THE LAW OF PATENTS.

THE LAW OF PATENTS

FOR

USEFUL INVENTIONS.

BY

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IN THREE VOLUMES.

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TO MY COLLEAGUES

IN THE

FACULTY OF THE YALE LAW SCHOOL,

FRANCIS WAYLAND, SIMEON E. BALDWIN, JOHNSON T. PLATT,
AND WILLIAM K. TOWNSEND,

I DEDICATE THIS TREATISE,

IN COMMEMORATION OF THE INTIMATE PERSONAL FRIENDSHIP
WHICH, FOR SO MANY YEARS, HAS INSPIRED AND
LIGHTENED OUR UNITED EFFORTS TO
ADVANCE THE LEARNING
OF THE LAW.

TO THE READER.

THE present work was undertaken in the conviction that a period had at last been reached when the Law of Patents could be successfully treated as a department of jurisprudence whose doctrines were derived by logical processes from established principles, and not as a mere body of legislative enactments verbally interpreted by the decisions of the courts. Patent Law governs those rights and obligations which are connected with the temporary monopoly in an invention. The fundamental principles on which it rests are in part rules of law, and in part facts in nature and the arts. These legal rules are identical with those applied from time immemorial in courts of law and equity, and have always been within the knowledge of persons learned in the law. Some of these facts have also long been known, while others, especially those relating to the essential attributes of an invention and the intrinsic character of the inventive act, have never, till a recent date, been fully understood. Ignorance concerning these formerly rendered the solution of many of the difficulties of Patent Law by any scientific method impossible, and led to nearly all the mistakes and perplexities which then arose in the administration of the law. But during the present generation a deeper research and a more exact discrimination have dispelled this ignorance, and though obscurities of detail still remain, yet whenever questions of Patent Law are now presented to our courts the factors of the problem lie before them, certain and intelligible, requiring only careful distinctions and accurate reasonings to attain impregnable results.

Acting upon this conviction the author commenced his labors by reading the various treatises on Patent Law, and all the English and American statutes and decisions bearing on the subject which had been published prior to the year 1882, extracting from them whatever statements, discussions, and explanations appeared to him of special value, and reducing the remainder to separate propositions of law or fact, — thus accumulating a wealth of material which for extensive knowledge, profound thought, and lucid explication can find no parallel in any other department of the law. The classification and collation of this material placed before him everything that has been said, decided, or conjectured concerning any question of Patent Law, and enabled him to formulate its doctrines with a completeness and correctness limited only by his own powers of comprehension and expression, while the material itself, enriched by the addition of the cases published during the progress of the work, and arranged in notes accompanying the formulated doctrine, now serves to explain, confirm, or perhaps to modify, the assertions and conclusions of the text.

This study of the Law of Patents in its sources demonstrated to the author that the fundamental principles on which it rests are these: —

I. That under our existing civilization public policy requires the state to encourage the exercise of inventive skill by conferring upon inventors a temporary monopoly in their inventions, and by securing to them its enjoyment.

II. That the grant and acceptance of this monopoly creates a contract between the inventor and the state, obliging the former to an immediate and complete disclosure of his invention to the public, and the latter to the legal protection and vindication of the monopoly in the invention thus disclosed.

III. That this contract is to be interpreted and enforced by the same rules of common law and equity which are applied to other contracts.

IV. That the terms "invention," "inventor" and "monopoly" express definite and permanent ideas of objects, persons, and relations which cannot be departed from in construing and protecting the rights of the respective parties to the contract.

V. That the mind and purpose of the legislature in enacting patent laws, and of the court in administering them, must be assumed to have been governed and directed by the four preceding principles; and hence that every statute and decision is to be read in their light and regarded as a correct enunciation of the law only when their distinctions and logical consequences are properly observed.

It is upon the basis of these principles that the system of Patent Law developed in the following pages has been erected. To these, as to infallible criteria of truth, have been brought the statements of text-writers, the provisions of statutes, the judgments, definitions, and discussions of the courts, and whenever one has been found inconsistent with these principles, its errors have been pointed out and its authority has been denied. It may surprise the reader, as it has excited the wonder and admiration of the author, to discover in how few out of all the abstruse and puzzling cases submitted to our courts any substantial divergence from these principles has occurred, and with what fidelity to duty our judges have receded from their unsound positions wherever a more mature consideration has convinced them of their error.

It is obvious from what has been already stated that the author does not regard the decisions of the courts in patent cases as simple judgments on the issues presented by the pleadings. On the contrary, they are, in numerous instances, elaborate essays, sometimes almost treatises, either on the whole body of the law or on a special topic, emanating from the minds of learned jurists, after long investigation and a close analysis of the conflicting arguments of acute lawyers and skilful experts, and announcing with carefulness of diction and thoroughness of statement the conclusions of law or

fact at which the writers have arrived. Such opinions are of priceless value to the author of a treatise and his readers. Although for the most part perhaps *obiter dicta*, so far as the controversy at bar was concerned, they are the true treasure-house of Patent Law to which student and teacher, counsel and court, must alike continually recur for the definition, confirmation, and exposition of the doctrines which they endeavor to comprehend and apply. Illustrious in the eyes of their professional brethren at large as are the judges from whom these opinions have procecded, their highest honors are and ever have been won from those who are familiar with their efforts to develop and elucidate what one of the greatest of their number long ago aptly called "the metaphysics of the law." The author feels that he need offer no apology for his profuse citations from decisions of this character, and that not one will be found superfluous by any reader who desires to understand the subject he considers.

While thus declaring his appreciation of the value of these decisions the author recognizes that his readers may need a word of caution in reference to their use. One of the most common sources of error in all human affairs is the partial statement of a truth. Such a statement is correct as far as it goes, but if adopted and repeated by the hearer as embodying the whole truth, it scatters the seeds of many subsequent mistakes. Some of these decisions are open to this criticism. They are not and they do not purport to be exhaustive discussions of the topics which they treat, but merely the presentation of them in such aspects, and to such an extent, as may be important or appropriate for the determination of the questions actually decided. When such opinions are regarded by later courts as covering the entire subject, and the limitations, extensions, or modifications which in the case then pending may be essential to bring them within the principles of the law are overlooked, error is of course inevitable. Instances of this as well as other forms of misuse of authorities are pointed out and corrected in the notes.

The notes which form so large a portion of these volumes consist mainly of monographs on subjects treated more briefly or from a different standpoint in the text, of the extracts just referred to, and of the propositions of law or fact gathered from statutes and decisions in the manner heretofore described. To these propositional notes the author has devoted particular attention. In a treatise like the present, where the text sets forth only the conclusions resulting from a study of the notes, the ordinary method of citation by page and volume would have been comparatively useless, and it was therefore deemed expedient to frame the notes in digest form that the reader might at one view have the entire topic at his command. To ensure their correctness the author has revised all such notes since they were in print and believes they can now be depended upon as exact statements of the doctrine of the cited cases. No notice is taken of one case as overruling another, for the reason that the direct reversal of the whole decision in a patent case rarely if ever occurs, and because any discrepancy between the cases must be apparent to the reader who examines all.

With one or two exceptions the details of the work require no explanation. The first volume is occupied with the consideration of the nature of the patent-monopoly, the invention which it protects, and the inventor on whom it is conferred. The second treats of the letters-patent, their grant, repeal, construction, and transfer. The grant of letters-patent, being regulated partly by statute and partly by Patent Office rules and customs, involves matters of transitory as well as permanent obligation. It has been the endeavor of the author to separate between these, and confine his discussions to the settled law and practice of the Office. This separation, however, is not and cannot be complete, and as the rules are changed from time to time by the Commissioner, there is no other method open to the reader than to make himself acquainted with the current official rules and judgments and be guided by them where they disagree with those set forth

in the author's pages. The third volume contains an examination of the wrongs against inventors, patentees, etc., and their remedies. These are considered at length except as to those rules of procedure in the courts of law and equity which are common to all controversies, and which are mentioned here only in order to preserve the continuity of the subject and enable matters peculiar to infringement suits to be discussed in their proper place.

The Index covers the notes as well as the text. This was necessary to render them available for purposes of reference, but had each note been indexed under all its appropriate headings the space occupied would have been equivalent to another volume. Usually, therefore, a note appears in the index but once, and if not found under the heading first consulted can be discovered by turning to the other headings cited at the conclusion of the first.

It was the intention of the author in citing cases to mention in every instance all the reports in common use in which the case appears. Generally this has been done, but in the handling of so large a mass of materials omissions have occurred which it is one object of the Table of Cases to supply. In referring to the Table the reader should remember that a case often goes by different names, most of which are abbreviations of the longer and correct title given in the Table itself.

In the Appendix are collected and digested the cases published since the work went to press in the spring of 1888. So far as was possible these were inserted in the notes, but as no complete statement of their propositions could thus be made it seemed advisable to add them in this manner by themselves. It is the present design of the author, in cooperation with his son, George W. Robinson, of the New Haven Bar, who has been associated with him during the past five years of his labors on this treatise, to issue similar digests of cases involving questions of Patent Law, with suitable annotations, at such intervals as the profession

may require until the work itself may need enlargement or revision.

In conclusion the author begs the indulgence of his brethren toward those errors which are to be expected in a treatise of such extent and character. Commenced at a late period of his own life, he did not feel at liberty to publish a tentative volume, trusting to the labor of future years to fill up to its due proportions the outline thus presented; and the difficulties of a writer who undertakes to cover the whole field of research and deduction at a single effort, however earnest and prolonged, can be learned only by experience. If length of days to which he has no natural right are given him, he hopes to bring his literary offspring to a higher degree of development and usefulness. If not, he leaves it in the hands of men and scholars through whose additions and corrections he is confident that it will not suffer loss.

WILLIAM C. ROBINSON.

YALE UNIVERSITY,
August, 1890.

NOTE. — A collection of the Acts of Congress concerning patents for inventions, chronologically arranged and annotated from the cases prior to 1861, may be found at the end of Law's Patent Digest, edition of 1877.

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INTRODUCTION.

OF THE ORIGIN AND NATURE OF THE MONOPOLY SECURED TO INVENTORS BY THEIR LETTERS PATENT,

AND OF

THE HISTORY AND DEVELOPMENT OF THE PATENT SYSTEM OF THE UNITED STATES.

TREATISE

ON

THE LAW OF PATENTS.

INTRODUCTION.

CHAPTER I.

OF THE ORIGIN OF THE MONOPOLY SECURED TO AN INVENTOR BY LETTERS-PATENT.

§ 1. Monopolies in General.

Historically, the patent systems both of England and America had their origin in those royal grants by which monopolies in trade or manufacture were conferred on a few favored subjects of the British crown. A monopoly is a franchise created by the Government, and vesting in an individual or corporation the exclusive privilege of practising a certain art, or of making, using, or selling a certain article, which, but for such monopoly, all other individuals and corporations would be at liberty to practise, or to make and use and sell.[1] In the infancy of European commerce, when all mercantile enterprises were attended with great hazard either of life or capital, these exclusive privileges were bestowed by different

§ 1. [1] "Monopoly" (from the Greek *μόνος, alone*, and *πωλέομαι, to sell*) signifies "the exclusive right to sell." Such rights were claimed and exercised both among the Greek and Roman merchants, but without the authority of their governments (Godson, 2). Under the English kings these rights were granted by public letters, authenticated by the Great Seal, addressed to the people at large. From the Latin name of these letters, "*literæ patentes*," is derived the word "patent;" a title now applied to many other forms of public grant, as well as to that of the exclusive right to practise an invention. The bestowal of a monopoly by the government, under this system, not merely creates an exclusive privilege, but enables its possessor to protect and defend the rights which it confers. Phillips, 1; 2 Bl. Com. 346.

monarchs upon particular cities in order to induce them to embark in those important undertakings. When trade increased, other monopolies were obtained by the same cities as rewards for service rendered or money furnished to the State; and in this manner nearly all commercial operations eventually became restricted to these incorporated bodies, and were carried on under the protection of these exclusive grants. Associations of trading cities, for their mutual advancement and defence, were also formed, in some instances assuming such proportions and exercising such political authority as to become formidable rivals of the sovereign power.[2]

§ 2. Continental Monopolies: The Hanseatic League.

The most famous of these ancient civic combinations was that of the Hanse towns, now generally known as the Hanseatic League.[1] This association was organized about the middle of the thirteenth century, by the trading towns of Northern Germany, for the protection of their commerce from the rapacity of princes and from the depredations of marauders, whether on land or sea. At one period it embraced eighty-five cities, grouped in four great societies, whose respective heads were Lubec, Dantzic, Brunswick, and Cologne. It possessed a regularly constituted government, and an established system of finance and administration. Its affairs were managed by a diet, in which each town was represented by its deputies, and which assembled once in every three years. Such were its resources that in A. D. 1428 it equipped a fleet of two hundred and forty-eight ships, carrying a force of twelve thousand soldiers, against Eric of Denmark. It maintained factories at London, Bruges, Novogorod, and Bergen, and was allied by treaty with the principal trading cities of Holland, France, Italy, and Spain. It created centres of industry and civilization in various parts of Northern Europe, opened new channels of communication by its highways and canals, and often rendered signal services to the monarchs in whose realms its agencies had been established. In return

[2] Godson, 2-5.

§ 2. [1] Hallam, Middle Ages, chap. ix. part ii.; Encyclopædias, *in loc.*

for these services its factories were endowed, by royal grant, with special privileges, in which every merchant belonging to a Hanseatic town participated. During the fifteenth century, however, it became involved in controversies with different sovereigns, by whom the privileges theretofore enjoyed by it were transferred to the trading cities in their several dominions; and its merchants were compelled to reside within their native towns in order that their own governments might receive the benefit accruing from their capital and skill. From this time its importance gradually declined, until in A. D. 1630 the greater number of the cities withdrew from its allegiance.

§ 3. Early English Monopolies: the Guilds.

In England trade became an object of royal solicitude at a very early period. By a law of Athelstan (925–941) every merchant who had made three voyages beyond sea was entitled to the dignity of "thane." The formation and development of towns, as the centres of domestic traffic, were encouraged by the grant of special privileges; and from the time of William Rufus there was no reign in which political immunities or commercial franchises were not bestowed upon them.[1] The guilds, which had originally been clubs for religious, charitable, or social purposes, and were common throughout the kingdom, allied themselves together in the towns, and forming a body, known as the "merchant guild," applied themselves to commerce, procured numerous monopolies from the crown by purchase or otherwise, and finally engrossed the local trade. As this "merchant guild" increased in wealth and influence, it devoted itself to the more extensive and lucrative enterprises, while the lesser tradesmen associated themselves in "craft guilds," and obtained royal charters conferring upon them the power to regulate apprenticeships, to fix the hours of labor and the rate of wages, to exclude competition, and to confine to their own bodies certain industrial pursuits as well as the minor branches of commerce. In the struggle which sprang up between the merchant guilds and

§ 3. [1] Hallam, Middle Ages, chap. viii., part iii.

craft guilds, and which continued during several centuries, the latter slowly encroached upon the privileges of the former, and becoming larger partakers of the royal favor gradually secured the control of trade.[2]

§ 4. English Monopolies from A. D. 1261 to A. D. 1551.

Until the reign of Edward VI. (A. D. 1551) the foreign commerce of England was almost entirely in the hands of strangers. These were principally citizens of the Hanse towns, who had been encouraged to settle in London by Henry III. (A. D. 1261), and had by him been erected into a corporation, endowed with many privileges, and exempted from various obligations imposed on other aliens. During three centuries these "merchants of the Steel-Yard," by loans of money and other services, maintained themselves under the favor and protection of the crown, and virtually monopolized the maritime trade of the whole country. In A. D. 1551 their privileges began to be recalled, and from thenceforward foreign commerce came more and more under the control of the English merchant companies, on whom monopolies of the same character were liberally bestowed.[1]

§ 5. English Monopolies: the Growth of Abuses.

At the same period a change appears to have taken place in the terms on which, and the purposes for which, these monopolies were granted. Anciently, a monopoly was conferred directly on the merchant or trading corporation by whom it was to be enjoyed; and the motive of the grant, in theory at least, was to induce the grantee to engage in trade. This theory of the motive of the grant soon became so far modified as to permit the consideration of the franchise to consist, wholly or in part, of money paid or service rendered to the sovereign. But now monopolies were given by the crown to individuals, who had no intention to employ them otherwise than by selling them to others at as high a price as possible. Rulers rewarded their favorites with these gifts, which, though costing

[2] Green's History of the English People, bk. iii., chap. i.

§ 4. [1] Hume, chap. xxxv.

the giver nothing, were of great value in the market, and bestowed on their purchaser the power to impose the severest burdens on his fellow-subjects. By this process the last remains of free competition, both in domestic and foreign commerce, were speedily destroyed, and English trade, in almost all commodities, was confined to a few citizens, who fixed whatever price they pleased upon the exports and imports of the nation.

§ 6. Monopolies under Elizabeth: Resistance against Abuses.

This evil reached its height under the reign of Elizabeth. It was the policy of that illustrious monarch never to call upon her people for supplies unless necessity compelled it; and as a means of raising money for herself, as well as of bestowing favors on her courtiers and servants, these exclusive privileges were multiplied by her until the most common articles of consumption, such as salt, iron, powder, vinegar, bottles, saltpetre, oil, starch, and paper, were brought under the control of the monopolists. The advance in the prices of all these commodities was enormous, — salt, for instance, which had sold at sixteen pence a bushel, being held at fourteen or fifteen shillings. At the same time, to protect monopolists in the enjoyment of their privileges, they were endowed with arbitrary powers of searching the stores and habitations of those who were suspected of infringing upon their rights, and of collecting heavy penalties from them when found guilty. Against these grievous burdens Parliament rebelled in A. D. 1601, and a bill abolishing monopolies was introduced and advocated in the House of Commons. In the midst of the discussion a message was received from the queen, in which she promised to withdraw the most oppressive of these privileges, and the proposed legislation on the subject was abandoned.[1]

§ 7. Monopolies under James I.: their Abolition in A. D. 1623 by Stat. 21 Jac. I.

The slight relief thus extorted from Elizabeth was followed in the reign of James I. by the complete deliverance of the

§ 6. [1] Hume, chap. xliv.

English people from this tyrannical dominion of monopolists. Upon his accession in A. D. 1603 this prince had voluntarily rescinded all the exclusive privileges by which his predecessor had attempted to restrict domestic commerce. The foreign trade, however, still remained under the control of the great merchant companies, comprising in all about two hundred citizens of London, who by combining among themselves raised or lowered the prices of all exported and imported articles at their pleasure. From time to time, during the ensuing twenty years, efforts were made to remedy these remaining evils by legislative action, but without success until, in A. D. 1623, the famous Statute against Monopolies (21 Jac. I. ch. 3) was enacted by Parliament and received the sanction of the king.[1] By this statute all past monopolies were abolished, and the power of the crown to grant them in the future was explicitly denied, except in cases where such grants had been or should be made to the inventors of new manufactures, conferring upon them the exclusive privilege of practising such inventions for a limited period of time.[2]

§ 8. English Monopolies since the Stat. 21 Jac. I.

Notwithstanding this statute, the English sovereigns did not immediately relinquish their claim to the free exercise of this branch of their prerogative. In A. D. 1631 Charles I. under the pressure of financial difficulties again asserted the ancient powers of the crown, and granted monopolies as a means of replenishing the royal treasury. But such was the effect of the victories already gained, and such the temper of the people, that the exclusive privileges thus conferred were generally disregarded, and all endeavors to enforce them failed. The pecuniary result to the king was also most discouraging, and from that time onward all pretence of any right in the crown to erect monopolies, contrary to the provisions of this statute, has been practically abandoned.[1]

§ 7. [1] Hume, chaps. xlv., xlix.

[2] For succinct accounts of the history of monopolies in England prior to the passage of this statute, see Coryton, 1–9; Godson, 5–15; Collier, chap. ii.

§ 8. [1] Hume, chap. lii.

§ 9. Two Classes of Monopolies, Legal and Illegal.

The monopolies created by the British crown before the statute of James I. may be divided into two great classes, which differ from each other both in their legal and in their intrinsic character. To the first class belong all those which were conferred on the inventors of a new manufacture or the introducers of a new trade into the realm, and which secured to them the exclusive privilege of carrying on such trade or manufacture for a certain period of time. The second class embraces those by which the exercise of some well-known branch of industry or commerce was restricted to particular individuals or corporations, and the liberty of other subjects to employ themselves in these pursuits was correspondingly abridged.[1] The earliest monopolies were of the former class, and were bestowed as a reward and an encouragement on those who, at their own expense or by their personal efforts, were engaged in advancing the mechanical knowledge or the commercial resources of the public.[2] Such monopolies were always sustained by the courts, and their creation was regarded as a legitimate exercise of royal power. The crown was properly considered as the patron of deserving artisans

§ 9. [1] The various definitions of monopoly given by different writers are to be reconciled only by remembering that some have endeavored to define monopoly in general, while others have confined themselves to a description of illegal or criminal monopolies. Thus Comyn (Dig. Tit. Trade D. 4), "A monopoly is when the sale of any merchandise or commodity is restrained to one or a certain number."

Bouvier, "A monopoly is also an institution or allowance by a grant from the sovereign power of a State by commission, letters-patent, or otherwise, to any person or corporation, by which the exclusive right of buying, selling, making, working, or using anything is given."

On the other hand, Blackstone (4 Com. 159) defines monopoly as "a license or privilege allowed by the king, for the sole buying and selling, making, working, or using of anything whatsoever; whereby the subject in general is restrained from that liberty of manufacturing or trading *which he had before*."

Hawkins (P. C. chap. 79, § 1), "A monopoly is an allowance by the king, to any person or persons, of the sole buying, selling, making, working, or using of anything whereby any person is sought to be restrained from any freedom *which he had before* or *hindered from his lawful trade*."

To the same effect are other authorities, both earlier and later, whose statements that monopolies are unlawful, void, or oppressive are to be understood as referring only to monopolies of the second class.

[2] Coryton, 1, 5.

and merchants; and the development of trade and commerce, through their enterprises and inventions, was recognized as a sufficient reason for temporarily restricting the freedom of the people.[3] But as monopolies became more numerous, and were bestowed as a return for service or pecuniary aid rather than as a recompense for benefits conferred upon the public, the character of the monopoly itself was less and less regarded, and the oppressive privileges of the second class were freely granted. These were, however, always treated by the courts as contrary to common right and void at common law; but since no power existed by which the king could be prevented from creating them, the judges could apply no remedy except by punishing the monopolist for procuring and asserting them.[4] In one case under Elizabeth in A. D. 1602, and another under James I. in A. D. 1614, this difference in the character and legality of these two classes of monopolies was clearly stated, and the nature of the controversy on this subject, between the courts and people upon one side and the crown upon the other, was accurately defined.[5] The statute of James I. simply enacted into a law,

[3] Hawkins (P. C. chap. 79, § 6), "It seemeth clear that the king may, for a reasonable time, make a good grant to any one of the sole use of any art invented or first brought into the realm by the grantee."

Bac. Abr. (Tit. Prerogative, F. 4), "It is agreed that the king may, for a reasonable time, grant to a person the sole use of any art first invented by him, and this it seems the king might do at common law."

See also Godson, 10.

[4] Bac. Abr. (Tit. Prerogative, F. 4), "The king's grant of a monopoly, as of the sole buying, selling, working, making, or using of any commodity, is not only void by the common law, but the persons procuring such grants are said to be punishable by fine and imprisonment."

Comyn (Dig. Tit. Trade, D. 4), "All monopolies are contrary to Magna Charta."

See also Godson, 12, *citing case* of John Peachie, who was convicted and punished, in the reign of Edward III., for obtaining a monopoly of the trade in sweet wines.

[5] Darcy *v.* Allin, Noy, Rep. 173. This was an action on the case brought by Edward Darcy against Thomas Allin for the infringement of a patent granted in the 30 Eliz., to one Ralph Bowes and his assigns, for the exclusive making and importing and sale of playing-cards during twelve years, and renewed for an additional twelve years to the plaintiff, evidently an assignee of Bowes.

The defendant pleaded that, as a citizen of London, he had a free right to trade in all merchantable things; and to this plea the plaintiff demurred. The argument against the validity of the patent, given at length in the report, is interesting and very forcible.

which bound the sovereign, the doctrines that the courts had always maintained, and reiterated those principles of Magna

It insists that the crown has no power to grant such a patent, and refers to cases in which monopolies of office, toll, etc., had been held void by the courts. It also denounces the patent as contrary to common right, destroying trade and labor, raising prices, and filling the market with inferior goods. It then states the distinction between lawful and unlawful monopolies, and gives instances thereof as follows: (182) "Now, therefore, I will show you how the judges have heretofore allowed of monopoly patents; which is, that where any man by his own charge and industry, or by his own wit or invention, doth bring any new trade into the realm, or any engine tending to the furtherance of a trade, that never was used before, — and that for the good of the realm, — that in such cases the king may grant to him a monopoly patent for some reasonable time, until the subjects may learn the same, in consideration of the good that he doth bring by his invention to the Commonwealth; otherwise not.

"In the 9th Eliz. there was a patent granted to Mr. Hastings of the court: That in consideration that he brought in the skill of making of Frisadoes as they were made in Harlem and Amsterdam beyond the seas, being not used in England, — that, therefore, he should have the sole trade of the making and selling thereof for divers years; charging all other subjects not to make any Frisadoes in England during that time, upon pain to forfeit the same Frisadoes by them made, and to forfeit also £100, the one moiety thereof to the Queen's Majesty, the other to Mr. Hastings; upon which patent Mr. Hastings, about 20 years past, exhibited an information in the Exchequer against certain clothiers of Coxall for making of Frisadoes, contrary to the intent of this patent. To which information, for that it was against law to have such penalties of the goods and £100 to be forfeited by force of a letter-patent, therefore did demur upon the information, and moved the court, and the opinion of the court being clear against him, he never went further in his information, but exhibited his English bill in the Exchequer chamber against them, where, upon the examination of the cause, it appeared that the same clothiers did make baize very like to Mr. Hastings's Frisadoes, and that they used to make them before Mr. Hastings's patent, for which cause they were neither punished nor restrained from making their baize like to his Frisadoes.

"Another monopoly patent was granted to Mr. Matthey, a cutler at Fleetbridge, in the beginning of this Queen's time, which I have here in court to show, by which patent it was granted unto him the sole making of knives with bone hafts and plates of lattin; because, as the patent suggested, he brought the first use thereof from beyond seas; yet, nevertheless, when the wardens of the company of cutlers did show, before some of the counsel and some learned in the law, that they did use to make knives before, though not with such hafts, that such a light difference or invention should be no cause to restrain them; whereupon he could never have benefit of this patent, although he labored very greatly therein.

"Lastly, the monopoly patent granted to one Humphrey of the Tower, for the sole and only use of a sieve, or instrument for melting of lead, supposing that it was of his own

Charta which declared that the liberties of the citizen were to remain forever unrestrained by royal usurpation.[6]

invention, and therefore prohibited all others to use the same for a time; and because others used the like instrument in Darbyshire, contrary to the intent of his patent, therefore he did sue them in the Exchequer chamber by English bill; in which court the question was whether it was newly invented by him, whereby he might have the sole privilege, or else used before at Mendiff in the West Country, which if it were there before used, then the court was of opinion he should not have the sole use thereof."

The same case, but without the argument of counsel, is reported in 11 Coke, R. 84 b., Trinity Term, 44 Eliz., where it appears that the cause itself was decided in favor of the defendant. 1 Abb. P. C. 1.

In the case of "The Clothworkers of Ipswich," Godbolt, 252, decided at Easter Term, 12 James I., in which similar questions were presented: (253) "it was agreed by the court that the king might make corporations, and grant to them that they may make ordinances for the ordering and government of any trade; but thereby they cannot make a monopoly, for that is to take away free trade which is the birth-right of every subject. . . . (254) But if a man hath brought in a new invention and a new trade within the kingdom, in peril of his life and consumption of his estate or stock, etc., or if a man hath made a new discovery of anything; in such cases the king, of his grace and favor, in recompense of his costs and travail, may grant by charter unto him, that he only shall use such a trade or traffic for a certain time, because at first the people of the kingdom are ignorant and have not the knowledge or skill to use it. But when that patent is expired, the king cannot make a new grant thereof; for when the trade is become common, and others have been bound apprentices to the same trade, there is no reason that such should be forbidden to use it." 1 Abb. P. C. 6.

[6] Magna Charta, 9 Henry III., chap. xxxvii. A. D. 1225, "Escuage from henceforth shall be taken like as it was wont to be in the time of King Henry our grandfather; reserving to all Archbishops, Bishops, Abbots, Priors, Templars, Hospitallers, Earls, Barons, and all persons as well spiritual as temporal, all their free liberties and free customs which they have had in time passed. And all these customs and liberties aforesaid, which we have granted to be holden within this our realm, as much as appertaineth to us and our heirs we shall observe; and all men of this our realm, as well spiritual as temporal (as much as in them is), shall observe the same against all persons in like wise. And for this our gift and grant of these liberties and of other contained in our Charter of Liberties of our Forest, the Archbishops, Bishops, Abbots, Priors, Earls, Barons, Knights, Freeholders, and other our subjects have given unto us the fifteenth part of all their moveables. And we have granted unto them, on the other part, that neither we nor our heirs shall procure or do anything whereby the liberties in this charter contained shall be infringed or broken; and if anything be procured by any person contrary to the premises it shall be had of no force nor effect." 1 Stat. at Large, 13.

§ 10. Relation of the Stat. 21 Jac. I. to English and American Patent Law.

The statute of James I. was thus declaratory of the common law.[1] It created no new right either in the crown or

§ 10. [1] The statute 21 James I., chap. 3, was, in substance, as follows, the passages in quotation marks being in the language of the act itself: —

"An Act concerning monopolies and dispensations of penal laws and the forfeiture thereof."

I. Whereas your majesty, in the year 1610, published a book declaring that all grants of monopolies, and of the benefit of penal laws, and of the power of dispensing with law, and of compounding penalties, are contrary to law; and whereas your majesty then expressly commanded that no suitor should ever apply for such grants; and whereas, nevertheless, such grants have been applied for and allowed: Therefore to make void all these, and to prevent the like in time to come, may it please your majesty that it be declared and enacted by authority of this present parliament "that all monopolies, and all commissions, grants, licenses, charters, and letters-patent, heretofore made or granted, or hereafter to be made or granted, to any person or persons, bodies politic or corporate whatsoever, of or for the sole buying, selling, making, working, or using of anything, within this realm or the dominion of Wales, or of any other monopolies," and all licenses to do anything contrary to law, or to confer authority on others so to do, and all grants of the power to compound or receive the benefit of any penalty before judgment thereon had, and all warrants or other process for the erection or promotion of the same "are altogether contrary to the laws of this realm, and so are and shall be utterly void, and of none effect, and in no wise to be put in use or execution."

II. "That all monopolies and all such commissions, grants, licenses, charters, letters-patent," and all other matters and things tending as aforesaid, "and the force and validity of them and of every of them, ought to be and shall be forever hereafter examined, heard, tried, and determined by and according to the common laws of this realm and not otherwise."

III. "That all person and persons, bodies politic and corporate whatsoever, which now are or hereafter shall be, shall stand and be disabled and incapable to have, use, exercise, or put in use any monopoly or any such commission, grant, license, charter, letters-patent," or other matter or thing tending as aforesaid, or any power grounded or pretended to be grounded on them.

IV. That at the end of forty days after this present session of parliament, any person who may be aggrieved "by occasion or pretext of any monopoly," or other matter or thing tending as aforesaid, may recover in the king's courts, in an action on this statute, treble damages; and such suits shall not be hindered or delayed by any order or injunction issuing out of any other court than that before which such suit is pending, except a writ of error, under penalty of a *premunire*.

V. "Provided, nevertheless, and be it declared and enacted: That any declaration before mentioned shall not extend to any letters-patent and grants of privilege, for the term of one and twenty years or under, heretofore made of the sole working or making of any manner of new manufacture, within this realm, to the first and true inventor or inventors of such manufactures, which others,

in the people. It limited the royal prerogative to certain definite channels and specified the boundaries within which

at the time of the making of such letters-patent and grants did not use, so they be not contrary to the law, nor mischievous to the state, by raising of the price of commodities at home, or hurt of trade, or generally inconvenient, but that the same shall be of such force as they were, or should be, if this act had not been made and of none other. And if the same were made for more than one and twenty years, that then the same, for the term of one and twenty years only, to be accounted from the date of the first letters-patent and grants thereof made, shall be of such force as they were, or should have been, if the same had been made but for the term of one and twenty years only, and as if this act had never been had or made, and of none other."

VI. "Provided also, and be it declared and enacted: That any declaration before mentioned shall not extend to any letters-patent and grants of privilege, for the term of fourteen years or under, hereafter to be made, of the sole working or making of any manner of new manufactures, within this realm, to the true and first inventor and inventors of such manufactures, which others, at the time of making such letters-patent and grant, shall not use, so as also they be not contrary to the law, nor mischievous to the state, by raising prices of commodities at home, or hurt of trade, or generally inconvenient: The said fourteen years to be accounted from the date of the first letters-patent or grant of such privilege, hereafter to be made; but that the same shall be of such force as they should be, if this act had never been made and of none other."

VII. Provided, that this act shall not extend to or interfere with any grant heretofore made or confirmed by act of parliament.

VIII. Provided, that this act shall not affect any warrant directed to any justice of the king's courts.

IX. Provided, that this act shall not prejudice any cities, boroughs, or incorporated towns, in the right to any customs heretofore used by them; or any company or corporation or fellowship of any trade, or society of merchants, in any of their immunities or privileges.

X. Provided, that this act shall not affect any patent heretofore made, or hereafter to be made, concerning printing, or the making of saltpetre or of gunpowder, or of ordnance or shot for ordnance, nor any grant of any office.

XI. Provided, that this act shall not affect any privilege heretofore granted, or hereafter to be granted, concerning the making of alum or the working of alum mines.

XII. Provided, that this act shall not prejudice any usage or privilege heretofore claimed and enjoyed by the guild of hoast-men of Newcastle-upon-Tyne, concerning the carrying or trading in coal; nor any grant of any licenses to taverners and retail dealers in wine to be drank on their own premises, where the fees for such licenses accrue directly to the use of the king.

XIII. Provided, that this act shall not affect the patent granted in A. D. 1623 to Sir Robert Mansel for the making of glass; or the patent granted in A. D. 1615 to James Maxwell for the transportation of calves' skins.

XIV. Provided, that this act shall not interfere with the patent granted in A. D. 1618 to Abraham Baker for the making of smalt; nor that granted in A. D. 1621 to Edward, Lord Dudley, for

it might lawfully be exercised. The grant of a monopoly still remained a voluntary concession on the part of the sovereign, to be bestowed by him according to his pleasure and on such terms as he might deem appropriate.[2] It became subject to judicial criticism only upon the questions whether the monopolist himself had complied with the conditions of the grant and was entitled, under the provisions of the statute, to receive it. If he were the true and first inventor of any manner of new manufacture within the realm, which others at the date of his grant did not use, and which was neither contrary to law nor hurtful to the state; if his monopoly, as granted, consisted only in the exclusive privilege of making or using such invention for the proper period of time; and if he had fulfilled the duties imposed on him by the crown,—his grant was valid, but otherwise was void. The decisions of the courts upon these provisions of the statute constitute the body of the present English Patent Law; while in the same statute, thus interpreted, are found the sources of the Patent Law of the United States.[3]

melting iron ore and making the same into bars with coal.

[2] Godson, 47; Attorney-General, *ex rel.* Hecker *v.* Rumford Chemical Works (1876), 9 O. G. 1062.

[3] The disposition to regard the rights and remedies of inventors as resting entirely upon the Constitution and the Acts of Congress, which is apparent in the narrow construction given to the statutes in some recent cases, and is specifically expressed in United States *v.* American Bell Telephone Co. (1887), 41 O. G. 123, is thus evidently improper. These rights and remedies were recognized by the common law before the Stat. Jac. I. was enacted. They were acknowledged and enforced by the individual states before the adoption of the Federal Constitution. Our patent acts have always depended upon common-law principles for their construction, and until recently have been uniformly treated as a part of that great body of theoretical and practical jurisprudence. Patent law is as truly, though not so extensively, a matter of historical development as the law of real property, and can no more be beneficially administered as a mere statutory system, inoperative except where verbally declared, than any other of those ancient branches of the law which we have inherited from our Anglo-Saxon ancestors. See Appendix to 3 Wheat. note 2: Briefs of counsel in United States *v.* American Bell Telephone Co. (1887), 32 Fed. Rep. 591.

CHAPTER II.

OF THE NATURE OF THE MONOPOLY SECURED TO AN INVENTOR BY LETTERS-PATENT.

§ 11. Patent Privilege a Monopoly: Diversity of Opinions.

Certain modern writers upon Patent Law have asserted that the exclusive privilege conferred on an inventor is not a monopoly. Certain judges of the courts of the United States, in their decisions upon patent cases, have expressed the same opinion.[1] Other authors and jurists have declared

§ 11. [1] To this effect is Curtis on Patents, Prelim. Obs. xix.: "A patent for a useful invention is not under our law, or the law of England, a grant of a monopoly, in the sense of the old common law." Also, xxii., "A patent right, under the modern law of England and America, differs essentially from one of the old English Monopolies. In those grants of the crown, the subject-matter of the exclusive privilege was quite as often a commodity of which the public were and long had been in possession, as it was anything invented, discovered, or even imported by the patentee."

There is no uniformity in the language used in reference to this matter by the American courts. Thus, for example, in Brooks *v.* Jenkins (1844), 3 McLean, 437, the judge remarks: "This law gives a monopoly, but not in an odious sense. It takes nothing from the community at large, but secures to them the greatest benefits." In Parker *v.* Haworth (1848), 4 McLean, 372; 2 Robb. 725, the same court declares: "It is not a monopoly the inventor receives. Instead of taking anything from the public, he confers on it the greatest benefits." In Bloomer *v.* Stolly (1850), 5 McLean, 162, he states: "It is said monopolies are odious; but a patent right that shall compensate the inventor is not a monopoly in the general sense of that term. The inventor takes nothing from society." And in Allen *v.* Hunter (1855), 6 McLean, 305, he says: "Patentees are not monopolists. This objection is often made and it has its effect upon society. The imputation is unjust and impolitic. A monopolist is one who by the exercise of the sovereign power takes from the public that which belongs to it and gives to the grantee and his assigns an exclusive use. On this ground monopolies are justly odious. It enables a favored individual to tax the community for his exclusive benefit, for the use of that to which every other person in the community, abstractly, has an equal right with himself. Under the patent law this can never be done. No exclusive right can be granted for anything which the patentee has not invented or discovered. If he claims anything which was before

that the exclusive right of the inventor is not only a true monopoly, but, as is apparent from the historical sketch already given, that it is the primeval and ideal monopoly, out of the abuse of which all odious and illegal monopolies have grown.[2] The latter is the view taken of the subject by the earlier writers, and is the doctrine generally adhered to by the British courts.[3]

known his patent is void. So that the law repudiates a monopoly. The right of the patentee entirely rests on his invention or discovery of that which is useful and which was not known before. And the law gives him the exclusive use of the thing invented or discovered for a few years as a compensation for his ingenuity, labor, and expense in producing it. This, then, in no sense partakes of the character of a monopoly." Thus within a period of eleven years the same court declares of a patent privilege that it "is a monopoly but not in an odious sense;" that "it is not a monopoly," and that "it is not a monopoly in the general sense of that term."

[2] Stat. James I., § 1: "Be it declared and enacted, by authority of this present parliament; That all Monopolies, and all Commissions, Grants, Licences, Charters, and Letters Patent, heretofore made or granted, or hereafter to be made or granted, to any person or persons, bodies politic or corporate whatsoever, of or for the sole buying, selling, making, working, or using of anything within this realm, or the dominion of Wales, *or of any other Monopolies*," &c. Out of these the 6th section excepts the privileges granted to first inventors, thereby showing that the patent privilege was then regarded as one form of monopoly. Says Coryton: (5) "The earliest form of these privileges was that of conducting exclusively new trades, or dealing exclusively in objects of commerce hitherto unknown, as a reward and encouragement to the parties introducing them. By degrees, however, the powers confided to the executive were perverted from their proper purpose; and under the pretence of the better government of trade, the prerogative of the crown was employed in sanctioning, in return for pecuniary aid, individuals and corporations in very oppressive monopolies."

[3] To this effect is Godson: (43) "One species of monopolies, it has been shown, are those, which, although founded on grants, are allowed by statute law. From that source the Law of Patents for Inventions springs. . . . For although they are monopolies, yet they are very limited ones."

So also Phillips: (2) "A patent is a grant by the state of the exclusive privilege of making, using, and vending, and authorizing others to make, use, and vend an invention. It is a monopoly of the invention. The monopoly may be unrestricted in geographical extent, and so be coextensive with the authority of the state or government granting it, or may be confined to a certain territory; so in respect to duration, it may be for an indefinite or a limited period; and again in its nature or character it may be either absolute, or subject to certain qualifications and conditions. . . . (23) Patent rights are a surviving branch of the great system of monopolies," &c.

In Coryton: (2) "The exclusive use of new inventions, although the origin and the supporting principle of the whole, plays but an insignificant part in the great system of monopolies," &c.

Other writers applying the same term

§ 12. Patent Privilege a Monopoly: Effect of this Doctrine on Legislatures and Courts.

The question whether a patent privilege is a monopoly is not a mere question of words. It is the point of departure for

to the patent privilege are Norman, 2; 1 Web. 5, n.

The language of the English courts from the earliest period has been of the same character. Thus, in Darcy *v.* Allin (1602), Noy, 173: (182) "Now, therefore, I will show you how the judges have heretofore allowed of monopoly patents; which is, that where any man by his own charge and industry, or by his own wit or invention, doth bring any new trade into the realm, or any engine tending to the furtherance of a trade that never was used before, and that for the good of the realm, that in such cases the king may grant to him a monopoly patent," &c.

In Liardet *v.* Johnson (1778), 1 Web. 53, Lord Mansfield says: (54, note *c*) "The law relative to patents requires, as a price the individual should pay the people for his monopoly," &c. Bull. N. P. 76.

In Rex *v.* Arkwright (1785), 1 Web. 64, Buller, J.: (66) "It is clearly settled at law that a man, to entitle himself to the benefit of a patent for a monopoly, must disclose his secret," &c. 1 Abb. P. C. 29 (31).

In Turner *v.* Winter (1787), 1 Web. 77, Ashhurst, J.: (80) "As every patent is calculated to give a monopoly to the patentee, it is so far against the principles of law," &c. 1 Abb. P. C. 43(47).

In Huddart *v.* Grimshaw (1803), 1 Web. 85, Lord Ellenborough: (86) "A patent entitling the plaintiff, for a limited period of time, to the monopoly of an invention," &c. 1 Abb. P. C. 128 (145).

In Crossley *v.* Beverly (1830), 1 Web. 112, Lord Tenterden: (116) "That would have been less beneficial to the public, because it would have prolonged the time of the monopoly." 1 Abb. P. C. 437 (442).

In Morgan *v.* Seaward (1836), 1 Web. 170, Alderson, B.: (173) "That is the fair premium which the patentee pays for the monopoly he receives." Parke, B.: (194) "If the inventor could sell his invention, keeping the secret to himself, and when it was likely to be discovered by another, take out a patent, he might have, practically, a monopoly for a much longer period than fourteen years. . . . (197) A grant of a monopoly for an invention which is altogether useless," &c. 2 Abb. P. C., 262 (319), 419 (428, 431).

In Crane *v.* Price (1842), 1 Web. 393, Tindal, C. J.: (411) "The king may grant him a monopoly of a patent for a reasonable time."

In Walton *v.* Bateman (1842), 1 Web. 613, Cresswell, J., speaking of the statute of James I., says it was passed (614) "to enact that all parties should be disabled from using monopolies, except in certain instances."

In Household Co. *v.* Neilson (1843), 1 Web. 673, Lord Brougham: (712) "The patent act contains two exceptions — the proviso under which the monopoly is allowed to be granted. . . . In cases of inventions, the patent right, or monopoly, may be granted," &c.

In re Morgan's Patent (1843), 1 Web. 737, Lord Brougham: (737) "a patent term, that is to say, a monopoly."

In re Porter's Patent (1855), 2 Web. 201, the Privy Council, in describing the object of the confirmation of a void patent, say that it is (211) "to give force and validity, by a *quasi* legislative authority, to a grant of monopoly actually void," &c.

In Smith *v.* Davidson (1857), 19 C. S.

two distinct theories, under whose influence courts and legislatures may be led to widely different conclusions as to the dividing line between the rights to be conceded to inventors and those to be reserved to the public. Every grant of a monopoly is, in appearance at least, in derogation of the common right.[1] The bestowal of an exclusive privilege on one man forbids its exercise by any other, and thus appropriates to him the benefits which otherwise would have remained, or might have become, the property of all. Like other apparent restrictions upon common right, the law regards such grants with disfavor, and so construes them as to permit no further limitation of the liberties of others than the language of the grant itself requires.[2] In legislative bodies, which recognize a patent-right as a monopoly, the interests of the public will naturally be preferred to those of the inventor; legislation on the subject will be cautious and conservative; and the powers conferred upon the patentee will be subordinated to the free enjoyment by all other citizens of every privilege that is not inconsistent with the protection to which his inventive skill and genius are entitled. In courts where the same theory prevails such rules will be followed as

697, the Lord President: "A monopoly of it is given to him as being his invention, because he is the party who has given to the public that invention. He has given it to the public under the condition that he shall obtain a monopoly. . . . The consequence is that his monopoly must be protected," &c.

In re Hill's Patent (1863), 1 Moore, P. C. C., N. S. 258, Coleridge, J.: (264) "A monopoly limited to a certain time is properly the reward which the law assigns to the patentee for the invention and disclosure to the public of his mode of proceeding." These authorities show the uniformity with which the English courts regard the inventor's privilege as a true monopoly.

§ 12. [1] Any grant to have the sole right to exercise a trade is "against the common law and the benefit and liberty of the subject." 11 Coke Rep. 86. Coryton: (4) "Freedom of trade, in so far as regards the employment of industry and skill was a jealously guarded maxim of common law, . . . (4) By the common law, however, the crown . . . had power to grant many privileges, 'although prima facie,' as it was said, 'they appear to be against common right.' The consideration was the invention of a new manufacture or the introduction of a new trade."

[2] 2 Bl. Com. 347.

"Crown grants have at all times been construed most favorably for the king," &c. Chitty, Prerog. 391–2.

"The taking away of rights is not favored by the law. Therefore statutes in derogation of common right are in the construction kept within their express provisions." Bishop on Written Laws, § 119.

tend to limit the monopoly of the inventor to the exact letter of his grant, and hold him to a strict compliance with all its conditions as an essential requisite to its validity.

§ 13. Patent Privilege a Monopoly: Effect of Departure from this Doctrine on Legislatures and Courts.

Upon the other hand, a grant, not made in derogation of the common right, is favored by the law. Being intended principally, if not entirely, for the benefit of the grantee, and conflicting with no public interest either actual or possible, the law construes it liberally in order to secure to the grantee all the advantage which the grantor might have purposed to bestow upon him.[1] And hence, where legislatures and the courts adopt this theory of the exclusive privilege created by a patent, and lose sight of its true character as a monopoly, legislative acts in favor of the inventor will be sweeping and extravagant, and the decisions of the courts will sustain him in claims which seriously abridge the rights of others, and will afford him a protection and redress far beyond that which justice and the public interest demand.

§ 14. Patent Privilege a Monopoly: Effect of this Doctrine upon earlier English Law.

The truth, as well as the importance, of this distinction will become apparent on an examination of the changes in the attitude of courts and legislatures toward inventors since the passage of the statute of James I. This statute was enacted at a period when the English people were suffering under grievous burdens, resulting from the multiplication of odious monopolies. The temper of the judges and of Parliament was hostile to exclusive privileges of every kind. In the two cases previously cited,[1] the former had cautiously allowed that a monopoly of a new trade or manufacture might lawfully be conferred on the inventor until the public had become accustomed to its use; and in this statute Parliament, with equal jealousy for the common right, confined this privilege to a

§ 13. [1] Bishop on Written Laws, § 192: Bac. Abr. (Statutes, I. 7, 9).

§ 14. [1] Darcy *v.* Allin (1602), Noy. 173; 1 Abb. P. C. 1; Clothworkers of Ipswich (1615), Godbolt, 252; 1 Abb. P. C. 6.

small class of individuals, and permitted it to them during no longer time than was considered necessary for the learning of the new trade and teaching it to others. The decisions under this statute within the next one hundred and eighty years were for the most part characterized by the same spirit. The inventor was looked upon as a monopolist, dependent for his exclusive rights upon the royal bounty; and his privileges were rigidly confined within the literal meaning of the words by which they were described in his patent.[2] If these were capable of two constructions, that was adopted which would enure most fully to the public benefit. Even where one of two constructions would defeat the grant while the other would support it, the latter was followed chiefly on the ground that the king's honor was more to be regarded than his profit, and that it, therefore, could not be admitted that the patent was intended to be void.[3] With equal strictness was

[2] Coryton: (38) "Previously to the time of Lord Eldon, the patentee was as purely a creature of royal bounty as the monopolist of the Elizabethan age, and language was employed by judges in the application of the doctrine which would at the present day be considered highly unconstitutional. . . . The nature of the patentee's privileges drove him frequently into courts of law, and during this early period almost constantly to his disadvantage. To him alone no margin was conceded for possible error. . . . (39) Judges either covertly evaded or openly overruled such portions of the statute as opposed their opinions, and patent trials by degrees degenerated into dialectic discussions and verbal criticism."

[3] Norman: (4) "It is laid down that the king's letters-patent are records of a high nature; they have in all times been construed most favorably for the king, contrary to the grants of common persons, which are construed in favor of the grantee and most strongly against the grantor. If they can be taken to enure to a double intent, they shall be taken to the intent that makes most to the king's benefit. . . . But where it is capable of two constructions, by the one of which it will be valid and by the other void, that construction shall be put on it which shall make it valid, for that will be more for the benefit of the subject and the honor of the king, which ought to be more regarded than his profit, for it was not the king's intent to make a void grant."

See also Bac. Abr. (Prerogative, F.); Comyn (Dig. Grant. G. 12); Bewley's Case, 9 Rep. 131 *a.*; Churchwardens of St. Saviour's, 10 Rep. 67 *a.*

In Rex *v.* Mussary (1738), 1 Web. 41, the following general rules were laid down respecting patents by Lee, C. J.:

"1. Every false recital, in a thing not material, will not vitiate the grant, if the king's intention is manifest and apparent;

"2. If the king is not deceived in his grant by the false suggestion of the party, but from his own mistake upon the surmise and information of the party, it shall not vitiate or avoid the grant;

it required that the patentee should have fulfilled all the conditions of his grant. Any mistake in the description of his invention, any excess in his claims as to its novelty or usefulness, any disclosure of his secret to others before the issue of the patent, was treated as a fraud upon the crown, and on proof of any one of these his patent was declared to be invalid.[4]

"3. Although the king is mistaken in point of law or matter of fact, if that is not part of the consideration of the grant it will not avoid it;

"4. Where the king grants *ex certa scientia et mero motu* those words occasion the grant to be taken in the most liberal and beneficial sense, according to the king's intent and meaning expressed in his grant;

"5. Although in some cases the general words of a grant may be qualified by the recital, yet if the king's intent is plainly expressed in the body of the grant the intent shall prevail and take place." 1 Abb. P. C. 8 (9).

These rules have been recognized in many patent cases. The distinction between a false suggestion of the patentee and a mistake of the king was very important; the former avoiding a patent, the latter not. But as almost any excess or deficiency in the description of the invention was held to constitute a false suggestion, and as every mistake of the king in reference to the same matter went to the consideration of the grant, the consequences to the patentee were equally disastrous. Under these rules, which appear to have been intended for the benefit of the patentee, it was therefore held that a patent which suggests that certain inventions are improvements when one of them was not so, or which *covers two or more inventions* when one is not new, or which describes something as a necessary part of the invention that in reality is not so, or which calls the invention by one name when another is more appropriate, or which claims for the invention certain uses to one of which it is not applicable, was void. Moreover, according to these rules, if the king's grant did not contain the phrase, *ex certa scientia et mero motu*, it was still subject to the strict construction which formerly prevailed. Feather *v.* Reg. (1865), 6 B. & S. 257.

[4] Coryton: (38) "An unapt title to his invention, an ill-judged word in its description, an incautious experiment, the least disclosure of his secret before letters sealed, and his privileges were at an end. Technical rules, framed with other objects and unsuited to the case, were rigorously applied by those who saw in it only the relation between the sovereign and the subject, and adjudicated on the maxims of the common law as applicable to royal franchises and grants, while the merits of the invention, or its effect on public policy, rarely engaged attention."

In Turner *v.* Winter (1787), 1 Web. 77, Buller, J.: (81) "Many cases upon patents have arisen within our memory, most of which have been decided against the patentees upon the ground of their not having made a full and fair discovery of their inventions." 1 Abb. P. C. 43 (48).

In Liardet *v.* Johnson (1778), 1 Web. 53, Lord Mansfield is said to have ruled (54, note *c*) that "the law relative to *patents requires, as a price the individual* should pay the people for his monopoly, that he should enroll, to the very best of his knowledge and judgment, the fullest and most sufficient description of all the particulars on which the effect depended that he was, at the time,

It was not until the generations which had suffered from the ancient grievances had passed away, and the traditions of those grievances themselves grew dim, that the judges, yielding to the pressure of industrial enterprise, laid aside the extreme doctrines and the rigid rules with which their predecessors had fought the battle of the people against odious monopolies, and began to recognize inventors as public benefactors, whose personal services and sacrifices merited the privileges which they received, and demanded for them a liberal consideration from the courts. In the latter part of the last century this change in judicial sentiment manifested itself in several notable expressions, in which, for the first time, the grant of letters-patent to an inventor was held to be a matter of right and not of favor, and the patentee was declared to be entitled to the approval and enforcement of his privilege whenever he had fairly given to the public the knowledge of the discovery that he had made.[5]

§ 15. Patent Privilege a Monopoly: Contract Theory Introduced: Effect on Later English Law.

During the present century the development of this liberal spirit in Great Britain has been marked and rapid. The right of the inventor to his exclusive privilege, in return for the benefit conferred by him upon the public, being once conceded, the idea that his letters-patent created a contract between him and the people naturally followed. This idea

able to do, . . . that no omission or defect in this instrument (specification) could admit of an apology while it was in the power of the patentee to have avoided it," &c.

Even as late as Hornblower *v.* Boulton (1799), 8 T. R. 95, Lord Kenyon observed: (98) "I am not one of those who greatly favor patents; for though, in many instances, . . . the public are benefited by them, yet on striking the balance upon this subject, I think that great oppression is practised on inferior mechanics by those who are more opulent." 1 Abb. P. C. 98 (99).

[5] In Arkwright *v.* Nightingale (1785), 1 Web. 60, Lord Loughborough: (61) "There is no matter of favor can enter into consideration in a question of this nature. The law has established the right of patents for new inventions; that law is extremely wise and just." 1 Abb. P. C. 24 (25).

In Turner *v.* Winter (1787), 1 Web. 77, Buller, J.: (81) "Whenever it appears that the patentee has made a fair disclosure, I have always had a strong bias in his favor, because, in that case, he is entitled to the protection which the law gives him." 1 Abb. P. C. 43 (48).

seems to have been first suggested by Lord Eldon who, in a case decided in A. D. 1800, stated that a patent was a bargain with the public and was to be construed on the same principles of good faith by which all other contracts were controlled.[1] Under the influence of this idea the attitude of the courts toward the patentee has gradually become more favorable, and the strictness of the old rules has relaxed, until he is now treated as if he were a party to a contract, and when he has substantially fulfilled his duty he is protected in the enjoyment of those benefits which his patent, liberally and reasonably construed, bestows upon him.[2]

§ 15. [1] In Cartwright *v.* Arnott, Easter Term, 1800, cited in Harmer *v.* Playne, (1809), 11 East, 101, Lord Eldon: (107) "That they were to be considered as bargains between the inventors and the public, to be judged of on the principle of keeping good faith, by making a fair disclosure of the invention, and to be construed as other bargains." 1 Abb. P. C. 171 (174).

In Harmer *v.* Playne (1807), 14 Vesey, 130, Lord Eldon: (132) "Where the crown, on behalf of the public, grants letters-patent, the grantee entering into a contract with the crown, the benefit of which contract the public are to have," &c. 1 Abb. P. C. 166 (167).

In Neilson *v.* Harford (1841), 1 Web. 331, Alderson, B.: (341) "Lord Eldon lays down the principle so long ago as 1800. He says patents are to be considered as bargains between the inventor and the public, to be judged of on the principles of good faith, by making a fair disclosure of the invention, and to be construed as other bargains. That is the principle which must be taken to be the sound principle."

[2] In Morgan *v.* Seaward (1836), 1 Web. 170, Alderson, B.: (173) "It is the duty of a party who takes out a patent to specify what his invention really is, and although it is the bounden duty of a jury to protect him in the fair exercise of his patent right, it is of great importance to the public, and by law it is *absolutely necessary*, that the patentee should state in his specification, not only the nature of his invention, but how that invention may be carried into effect. . . . That is the fair premium which the patentee pays for the monopoly he receives." 2 Abb. P. C. 262 (318.)

In Walton *v.* Potter (1841), 1 Web. 585, Tindal, C. J.: (595) "The object of the specification is, that it is the price which the party who obtains the patent pays for it," &c.

In Gibson *v.* Campbell (1841), 1 Web. 627, Tindal, C. J.: (629) "The specification . . . is the price that the man who takes out his patent pays to the public. . . . Therefore, every man who is an honest man, is bound to pay that price justly and fairly," &c.

In Stevens *v.* Keating (1847), 2 Web. 181, Pollock, C. B.: (187) "I take the rule to be that you are not to intend anything in favor of a specification or patent, and certainly not to intend anything against it; you are to deal with it just as you find it; you are to put the true and right and fair construction upon every allegation and every fact connected with it, and you are to find what is the true and fair and just result. You are not to lean in favor of the pub-

§ 16. Patent Privilege a Monopoly: Effect of Departure from this Doctrine on Later English Law: Amendments of Patents.

A similar alteration is exhibited in the spirit of the people, as it has been expressed in parliamentary enactments. Notwithstanding the disposition of the judges to construe a patent liberally in favor of the inventor, they had no power, under the statute of James I., to change its terms. However inaccurately it described the real invention, this description was the measure of his privilege, and by his patent, as originally granted, he must stand or fall.[1] Clerical errors might indeed be corrected upon application to the crown.[2] But a material defect, whether arising from inadvertence or design, could not be remedied; and as the contract created by the patent was entire and indivisible, such a defect rendered the patent void. Thus if a patentee mistakenly embraced within his privilege anything that was not new, or claimed two or more inventions one of which was not entitled to protection, or attributed to his invention a wider sphere of usefulness than actual experience would justify, the whole patent was invalid.[3] In this condition the law remained until

lic against the patent, which, it is to be regretted, was many years ago rather the fashion of courts of justice, under the notion that it was a monopoly, that all monopolies were odious, and that, therefore, you were to intend everything against them; although, on the other hand, in modern times, it is said the leaning is the other way, I do not think there ought to be any leaning one way or the other."

But in Feather *v.* Reg. (1865), 6 B. & S. 257, Cockburn, C. J., holds that a patent is not truly a contract by the crown with the patentee on valuable consideration, and so entitled to the most liberal construction, but is a prerogative grant upon condition that full publication be made.

§ 16. [1] Godson: (159) "The patent and specification must, in fact, stand or fall by themselves; and no extraneous matter can be introduced to explain them and establish their legality. If they are bad in themselves nothing whatever can make them legal instruments."

[2] Norman, 107; Coryton, 180. *In re* Sharp's Patent (1840), 1 Web. 641.

[3] In Turner *v.* Winter (1787), 1 Web. 77, Buller, J.: (82) "If the patentee says that by one process he can produce three things, and he fails in any one, the consideration of his merit, and for which the patent was granted, fails, and the crown has been deceived in the grant. Slight defects in the specification will be sufficient to vacate the patent." 1 Abb. P. C. 43 (50).

In Bainbridge *v.* Wigley (1810), 1 Carp. 270, the patent claimed improvements by which new notes could be sounded on a musical instrument. The

A. D. 1835. In that year Parliament bestowed upon inventors the right to amend the claims and descriptions in their patents, subject only to the limitation that no such amendment should extend the exclusive rights already granted.[4] The power thus conferred was practically of the most important character. It enabled the patentee, at any time, to disclaim any matter whose presence in his patent would have made it void. It permitted him to change the published description of his invention by adding new words or excluding old. Under this act he might, at the first issue of his patent, claim anything he chose and enjoy its exclusive use, as if it were his own invention, until the public ascertained that he had claimed too much, and then, by this disclaimer, make his patent good. He might communicate his secret in imperfect language, never admitting the public into full possession of the invention unless his patent were attacked on that account, and when attacked might save himself from the consequences of his own ignorance or carelessness, by properly correcting it.[5] Or if the progress of the art disclosed to him that advantages could be obtained by broadening his privilege, he might by skilful alterations in his claims embrace within

evidence showed that only *one* new note could be produced. Ellenborough, C. J., held the patent void. 1 Abb. P. C. 181.

In Rex *v.* Metcalf (1817), 1 Web. 141 (note *a*), the patent was for making a "tapering" brush. The specification described it as a brush having bristles of unequal lengths. Lord Ellenborough held this patent invalid on account of the discrepancy. 1 Abb. P. C. 297.

In Campion *v.* Benyon (1821), 6 Moore, 71, Dallas, C. J.: (81) "If, therefore, there be any ambiguity, either in the patent itself, or in the specification, in any material point, it is of itself a ground for rendering the patent absolutely void." 1 Abb. P. C. 345 (355); see also Rex *v.* Arkwright (1785), 1 Web. 64; 1 Abb. P. C. 29; Huddart *v.* Grimshaw (1803), 1 Web. 85; 1 Abb. P. C. 128; Bovill *v.* Moore (1816), Dav. P. C. 361; 1 Abb. P. C. 231; Hill *v.* Thompson (1817), 1 Web. 235; 1 Abb. P. C. 299; Morgan *v.* Seaward (1837), 1 Web. 187; 2 Abb. P. C. 419.

[4] 5 & 6 Will. IV., chap. 83, § 1, authorizing any person "who as grantee, assignee, or otherwise, hath obtained, or who shall hereafter obtain letters-patent," by leave of certain officials, to enter with the clerk of patents "a memorandum of any alteration in the said title or specification, not being such disclaimer or such alteration as shall extend the exclusive right granted by the said letters-patent," &c.

[5] A disclaimer may be made after the judgment of a court of law, or the verdict of a jury, adverse to the validity of a patent, in order to preserve the new and useful parts of the invention. *In re* Derosne's Patent (1835), 1 Web. 166 n.; Morgan *v.* Seaward (1838), 2 Carp. 104.

them matters which at first he did not ask to have protected, and thus create a patent-right materially different in its effect from that originally bestowed upon him.[6] Necessary and proper as the law in substance may have been, the age had become so permeated with the spirit of industrial enterprise, and had conceived such exalted ideas of the value of inventive skill, that no sufficient safeguards were thrown around the power thus bestowed, and the inventor, no longer a mere contracting party, whose granted privileges depended on his own fulfilment of his bargain with the public, was raised to a position where he could receive and enjoy his grant without ever giving for it the consideration which the law demands.[7]

[6] Coryton : (185) "The extent of the lidity of any memorandum of alteration, alterations in its description gives, as we have seen, a very inadequate idea of the extent of the alteration in the results of a manufacture. The real effect of any alteration in a specification may, therefore, be to create a patent-right materially different from that intended to be conferred by the original letters-patent."

In re Sharp's Patent (1840), 1 Web. 641, the petitioner claimed that by a memorandum of alteration, filed under this statute, the patent of the respondent had been extended to embrace matters not originally protected, and prayed the Master of the Rolls to expunge it as unlawful. Lord Langdale, M. R. refused, on the ground that he had no authority so to do, and said : (643) "You have a plain and easy remedy elsewhere. If the memorandum goes beyond the act, as you say, it is void, and could not be given in evidence or made any use of," — thereby recognizing as valid every memorandum that might be filed, until the same were declared invalid in a court of law. In a note to this case Mr. Webster says : (642, note *e*) "According to the practice of the law officers of the crown, memoranda of alterations of a very extensive kind have been allowed. . . . The validity of any memorandum of alteration, when enrolled, is matter of law and of fact, to be decided in the same manner as questions arising on the validity of the original specification." With a disposition to allow "alterations of a very extensive kind" to be filed, and a decision which makes such alterations valid parts of the original specification until a contrary judgment is rendered on a trial of the patent itself, the power conferred upon a patentee by this statute could hardly escape serious abuses.

[7] Coryton : (178) "A consideration of amendment and disclaimer . . . produces a strong conviction on the mind that the theory proceeded on is false, and the practice, beyond a doubt, highly prejudicial to public interests. Good policy requires that the invention, at the period of the grant, should be complete, and the proceedings connected with it such as to discourage all laxity in the patentee. The very contrary appears to be at the foundation of the practice as at present established, as the terms of the patent privilege, carelessly conceded in the first instance, may, with as little supervision, at any period of their continuance, be varied almost arbitrarily by the patentee."

Lund : (197) "The privilege has been

§ 17. Patent Privilege a Monopoly: Effect of Departure from this Doctrine on later English Law: Validating void Patents.

Parliament did not content itself even with this concession. In another section of the same act it conferred upon the crown the power to confirm and validate patents which had been granted contrary to the express language of the law. According to the statute of James I., a monopoly could be bestowed on no one except the first and true inventor of some manufacture which others, at the date of the letters-patent, did not use.[1] In construing this provision the courts distinguished between a use in secret by which the people could obtain no knowledge of the invention, and a use in public by which such knowledge might have been communicated; and decided that any use of the latter kind, whether by one person or many, would defeat a patent.[2] This was the law for upwards of two hundred years. But now it was enacted that the patentee, though not the first inventor, and though the actual invention protected by his patent had been used by others before he discovered it, might have his void patent

greatly abused in a large majority of cases, and it has almost become a custom to choose a very distributive title, and to divide or break up the specification into as many minute divisions and heads as possible, with the sole object of enabling the patentee to detach any of these several members whenever he may find it convenient. This very much increases the difficulty of understanding or applying what remains, and a specification drawn up on such a principle can never be that carefully and minutely digested document which will alone stand an argument in a court of law, and protect either the public from imposition or an inventor from the embarrassment and anxiety attendant upon a badly defined right."

§ 17. [1] Stat. Jac. I., § 6.

[2] In Dollond's Case (1766), 1 Web. 43, it was held that a prior inventor, confining his discovery to his closet so that the public were not acquainted with it, did not prevent a later inventor and patentee from obtaining a monopoly of the invention. 1 Abb. P. C. 9.

In Tennant's Case (1802), 1 Web. 125, note *c*, Lord Ellenborough, C. J., held that a prior use by five persons, though connected in the same business, was such a use as would defeat a patent. 1 Abb. P. C. 115.

Lund: (69) "Throughout the preceding cases this principle is kept steadily in view: that the private or secret use of an invention, or trials, or experiments, by one person, do not prevent another from obtaining a patent for the same invention; if he be the first to publish the invention (the first who comes to the crown), he is accounted the first inventor. This was distinctly laid down in the early case of Dollond's Patent and has since been invariably followed."

made good against all persons whatsoever, including the original inventor, on proof that at the date of his patent he believed himself the first inventor, and that the thing invented had not then been publicly and generally used.[3]

§ 18. Patent Privilege a Monopoly: Effect of Departure from this Doctrine on later English Law: Extending Patents.

Nor did the liberality of Parliament stop here. The statute of James I. had limited the period of the inventor's privilege to fourteen years. This period had always been considered long enough to enable any patentee, who used due diligence in bringing his invention to the knowledge of the public, to gain an ample recompense for the cost and labor of inventing it. But such was the appreciation in which these modern

[3] 5 & 6 Will. IV., chap. 83, § 2. This statute provides that if, in any action, it be found that the patentee was not the first inventor of the supposed invention "by reason of some other person or persons having invented or used the same or some part thereof, before the date of such letters-patent;" or, if the patentee discovers that some other person had, unknown to him, "invented or used the same or some part thereof before the date of such letters-patent," he may apply to the king in council to confirm his patent; and upon hearing before the judicial committee of the privy council, if such committee are "satisfied that such patentee believed himself to be the first and original inventor," and are "satisfied that such invention or part thereof, had not been publicly and generally used before the date of such first letters-patent," may report to the king, and the king may grant the application, and the said patentee shall then have "the sole right of using, making, and vending such invention as against all persons whatsoever, any law, usage, or custom to the contrary thereof notwithstanding."

In re Stead's Patent (1846), 2 Web. 143, Lushington, J.: (146) "We apprehend that this section must necessarily be construed to confer the power of giving to the patentee that which he did not possess before the passing of the statute, or, in other words, of curing that which, before the statute, would have constituted an invalidity. If the patent were valid by the law as it existed before the passing of the statute, it could hardly be necessary to confirm it. The case to be remedied was not that of a patentee discovering a prior invention, wholly unused and wholly unknown up to the date of the letters-patent, but it was applicable to the case of a patentee discovering a prior invention so known that the patent might be invalidated on that ground, though not publicly and generally used."

In re Horniball's Patent (1855), 2 Web. 201, Leigh, J.: (210) "It is not very easy to define what is the exact meaning of the expression 'publicly and generally used,' . . . but certainly we cannot consider the use of the invention on board a single ship, however public or for whatever length of time, as a general use."

lawgivers held the services of the inventor that power was now conferred upon the crown to continue his monopoly for an additional period of seven years, and this was increased in A. D. 1844 to fourteen years.[1]

§ 19. Patent Privilege a Monopoly: Effect of Departure from this Doctrine upon Patentee and Public under later English Law.

The change which these three statutory concessions wrought in the position of the patentee was very great. His patent, which once accurately and permanently defined the boundary between his rights and those of the public, had now become an elastic instrument which, by disclaimer or amendment, might be adapted to his varying fortunes in the courts and to the requirements of advancing art. To have been the first applicant for letters-patent constituted the basis of his privilege rather than to have been the first inventor, or even to have first brought the invention into actual use. Instead of being now, as formerly, compelled to push his new manufacture into public notice with energy and promptness in order to make sure of his reward, it became possible for him to secure additional periods of protection, in some cases even doubling the monopoly originally granted to him for making and disclosing his invention. Each one of these statutory concessions was a direct limitation of the public right. Each was a bestowal on the inventor of important powers never embraced in any grant of a monopoly under the statute of James I. and never contemplated by the common law. Neither of them could have been allowed by Parliament, nor would the attempt to grant them have been tolerated by the people, had not the theory of the nature of a patent privilege, and of the reciprocal relations of the inventor and the public, been very different from that which had prevailed two centuries before.

§ 18. [1] 5 & 6 Will. IV., chap. 83, § 4; 7 & 8 Vict., chap. 69.

§ 20. Patent Privilege a Monopoly: Effect of Departure from this Doctrine on the American Courts: Contract Theory: Reward Theory.

In this country that extreme jealousy of the inventor's privilege, which characterized the earlier English judges, never has been manifested. Our courts did not approach this subject until after the ancient doctrines had been widely modified in favor of the patentee, and the true interest of the public had been recognized as best promoted by securing to him an immediate and liberal reward. In the earliest case in which those questions were considered at any length (A. D. 1831), the court adopted these three fundamental principles, which have been followed in all subsequent decisions: (1) That a patent creates a contract between the inventor and the public, and that each party is bound to exercise good faith toward the other; (2) That a patent is not granted to the inventor as a favor, but is a matter of right on his compliance with the conditions prescribed by law; (3) That being intended for his benefit, both the patent and the law are to be construed in favor of the patentee.[1] The progressive spirit

§ 20. [1] In Whitney *v.* Emmett (1831), Baldwin, 303, Baldwin, J.: (319) "A patent is a bargain with the public, in which the same rules of good faith prevail as in other contracts. . . . (318) In England a patent is granted as a favor on such terms as the King thinks proper to impose; here a patent is a matter of right, on complying with the conditions prescribed by the law. . . . (322) Intended for their protection and security, the law should be construed favorably and benignly in favor of patentees in the spirit of the proviso in patents in England." 1 Robb, 567 (589, 587, 593).

In Ames *v.* Howard (1833), 1 Sumner, 482, Story, J.: (485) "Patents for inventions are not to be treated as mere monopolies, odious in the eyes of the law, and therefore not to be favored; nor are they to be construed with the utmost rigor, as *strictissimi juris*. The Constitution of the United States, in giving authority to Congress to grant such patents for a limited period, declares the object to be to promote the progress of science and useful arts; an object as truly national and meritorious and well-founded in public policy as any which can possibly be within the scope of national protection. Hence it has always been the course of the American courts (and it has latterly become that of the English courts also) to construe these patents fairly and liberally, and not to subject them to any over-nice and critical refinements." 1 Robb, 689 (692).

In Blanchard *v.* Sprague (1839), 3 Sumner, 535, Story, J.: (539) "Formerly, in England, courts of law were disposed to indulge in a very close and strict construction of the specifications accompanying patents and expressing the nature and extent of the inven-

of this court appears in the further doctrine then announced: that the grant of an exclusive privilege to the inventor is intended to advance the interest of the public, not by securing to it the knowledge and the use of that particular invention, but by rewarding the inventor and thus stimulating him as well as others to new efforts,[2] — a doctrine which, if pushed to its legitimate conclusions, would justify the legislative grant of any privilege however extensive in scope or in duration, and which seems to have influenced the language, if not the ideas, of many later judges in their interpretation of the powers and remedies bestowed by Congress on the patentee.[3]

tions. This construction seems to have been adopted upon the notion that patent-rights were in the nature of monopolies, and, therefore, were to be narrowly watched, and construed with a rigid adherence to their terms, as being in derogation of the general rights of the community. At present, a far more liberal and expanded view of the subject is taken. Patents for inventions are now treated as a just reward to ingenious men, and as highly beneficial to the public, not only by holding out suitable encouragements to genius and talents and enterprise, but as ultimately securing to the whole community great advantages from the free communication of secrets and processes and machinery, which may be most important to all the great interests of society, — to agriculture, to commerce, and to manufactures, as well as to the cause of science and art. In America this liberal view of the subject has always been taken, and indeed it is a natural, if not a necessary result from the very language and intent of the power given to Congress by the Constitution on this subject. Congress (says the Constitution) shall have power to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right of their respective writings and discoveries. Patents, then, are clearly entitled to a liberal construction, since they are not granted as restrictions upon the rights of the community, but are granted to promote science and useful arts." 1 Robb, 734 (739).

[2] In Whitney *v.* Emmett (1831), Baldwin, 303, Baldwin, J.: (321) "With the Constitution, the English Statute, and the adjudication upon it before them, Congress have declared the intention of the law to be to promote the progress of the useful arts by the benefits granted to inventors, not by those accruing to the public after the patent had expired, as in England." 1 Robb, 567 (591).

[3] In Brooks *v.* Jenkins (1844), 3 McLean, 432, McLean, J.: (437) "When we consider the inestimable advantages which result to the world from the labor, ingenuity, and expense of inventors, so far from classing them with monopolizers, they should be regarded as public benefactors. And in order to secure to them the remuneration, which the law provides, a liberal construction should be given to it."

See also Parker *v.* Haworth (1848), 4 McLean, 370; 2 Robb, 725; Bloomer *v.* Stolly (1850), 5 McLean, 158; Allen *v.* Hunter (1855), 6 McLean, 303.

§ 21. Patent Privilege a Monopoly: Effect of Departure from this Doctrine on the American Courts: Amending Patents: Damages and Profits.

The opinion that a defective patent is amendable was also first authoritatively expressed in the courts of the United States. In A. D. 1832 it was decided that the practice of correcting such defects is within the spirit and intention of the general law which authorizes the granting of a patent, and is necessary to secure to the inventor that full compensation which it is the interest of the public to bestow upon him.[1] The subsequent act of Congress establishing this practice has been construed with even greater liberality, — the court in one case holding that in his amended patent the inventor may

The distinction taken by the learned judge in this early case of Whitney *v.* Emmett seems to serve almost as a line of demarcation between the two great classes into which the later authorities may be divided. That the purpose of the patent law is to benefit the inventor is one principle. That the purpose of the law is to secure to the public the advantages of the invention, by compensating the inventor for its disclosure, is an entirely different principle. Some decisions of the courts are evidently controlled by the first principle; others are as evidently delivered under the inspiration of the second. By remembering this, many seeming diversities in the opinions of the judges may be accounted for and reconciled; and in reading and collating these opinions it is essential that the lawyer or the writer should be on his guard and not be misled by the language of the court into a doubt as to the soundness of its doctrine.

The influence of the idea that the benefit of the inventor is the object sought by the law also manifests itself in the extreme importance given by our present rules to priority of invention as distinguished from priority of publication, in the facility with which reissues and extensions have been granted, and in the extravagant compensation often awarded by the courts to patentees whose exclusive rights have been infringed.

§ 21. [1] In Grant *v.* Raymond (1832), 6 Pet. 218, Marshall, C. J.; (243) "It has been said that this permission to issue a new patent on a reformed specification, when the first was defective through the mistake of the patentee, would change the whole character of the Act of Congress. We are not convinced of this. The great object and intention of the act is to secure to the public the advantages to be derived from the discoveries of individuals; and the means it employs are the compensation made to those individuals, for the time and labor devoted to these discoveries, by the exclusive right to make, use, and sell the things discovered for a limited time. That which gives complete effect to this object and intention by employing the same means for the correction of inadvertent error, which are directed in the first instance, cannot, we think, be a departure from the spirit and character of the act." 1 Robb, 604 (635).

include not only what was well described before, but whatever else was suggested, either in the first patent or in the specification, drawings, or model by which it was accompanied.[2] In reference to the damages to be recovered in an action for infringement, the courts have been equally solicitous for the interests of the patentee, allowing him, as compensation for the injuries he has sustained, not only all he might have realized from his invention, if undisturbed, but all that the superior industry or capital of the infringer have enabled him to save or make by using the invention.[3]

§ 22. Patent Privilege a Monopoly: Effect of Departure from this Doctrine on American Legislation: Amending Patents: Extensions.

The legislative bodies whose attention has been directed to this subject have exhibited a still more marked regard for the welfare of the patentee. The Constitution of the United

[2] In Seymour *v.* Osborne (1870), 11 Wall. 516, Clifford, J.: (544) "Power is unquestionably conferred upon the Commissioner to allow the specification to be amended if the patent is inoperative or invalid, and in that event to issue the patent in proper form; and he may doubtless, under that authority, allow the patentee to redescribe his invention and to include in the description and claims of the patent not only what was well described before, but whatever else was suggested, or substantially indicated in the specification or drawings, which properly belonged to the invention as actually made and perfected."

[3] In Mowry *v.* Whitney (1871), 14 Wall. 620, Strong, J.: (651) "The question to be determined in this case is what advantage did the defendant derive from using the complainant's invention over what he had in using other processes then open to the public and adequate to enable him to obtain an equally beneficial result? The fruits of that advantage are his profits."

In Mers *v.* Conover (1876), 11 O. G. 1111, Strong, J.: (1112) "In the ascertainment of profits made by an infringer of a patented invention, the rule is a plain one. The profits are not all he made in the business in which he used the invention, but they are the worth of the advantage he obtained by such use; or, in other words, they are the fruits of that advantage. . . . It is urged, however, that the Green machine, in which the defendant used the plaintiff's invention, was old and defective, and that no profits were actually received from such an use. But if such be the fact, if the defendant was a loser by splitting wood with the Green machine, his loss was less, to the extent of seventy-five cents on each cord split, than it would have been had he not used the patented invention. Such a result was equivalent to an equal gain, and it was rightly estimated as a part of the profits for which the infringer was responsible."

States declares that the progress of science and art is promoted by securing to inventors these exclusive privileges, and empowers Congress to enact such laws as will carry this idea into practical effect.[1] In the discharge of this duty, Congress conferred upon inventors the right to an exclusive privilege in such inventions as were not known or used *before their alleged discovery by the patentee*,—a right of far greater practical value than that conferred by the statute of James I., which permitted grants of the exclusive privilege only for inventions not known or used *at the date of the grant*.[2] It also provided for the surrender of an invalid or inoperative patent, and the issue of a new one based on a restricted or enlarged description; by which proceeding a patentee could claim and protect matters that were unclaimed and unprotected by his original patent.[3] In A. D. 1836 it established a system by which the trouble and expense of obtaining patents were reduced to the lowest possible degree, and the security of the inventor against the subsequent loss of his privilege by

§ 22. [1] Const. U.S. Art. 1, § 8: "Congress shall have power . . . to promote the progress of science and useful arts by securing, for limited times, to authors and inventors the exclusive right to their respective writings and discoveries."

[2] Phillips: (169) "But there is a material difference in the effect of an oral publication, in England or France and the United States, where the invention has been reduced to practice in consequence of such a publication; for, as we have seen, in England and France, the novelty of the discovery is tested in reference to the date of the patent, whereas in the United States it is tested in reference to the date of the discovery. We perceive how prejudicial the rule, adopted in England and France, must be to the interests of the inventor, and to the beneficial operation of the patent law, by depriving the inventor of all the advantage of communication with others on the subject of his invention previous to taking out his patent; for if he so makes it known, it may give others an opportunity to defeat his patent by piracy."

In Cornish *v.* Keene (1835), 1 Web. 501, Tindal, C. J.: (508) "If this (invention) was, at the time these letters-patent were granted, in any degree of general use, . . . then the letters-patent are void." 2 Abb. P. C. 139 (171).

The act of 1790, § 1, provided that a patent might issue for an invention "not before known or used." The act of 1793, § 1, prescribes that the invention must not have been "known or used before the application" for a patent. In the act of 1836, § 7, it was made the duty of the Commissioner to issue a patent if upon examination it did not appear that the invention had been known or used "prior to the alleged invention or discovery thereof by the applicant." See also Curtis, §§ 83, 84.

[3] Act of 1832, § 3.

an adverse decision in the courts was rendered almost impregnable.[4] In A. D. 1837 it gave to any person interested in a patent, which was void by reason of excessive claim, permission to cure the difficulty, as far as his interest in the patent was concerned, by simply filing in the Patent Office a written disclaimer of the excess.[5] In A. D. 1839 it bestowed upon the inventor the further privilege of using his invention for two years before applying for a patent.[6] It also freely exercised its powers in granting to patentees an extension of the period of their monopoly, at first by special acts and later under general laws, until the act of 1861 which prohibited extensions and increased the ordinary period to seventeen years.[7] Thus although, at the outset, our patent laws were in some most important aspects more favorable to the inventor than those of England, the development of the theory that an inventor is necessarily a public benefactor, and that the means adopted for his protection and encouragement are in themselves promotive of the public good, has here as well as there produced its legitimate results in the constant increase of his exclusive privileges and the corresponding limitation of the public rights.

§ 23. Patent Privilege a Monopoly: Necessity for a Permanent and Correct Doctrine on this Point.

Experience having thus demonstrated that the dividing line, as drawn by courts and legislatures, between the rights of the inventor and the public is determined by the current theory concerning the nature of a patent privilege, it is evidently a matter of the first importance that this theory should be correct, and that once having been adopted it should always be consistently maintained.[1] Continual concessions to the pat-

[4] Act of 1836, § 7. But see § 50, note 2, *post*.

[5] Act of 1837, § 7.

[6] Act of 1839, § 7.

[7] Act of 1836, § 18; act of 1861, § 16.

§ 23. [1] Not merely the importance but the absolute necessity of a correct theory upon this subject is demonstrated by the remarkable changes in the attitude of our courts toward patentees during the past few years. From an extreme liberality, in which the rights of the public were too often disregarded, a tendency to an equally extreme strictness has been manifested, particularly in reference to the doctrines governing reissue and abandonment. Under the

entee are as unjust, and ultimately as disastrous, as continual restrictions of his powers; for they constantly give rise to new grounds of litigation, and are sure to produce, at some time, a reaction in public sentiment under whose impulse the entire system of exclusive privileges may disappear. That the correct theory can be ascertained by examining the relations of the inventor and the public to the invention both before and after the patent privilege is granted, and discovering what the grant has taken from the one and given to the other, cannot be disputed. Such an investigation will disclose not only that a patent privilege is a true monopoly, but that it approaches very nearly to an odious monopoly in its restriction of the pre-existing public right.

§ 24. Patent Privilege a Monopoly: Rights of Inventor under Natural Law.

In pursuing this investigation the relations of an inventor and the public to an unpatented invention first demand attention. In its earliest stage this invention is a mere addition to the stock of ideas possessed by the inventor. He has imagined or discovered something which to himself, and presumably to all the world, is new, and has conceived a method by which his idea may be so applied as to produce a tangible and valuable result. In this stage he has a natural exclusive right to his invention. No one can compel him to disclose his secret. He may reduce it to actual practice, or preserve it as a matter of subjective contemplation. The law can take no other notice of it than it does of his moral sentiments or his personal recollections. If, however, he endeavors to avail himself of this idea in his exterior life, his position in regard to it is somewhat changed. The material forms in which he then embodies it are his, but the idea itself is not to be imprisoned within their narrow bounds. Every one who examines and can understand them immediately conceives the same idea, whether he will or not, and thencefor-

influence of this tendency fundamental principles, bottomed in the unchangeable relations of an inventor to his invention, and sanctioned by uniform legal recognition, have been brought in question, and uncertainty introduced into some of the most stable and essential provisions of the law.

ward that idea remains as much a part of the observer's fund of knowledge as it ever was of that of the inventor. In order, therefore, to retain exclusive ownership of his idea, he must withhold its material embodiment from observation; and as long as he can do this, the invention is as truly his by natural right as if it never had been thus externally expressed.[1] But with his submission of the tangible result of his idea to the inspection of others, in such a manner that the idea itself becomes apparent, his control over it is gone. An idea once communicated can no longer be exclusively appropriated and enjoyed. Every one who receives it possesses it in the same degree as if he alone had apprehended it, and its inventor has no power to restrain him from its practical and useful application. Under the laws of nature the exclusive public use of an invention is thus impossible, and hence there is no natural right to such a use. The inventor, who voluntarily discloses his invention to the public, necessarily and freely dedicates it to the public; and that which formerly was his alone by virtue of his sole possession becomes by universal possession the common property of all mankind.[2]

§ 24. [1] Curtis: (xx) "Whether we regard the knowledge, remaining for the present in the exclusive control of him whose intellectual production it is, as property, or as a possession of ideas, to which some other term might be more appropriate, it is still a possession, of which the owner cannot by any rule of natural justice be deprived without his consent. In this view it may, as it seems to me, justly be termed property."

[2] Coryton: (45) "So far as natural right is concerned, the application of a law of nature, a philosophical or abstract principle, is capable of exclusive appropriation only so long as the secret of such application is within the inventor's breast. Once passed, it becomes the property of all mankind."

Norman: (2) "Independently of an express restriction by the sovereign authority in a state, there is no such thing as exclusive property in an invention. The subject-matters of human inquiry are free to all men. An addition once made to the stock of knowledge is common property forever, nor is it less the property of the discoverer because others possess it as well as himself. It is in its nature infinite and incapable of appropriation. The first builder of a house could claim as his own the substantial and tangible materials, the logs and wood of which he constructed it; but the idea of such an erection became instantly the property of all mankind. The abstract natural right of the inventor is only to exercise his own invention freely."

In The Attorney-General *ex rel.* Hecker *v.* The Rumford Chemical Works (1876), 9 O. G. 1062, Shepley, J.: (1064) "So long as such writings and discoveries were not communicated to the public, authors and inventors had a possession

§ 25. Patent Privilege a Monopoly: Rights of Public under Natural Law.

The natural right of the public to appropriate all new ideas that may be voluntarily disclosed is no less evident than that of the inventor to conceal them.[1] It is a law of nature that men should profit by the discoveries and inventions of each other. This is the law which binds society together, and in obedience to which lies all the possibility of moral, intellectual, and material advancement. No man lives, or can live, for himself alone. Every improvement he can make in his appearance, habits, manners, or affairs becomes a guide and stimulus to others, by following which they also can improve themselves in person or estate. To benefit by the discoveries of his fellow-men is thus not only a natural right, it is also the natural duty which every man owes to himself and to society; and the mutual, universal progress thence resulting is the fulfilment of the earthly destiny of the human race.[2] It is by virtue of this natural right, and in pursuance of this natural duty, that the public receive

of, which was equivalent to a property in, their writings and discoveries. When communicated to the public, by the common law that property was lost."

§ 25. [1] In Jordan *v.* Overseers (1831), 4 Ham. 294, Lane, J.: (309) "Although the inventor had, at all times, the right to enjoy the fruits of his own ingenuity, in every lawful form of which its use was susceptible, yet, before the enactment of the statute, he had not the power of preventing others from participating in that enjoyment, to the same extent with himself; so that however the world might derive benefit from his labours, no profits ensued to himself."

[2] Perhaps no recognition of this inherent public right is clearer and more positive than that contained in the very law by which the patent privilege is created. It has always been a fundamental doctrine of that law that if the public once became possessed of the inventor's secret their right to use it could never thereafter be restrained. What should amount to such possession has, it is true, at different times been differently determined. In the earlier English cases it was held that any knowledge of the invention by the public before the granting of the patent vested it inalienabiy in them. Wood *v.* Zimmer (1815), 1 Web. 44, note; Cornish *v.* Keene (1835), 1 Web. 501. Modern legislation in the United States, on the other hand, permits the inventor to publicly use and sell his invention for two years before applying for a patent without thereby delivering it into their possession. But the principle remains the same, and in every aspect of it is enforced by the courts, that whenever the inventor permits the invention to pass beyond the legally defined limits of his exclusive possession, his right to it ceases and the right of all mankind to it begins. See also Phillips, 422; Curtis, §§ 101, 102.

and profit by the ideas of the inventor, as he, in turn, receives and profits by the ideas of others, each being recompensed for his private contribution to the general good by that which he appropriates to his own use out of the vast fund of human knowledge which has been formed by the continuous contributions of all races and all ages since the world began. This natural right and duty of the public come into existence where the natural right of the inventor ends, the same act which determines his exclusive possession and control delivering the invention to the universal knowledge and service of mankind.

§ 26. Patent Privilege a Monopoly: Restricts the Natural Right of the Public to use the Invention when disclosed.

Into the midst of this harmonious system of mutual rights and duties the patent privilege intrudes itself as a disturbing element. It obliterates the dividing line, drawn by the law of nature, between the relations of the inventor and the public to the new invention. It establishes an arbitrary line, based on no fixed principle, suggested by no natural analogy, and shifting toward or from the true line according to the changing theories of successive generations. It temporarily deprives the human race of its right to profit by the labors and discoveries of the individual, except upon such terms as he may see fit to impose. It locks up, under the control of the inventor, the physical fact or law which he applies, and gives him as complete dominion over it as if he and not Almighty God were its creator, and as if his advantage and not that of mankind in general were the object for which this attribute or element itself was made.[1] Regarded, therefore, in its sim-

§ 26. [1] Many erroneous ideas, concerning the rights of inventors and the benefits conferred by them upon the public, seem to result from a failure to discriminate between different classes of inventors, as well as between the relations which authors and inventors occupy toward their respective writings and discoveries. Some jurists regard authors and inventors as having the same rights to their various productions. Thus Curtis: (xix) "Inventors, in this respect, stand upon the same broad ground with authors. Both of these classes of persons have created something intellectual in its nature, &c." To the same effect are *dicta* of the judges scattered through the various reports. Other jurists, on the contrary, consider authors and inventors as occu-

plest and most abstract form, the patent privilege is a true restriction of pre-existing public rights. It may not, and or-

pying totally different positions. Thus Hindmarch, Def. Pat. Laws, &c.: (23) "A work of the imagination whether in literature or the fine arts, such as a poem, a piece of music, a painting, or a piece of sculpture, is actually created by its author, and he gives to the world that which in all probability never would be produced by any other mind. But he who invents a new practical manufacturing art, although the art may be of greater utility than any product of the imagination, does but find out that which had previous existence in the same way as travellers discover new countries or places. Inventions in the useful arts are based upon physical laws, which are immutable; every investigation of those laws, in any given direction, must end in the same result; and the consequence is that it frequently happens that several persons unknown to each other make almost precisely the same invention. . . . The merit of an inventor, which entitles him to the consideration of the public, in truth consists in his being the first to *communicate* a knowledge of the art, which he has discovered, to the public, and his merit with the public is the same whether any one has before *secretly* discovered the same art or not; but he no more creates that art than Sir Isaac Newton did the law of gravitation, which he discovered."

Neither of these assertions is entirely correct. The habit among American writers of classing authors with inventors has probably arisen from the fact that the Constitution of the United States mentions them in the same clause, as alike entitled to protection. But their exclusive privileges rest, historically as well as theoretically, upon different foundations. The common law, as we have seen, never recognized any exclusive right in the inventor to his invention, after he had once publicly disclosed it. His privilege was based on a royal grant, which was justified only on the ground of the benefit accruing to the public from such disclosure. The property of an author in his writings, on the other hand, was acknowledged as existing at common law even after his voluntary publication of them (Millar *v.* Taylor (1769), 4 Burr. 2303); and though this natural right has been merged into that defined and limited by the statute 8 Anne, chap. 19, § 1 (1710), (Becket *v.* Donaldsons, 4 Burr. 2408), which is the foundation of our modern copyright law, its origin and nature are entirely different from that which left the inventor dependent on the bounty of the sovereign for whatever protection his invention might receive.

The character of the exclusive privileges secured to authors and inventors by existing laws is also widely different. His copyright vests in the author no exclusive right to his ideas, apart from the language in which they are expressed, and any other writer may create them or adopt them, and clothe them in his own words, at his pleasure. But the exclusive privilege of the inventor extends to the idea which is embodied in his invention as well as to the form in which that idea is presented to the eye, and no other person is permitted to conceive and use or copy that idea in any mechanism or production of his own.

But notwithstanding these historical and legal diversities, the distinction between authors and inventors is not as great or as well-defined as Mr. Hindmarch has asserted. It is not true that every author is a creator as distinguished from a discoverer, nor that every inventor is a discoverer as distinguished from a creator. In fact, there are two

dinarily it does not, take away from the people the actual enjoyment of any benefit which they already had in their

classes of authors; one which creates ideas as well as represents them; the other which collects ideas or facts already in existence and whose method of presenting them alone is new. To the first class belong the real authors, properly so called, — the pioneers in poetry, romance, and philosophy, and those who in succession have substantially added to, or developed the primeval thought. To the latter class belong the compilers, abridgers, and all others who bring nothing of their own into their works except their mode of selection, expression, and arrangement. In the same way there are also two classes of inventors: one which grasps at laws or facts in nature hitherto uncomprehended or unknown, and by applying them to practical uses, opens new fields of activity to the industrial arts; the other which, on these fundamental inventions, builds its humble superstructures, by the combination, rearrangement, or new application of the facts or elements or principles which the great inventors have made known. To rank these two together as equal in accomplishment and merit is unwarrantable. The great inventor is no less a creator than the great author; and the idea by which he links the physical law or fact to its accomplished object in the arts, that idea which is embodied in his actual invention, is as truly his creation as the nebular hypothesis was the creation of Laplace, or "Samson Agonistes" that of Milton. These are the inventors who deserve the name, the honors, and the rewards of public benefactors. They confer upon mankind, not only during their own generation, but for all time, benefits which, without them, might have never been enjoyed. But the second class of authors and inventors are entitled to no such encomiums and to no such rewards. They achieve nothing which other men of ordinary ability and skill could not perform, and give nothing to the world that some one else would not be sure to give, as soon as the necessity for it was realized and the attention of the artisan or chemist turned in that direction.

With these differences in view it is evident that authors and inventors can neither be classed together nor entirely separated from each other; and it is also evident that neither the existing copyright nor patent laws give to these different classes of authors and inventors a protection commensurate with their respective merits. The copyright law apparently ignores the existence of the first class of authors, as a distinct and more meritorious class, and gives to them no higher protection than it accords to the mere echoer of their original ideas. The patent law, on the other hand, secures to the first class of inventors an adequate recompense, in kind if not in duration, but bestows the same reward upon inventors of the second class, no matter how small may be the intellectual value of their achievements. The practical difficulties attending any attempt to measure recompense by merit, in either case, may be insurmountable. But there is no occasion for rendering the questions involved in the conflicting claims of inventors and the public any more obscure by putting all classes of inventors on the same level with the first class of authors, as has sometimes been done, or by denying to the first class of inventors the same degree of intellectual merit and accomplishment which is justly attributed to the highest class of writers. Patent law ought to rest on its own theories and antecedents, and deal with its own problems accord-

possession, but it does prohibit their immediate exercise of that perpetual and natural right by virtue of which every new discovery, when openly practised or proclaimed, becomes at once the possession and the property of all.

§ 27. Patent Privilege a Monopoly: Restricts the Natural Right of the Public in favor of a Limited Class of Inventors.

The extent to which the patent privilege invades these natural rights and duties appears still more clearly on considering the fact that such privileges are granted only to a very small class of inventors. In some degree probably *every* sane person of mature age is an inventor. By accident or by the efforts of his genius he discovers something new in one or more of the innumerable departments of human affairs, by which his own condition, as well as that of other men, is substantially improved. Not only the scholar in his closet, the explorer in the ocean or the wilderness, and the artisan in his work-shop, but every other man whose faculties are occupied with any form of labor, or with any kind of rational amusement, makes some addition to the common stock of useful knowledge, and aids in the advancement of his race. If each of these were privileged to appropriate to himself, for the time being, the entire advantage of his own discovery, the relation of the individual inventor to the whole body of inventors would correspond more closely with the principles of natural justice. But, on the contrary, the field of patentable invention is comparatively narrow.[1] By far the greater and the most useful portion of human discoveries lie outside the domain of these exclusive privileges. The general phenom-

ing to its own principles, without being led astray, either in its enactments or interpretations, by false analogies or by attempts to follow systems which, in nature as well as origin, are unlike its own.

§ 27. [1] Under the statute of James I. a patent privilege is grantable only to protect a "new manner of manufacture." The courts interpreted this phrase as including: (1) New substances or compositions of substances; (2) new mechanisms or combinations of mechanisms; (3) new methods or processes of operating, whereby substantial or mechanical results were produced. Boulton *v.* Bull (1795), 2 H. Bl. 463 (492). Under the acts of Congress only an art, machine, manufacture, composition of matter, or design, or some improvement therein, can be thus privileged.

ena and laws of matter, the methods of agriculture and commerce, the metaphysical and moral truths, and all other inventions which do not relate to the industrial arts, belong at once, upon their publication, to all mankind. Of every one of these the privileged inventor may avail himself as freely as their first discoverer. But because his invention chances to fall within the protected field he can enjoy it in its full extent, and yet withhold it from the general fund of knowledge. He can do even more. He can select from the discoveries of others some truth which lies beyond the privileged domain, bring it within the privilege by devising a method for its application in the arts, and then appropriate the whole to his exclusive use. He can thus embody in tangible materials the results of the long years of research of the engineer, the chemist, or the electrician, and then forbid even these pioneers of science to employ in their own service the laws and facts which they themselves made known.[2] The whole world of activity is in this manner laid at the inventor's feet. Not only is the natural right of the public to benefit by every new discovery devested in his favor, but the natural right of every discoverer to enjoy the fruit of his own genius or good fortune, in common with the public, may be also lost as soon as the inventor has contrived the means of putting it to practical employment.

[2] While it is true that no physical law or fact, merely as such, can be exclusively appropriated by any person, even with the aid of the patent privilege, yet if there be but one method by which that law or fact can be practically applied to useful purposes, the person who discovers and patents that one method thereby obtains complete control over the uses of such fact or law. In this manner the discovery of any scientist, if published to the world, may be brought into actual employment in the arts by some other person, under such circumstances as entirely to deprive the original discoverer of the right to apply it to any use whatever. Thus in the case of Neilson's Patent (1829), 1 Web. 273, if another than Neilson had discovered that smelting-furnaces driven by hot blast were more profitable than those driven by cold, and Neilson's method of employing the hot blast were the only practicable one, his patent would have excluded the very person who discovered the utility of the hot blast from availing himself, in any way, of his own discovery.

§ 28. Patent Privilege a Monopoly: Restricts the Natural Right of the Public to Discover and Employ the same Invention.

But the limitations created by the patent privilege extend to deeper and more fundamental rights than these. Every man has the natural right to discover for himself, and to apply to his own uses, any physical fact or law. That another may have already discovered the same law or fact, and the same method of its application, in no manner abridges this inherent right.[1] To all men the entire universe of truth is open, and no one can infringe upon another's rights therein unless by fraud or force he obtains possession of some secret which that other has alone discerned. This natural right is an essential and invaluable one. The indomitable activity of the human mind, directed by the pressure of exterior necessities to the subjugation of the material world, inevitably and constantly results in new discoveries and in their adaptation to the satisfaction of its wants. The maintenance of life as well as the development of character and civilization has always been, and always must be, dependent on the untrammelled exercise of these inventive powers; and no man can totally relinquish or be hindered from their use without losing his proper place among the thinkers and workers of his age, and being degraded to the condition of a pauper or a slave. Against this onward rushing tide of inventive energy the patent privilege arrays itself. To one who has conceived and practically applied a new idea it gives the power, not only to prohibit other men from copying after him, but from inventing and applying the same idea for themselves. It rec-

§ 28. [1] In Am. H. & L. S. & D. Mach. Co. *v.* Am. T. & M. Co. (1870), 4 Fisher, 284, Shepley, J. (294): "An inventor has no right to his invention at common law. He has no right of property in it originally. . . . If to-day you should invent an art, a process, or a machine, you have no right at common law, nor any absolute natural right, to hold that for seven, ten, fourteen, or any given number of years, against one who should invent it to-morrow, without any knowledge of your invention, and thus cut me and everybody else off from the right to do to-morrow what you have done to-day. There is no absolute right, or natural right at common law, that I, being the original and first inventor to-day, have to prevent you and everybody else from inventing and using to-morrow or next day the same thing." Holmes, 503 (509).

ognizes no difference between the piracy of an invention by the wilful injurer and its entirely independent generation by a true inventor. It so appropriates to one a truth originally free to all, that no other has any longer the right to know it, for any practical and useful purpose, until the patent privilege expires.[2] Every new patent thus closes up another avenue of research against all the world, thwarts the endeavors of the human mind in that direction, and to benefit one individual deprives all others of the right to profit in the same way by their own inventive powers.

§ 29. Patent Privilege a Monopoly: Restricts the Natural Rights of Simultaneous Inventors.

It is no answer to this thought to say that the privileged inventor is generally the sole inventor, and that but for him the idea and its application would remain unknown. The contrary is true. With very few exceptions, every invention is the result of the inventive genius of the age, working under the demand of its immediate wants, rather than the product of the individual mind. The inventors who have stepped forward into the outer darkness, and inaugurated a new era in the industrial progress of mankind, are probably less in number than the centuries of human history. The vast majority of inventions consist of slight advances in existing arts, and lie within the scope of the activities of many of the laborers in the common field. The one who first, through his superior abilities or more fortunate surroundings, attains the goal, only does that which many others, without aid from him, would very soon accomplish as effectually as he; and

[2] Lund: (4) "Supposing the originator of an idea also provides a mode or way of usefully applying it; or even suppose he usefully applies an idea or thought suggested by another person, or one long and well known but not as yet usefully applied: in either of these cases he will be entitled to forbid all other similar applications of the idea to the same object or purpose; although the utility which he produces is comparatively trifling, and the forbidden application is admitted to be a great improvement upon the subject-matter of patent."

In Andrews *v.* Carman (1876), 9 O. G. 1011, Benedict, J.: (1013) "The idea when made available by a method, whereby it is put to practical use, is patentable as a process, and is thus secured to the person who has conceived the idea and invented the method." 13 Blatch. 307 (312); 2 Bann. & A. 277 (282).

the true measure of his merit is, therefore, not the value of his actual discovery, but the value of his temporary precedence of them.[1] Quite often also is the same discovery simultaneously made by several inventors. Men of the same genius, recognizing the same wants, skilled in the same arts, and familiar with the same defects in present methods of supply, might naturally be expected to arrive, at nearly the same time, at the same means of answering the public need; and experience amply justifies this expectation.[2] But with the granting of a patent privilege to any one of these inventors, the discoveries of the others, whether simultaneous or successive, become useless. Their patient research, their earnest meditation, their unwearied struggles are now all in vain. The patent privilege appropriates to the patentee the whole discovery, deprives them of the right to use the results they have themselves attained, and by rewarding him for his mere priority of publication or invention defeats the hopes and efforts of the rest.[3]

§ 29. [1] Coryton: (16, 17) "The extension of the condemnation of monopolies of trades and articles in common use to that of patents, is based on the restraints upon the public during the continuance of the privileges. In some cases the mere abstinence amounts to serious self-denial. The tide of manufacturing industry and inventive skill, notwithstanding its apparent irregularities, rolls onward in a settled direction, indicated by the expressed wants of society, and within an almost calculable time is certain to achieve some means of satisfying those wants. Some discoveries are made by the pioneers of science, men like Watt, far before their age; to them a monopoly of their invention is but an inadequate reward; while of others the whole body of society is in earnest search; the appropriation therefore by individuals may be looked on almost as an invasion of a right."

In Clark P. S. & F. R. Co. *v.* Copeland (1862), 2 Fisher, 221, Shipman, J.: (227) "It not unfrequently happens, in the progress of the mechanic arts, that the time arrives when the whole atmosphere of inventive thought is quickened with the life of an approaching discovery, that many lines of investigation and experiment, converging for a long time toward the point, almost, but not quite, reach it; when, at last, some mind, by a happy thought, supplies some new element, or instrument, or mode of organization, and instantly gives birth to the organized idea."

[2] Accurate statistics as to simultaneous inventions are unattainable. In the greater proportion of such cases, the grant of a patent to the first applicant probably leads to the silent abandonment of the enterprise by others. But those which come under the notice of the Patent Office, in interference proceedings and otherwise, are quite numerous, amounting sometimes to several hundred in a year. Argument before Com. on Patents, 1878, 336.

[3] Godson: (54) "If two persons severally discover the same thing, the one

§ 30. Patent Privilege a Monopoly: Restricts the Natural Right of the Public to Improve upon Existing Inventions.

Nor is this all. The patent privilege reaches out into the future, and restricts the right to exercise inventive skill in fields which the thought of the privileged inventor never entered. Every real invention gives a fresh impulse to the progress of the age, and affords it a new vantage ground from which to press on toward still greater triumphs over the material world. Ideas which the inventor could not have conceived are suggested by his invention to the minds of others, — ideas which, if applied in practice, would result in benefit to all mankind. The right of one man in this manner to avail himself of the discoveries of others is also a natural right. It is the right which every generation exercises over the inventions of its predecessors; and were it denied, every inventor, instead of aiding in the progress of the race, would be a barrier in its path, unless his own invention were so perfect as to exhaust all possibility of advancement in the same direction. Yet even this right is invaded by the patent privilege. It debars other men, not only from applying the discovery to the uses for which it was designed by its inventor, but from employing it as a basis on which to build up new inventions of their own. To the patentee belongs, not merely the exclusive right to what he has invented, but also the right to prevent others from using their own inventions, however valuable they may be, if they embrace a single one of his original ideas.[1] Nor is his right affected by the fact that whatever

who obtains a patent for it, before the other has made the matter public, will be adjudged to be the true and first inventor and be entitled to hold the grant."

In Smith *v.* Davidson (1857), 19 C. S. 697, which was a case of contemporaneous invention by both plaintiff and defendant, it was adjudged that the defendant could not use his own invention after the grant of a patent to the plaintiff. The lord president said: "His monopoly must be protected, and although there may be others who have made the same discovery, but who have not brought it to the same perfection, and have not made their bargain with the public in regard to it, they cannot disturb the integrity of the monopoly of the party who first makes his bargain with the public." See also Forsyth *v.* Riviere (1819), 1 Carp. 401; 1 Abb. P. C. 325. For American cases to the same effect, see Cox *v.* Griggs (1861), 2 Fisher, 174; 1 Bissell, 362.

§ 30. [1] Lund, speaking of the effect of a patent privilege on the rights of others to develop the same idea, says: (5) "This

they adopt of his invention was independently discovered. His patent privilege once thrown around a new idea, that idea, no matter by whom conceived or how improved upon by others, is his alone. So far as he is able he may develop and extend it, and may erect new structures upon its foundation; but to all others it remains forbidden ground.[2] And hence, where characteristic of a patent right may undoubtedly very often hinder the profitable employment of a certain amount of ingenuity, as well as prevent great improvements in some patented inventions. It is well known that the degree and character of the ingenuity, required to perfect or vary the practical details of an invention, is common in comparison either with the genius or good fortune, which leads to the useful application of a mere thought or abstract idea; and, therefore, as soon as such an application is made, some improvements in matters of detail would, in almost every case, be immediately produced. Now to allow these to be put in practice without the consent of the patentee, during the continuance of his grant, would amount to its repeal — for instance by the sale of a cheaper or better article. Whatever question there may be, as to the right of the public to the immediate enjoyment of any such improvements, there can be no doubt that the improver is not entitled to profit at the expense of the patentee; as the improvements were the fruits of his usefully applied thought."

In Converse *v.* Cannon (1873), 9 O. G. 105, Woods, J.: (107) "It makes no matter what additions to, or modifications of, a patentee's invention a defendant may have made; if he has taken what belonged to the patentee he has infringed, although with his improvement the original machine or device may be much more useful." 2 Woods, 7 (12).

[2] Curtis: (§ 320) "These cases show that when a party has invented some mode of carrying into effect a law of natural science, or a rule of practice, it is the application of that law or rule which constitutes the peculiar feature of his invention; that he is entitled to protect himself from all other modes of making the same application; and, consequently, that every question of infringement will present the question whether the different mode, be it better or worse, is in substance an application of the same principle. . . . If the mode of carrying the same principle into effect, adopted by the defendant, still shows only that the principle admits of the same application in a variety of forms, or by a variety of apparatus, the jury will be authorized to treat such mode as a piracy of the original invention."

In Jupe *v.* Pratt (1837), 1 Web. 145, Alderson, B.: (146) "You may take out a patent for a principle coupled with the mode of carrying the principle into effect, provided you have not only discovered the principle, but invented some mode of carrying it into effect. But then you must start with having invented some mode of carrying the principle into effect; if you have done that, then you are entitled to protect yourself from all other modes of carrying the same principle into effect, that being treated by the jury as piracy of your original invention." 2 Abb. P. C. 464 (467).

In *Ex parte* Kent (1880), 17 O. G. 686, Doolittle, Acting Com.: (686) "It is true that a discoverer of a genus in mechanics is entitled to a claim in a

his exclusive rights are rigidly respected or enforced, and his own skill and enterprise are not sufficient to produce the improvements of which his discovery is capable or to which it leads, the public may be deprived of every benefit of the invention, except those which it confers upon them at the moment when it leaves the first inventor's hands.

§ 31. Patent Privilege a Monopoly: Deprives the Public of the entire Use of the Invention at the Option of the Patentee.

Finally, the patent privilege is not merely restrictive of these public rights, it is capable of being turned, at the will of the inventor, to their complete destruction. A patentee has not only the exclusive right to use his own discovery and to impose whatever terms he chooses on its use by others, but he also has the right to refuse to use it or permit its use. His patent places him under no obligation to the public during the existence of his privilege. If poverty or other inability compels him to retain it unemployed, or his unwarranted estimate of its pecuniary value places it beyond the reach of others, the people are without redress. The fact or law which he has discovered and applied is his own property, and can be withheld from or bestowed upon mankind at his pleasure. He has become an absolute monarch over that part of nature's vast domain, and can determine whether it shall be at once a fruitful field, or remain during his ownership an uncultivated waste.[1] Fortunately, this evil is less formidable in practice than in possibility. The obstinacy or carelessness of the inventor does not often keep from public use a really valuable invention. Those who appreciate its true importance adopt it

patent co-extensive with the genus, and to which all subsequent claims for species of that genus must be subordinate."

§ 31. [1] In Pitts *v.* Wemple (1855), 2 Fisher, 10, Drummond, J.: (15) "A man may obtain a patent for an invention and let it lie in the Patent Office without use, and no one else would have the right to use such invention because it is his property." 1 Bissell, 87 (93).

This position has been recently qualified by a decision that the patentee must use the invention himself, or permit others to use it on reasonable terms, or the court will not grant him an injunction against infringers, but will order them to give bonds to account for its use. See Hoe *v.* Knap (1886), 27 Fed. Rep. 204; 36 O. G. 1244.

in defiance of his rights, and at the risk of their own ultimate loss confer upon the public the benefit of his discovery. And though the courts condemn these bold infringers, the world may owe to them the entire advantage it derives from the invention, which but for them would have lain unemployed for years, if not forever.

§ 32. Patent Privilege a true Monopoly: how Distinguished from an Odious Monopoly.

The nature of the patent privilege, as thus disclosed by its effects on the relations of the inventor and the public toward the invention, proves that it possesses both the characteristics of a true monopoly: (1) It confers on the inventor an exclusive right to which he is not naturally entitled, and which he could neither claim nor enforce except through the arbitrary interposition of the law; (2) It restricts the public in its enjoyment of three invaluable natural rights, without the exercise of which, in some form, all progress in the industrial arts would be impossible. It differs from an odious monopoly in this: that in the odious monopoly the public are deprived of some existing method of enjoying these rights, while the patent privilege prevents their exercise only in the new direction marked out by the discovery of the inventor.[1] But in both cases the rights restricted are the same, and the effect on their enjoyment after the monopoly is granted is identical.[2] That a patent privilege is a true monopoly, derogatory to common right, is, therefore, the correct theory concerning it considered in itself. If courts and legislatures, by abandoning this theory, have drifted into lax and dangerous modes of dealing with the public interests when opposed to those of the inventor,

§ 32. [1] In Mitchell *v.* Reynolds (1711), 1 P. Williams, 181, Parker, C. J., held that the grant of the sole use of a trade is void, but a grant of a trade newly invented, and for a time, is good; for the public has an advantage in the invention of a useful trade which, after a limited time, is to be public. See also Darcy *v.* Allin (1602), Noy. 173; 1 Abb. P. C. 1.

[2] Phillips: (5) "The rights taken from the members of the community generally are, first, that of discovering or inventing the same thing, independently of the prior invention, and that of using and vending it for a limited time; and second, the right of profiting by the prior invention or discovery of another, for a limited time."

it is apparent that the future safety of the entire patent system, and the protection of the people from unreasonable and oppressive patent privileges, can only be secured by such a return to this theory as shall result in the adoption of a just and permanent dividing line between these constantly conflicting rights.

§ 33. Patent Privilege, though a Monopoly, is Justifiable on grounds of Public Policy.

The creation of a monopoly embracing these extraordinary privileges, with their corresponding limitations of the common right, could not be justified unless the ultimate results of its bestowal were, upon the whole, highly advantageous to the public. That this is true, experience has fully demonstrated.[1] The granting of a patent privilege at once accomplishes three important objects: it rewards the inventor for his skill and labor in conceiving and perfecting his invention; it stimulates him, as well as others, to still further efforts in the same or different fields; it secures to the public an immediate knowledge of the character and scope of the invention, and an unrestricted right to use it after the patent has expired. Each of these objects, with its consequences, is a public good, and tends directly to the advancement of the industrial arts. Any system of law which attains these results, without the

§ 33. [1] Curtis: (xxxiv) "It is now too late in the history of civilization to question the policy of this protection, which forms a prominent feature in the domestic polity of every nation which has reached any considerable stage of progress in the arts of civilized life."

In Ames *v.* Howard (1833), 1 Sumner, 482, Story, J.: (485) "The Constitution of the United States, in giving authority to Congress to grant such patents for a limited period, declares the object to be to promote the progress of science and useful arts, an object as truly national, and meritorious, and well-founded in public policy, as any which can possibly be within the scope of national protection." 1 Robb, 689 (692).

J. J. Storrow, Esq., Argument before Com. on Patents (1878): (334) "I look upon it as a mark of the highest civilization that a country shall recognize by its fundamental law the utilitarian effects of pure brain power; as a mark both of the highest civilization and of the highest reaches of the law that a nation recognizes, as property to be protected, because helpful to the state and to all its people, the pure creations of the intellect."

See also, for an able presentation of the policy and advantages of this method of reward and encouragement, the address of Hon. J. M. Thacher before the Patent Congress at Vienna in 1873, 4 O. G. 419.

undue restriction of natural rights, is evidently consonant with reason, justice, and sound public policy.

§ 34. Patent Privilege a Justifiable Monopoly: Inventors Entitled to Reward.

To reward the inventor for his skill and labor in making his invention has always been recognized as a proper reason for granting him an exclusive privilege.[1] Every discoverer of any new and useful thing becomes thereby a benefactor to his race. Even if he preserves his secret, employing his invention only in his own affairs, the improvement which he makes in them is an addition to the sum of human prosperity, and so far an advantage to the public. If he reveals it, permitting but a limited enjoyment and on terms involving compensation to himself, he has conferred still greater favors on mankind. And if he freely publishes it, allowing all to practise it who so desire, and conveying to them whatever knowledge he may have as to its most profitable use, he has bestowed upon the world the highest benefits. Regarded as a mere inventor, not protected by a patent, he is thus always serviceable to the state, and whenever the value of his invention to the public exceeds the fair measure of that contribution, which is due from every man to the common stock of useful knowledge, he is entitled to some adequate reward.

§ 34. [1] Phillips: (12) "It would be considered paltry to maintain that a general, who had achieved a victory, was sufficiently compensated by his pay, during the time he gave to the achievement. He is considered a benefactor to his country, and, as such, entitled not merely to his pay, but to a *reward*. So is the inventor of a useful art a benefactor to his country, and to the whole civilized world, and as such entitled to a *reward*. It is a debt due to him; not one that he can demand by virtue of the law of nature, and independently of all civil institutions, but one which it ought to be the early care of the positive laws to acknowledge and satisfy."

Curtis: (xx) "The intellectual conception of an inventor, or a writer, constitutes a valuable possession, capable of being appreciated as a consideration, when it passes by his voluntary grant into the possession of another. If, by the same voluntary grant, this possession is bestowed upon the public, the logical justice of compensation, in some form, will appear at once, by supposing the benefit to have been conferred exclusively upon any one of the mass of individuals who form in the aggregate the moral entity termed the public."

§ 35. Patent Privilege a Justifiable Monopoly: a Proper Reward for the Inventor.

Of all conceivable methods of recompensing an inventor, that of conferring upon him a temporary monopoly of his invention is undoubtedly the best, both for himself and for the public. It places the invention in the hands of him who generally is most fitted to develop and apply it, and compels him to render it beneficial to the public in order that he may reap his own reward. It encourages the inventor to bring his invention to the highest possible condition of practical utility by constantly inventing improvements on it, in order to keep pace with the public wants and to control the trade from which his compensation is derived. It secures the direction of inventive genius toward fields of labor which are of practical importance to the public, and in which the prospect of a due remuneration is most immediate and certain. It makes the reward of the inventor commensurate with the value of his invention to the public. It lays no burden on the people except that of remaining for a while without that which they never yet enjoyed. It is in all respects, if judiciously bestowed and so construed as to protect the precise thing invented and only that, the nearest approach to a perfect apportionment of recompense to services that the law has ever known.[1]

§ 35. [1] Bentham, Rationale of Rewards: (92) "It is an instance of reward peculiarly adapted to the nature of the service, and adapts itself with the utmost nicety to those rules of proportion to which it is most difficult for reward, artificially instituted by the legislature, to conform. If confined, as it ought to be, to the precise point in which the originality of the invention consists, it is conferred with the least possible waste of expense. It causes a service to be rendered, which, without it, a man would not have a motive for rendering; and that only by forbidding others from doing that which, were it not for that service, it would not have been possible for them to have done. Even with regard to such inventions, for such there will be, where others besides him who possesses the reward have scent of the invention, it is still of use by stimulating all parties and setting them to strive which shall first bring the discovery to bear. With all this it unites every property that can be wished for in a reward. It is variable, equable, commensurable, characteristic, exemplary, frugal, promotive of perseverance, subservient to compensation, popular and reasonable." See also Coryton, 21.

§ 36. Patent Privilege a Justifiable Monopoly: Public Interest Promoted by Stimulating Inventive Genius.

To stimulate inventive skill and energy is one of the most effective methods of advancing national prosperity, and in modern times especially attracts the attention of all enlightened governments. While it is certain that the human mind, independently of external impulses, is constantly engaged in pushing its investigations into new fields and in achieving new results, it by no means follows that practical inventions in the industrial arts would rapidly be multiplied without the inducement offered by the prospect of pecuniary reward. Such inventions necessitate not only the conception of a new idea by the mind, but the reduction of that idea to practice in some tangible and useful form. This latter process cannot be accomplished by speculation only, but involves experiments, often protracted and expensive, and a degree of physical skill and labor which otherwise applied might secure to the inventor a considerable recompense in money. To lead an able and prudent man to engage in such enterprises as these, some reasonable hope of profiting by his own labors must be aroused within him; and this can be effected only by a promise on the part of the public that if he succeeds in his invention he shall be suitably rewarded.[1] Experience teaches that this is true; the progress of inventive triumphs, in all civilized nations, being directly in proportion to the encouragement offered to inventors by the state.[2]

§ 36. [1] Coryton: (22) "Inventors, as a class, are singularly deficient in the qualifications for prosecuting a new trade with a probability of success, if exposed to unlimited competition. Without the encouragement of a patent, how is any man to engage in a novel and expensive process, if the moment he succeeds, at the cost of all this outlay, he must be sure that his neighbors, who were cautious enough to shun all chances of loss, will come into competition with him and make his remuneration impossible?"

Chauncey Smith, Esq., Argument before Com. on Patents (1878): (426) "The suggestion is made, indeed, that inventors are so possessed with the spirit of invention that they would make inventions whether rewarded for it or not. But I am satisfied, from my observation of the inventors with whom I have come in contact, that those who make this assertion know but little of inventors. I have met many of them, but I have never yet seen one, who did not labor constantly and zealously in view of the reward which he hoped to reap as the result of his labor."

[2] Hon. Elisha Foote, Argument before Com. on Patents (1878): (416) "Some gentlemen have urged here that inventions do not need the protec-

§ 37. Patent Privilege a Justifiable Monopoly: Stimulates Inventive Genius.

For this purpose also the bestowal of the patent privilege on the inventor is admirably adapted. The reward which it offers is certain, and is limited in amount only by the value of his invention to the public and by his energy and judgment in developing it. It furnishes him with the strongest motive to pursue his researches and experiments by securing to him the profitable result of the very enterprise in which he is engaged. It gives him a contingent property in the invention from the moment when he first conceives the idea, to become absolute when the patent privilege is granted, on which he can, as on the pledge of any other property, raise means to prosecute his inquiries and bring them to complete success.[1] And where the field of art covered by his patent is capable of further cultivation, it enables him to devote himself to its improvement with the assurance that every increase in its utility to the public will be followed by an increase in his own reward.

tion of patents; that they come as a matter of course, from the natural promptings of the human mind, and will be made without reference to profits or personal advantages. Such persons, I apprehend, have never investigated the subject. It is within my remembrance when most of the women were employed in spinning and weaving just as they were in the times of Homer. . . . Indeed since the practical operation of patent laws, there has been more advance in all the practical arts of life than was made before in all preceding ages of the world taken together."

§ 37. [1] Chauncey Smith, Esq., Argument before Com. on Patents (1878): (427) "Those who expect and, perhaps, believe that inventors would make inventions without the hope of reward as well as with, assume, I think, that invention consists wholly in mental labor — in the intellectual exercise of conceiving and devising new things, which may be described in words and represented by drawings, if the subject is of a nature to admit of drawings. But in almost all cases a good invention involves a great deal more than this. It involves experiments and trials, a large amount of physical labor, and the expenditure for materials of more or less money, according to the nature of the invention. . . . It is this practical part of invention which few men could or would undertake unless the product of the labor and expense should become their own. Most of our inventors are men who live by their daily labor, and they are frequently compelled to sell a share of their proposed inventions in advance of their reduction to practice, in order to obtain the means to reduce them to practice. Contracts of this kind are common, but they could not be made if the law did not protect the invention in the hands of the inventor when completed."

§ 38. Patent Privilege a Justifiable Monopoly: Public Interest promoted by Disclosure of Inventions.

The duty which the state owes to the people to obtain for them, at the earliest moment, the practical use of every valuable invention in the industrial arts is, however, a higher and more imperative duty than any which it owes to the inventor. Upon the amelioration of their physical condition depends, to a great extent, the mental and moral progress of its citizens, and the influence of inventions in effecting this amelioration cannot well be overestimated. Such a delay in bringing a single invention into use as might result from an attempt by the inventor to conceal it may deprive an entire generation of advantages which would redound to its incalculable benefit. To secure the publication of the invention as soon as it is brought to such perfection as to be capable of practical employment, and to remove, as early as the accomplishment of this first object will permit, all restrictions to its free use by the people is, therefore, the main purpose of every concession made to the inventor by the state.[1]

§ 39. Patent Privilege a Justifiable Monopoly: Secures the early Disclosure of Inventions to the Public.

The patent privilege, if wisely guarded, effects this purpose. It removes from the inventor all inducement to conceal his

§ 38. [1] Coryton: (20) "Nothing but principles of justice or public policy can justify the crown, as the steward of public rights, in sanctioning such privileges as those awarded to patentees. The reward of the inventor for the benefit he has conferred on trade, and the obtaining from him for public use the full benefit of the improvement he has effected, are objects which the Executive, as representative of the community, should endeavor to effect with the least possible disturbance of public rights."

In Blanchard *v.* Sprague (1839), 3 Sumner, 535, Story, J.: (539) "Patents for inventions are now treated as a just reward to ingenious men, and as highly beneficial to the public, not only by holding out suitable encouragements to genius and talents and enterprise; but as ultimately securing to the whole community great advantages from the free communication of secrets, and processes, and machinery, which may be most important to all the great interests of society." 1 Robb, 734 (739).

In Kendall *v.* Winsor (1858), 21 How. 322, Daniel, J.: (327) "It is undeniably true, that the limited and temporary monopoly granted to inventors was never designed for their exclusive profit or advantage; the benefit to the public or community at large was another and doubtless the primary object in granting or securing that monopoly."

discovery, by affording him the same protection that could be obtained by the most rigid secrecy. It encourages him to make known his results, as the method of securing for himself the largest recompense. It compels him to acquaint the public, thoroughly and at the outset, with all the details of his invention and with the various modes of benefiting by its use. It appropriates to the whole people, after a short period of exclusive ownership by the inventor, the entire invention as a portion of that common property in which all men may exercise an equal right.[1] Wherein any grant of the patent privilege fails to accomplish this object it is the fault, not of the inherent nature of the privilege itself, but of the legislature which devised it or the courts by whom it is construed.

§ 40. Patent Privilege a Monopoly: its Threefold Aspect, as a Reward, a Stimulus, and a Contract for the Disclosure of the Invention.

Regarded as a method of attaining these three objects, the concession of the patent privilege by the state is an act having a threefold character. As a reward bestowed on the inventor for his past inventions, it is an act of justice. As an inducement to future efforts, it is an act of sound public policy. As a grant of temporary protection in the exclusive use of a particular invention, on condition of its immediate publication and eventual surrender to the people, it is an act of compromise between the inventor and the public, wherein each concedes something to the other in return for that which is conceded to itself.[1] In this latter character it is a true

§ 39. [1] In Grant *v.* Raymond (1832), 6 Pet. 218, Marshall, C. J.: (243) "The great object and intention of the act is to secure to the public the advantages to be derived from the discoveries of individuals." 1 Robb, 604 (635).

For a very instructive and interesting discussion of the effects produced by the patent laws upon the inventive genius, the public convenience, wealth and happiness, and the intellectual progress of the countries where such laws prevail, see the arguments of Messrs. Chauncey Smith, J. J. Storrow, and other gentlemen, in the Report of the hearing before the Congressional Committee on Patents in 1877-78.

§ 40. [1] Coryton: (41) "The clearest insight, however, into the peculiarities of this property [a patent privilege] is from considering it as the result of a contract entered into by the executive, as representative of the public, with the patentee. The parties meet on the understanding that the one has a secret to communicate, the other a favor to confer in return."

contract, to the stipulations in which each party is bound with the same strictness as in any other contract, and which is to be interpreted in the same manner as other legal obligations.[2] That portion of the contract by which the public grant protection to the inventor, being intended for his benefit, should be liberally construed, in order to secure to him, in its fullest extent, the protection to which he is entitled. That portion of the contract by which the inventor communicates his invention to the public, being intended for the public benefit, ought, for the same reason, to be construed in favor of the public, in order to secure to them that knowledge and use of the invention to which they are entitled. To construe both parts of the contract in favor of the public, as in the earlier English cases, or to construe both in favor of the inventor, as seems to be the tendency of certain modern courts, is an abandonment of the correct theory of the patent privilege itself, and of the common rules by which all mutual obligations are controlled.[3]

Phillips: (22) "All laws of this description, therefore, give only a temporary monopoly. They offer a compromise between the inventor and the rest of the community, by which each party surrenders something, and it is proposed that each shall receive an equivalent."

[2] Curtis: (xxiii) "But it should always be remembered that in the grant of a patent privilege, as now understood, a contract takes place between the public and the patentee, to be supported upon the ground of mutual considerations, and to be construed, in all its essential features of a bargain, like other contracts to which there are two parties, each having rights and interests involved in its stipulations."

[3] Curtis: (xxxv) "The truth is, a patent should be construed as, what it really is, in substance, namely, a contract or bargain between the patentee and the public, upon those points which involve the rights and interests of either party. These points relate to the extent of the claim, and to the intelligibility of the description for the purposes of practice." See also 2 Pars. Cont. 257 *z*.

That any confusion or doubt should attend the truth or application of so plain a rule as that stated in the text would seem impossible, did not experience prove the contrary. So far as the relation between the public and the patentee can be regarded as a contract relation, the rights and obligations of both parties to the contract are perfectly clear and simple. The right of the public is to be put into immediate possession of a complete knowledge of the invention, and it is the duty of the patentee to give this knowledge. The right of the patentee is to enjoy unmolested the exclusive use of his invention during the life of his patent, and it is the duty of the public to secure him in this right by the ordinary forms of legal protection and redress. These reciprocal rights and obligations are to be assured to the respective parties only by imposing upon each the necessity of fully,

§ 41. Patent Privilege a Monopoly: its Contract Aspect alone Involved in the Construction and Administration of Patent Law: Two Fundamental Principles.

The acts of legislatures which prescribe the limits and conditions of the patent privilege, and the decisions of the courts in interpreting and applying such legislative acts, relate to its contract character alone. Considerations of public policy and of justice to inventors are proper for the constitutional convention, when determining whether or not these privileges shall be granted, and for the legislature when about to define the scope of the inventor's rights and the service which he must render to the public in return. But the legis-

literally, and immediately discharging by the fact that the interpretation of its legal duty to the other; in other words, by interpreting each side of the contract against its promisor and in favor of its promisee.

The cause of this confusion and doubt one need not go far to discover. In the first place, the courts have for many years habitually employed sweeping language to the effect that patents were to be construed liberally in favor of the patentee, — language which is correct enough if the patent is to be regarded merely as the grant of the privilege (which it was until a recent period), but which is incorrect when the patent is considered as embracing also the communication of his discovery by the inventor to the public. As a matter of fact the specification and drawings attached to a patent now perform two distinct functions, and thus become portions of each of the two different parts of the contract. Used to define the limits of the granted privilege, they are the contract of the public, and to be interpreted in favor of the patentee. Used to describe the invention to the public, they are the contract of the inventor and to be construed in favor of the public. General language in this instance has worked such mischief as it usually does.

Moreover, this confusion is increased these two parts of the contract is practically confided to two different tribunals. The question as to the meaning of the patent, specification, and drawings, considered as a grant of privilege, is a question of law for the court. The question as to their meaning and sufficiency, considered as a communication of the discovery to the public, is a question for the jury under the direction of the court. The rule which is to guide the court in its interpretation is the rule of favor to the patentee; that which is to guide the jury is the rule of full protection to the public. That the courts, in hurriedly prepared instructions to the jury, should sometimes fail to distinguish between these two rules, and direct them generally that the patent is to be construed in favor of the patentee, is perhaps not surprising; but that their language, embodied in the reports and followed by later judges, should come to be regarded as embracing the entire law on that subject was as unnecessary as it is unfortunate. That this confusion has worked practical injustice to the public may not be capable of proof; but the obscuration of the law itself by those whose duty it is to develop and elucidate it is, by no means, the least of evils.

lature having acted in the premises, the language of the statute, regarded, as all statutes must be, as intended to promote the common good, becomes the measure of the rights and duties of the inventor and the public, and fixes the relations which they are to occupy toward each other. It is the office of the courts to interpret the language of the statute, and apply it to particular cases, in such a manner as to effect the intention of the legislature, by preserving these rights and enforcing these duties, as they are prescribed by the statute and specified in the patent actually granted.[1] Patent Law as such, consisting of these statutes and decisions, therefore relates only to the contract character of the patent privilege and forms one branch of the Law of Contracts.[2] It deals with a single form of obligation, and with but two classes of parties whose relations to each other are always substantially the same. The principles on which it rests are simple, though often difficult of application on account of the abstruse or intricate character of the invention concerning which the controverted questions rise. These principles may be finally reduced to two, as fundamental grounds on which all others rest: —

I. That the inventor, having made such an invention as is entitled to the patent privilege, must communicate it to the public by publishing an accurate description of its character and uses;

II. That the public, having received from the inventor this communication, must thenceforth, during the period for which his privilege is granted, protect him in the exclusive use of the invention so described.

§ 41. [1] Bishop, Written Laws: (§ 70) "Laws are expounded and enforced, not made, by the courts. The makers are entitled to have their real meaning, if it can be ascertained, carried out. Hence the primary object of all rules for interpreting statutes is to ascertain the legislative intent; or, exactly, the meaning which the subject is authorized to understand the legislature intended."

[2] 2 Pars. Cont.: (257 *y*) "The rules and principles of the common law, as to contract, construction, evidence and remedy, are applied to the law of patents. . . . (257 *z*) [The patentee] is a party to a fair and equal contract, and should be dealt with by the law rationally and impartially."

§ 42. Patent Privilege a Monopoly: its Contract Aspect: Obligations assumed by the Inventor.

According to the first of these principles the obligation of the inventor to the public is twofold: (1) The result of his inventive skill must be of such a nature that a patent may lawfully be granted to protect it; (2) The invention itself must be fully communicated to the public. Of these two obligations the latter is practically the most important. Invention without publication is of comparatively little value to the state, and to reward the inventor, at the public loss, for a discovery which he endeavors for his own advantage to conceal, would be contrary to the entire purpose of the patent privilege.[1] It is the publication, rather than the invention, which promotes the interests of the people; and although invention by some one must necessarily precede publication by any, it has always been the policy of the law to treat the publication as the meritorious act which entitles the inventor to his patent. Thus by the decisions under the statute of James I. it was established that the first importer into the realm was entitled to the same privilege as a first inventor; the mere act of invention adding nothing to the merit of the latter, and its absence not diminishing the service rendered to the public by the former.[2] The earlier patents also contained a clause, requiring the inventor to take apprentices and teach them the knowledge and mystery of the new invention.[3] In the reign of Anne (A. D. 1712) it was made a condition of the grant that the patentee should file in Chan-

§ 42. [1] In Kendall *v.* Winsor (1858), 21 How. 322, Daniel, J.; (328) "The inventor who designedly, and with a view of applying it indefinitely and exclusively for his own profit, withholds his invention from the public, comes not within the policy or objects of the Constitution or Acts of Congress. He does not promote, and if aided in his design, would impede, the progress of science and the useful arts. And with a very bad grace could he appeal for favor or protection to that society which, if he had not injured, he certainly had neither benefited nor intended to benefit."

[2] In Edgebury *v.* Stephens (1691), 1 Web. 35, Holt and Pollexfen, JJ.: "A grant of a monopoly may be to the first inventor by the 21 Jac. I., and if the invention be new in England, a patent may be granted though the thing was practised beyond sea before; for the statute speaks of new manufactures within this realm; so that if it be new here, it is within the statute; for the act intended to encourage new devices useful to the kingdom, and whether learned by travel or by study it is the same thing." 1 Abb. P. C. 8.

[3] Coryton, 123.

cery a written specification, describing his invention and the proper mode of its employment.[4] And in this country it has always been a condition precedent to the issue of a patent that the inventor should place upon the public records a full and accurate statement of the character of his discovery and of the methods in which it could be practically used.[5] As between rival inventors, also, the one who has first published the invention, by his application for a patent, is presumed to be entitled to the privilege until the contrary is shown.[6] Of simultaneous inventors, the first publisher by specification becomes the only patentee.[7] Through the whole body of the law runs the same principle, that the real consideration given to the public for the patent privilege is not the skill of the inventor in inventing, but his honesty and thoroughness in making his discovery known.[8] The inventor, therefore, who does not

[4] Godson, 46; Coryton, 123. This requirement was introduced into the patent, not by legal enactment, but on the authority of the law officers of the crown, — the date of the first patent containing this condition being April 1, 1712.

[5] In the act of 1790, § 2, it is provided that, at the time the patent is granted, the patentee shall file, to be kept on public record, a written specification so describing the invention as to enable any person skilled in the art to which it belongs to make and use it. The same act, § 3, makes it the duty of the government official, in charge of such record, to furnish copies of it to any one who may desire them. These provisions, in substance, are found in all later statutes.

[6] In Booth *v.* Lyman (1880), 17 O. G. 393, Paine, Com.; (394) "Priority of invention . . . is determined *prima facie* as between two original applications by the dates of filing the respective applications: as between an original pending application and one or more patents by the dates of filing the pending application and the applications on which the patents were granted; as between a pending reissue application and one or more unexpired patents by the dates of filing the original application for the patent of which a reissue is asked and the applications on which the other patents were granted."

[7] In Cox *v.* Griggs (1861), 2 Fisher, 174, Drummond, J.: (177) "If they were jointly experimenting and equally meritorious, a doubt should be solved in favor of him who first obtains a patent." 1 Bissell, 362 (365).

[8] Curtis: (xxi) "This secret the inventor undertakes to impart to the public, when he enters into the compact which the grant of a patent privilege embraces. In that compact he promises, after the lapse of a certain period, to surrender to the public completely the right of practising his invention; and, as a guaranty against his concealment of the process by which it is to be practised, and to prevent the loss of this knowledge, he is required to deposit in the archives of the government a full and exact description in writing of the whole process, so framed that others can practise the invention from the description itself. The public, on the other

fully disclose his invention, at the time and in the manner required by law, does not fulfil his contract with the public and is not entitled to the privilege which he receives.[9] If this occurs without his fault, reason and the public interest both require that he should be permitted to protect himself and afford proper information to the public by amending his description.[10] But such permission, unless restricted to evident mistakes and never suffered to result in an extension of the privilege already granted, is fraught with many dangers, and leads to flagrant violations of the public rights.[11]

§ 43. Patent Privilege a Monopoly: its Contract Aspect: Obligations assumed by the Public.

According to the second of these two principles, the obligation of the public to the inventor, upon the discovery and

hand, through the agency of the government, in consideration of this undertaking of the inventor, grants and secures to him the exclusive right of practising his invention for a term of years."

In Carr *v.* Rice (1856), 1 Fisher, 198, Betts, J. : (200) "It is dealt with by the courts, as a grant by the legislature, in exchange for the equivalent to be received by the public, in the free enjoyment of the patented discovery, after the inventor's exclusive privilege expires."

In Page *v.* Ferry (1857), 1 Fisher, 298, Wilkins, J. (306) : "The patent may be considered in the light of a deed from the government, the consideration of which is the invention specified ; and the patentee is bound to communicate it, by so full, clear, and exact a description, with drawings and models, that it shall be within the comprehension of the public at the expiration of the patent, for at that period his invention becomes public property."

[9] Curtis : (§ 256) "If anything be omitted which gives an advantageous operation to the thing invented, it will vitiate the patent."

[10] In French *v.* Rogers (1851), 1 Fisher, 133, Kane, J. : (137) "If it be true, as we have supposed . . . that the patent is granted to the inventor in consideration of some benefit to be derived by the public from his disclosures, and that the reissue is in consideration of some more full or more accurate disclosure than that which he had made in his original specification, or some renunciation on his part of an apparently secured right — it is for the public interest that the surrender and reissue should be allowed to follow each other, just as often as the patentee is content to be more specific or more modest in his claims."

[11] In Meyer *v.* Maxheimer (1881), 20 O. G. 1162, Wheeler, J. : (1162) "There is no safe or just rule but that which confines a reissue patent to the same invention which was described or indicated in the original." 20 Blatch. 15 (17) ; 9 Fed. Rep. 99 (100).

In Smith *v.* Merriam (1881), 19 O. G. 601, Lowell, J. : (602) "The law is extremely liberal, perhaps too much so, and has been much abused." 6 Fed. Rep. 713 (717).

See also Miller *v.* Brass Co. (1882), 104 U. S. 350, 21 O. G. 201.

publication of his invention, is also twofold: (1) It must give to his exclusive right a legal sanction by the act of granting him the patent; (2) It must afford him adequate protection and redress in cases where his rights are violated or endangered. To the inventor himself the former is undoubtedly the most valuable part of this obligation. A patent being once obtained, the public generally acquiesce in the inventor's claims as far as he has clearly stated and defined them, and he proceeds to gather his reward without denial or interference on the part of others.[1] But the latter part is practically the most important; for it is this which gives vitality and force to the former, and it is in the proceedings which this involves that the limits of the patent privilege are finally determined and the rules governing it are settled and applied. The principle which underlies these rules, namely, that the inventor is entitled to complete protection in the exclusive use of what he has invented and has covered by his patent, assumes that he will bring his invention into actual use, and that the injury to which he is subject consists in such a use by others as amounts to an infringement of his own.[2] It is true that his patent privilege as now interpreted permits him to withhold his patented invention from the public, and that this course of action does not justify its unauthorized employment.[3] Nevertheless, it is apparent that one great object of the patent privilege is to secure to the public an immediate,

§ 43. [1] Although there are numerous *infringements*, which are never brought to the attention of the courts, and of suits actually instituted but a small part find their way into the reports, yet, in view of all the facts, it appears probable that less than two per cent of the patents actually granted are so far infringed as to impair the enjoyment of his exclusive use by the inventor.

[2] The property of a patentee in his invention consists entirely in his right to its exclusive use (Brush *v.* Naugatuck R. R. Co. (1885), 32 O. G. 894, 24 Fed. Rep. 371; 23 Blatch. 277), and the whole body of the law protecting this property, with the single exception of the equity doctrine concerning his right to the infringer's profits, proceeds on the assumption that the invention will be put to practical use, so far as it is in the inventor's power.

[3] In Pitts *v.* Wemple (1855), 2 Fisher, 10, Drummond, J.: (15) "A man may obtain a patent for an invention and let it lie in the Patent Office without use, and no one else would have the right to use such invention, because it is his property." 1 Bissell, 87 (93); but see Hoe *v.* Knap (1886), 27 Fed. Rep. 204; 36 O. G. 1244, cited in note 1, § 31.

if not gratuitous, enjoyment of the new discovery, and that the inventor does not fulfil the spirit of his contract unless he introduces his invention into actual use and puts its benefits within the reach of others.[4] It is for this very reason that his reward for his disclosure is given him in this form of a monopoly of his invention, and that the amount of his compensation is thus made dependent on the diligence with which he presses it upon the public. Correctly speaking, it is, therefore, the infringement of the use, and not of the ownership of an invention, that the public have contracted to prevent or to redress; and the degree of injury committed by the infringer is to be estimated by his interference with that use as already made, or likely to be made, by the inventor. To give to one who, having patented a valuable invention, practically suppresses it the same redress, in quantity as well as kind, which justly could be claimed by one who was engaged in its employment, is a perversion of the true idea of the relation of the inventor to the public, and sanctions his neglect of a duty impliedly imposed upon him by his grant.[5] No such encouragement should be given to him to speculate up.. wrongdoing. He should be compelled to exercise the exclusive right conferred upon him by his patent, and thereupon the state should vindicate that right by obliging those who violate it to make him ample compensation for the loss they have occasioned.

[4] In Magic Ruffle Co. *v.* Douglass (1863), 2 Fisher, 330, Shipman, J.: (333) "The public who thus, through the law, secure to the inventor the exclusive property in his invention for a limited period, receive in return either new, more valuable, or cheaper productions during the lifetime of the patent, and from its expiration the free enjoyment of any benefits which may flow from it forever thereafter."

[5] This is the consequence, however, of the rule adopted by the courts that in equity the infringer is to be so far treated like a trustee for the owner of the infringed patent, as to be held accountable to him for all the benefits that may accrue from the infringement. In view of that rule, all question as to the actual injury done to the patentee is avoided. It is assumed that, by the infringement, he has been deprived of all the profit which the defendant has made, and this whether he has ever attempted to avail himself of his invention or not. Indeed, if his invention be of that class which can be enjoyed by licensing others to use it, and he has thus enjoyed it, his compensation for the infringement is likely to be far less in amount than if he had neglected it, since in the former case his habitual license fee, and not the profits, becomes the measure of his recovery.

§ 44. Patent Privilege a Monopoly: Summary of Fundamental Principles.

This discussion of the nature of the patent privilege leads to the following conclusions:—

I. That the patent privilege is a true monopoly, granted in derogation of the common right;

II. That this monopoly is, however, properly bestowed on the inventor, because, upon the whole, it is conducive to the public good;

III. That when bestowed, it becomes a consideration paid to the inventor for the immediate and full disclosure of his invention, and for its ultimate entire surrender to the public;

IV. That unless the inventor, at or before the issue of his patent, makes this disclosure, and thereby puts the public into complete possession of his secret, his own part of the contract remains unfulfilled, and he is not entitled to the privilege;

V. That so much of the letters-patent as constitutes the grant of the inventor's privilege is to be construed liberally in his favor; while so much as constitutes his disclosure of the invention is to be construed in favor of the public;

VI. That having duly published his invention, and received his patent, the inventor is entitled to enjoy his exclusive use without interference, and to recover in suitable proceedings full compensation for all injuries thereto.

CHAPTER III.

OF THE PATENT SYSTEM OF THE UNITED STATES.

§ 45. Patent Privilege in America usually Conferred only by Federal Government: Power of State Governments to Grant Patents.

In the United States the patent privilege is now conferred by the national government alone. That the individual States possess the power to grant these rights, as part of their inherent sovereignty, is generally conceded, and has been formally recognized both by Congress and the courts.[1] Previous to the establishment of the patent system of the United States many of the States had exercised this power, but as its opera-

§ 45. [1] The act of 1793, § 7, provides: "That where any State, before its adoption of the present form of government, shall have granted an exclusive right to any invention, the party, claiming that right, shall not be capable of obtaining an exclusive right under this act, but on relinquishing his right under such particular State; and of such relinquishment, his obtaining an exclusive right under this act shall be sufficient evidence."

Among the most notable examples of these State grants is the one out of which grew the case of Livingston and Fulton *v.* Van Ingen (1812), 9 Johns. 507. On Mar. 19, 1787, the legislature of the State of New York granted to one John Fitch the sole and exclusive right and privilege of making and using boats, propelled by fire or steam, within the waters of that State for the period of fourteen years. Fitch failed to exercise this right, and on Mar. 27, 1798, his patent was repealed, and the same privileges were conferred on Robert R. Livingston for the ensuing twenty years. Livingston's efforts were also fruitless, but Robert Fulton having at last succeeded in constructing a boat that could be moved by steam, the Livingston patent was extended on April 5, 1803, to embrace Fulton also, and its duration fixed conditionally at twenty years from the date of the extending act. While the steamboats of these patentees were in operation, James Van Ingen and others engaged in a similar enterprise, and against these a bill for an injunction was filed by Livingston and Fulton in 1811. The chancellor denied the prayer of the bill, but on appeal to the Court of Errors this judgment was reversed, and a perpetual injunction ordered. Kent, C. J., delivering his opinion in reference to the power of in-

tion was necessarily limited to the territory of the State, the practical protection afforded to the inventor by such grants was comparatively worthless.[2] And since it became possible, by one act emanating from the central government, to secure these exclusive privileges throughout the entire nation, inventors have, with scarcely an exception, sought and received their patents from the Federal authority.

§ 46. Patent Privilege Authorized by Federal Constitution: Powers of Congress.

The power of the United States to clothe inventors with their exclusive privileges is derived from the following clause in the eighth section of the first article of the Constitution: "The Congress shall have power . . . to promote the progress of Science and useful Arts, by securing, for limited Times, to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." The authority thus conferred on Congress is unrestricted as to the method of its exercise. The subject of the exclusive right must be a writing or discovery of the person to whom the right is granted, and the period during which the right may be enjoyed must be determined by the letter of the grant.[1] As to all other matters Congress

dividual States to grant such patents, says: (581) "If the grant is not inconsistent with the power of Congress to regulate commerce, there is as little pretence to hold it repugnant to the power to grant patents. That power only secures, for a limited time, to authors and inventors, the exclusive privilege to their writings and discoveries; and as it is not granted, by exclusive words, to the United States, nor prohibited to the individual States, it is a concurrent power which may be exercised by the States, in a variety of cases, without any infringement of the Congressional power. A State cannot take away from an individual his patent right, and render it common to all the citizens. This would contravene the Act of Congress, and would be, therefore, unlawful. But if an author or inventor, instead of resorting to the Act of Congress, should apply to the legislature of this State for an exclusive right to his production, I see nothing to hinder the State from granting it, and the operation of the grant would, of course, be confined to the limits of this State. Within our own jurisdiction, it would be complete and perfect. So a patentee under the Act of Congress may have the time of his monopoly extended by the legislature of any State, beyond the term of fourteen or twenty-eight years allowed by that law."

[2] Law. Dig. (States, 11).

§ 46. [1] In Graham *v.* Johnston (1884), 21 Fed. Rep. 40, Morris, J.: (42) "The theory of the encouragement given to inventors is, that by disclosing under the

is supreme. It may refuse all privileges whatsoever. It may bestow them with or without conditions. It may establish such a period for their duration as it deems expedient. It may exhaust its powers by special grants to individual authors and inventors, or by a general law award to all a uniform protection. Its action may be retrospective or prospective, as long as vested rights are not impaired.[2] The effect of its

regulations of law their discoveries they benefit the public, and the constitutional power of Congress for securing to them the exclusive right to their inventions has only one restriction, viz.: that it shall be for limited times. With regard to the terms upon which the exclusive right shall be granted, the time when the application for the original grant or for any renewal or extension of it shall be made, it has been frequently held that the regulations in these matters are merely self-imposed restrictions on the constitutional power of Congress, which it can at pleasure disregard in any particular case. Walker Pat., § 255."

In Livingston and Fulton *v.* Van Ingen (1812), 9 Johns. 507, Kent, C. J.: (583) "It seems to be admitted that Congress are authorized to grant patents only to the *inventor* of the useful art. . . . There cannot, then, be any aid or encouragement, by means of an exclusive right under the law of the United States, to importers from abroad of any useful invention or improvement."

In Blanchard *v.* Sprague (1839), 3 Sumner, 535, Story, J.: (541) "The power is general, to grant to inventors; and it rests in the sound discretion of Congress to say, when and for what length of time and under what circumstances the patent for an invention shall be granted. . . . All that is required is, that the patentee should be the inventor." 1 Robb, 734 (741).

[2] In Graham *v.* Johnston (1884), 21 Fed. Rep. 40, Morris, J.: (42) "Special acts for the relief of particular inventors have often been passed by Congress. Evans *v.* Eaton, 3 Wheat. 454. In the case of Agawam Co. *v.* Jordan, 7 Wall. 583, the Supreme Court sustained a patent which had been extended in pursuance of a special act of Congress, passed more than twenty years after the original patent had expired, and the invention had been free to the public. . . . In Blanchard *v.* Sprague, 2 Story, 170, Mr. Justice Story, speaking of the right of Congress to grant a patent to an inventor whose invention had, at the time of the passage of the act, gone into public use, says that the question is set at rest by Evans *v.* Eaton, and that he had never doubted the constitutional authority of Congress to make such a grant. The right which the public has acquired to use the thing invented, by reason of the applicant for a patent failing to do something prescribed by Congress, and the necessity for which Congress might, by previous legislation, have dispensed with, has never been held to be a vested right."

In Bloomer *v.* Stolley (1850), 5 McLean, 158, McLean, J.: (161) "There would seem to be no doubt that the constitutional power in question might have been fully exercised by Congress in making special grants; . . . but this would be a question of expediency and not of constitutional power. . . . (162) The machinery through which this right is ordinarily applied for, and obtained, may be dispensed with, and the title may be conferred by a legislative grant;

enactments is co-extensive with the territory of the United States,[3] and no State can disturb or modify either the privileges

and this may be done in regard to the extension of an exclusive right by Congress, the same as in originally granting it."

In McClurg *v.* Kingsland (1843), 1 How. 202, Baldwin, J., speaking of the patent laws : (206) "Though they may be retrospective in their operation, that is not a sound objection to their validity ; the power of Congress to legislate upon the subject of patents is plenary by the terms of the Constitution, and as there are no restraints on its exercise, there can be no limitation of their right to modify them at their pleasure, so that they do not take away the rights of property in existing patents." 2 Robb, 105 (110).

For examples of the exercise of its more extraordinary powers on this subject, see the following cases :—

The grant of a patent, or a renewal, for an invention already in public use, Evans *v.* Jordan (1813), 1 Brock. 248 ; 1 Robb, 20 ; Evans *v.* Jordan (1815), 9 Cranch, 199 ; 1 Robb, 57 ; Blanchard *v.* Sprague (1839), 3 Sumner, 535 ; 1 Robb, 734 ; Jordan *v.* Dobson (1870), 4 Fisher, 232.

The grant of special extensions, Blanchard's Gun-Stock Turning Factory *v.* Warner (1848), 1 Blatch. 258 ; Bloomer *v.* Stolley (1850), 5 McLean, 158 ; Bloomer *v.* McQuewan (1852), 14 How. 539.

That all the rights and remedies of inventors rest on the Constitution and the acts of Congress, and where these are silent no right or remedy exists, see United States *v.* American Bell Telephone Co. (1887), 41 O. G. 123; 32 Fed. Rep. 591. But see § 10 and notes.

That the powers of Congress are unlimited except as to time of grant, see Graham *v.* Johnston (1884), 21 Fed. Rep. 40.

That special acts of Congress are valid though privative of common right, see Graham *v.* Johnston (1884), 21 Fed. Rep. 40.

[3] In Brown *v.* Duchesne (1856), 19 How. 183, Taney, C. J., speaking of the power of Congress to confer patents for inventions : (195) "The power thus granted is domestic in its character, and necessarily confined within the limits of the United States. It confers no power on Congress to regulate commerce, or the vehicles of commerce, which belong to a foreign nation, and occasionally visit our ports in their commercial pursuits. . . . Nor is there anything in the patent laws that should lead to a different conclusion. They are all manifestly intended to carry into execution this particular power. They secure to the inventor a just remuneration from those who derive a profit or advantage, within the United States, from his genius and mental labors. . . . But these acts of Congress do not, and were not intended to, operate beyond the limits of the United States ; and as the patentee's right of property and exclusive use is derived from them, they cannot extend beyond the limits to which the law itself is confined." In pursuance of this rule it was held in this case that the use, on a foreign vessel in an American port, of an invention patented in the United States, is no infringement of the patentee's rights.

In Gardiner *v.* Howe (1865), 2 Clifford, 462, the limits of the United States, for this purpose, were regarded as including American vessels on the high seas. Clifford, J. : (464) "The patent laws of the United States afford no protection to inventions beyond or outside of the jurisdiction of the United States; but this jurisdiction extends to the decks of American vessels on the high seas, as much as it does to all the territory of the country."

which it creates or their enjoyment by the persons on whom they are bestowed.[4]

[4] In People *v.* Russell (1883), 25 O. G. 504, Cooley, J., speaking of an ordinance imposing a license fee on peddlers, says: (504) "It is objected to the ordinance that if applied to the sale of patented articles it is an interference with the power of Congress to grant exclusive rights to patentees to make and sell their inventions, and an encroachment upon the rights which the patent assures to the patentees. We agree that if this is the case the ordinance can have no such application. The power of Congress to grant the exclusive right to make and sell the articles which from their originality and value have been found deserving, is exclusive, and any State legislation which undertakes to limit or restrict in any manner the privileges which the letters-patent confer is an invasion of the sphere of national authority, and therefore void. This was shown in Cranson *v.* Smith, 37 Mich. 309, and what is said there need not be repeated. But the ordinance in question does not assume to interfere with or in any way to abridge the exclusive rights which the patentee may lay claim to under his patent. The ordinance is a police regulation, made under the general police authority of the State, and taking no notice of this or any other patent, or of the way in which any salable commodity may have come into existence. It is one of the customary regulations for a business. It is well settled now, if it was ever doubted, that any ordinary exercise of Congressional authority does not take from the State any portion of its general power of police. Pervear *v.* Commonwealth, 5 Wall. 475. The acts of Congress assume the existence of State regulations, and in many respects would prove inoperative and confusing if it were otherwise. The patent laws are as forcible for illustration as any other; they give exclusive rights, but they do not determine personal capacity to contract or prescribe the requisites for sales of patented articles or impose the customary restrictions which are supposed to be important to the protection of public morals. All these matters are left to the State law. The patentee must observe the Sunday law as much as any other vendor; he must put his contracts in writing under the same circumstances which require writings of others, and he must obey all other regulations of police which are made for general observance. Patterson *v.* Kentucky, 97 U. S. 501. Invidious regulations applicable to patentees exclusively might be void; but there is no question of that nature here. We have no doubt that it was competent for the State to confer upon the city the power to pass such an ordinance. That the regulating of hawkers and peddlers is important, if not absolutely essential, may be taken as established by the concurring practice of civilized states. They are a class of persons who travel from place to place among strangers, and the business may easily be made a pretence or a convenience to those whose real purpose is theft or fraud. The requirement of a license gives opportunity for inquiry into antecedents and character and the payment of a fee affords some evidence that the business is not a mere pretence." 49 Mich. 617 (618).

In Palmer *v.* State (1883), 39 Ohio State, 236, Upson, J.: (238) "The patent laws of the United States give to inventors the exclusive right to their inventions, but do not give to them the right to disregard laws enacted to promote the welfare of the whole people.

§ 47. Patent Privilege Conferred by General or Special Acts of Congress.

The acts of Congress, in pursuance of this authority, have been of two classes: (1) Special acts, bestowing upon in-

> The State cannot discriminate against patented articles by imposing upon their sale conditions and restrictions not placed upon the sale of other similar articles; but the sale of all articles like those now under consideration, whether patented or not, may be restricted, regulated or forbidden, whenever the public good requires such restriction, regulation, or prohibition."

In State *v.* Telephone Co. (1880), 36 Ohio State, 296, McIlvaine, C. J.: (311) "While it is true, that letters patent secure a monopoly in the thing patented, so that the right to make, vend, or use the same is vested exclusively in the patentee, his heirs and assigns, for a limited period; it is not true, that a right to make, vend, or use the same in a manner which would be unlawful except for the letters patent, thereby becomes lawful, under the act of Congress, and beyond the power of the States to regulate or control. This doctrine is fully discussed and settled in Jordan *v.* Overseers of Dayton (4 Ohio, 295), and Patterson *v.* Kentucky (97 U. S. 501). The doctrine of these cases may be stated thus: the right to enjoy a new and useful invention may be secured to the inventor and protected by national authority against all interference; but the use of tangible property which comes into existence by the application of the discovery is not beyond the control of State legislation, simply because the patentee acquires a monopoly in his discovery."

In Patterson *v.* Commonwealth (1875), 11 Bush, 311, Pryor, J.: (314) "There is a manifest distinction between the right of property in the patent, which carries with it the power on the part of the patentee to assign it, and the right to sell the property resulting from the invention or patent. A State has no power to say through its legislature that the patentee shall not sell his patent, or that its use shall be common to all of its citizens; for this would be in direct conflict with the law of Congress; and that portion of the opinion referred to, giving the patentee an unrestricted power to sell, has allusion alone to his right of property in the patent right, as that was the only question involved in the case. The discovery or invention is made property by reason of the patent, and this right of property the patentee can dispose of under the law of Congress, and no State legislation can deprive him of this right; but when the fruits of the invention or the article made by reason of the application of the principle discovered is attempted to be sold or used within the jurisdiction of a State, it is subject to its laws, like other property; and such has been the uniform decision of all the courts, State and Federal, upon this question."

In *Ex parte* Robinson (1870), 4 Fisher, 186, Davis, J.: (188) "The property in inventions exists by virtue of the laws of Congress, and no State has a right to interfere with its enjoyment, or to annex conditions to the grant. If the patentee complies with the law of Congress on the subject he has a right to go into the open market anywhere within the United States and sell his property." 2 Bissell, 309 (314). In this case a law of Indiana regulating the sale of patent-rights within that State was held unconstitutional and void.

In support of the same principle see Hollida *v.* Hunt (1873), 70 Ill. 109;

dividual inventors some new or more extensive privilege; (2) General acts, providing for the issue of grants of privi-

Helm *v.* First National Bank of Huntington (1873), 43 Ind. 167.

In Jordan *v.* Overseers (1831), 4 Ham. (Ohio) 294, Lane, J. : (309) "The sole operation of the statute, is to enable him to prevent others from using the products of his labours, except with his consent. But his own right of using is not enlarged or affected. There remains in him, as in every other citizen, the power to manage his property, or give direction to his labours, at his pleasure, subject only to the paramount claims of society, which require that his enjoyment may be modified by the exigencies of the community to which he belongs, and regulated by laws, which render it subservient to the general welfare, if held subject to State controul."

That a State statute is not to be so construed as to interfere with the enjoyment of a patent privilege or annex conditions to its grant, see Grover & Baker Sewing Mach. Co. *v.* Butler (1876), 53 Ind. 454.

That a State law imposing unusual burdens on the vendors of patent-rights is unconstitutional, see Wilch *v.* Phelps (1883), 14 Brown (Neb.), 134 ; 25 O. G. 981.

That a State has no power to require the vendor of *patent-rights* to procure a State license to do so, see State *v.* Butler (1879), 3 Lea, 222.

That a State has power to protect its citizens against fraud in the sale of patent-rights by requiring the vendor to file and record his patent and statement of his title in the county where it is offered for sale, see New *v.* Walker, (1886), 108 Ind. 365; Brechbill *v.* Randall (1885), 102 Ind. 528.

That a foreign corporation cannot be compelled to comply with certain State provisions as a condition of its power to sell or license under its patents within such States, see Shook *v.* Singer Mfg. Co. (1878), 61 Ind. 520; Grover & Baker Sewing Mach. Co. *v.* Butler (1876), 53 Ind. 454 ; Wood Mowing & Reaping Mach. Co. *v.* Caldwell (1876), 54 Ind. 270.

That a State cannot pass laws regulating the sale of patent-rights, see People *v.* Russell (1883), 49 Mich. 617; 25 O. G. 504 ; Crittenden *v.* White (1876), 23 Minn. 24 ; Patterson *v.* Com. (1875), 11 Bush (Ky.), 311 ; Hollida *v.* Hunt (1873), 70 Ill. 109.

That a State cannot discriminate against notes taken for patent-rights, see Hollida *v.* Hunt (1873), 70 Ill. 109.

That a State may pass a law requiring notes or bonds given for a patent-right to state that fact on the face of the instrument, see New *v.* Walker (1886), 108 Ind. 365; Herdic *v.* Roessler (1886), 39 Hun, 198; Tod *v.* Wick Bros. (1881), 36 Ohio. St. 370 ; Haskell *v.* Jones (1878), 86 Pa. St. 173. *Contra*, Castle *v.* Hutchinson (1885 , 25 Fed. Rep. 394 ; Cranson *v.* Smith (1877), 37 Mich. 309 ; Helm *v.* First National Bank of Huntington (1873), 43 Ind. 167.

That where a State law requires that a note or bond given for a patent-right shall disclose that fact on its face, a note not disclosing it is open to all defences which could be made if it had contained such disclosure, see New *v.* Walker (1886), 108 Ind. 365; Tod *v.* Wick Bros. (1881), 36 Ohio St. 370.

That a State has power to regulate the transfer of notes which were originally given for an interest in a patent, see Domestic Sewing Mach. Co. *v.* Hatfield (1877), 58 Ind. 187.

That the States cannot be deprived of their police powers by any ordinary act of Congress, see People *v.* Russell (1883), 49 Mich. 617 ; 25 O. G. 504.

That the patent laws confer rights

lege by some department of the government to any person who might be found to be entitled to them. Each of the former is independent of all others of its class, but is considered as engrafted on the general acts, and is construed in harmony with them as far as its own language will permit.[1] The latter

but do not determine contracting powers or prescribe requisites for sales, see People *v.* Russell (1883), 49 Mich. 617; 25 O. G. 504.

That a patentee's right to use and sell his invention is subject to State law, see *In re* Brosnahan (1883), 4 McCrary, 1; 18 Fed. Rep. 62.

That a State has power to regulate the salo of the patented article and of the products of patented processes, see Patterson *v.* Com. (1875), 11 Bush (Ky.), 311.

That a State may require a pedler to take out a license though the articles he sells are patented and he is the patentee, see People *v.* Russell (1883), 49 Mich. 617; 25 O. G. 504; Webber *v.* Virginia (1881), 103 U. S. 344; 20 O. G. 869.

That a State may protect its citizens against unwholesome food by requiring that a label stating its ingredients be placed on each package, and to such a requirement a patent for the composition of matter is no defence, see Palmer *v.* State (1883), 39 Ohio St. 236.

That the States have power to regulate the use of the invention, see State *v.* Telephone Co. (1880), 36 Ohio St. 296.

That where the use of an invention requires an exercise of the right of eminent domain, the State may impose such conditions on the right as it deems necessary, see State *v.* Telephone Co. (1880), 36 Ohio St. 296.

That a State may regulate the use of property resulting from the enjoyment of the invention, see Halkett *v.* State (1885), 105 Ind. 250.

That a State may fix a maximum charge for the use of patented inventions, see Central Union Telephone Co. *v.* Bradbury (1885), 106 Ind. 1.

That a patent for a medicine does not authorize any person to administer it without obtaining the State license required by law, see Thompson *v.* Staats (1836), 15 Wend. 395; Jordan *v.* Overseers (1831), 4 Ham. (Ohio) 294.

That a State law prohibiting lotteries cannot be violated under pretence of exercising a right under the patent laws, see Vannini *v.* Paine (1833), 1 Harr. (Del.) 65.

The summation of the law on this somewhat involved topic seems to be: (1) That the monopoly conferred by the United States upon the patentee is entirely distinct, in law, from his property in the art or instrument protected by the patent, Bloomer *v.* McQuewan (1852), 14 How. 539; (2) That States have no power to interfere with the enjoyment or disposition of the monopoly created by the issue of letters-patent; (3) That States have power to regulate the manufacture, use, and sale of the invention protected by the patent so far as public policy may require; (4) That States have no power to discriminate against patented inventions on the ground that they are patented; (5) That contracts between the patentee and others in reference to the invention are governed by State laws.

See also Wilson *v.* Sandford (1850), 10 How. 99; § 1242 and notes, *post.*

§ 47. [1] In Evans *v.* Eaton (1818), 3 Wheaton, 454, as to one of these special acts, Marshall, C. J., said (518) that it is "engrafted on the general act for the promotion of useful arts, and that the

were intended to establish and develop a permanent patent-system, by which the reciprocal rights of the inventor and the public might be carefully determined and thoroughly secured. These, and the decisions of the courts upon them, constitute the body of the American Patent Law.

§ 48. Patent Privilege under General Acts of Congress: History of the Patent System of the United States.

Congress inaugurated the patent system of the United States by an act passed in A. D. 1790.[1] By this act it im-

patent is issued in pursuance of both." 1 Robb, 243 (286).

In Bloomer *v.* McQuewan (1852), 14 How. 539, Taney, J.: (548) "We must take into consideration not only the special act under which the appellant now claims a monopoly, but also the general laws of Congress in relation to patents for useful improvements. . . . They are statutes *in pari materia;* and all relate to the same subject and must be construed together."

§ 48. [1] The following epitome of the various general acts of Congress, relating to patents for inventions, will show at once the scope of legislation, and the development of positive patent law:—

Act of 1790:—

Sec. 1. Patent to issue to inventor for fourteen years, on application; record to be made thereof.

Sec. 2. Patentee to file a full description, with drawings and model, when applicable.

Sec. 3. Copies of specification, &c., furnished to all persons.

Sec. 4. Penalty for infringement.

Sec. 5. Proceedings to repeal unlawful patents.

Sec 6. Patents and specifications *prim. facie* evidence of patentee's right to patent; but statements of specification may be disputed by defendant; and, if it be excessive or defective, defendant to prevail.

Sec. 7. Fees for issue of patents.

Act of 1793:—

Sec. 1. Patent to issue to inventor for fourteen years, on application; record to be made thereof.

Sec. 2. Patentee of an improvement not entitled to use original invention, or *vice versa;* changes of form or proportions not invention.

Sec. 3. Patentee to make oath that he believes himself the true inventor, and to file a full specification, with drawings and model when applicable.

Sec. 4. Interest in patent privilege assignable; record of assignment, &c.

Sec. 5. Penalty for infringement.

Sec. 6. Defendant may attack patent on ground of fraudulent excess or defect in specification, or prior use, or publication, or piracy by patentee from prior inventor.

Sec. 7. State patents to be relinquished by patentees of United States.

Sec. 8. Saving existing applications for patents.

Sec. 9. Proceedings in case of interfering applications.

Sec. 10. Proceedings to repeal unlawful patents.

Sec. 11. Fees for issue of patents.

Sec. 12. Repeal of act of 1790, saving existing rights.

Act of 1794:—

Sec. 1. Saving suits commenced under act of 1790 from defeat by its repeal in 1793.

posed upon the Secretary of State, the Secretary of War, and the Attorney-General, or any two of them, the duty of grant-

Act of 1800 :—

Sec. 1. Extends privileges of act of 1793 to resident aliens ; oath to be made by every applicant that to the best of his knowledge the invention was never before known or used in this or any foreign country ; such use to avoid patent if obtained.

Sec. 2. Representatives of deceased inventor may obtain patent in trust for heirs or devisees.

Sec. 3. Penalty for infringement.

Sec. 4. Repeals fifth section of act of 1793.

Act of 1819 :—

Sec. 1. Circuit courts of United States to have original cognizance, at law and equity, of actions under patent laws, with writ of error or appeal to Supreme Court.

Act of 1832, ch. 162 :—

Sec. 1. Annual publication of list of patents for preceding year.

Sec. 2. Proceedings before Congress for an extension.

Sec. 3. Proceedings for reissue of patent on account of defect in original.

Act of 1832, ch. 203 :—

Sec. 1. Extending privilege of alien patentees; requires actual use in United States within one year after date of patent.

Act of 1836 :—

Sec. 1. Establishes Patent Office under commissioner; duties of commissioner.

Sec. 2. Duties of chief clerk and other clerks.

Sec. 3. Oath and official bond of commissioner, &c.

Sec. 4. Seal of Office ; copies of records.

Sec. 5. Form of patent.

Sec. 6. Patent to issue to inventor of new and useful art, machine, manufacture, or composition of matter, or an improvement thereon, not before known or used by others, or in public use or on sale at time of application, provided full specification, drawings, and model be filed ; oath required that patentee believes himself the first inventor, and does not know of its prior use or knowledge.

Sec. 7. Commissioner to have examination made as to novelty of the invention, and inform applicant of result thereof ; fees to be paid ; appeal from this finding regulated.

Sec. 8. Proceedings when application interferes with an existing patent ; foreign patent to same applicant no bar to one in the United States within six months after issue of former ; when patent may be dated.

Sec. 9. Fees for patents.

Sec. 10. Representatives of deceased inventor may take out patent in trust for heirs or devisees.

Sec. 11. Patents to be assignable; record thereof.

Sec. 12. Proceedings as to *caveat;* effect of and proceedings under same ; judgment in Patent Office not binding on courts on question of validity of patents.

Sec. 13. Proceedings as to reissues; improvements subsequently invented may be annexed to existing patents.

Sec. 14. Penalty for infringement.

Sec. 15. Notice of special defences; fraudulent specification ; patentee not first inventor; prior publication; prior public use or sale; piracy of the invention by patentee from another ; failure of alien patentee to introduce the invention into public use in the United States in due time; provides that if prior use or knowledge abroad is without the cognizance of patentee, the patent shall be good.

ing to every inventor, whose discovery they deemed sufficiently useful and important, a patent securing to him the exclusive

Sec. 16. Proceedings to repeal interfering patent by rival patentee or applicant; and to obtain patent when interfering application rejected by Patent Office.

Sec. 17. Original jurisdiction of all actions, under the patent laws, to be in circuit courts of the United States with writ of error or appeal to Supreme Court.

Sec. 18. Proceedings in Patent Office for an extension.

Sec. 19. Provides for Patent Office Library.

Sec. 20. Models and specimens to be classified and arranged for public inspection.

Sec. 21. Repeals all former patent laws; saving pending actions and applications.

Act of 1837, passed in part to remedy evils caused by destruction of Patent Office by fire Dec. 15, 1836: —

Sec. 1. Patents issued before Dec. 15, 1836, and assignments thereof, to be recorded in Patent Office without charge; drawings may be reproduced; clerks of courts to furnish copies to Patent Office of all such patents, &c., in their possession.

Sec. 2. Copies of such record to be *prima facie* evidence; originals not to be evidence unless recorded.

Sec. 3. New patent to issue on deposit of a duplicate, as near as may be, of the model, drawings, and specifications of the old; copies and new patents made evidence.

Sec. 4. Models destroyed to be duplicated where important.

Sec. 5. Provides for reissue of several patents for the different inventions embraced in the original; models and drawings to be deposited if former ones were destroyed.

Sec. 6. Patent may issue to assignee at request of, and on application by, inventor.

Sec. 7. Proceedings in disclaimer.

Sec. 8. Application for reissue, or to annex an improvement to an existing patent, to be subject to same examination as original.

Sec. 9. Patent not invalid for what is properly claimed, by reason of excessive claim; costs and disclaimer.

Sec. 10. Agents to receive and forward models, &c., to Patent Office.

Sec. 11. Additional clerks.

Sec. 12. If application of foreigner rejected, fees, in part, refunded.

Sec. 13. Oath and affirmation of patentee.

Sec. 14. Funds of Patent Office; annual list of patents to be published, &c.

Act of 1839: —

Secs. 1 and 2. Additional examiners and clerks.

Sec. 3. Publication of classified and alphabetical list of all patents heretofore granted.

Secs. 4. and 5. Appropriations.

Sec. 6. Foreign patent for same invention within previous six months not to defeat an application, if there has been no public use in the United States; in such cases domestic patent to run fourteen years from date of foreign patent.

Sec. 7. Owner of an invention, before application by the inventor for a patent, may continue its use or sale after patent granted; no patent invalid by reason of such prior ownership, use, or sale, unless invention were abandoned by inventor, or were in use or sale more than two years before his application.

Sec. 8. Assignments, &c., recorded without charge.

Sec. 9. Appropriation for agricultural purposes.

benefits of his invention for a period not exceeding fourteen years. The same act prescribed the mode in which the

Sec. 10. Bill in equity for a patent, when application is refused by Patent Office.

Sec. 11. Appeal from commissioner to Chief-Justice of District Court for District of Columbia.

Sec. 12. Commissioner to make rules for taking evidence in cases in the Patent Office.

Sec. 13. Appropriation.

Act of 1842 : —

Sec. 1. Fees paid by mistake refunded.

Sec. 2. Act of 1837, sec. 3, extended to patents issued prior to Dec. 15, 1836, but subsequently lost.

Sec. 3. Patents may be granted for new designs for seven years.

Sec. 4. Before whom patentee may make oath.

Sec. 5. Penalty for marking "patented," &c., on unpatented articles, or for imitating the mark of a patentee.

Sec. 6. Patented articles to be marked with date of patent.

Act of 1846 : —

Sec. 1. Payment and deposit of funds for Patent Office.

Act of 1848: —

Sec. 1. Additional examiners ; power to extend patents vested in commissioner.

Sec. 2. Recording fee of assignments, &c.

Sec. 3. Additional clerks.

Sec. 4. Commissioner to have freedom of mails for distributing annual reports.

Act of 1849, chap. 108 : —

Sec. 2. Patent Office removed to the Interior Department.

Act of 1852 :—

Sec. 1. Appeals, now made to Chief-Justice of District Court of United States for the District of Columbia, may be also taken to either of the assistant-judges of the Circuit Court for said district.

Sec. 2. Compensation of such judges.

Sec. 3. Repeals sec. 13, act of 1839.

Act of 1861, chap. 37 : —

Sec. 1. Writ of error or appeal from Circuit Court to Supreme Court in patent cases, at instance of either party.

Act of 1861, chap. 88 : —

Sec. 1. Proceedings in taking testimony for use in Patent Office.

Sec. 2. Examiners-in-chief "of legal knowledge and scientific ability," appointed to revise decisions of examiners when necessary, &c.

Sec. 3. Except in interference cases no appeal allowed to examiners-in-chief till application has been twice rejected by examiners, &c.

Sec. 4. Salaries.

Sec. 5. Models may be restored to rejected applicants.

Sec. 6. Sec. 10, act of 1837 repealed.

Sec. 7. Commissioner may appoint new examiners.

Sec. 8. Commissioner may require illegible applications, &c., to be printed ; may refuse to recognize any person as a patent solicitor, subject to approval of President.

Sec. 9. No fees to be refunded.

Sec. 10. Revision of fee-table.

Sec. 11. Inventors of new designs may patent the same for three and a half years, seven years, or fourteen years as they desire ; fees established ; existing design patents may be extended.

Sec. 12. Applications for patents to be regarded as abandoned when not completed and prepared for examination within two years after filing, unless cause shown ; time of filing applications for extensions.

Sec. 13. Patented articles to be so marked on article or package ; otherwise

application for a patent should be made, the conditions on which it should be granted, the proceedings by which it might be annulled, and the remedies for its violation by infringement. In A. D. 1793 the duty of issuing these patents was confided to the Secretary of State, subject to the approval of the Attorney-General. In A. D. 1836, the necessities of inventors having outgrown the capacity of the State Department as then constituted, a sub-department was created, known as the Patent Office, to which the powers and duties of the Secretary, in reference to patents, were transferred. At the same time the entire system was reconstructed, many new and valuable elements were added, and the rights and obligations of inventors were established very nearly as they now exist. In A. D. 1849 the Patent Office was removed to the Department of the Interior, a division of which it has ever since remained. In A. D. 1870 a further improvement of the law took place, which was confirmed and re-enacted in the Revision of 1874. Besides these acts, others of minor importance have from time to time been passed, amending or extending the subordinate provisions of the law.

infringer not liable to pay damages unless he knew of his infringement; sec. 6, act of 1842 repealed.

Sec. 14. Printing and disposal of ten copies of each patent, specification, and drawings.

Sec. 15. Printed copies of patent, duly sealed and certified by the commissioner to be legal evidence.

Sec. 16. Term of patents to be seventeen years; and no extension of such patents.

Sec. 17. Repeal of inconsistent acts.

Act of 1863: —

Sec. 1. Renewal of oath on appeal as required by sec. 7, act of 1836, unnecessary.

Sec. 2. Compensation of examiners, &c.

Sec. 3. Every patent to be dated not later than six months after notice of its allowance to patentee or his agent; if final fees not paid within the six months, the invention to become public property.

Act of 1865: —

Sec. 1. When final fee unpaid in due time, a new application may be filed within two years from date of allowance of original application.

Act of 1868: —

Chap. 227. Examiner-in-chief of longest official experience to act as commissioner in case of absence or disability of commissioner.

Act of 1870: —

This act — as amended in act of 1871, chaps. 5 and 132, and joint resolution of 1871, No. 5 — is still in force, and forms part of the Revision of 1874.

The foregoing summary does not include acts whose sole purpose was the appointment of officials or the granting of appropriations.

§ 49. Condition of the Patent System of the United States before the Act of 1836: Patents Granted without Examination.

The principal features of the present patent system had their origin in the act of 1836. This act marked a new epoch in patent legislation in this country, and has been of inestimable benefit both to inventors and the public. Under the English law patents were granted upon the simple application of the inventor, and without investigation as to the novelty or utility of his invention.[1] The same practice prevailed in the United States until the act in question, the patentee receiving his grant entirely at his own risk of its subsequent defeat by the proof of any use or knowledge of the invention prior to his own, and yet having no method of ascertaining whether such use existed, except the tedious, expensive, and uncertain one of private inquiry.[2] A patent thus situated was necessarily of small commercial value. Few men would risk their capital on the chance of its validity; and if, as often was the case, the patentee was without means to develop his invention, it became either wholly useless to himself as well as to the public, or gave him his reward after long years of suffering and discouragement.

§ 49. [1] Simonds: (222) "No examination is made as to novelty, or utility, and the patent issues as a matter of course, unless some private person enters an opposition and shows good reason why a patent should not be granted."

[2] Under the act of 1790, the patent was to issue upon the simple application of the inventor, alleging and describing his discovery, if the Secretary of State, Secretary of War, and the Attorney-General, or any two of them, deemed it sufficiently useful and important.

Under the act of 1793, the patent issued on application and publication, with oath of the inventor as to novelty. On complying with these conditions the applicant was entitled to his patent as matter of right.

In Grant *v.* Raymond (1832), 6 Peters, 218, Marshall, C. J.: (241) "The Secretary of State may be considered, in issuing patents, as a ministerial officer. If the prerequisites of the law be complied with, he can exercise no judgment on the question whether the patent shall be issued." 1 Robb, 604 (632). See also Pennock *v.* Dialogue (1829), 2 Peters, 1; 1 Robb, 542; Whitney *v.* Emmett (1831), Baldwin, 303; 1 Robb, 567.

§ 50. Changes introduced by the Act of 1836: Patents granted only after due Examination.

By the act of 1836 Congress undertook to relieve inventors from this difficulty, as far as possible, by providing a tribunal before which the right of the inventor to his patent might be examined and determined prior to its issue, and at a minimum of trouble and expense. For this purpose it established a bureau, or department of the government, having both executive and judicial powers, and imposed on it the duty of thoroughly investigating all the questions on which the validity of the proposed patent might depend, and of granting it to the inventor only when such investigation disclosed no probability of its defeat by subsequent litigation.[1] A patent thus granted could, of course, be reasonably trusted. The capitalist might venture his fortune in developing the inventions which it protects, with as much security as attends ordinary commercial operations. The meritorious inventor was no longer condemned to interminable waiting and unrewarded self-sacrifice. The discoverer of anything pronounced by the Patent Office to be new and useful acquired thereby a property which had market value, and to which he could give a title as reliable as that to any other form of personal estate.[2]

§ 50. [1] Act of 1836, § 7. On the filing of the application and description "the Commissioner shall make or cause to be made an examination of the alleged new invention or discovery; and if on any such examination it shall not appear to the Commissioner that the same had been invented or discovered by any other person in this country prior to the alleged invention or discovery thereof by the applicant, or that it had been patented or described in any printed publication in this or any foreign country, or had been in public use or on sale with the applicant's consent or allowance prior to the application, if the Commissioner shall deem it to be sufficiently useful and important, it shall be his duty to issue a patent therefor. But whenever, on such examination it shall appear to the Commissioner that the applicant was not the original and first inventor or discoverer thereof, or that any part of that which is claimed as new had before been invented or discovered, or patented or described in any printed publication in this or any foreign country, as aforesaid, or that the description is defective and insufficient, he shall notify the applicant thereof, giving him, briefly, such information and references as may be useful in judging of the propriety of renewing his application, or of altering his specification to embrace only that part of the invention or discovery which is new."

[2] The confidence hitherto engendered by the supposed reliability of patents which have sustained the scrutiny of the Patent Office is not likely to be long preserved, if certain positions now asserted receive permanent indorsement in

§ 51. Organization of the Patent Office: Its Officers and their Duties.

The organization of the Patent Office consists of a Commissioner of patents, an assistant-commissioner, a board of examiners-in-chief, and a large staff of subordinate clerks, examiners, draughtsmen, and attendants. It is the duty of the Commissioner, acting personally or through the assistant, to superintend or perform all operations concerning the issuing of patents as directed by law, and to have charge of all the records, apparatus, and other property belonging to the Office.[1]

the courts. If every decision of the Commissioner which involves a question of law is open to review; if every reissue is liable to be declared invalid because the court before which it is attacked cannot find in the original a claim for the invention embraced in the reissue; if the public use of an invention by a rival but later inventor, without the knowledge of the first and true inventor, more than two years before the latter's application for a patent, is *ipso facto* a bar to the issue of such patent, though no fault of omission or commission can be imputed to the true inventor; if the opinion of a judge upon the bench, who however skilled in law must seldom be profoundly versed in the chemical or mechanic arts, can outweigh the deliberate judgment of trained experts in the Patent Office on the question of the presence of inventive as distinguished from mechanical skill, and that upon his mere inspection without evidence, as certain cases hold, — the value of a patent is too precarious to warrant large investments on the faith of its validity. Not even multitudinous decisions in its favor can much increase the confidence of capitalists, since it may often happen that after every meritorious defence has been exploded, some obscure event, whose sole importance is dependent on a technical construction of the statutes, will become a pebble in the judicial sling to smite a gigantic but beneficent monopoly into the dust. See Andrews *v.* Hovey (1887), 123 U. S. 267; 42 O. G. 1284.

§ 51. [1] Rev. Stat. 1874, sec. 475. "There shall be in the Department of the Interior an office known as the Patent Office, where all records, books, models, drawings, specifications, and other papers and things pertaining to patents shall be safely kept and preserved."

Sec. 476. "There shall be in the Patent Office a Commissioner of Patents, one Assistant Commissioner, and three examiners-in-chief, who shall be appointed by the President by and with the advice and consent of the Senate. All other officers, clerks, and employees authorized by law for the Office shall be appointed by the Secretary of the Interior, upon the nomination of the Commissioner of Patents."

Sec. 481. "The Commissioner of Patents under the direction of the Secretary of the Interior shall superintend or perform all duties respecting the granting and issuing of patents directed by law; and he shall have charge of all books, records, papers, models, machines, and other things belonging to the Patent Office."

Under § 178, in the absence of the Commissioner from any cause, his assistant, deputy, or chief clerk becomes the "Acting Commissioner." Patents certified and signed by the "Acting Commissioner" are of the same force as

He has power to establish such regulations, not inconsistent with law, as he may, from time to time, deem proper for the conduct of proceedings in his department.[2] He is the final judge, so far as the Patent Office is concerned, of all controverted questions arising in the Office, and in granting or withholding patents he is not bound by the decisions of his inferiors.[3] The examiners-in-chief are by law required to be persons of competent legal knowledge and scientific ability. It is their duty, on the written application of the inventor, to revise and determine upon the correctness of such decisions of the subordinate examiners as may be alleged to be erroneous,

if issued by the Commissioner himself, and the presumption is that the officer so certifying is the "Acting Commissioner," and that sufficient reason existed for his appointment as such. Wilson *v.* Rousseau (1846), 4 How. 646; 2 Robb, 372; Woodworth *v.* Hall (1846), 1 W. & M. 389; 2 Robb, 517; York & Mary. R. R. Co. *v.* Winans (1854), 17 How. 30; Dorsey Co. *v.* Marsh (1873), 6 Fisher, 387.

[2] Rev. Stat. 1874, § 483. "The Commissioner of Patents, subject to the approval of the Secretary of the Interior, may from time to time establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent Office."

The rules established by the Commissioner are, until abrogated, as binding as the law itself, not only upon him and his inferior officers, but also upon parties doing business with his department. If they contravene a statute, however, the statute prevails. Law Dig. (Rules of Patent Office); Stone *v.* Greaves (1879), 17 O. G. 260; Brown *v.* La Dow (1880), 18 O. G. 1049.

[3] Rev. Stat. 1874, § 4893. "On the filing of any such application and the payment of the fees required by law, the Commissioner of Patents shall cause an examination to be made of the alleged new invention or discovery; and if on such examination it shall appear that the claimant is justly entitled to a patent under the law, and that the same is sufficiently useful and important, the Commissioner shall issue a patent therefor."

In Wilder *v.* McCormick (1846), 2 Blatch. 31, Betts, J. (34): "The grant of the patent is itself sufficient evidence that all the preliminary steps required by law were properly taken. . . . (35) The question of the regularity of the proceedings in petitioning for and obtaining the patent, and that of the correctness of the judgment of the officer in awarding it . . . cannot be inquired into."

In Stone *v.* Greaves (1880), 17 O. G. 397, Doolittle, A. C. (398): "It has been inferred from the language of section 4893 that the Commissioner can simply direct an examination of an application, and that when by that examination it shall appear to the subordinate person or tribunal who has made the examination that the claimant is justly entitled to a patent under the law, the Commissioner, *nolens volens*, shall issue the patent. This is a strained construction of the section and one opposed to the language of the other sections cited. The power to direct an examination under the section in question is incidental to the general powers conferred upon the Commissioner by

and to perform such other similar labors as the Commissioner may assign to them.[4] The qualifications and duties of the remaining clerks, examiners, and other officers of the department are left to the discretion of the appointing power and the Commissioner.

§ 52. Functions of Patent Office: Examination of Inventions claimed to be Patentable.

The principal functions of the Patent Office, in addition to the formal issuing of letters-patent, are three: (1) To determine whether an alleged invention is in itself patentable; (2) To settle the disputes arising between rival claimants of the same invention; (3) To disseminate among the public the best and most exhaustive information concerning the

section 481 concerning 'all duties respecting the granting and issuing of patents directed by law.' The section does not state whom the Commissioner shall cause to make the examination, nor does it require that it shall be made to appear to the examiner, or other person than the Commissioner, that the claimant is justly entitled to a patent; and in this absence of control or exercise of final judgment expressly given any other officer of the question of patentability, it is both reasonable and necessary to conclude that such control and judgment should be exercised by the officer causing the examination to be made, who alone is permitted to issue the patent, and . . . that the Commissioner can and should stay the grant or issuance of a patent at any time before its delivery if convinced that such issuance would be contrary to any requirement of law."

See also Hull *v.* Com. (1875), 2 McArthur, 90; 7 O. G. 559; *Ex parte* Neale (1879), 15 O. G. 511; Hoe *v.* Cottrell (1880), 18 O. G. 59; 17 Blatch. 546; 1 Fed. Rep. 597; 5 Bann. & A. 256; McKay, Tr. *v.* Dibert (1881), 19 O. G. 1351; 5 Fed. Rep. 587.

[4] Rev. Stat. 1874, § 482. "The examiners-in-chief shall be persons of competent legal knowledge and scientific ability, whose duty it shall be, on the written petition of the appellant, to revise and determine upon the validity of the adverse decisions of examiners upon applications for patents, and for reissues of patents, and in interference cases; and, when required by the Commissioner, they shall hear and report upon claims for extensions, and perform such other like duties as he may assign them."

§ 4910. "If such party is dissatisfied with the decision of the examiners-in-chief, he may, on payment of the fee prescribed, appeal to the Commissioner in person."

In Snowden *v.* Pierce (1861), cited Law Dig. (Examiners, 6–9), it was held that before the act of 1861 all judicial acts done in the Patent Office were in intendment of law done by the Commissioner. But under the act of 1861 the examiners-in-chief became judicial officers, independent of the Commissioner, to whom their proceedings may be brought for review by appeal.

existing state of the industrial arts. Of these three functions the former is at once the most onerous and the most important. The number of applications yearly filed exceeds twenty thousand. The inventions described in them belong to every division and subdivision of human employments. The patentable difference between any one of these and preceding inventions may be difficult of detection and yet really exist. Its discovery may involve the examination of every article of the same species used in this country, or patented or described in any printed publication at home or abroad. Such an investigation requires not only the services of a large body of skilled examiners, but also the most thorough systemization of their labor.

§ 53. Functions of Patent Office : Mode of Examining Inventions.

To secure the necessary accuracy and expedition in this work all known industries are divided into classes, embracing almost every species of material products. These classes are again grouped into divisions, cognate classes being kept as far as possible in the same division, and each division is assigned to certain examiners who are familiar with the classes of products of which it consists. On the receipt of a new application it is referred to the appropriate examiner, and the result of his investigation is reported to the applicant. If the invention is found patentable, and no rival claims to be the first inventor, the patent is allowed; if found not patentable, a further hearing can be had upon appeal. This examination results in the final rejection of about one third of all the applications filed. On the assumption that these rejections are on sufficient grounds, the public are thus saved from the infliction of several thousand worthless patents every year, while the applicants and their business associates escape the losses and disappointment which the issue of such patents, and their subsequent destruction by judicial action, would involve.[1]

§ 53. [1] It would appear from the Annual Report of the Commissioner for 1887 that about 14,000 applications were in that year rejected.

§ 54. Functions of Patent Office: Adjudicating between Rival Inventors: Interferences.

The disputes arising in the Patent Office between rival claimants of the same invention are determined by a proceeding known as an interference.[1] Such interference is declared whenever two or more applications are filed covering the same invention, or when an applicant, whose petition is rejected on the ground of an outstanding patent in another, asserts that he is nevertheless the first inventor. In the former case each of the several applicants, and in the latter the applicant and the patentee, are notified to file in the Office within a given time written statements, under oath, and duly sealed from observation, specifying the dates at which the invention was conceived and perfected by them. At the time appointed these statements are opened, and if from them it appears who has priority the patent is awarded to him; if not, such further hearing will be had as may be necessary to ascertain the fact. Where the contestants are all merely applicants, the issue of a patent to one of them is a denial of it to the others. Where one of the contestants is already a patentee, this proceeding does not affect his patent, but if the other party proves his own priority he receives a patent also, and they are both left to pursue the controversy in the courts.

§ 54. [1] Rev. Stat. 1874, § 4904. "Whenever an application is made for a patent which, in the opinion of the Commissioner, would interfere with any pending application, or with any unexpired patent, he shall give notice thereof to the applicants, or applicant and patentee, as the case may be, and shall direct the primary examiner to proceed to determine the question of priority of invention. And the Commissioner may issue a patent to the party who is adjudged the prior inventor, unless the adverse party appeals from the decision of the primary examiner, or of the board of examiners-in-chief, as the case may be, within such time, not less than twenty days, as the Commissioner shall prescribe."

See also Rules of Patent Office: Interferences.

In Nicholson *v.* Bennett (1879), 16 O. G. 631, Paine, Com.: (631) "Interferences between patents cannot be adjudicated in the Patent Office; but interferences between one or more applications and two or more patents can be adjudicated here, and priority awarded to one of the patents or to an application, according to the facts. Such adjudication is conclusive upon all parties so far as the interference in the Patent Office is concerned, but it is not conclusive as to the relative rights of the patentees outside of the Patent Office."

§ 55. Functions of Patent Office: Disseminating Information concerning Patented Inventions.

The duty of disseminating information to the public concerning the current progress of the industrial arts has always been recognized and prescribed by Congress. The act of 1790 directed the Secretary of State to furnish copies of the description, model, and drawings of any invention to every person who would pay the cost of making them. The act of 1836 provided that the models and specimens of existing inventions, duly classified, should be arranged in suitable galleries and kept open for the inspection of the public. In A. D. 1837 the annual publication of a list of the patents granted during the preceding year was ordered. In A. D. 1839 a classified and alphabetical list of all patents theretofore granted was prepared and issued. In A. D. 1871 complete copies of the specifications and drawings of each patent subsequently issued were directed to be placed at the Capitol of every State and Territory, in the Clerk's office in each Judicial District, in the Congressional Library, and in every other public library which would pay the cost of binding and transportation, and secure freedom of access to them for the public. In A. D. 1872 was commenced the publication of the "Official Gazette," a weekly journal containing a list of all patents issued during the preceding week, with abstracts of their specifications, copies of their drawings, transcripts of their claims, and the names and residences of the patentees. Decisions of the Commissioner on questions of practice, and of the United States Courts on matters of Patent Law are also given, making annually about two thousand pages, with some thirteen thousand illustrations, two hundred reported cases, an index of patentees and patents, and an excellent digest of decisions. The extensive circulation of this journal now puts into the hands of every inventor, manufacturer, and capitalist interested in industrial pursuits, full information in regard to all that is accomplished in the numerous fields of inventive effort, and suggests to alert and thoughtful minds many of those ideas which are finally embodied in actual improvements in mechanics and the arts.

§ 56. Functions of Patent Office: Caveats: Disclaimers: Reissues.

In furtherance of the advantages thus offered by the patent system to inventors, there are three collateral proceedings, designed to meet peculiar exigencies in the history of an invention. Where an inventor, who is still engaged in reducing his discovery to practice, fears that another, laboring in the same direction, may first obtain a patent, he can file a caveat in the Office and thereby protect himself during the residue of his experiments, and secure a hearing on the question of priority before a patent issues to any one for the invention.[1] If a patent, as already granted, is defective on account of its excessive claims, the error may be cured by simply filing a disclaimer.[2] When, through the inadvertence

§ 56. [1] Rev. Stat. 1874, § 4902. "Any citizen of the United States who makes any new invention or discovery, and desires further time to mature the same, may, on payment of the fees required by law, file in the Patent Office a caveat setting forth the design thereof, and of its distinguishing characteristics, and praying protection of his right until he shall have matured his invention. Such caveat shall be filed in the confidential archives of the Office and preserved in secresy, and shall be operative for the term of one year from the filing thereof; and if application is made within the year by any other person for a patent with which such caveat would in any manner interfere, the Commissioner shall deposit the description, specification, drawings, and model of such application in like manner in the confidential archives of the Office, and give notice thereof, by mail, to the person by whom the caveat was filed. If such person desires to avail himself of his caveat, he shall file his description, specifications, drawings, and model within three months from the time of placing the notice in the post-office in Washington, with the usual time required for transmitting it to the caveator added thereto; which time shall be endorsed on the notice. An alien shall have the privilege herein granted, if he has resided in the United States one year next preceding the filing of his caveat, and has made oath of his intention to become a citizen."

See also Rules of Patent Office: Caveats.

[2] Rev. Stat. 1874, § 4917. "Whenever, through inadvertence, accident, or mistake, and without any fraudulent or deceptive intention, a patentee has claimed more than that of which he was the original or first inventor or discoverer, his patent shall be valid for all that part which is truly and justly his own, provided the same is a material or substantial part of the thing patented; and any such patentee, his heirs or assigns, whether of the whole or of any sectional interest therein, may, on payment of the fee required by law, make disclaimer of such parts of the thing patented as he shall not choose to claim or to hold by virtue of the patent or assignment, stating therein the extent of his interest in such patent. Such disclaimer shall be in writing, attested by one or more witnesses, and recorded in the Patent Office; and it

or mistake of the inventor, his patent fails to cover any part of his invention, as he attempted to describe and publish it in his specification, the patent may be surrendered and a new one, remedying the deficiency, may be procured.[3]

shall thereafter be considered as part of the original specification to the extent of the interest possessed by the claimant and by those claiming under him after the record thereof. But no such disclaimer shall affect any action pending at the time of its being filed, except so far as may relate to the question of unreasonable neglect or delay in filing it."

See also Rules of Patent Office: Disclaimer.

[3] Rev. Stat. 1874, § 4916. "Whenever any patent is inoperative or invalid, by reason of a defective or insufficient specification, or by reason of the patentee claiming as his own invention or discovery more than he had a right to claim as new, if the error has arisen by inadvertence, accident, or mistake, and without any fraudulent or deceptive intention, the Commissioner shall, on the surrender of such patent and the payment of the duty required by law, cause a new patent for the same invention, and in accordance with the corrected specification, to be issued to the patentee, or, in case of his death or of an assignment of the whole or any undivided part of the original patent, then to his executors, administrators, or assigns, for the unexpired part of the term of the original patent. Such surrender shall take effect upon the issue of the amended patent. The Commissioner may, in his discretion, cause several patents to be issued for distinct and separate parts of the thing patented, upon demand of the applicant, and upon payment of the required fee for a reissue for each of such reissued letters patent. The specifications and claim in every such case shall be subject to revision and restriction in the same manner as original applications are. Every patent so reissued, together with the corrected specification, shall have the same effect and operation in law, on the trial of all actions for causes thereafter arising, as if the same had been originally filed in such corrected form; but no new matter shall be introduced into the specification, nor in case of a machine patent shall the model or drawings be amended, except each by the other; but when there is neither model nor drawing, amendments may be made upon proof satisfactory to the Commissioner that such new matter or amendment was a part of the original invention, and was omitted from the specification by inadvertence, accident, or mistake, as aforesaid."

See also Rules of Patent Office: Reissues.

In Smith *v.* Merriam (1881), 19 O. G. 601, Lowell, J.: (602) "The most natural construction of this law would perhaps be that, if a patent should be inoperative by *reason* of a defective specification or invalid for claiming too much, the defect might be supplied or the excessive claim be reduced by reissue; but the courts have given a different interpretation, much wider in most respects and narrower in only one. They do not permit a defective specification to be supplied excepting from the drawings or model; but they do permit the claim to be varied, provided the same invention is described in both patents, and hold that the decision of the Office that the occasion had arisen for granting a reissue is final. 'The law is extremely liberal, perhaps too much so, and has been much abused.'" 6 Fed. Rep. 713 (716).

§ 57. Patent Privilege Conferred only on Inventors.

The Constitution of the United States authorizes the grant of patents only to inventors. Under the construction given to the word "inventors" by the English courts, it comprehended not only those who by their ingenuity had discovered, and by their labors or expenditures had reduced to practice, some new art or manufacture, but all those who had introduced into the realm any new trade or industry from foreign lands.[1] This construction was never recognized in the United States. An inventor, in the meaning of the Constitution, is one who has himself conceived the fundamental idea of the invention, and has embodied it in tangible materials. To him and to him only can a patent lawfully be granted.[2]

§ 58. Patent Privilege Conferred only on the First and Original Inventor.

To what inventors and for what inventions patents may be issued, is determined by the acts of Congress. For any one invention but one valid patent can exist; and of several distinct inventors of the same invention, one only is entitled to receive a grant of the exclusive right. This one is the original and first inventor.[1] An original inventor is a creator,

§ 57. [1] In the case of Edgebury *v.* Stephens (1691), 2 Salk. 447, it was held that "if the invention be new in England a patent may be granted, though the thing was practiced beyond sea before; for the statute speaks of new manufactures within this realm; so that if it be new here, it is within the statute; for the act intended to encourage new devices useful to the kingdom, and whether learned by travel or by study, it is the same thing." 1 Web. 35; 1 Abb. P. C. 8.

[2] In Livingston *v.* Van Ingen (1812), 9 Johns. 507, Kent, C. J.: (583) "It seems to be admitted that Congress are authorized to grant patents only to the *inventor* of the useful art. . . . There cannot, then, be any aid or encouragement, by means of an exclusive right under the law of the United States, to importers from abroad of any useful invention or improvement."

In Pitts *v.* Hall (1851), 2 Blatch. 229, Nelson, J.: (234) "A person, to be entitled to the character of an inventor, within the meaning of the Act of Congress, must himself have conceived the idea embodied in his improvement. It must be the product of his own mind and genius, and not of another's."

See also Washburn *v.* Gould (1844), 3 Story, 122; 2 Robb, 206; Sparkman *v.* Higgins (1846), 1 Blatch. 205.

§ 58. [1] Rev. Stat. 1874, §§ 4886, 4920. In Bedford *v.* Hunt (1817), 1 Mason, 302, Story, J.: (304) "The first inventor, who has put the invention in practice, and he only, is

not a borrower or copyist, of the invention.[2] The first inventor is that original inventor whose inventive act, in point of time, preceded the inventive acts of others.[3] According to the earlier statutes, a first inventor must have been such as to all the world.[4] However meritorious an applicant might

entitled to a patent. Every subsequent patentee, although an original inventor, may be defeated of his patent right upon proof of such prior inventions being put into use. The law in such case cannot give the whole patent right to each inventor, even if each be equally entitled to the merit of being an original and independent inventor; and it therefore adopts the maxim, *qui prior est in tempore, potior est in jure.*" 1 Robb, 148 (150).

See also Lowell *v.* Lewis (1817), 1 Mason, 182; 1 Robb, 131; Thomas *v.* Weeks (1827), 2 Paine, 92; Reed *v.* Cutter (1841), 1 Story, 590; 2 Robb, 81; Allen *v.* Blunt (1846), 2 W. & M. 121; 2 Robb, 530.

[2] The term "original inventor," is sometimes used by the courts as synonymous with "first inventor." See Odiorne *v.* Winkley (1814), 2 Gallison, 51; 1 Robb, 52; Thomas *v.* Weeks (1827), 2 Paine, 92; Allen *v.* Blunt (1846), 2 W. & M. 121; 2 Robb, 530.

In other cases the judges make a distinction between the "original" and the "first" inventor, giving the former title to every true inventor, and the latter only to the foremost among true inventors. See Lowell *v.* Lewis (1817), 1 Mason, 182; 1 Robb, 131; Bedford *v.* Hunt (1817), 1 Mason, 302; 1 Robb, 148; Pennock *v.* Dialogue (1829), 2 Peters, 1; 1 Robb, 542; Reed *v.* Cutter (1841), 1 Story, 590; 2 Robb, 81; Roemer *v.* Simm (1874), 5 O. G. 555.

[3] In Pennock *v.* Dialogue (1829), 2 Peters, 1, Story, J.: (23) "It gives the right to the first and true inventor and to him only; if known or used before his supposed discovery he is not the first, although he may be a true inventor." 1 Robb, 542 (566).

In Reed *v.* Cutter (1841), 1 Story, 590, Story, J.: (599) "He is the first inventor in the sense of the Act, and entitled to a patent for his invention, who has first perfected and adapted the same *to use*; *and until the invention* is so perfected and adapted to use, it is not patentable. . . . In a race of diligence between two independent inventors, he, who first reduces his invention to a fixed, positive, and practical form, would seem to be entitled to a priority of right to a patent therefor. The clause of the fifteenth section (Act of 1836; Rev. Stat. 1874, § 4920), now under consideration, seems to qualify that right, by providing that, in such cases, he who invents first shall have the prior right, if he is using reasonable diligence in adapting and perfecting the same, although the second inventor has, in fact, first perfected the same, and reduced the same to practice in a positive form. It thus gives full effect to the well known maxim, that he has the better right, who is prior in point of time, namely, in making the discovery or invention." 2 Robb, 81 (90, 91).

[4] In the act of 1790, the invention to be patentable, must have been one "not before known or used;" no limit to the time or place of user being mentioned. In the act of 1793, it must have been one "not known or used before the application;" no limit of place being here established. In pursuance of these acts, the courts held that the inventor must be the first inventor as to all the world, in order to be entitled to a patent.

be, he could obtain no valid patent for the fruits of his own ingenuity, if his discovery had been anywhere anticipated, even without his knowledge. The act of 1836 removed this hardship, and provided that he who first conceived and reduced to practice an invention which was not before known or used in the United States, and nowhere had been patented or described in any printed publication, should be regarded as its first as well as an original inventor.[5]

§ 59. Patent Privilege Conferred only for Certain Classes of Inventions.

Not everything that in itself is new is an invention, nor is every invention patentable under the existing law. Invention implies something more than change of form, or of arrangement, or of mode of use. It is the result of inventive as distinguished from mechanical skill. An operation of the intellect, not following the beaten track but striking out into some new direction and achieving some new triumph over matter, is involved in its production. It is perhaps incapable of exact definition, and the line between it and what the

In Reutgen *v.* Kanowrs (1804), 1 Wash. 168, Washington, J.: (170) "If it appears that the plaintiff was not the original inventor, in reference to other parts of the world as well as America, he is not entitled to a patent." 1 Robb, 1 (4).

In Dawson *v.* Follen (1808), 2 Wash. 311, Washington, J.: (311) "To entitle the plaintiff to recover [the jury] must be satisfied that he was the original inventor, not only in relation to the United States, but to other parts of the world." 1 Robb, 9 (9).

"If a patentee is not the first or original inventor, in reference to all the world, he is not entitled to a patent even although he had no knowledge of the previous use or previous description." Law Dig. (Inventor, B. 32). See also Whitney *v.* Emmett (1831), Baldwin, 303; 1 Robb, 567.

[5] Act of 1836, §§ 7, 15. By § 7, the applicant for a patent was entitled to receive it unless, on due examination, it appeared that the same invention had been previously invented or discovered by some other person *in this country*. And § 15 provided that a patent should not be void on account of the invention or any part thereof having been before known or used in any foreign country. See also Rev. Stat. 1874, § 4886.

"The provision of § 6 and § 15 of the act of 1836 introduced an important modification into the law of patents, designed to protect the American inventor against the injustice of being thrown out of the fruits of his ingenuity, by the existence of a secret invention or discovery abroad, — that is, a discovery not patented, and not described in any printed publication." Law Dig. (Inventor, B. 33), citing 5 Opin. 21 (1848).

Patent Law regards as a mere imitation is often very difficult to draw.[1] Among recognized inventions, however, only certain classes are entitled to protection. These lie almost entirely within the domain of the industrial arts. The act of 1790 enumerated them as "any useful art, manufacture, engine, machine, or device, or any improvement therein."[2] The act of 1793 describes them as "any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement" on the same.[3] To these the act of 1842 added "any new and original design" for a manufacture or to be worked into or imprinted on a manufacture.[4] Beyond these narrow limits no discovery, whatever its utility or novelty, is patentable.[5]

§ 60. Form of Letters-Patent.

The form of letters-patent in the United States has undergone but little change. Under the acts of 1790 and 1793 they were simple grants of the exclusive right to the invention, for a term not exceeding fourteen years, and contained [redacted]ecital of the petition and a full description of the discovery

§ 59. [1] In Ransom *v.* Mayor of New York (1856), 1 Fisher, 252, Hall, J.: (265) "Invention, in the sense of the patent law, is the finding out, contriving, devising, or creating something new and useful, which did not exist before, by an operation of the intellect."

In Clark Patent S. & F. R. Co. *v.* Copeland (1862), 2 Fisher, 221, Shipman, J.: (227) "With regard to the degree of mental labor and inventive skill required in the work of invention, the law has no nice or rigid standard. There must be some inventive skill exercised, but the degree of that skill is not material."

In Woodman *v.* Stimpson (1866), 3 Fisher, 98, Lowell, J.: (103) "The difficulty is in drawing the line and showing what is invention and what is mere construction."

In Kirby *v.* Beardsley (1867), 3 Fisher, 265, Shipman, J.: (278) "I am well aware that it is often no easy task to draw the true line of distinction between invention, the product of original thought, and mere obvious manual changes following the beaten track of mechanical experience." 5 Blatch. 438, (453).

[2] Act of 1790, § 1.

[3] Act of 1793, § 1.

[4] Act of 1842, § 3.

[5] Rev. Stat. 1874, § 4886. In Singer *v.* Walmsley (1860), 1 Fisher, 558, Giles, J.: (562) "It seems, then, that whatever may be the extent of the terms of the grant under the Constitution, the only power that Congress has exercised is the power to give a patent for a 'new and useful art, machine, manufacture, or composition of matter.'"

of the inventor.[1] The act of 1836 substituted for this full description in the patent a short description or title of the invention, and required the annexation to the patent of a complete copy of the description and the claims, as contained in the application.[2] The act of 1837 directed that a copy of the drawings, if any existed, should also be appended to the patent.[3] In A. D. 1861 the term of patents was extended to seventeen years.[4] A patent, as now issued, thus contains a grant of the exclusive right to the patented invention during seventeen years, a short description or title of the art or thing invented, and a copy of the description, claims, and drawings which form the basis of the grant.

§ 61. Rights Embraced in Patent Privilege.

The patent privilege, in the United States, includes the exclusive right to make, use, or sell the patented invention and the exclusive right to empower others to make and use and sell it.[1] These rights are separable from each other and may

§ 60. [1] Act of 1790, § 1; Act of 1793, § 1.

Under these statutes the patent itself gave substantial notice of the character of the invention. The applicant, in his petition, was compelled to set forth the fact and nature of his discovery, and the allegations and suggestions of the petition were recited in the patent. If the specification and petition were filed at the same time, the former was regarded as part of the latter, and by reference was made a portion of the description given in the patent. See Evans *v.* Chambers (1807), 2 Wash. 125; 1 Robb, 7; Hogg *v.* Emerson (1847), 6 How. 437; 2 Robb, 655.

[2] Act of 1836, § 5.

This change in the language of the statutes, describing the requisites of the patent, was adopted in order to make the law itself conform to the usage, which had grown up under the prior acts, of inserting the whole descriptive portion of the petition in the patent, and which sometimes led to misconstructions. See Hogg *v.* Emerson (1847), 6 How. 457; 2 Robb, 655.

[3] Act of 1837, § 6.

[4] Act of 1861, § 16.

§ 61. [1] Rev. Stat. 1874, § 4884.

In Gayler *v.* Wilder (1850), 10 How. 477, Taney, C. J.: (494) "Now the monopoly granted to the patentee is for one entire thing; it is the exclusive right of making, using, and vending to others to be used, the improvement he has invented, and for which the patent is granted."

In Bloomer *v.* McQuewan (1852), 14 How. 539, Taney, C. J.: (549) "The franchise which the patent grants, consists altogether in the right to exclude every one from making, using, or vending the thing patented, without the permission of the patentee. This is all that he obtains by the patent."

be transferred, either singly or together, by the patentee.[2] They constitute his property in the invention, and are the measure of the reward conferred upon him for the service he has rendered to the public.[3]

§ 62. Remedies for Infringement.

The law provides two methods by which the injuries to these rights of patentees may be redressed: (1) An action on the case; (2) A bill in equity for an injunction, an account, and damages.[1] The former was once the ordinary method, but in recent times has been almost wholly superseded by the latter. Original jurisdiction over these proceedings resides exclusively in the Circuit Courts of the United States, subject to an appeal or writ of error to the Supreme Court.[2]

[2] Rev. Stat. 1874, § 4898.

In Blanchard *v.* Eldridge (1849), 1 Wall. Jr. 337, Grier, J.: (339) "As the grants of the crown were, at common law, construed with the greatest strictness, the privileges granted by a patent for a monopoly, would probably not have been treated as capable of assignment, unless made so by the letter of the grant. . . . But the Act of Congress of 1836 has regulated the assignment of patents. . . . (340) This statute also renders the monopoly capable of subdivision in the category of its locality, but in no other way. The patentee is not allowed to carve out his monopoly, which is an unity, into a hundred or more, all acting in the same place, and liable to come into conflict." 2 Robb, 737 (739, 740). See also Gayler *v.* Wilder (1850), 10 How. 477; Suydam *v.* Day (1846), 2 Blatch. 20.

[3] In Brown *v.* Duchesne (1856), 19 How. 183, Taney, C. J.: (195) "The right of property which a patentee has in his invention, and his right to its exclusive use, is derived altogether from these statutory provisions; and this court have always held that an inventor has no right of property in his invention, upon which he can maintain a suit, unless he obtains a patent for it, according to the acts of Congress; and that his rights are to be regulated and measured by these laws, and cannot go beyond them."

In Blandy *v.* Griffith (1869) 3 Fisher, 609, Swayne, J.: (620) "The rights secured by a patent for an invention or discovery are as much property as anything else, real or incorporeal."

In Densmore *v.* Scofield (1880), 102 U. S. 375, Swayne, J.: (378) "Patents rightfully issued are property, and are surrounded by the same rights and sanctions which attend all other property." 19 O. G. 289 (289).

That an inventor's property consists in his exclusive right to practise the invention, see Brush *v.* Naugatuck R. R. Co. (1885), 32 O. G. 894; 24 Fed. Rep. 371; 23 Blatch. 277.

§ 62. [1] Rev. Stat. 1874, §§ 4919, 4921.

[2] Rev. Stat. 1874, §§ 629, 699, 711.

State courts, however, can entertain questions arising under the patent laws of the United States when collaterally drawn into discussion in cases within their jurisdiction. See Sherman *v.*

§ 63. Increase of Inventions under the Patent System of the United States.

The patent system of the United States completed the ninety-eighth year of its existence on the tenth day of April, A. D. 1888. During this period the number of patents issued has been over three hundred and eighty thousand; an average of more than ten per day. Under the stimulus afforded by the protection given to the inventor, and by the vast fortunes realized by successful patentees, the inventive genius of the nation has been rapidly developed, and is increasing at an almost incredible rate.[1] Before A. D. 1837 the whole number of patents granted was about ten thousand; less than two hundred and twenty per year. The following table shows the rate of issue since that date, given in decades including 1876:

1837	to	1846	5,019
1847	"	1856	12,572
1857	"	1866	50,094
1867	"	1876	130,240

That this increase has been out of all proportion to the increase of population is evident from the following table, in which appears the population at each census year in the preceding decades, the number of patents granted in that year, and the ratio of patents to population:—

Census Year.	Population.	Patents.	Ratio.
1840	17,069,453	473	1 to 36,088
1850	23,191,876	993	1 " 23,308
1860	31,443,321	4,778	1 " 6,525
1870	38,558,371	13,333	1 " 2,894

In other words, the rate of the development of inventive genius in the United States, as exhibited by the operations of the Patent Office from 1840 to 1850 was six times, from 1850 to 1860 was nine times, and from 1860 to 1870 was thirteen times as great as the rate of increase in population.

Champlain Trans. Co. (1858), 31 Vt. 162; Rich *v.* Atwater (1844), 16 Conn. 409; and §§ 854–866, 1256, 1257 and notes, *post*.

§ 63. [1] See statement of the Progress of the Patent System of the United States in Commissioner's Report for 1887, 42 O. G. 616.

§ 64. Increase of Inventions due to Patent System.

Whatever other influences have contributed to this extraordinary increase in the efforts and triumphs of inventors, a powerful and permanent cause has undoubtedly existed in the patent system itself. A system which constantly calls the attention of the public to the progress of the industrial arts, and as constantly suggests new wants and new fields for investigation; which secures the inventor against the issue of a patent to another claimant until he has been heard as to his prior rights; and which affords him a thorough examination as to the novelty and usefulness of his invention by skilled and learned experts at an expense scarcely exceeding the week's wages of a laborer, may fairly be credited with a large proportion of that benefit which the nation has received from the inventions and discoveries of its citizens. History does not present a better illustration of the vast results which may flow from a few acts of wise and far-sighted legislation.

§ 65. Subdivisions of Patent Law.

In examining the details of this patent system, and attempting to define and classify the principles and rules of law by which its several departments are controlled, the following division of the subject will be pursued:—

I. Of Patentable Inventions.
II. Of Inventors and Patentees.
III. Of Letters-Patent.
IV. Of Wrongs and Remedies.

To each of which a separate Book will be devoted.

BOOK I.

OF PATENTABLE INVENTIONS.

BOOK I.

OF PATENTABLE INVENTIONS.

PRELIMINARY ANALYSIS.

§ 66. Patents Grantable only to the Persons and for the Objects Prescribed by Law.

THE right of an inventor to a patent depends entirely upon the provisions of positive law.[1] However valuable his discovery, however meritorious the service he has thereby rendered to the public, unless his invention falls within the scope of these provisions, it becomes, immediately upon its disclosure, the property of all mankind. That in peculiar cases great apparent hardship results from an adherence to this rule is no doubt true;[2] but such exceptional evils necessarily

§ 66. [1] This proposition is as correct in reference to the English patent system as in reference to our own. Whatever considerations of private justice or of public policy may have sustained the grant of letters-patent at common law, the statute of James I. abolished all such grants except in certain special cases. The effect of this exception in the statute was to place the excepted cases on the same footing as if no right existed, unless created by express statute; for though the statute has been uniformly regarded as declaratory of the common law, it has nevertheless been interpreted in this respect as a negative statute, excluding from this privilege every invention on which the privilege itself was not in terms conferred. The same severe interpretation has been properly applied to our own statutes, which rest entirely upon the positive provisions of the Constitution of the United States. This proposition, however, has no reference to rights *under* a patent, which are determined, in part at least, by the inherent nature of the subject and the fundamental principles of the common law. See § 10 and notes.

[2] Rarely in any case, within the history of the Patent Law, has the rigor of this rule been more apparent than in that of Morton *v.* The N. Y. Eye Infirmary (1862), 5 Blatch. 116. The plaintiff had discovered a method of rendering patients insensible to pain during surgical operations, and had thereby conferred inestimable benefits upon the whole race of man. Having procured a patent for his method, and attempted to enforce his apparent rights

attend all regulations which depart from the great principles of natural law, and seek by arbitrary measures to promote the common good.

§ 67. Patents Grantable only to Inventors: and to them only for Certain Inventions.

In this country the positive law, from which this right of the inventor is derived, is contained in the Constitution of the United States and in the Acts of Congress, as interpreted by the decisions of the Federal Courts. According to the Constitution, Congress has no power to grant a patent to any one but an inventor, and to him only for his own invention.[1] Even this limited power has been exercised by Congress only in respect to certain classes of inventions, and the privilege of the inventor is thus practically confined to particular results of his inventive skill.[2] Under our laws, therefore, as

against the defendant, the validity of his patent was disputed, *inter alia*, on the ground that such a discovery could not be protected under any existing provision of the law. In rendering a decision against the plaintiff upon this point, Shipman, J., said: (127) "But the beneficent and imposing character of the discovery cannot change the legal principles upon which the law of patents is founded, nor abrogate the rules by which judicial construction must be governed. These principles and rules are fixed, and uninfluenced by shades and degrees of comparative merit. They secure to the inventor a monopoly in the manufacture, use, and sale of very humble contrivances, of limited usefulness, the fruits of indifferent skill and trifling ingenuity, as well as of those grander products of his genius which confer renown on himself and extensive and lasting benefits on society. But they are inadequate to the protection of every discovery, by securing its exclusive control to the explorer to whose eye it may be first disclosed. A discovery may be brilliant and useful, and not patentable. No matter through what long, solitary vigils, or by what importunate efforts, the secret may have been wrung from the bosom of nature, or to what useful purposes it may be applied. Something more is necessary. The new force or principle brought to light must be embodied and set to work, and can be patented only in connection or combination with the means by which, or the medium through which, it operates." 2 Fisher, 320 (329).

See also the opinion of the Attorney-General (1856), 8 Op. Atty. Gen. 269.

Further, that an inventor has no exclusive right at common law but only by statute, see Comstock *v.* White (1860), 18 How. Pr. 421; Dudley *v.* Mayhew (1849), 3 Comst. 9; Higgins *v.* Strong (1836), 4 Blackf. (Ind.) 182.

§ 67. [1] Const. U. S. art. 1, § 8.

[2] Act 1790, § 1, "art, manufacture, engine, machine, or device, or any improvement therein." Act 1793, § 1, "art, machine, manufacture, or composition of matter," or an improvement therein. Act 1836, § 6, "art, machine,

they now exist and always have existed, the grantee of a patent must be an inventor, and its subject-matter must be one of those inventions which are specifically mentioned in the Acts of Congress.

§ 68. No Object can be an Invention unless it Results from an Inventive Act: no Person an Inventor unless he has Performed an Inventive Act.

An invention is the result of an inventive act; and an inventor is a person by whom an inventive act has been performed. The terms "invention" and "inventor" had acquired a definite legal meaning before our Constitution was adopted. It was in favor of "inventors" that the exception in the statute of James I. was made. In several early cases it was held that this name included only those who either by their own ingenuity and study had created, or by their researches in foreign countries had discovered and had then imported, something worthy of protection by the law.[1] The reason for thus

manufacture, or composition of matter," or improvement therein. Act 1870, § 24; Rev. Stat. 1874, § 4886.

§ 68. [1] At common law the importer and the inventor were regarded as of equal merit, since each gave to the public some useful manufacture which they did not before possess. Thus in Darcy *v.* Allin (1602), Noy, 173, the law is thus stated: (182) "Where any man by his own charge and industry, or by his own wit or invention, doth bring any new trade into the realm, or any engine tending to the furtherance of a trade, that never was used before, . . . the king may grant to him a monopoly patent . . . in consideration of the good he doth bring by his invention to the commonwealth, &c;" instancing Hastings's patent granted in 1567 "*in consideration* that he brought in the skill of making frisadoes as they were made in Harlem and Amsterdam," &c; also Matthey's patent, granted still earlier, for the sole making of knives with bone hafts, &c., "because . . . he brought the first use thereof from beyond seas." 1 Web. 5 (6); 1 Abb. P. C. 1.

The Smalt patents, granted 1606, were in consideration that the patentees had undertaken to manufacture in England "a blue stuff called smalt," which should be "as good, perfect, and merchantable as the same or like stuff called smalt, made, wrought and compounded in the parts beyond the seas and brought into this realm," &c.

Dudley's patent, granted 1622, was in consideration that Dudley had "at his great travail and industry and after many chargeable experiments found out the mystery, art, way, and means of melting iron ore . . . with sea coals or pit coals in furnaces with bellows, of as good condition as hath been heretofore made of charcoal," &c.

Mansell's patent, granted 1624, was in consideration of his having expended his whole fortune in developing the invention of one Percival for making glass with coal instead of wood.

Then came the stat. Jac. I., 1624,

placing an importer on the same plane of merit with a creator, if it ever was sufficient, ceased to be so when intimate commercial intercourse made the improvements of one nation the immediate property of others; but in the English law this classification has not changed, and the importer is still entitled to a patent. In the United States, however, the importation, by one man, of that which is accessible to all, has never been regarded as meriting the right to its exclusive public use, and hence the word "inventors" is in our law em-

authorizing a patent to the "first and true inventor or inventors of such manufactures," but excepting alike from the repealing clause of the statute, the Smalt patents, the Dudley and the Mansell patents, as being on the same ground of merit. This phrase in the statute received its construction in Edgebury *v.* Stephens (1691), 1 Web. 35; 2 Salk. 447, Holt and Pollexfen, JJ., saying: "The act intended to encourage new devices useful to the kingdom and whether learned by travel or by study it is the same thing." 1 Abb. P. C. 8. Following this ruling, Lombe's patent, granted 1719, was in consideration that he "did with the utmost difficulty and hazard, and at a very great expense, discover the arts of making and working the three capital engines made use of by the Italians to make their organzine silk, and did introduce those arts and inventions into this kingdom," &c.

This doctrine was constantly admitted in the courts by counsel and recognized in practice. In later cases it has also been affirmed. Thus in Walton *v.* Bateman, (1842), 1 Web. 613, Cresswell, J.: (615) "The party obtaining the patent must be the true and first inventor in this country. If he import from a foreign country that 'which others at the time of making of such letters-patent and grants did not use,' it will suffice." So, also, in Lamenaude's Patent (1850), 2 Web. 164, Lord Brougham: (169) "You may have a patent as the importer of a foreign invention, because that is the construction that the courts have put upon the statute that you are the *quasi* inventor, if you import it for the first time." See Lewis *v.* Marling (1829), 1 Web. 493; 1 Abb. P. C. 421; Minter *v.* Wells (1834), 1 Carp. 622; 2 Abb. P. C. 26; Stead *v.* Williams (1843), 2 Web. 126; Beard *v.* Egerton (1846), 3 C. B. 97; Nickels *v.* Ross (1849), 8 C. B. 679.

The extent to which this doctrine has been carried may be gathered from the decision in Wirth's patent (1879), L. R. 12 Ch. 303, where it was held that an alien resident abroad may take a patent in England for an invention communicated to him by another alien resident abroad; though one who learns the invention in England from another is neither an inventor nor an importer. See Marsden *v.* Saville Co. (1878), L. R. 3 Ex. D. 203.

At the same time, the actual difference between the merit of the inventor and importer is in some cases recognized, especially in reference to the extension of the patent privilege beyond the first life of the patent; the claims of an inventor being in such cases regarded as entitled to greater consideration. See Soames' Patent (1843), 1 Web. 729.

See also Coryton, chap. iii.; Norman, chap. vi.

ployed in its first meaning only, and is confined to those by whom creative skill and genius have been exercised.[2] It is the exercise of this creative skill alone which is here recognized as an inventive act, and only the result of such an act, so far perfected as to be available for public use, is an invention. In every question whether or not a given person is an inventor, or a given thing an invention, the test is, therefore, found in the nature of the act performed by the one, or resulting in the other. If the act is what the law regards as an inventive act, the actor is an inventor and the result is an invention. If the act is not in law an inventive act, neither the actor nor his production are entitled to the protection afforded by a patent.

§ 69. No Invention Patentable unless Embraced within one of the Prescribed Classes.

Before our patent system was established, the line was also clearly drawn between those results of the inventive act which constitute the proper subject-matter of a patent, and those to which the law gives no protection. The English statute

[2] In this exclusion of the importer from the privilege of a patent Congress inaugurated that departure from the fundamental idea of the English courts, concerning the true relation between the inventor and the public, which has exercised such an important influence over many of our subsequent ideas. Under the English theory the merit of the inventor was not in the exercise of his inventive genius creating new manufactures, but in the rendering of new manufactures, by whomsoever created, accessible to the public. The consideration, therefore, for the issue of the patent was simply publication, not creation; and this principle colors the decisions of the courts on all questions of prior use, prior knowledge, abandonment, etc., as well as those of novelty. But, in this country, a different principle has been established. The act of 1790 authorized a patent to inventors only for something "not before known or used," and this phrase being regarded by the courts as including knowledge or use at any time or in any country, no mere importer could receive a patent, since the invention must have been at some time and somewhere "before known and used." The privilege was thus restricted to inventors proper; that is, to those who had created that which did not before exist, and the merit of creation was thus substituted in the American theory for that of publication, though not, as we shall see hereafter, to the total exclusion of the latter. The effect of this change of theory is manifest in our doctrines of prior use and publication, of novelty in the thing invented, and of priority of right as between rival inventors. See Phillips 59; Godson, 54–56.

groups the former under the general name of "manufacture," but this was early held to include not merely a vendible product of inventive skill, but also a method of applying physical forces to the production of physical effects.[1] Congress adopted the same ideas in its description of the inventions for which patents might be granted. It enumerates them as an art, a machine, a manufacture, a composition of matter, a

§ 69. [1] In Boulton *v.* Bull (1795), 2 H. Bl. 463, Eyre, C. J.: (492) "It was admitted in the argument at the bar, that the word '*manufacture*' in the statute (21 Jac. I., c. 3), was of extensive signification, that it applied not only to things made, but to the practice of making, to principles carried into practice in a new manner, to new results of principles carried into practice. Let us pursue this admission. Under things made, we may class in the first place, new compositions of things, such as manufactures in the most ordinary sense of the word; secondly, all mechanical inventions, whether made to produce old or new effects, for a new piece of mechanism is certainly a thing made. Under the practice of making we may class all new artificial manners of operating with the hand, or with instruments in common use, new processes in any art, producing effects useful to the public." 1 Abb. P. C. 59 (87).

This classification of C. J. Eyre evidently includes an art, machine, manufacture, and composition of matter. That a design is an invention relating to the industrial arts, and consequently the proper subject-matter of a patent, was a subsequent conception both in the American and English law. The patentability of an improvement upon an existing invention was, in the earlier history of the law, denied. Lord Coke, who was chairman of the Committee on the passage of the stat. Jac. I., commenting upon that statute in 3 Inst. 184, says: "The privilege must not be contrary to law; such a privilege as is consonant to law must be substantially and essentially newly invented, but if the substance was *in esse* before, and a new addition thereunto, though that addition make the former more profitable, yet it is not a new manufacture in law; and so was it resolved in the Exchequer Chamber, Pasch. 15 Eliz. in Bircot's case, for a privilege concerning the preparing and melting, &c., of lead ore, for there it was said that it was but to put a new button to an old coat, and it is much easier to add than to invent; and it was there also resolved, that if the new manufacture be substantially invented according to law, yet no old manufacture in use before can be prohibited." This position was controverted by Lord Mansfield in Morris *v.* Bransom (1776), Bull. N. P. 76 *c.*; 1 Web. 51; 1 Abb. P. C. 21; and by Buller, J., in Boulton *v.* Bull (1795), 2 H. Bl. 463 (488); 1 Abb. P. C. 59 (83), and the error attributed to the ignorance of the age concerning the true nature of an invention, since which decision the patentability of an improvement as well as an original invention has been generally recognized.

For further classifications of patentable inventions under the English law, see Godson, 58; Holroyd, 33; Web. Law and Prac. Supp. 1, &c.; Coryton, 57; Norman, 7; Lund, 6; Morgan *v.* Seaward (1837), 1 Web. 187; 2 Abb. P. C. 419.

design, and an improvement upon some art, machine, manufacture, composition of matter, or design.[2] All other discoveries and inventions, however valuable and important, are subject to the operation of the natural law.

§ 70. No Invention Patentable unless New and Useful.

A further limitation on the patentability of inventions is found in the provision of the statute of James I. that a manufacture is entitled to protection only when it is "new," [1] and

[2] The admirable classification contained in the present American statute was not reached without previous futile endeavors to enumerate the objects covered by the spirit and purpose of the law. In the act of 1790 they were described as an "art, manufacture, engine, machine, or device, or any improvement thereon." The terms here employed were evidently chosen without reference to their exact meaning, and have a remarkable correspondence to some of those then current in the English courts. The words "engine" and "device" convey no idea not embraced in "manufacture" and "machine," and no phrase is introduced which clearly covers a substance formed by the intermixture of ingredients, though this could have been here, as it was in England, included under "manufacture." During the interval between this act and that of 1793, the matter was sufficiently elucidated to enable Congress in the latter act to specify the great classes of inventions, according to their radical distinctions, and to arrange their statement in an order expressing their scientific relations to each other, — a classification unsurpassed by that of any other patent system, and probably, in the very nature of things, incapable of improvement. See *Ex parte* Blythe (1884), 30 O. G. 1321.

§ 70. [1] Under the stat. Jac. I., the patentable subject-matter was the "sole working or making of any manner of new manufacture within this realm." Whether the phrase "within this realm" was intended to qualify the "working or making" and thus define the territorial limits of the patent privilege, or to make patentable any manufacture which was new within the realm, is not apparent from the language of the statute. The courts, assuming that the former rule needed no expression, adopted the latter interpretation, and regarded every manufacture not already known in the kingdom as new, however well known it might be in other lands. This doctrine required a wider extension of the term "inventor" than is embraced within its ordinary meaning, and a limitation of the further provision "which others at the time of the making of such letters-patents and grants did not use" to the people of the realm, although no words to that effect appear in the statute. If the courts had held the phrase "within the realm" as referring to the scope of the monopoly instead of the locality within which the invention must be new, and consistently with this view had insisted that the manufacture must not have been before in use by any person in any country, and that the patentee must have been its actual inventor, in the sense of its creator, the English statute would have substantially represented our own law as it stood until the act of 1836.

neither "contrary to the law, nor mischievous to the state, by raising prices of commodities at home, or hurt of trade, or generally inconvenient."[2] Our statute has expressed the same idea in the phrase "new and useful,"[3] making the novelty and utility of the result of the inventive act additional conditions of its patentability. The language of our courts might sometimes lead the incautious reader to imagine that the novelty and utility here required were to be taken as the tests by which the presence or the absence of the inventive act could always be determined.[4] Yet such is not the case.

[2] The language of the stat. Jac. I., in reference to this requisite of a patentable invention is particularly significant. It was designed to exclude from protection not only every illegal manufacture, and those which tended to raise the price of commodities or to injure trade, but all those which on any ground were generally inconvenient. Lord Coke, in commenting on this requirement in 3 Inst. 184, instances an invention of labor-saving machinery, whereby persons hitherto employed were deprived of work, as falling within the prohibition, because "it was holden inconvenient to turn so many laboring men to idleness." Unreasonable as this may now appear, it illustrates the fundamental theory of the law, that the patent privilege exists for the public benefit and not for that of the inventor, and that whatever merit his discovery may possess in itself, if the community are not advantaged by its use, the government is not justified in encouraging the inventor to disclose it by offering him the protection of a patent.

[3] In the act of 1790 the word "new" is not applied adjectively to the invention, the idea being represented by the verbs "invented or discovered," and the qualifying phrase "not before known or used." It appears, however, in the act of 1793 and in all subsequent statutes. That the invention must be "useful" has always been expressly stated.

[4] Where the advantage derived by the public from an invention is considered as the only or the chief reason for the allowance of the patent privilege, the presence of inventive skill is either not regarded or is inferred from the utility and novelty of the invention. In England, therefore, it is generally presumed when the art or article is found to possess the statutory requisites for patentability. In this country, until recently, the same position has been maintained. In the learned work of Mr. Curtis (edition of 1867), § 32, the view then entertained of this subject is stated in the following sentences: "It may be doubted, whether all the different forms of stating or investigating the question of sufficiency of invention are anything more than different modes of conducting the inquiry, whether the particular subject of a patent possesses the statute requisites of *novelty* and *utility*, both of which qualities must be found uniting in it. . . . While the law does not look to the mental process by which the invention has been reached, but to the character of the result itself, it may still require that the result should be such as not to exclude the possibility of some skill or ingenuity having been exercised. It

Inventive skill may be involved in the production of an object which, though hitherto unknown to the inventor, is already in possession of the public; and even greater genius may be manifested in devising mischievous and destructive agencies than in creating those which aid in the advancement of mankind. But in order to entitle an inventor to a patent the inventive act must not merely be performed; it must be performed in such a manner and for such a purpose as to benefit the public by bestowing something on them which they do not before possess, and which when they receive it will tend to their advantage; or, in the briefer phrase, the result of the inventive act must be both "new and useful."

§ 71. No Invention Patentable if already Abandoned to the Public.

Finally, the patent privilege undergoes another limitation in the provision that no invention, which has already passed from the control of the inventor into the possession of the public, is entitled to protection. The English statute expresses this condition in the declaration that the "manufacture" must be such as "others, at the time of making such letters-patent

requires this, because it requires that the subject-matter of a patent shall be something that has not substantially existed before, and is useful in contra-distinction to being frivolous."

The later American cases, however, have drawn the line sharply, as will be shown hereafter (§§ 78–86 and *notes*), between those new and useful productions which could have resulted from the exercise of mechanical or constructive skill and those to which the employment of the inventive faculties is necessary. Thus it is no longer the rule that where the nature of the invention does not exclude the exercise of the creative powers its origin in them will be presumed (Curt. §§ 32, 34, 36, 40). On the contrary, it must affirmatively appear that the inventive faculties alone could have produced the art or article, and for this purpose its novelty and utility may be considered, not as direct evidence, but as the minor premiss of a syllogism whose major asserts that if mechanical genius could provide an instrument or operation of such value and importance in the arts it would have long before been in existence and subjected to the use of man.

The distinction between "intrinsic novelty" and "legal novelty" drawn in § 113 *post*, is here important. The confusion of the two is evident in the last portion of the citation from Curtis, *ante*. The "statute requisite of novelty" is not the same as that novelty which consists in the fact that the invention "has not substantially existed before."

and grants, shall not use."[1] The Acts of Congress, though varying from time to time the terms of this requirement[2] as well as their description of the conduct by which the abandonment of the invention to the public may be indicated, have uniformly recognized this rule, and made the inventor's retention of control over his own discovery an essential element in his right to its protection. The reason of this rule is evident, since if the inventor has already dedicated his invention to the public, he cannot afterwards bestow it upon

§ 71. [1] The doctrine that the "abandonment" of an invention, or its dedication to the public, is fatal to the claim of the inventor for a patent is as well recognized in the English law as in our own, although the technical language of our statutes gives greater prominence to the rule. The stat. Jac. I., by excluding from the privilege all inventions except those "which *others* at the time of the making of such letters-patents and grants *did not use*," can scarcely have been intended to repeat the previous requirement, that a patentable manufacture must be "new." But as an invention, however new at the date of its conception or importation, might easily have passed into use by others, and thus have become public property, before the patent had been granted, it was essential to provide that no issue of a patent should deprive the public of the advantage they already had attained, by making it a condition of the grant that no such use should have occurred. This view of the provision has uniformly been enforced in the British courts. Wood *v.* Zimmer (1815), Holt, N. P. 160; 1 Abb. P. C. 202; Household Co. *v.* Neilson (1843), 1 Web. 673. In the latter case Lord Brougham says: "The statute excludes from a patent the true inventor who shall have made the invention so public that others, at the time of granting the patent, shall use the invention" (note 719).

[2] Act of 1790, "not before known or used."

Act of 1793, "not known or used before the application." In several cases this phrase has been treated as relating to the question of novelty rather than that of abandonment, and as in effect a repetition of the adjective "new," already stated in the act to be an essential condition of patentability. Morris *v.* Huntington (1824), 1 Paine, 348; 1 Robb, 448; Mellus *v.* Silsbee (1825), 4 Mason, 108; 1 Robb, 506; Treadwell *v.* Bladen (1827), 4 Wash. 703; 1 Robb, 531, &c. In others its relation to the doctrine of abandonment more definitely appears. Whitney *v.* Emmet (1831), Baldwin, 303; 1 Robb, 567; Shaw *v.* Cooper (1833), 7 Peters, 292; 1 Robb, 643, &c.

Act of 1836, "not, at the time of his application for a patent, in public use or on sale, with his consent or allowance."

Act of 1839, "no patent shall be held to be invalid by reason of such purchase, sale, or use prior to the application, . . . except on proof of abandonment of such invention to the public; or that such purchase, sale, or prior use has been for more than two years prior to such application for a patent."

Act of 1870, "not in public use or on sale for more than two years prior to his application, unless the same is proved to have been abandoned."

them as a consideration for the grant to him of its exclusive use.[8]

§ 72. Essential Characteristics of a Patentable Invention.

The characteristics of a patentable invention, as they appear from this analysis of the provisions of the law, are these: (1) It must be the result of an inventive act, so far perfected as to become available for public use; (2) It must belong to one of those great classes of inventions, which Congress has declared to be the subjects-matter of a patent; (3) It must be new; (4) It must be useful; (5) It must not have been abandoned to the public by the inventor.[1] Hence in considering inventions in detail, and in examining the various principles and rules by which their patentability is to be determined, these topics will require attention: —

I. Of the nature and result of the inventive act.
II. Of the classes of inventions legally entitled to protection.
III. Of novelty.
IV. Of utility.
V. Of the abandonment of the invention to the public.

[8] 1 Web. (720, n.): "What has once been given to the public cannot be resumed; the public being in possession of any species of knowledge, there is no consideration for the exclusive privileges granted by subsequent letters-patent; there is no fresh knowledge to be communicated to the public through the medium of the specification, to constitute the consideration upon which the letters-patent are granted; such knowledge being the price and bargain for the grant, or that which the public get in return for the limited monopoly."

The necessity for this rule is so evident, and the reasons on which it is based are so forcible, that in its application the courts have been inclined to restrict even the rights which grow out of priority of inventive act and of good faith on the part of the inventor, when they come in conflict with an already acquired possession of the invention by the public. See § 357 and notes.

§ 72. [1] In Earle *v.* Sawyer (1825), 4 Mason, 1, Story, J.: (6) "The thing to be patented is not a mere elementary principle, or intellectual discovery, but a principle put in practice, and applied to some art, machine, manufacture, or composition of matter. It must be *new*, and not *known* or *used* before the application; that is, the party must have found out, created, or constructed some art, machine, &c., or improvement on some art, machine, &c., which had not been previously found out, created, or constructed by any other person. . . . It must also be useful, that is, it must not be noxious or mischievous, but capable of being applied to good purposes; and perhaps it may also be a just interpretation of the law that it meant to exclude things absolutely frivolous and foolish." 1 Robb, 490 (495).

§ 73. Difficulties of the Subject Caused by Failure to Apprehend the True Nature of an Invention.

In discussing these topics we shall encounter certain difficulties, inseparable from any system of positive law which attempts to regulate matters relating to imperfectly understood mental or physical facts. Such systems are not the development of evident and necessary truths, but are built up through the interpretations given by the courts to the terms in which the arbitrary will of the legislative body is expressed; terms not always carefully selected, nor accurately adapted to the subjects which they are intended to control.[1] In all such cases, the nature of the fact to which the law relates, as well as the reason of the law and the principles by which its application must be governed in order that the system may be permanent and beneficial to the state, are of gradual and late discovery; and the efforts of the courts to grasp and formulate them are characterized by many apparent

§ 73. [1] In reference to no body of law can this proposition be more true than in regard to the English and American law of patents. The law itself was formulated at a period when the fact to which it relates was comparatively little understood, and though the language used was in itself sufficiently clear, the interpretations of it which became necessary, in order to carry out its spirit and intent, depended too much on the essential characteristics of its subject-matter not to suffer in precision and completeness from the general want of exact information in reference to the real nature of an invention. The law itself undertook to protect an invention in the hands of its inventor for a certain time, in consideration of its disclosure to the public; and all its terms and implications were, therefore, to be construed in such a manner as to accomplish this result. In every general interpretation of the law the questions presented were: What is an invention? What is an inventor? and What is a bestowal of the invention on the public? In every special application of the law the courts were called upon to determine whether the object protected was an invention; whether the patentee was an inventor, and whether he had fulfilled his duty by rendering the invention accessible to the public. All of these are questions of fact, reducible in most instances to one; viz., Is that which the patentee has created or imported and published, an invention? To answer this question a thorough knowledge of the nature of an invention, as a fact in the arts, is of course essential. Whatever legal learning may accomplish in the effort to construe and apply the language of the law, it is evident that no reliable result can be attained without this knowledge. And an examination of the cases chronologically will satisfy the investigator that the development of this legal system has been dependent upon and determined by the development of knowledge concerning the true essential characteristics of the subject-matter to which the law relates.

contradictions, by much uncertainty of language, and by the frequent confusion of ideas which are, in themselves, essentially dissimilar. These difficulties are perhaps less formidable in the present system than in any other, owing partly to its narrow limits, partly to the fortunate expressions which are contained in both the American and English statutes, but they nevertheless exist; and hence, in the examination of the text-books and reported cases, the exercise of constant caution becomes necessary, lest by the overlapping and interlacing of propositions which are really distinct, or by the substitution of the rules governing one branch of the subject for those which properly control another, the reader should be needlessly misled. To remedy as far as possible these evils, our own examination of the system will begin with an endeavor to ascertain the nature and essential attributes of an invention.

CHAPTER I.

OF THE NATURE AND ESSENTIAL ATTRIBUTES OF AN INVENTION.

§ 74. An Invention is an Unchangeable Fact to which the Law must Conform: Its Comprehension essential to a Comprehension of the Law.

The one unchangeable factor in all legal questions relating to inventions is the invention itself. An invention is either a physical operation or a physical instrument, and as such its essential characteristics are determined by the laws of nature. No human legislation, no judicial interpretation, can increase, modify, or diminish its necessary attributes, and no legal doctrine concerning it can be correct which is based upon a partial or erroneous view of those inherent qualities that differentiate it from all other actual or possible inventions. What is thus true of individual inventions is true of all inventions, considered as a class of agencies employed by man for the production of physical effects. An invention, in that it is an invention, possesses certain attributes without which it could not be an invention, — attributes which the law cannot alter, and which it cannot ignore with any prospect of arriving at reliable conclusions upon any problem that relates to inventions. A clear and accurate apprehension of these necessary attributes is, therefore, the first step in any investigation of the principles and rules of Patent Law, as well as the only guide to the solution of those difficulties which the practical application of that law presents.

§ 75. True Nature of an Invention but Recently Disclosed.

It is not the least remarkable feature in the history of our Patent Law, that this fundamental conception has been the latest in definition and development of any connected with inventions. The earlier courts contented themselves with the

construction of the statutes, and with the decision of the individual cases presented to them, according to the crude notions of physical agencies which then prevailed. As new questions arose, not of law merely but of law as interpreted by the subject-matter to which it related, they were compelled to penetrate more and more deeply into the mysteries of nature and examine the inherent properties of the instruments and operations whose identity or diversity was to be determined, until within the past few years the essential characteristics of an invention itself have been elucidated and established as the foundation on which the entire structure of legislation and interpretation rests. To our own courts, and to certain of their able and experienced judges whose opinions will be freely cited in the following pages, is this great advancement toward a correct and exhaustive knowledge of the law of patents for inventions largely due.

§ 76. Nature of an Invention Ascertained by Examining the Inventive Act from which it Results.

No apprehension of an effect can be more perfect than that which is obtained through an examination of its cause. An invention is the effect of an inventive act, and it has been by passing from the study of the invention — the effect, to that of the inventive act — its cause, that the great progress in our modern understanding of the subject has been achieved. Every invention has its origin in man. It is his addition to the agencies already existing in nature, and owes to him its generation, its birth, its growth, and its application to the purposes for which it was designed. Beyond the brain which conceives and the hand which fashions it human investigation cannot penetrate. We must be satisfied to pause when we have discerned the mental processes and manual operations which result in an invention, and have learned from them the essential characteristics which every invention must possess. To the inventive act we therefore turn our attention, as furnishing to us a correct and definite apprehension of the attributes which must be found in every true invention.

§ 77. Inventive Act Twofold: Mental and Physical.

Every invention contains two elements: (1) An idea conceived by the inventor; (2) An application of that idea to the production of a practical result.[1] Neither of these elements is alone sufficient. An unapplied idea is not an invention. The application of an idea, not original with the person who applies it, is not an invention. Hence, the inventive act in reality consists of two acts; one mental, the conception of an idea; the other manual, the reduction of that idea to practice.[2] It is especially in the mental act that the questions which confront us find their answer.

SECTION I.

OF THE MENTAL PART OF THE INVENTIVE ACT.

§ 78. Mental Part of Inventive Act Includes an Exercise of the Creative Faculties, Generating a new Idea.

The mental faculties employed in the inventive act are the *creative* not the *imitative* faculties.[1] An invention is the

§ 77. [1] In Horton *v.* Mabon (1862), 12 C. B. N. S. 437, Willes, J.: "The invention consists in the idea, and the mode in which the idea is made of practical utility." *Cited* Higgins, § 88.

[2] That the inventive act consists in conceiving an idea and reducing it to practice, see Adams *v.* Edwards (1848), 1 Fisher, 1; Thomas *v.* Weeks (1827), 2 Paine, 92.

§ 78. [1] In May *v.* County of Fond du Lac (1886), 27 Fed. Rep. 691, Dyer, J.: (695) "To be patentable, a thing must not only be new and useful, but must amount to an invention or discovery."

In Rosenwasser *v.* Berry (1885), 22 Fed. Rep. 841, Colt, J.: (843) "Not every improvement is invention; but to entitle a thing to protection it must be the product of some exercise of the inventive faculties, and it must involve something more than what is obvious to persons skilled in the art to which it relates."

In Conover *v.* Roach (1857), 4 Fisher, 12, Hall, J.: (16) "An invention in the sense of the patent law, as I understand it, means the finding out — the contriving, the creating . . . of something which did not exist, and was not known before, and which can be made useful and advantageous in the pursuits of life, or which can add to the enjoyment of mankind."

In Ransom *v.* The Mayor of New York (1856), 1 Fisher, 252, Hall, J.: (265) "Invention, in the sense of the patent law, is the finding out, contriving, devising, or creating something new and useful, which did not exist before, by an operation of the intellect."

That not every new thing is an in-

product of original thought. It involves the spontaneous conception of some idea not previously present to the mind of the inventor. Industry in exploring the discoveries and acquiring the ideas of others; wise judgment in selecting and combining them; mechanical skill in applying them to practical results; none of these are creation, none of these enter into the inventive act.[2] Only when the mind of

vention, see Landesmann *v.* Jonasson (1887), 32 Fed. Rep. 590.

[2] In Hollister *v.* Benedict Mfg. Co. (1884), 113 U. S. 59, Matthews, J.: (73) "As soon as the mischief became apparent, and the remedy was seriously and systematically studied by those competent to deal with the subject, the present regulation was promptly suggested and adopted, just as a skilled mechanic, witnessing the performance of a machine, inadequate, by reason of some defect, to accomplish the object for which it had been designed, by the application of his common knowledge and experience, perceives the reason of the failure, and supplies what is obviously wanting. It is but the display of the expected skill of the calling, and involves only the exercise of the ordinary faculties of reasoning upon the materials supplied by a special knowledge, and the facility of manipulation which results from its habitual and intelligent practice; and is in no sense the creative work of that inventive faculty which it is the purpose of the Constitution and the patent laws to encourage and reward."

In this opinion the same justice accurately defines inventive skill as "that intuitive faculty of the mind put forth in the search for new results, or new methods, creating what had not before existed, or bringing to light what had lain hidden from vision," as opposed to a "suggestion of that common experience which arose spontaneously and by a necessity of human reasoning in the minds of those who had become acquainted with the circumstances with which they had to deal."

In Atlantic Works *v.* Brady (1883), 107 U. S. 192, Bradley, J.: (199) "The process of development in manufactures creates a constant demand for new appliances, which the skill of ordinary head-workmen and engineers is generally adequate to devise, and which, indeed, are the natural and proper outgrowth of such development. Each step forward prepares the way for the next, and each is usually taken by spontaneous trials and attempts in a hundred different places. To grant to a single party a monopoly of every slight advance made, except where the exercise of invention, somewhat above ordinary mechanical or engineering skill, is distinctly shown, is unjust in principle and injurious in its consequences. The design of the patent laws is to reward those who make some substantial discovery or invention, which adds to our knowledge and makes a step in advance in the useful arts. Such inventors are worthy of all favor. It was never the object of those laws to grant a monopoly for every trifling device, every shadow of a shade of an idea, which would naturally and spontaneously occur to any skilled mechanic or operator in the ordinary progress of manufactures." 23 O. G. 1330 (1332).

In Smith *v.* Elliott (1872), 1 O. G. 331, Woodruff, J.: (332) "The law, however, gives no monopoly to industry, to wise judgment, or to mere me-

the inventor originates an idea new to himself, if not to

chanical skill in the use of known means, nor to the product of either if it be not new. These are within the proper field of competition, and open to all. In general they will in that competition be justly appreciated, and will command their proper remuneration if usefully employed. It is invention of what is new, and not comparative superiority or greater excellence in what was before known, which the law protects as exclusive property, and it is that alone which is secured by patent. . . . (333) On that subject it should be observed that there are many changes which may be suggested by the judgment or taste of the manufacturer, or by the particular uses to which the article produced is to be applied, which are not invention; and many exhibitions of superior skill in producing an article of greater excellence, which are not invention. Thus, if a fabric be already known and in use, change of color, change of mere material, change in its degree of fineness, or in the fineness of the parts thereof, if these changes involve nothing new in construction, nor in the relations of its parts, nor in the office or function of either part, the whole do not constitute invention, although for many purposes these may constitute the greater excellence of the fabric." 9 Blatch. 400 (403); 5 Fisher, 315 (318).

In Tatham *v.* Le Roy (1852), 2 Blatch. 474, Nelson, J.: (488) "In order to ascertain and determine whether the change in the arrangement and construction of an existing machine is to be considered as a substantial change or not, you must ascertain and determine whether the change is the result of mechanical skill, worked out by mechanical devices — of a knowledge that belongs to that department of labor — or whether the change is the result of mind, of genius, of invention, in which you discover something more than mere mechanical skill and ingenuity. A change in the arrangement and construction is not substantial, unless you find embodied in it, over and beyond the skill of the mechanic, that inventive element of the mind which is to be found in every machine or improvement that is the proper subject of a patent. If you find that, then the change is a substantial one, that entitles the party to a patent."

That the exercise of inventive as distinguished from mechanical skill is essential to constitute an inventive act, see Leonard *v.* Lovell (1886), 29 Fed. Rep. 310; Celluloid Mfg. Co. *v.* Comstock & Cheney Co. (1886), 27 Fed. Rep. 358; 36 O. G. 1356; Aron *v.* Manhattan Ry. Co. (1886), 26 Fed. Rep. 314; 34 O. G. 1508; Hartford Woven Wire Mattress Co. *v.* Peerless Wire Mattress Co. (1885), 23 Blatch. 227; Washburn & Moen Mfg. Co. *v.* Grinnell Wire Co. (1885), 24 Fed. Rep. 23; Ames *v.* Carlton Spring Bed Co. (1885), 24 Fed. Rep. 785; 32 O. G. 1238; Kappes *v.* Hartung (1885), 23 Fed. Rep. 187; 32 O. G. 652; 23 Blatch. 152; Phillips *v.* Carroll (1885), 23 Fed. Rep. 249; 31 O. G. 265; Hollister *v.* Benedict Mfg. Co. (1885), 113 U. S. 59; Celluloid Mfg. Co. *v.* Chrolithion Collar & Cuff Co. (1885), 23 Fed. Rep. 397; 31 O. G. 519; 23 Blatch. 205; Rosenwasser *v.* Berry (1885), 22 Fed. Rep. 841; Mosler Safe & Lock Co. *v.* Mosler (1885), 31 O. G. 1689; 22 Fed. Rep. 901; Spill *v.* Celluloid Mfg. Co. (1884), 21 Fed. Rep. 631; 22 Blatch. 441; Nicodemus *v.* Frazier (1884), 19 Fed. Rep. 260; Thompson *v.* Boisselier (1884), 114 U. S. 1; 31 O. G. 377; Estey *v.* Burdett (1884), 109 U. S. 633; 26 O. G. 637; Morris *v.* McMillin (1884), 112 U. S. 244; 29 O. G. 951; Phillips *v.* Detroit

all the world, does he call into exercise his own inventive

(1884), 111 U. S. 604; Double Pointed Tack Co. *v.* Two Rivers Mfg. Co. (1883), 109 U. S. 117; 25 O. G. 1075; National Mfg. Co. *v.* Myers (1883), 23 O. G. 1443; 15 Fed. Rep. 237; Wood *v.* Packer (1883), 17 Fed. Rep. 650; Slawson *v.* Grand St. R. R. Co. (1883), 107 U. S. 649; 24 O. G. 99; Clark Pomace Holder Co. *v.* Ferguson (1883), 21 Blatch. 376; 17 Fed. Rep. 79; 24 O. G. 1090; Wallace *v.* Noyes (1882), 23 O. G. 435; 21 Blatch. 83; 13 Fed. Rep. 172; MacKay *v.* Jackman (1882), 22 O. G. 85; 12 Fed. Rep. 615; 20 Blatch. 466; Atlantic Works *v.* Brady (1882), 107 U. S. 192; 23 O. G. 1330; Bruce *v.* Marder (1882), 22 O. G. 1039; 20 Blatch. 355; 10 Fed. Rep. 750; Packing Co. Cases (1881), 105 U. S. 566; 21 O. G. 1689; Pratt *v.* Rosenfeld (1880), 21 O. G. 866; 3 Fed. Rep, 335; 18 Blatch. 234; 5 Bann. & A. 488; Pearce *v.* Mulford (1880), 102 U. S. 112; 18 O. G. 1223; Dunbar *v.* Myers (1876), 94 U.S. 187; 11 O. G. 35; Stimpson *v.* Woodman (1869), 10 Wall. 117.

That inventive skill and mechanical skill are not easily distinguishable, though the former creates a new idea while the latter employs an old one, see New York Belting & Packing Co. *v.* Magowan (1886), 27 Fed. Rep. 362; 34 O. G. 1159.

That small discoveries may involve inventive skill, see Hobbie *v.* Smith (1886), 27 Fed. Rep. 656.

That study, effort, and experiment are not alone enough to constitute inventive skill, see Butler *v.* Steckel (1886), 27 Fed. Rep. 219; 36 O. G. 455.

That good judgment is not inventive skill, see Estey *v.* Burdett (1884), 109 U. S. 633; 26 O. G. 637.

That reasoning processes are not inventive processes, see Watson *v.* Cincinnati, I., St. L. & C. R. R. Co. (1885), 23 Fed. Rep. 443.

That to use well known materials in conjunction with each other, as mechanics usually do, may show judgment but is not invention, see Welling *v.* Crane (1882), 23 O. G. 189; 14 Fed. Rep. 571.

That to relieve an existing invention from long known and grievous defects is invention, see Asmus *v.* Alden (1886), 27 Fed. Rep. 684; 36 O. G. 231.

That a mere working caution or direction, though if followed it will improve existing modes of operation, is not an invention, see Patterson *v.* Gas Light & Coke Co. (1876), L. R. 2 Ch. 812.

That a mere mode of packing is not an invention, see Forncrook *v.* Root (1884), 29 O. G. 774; 21 Fed. Rep. 328; King *v.* Gallun (1883), 109 U. S. 99; 25 O. G. 980.

But that a mode of packing, producing useful results, may be an invention, see Eppinger *v.* Richey (1877), 14 Blatch. 307; 12 O. G. 714; 3 Bann. & A. 69.

That a mode of arranging and presenting for sale is not an invention, see Pratt *v.* Rosenfeld (1880), 5 Bann. & A. 488; 21 O. G. 866; 18 Blatch. 234; 3 Fed. Rep. 335; King *v.* Frostel (1879), 4 Bann. & A. 236; 8 Bissell, 510; 16 O. G. 956; Reed *v.* Reed (1875), 8 O. G. 193; 12 Blatch. 366; 1 Bann. & A. 515; Langdon *v.* De Groot (1822), 1 Paine, 203; 1 Robb, 433.

That the making of part of a known thing is not invention, see Seligman *v.* Day (1876), 2 Bann. & A. 467; 14 Blatch. 72.

That the mere casting in one piece what was formerly cast in two is not invention, see Ormson *v.* Clarke (1862), 13 C. B. N. S. 337.

That to employ the instinct of animals to apply force to existing machines is not an invention, see Merrill *v.* Cousins (1866), 26 U. C. Q. B. 49.

skill, and perform the mental portion of the inventive act.[3]

That the discovery of a method of arranging patterns on the material so as to cut it up for use without waste is not invention, see Walker *v.* Rawson (1879), 4 Bann. & A. 128.

That using the same thing on a larger scale is not invention, see Braiuard *v.* Evening Post Association (1884), 22 Blatch. 61 ; 19 Fed. Rep. 422.

That to increase power by substituting compound for simple levers is not invention, see Puetz *v.* Bransford (1887), 31 Fed. Rep. 458.

[8] In Earle *v.* Sawyer (1825), 4 Mason, 1, Story, J., apparently disputes the doctrine of intellectual creation, and refers the creative act to the actual machine or other instrument produced. Thus he says, speaking of the claims of the defendant, which he overrules : (5) "The whole argument, upon which this doctrine is attempted to be sustained, is, if I rightly comprehend it, to this effect. It is not sufficient, that a thing is new and useful, to entitle the author of it to a patent. He must do more. He must find it out by mental labor and intellectual creation. If the result of accident, it must be what would not occur to all persons skilled in the art, who wished to produce the same result. There must be some addition to the common stock of knowledge, and not merely the first use of what was known before. . . . An invention is the finding out by some effort of the understanding." He then denies this proposition as follows : "It did not appear to me at the trial, and does not appear to me now, that this mode of reasoning upon the metaphysical nature, or the abstract definition of an invention, can justly be applied to cases under the Patent Act. That Act proceeds upon the language of common sense and common life, and has nothing mysterious or equivocal in it. . . . (6) The thing to be patented is not a mere elementary principle, or intellectual discovery, but a principle put in practice, and applied to some art, machine, manufacture, or composition of matter. It must be *new*, and not *known* or *used* before the application ; that is, the party must have found out, created, or constructed some art, machine, &c., . . . which had not been previously found out, created, or constructed by any other person. It is of no consequence, whether the thing be simple or complicated ; whether it be by accident, or by long, laborious thought, or by an instantaneous flash of the mind, that it is first done. The law looks to the fact, and not to the process by which it is accomplished. It gives the first inventor, or discoverer of the thing, the exclusive right, and asks nothing as to the mode or extent of the application of his genius to conceive or execute it." 1 Robb, 490 (494).

If the difference between the court and counsel were other than a mere verbal one, it is evident, in the light of later decisions, that the views of the learned judge were incorrect. The patent in question was for a combination of old elements. The defendants contended that the combination was so simple that it did not require inventive skill to make it. The court held that, being new and useful, it was patentable without reference to the intellectual processes involved in its production. The opinions of the court also seem somewhat colored by the then prevailing ideas in the English courts, that the law could take notice only of the concrete practical invention and not of the abstract ideas which lie behind it. Modern judges would probably have sustained the patent on the ground that, while

§ 79. Mental Part of Inventive Act Includes a Conscious Perception of the Idea Generated by the Creative Faculties.

Moreover, no exercise of the creative faculties can form a part of the inventive act, unless the idea resulting from such exercise is fully apprehended by the mind of the inventor. To create by accident without a recognition of the fact or nature of his own creation, and consequently without the power to repeat the same creative act, is not invention.[1]

intellectual inventive skill is necessary, the novelty and usefulness of the invention were sufficient evidence of its employment. Be this, however, as it may, the necessity of inventive skill, as distinguished from every other "application of genius," is now thoroughly established.

See also the following cases. Edgham *v.* Washburn (1874), 4 Clifford, 254; 7 O. G. 649; 1 Bann. & A. 537; Reed *v.* Reed (1874), 12 Blatch. 366; 8 O. G. 193; 1 Bann. & A. 515; Smith *v.* Elliott (1872), 9 Blatch. 400; 5 Fisher, 315; 1 O. G. 331; Spaulding *v.* Tucker (1869), Deady, 649; Blake *v.* Stafford (1867), 3 Fisher, 294; Woodman *v.* Stimpson (1866), 3 Fisher, 98; Wooster *v.* Crane (1865), 2 Fisher, 583; 5 Blatch. 282; Case *v.* Brown (1864), 2 Wall. 320; Forbes *v.* Barstow Stove Co. (1864), 2 Clifford, 379; Clark Patent Steam & Fire Regulator Co. *v.* Copeland (1862), 2 Fisher, 221; Ransom *v.* Mayor of N. Y. (1856), 1 Fisher, 252; Tatham *v.* Le Roy (1852), 2 Blatch. 474.

That mechanical skill must be estimated as it existed at the date of the invention, see Wilcox *v.* Bookwalter (1887), 31 Fed. Rep. 224; 39 O. G. 1200.

That the standard of mechanical skill is being constantly raised and the field of invention narrowed, see Wilcox *v.* Bookwalter (1887), 39 O. G. 1200; 31 Fed. Rep. 224.

§ 79. [1] In Ransom *v.* The Mayor of New York (1856), 1 Fisher, 252, Hall, J.: (265) "If there was, at any time, or under any circumstances an accidental combination similar in character to that which the plaintiffs have patented — if that combination was made accidentally or otherwise, under such circumstances that the public obtained no knowledge of the invention — obtained no knowledge of the mode in which (it) could be made available, then the invention was not made by the parties who produced this combination. In other words, if the parties who made the combination, although seeing with the eye, perceived not, or hearing with the ear, understood not what would be the result of this combination, they added nothing to their own stock of knowledge; and the fact if observed by other men, (if they understood it not), added nothing to the knowledge of science upon that subject. Therefore the invention was not made until the parties contriving, or others observing, the existing combination, saw that it could be made available for the purpose of producing a result."

In Household Co. *v.* Neilson (1843), 1 Web. 673, Hope, J.: (690) "It is not sufficient to show that others, in experiments or incidental trials, had hit upon the same idea, not having made public the principle and the application of it to the same processes. . . . I have to repeat, that the originality of the invention is not destroyed by proof, that, in the history of the arts and trades of

While previous intention to create in this especial form, or even to create at all, is not required, it is essential to the inventive act that the inventor should not only *con*ceive, but should also *per*ceive his original idea, and should do both so clearly as to make this idea an actual addition to his fund of knowledge, and to be able to communicate it to the public.

§ 80. Mental Part of Inventive Act Complete only when the Idea Generated is Sufficiently Developed for Practical Application.

Again, the idea in which this exercise of the creative faculties results must be complete and capable of practical application. To recognize a public want, to entertain vague notions of some mode in which that want may be supplied, to put forth efforts which approach, however nearly, to the solution of the problem and yet leave it unsolved, are not enough. Such operations never pass beyond the line of mere conjecture or of unsuccessful experiment. They *create* nothing; and though they tend to stimulate and aid creative genius, they are in themselves useless both to the inventor and the public.[1] To

this country, some one or two or even more persons may have apparently had some glimpse of the same conception, in occasional and insulated experiments, which were not prosecuted, nor made known, and from which, so far as the rest of the world were concerned, no result or change followed on former practice."

That unless the idea of the invention is fully present to the mind of the inventor, inventive skill has not been exercised, and no invention has been made, see Andrews *v.* Hovey (1883), 5 McCrary, 181; 26 O. G. 1011; 16 Fed. Rep. 387; Boyd *v.* Cherry (1883), 4 McCrary, 70.

That to make a thing by chance, without the ability to reproduce it, is not invention, see Maxheimer *v.* Mayer (1881), 20 Blatch. 17; 9 Fed. Rep. 460; 20 O. G. 1162; Andrews *v.* Carman (1876), 13 Blatch. 307; 9 O. G. 1011; 2 Bann. & A. 277; Pelton *v.* Waters (1874), 1 Bann. & A. 599; 7 O. G. 425; Harrison *v.* Railway Co. (1860), 6 Jur. N. S. 993; Minter *v.* Mower (1835), 1 Web. 138; 2 Abb. P. C. 178.

That to accidentally produce, without perceiving and comprehending the nature of the result or the mode of producing it, is not invention, see Libbey *v.* Mt. Washington Glass Co. (1886), 26 Fed. Rep. 757; 36 O. G. 572; Boyd *v.* Cherry (1883), 4 McCrary, 70.

That incidental ideas, not discerned by the inventor, are not within the scope of his conception, see Boyd *v.* Cherry (1883), 4 McCrary, 70.

§ 80. [1] In Winans *v.* The New York and Harlem R. R. Co. (1855), 4 Fisher, 1, Nelson, J.: (9) "Now, the circumstance that a person has had an idea of an improvement in his head, or has sketched it upon paper — has drawn it,

him alone whose mind conceives the perfect, practical, operative idea, — that idea which, when embodied in tangible materials, will accomplish the desired result, — belongs the right of the inventor and the credit of performing the inventive act.[2]

and then gives it up — neglects it — does not, in judgment of law, constitute or have the effect to constitute him a first and original inventor. It is not the person who has only produced the idea, that is entitled to protection as an inventor, but the person who has embodied the idea into a practical machine, and reduced it to practical use. He who has first done that is the inventor who is entitled to protection. A kindred principle, also, it may be proper to state here, which is, that where a person engaged in producing some new and useful instrument or contrivance, and who has embodied it into a machine, and endeavored to reduce it to practice by experiments — if those trials fail — if he fail in success and abandon it, or give it up, that consideration affords no impediment to another person, who has taken up the same idea or class of ideas, and who has gone on perseveringly in his studies, trials, and experiments, until he has perfected the new idea, and brought it into practical and useful operation. He is the person — the meritorious inventor — who is entitled to the protection of the law."

In Goodyear *v.* Day (1852), 2 Wall., Jr., 283, Grier, J. : (299) "It is usually the case, when any valuable discovery is made, or any new machine of great utility has been invented, that the attention of the public has been turned to that subject previously; and that many persons have been making researches and experiments. Philosophers and mechanicians may have, in some measure, anticipated, in their speculation, the possibility or probability of such discovery or invention; many experiments may have been unsuccessfully tried, coming very near, yet falling short of the desired result. They have produced nothing beneficial. The invention, when perfected, may truly be said to be the culminating point of many experiments, not only by the inventor, but by many others. He may have profited indirectly by the unsuccessful experiments and failures of others; but it gives them no right to claim a share of the honor or the profit of the successful inventor. It is when speculation has been reduced to practice, when experiment has resulted in discovery, and when that discovery has been perfected by patient and continued experiments — when some new compound, art, manufacture, or machine, has been thus produced, which is useful to the public, that the party making it becomes a public benefactor, and entitled to a patent."

As it is evident that no idea can be embodied in a practical art or instrument until it is sufficiently developed in the mind of the inventor to be thus applied, the rule requiring reduction to practice necessitates the complete development of the idea.

That to have invented a person must not be merely experimenting in the direction of a result, but must have matured his conception into an operative means, see Voelker *v.* Gray (1885), 30 O. G. 1091.

[2] That to suggest that a given result may be obtained, without indicating the method of obtaining it, is not invention, see Graham *v.* Gammon (1877), 3 Bann. & A. 7; 7 Bissell, 490.

That any mere experiment, as distinguished from practical use, is not

§ 81. Mental Part of Inventive Act Complete though the full Value of the Idea Generated is not Perceived.

But while the idea of the invention must thus exist, complete and comprehended, in the mind of the inventor, it is not necessary that he should have fathomed all its possibilities.[1] An invention, though made only for one purpose, is sometimes capable of serving many. In the development of the industrial arts, every really valuable invention finds numerous applications outside the scope of that for which it was originally devised; and some of these are often vastly more important to the public, and more profitable to the inventor, than those which occupied his mind in the performance of the creative act. That these modes of employing his invention are unforeseen does not affect his position or his rights as an inventor, so far as his invention is concerned.[2] The law regards him as the owner of the invention for any and every purpose to which it can be applied, and thus secures to him the entire benefit of his original idea.[3]

invention, see Many *v.* Sizer (1849), 1 Fisher, 17.

That if an invention will not answer its purpose without further invention it is not patentable, and a patent for it is void, see Burrall *v.* Jewett (1830), 2 Paige (N. Y.), 134.

§ 81. [1] That an inventor need not understand all the uses to which his invention may be applied, see Stow *v.* Chicago (1882), 104 U. S. 547; 21 O. G. 790; Eagleton Mfg. Co. *v.* West, Bradley & Cary Mfg. Co. (1880), 17 O. G. 1504; 18 Blatch. 218; 2 Fed. Rep. 774; Woodbury Patent Planing Mach. Co. *v.* Keith (1879), 4 Bann. & A. 100; Welling *v.* Rubber Coated Harness Trimming Co. (1874), 7 O. G. 606; 1 Bann. & A. 282; Wells *v.* Jacques (1874), 1 Bann. & A. 60; 5 O. G. 364.

[2] That an inventor is entitled to all the benefits of his invention, see New Process Fermentation Co. *v.* Koch (1884), 21 Fed. Rep. 580; 29 O. G. 535; Union Stone Co. *v.* Allen (1882), 15 Phila. 508; Stow *v.* Chicago (1882), 104 U. S. 547; 21 O. G. 790; Burke *v.* Partridge (1878), 58 N. H. 349.

[3] The proposition stated in this paragraph must not be so extended as to conflict with two others, which are equally correct. These are: (1) That where the same concrete invention may serve as the embodiment of two distinct ideas, the use of such invention as the expression of one of those ideas is not the use of the invention as the expression of the other; (2) That when the new use of an existing invention involves the exercise of inventive skill, beyond that which was exercised in creating the invention, this new use is itself a new invention, and not included in the invention as originally created.

The scope of the doctrine of this paragraph is, therefore, limited to such benefits as the inventive skill of the inventor in question has actually conferred upon the public, and which are

§ 82. Mental Part of Inventive Act Complete though the Scientific Principles Underlying the Idea are not Understood.

Nor is it necessary, on the other hand, that he should comprehend the scientific principles on which the practical effectiveness of his invention rests.[1] The relations that subsist between his idea and the effect which it produces when embodied in an operative form, can be really understood by no one. Human knowledge goes no further than to recognize that when a given action is performed a given event follows; but the tie which binds the action and event together evermore escapes investigation; and when we speak of "laws of nature," or of "causes and effects," we use the language of convenience, not of necessary truth. No deeper insight is required of the inventor in regard to his original idea. If that idea, when practically applied, is followed by the desired result the law is satisfied, whether or not the inventor can explain, or whether any one can understand, the reason of its operation, or state the principle on which the correspondence of effect and cause depends.

thereby made accessible to them without any further exercise of the creative faculties. All these belong to him, whether or not he recognizes their existence, and though they may become apparent only after long use of his invention. A new inventor, conceiving an essentially different idea and expressing it through the same tangible embodiment, does not avail himself of the same invention. And though new inventors devising, by their creative genius, new uses for his old invention cannot employ it for these uses without his consent, the uses they have thus produced do not belong to him, but are their separate and complete inventions.

§ 82. [1] In Andrews *v.* Hovey (1883), 5 McCrary, 181, Shiras, J.: (194) "Indeed, it is not necessary that the inventor, to be entitled to a patent, should himself understand the abstract principle which his invention brings into use. It is sufficient if he is the inventor of a means whereby a new and useful application of the abstract principle is brought about." 16 Fed. Rep. 387 (396); 26 O. G. 1011 (1014).

That the inventor need not understand the scientific truths underlying his invention, see Andrews *v.* Cross (1881), 19 O. G. 1705; 8 Fed. Rep. 269; 19 Blatch. 294; St. Louis Stamping Co. *v.* Quinby (1879), 4 Bann. & A. 192; 16 O. G. 135; Stow *v.* Chicago (1877), 3 Bann. & A. 83; 8 Bissell, 47; Piper *v.* Brown (1870), Holmes, 20; 4 Fisher, 175; Treadwell *v.* Parrott (1866), 3 Fisher, 124; 5 Blatch. 369.

But that where his invention purports to be a process consisting in the application of the laws of nature to effect a certain object, the conception of the idea is impossible without a previous perception of the physical laws which it employs, see Andrews *v.* Hovey (1883), 16 Fed. Rep. 387; 26 O. G. 1011; 5 McCrary, 181.

§ 83. Mental Part of Inventive Act Complete whether Prolonged or Instantaneous.

The law draws no distinction between those operations of the creative faculties which manifest themselves in long-continued study and experiment, and those which reach their end by sudden intuition or apparent accident.[1] Here also is a

§ 83. [1] In Anilin *v.* Cochrane (1879), 16 Blatch. 155, Wheeler, J.: (160) "An invention is not like a will, depending on intention. It is a fact, and, if the fact exists, it does not appear to be material whether it came by design, or accidentally without being bidden." 4 Bann. & A. 215 (221).

In Blake *v.* Stafford (1868), 6 Blatch. 195, Shipman, J.: (205) "If no inventive skill, but only mechanical dexterity, was necessary to produce it, then it is not patentable. Originality is the test of invention. If that is successfully exercised, its product is protected; and it is immaterial whether it is displayed in greater or less degree, or whether the new idea revealed itself to the inventor by a sudden flash of thought, or slowly dawned on his mind after groping his way through many and dubious experiments." 3 Fisher, 294 (305).

In Middletown Tool Co. *v.* Judd (1867), 3 Fisher, 141, Shipman, J.: (146) "Whenever a change or device is new, and accomplishes beneficial results, courts look with favor upon it. The law, in such cases, has no nice standard by which to gauge the degree of mental power or inventive genius brought into play in originating the new device. A lucky casual thought, involving a comparatively trifling change, often produces decided and useful results, and though it be the fruit of a very small amount of inventive skill, the patent law extends to it the same protection as if it had been brought forth after a lifetime devoted to the profoundest thought and the most ingenious experiment to attain it."

In The Magic Ruffle Co. *v.* Douglass (1863), 2 Fisher, 330, Shipman J.: (338) "A subject-matter to be patentable must require invention, but is not necessarily the result of long and painful study, or embodied alone in complex mechanism. A single flash of thought may reveal to the mind of the inventor the new idea, and a frail and simple contrivance may embody it. Some inventions are the result of long and weary years of study and labor, pursued in the face of abortive experiments and baffled attempts, and finally reached after the severest struggles, while others are the fruit of a single happy thought."

In Crane *v.* Price (1842), 1 Web. 393, Tindal, C. J.: (411) "In point of law, the labor of thought, or experiments, and the expenditure of money, are not the essential grounds of consideration on which the question, whether the invention is or is not the subject-matter of a patent ought to depend. For if the invention be new and useful to the public, it is not material whether it be the result of long experiments and profound research, or whether by some sudden and lucky thought, or mere accidental discovery." Utility to the public, and the fact that the public received the invention from the patentee, being in England the real basis of the patent, it was of course immaterial whether the patentee was an inventor or an importer, and if an inventor, whether his inventive act were sudden and easy or laborious and prolonged. Where, as in this country, the inventive act is regarded as also a ground,

region in which human knowledge is at fault. Indeed, it may well be doubted whether the creative act is ever otherwise than instantaneous and intuitive, and whether research and reflection ever do more than clear the way for, and dispose the mind toward those sudden apprehensions of the truth to which in literature and the arts we give the names "invention" and "discovery." The law does not attempt to settle questions which thus lie beyond the reach of mental science. Wherever the creative faculties have evidently been at work, it inquires neither as to the method nor the duration of their exercise.[2] The patient labors of a lifetime, the unpremeditated flash of an original thought upon the mind, the revelation made to an appreciative intellect by some trivial accident,[3] all stand upon an equal footing both in character and merit, and are entitled to the same reward.

§ 84. Mental Part of Inventive Act Complete though Aided by External Suggestions.

Nor does the law take notice of the aid which the inventor has derived from the suggestions, writings, or experiments of others, provided the creative act be truly his.[1] Unless the

perhaps the principal ground, of merit, the doctrine of this case can be maintained, as it has always been, only for the reason that the character of the inventive act is not dependent upon its difficulty or duration, but on its employment of the creative faculties of the human mind.

[2] That the degree of inventive skill is immaterial, see Furbush *v.* Cook (1857), 2 Fisher, 668; Carr *v.* Rice (1856), 1 Fisher, 198. (See also cases cited in § 85, note 2.)

[3] Some valuable and remarkable inventions are said to have thus owed their origin to accident or the instantaneous conception of the mind. One of the most interesting cases upon this point is that of the "Water Tabbies." A workman, having spat on the floor, put his hot iron upon it, and observed that it spread into a kind of flower. He afterwards tried the experiment upon linen and found it produced the same effect. He then obtained a patent, and lived to make a considerable fortune. 1 Web. 54, note.

§ 84. [1] In Hall *v.* Johnson (1883), 23 O. G. 2411, Marble, Com.: (2412) "Mere suggestions, even if they point toward a result, are not sufficient to entitle one making them to be considered the inventor. In order that he may claim the benefit of what another does his suggestions must leave nothing for the mechanic to do but to work out what has been suggested."

In The Union Paper Bag Machine Co. *v.* Pultz and Walkley Co. (1878), 15 O. G. 423, Shipman, J.: (424) "Knowledge of prior experiments by another will not defeat the claim of the

idea which constitutes the spirit of his invention has been obtained by him from other persons, complete and capable of

patentee to an invention if it appears that, after those experiments were abandoned, he first perfected and adapted the invention to actual use; but he will not be an original inventor, and his claim to originality will be defeated if the knowledge or information which he derived from the abandoned models or experiments was sufficiently definite and clear to enable him to construct the improved thing which was the subject of his alleged invention. . . . (425) The patentee has a right to take up the improvement at the point where it was left by his predecessor, and if, by the exercise of his own inventive skill, he is successful in first perfecting and reducing to practice the invention which his predecessor undertook to make, is entitled to the merit of such improvement as an original inventor. . . . And if he is an original inventor of the improvement he is entitled to the benefit of unsubstantial varintions and modifications in form of the principle of his invention, notwithstanding such modifications may run into and include the forms of mechanism shown in the abandoned experiments of which he had knowledge." 15 Blatch. 160 (165, 166); 3 Bann. & A. 403 (407, 408).

In The United Nickel Co. *v.* Anthes (1872), 1 O. G. 578, Shepley, J.: (581) "However suggestive the experiments of others may have been . . . they cannot be made available to defeat a patent granted to one who, after all the experimenters had failed to secure a practical and successful result beneficial to the community and a valuable contribntion to the useful arts, first succeeded so as to be able to disclose to the public a practically useful and successful process, by him first brought to perfection and first made capable of useful application." Holmes, 155 (160); 5 Fisher, 517 (523).

In Judson *v.* Moore (1859), 1 Fisher, 544, Leavitt, J.: (555) "Mere conversations about the practicability of an improvement, or suggestions as to the manner in which it might be carried out or accomplished, will not of themselves defeat the claims to originality of him who perfects the idea and secures a patent. Neither will experiments defeat, even if known to the patentee, if it appear that he prosecuted such experiments to final success; but any information to a patentee, sufficient to enable him to construct the thing itself, would destroy the originality of the invention. But that knowledge must be definite and tangible; it should be sufficient of itself to enable the party to whom it was imparted, to construct the improvement." 1 Bond, 285 (298).

In O'Reilly *v.* Morse (1853), 15 How. 62, Taney, C. J.: (111) "Neither can the inquiries he made, or the information or advice he received, from men of science in the course of his researches, impair his right to the character of an inventor. No invention can possibly be made, consisting of a combination of different elements of power, without a thorough knowledge of the properties of each of them, and the mode in which they operate on each other. And it can make no difference, in this respect, whether he derives his information from books, or from conversation with men skilled in the science. If it were otherwise, no patent, in which a combination of different elements is used, could ever be obtained. For no man ever made such an invention without having first obtained this information, unless it was

practical application, it is his own creation and not theirs, however closely their imperfect notions may approach to his.

discovered by some fortunate accident."

In Pitts *v.* Hall (1851), 2 Blatch. 229, Nelson, J. : (234) "Now, there is no doubt that a person, to be entitled to the character of an inventor, within the meaning of the Act of Congress, must himself have conceived the idea embodied in his improvement. It must be the product of his own mind and genius and not of another's. . . . At the same time, it is equally true that, in order to invalidate a patent on the ground that the patentee did not conceive the idea embodied in the improvement, it must appear that the suggestions, if any, made to him by others, would furnish *all* the information necessary to enable him to construct the improvement. . . . If they simply aided him in arriving at the useful result, but fell short of suggesting an arrangement that would constitute a complete machine, and if, after all the suggestions, there was something left for him to devise and work out by his own skill or ingenuity, in order to complete the arrangement, then he is, in contemplation of law, to be regarded as the first and original discoverer. On the other hand, the converse of the proposition is equally true. If the suggestions or communications of another go to make up a complete and perfect machine, embodying all that is embraced in the patent subsequently issued to the party to whom the suggestions were made, the patent is invalid, because the real discovery belongs to another." See also International Tooth Crown Co. *v.* Richmond (1887), 30 Fed. Rep. 775.

That an inventor may employ the mechanical skill of others and take their suggestions, see Yoder *v.* Mills (1885), 25 Fed. Rep. 821 ; 34 O. G. 1048.

That if the entire idea of the invention as a practical working means is derived from the suggestions of others, the alleged inventor is not entitled to a patent for it, see Atlantic Works *v.* Brady (1882), 107 U. S. 192 ; 23 O. G. 1330 ; Spaulding *v.* Tucker (1869), Deady, 649 ; Thomas *v.* Weeks (1827), 2 Paine, 92.

That mere suggestions of others do not show a want of inventive skill unless they suggest the entire invention, see Butch *v.* Boyer (1871), 8 Phila. 57 ; Hubbell *v.* United States (1869), 5 Court of Claims, 1 ; Slemmer's Appeal (1868), 58 Pa. St. 155.

That suggestions of part of the idea do not indicate want of inventive skill as to the whole, see Celluloid Mfg. Co. *v.* Chrolithion Collar & Cuff Co. (1885), 23 Fed. Rep. 397 ; 31 O. G. 519 ; 23 Blatch. 205 ; Hall *v.* Johnson (1883), 23 O. G. 2411 ; Worden *v.* Fisher (1882), 21 O. G. 1957 ; 11 Fed. Rep. 505 ; National Feather Duster Co. *v.* Hibbard (1881), 11 Bissell, 76 ; 21 O. G. 635 ; 9 Fed. Rep. 558.

That suggestions are not inconsistent with inventive skill unless they are so complete that it is unnecessary, see Watson *v.* Belfield (1886), 26 Fed. Rep. 536 ; 35 O. G. 1112.

That if, in addition to the ideas derived from such suggestions, inventive skill of his own was necessary in order to produce an operative means, he is the true inventor and entitled to a patent, see Worden *v.* Fisher (1882), 11 Fed. Rep. 505 ; 21 O. G. 1957 ; National Feather Duster Co. *v.* Hibbard (1881), 11 Bissell, 76 ; 9 Fed. Rep. 558 ; 21 O. G. 635 ; Union Paper Bag Mach. Co. *v.* Pultz & Walkley Co. (1878), 15 Blatch. 160 ; 15 O. G. 423 ; 3 Bann. & A. 403 ; United Nickel Co.

The law can draw no line between the ideas suggested to his mind by such external objects, and those which his mind generates from these suggestions. It can look only to the words and things from which his ideas may have been derived, and if it cannot find in them, apparent to the public view, the entire original idea as claimed by the inventor, it does not venture to dispute his right.

§ 85. Mental Part of Inventive Act Complete though the Idea Generated be of Small Value.

Lastly, the magnitude of the results which flow from the inventive act furnish no test by which its merits are determined. The advance made by the inventor may be slight, the benefit conferred upon the public may be small, but though these considerations influence the recompense which he eventually receives, they do not affect the intrinsic character of the

v. Anthes (1872), 5 Fisher, 517 ; 1 O. G. 578 ; Holmes, 155 ; Waterbury Brass Co. *v.* Miller (1871), 5 Fisher, 48 ; 9 Blatch. 77 ; Matthews *v.* Skates (1860), 1 Fisher, 602 ; Bell *v.* Daniels (1858), 1 Fisher, 372 ; 1 Bond, 212 ; O'Reilly *v.* Morse (1853), 15 How. 62 ; Pitts *v.* Hall (1851), 2 Blatch. 229 ; Alden *v.* Dewey (1840), 1 Story, 336 ; 2 Robb, 17.

That inventive skill may exist though the invention were suggested by the defective operation of previous devices, see Heysinger *v.* Crawford (1883), 16 Phila. 568.

That suggestions derived from the unsuccessful experiments of others do not exclude the exercise of inventive skill, see Consolidated Valve Co. *v.* Crosby Valve Co. (1885), 113 U. S. 157 ; 30 O. G. 991 ; Whittlesey *v.* Ames (1880), 18 O. G. 357 ; 9 Bissell, 225 ; 5 Bann. & A. 96 ; 13 Fed. Rep. 893 ; Roberts *v.* Dickey (1872), 4 Brews. (Pa.) 260 ; 1 O. G. 4 ; 4 Fisher, 532 ; Spaulding *v.* Tucker (1869), Deady, 649 ; Hubbell *v.* United States (1869), 5 Court of Claims, 1 ; Agawam Co. *v.* Jordan (1868), 7 Wall. 583 ; Haselden *v.* Ogden (1868), 3 Fisher, 378 ; Matthews *v.* Skates (1860), 1 Fisher, 602 ; Bell *v.* Daniels (1858), 1 Bond, 212 ; 1 Fisher, 372 ; Pitts *v.* Hall (1851), 2 Blatch. 229.

That the employment of ideas gathered from books is not inconsistent with inventive skill, see O'Reilly *v.* Morse (1853), 15 How. 62.

That the application of ideas suggested in prior patents, if not sufficiently explained therein to render the whole invention accessible to the public, does not exclude inventive skill, see Baldwin *v.* Schultz (1871), 5 Fisher, 75 ; 9 Blatch. 494 ; 2 O. G. 315 ; Graham *v.* Mason (1869), 5 Fisher, 1 ; 4 Clifford, 88.

That to reorganize an old invention, which is based on wrong principles, and render it successful is invention, see Cammeyer *v.* Newton (1874), 12 Blatch. 122 ; 5 O. G. 753 ; 1 Bann. & A. 294.

creative act.[1] The exercise of the inventive faculties in the production of a practical result having been once conceded, the degree and quantity of inventive skill which it involves are immaterial.[2] It falls within the purview of the law as an

§ 85. [1] In Pearl *v.* Ocean Mills (1877), 2 Bann. & A. 469, Shepley, J.: (476) "No more difficult task is imposed upon the court in patent causes than that of determining what constitutes invention, and of drawing the line of distinction between the work of the inventor and the constructor. The change from the old structure to the new may be one which one inventor would devise with the expenditure of but little thought and labor, and another would fail to accomplish after long and patient effort. It may be one, which one whose mind is fertile in invention will suggest almost instantaneously, when the skilled hand of the constructor will fail to reach the apparently simple result by the long and toilsome process of experiment. It may be one which, viewed in the light of the accomplished result, may seem so simple as to be obvious almost to an unskilled operative, and yet the proof may show that this apparently simple and obvious change has produced a result which has for years baffled the skill of the mechanical expert, eluded the search of the discoverer, and set at defiance the speculations of inventive genius." 11 O. G. 2 (4).

In Soames' Patent (1843), 1 Web. 729, Brougham, J.: (735) "It is very fit their lordships should guard against the inference being drawn, from the small amount of any step made in improvement, that they are disposed to undervalue that in importance; if a new process is invented, if new machinery is invented, if a new principle is found out and applied so as to become the subject of a patent right, embodied in a manufacture, then, however small it may be in advance of the state of science or of art previous to the period of that step being made, that is no reason whatever for undervaluing the merits of the person who makes a discovery in science or an invention in art, because the whole history of science, from the greatest discoveries down to the most unimportant . . . is one continued illustration of the slow progress by which the human mind makes its advance in discovery; it is hardly perceptible, so little has been made by any one step in advance of the former state of things, because generally you find that just before there was something very nearly the same thing discovered or invented. Therefore it is no argument whatever in general, if there is a new principle, or a novel invention."

[2] That if inventive skill is actually exercised the degree of it is immaterial, see Washburn & Moen Mfg. Co. *v.* Haish (1880), 10 Bissell, 65; 4 Fed. Rep. 900; 19 O. G. 173; Strobridge *v.* Lindsay (1880), 18 O. G. 62; 5 Bann. & A. 411; 2 Fed. Rep. 692; Pearl *v.* Ocean Mills (1877), 2 Bann. & A. 469; 11 O. G. 2; Potter *v.* Holland (1858), 4 Blatch. 238; 1 Fisher, 382; Many *v.* Sizer (1849), 1 Fisher, 17; Earle *v.* Sawyer (1825), 4 Mason, 1; 1 Robb, 490.

That, on the contrary, the simplicity of the invention increases the merit of the inventive act, see Yates *v.* Ry. Co. (1877), 24 Grant Ch. (Can.) 495; Summers *v.* Abell (1869), 15 Grant Ch. (Can.) 532; Powell *v.* Begley (1867), 13 Grant Ch. (Can.) 381; Muntz's Patent (1846), 2 Web. 113.

invention, and is entitled to the same protection as if it were the most important of discoveries.

§ 86. Mental Part of Inventive Act Defined.

These characteristics of the mental part of the inventive act lead to the following as its definition: It is an exercise of the creative faculties, generating an idea which is clearly recognized and comprehended by the inventor, and is both complete in itself and capable of application to a practical result. Of the nature of the idea thus generated, and of the mode in which this exercise of the creative faculties is indicated, it next becomes our province to inquire.

SECTION II.

OF THE NATURE AND FACTORS OF THE IDEA GENERATED BY THE MENTAL PART OF THE INVENTIVE ACT.

§ 87. The Generated Idea an Idea of Means, not an Idea of End.

Two ideas are present to the mind of an inventor during his performance of the inventive act: (1) The idea of an end to be accomplished; (2) The idea of a means by which that end can be attained. The same ideas are manifest in the invention when reduced to practice and engaged in the production of its appropriate result.[1] In one or both of these ideas, therefore, resides the essence of the invention, — that characteristic principle on which its individuality depends, and by whose presence or absence its identity must be determined.[2] And here arise the fundamental questions upon

§ 87. [1] In Curtis *v.* Platt (1863), cited in note to Adie *v.* Clark (1876) L. R. 3 Ch. 135, Wood, V. C.: (136) "In all discoveries of course there are two things — there is an object to be achieved and a means of achieving that object."

[2] In discussing an abstract as distinguished from a concrete invention, certain radical differences between them must be remembered, or confusion will inevitably result. The abstract invention is the mental conception of the inventor. The concrete invention is that mental conception embodied in some operative art or instrument. In the abstract invention the end and means are inseparable from each other; the idea of means being unthinkable except in connection with the idea of

whose answer all other doctrines of the Patent Law are based: What is the essence of an invention? What is the idea whose generation in the mind of the inventor constitutes the mental part of the inventive act? Is it the idea of end, or is it the idea of means, or does it include both? The rule, defined and analyzed in the last section, affords us a sufficient guide to the solution of this question. That rule excludes from the inventive act every mental operation which does not involve the exercise of the creative faculties. The application of this rule will demonstrate that the idea of means alone, and not the idea of end, is the result of the inventive act and, therefore, is the essence of the invention.

§ 88. Idea of End Perceived but never Generated by the Inventor.

The end to be accomplished by the invention is the satisfaction of a public want. This want is an existing fact. It grows inevitably out of the relations which man occupies to the external world. It can be satisfied only by such a change in those relations as will supply or terminate the want. The satisfaction of a want thus consists in a new condition of affairs, substituted for that in which the want originates.[1] Each of these two conditions is necessarily the antithesis or converse of the other, and hence whenever either is perceived the other is immediately suggested. Neither the idea of the want nor that of its satisfaction, therefore, is created or conceived by the inventor. As intellectual entities each has perpetual

that end to which it is a means. But the concrete invention does not usually express the idea of the end to be accomplished. It represents the idea of the means alone, the end coming into view only as the art or instrument is practically employed. Hence in speaking of the invention as it lies in the mind of the inventor, the end may properly be treated as a necessary subject for consideration as interpreting and defining the idea of means, although the latter is not yet embodied in tangible materials nor capable of producing any practical results. But in discussing the concrete invention, the end must be regarded as unknown until by actual use of the invention the effect which it accomplishes can be ascertained.

§ 88. [1] The word "satisfaction" admits of two significations: (1) The new condition of things, in which the want disappears; (2) The method or operation by which the new condition is substituted for the old. In this sentence it is used in the former sense; i. e., as *an effect produced.*

existence. To him may come the first perception of the want, and also the first idea of that condition of affairs in which the want will be extinguished, but thus far he has only seen what lies before the unconscious eyes of all mankind. Not until he endeavors to devise a means by which this change in his relations to the external world can be accomplished, and the new state of satisfaction be substituted for the state of want, do his creative faculties commence their operations. And this is true in reference to the satisfaction of his artificial wants, as well as in regard to those which are of common and continual recognition. These wants are all existing facts, suggesting their own satisfactions. However limited and special in itself, every artificial need is only one phase of a greater and once universal need which has been narrowed and divided by the successive triumphs of human ingenuity. Each new invention brings into clearer light the subordinate necessities which still remain, points out the new state of affairs in which the satisfaction of the want consists, and demands for its accomplishment a new exertion of inventive skill.[2] He who

[2] It is hardly possible to believe that a proposition so simple and self-evident as this could ever be forgotten or ignored. Yet many of the difficulties encountered in the development of Patent Law seem to have their origin just here. As we go forward it will be seen that an invention is a means, and a means only; and, therefore, that in determining the scope of any given invention it is, first of all, necessary to draw the line between such invention, as a means, and the effect which it produces. But in many cases the careful student will discover that this line has been missed, through a failure of the courts to recognize the truth that every want, and consequently every satisfaction of a want (i. e., every new condition in which a want disappears), is an existing fact; a fact to be perceived, not a thing or state to be conceived or created; and hence that judges have had recourse to doctrines not properly applicable to the case at bar in order to support what evidently merited a patent, or to reject what certainly was not entitled to protection under the law. Instances of this are especially frequent in those cases which have been decided upon the doctrines of double use, or of the non-patentability of a principle. But it is evident that even the narrowest and most technical invention must have been devised to meet some want existing in the art to which the invention belongs, and that the invention is not itself the satisfaction but the means by which the satisfaction is produced. The want may never have been apparent until some previous invention, partially or imperfectly satisfying the more universal want, disclosed this subordinate and narrower need; but the need was nevertheless a fact, open to the observation of all men, and sure to be perceived by those skilled in the art and interested in its development.

perceives those new necessities and satisfactions, and devises means by which the state of satisfaction is substituted for the

Thus it was once impracticable for men to hold communication with each other at remote distances, without the aid of messengers, passing between one and the other. This universal want was limited in scope when blazing fires from lofty hilltops were adopted as signals mutually understood; thereby revealing the new, narrower want of some more certain, rapid, and intelligible mode by which information might be conveyed. In answer to this want the Semaphore, with its movable shutters, was devised, taking the place of the beacon-fire upon the hilltops, and affording sixty-three distinct messages, where but one or two had before been possible. This new device, however, only served to make still clearer the necessity for some mode of communication, by which the intermediate hilltop stations could be dispensed with, and the character of the messages be indefinitely varied; and the capabilities of the Semaphore being exhausted, attention was directed to the electric force as a means for the supply of this late-felt demand. The electric telegraph was not directed to the satisfaction of the old, original, universal want. That had ceased to exist in its fulness; for mankind were already in possession of the system of communicating by intelligible signals. The telegraph was a new method of forming such signals, having many advantages in efficacy and economy over the one then in use. With its introduction the want of communicating power at great distances without intermediate stations disappeared, and narrower wants became visible, relating to the more accurate and rapid operation of the instruments employed. Every successive improvement of the telegraph has substituted a better condition of affairs for a worse, but at the same time has made evident the imperfections which remain to be removed, and has thus called for new exertions of inventive skill. In each case, as the end has become narrower and more special, the scope of the means devised to meet it has been correspondingly contracted; but wherever any want has become known it has been only as the subject of observation, the means by which its satisfaction was accomplished alone being the product of creative power. The same may be said of the development of every other great original invention, — the Steam-engine, the Smelting-furnace, the Sewing-machine, &c., — every advance in which has been made in obedience to some new need, disclosed by previous advances, and supplied by further triumphs of the inventive faculties. This truth is the foundation of the rule that all inventions must be studied in the light afforded by the state of the art, to which they belong, at the time the invention was made. By an examination of this art the exact want which the invention was intended to supply is ascertained, and in the attributes of the invention as adapted to that end, and in its operation while fulfilling it, the real character and purpose of the invention are disclosed. Regarded from this stand-point, the tests of novelty, utility, and the presence of inventive as distinguished from mechanical skill, may be applied to it with ease and accuracy, and the danger of erroneously awarding or denying the protection of the law to the invention is avoided.

That to perceive a hitherto unperceived quality in a known substance is not the invention of the substance nor of the quality, see Ansonia Brass & Copper Co. *v.* Electrical Supply Co. (1887), 32 Fed. Rep. 81; 42 O. G. 1168.

state of want, is a true inventor; but he who merely sees the want and its antithesis performs no part of the inventive act.

§ 89. Idea of Means Necessarily Generated by some Inventor.

The means by which man satisfies a want arising out of his relations to the external world is, on the contrary, invariably the result of the creative act. The idea which underlies it is necessarily *con*ceived by one before it can be *per*ceived by any. However great the want, however simple the method by which it is supplied, that method can originate only through the exercise of faculties which produce new operations or devices, and not merely discern and imitate the old. When man first came in contact with material nature, he found awaiting him the means of satisfying his most urgent if not all of his essential needs. Fruit offered itself to him for his food, water for drink, the caves and forests for his shelter. Beyond what nature thus spontaneously provided, he could not pass without employing his inventive skill, and every step in his material advancement has consisted in the creation of new means by which his constantly suggested wants could be supplied. The process by which he first generated artificial light or heat was thus as truly an invention as his last conquest over the difficulties of petroleum or electricity. The first rude car, on which he carried burdens previously borne upon his shoulders, embodied his creative act as fully as the ponderous engine whose glittering wheels transport the wealth of nations across continents with ceaseless energy and lightning speed.

§ 90. Every Concrete Invention a Means, not an End.

Judged by this test it is apparent that an invention, considered in itself, is neither an end nor a combination of both means and end, but is a means for the attainment of an end;[1]

§ 90. [1] In Electric Railroad Signal Co. *v.* Hall Railway Signal Co. (1885), 114 U. S. 87, Matthews, J.: (96) "The thing patented is the particular means devised by the inventor by which that result is attained, leaving it open to any other inventor to accomplish the same result by other means." 31 O. G. 515 (517).

In Fuller *v.* Yentzer (1876), 94 U. S.

and though the idea of means cannot be contemplated by the mind apart from the idea of end, the end must be referred to only for the purpose of more fully comprehending the real nature of the means employed. An art or process, for example, is a means devised for the production of a given result. Its essence, the creative thought which it expresses, may be more clearly ascertained by studying the result accomplished than by examining the means itself in actual operation; but as an art or process it is complete, apart from any end which

288, Clifford, J.: (288) "The invention, if any, within the meaning of the patent act, consists in the means or apparatus by which the result is obtained." 11 O. G. 551 (551).

In Corning *v.* Burden (1853), 15 How. 252, Grier, J.: (268) "It is for the discovery or invention of some practicable method or means of producing a beneficial result or effect, that a patent is granted, and not for the result or effect itself."

In O'Reilly *v.* Morse (1853), 15 How. 62, Taney, C. J.: (119) "Whoever discovers that a certain useful result will be produced, in any art, machine, manufacture, or composition of matter, by the use of certain means, is entitled to a patent for it; provided he specifies the means he uses in a manner so full and exact, that any one skilled in the science to which it appertains, can, by using the means he specifies, without any addition to, or subtraction from them, produce precisely the result he describes. And if this cannot be done by the means he describes, the patent is void. And if it can be done, then the patent confers on him the exclusive right to use the means he specifies to produce the result or effect he describes, and nothing more."

In Whittemore *v.* Cutter (1813), 1 Gallison, 478, Story, J.: (480) "A patent can, in no case, be for an effect only, but for an effect produced in a given manner, or by a peculiar operation. For instance, no patent can be obtained for the admeasurement of time, or the expansive operations of steam; but only for a new mode or new application of machinery, to produce these effects." 1 Robb, 40 (42).

In Curtis *v.* Platt (1863), cited in note to Adie *v.* Clark (1876), L. R. 3 Ch. 135, Wood, V. C.: (136) "In all discoveries of course there are two things — there is an object to be achieved and a means of achieving that object. . . . No novelty is required as to the object, the novelty may be in the means for effecting the object whether old or new."

Further, that the means, and not the end, is the invention, see New American File Co. *v.* Nicholson File Co. (1887), 31 Fed. Rep. 289; Aron *v.* Manhattan Ry. Co. (1886), 26 Fed. Rep. 314; 34 O. G. 1508; New Process Fermentation Co. *v.* Maus (1884), 20 Fed. Rep. 725; *Ex parte* Blythe (1884), 30 O. G. 1321; McMillin *v.* Rees (1880), 5 Bann. & A. 269; 1 Fed. Rep. 722; 17 O. G. 1222; Henderson *v.* Cleveland Co-operative Stove Co. (1877), 2 Bann. & A. 604; 12 O. G. 4; Burr *v.* Cowperthwaite (1858), 4 Blatch. 163; American Pin Co. *v.* Oakville Co. (1854), 3 Blatch. 190; Holden *v.* Curtis (1819), 2 N. H. 61.

That different means for the same end are different inventions, see Hubbell *v.* United States (1885), 20 Ct. of Claims, 354.

it achieves. The same is true of every other species of invention.[2] Each is a means designed to serve a purpose, to satisfy a want; and in its nature as a means, and a means only, reside those attributes on which its individuality and identity depend.

§ 91. Idea of Means Includes the Ideas of a Force, an Object, and a Mode of Application.

The idea resulting from the mental processes involved in the inventive act being thus purely an idea of means, the nature of this idea, as it lies in the mind of the inventor and is exhibited in his concrete invention, becomes a matter of the highest consequence. A moment's reflection will disclose that this idea must necessarily consist of three subordinate ideas: (1) The idea of an operating force; (2) The idea of an object operated on; (3) The idea of a mode of application through which the force is enabled to operate upon the object.[1]

[2] That an art or process, in itself, satisfies no public want, but is a mere means of producing a state of things in which the want is satisfied, needs no argument. That a machine, though in operation, benefits no one unless it produces results in some physical substance, and that it is the result so produced which is really useful to the public, and not the machine or means itself, is also sufficiently apparent. In reference to manufactures and compositions of matter, however, the truth of this characterization is not, at first glance, quite so evident. Still the slightest examination shows that neither of those inventions is of any value to mankind until applied to some useful purpose as a means, and that even then the true benefit conferred by each is not in the manufacture or the compound, but in the effect which it produces upon the external substances to which it is applied. A dye-stuff or a leverage-chair, for example, satisfy no want while the one remains in the unbroken package or the other in the storehouse of the manufacturer. If they could be employed for their respective purposes without affecting any other objects than themselves, they would still be utterly unprofitable to the human race. It is the substitution of one color for another effected by the one, and the ease and comfort to the human body afforded by the other, which constitute their real value to the public, — a value which no otherwise relates to them than as they are the means by which these changes of condition are produced. And it is as this means, and this means only, that they can be regarded as inventions and as embodying the efforts of creative power.

§ 91. [1] In this and the succeeding paragraphs of this section, with the exception of § 105, the abstract invention is alone under discussion. As the idea of end is inseparable from the idea of means, the idea of the object which is to be acted on by the means in accomplishing its end, is necessarily present to the

For every change in material conditions is produced by the application of some physical force to some physical object; and the nature of this change depends upon the nature of the force, the method of its application, and the character of the object upon which it terminates. In conceiving his idea of the means, whereby such a change in material conditions is to be accomplished, the inventor must, therefore, contemplate some specific force, applied in a specific manner to a specific object and producing in the object the change proposed.

§ 92. Generation of Idea of Means does not Require the Generation of these Subordinate Ideas: The Force is a Fact Perceived, not Created, by the Inventor.

A closer examination will, moreover, demonstrate that the conception of an idea of means does not require that either the force, the mode of application, or the object, separately considered, should have been created by the inventor. A force is either natural or artificial. A natural force is a property of matter, as it exists and operates in nature independently of human aid, and though it may be discovered and employed by man, it cannot be the fruit of his inventive skill. An artificial force is a natural force, so transformed in character or energies by human power as to possess new capabilities of action. This transformation of a natural force into a force practically new involves a true inventive act. It is accomplished by applying to the natural force, as an object, some other force through some mode of application, and is

mind of the inventor whenever the idea of the means itself is entertained. As the concrete invention, however, embodies only the idea of means, it does not usually disclose to an observer the object upon which it is intended to exercise its functions until it is put in practical operation. In certain instruments even the idea of force is not apparent. A machine, for instance, as it stands unemployed, merely exhibits the idea of a mode of application, the force which impels it and the object upon which it acts being neither expressed, nor perhaps suggested, by the concrete invention. But when the essential character of the invention is in question, and it becomes necessary to pass through the concrete embodiment to the idea of means, all these subordinate ideas must be presented to the mind, and be considered as the inherent and indispensable factors of which the idea of means is itself composed.

thus in itself an independent and complete invention, of which a later inventor may avail himself as the operative force to be employed by him in the conception of his own idea of means.[1] Hence, as the idea of means lies in the mind of the inventor, it is of no importance whether the force which forms the first factor of this idea is natural or artificial; or if artificial, whether it resulted from his own or from another's inventive act. In either case it is a completed fact in nature or the arts, whose capabilities are to be discovered and utilized by him as a subordinate element in the new means which he endeavors to create.

§ 93. The Object is a Fact Perceived, not Created, by the Inventor.

The second factor, the object to be acted on, stands in the same relation to the new idea of means. This object is also either natural or artificial. If natural, its existence, character, and susceptibilities are facts to be discovered, not invented. If artificial, the inventive act in which it had its origin is already past, the object has become a part of the material world, and occupies the same position, in reference to the invention now proposed, as if it had proceeded from the author of the universe himself.

§ 92. [1] The doctrine of the "unity of inventions," hereafter to be more fully explained, rests upon the scientific fact that every means, however limited in operation or subordinate to other means, is necessarily a complete invention in itself, and is neither enlarged nor restricted by its employment in connection with other inventions. Hence when an inventor has transformed a natural force into a new artificial force, since this new force is a new means he has completed one inventive act. If he thereafter discovers in this new artificial force certain capabilities of action hitherto unknown, and unites them with any mode of application by which they can be made practically useful in the arts, this is an additional means, and the result of an additional inventive act. If further discoveries reveal to him that certain objects possess susceptibilities which enable him to produce valuable results by subjecting them to the operation of his new force, this is still another means and is attained by a different inventive act. Thus any past invention may become the subject of discovery during the performance of a subsequent inventive act, and so form one of the factors of the new invention.

That a change in the condition of a natural force is an invention, and that the force in such changed condition is a new means and patentable when practically applied, see Dolbear *v.* American Bell Telephone Co. (1888), 43 O. G. 377.

§ 94. The Mode of Application is a Fact Perceived, not Created, by the Inventor.

The same truth may be predicated of the third factor, or the mode of application.[1] The action of a force upon an object depends not only upon their inherent qualities, but upon the relation which naturally or artificially exists between them. This relation may reside in simple contiguity, or it may result from the interposition of material agencies through which the force is brought to bear upon its object. The method by which this relation between the force and object is established is the mode of application. It may manifest itself by fugitive acts applying the force to the object, or by the employment of permanent instruments through which the force operates upon the object. But whatever may be its essential character it is either a natural or an artificial means, existing antecedently to the conception of the idea of which it forms a part, and consequently is not originated by the same mental process which results in this new idea of means.

§ 95. Generation of Idea of Means Consists in Conceiving a New Union of the Force, Object, and Mode of Application.

The creative genius of the inventor not being employed in the production of either one of the three factors of his idea of means, its sphere of operations must be limited to the union of these factors in that idea. This union consists in bringing the force into such relations with its object, through the mode of application, that the force will operate upon the object to produce the desired effect. Such union is rendered possible by the existence of certain capabilities in the force which enable it to act upon the object, of certain susceptibilities in the object which qualify it to receive the action of the force, and of certain availabilities in the mode of application which fit it for the direction of the force upon the object. All these

§ 94. [1] What is here called the "mode of application" is essentially distinct from the apparatus employed in applying the force to its object. The "mode of application" is the method in which the force is brought, *through the instrumentalities adopted by the inventor*, into connection with the object. See § 163, note 1, note to case cited.

the inventor must perceive in order to effect this union. If this perception is derived from other persons his union of these factors requires no exercise of his creative faculties, since the direction of known capabilities upon known susceptibilities through known availabilities is a mere matter of industrial skill. But if his *per*ception is the reflex of his own *con*ception, if the capabilities of the force, or the susceptibilities of the object, or the availabilities of the mode of application have become known to him through his own original efforts, then the union of these factors, and the idea of means produced by such union, owe their existence to his creative faculties and are the fruit of his inventive skill.

§ 96. Generation of Idea of Means Involves two Mental Processes: Discovery and Construction.

It is thus evident that the conception of an idea of means by an inventor includes two mental processes: a process of discovery, and a process of construction. The process of discovery consists in the finding out, by his own endeavors, of those qualities in the force, the object, or the mode of application, which render their union possible. The process of construction consists in combining the three factors into the idea conceived. Without the former process, the latter would demand no exercise of the inventive faculties.[1] Without the

§ 96. [1] That the act of discovery is an essential part of the inventive act has been recognized from the earliest history of Patent Law, and finds expression in numerous modes of statement, some direct, some circuitous. Among the most recent is that of Blatchford, J., in Thompson *v.* Boisselier (1885) 114 U. S. 1: (11) "The beneficiary must be an inventor, *and he must have made a discovery.*" Also in the same case (11) "So, it is not enough that a thing shall be new, in the sense that in the shape or form in which it is produced it shall not have been before known, and that it shall be useful, but it must, under the Constitution and the statute, amount to an invention or discovery." 31 O. G. 377 (379).

In Wooster *v.* Blake (1881), 22 O. G. 1132, Blatchford, J.: (1133) "The invention consists primarily in finding out what mechanical operation is necessary to produce the practical result arrived at. When such operation is hit upon the mechanical work is easy. It is easy when the mechanical operation is seen to say that it was obvious that certain mechanical arrangements would effect it; but mechanical arrangements are tried and tried in vain to reach a practical result, because the mechanical operation which is to effect such a result is not yet seen. In looking at the completed thing the mechanical

latter, the former would result only in an addition to the inventor's knowledge of the properties of things, and not in the production of new operative means. Taken together they constitute the complete mental part of the inventive act, creating a new and original idea of means which requires only reduction to practice to make it useful in the arts.

§ 97. Discovery may Relate either to the Force, the Object, or the Mode of Application.

It is further evident that these mental processes are both performed whenever the qualities of either one of the three factors were hitherto unknown to the inventor. The constructive process is the same whether such qualities were originally discovered by the inventor or were communicated to him by others, and is, therefore, present in all efforts either of mechanical or of inventive skill. The process of discovery becomes necessary only when these qualities remain unknown, but is as necessary when those of a single factor are undiscovered as if those of the three were still to be revealed. Thus, where the capabilities of the force are as yet concealed, no conception of an idea of means in which it is united with an object and a mode of application is possible, although the susceptibilites of the object and the availabilities of the mode of application may be fully understood. Equally true is this when the susceptibilities of the object, or the availability of the mode of application are unknown. That which remains unknown must become known before the constructive process can begin; and this can be effected only by the process of discovery, whether its field of exploration cover the whole or merely one of these subordinate factors. Hence the conception of an idea of means may consist in the discovery of the capabilities of the force, and its union with an object whose susceptibilities are known, through a mode of

operation is there; but the inventor, though he knew all about cams and levers and other mechanical arrangements, did not have in advance before him the coveted mechanical operation." [9] Fed. Rep. 429 (432).

That the process of discovery is essential to the inventive act, see Gardner *v.* Herz (1886), 118 U. S. 180; 35 O. G. 999.

application whose availability is also known. Or it may consist in the discovery of the susceptibilities of the object, and its union with a force whose capabilities, and a mode of application whose availabilities, are already familiar to the inventor. Or it may consist in the discovery of the availability of a mode of application and its union with a force whose capabilities, and an object whose susceptibilities, he has long since ascertained. In each of these conceptions the creative faculties are exercised, and the mental part of the inventive act is truly and completely performed. If the field of discovery is wider, embracing the qualities of two or even of all these factors, the essential character of the mental processes involved, and consequently of the inventive act, remains unchanged.

§ 98. Creative Faculties Employed in Discovery on Seven Occasions.

From these considerations it appears that the creative faculties of the inventor may be exercised in the process of discovery on seven different occasions: (1) Where the capabilities of the force are discovered, the qualities of the other two elements being known; (2) Where the susceptibilities of the object are discovered, the qualities of the other two elements being known; (3) Where the availability of the mode of application is discovered, the qualities of the other two elements being known; (4) Where the capabilities of the force and the susceptibilities of the object are discovered, the availability of the mode of application being known; (5) Where the capabilities of the force and the availability of the mode of application are discovered, the susceptibilities of the object being known; (6) Where the susceptibilities of the object and the availability of the mode of application are discovered, the capabilities of the force being known; (7) Where the capabilities of the force, the susceptibilities of the object, and the availability of the mode of application are all the subject of discovery. In each of these cases, if the discovered factor or factors have been united by the discoverer with the known factors, (if any were already known), into an idea of a practically operative means, the mental part of the inventive act

has been performed and the invention is ready for concrete embodiment.

§ 99. Process of Discovery Described: how Evidenced.

The process of discovery consists in finding out what was before unknown. The method in which it is conducted is of no importance. Many discoveries are the result of study and research. Others are reached by experiment based on reasoning or conjecture. Others dawn on the mind apparently by accident, without previous attention to the subject. The fact of discovery can, in the nature of things, be ascertained only through its results. A matter hitherto unknown cannot become known without an act of discovery on the part of the person to whom it is first known; and when the unknown is made known it is, therefore, certain that an act of discovery has been performed. The sole test of discovery, which any science can possess, thus formulates itself in the question: Has the unknown become known? — a question which includes two others: What is the unknown? When does the unknown become known? In answering the first question the law escapes the uncertain speculations of philosophy by the adoption of a rule at once definite and practical. A thing is unknown when it is neither known in itself nor suggested to persons, who are acquainted with that class of things, by what is known. That individuals of unusual ability may reason from the known fact to the other does not make the latter also known; but if the ordinary mind, being already familiar with a class of objects, can pass by an association of ideas from one of these to others not before perceived, the knowledge of the former embraces that of the latter and all alike are thus considered known. The unknown becomes known when its essential characteristics are comprehended by the mind. Hence in any given instance of alleged discovery, if the necessary attributes of some fact or object, heretofore unknown in itself to the alleged discoverer and not suggested to him by any known fact or object, have been brought within his comprehension by his own efforts, the allegation of discovery is true, and a substantial addition to his stock of knowledge has been made. Applying this test to the generation of an idea of means, the process of

discovery consists in the finding out, by the inventor, of some force or capability of a force, or some object or susceptibility of an object, or some mode of application or availability in a mode of application, which was neither known to him before nor could have been suggested to him by anything that was known.[1] Wherever, therefore, either of the factors in the idea of means is new, in the sense of being hitherto wholly unknown to the mind of the inventor, and has not been communicated to him by others, the creative faculties must have been in operation and engaged in the process of discovery.

§ 100. Process of Construction Described: how Evidenced.

The process of construction consists in uniting the discovered force, or object, or mode of application, with the other two factors of the idea of means, in a conception whose embodiment in tangible materials will form a practically operative art or instrument. This process, though of a lower order than the process of discovery, is equally essential to the mental part of the inventive act.[1] The test of its performance is the accomplishment, by the embodied idea of means, of the end it was created to fulfil. For wherever a proper force is directed upon a proper object, by a proper mode of application,

§ 99. [1] In order further to avoid any question as to the degree of personal knowledge possessed by the inventor, and thus the existence of the process of discovery, the law presumes that he has an acquaintance with all matters familiar to those who are skilled in the art to which his invention belongs. This subject is discussed in § 112, and the authorities are collected in its notes. If, therefore, the matter which he claims to have discovered was known to persons skilled in the art before the date of his alleged discovery, it is conclusively presumed that it was known to him, and hence that his assertion of discovery is false. On the contrary, if it were not known in the art until he made it known, its intrinsic novelty is strong but not conclusive evidence that the act by which it became known to him was an act of true discovery. This position is the foundation of the theory that novelty indicates the exercise of inventive skill, a theory which is correct if the actual or intrinsic newness of the discovery be taken as the guide, but incorrect if the legal novelty (or patentable novelty, if it may be so called), of the concrete invention is regarded.

§ 100. [1] That the discovery of hitherto unknown qualities or capabilities is not, by itself, invention, see Ansonia Brass & Copper Co. *v.* Electrical Supply Co. (1887), 32 Fed. Rep. 81; 42 O. G. 1168.

the result intended by the inventor must inevitably follow; and any failure in the result thus proves either that his discovered factor has not been joined with suitable associates, or that their union is still incomplete.

§ 101. Essence of Idea of Means Depends on which of these Factors is the Subject of Discovery: Three Groups of Means: "A Force Applied:" "A Mode of Application:" "A Specific Treatment of Specific Objects."

The idea of means being thus composed of three factors, at least one of which possesses attributes unknown to the inventor until discovered by his efforts, and all of which have been united by his constructive thought into a conception ready for practical and efficient expression in the arts, the ultimate and essential character of this idea must depend upon the factor in reference to which the process of discovery has been performed. The discovery of a new force or new capability of a known force, and its union with a mode of application through which it can act upon such objects as are naturally susceptible to its influence, constitutes an idea of *a force applied*.[1] The discovery of a new mode of application, or of a new availability in a mode already known, and its adaptation to employment as a method of connecting forces with their objects, constitutes an idea of *a mode of application*.[2] The discovery of a new object or of new susceptibilities in a known object, and its union, through an available mode of application, with a force capable of operating upon these susceptibilities with useful results, constitutes an idea of *subjecting a specific object to specific treatment*, thereby producing in the object certain definite effects.[3] To one of these three groups all ideas of means necessarily belong; and in determining any question con-

§ 101. [1] That the practical application of a newly discovered force or property of matter to any object, and by any mode of application, constitutes a new means and hence a new invention, see Poillon *v.* Schmidt (1869), 6 Blatch. 299; 3 Fisher, 476; Smith *v.* Ely (1849), 5 McLean, 76; Parker *v.* Hulme (1849), 1 Fisher, 44.

[2] That a new mode of applying a well-known force to its objects is a new means and a new invention, see Hills *v.* London Gas Light Co. (1860), 5 H. & N. 312.

[3] That to discover new susceptibilities in an object and to render them available by subjecting it to well-known forces, applied in well-known methods,

cerning the essence of a concrete art or instrument, or its identity with any other art or instrument, the analysis of the idea of means, therein embodied, into its component factors, and its relegation to its proper group as indicated by the factor which has been the subject of discovery, affords the only scientific and reliable method of investigation.

§ 102. Essence of "A Force Applied."

The essence of an invention, in which is embodied the idea of a force applied, consists of the new force or capability acting through the selected mode of application. The process of discovery, it is true, has been employed only upon the force, but a force alone is not an operative means. To it must be added the intermediate agency, by which it is brought in contact with its object and so directed thereupon as to produce the end desired. The object, however, forms no part of the invention. It is, indeed, the substance upon which the means must act and in which it must accomplish its effects. Its presence is, therefore, indispensable to the useful operation of the means, and must have been contemplated by the inventor while selecting the mode of application by which his new force could be beneficially applied; but the existence of the means itself is independent of the object upon which it may be employed.

§ 103. Essence of "A Mode of Application."

The essence of an invention, in which is embodied the idea of a mode of application, consists of the new intermediate agency which the inventor has discovered, whereby a force may be united with its object. In discovering and comprehending such an agency, the mind must apprehend the force and object, and the relations which the new mode of application can establish between them; but when completely

is a new means and a new invention, see Cary *v.* Wolff (1885), 23 Blatch. 92; 32 O. G. 257; 24 Fed. Rep. 139; Spill *v.* Celluloid Mfg. Co. (1880), 5 Bann. & A. 405; 18 Blatch. 190; Dalton *v.* Nelson (1876), 2 Bann. & A. 225; 13 Blatch. 357; 9 O. G. 1112; Union Paper Collar Co. *v.* White (1875), 2 Bann. & A. 60; 7 O. G. 698, 877; Young *v.* Fernie (1864), 4 Giff. 577; Steiner *v.* Heald (1851), 6 Exch. 607; Walton *v.* Potter (1841), 1 Web. 597.

conceived and understood by the inventor, the mode of application stands alone, as a perfect and independent means, available for use with any force and any object to which it may be suitable, and reducible to practice in any form which establishes between them the connection necessary to the operation of the one upon the other in the mode proposed.

§ 104. Essence of "A Specific Treatment of Specific Objects."

The essence of an invention, in which is embodied the idea of treating a specific object in a specific manner in order to produce particular results, comprises the three factors of the idea, — the susceptibility of the object, the capability of the force, and the availability of the mode of application.[1] The susceptibility of the object is the only subject of discovery, but this is not a means. The capacity to receive impressions from external forces is a condition precedent to the operation of such forces, but is not a method by which those impressions may be produced. Yet the force, united with the mode of application, does not constitute the entire essence of the invention, since in reference to these factors there has been no process of discovery; and without that process exercised upon the object the specific treatment which results in the desired effect could not have been invented. Hence in inventions of this character, the three factors are inseparable, both in mental contemplation and in actual practice; the substitution of a different object or susceptibility, or of a different force or capability, or of a different mode of application or availability,

§ 104. [1] This group of inventions is of comparatively late recognition in the law. The employment of an old force through an old mode of application upon a new object was long confounded with the "double use" of the old invention; and the proposition that an inventive act might consist in discovering new objects or new susceptibilities in an old object, and utilizing these by applying to them old forces through old modes of application, has been established only after long delay and much controversy. It is now, however, a settled doctrine. Its gradual growth may be traced in the following cases: Walton *v.* Potter (1841), 1 Web. 597; Steiner *v.* Heald (1851), 6 Exch. 607; Young *v.* Fernie (1864), 4 Giff. 577; Union Paper Collar Co. *v.* White (1875), 2 Bann. & A. 60; 7 O. G. 698, 877; Dalton *v.* Nelson (1876), 2 Bann. & A. 225; 13 Blatch. 357; 9 O. G. 1112; Spill *v.* Celluloid Mfg. Co. (1880), 18 Blatch. 190; 5 Bann. & A. 405; Cary *v.* Wolff (1885), 23 Blatch. 92; 32 O. G. 257; 24 Fed. Rep. 139.

See also cases cited under § 266.

changing either the object treated or the method of treatment, and forming, therefore, a distinct invention.

§ 103. Essence of any Concrete Invention Ascertained by Relegating it to its Proper Group.

The concrete inventions falling within these fundamental groups do not necessarily belong to the same classes in the arts. Many processes, possibly some machines and manufactures, and probably all compositions of matter, are of the first group, representing the idea of a force applied. Processes which consist merely in the direction of known forces upon known objects, as well as most if not all machines and manufactures, are of the second group, embodying the idea of a mode of application. Processes which consist in the subjection of specific objects to specific modes of treatment, based upon the discovery of new susceptibilities in the objects treated, constitute the third group. The test, in any case of doubt, resides in the subject of discovery. Where the force alone has been discovered by the inventor, the other factors being known, the invention falls within the first group. Where only the mode of application has been discovered, the force and object being known, the invention belongs to the second group. Where the object furnished the sole field of discovery, the invention is embraced within the third group. The relegation of an invention to its proper group thus at once discloses its essential character, and renders its comparison with other inventions, for the purpose of determining their identity, accurate and practicable.

§ 106. Essence of Idea of Means not Changed though other Factors are Subjects of Discovery.

Were the process of discovery in all inventions confined to a single factor of the idea of means, the classification thus attained would need no further explanation. But it may occur that an inventor, having discovered one new factor, finds none within his knowledge which can be united with it into an operative means, and is compelled to prosecute his efforts of discovery until one or both of the remaining factors are obtained. Whether this method of achieving his results

changes the mental part of the inventive act, and the consequent character of the idea conceived, is a question of serious importance. That the constructive process of the mind is not varied by the necessity for additional discovery is evident, since the organization of factors into an operative whole involves the same mental energies whether or not the factors were hitherto unknown. The difference, if it exists, resides in the process of discovery and in the relation of the thing discovered to the idea of means. The process of discovery is the same except as to the field with which it has been occupied, involving the same faculties and proceeding by the same methods to the accomplishment of its results. The relation of the factors to each other and to the entire idea must, therefore, determine whether the discovery of more than one affects in any manner the nature of the inventive act and the idea of means which it evolves. But where an inventor has discovered a new force or a new object or a new mode of application, and either one of the remaining factors is unknown, it is obvious that the process of construction cannot be commenced and that no inventive act has been performed. And when he discovers the needed factor, and completes the idea of means through the constructive process, it is equally obvious that, so far as this idea of means is concerned, he has performed no more than the inventive act requires. Hence it is true that the essential character of the inventive act, which results in the production of any given idea of means, is not affected by the number of the factors which become the subjects of discovery. The discovery of the inventor in relation to the second or third factors may, however, have been more extensive than was necessary to complete this given idea of means. Thus, if the factor first discovered were the force or object, and the missing factor were the mode of application, that mode which he discovers may be available as the connecting agency between many other forces and their objects. Here it is evident, that while the idea of means into which the discovered force or object enters as a factor does not exhaust the availabilities of the discovered mode of application, yet neither the nature of the force applied, nor that of the object treated, nor that of the idea in which they are united,

is varied by the excess existing in the mode of application. The means is still the same means, operating on the same objects and accomplishing the same results, although one of its factors might have been employed for other independent purposes. The discovery of this additional availability may serve the inventor as a basis for constructing other ideas of means by uniting it with other forces or other objects, but cannot enlarge the scope or change the nature of the means of which the new discovered force or object is an essential factor. On the same principle, if the first discovery related to the mode of application, and the additional discovery to the force or object, the fact that in the mode of application availabilities reside, which are not required in the direction of this force upon its object, cannot extend the scope of the idea of that invention beyond the availabilities therein employed, although the additional availabilities may enter as essential factors into other means, whenever objects or forces which can be connected by them are discovered. The conclusion, therefore, seems inevitable that in a given invention it is immaterial whether one or more factors are the subject of discovery; that in all cases the same mental faculties are employed, the same processes are followed, and the same results attained; and that every invention, however conceived and constructed, must be either a force applied, a mode of application, or the subjection of a specific object to specific treatment for the purpose of producing in the object certain definite effects.

§ 107. Identity of Two Ideas Determined by Comparing their Essential Factors.

The identity or diversity of two ideas of means may be determined by resolving each idea into its component factors, and comparing those of one idea with the corresponding factors of the other. Where the force, the object, and the mode of application are the same in both ideas, the ideas are essentially identical. Where the force, the object, and the mode of application in one idea all differ from the corresponding factors of the other, the ideas are essentially diverse. Where one or two of the factors are the same in each idea, but the

remaining factor or factors are different, the ideas may be totally distinct, or they may be identical, or one may be included in the other. In such cases, to ascertain their true relation, each must be referred to its appropriate group, according to the factor which has been the subject of discovery. If the ideas fall into different groups they cannot be identical, though one may be included in the other. Thus an idea of means consisting in a mode of application may be embraced in an idea of a force applied, and both may be involved in that of treating a specific object in a specific manner, but neither of these ideas is identical with any of the others. But when the mode of application which constitutes the essence of one idea is not the same mode which the force applied employs, these two ideas have no common attribute, since the force in the first case, and the object in both cases forms no part of the essence of the means. In like manner, when one of the ideas is a mode of application or a force applied, and the other is a specific object subjected to specific treatment, the ideas must be wholly different, unless the force and mode of application in the latter are identical with those which constitute the former. If the two ideas fall within the same group, their identity or diversity depends upon the identity of their essential factors. When each is a force applied, the force and mode of application in each must be the same or they are totally diverse. When each is a mode of application, the availability employed by each must be the same or no identity of means exists. When each is the treatment of an object, the object, the mode of application, and the force in each must be identical, or the ideas are essentially distinct. In making these comparisons, accurate results would be impossible were the physical identity or diversity of forces, objects, and modes of application the facts to be decided, since for the most part these lie beyond the sphere of human knowledge. The law, therefore, being compelled to furnish some test of identity or leave these problems utterly unsolved, declares that, for its purposes, two forces, objects, or modes of application shall be regarded as the same, whenever, in connection with the other factors of the idea of means, they could be used as perfect substitutes for one another, and were

known as such in the arts when the idea of means was first conceived.[1] This rule rests on sound reason as well as on authority. No matter what their actual differences may be, two things must be the same, in reference to an invention, when, as employed in the invention, each would perform the functions of the other. If this interchangeability is known when the idea of means is conceived by the inventor, or is made known by his generation of the idea, his inventive act, in its processes of discovery and construction, embrace all alike, although in his concrete invention he may have chosen to employ but one. On the other hand if, after his idea has been completed, a new factor is discovered capable of filling the same place in the invention, and relations are established between it and the other factors of his idea, a new inventive act has been performed, including both the processes of discovery and construction, the results of which are not in law regarded as identical with his, however certain it may be that physically and industrially they are the same.

§ 108. General Statement of the Nature and Factors of the Idea Generated by the Mental Part of the Inventive Act.

The conclusions to which this examination of the nature and elements of the idea generated by the mental part of the

§ 107. [1] The principle here involved is the same as that which, in reference to the concrete embodiment of the idea of means, finds expression in the doctrine of Equivalents. Whether in dealing with the art or instrument as practically employed, or with the ideas which form the essence of the invention, the law is compelled to furnish some standard by which, in the incurable deficiency of scientific knowledge, the identity of conceptions, as well as substances, may be determined. The one adopted serves all necessary purposes in either field, and though usually found, in its verbal statement, predicated of embodiment alone, is evidently as true and serviceable in ascertaining the identity of those factors upon whose correspondence the identity of the concrete art or instrument depends.

Sec. iii., chap. iii., §§ 245–258 on Equivalents, with its notes, affords a wider and clearer discussion of the subject. Caution is requisite not to attribute to the identity of ideas the rule governing the date when equivalents in embodiment must have been known. An equivalent in embodiment must have been known when the act of embodiment was performed, which is *prima facie* at the date of the patent. An equivalent in idea must have been known when the idea was conceived by the inventor, which is at the date of his complete comprehension of his idea as an operative means.

inventive act conducts us, may be stated in the following propositions: —

I. The idea generated is an idea of means as distinguished from an idea of end;

II. The idea of means is composed of three factors, an idea of force; an idea of object; and an idea of a mode of application;

III. The generation of the idea consists not in the creation of either of these factors, but in the discovery that they are capable of union, and in uniting them in one idea of means;

IV. The idea of means is generated, and the mental part of the inventive act performed, whenever a new force, or new capability of a force, is discovered and applied to proper objects by some proper mode of application; or whenever a new object, or new susceptibility of an object, is discovered and is subjected to the action of any force through any suitable mode of application; or whenever a new mode of application, or new availability of a mode of application, is discovered and employed as the connecting agent between forces and their objects;

V. The ideas of means thus generated are divisible, according to the method of their generation and their essential attributes, into three classes: (1) A force applied, in which the force has been the subject of discovery, and the force and mode of application constitute the essence of the means; (2) A mode of application, in which the mode of application is the subject of discovery and the essence of the means; (3) A subjection of specific objects to specific treatment, in which the object is the subject of discovery but all the factors enter into the essence of the means;

VI. Whether the process of discovery extends to other factors than the one which characterizes an idea of means is unimportant; the idea itself is still the same, whatever other ideas may be constructed on the basis of the additional discovery;

VII. The identity or diversity of ideas of means is ascertained by resolving each into its component factors, and comparing every factor in one with the corresponding factor in the other;

VIII. Judged by this standard, ideas of means are iden-

tical where all the factors in each are identical with the corresponding factors in the other, or where both the inventions belong to the same group and the essential factors of each are the same as the essential factors of the other; they are diverse when all their corresponding factors are unlike, or when, belonging to different groups, the more complex does not embrace the essential factors of the other; one idea includes another when they belong to different groups and all the essential factors of the simpler means enter into the essence of the other.

The importance of these propositions, and of the principles upon which they rest, cannot be overestimated. They form the tests which, in the last resort, are decisive of every question relating to the exercise of inventive skill, or to the novelty or utility of its results. To them may be reduced most of those rules which, before the nature of the mental part of the inventive act was clearly understood, had obtained titles of their own, as if they were the ultimate verities of Patent Law. As we go forward they will solve for us all our apparent difficulties, and furnish us a basis for the classification of those decisions through which the courts have gradually wrought their way toward these essential and imperishable truths.

SECTION III.

OF THE FACTS WHICH INDICATE THAT THE MENTAL PART OF THE *INVENTIVE ACT HAS BEEN PERFORMED.*

§ 109. Whether an Inventive Act has been Performed is to be Determined from the Invention itself, not from the Assertions of the Inventor.

Whether or not the mental part of the inventive act has been performed is a question of fact, to be determined by the evidence presented.[1] For obvious reasons, this question is one of the most difficult of those arising in the administration

§ 109. [1] That the existence of inventive skill is a question of fact, see Butler *v.* Bainbridge (1886), 29 Fed. Rep. 142; Stimpson *v.* Woodman (1869), 10 Wall. 117.

of Patent Law; and hence, wherever reasonable doubt exists, the same liberal spirit which characterizes both the enactment and the application of the law awards the benefit of the doubt to the inventor.[2] In the investigation of this question, the actual operations which have taken place in the mind of the inventor are not open to inquiry. Concerning these he alone has any personal knowledge, and even his impressions are often vague and unreliable. Of themselves they are of no importance to the public, provided the process of discovery and the process of construction have both been completed, and of these the nature and the elements of the idea embodied in the invention afford the only evidence. The invention must, therefore, speak for itself. As contemplated by the observer, apart from any claims of the inventor, it must present those indications which the law deems sufficient proof that it originated in an exercise of the inventive powers. If these exist, there is no occasion to determine by what intellectual operations the result was reached. If these are wanting, no allegations by the inventor can supply their place.

§ 110. Inventive Act Performed when the Generated Idea is an Idea of Means, and either of its Factors has been Discovered by the Inventor.

This question, when fairly apprehended, resolves itself into two subordinate inquiries: Whether the idea conceived by the

[2] In Kirby *v.* Beardsley (1867), 3 Fisher, 265, Shipman, J.: (278) "I am well aware that it is often no easy task to draw the true line of distinction between invention, the product of original thought, and mere obvious manual changes following the beaten track of mechanical experience. This difficulty, in connection with the general merit of inventors, as contributors to the material interest of society, has inclined courts to give a liberal construction to the law, so as to protect every contrivance that can be called new, which proves at all useful. Care has been taken to give the benefit of doubt, as to originality or creative thought, to the inventor, so as to nourish inventive enterprise by lending encouragement to every degree of merit. This is the more important, as simple contrivances, the offspring of simple, even involuntary thoughts, often produce great and beneficial results, while complex and elaborate ones, the product of long and profound cogitation, not unfrequently prove comparatively or wholly abortive. But it is obvious that there is a limit beyond which mere changes cannot and ought not to receive this protection." 5 Blatch. 438 (453). See also Butler *v.* Bainbridge (1886), 29 Fed. Rep. 142.

alleged inventor is that of a practically operative means? and Whether either of the factors of the means conceived was previously unknown to the inventor? If the idea conceived is that of an operative means, it is at least certain that the constructive process has been performed, and that a force, an object, and a mode of application have been united in such a manner as to produce useful results. If, in addition to this, the inventor had no prior knowledge of that capability of the force, or that susceptibility of the object, or that availability of the mode of application, which renders possible their union in this idea of means, it is apparent that the process of discovery has taken place, and, therefore, that the mental part of the inventive act has been complete. The first inquiry is answered without difficulty by the tangible embodiment of the idea and its practical application in the arts, since if it there proves useful it is evidently an operative means. The second is the field of doubt and obscurity, in which the most exhaustive research sometimes fails to obtain a satisfactory reply.

§ 111. Discovery Present when either Factor of the Idea was before Unknown in the Arts.

Upon the subject of this second inquiry the inventor alone, of course, can speak with perfect accuracy. The conclusions of the law, however, are not allowed to rest on his unaided testimony, except when every other source of information fails. It has its own methods of ascertaining the state of his prior knowledge, and only when it has applied these, and has found them insufficient, does it permit his assertions to control its judgment. The fundamental test which it applies is the condition of human knowledge in general, in reference to those factors of the idea of means which the inventor claims to have discovered for himself. If these were utterly unknown before the date of their employment by the alleged inventor; in other words, if they were new in themselves; they must have been presented to his mind by the process of discovery. The actual novelty of any factor in the idea of means thus establishes beyond dispute the want of prior knowledge on the part of the producer of the means, and proves his exercise of his inventive powers.

§ 112. Discovery Absent when every Factor of the Idea was Already Known in the Arts.

The knowledge of mankind in general concerning any of the factors of the idea of means does not, however, demonstrate that the inventor shared such knowledge. Whatever information others may have possessed, the attributes of these factors may be new to him and have been ascertained by a true process of discovery. But the uncertainties attending the investigation of this fact are so great that the law cannot, with safety, give it serious attention. Except in cases where it could be proved that the inventor had derived his knowledge from external sources, his own assertion would be the only evidence obtainable, and though he were surrounded by those who were familiar with the factors he employed, his undisputed claim of personal ignorance would secure to him the credit of an inventive act. If the purpose of the law were to do honor or bestow rewards on all conceivers of ideas of means, this fact would be the proper point of inquiry. But as its only object is to confer exclusive privileges on the first inventor, it consistently refuses to regard any exhibition of inventive skill, the result of which could have been attained by applying the constructive process to the discoveries of others, and thus establishes the rule that every alleged inventor shall be conclusively presumed to have known, at the time of his conception of the idea of means, whatever was then generally known concerning any of its factors to persons skilled in the art to which the idea belongs.[1] Under this rule, the secret knowl-

§ 112. [1] In Crompton *v.* Knowles (1881), 7 Fed. Rep. 199, Lowell, J.: (203) "It is a presumption of law that all mechanics interested in upholding or defeating a patent were fully acquainted with the state of their art when they took out their patent, or when they built their machine. This presumption is founded upon a policy like that which imputes to all persons charged with crime a knowledge of the law. It is necessary to the safe administration of justice. Each party may then be assumed to have borrowed from the other whatever was actually first invented and used by that other."

In Walton *v.* Potter (1841), 1 Web. 585, Tindal, C. J.: (592) "The party is not entitled to his patent . . . unless he is the first and true inventor; therefore, if the subject-matter of the patent has been discovered — has been published in a dictionary, for example — though it has not been reduced into practice, if a man merely adopts it, the merit is so small that his patent for it would be worth nothing."

In a note to this case Mr. Webster

edge of single individuals is not considered. Such knowledge is not incompatible with general ignorance, and when it has been demonstrated that the knowledge was concealed, the want of knowledge on the part of other persons and the public is established. Wherever, therefore, an alleged inventor employs, in his idea of means, a factor whose attributes were unknown before his idea was conceived, or were known only to individuals who concealed their knowledge, his perception of those attributes must have resulted from his own process of discovery. On the other hand, whatever may have been the state of his own knowledge, if these attributes were already generally known to persons familiar with the art, it is presumed that he derived his information from external sources and that no inventive act has been performed.

§ 113. Discovery Indicated by the Intrinsic Novelty or Utility of the Concrete Invention.

When the performance of the process of discovery can be affirmed or contradicted in the foregoing manner, no further inquiry is necessary. But investigations of the attributes of forces, objects, or modes of application are not always satisfactory in the present state of scientific knowledge, and other methods of solving this question must, therefore, be employed.

says: (1 Web. 592) "The two issues of novelty, viz., whether the plaintiff is the true and first inventor, within the meaning of the statute, and whether the invention at the time of the grant be new as to public use and exercise, are, as in this case, generally involved together, because, if the latter be established in the negative, the former is involved in it; but they are, in point of law and of fact, distinct issues, for it may well be that the invention was never in public use and exercise, and yet that the grantee of the letters-patent is not the true and first inventor."

(1 Web. 44 n.) "If an account of an invention be contained in any published book in general circulation, the presumption is that the patentee learnt it from such source, and in that case he would not be the true and first inventor."

Further, that an inventor is always presumed to have known all prior inventions that were identical with his, unless they had become "lost arts," see Sinclair *v.* Backus (1880), 5 Bann. & A. 81; 4 Fed. Rep. 539; 17 O. G. 1503.

That a matter of common knowledge and experience is not patentable, see Preston *v.* Manard (1886), 116 U. S. 661; 34 O. G. 1507.

That patents are public records, and a knowledge of them is presumed, see Bate Refrigerating Co. *v.* Gillette (1887), 40 O. G. 1029; 31 Fed. Rep. 809.

Among these the intrinsic novelty and utility of the concrete invention are the most important. In the concrete invention the idea of means is made practically operative by embodiment in tangible materials. An art or instrument is thereby produced which is capable of employment for a useful purpose. *This art or instrument may possess legal novelty* without intrinsic novelty. Legal novelty is a prerequisite to patentability, and exists whenever the invention has never been in use in the United States, nor patented nor described in a printed publication either here or abroad. Intrinsic novelty is predicable of the invention itself, and exists wherever the art or instrument was hitherto unknown in the arts, and was not suggested by anything already known. The latter novelty is very strong, and often conclusive, evidence that the alleged inventor of the art or instrument has discovered one or more of the factors of his idea of means, and consequently has performed the entire inventive act.[1] It may indeed be true that the constructive process, working upon factors all whose attributes are known, sometimes evolves concrete inventions which cannot be recognized as previously existing, and, therefore, are accepted as results of an inventive act, although no process of discovery has really occurred. The capability of the force, the susceptibility of the object, the availability of the mode of application, never before perceived and acted on by any one, may, nevertheless, have been suggested to the inventor's mind by other qualities of the same factor, and might have been suggested to the mind of any other person familiar with the art, provided his attention had been thereto directed. Where the suggestiveness of the known attribute is evident, and hence the process of discovery is excluded, the intrinsic novelty of the concrete invention cannot overcome the inevitable inference that no inventive act has been performed. But where the suggestiveness of the known

§ 113. [1] That intrinsic novelty in the concrete invention indicates discovery, see Celluloid Mfg. Co. *v.* Comstock & Cheney Co. (1886), 27 Fed. Rep. 358 ; 36 O. G. 1356 ; Hoe *v.* Cottrell (1880), 17 Blatch. 546 ; 18 O. G. 59 ; 1 Fed. Rep. 597 ; 5 Bann. & A. 256.

That the novelty of the concrete invention is not conclusive evidence of discovery, see Adams *v.* Bellaire Stamping Co. (1886), 28 Fed. Rep. 360 ; 36 O. G. 567.

attribute is not apparent, and the inventor may thus have developed his idea through the process of discovery, the intrinsic novelty of the concrete invention is sufficient to remove the doubt and affirm the claim of the inventor to the merit of an entire inventive act. The intrinsic utility of the concrete invention is of similar significance.[2] Wherever any practically operative means proves itself singularly beneficial to mankind, the inference is almost inevitable that the idea which it embodies would long before have been perceived, had the constructive faculties of the human mind alone been able to produce it, and, therefore, that the process of dis-

[2] In Hill *v.* Biddle (1886), 27 Fed. Rep. 560, Butler, J.: (561) "While it is true that the utility of a machine, instrument, or contrivance, as shown by the general public demand for it when made known, is not conclusive evidence of novelty and invention, it is nevertheless highly persuasive in that direction, and, in the absence of pretty conclusive evidence to the contrary, will generally exercise controlling influence."

In Asmus *v.* Alden (1886), 27 Fed. Rep. 684, Butler, J.: (687) "What constitutes invention, in the legal sense, is difficult of exact definition, in terms. Where, however, an old device or machine in general use, with acknowledged serious defects, which have been long endured because no one has previously discovered a means of obviating them, is taken in hand, and, by changing its form or structure, they are removed, and a different and improved result obtained, it may safely be affirmed that the change required invention. Where the improvement, and consequent public benefit, is great, very little evidence of invention is required." 36 O. G. 231 (232).

That utility is evidence of the exercise of inventive skill, see Sax *v.* Taylor Iron Works (1887), 40 O. G. 118; Wallace *v.* Noyes (1882), 21 Blatch. 83; 23 O. G. 435; 13 Fed. Rep. 172; Western Electric Light Co. *v.* Chicago Electric Light Mfg. Co. (1882), 11 Bissell, 427; 14 Fed. Rep. 691; Gottfried *v.* Crescent Brewing Co. (1882), 22 O. G. 1447; 13 Fed. Rep. 479; Bruce *v.* Marder (1882), 22 O. G. 1039; 20 Blatch. 355; 10 Fed. Rep. 750.

That simplicity and evident fitness are no sign of an absence of inventive skill, see McFarland *v.* Spencer (1885), 23 Fed. Rep. 150; 32 O. G. 893; 23 Blatch. 155.

That a new arrangement and better result are not conclusive evidence of discovery, see Calkins *v.* Oshkosh Carriage Co. (1886), 27 Fed. Rep. 296; 36 O. G. 1149.

That cheapness may indicate inventive skill, see Cornish *v.* Keene (1835), 1 Web. 501.

That simplicity and cheapness do not necessarily indicate inventive skill, see Evory *v.* Burt (1883), 23 O. G. 2121; 15 Fed. Rep. 112; Waterous *v.* Bishop (1867), 20 Can. C. P. 29.

That merely overcoming former prejudices does not indicate discovery, see Butler *v.* Steckel (1886), 27 Fed. Rep. 219; 36 O. G. 455.

That when serious defects are remedied inventive skill is indicated, see Osborn *v.* Glazier (1887), 40 O. G. 1137.

See also § 344 and notes, *post*.

covery has been performed in reference to some one of the factors of which it is composed.

§ 114. Intrinsic Novelty of a Concrete Invention how Evidenced.

In examining an invention, for the purpose of determining its *intrinsic novelty*, it may be considered either directly in its own nature as an operative means, or indirectly through the end which it accomplishes. In many cases the former inquiry alone is necessary, its intrinsic novelty being apparent on the face of the invention, when contemplated in connection with the other processes or instruments heretofore employed in the same art. But in by far the greater number recourse must be had also to the nature of the end attained, to the concrete results whose character is definite and comprehensible, however recondite may be the agencies by which they are achieved. Whenever the direct evidence of novelty is wanting or is insufficient, the courts, therefore, accept the indirect as ample ground for their conclusions, provided it conforms to certain well-established rules.

§ 115. Intrinsic Novelty of a Concrete Invention Evidenced by the Novelty of its Essential Factors.

The indications of intrinsic novelty afforded by an invention itself must be sought in its essential factors. If the invention is a force applied, whatever novelty the invention may possess resides in the force, or in the method of its application; no variation in the object, upon which the force may be directed, constituting any variation in the means employed. If the invention is a mode of application, the changes which may have been effected in the force and object are to be excluded, and novelty be sought in the intermediate agency through which they are connected with each other.[1] If the invention is the specific treatment of an object, all factors are essential, and novelty either in the object, the mode of application, or the force will make the whole invention intrinsically new.

§ 115. [1] That a machine may itself show invention, see Enterprise Mfg. Co. *v.* Sargent (1886), 28 Fed. Rep. 185; 37 O. G. 891.

§ 116. Intrinsic Novelty of a Concrete Invention Evidenced by the Novelty of its Mode of Operation: this Shown by its Comparative Utility.

Further indications of the intrinsic novelty of the concrete invention are afforded by its operation while effecting its results. Although the essential factors of the idea of means remain the same, so far as human observation can detect, yet in the mode in which the operative means accomplishes its end such differences may exist as prove beyond all controversy that one or more of these essential factors has been changed, and, consequently, that the means itself is new. The question of utility, as indicating novelty, here becomes most important. The actual utility of an alleged invention sometimes, as we have seen, affords strong and direct evidence of inventive skill. But its comparative utility, the superiority of its operation over all existing methods of accomplishing the same result, may be so great as to furnish conclusive proof that the invention is radically different from all preceding arts or instruments, and that, though itself imperceptible, some new force, or new application, or new object must have been discovered by the inventor.[1] If, therefore, in

§ 116. [1] In Washburn & Moen Mfg. Co. *v.* Haish (1880), 19 O. G. 173, Drummond and Blodgett, JJ.: (174) "There is no doubt that a device, in order to be patentable, must be the result of invention. The mere mechanical adaptation of old things to new uses is not usually invention, unless in combination; and yet it is extremely difficult in many cases to say just where the inventive faculty asserts itself as the controlling force. And the authorities furnish us no satisfactory test to apply and determine this question. . . . (175) In the absence of any other test, the courts have seemed to assume that the fact of the acceptance of a new device or combination by the public and putting it into extensive use was evidence that it was the product of invention; or, as one of the counsel for plaintiff expressed it, 'utility is suggestive of originality.' In Smith *v.* Goodyear Dental Vulcanite Company (3 Otto, 486), Mr. Justice Strong said: 'Undoubtedly the result or consequences of a process or manufacture may in some cases be regarded as of importance when the inquiry is whether the process or manufacture exhibits invention, thought, and ingenuity.' Webster on the subject of patents, page 30, says: 'The utility of the change as ascertained by its consequences is the real practical test of the sufficiency of an invention, and since the one cannot exist without the other, the existence of the one may be presumed on proof of the existence of the other. Where the utility is proved to exist in any degree a sufficiency of invention to support the patent must be presumed.' We do not say the single fact that a device has gone into general use and has displaced other devices

its operation the concrete invention attains the desired end with greater economy of time, material, or labor; if it avoids

which had previously been employed for analogous uses establishes in all cases that the later device involves a patentable invention. It may, however, always be considered, and when the other facts in the case leave the question in doubt it is sufficient to turn the scale. So in *Eppinger v. Richey* (14 Blatchford, 307), Judge Shipman said: 'Two facts exist in this case. One is, that an important improvement has been attained. The second is, that the improvement is in a staple article which has been manufactured in this country for a long series of years. . . . The utility of the patented article has been evinced by its large sales. . . . The inventor evidently gave to the public an article which it wanted, and which it had not previously known. Without giving to the general use of the invention, as a test of its patentability, any greater importance than the Supreme Court in the case of Smith v. Goodyear Dental Vulcanite Company (above quoted) indicate should be given to this circumstance, I am of the opinion that the facts in the case fully establish the conclusions: (1) That however simple the change in the method of manufacture apparently may have been, yet it was a change which required invention for its accomplishment; (2) That the improvement resulting from the changed method of manufacture has been so great that the article which is produced is, within the meaning of the patent acts, a new and useful article of manufacture.' Mr. Justice Shepley said, in the case of Isaacs *v.* Abrams, 14 O. G. 862: 'A change in the form of a machine or instrument, though slight, if it works a successful result not before accomplished in a similar way in the art to which it is applied or in any other, is patentable.' Judge Shipman said, in Stanley Works *v.* Sargent (8 Blatchford, 346): 'Utility is not an infallible test of originality. The patent law requires a thing to be new as well as useful in order to entitle it to the protection of the statute. To be new in the sense of the act it must be the product of original thought or *inventive skill, and not a mere formal* or mechanical change of what was old and well known; but the effect produced by the change is often an appropriate, though not a controlling, consideration in determining the character of the change itself.'" 4 Fed. Rep. 900 (906).

In Roberts *v.* Dickey (1871), 4 Fisher, 532, Strong, *J.*: (538) "There are many cases in which the materiality of an invention, whether it be a machine or a process, can be judged of only by its effect on the result, and this effect is tested by the actual improvement in the process of producing an article, or in the article itself introduced by the alleged invention. Curtis on Pat., § 9. 'In these cases,' says that author (§ 10), 'the subject of the invention is not the particular machinery, or apparatus by which the new application is made to be available, but it is the new application itself of certain known substances or agents, to produce a particular result, differing either in the process, or in the article produced from the former methods of producing the same thing, and thereby producing a better article, or producing it by superior and cheaper processes. It is obvious that the results in such cases furnish a complete test of the sufficiency of the inventions, because the importance of the result shows that, whether actually exercised or not, the possibility of the exercise of thought, design, ingenuity, and skill is not excluded.'" 1 O. G. 4 (5); 4 Brews. 260 (264).

In Judson *v.* Cope (1860), 1 Bond,

difficulties hitherto encountered, and thus becomes an agency more valuable and effective than any previously known, — the

327, Leavitt, J. : (337) "It will be obvious that, where there is doubt upon the question of novelty, and where the evidence of the witnesses leaves it uncertain whether the principle of the valves was identical, that evidence of the superior performance and utility of the patented improvement would have a direct bearing upon the question of novelty. In other words, if the jury are satisfied that the invention patented produces a result decidedly and clearly different from any which had been produced by the action of any prior valve, and that it was decidedly superior to any other in its operation, it would certainly afford a ground for the presumption that the thing itself had not been known before." 1 Fisher, 615 (624).

In Many *v.* Sizer (1849), 1 Fisher, 17, Sprague, J. : (24) "If the changes made by the defendant have rendered his wheel one of greater utility than the plaintiff's, such utility is evidence that some new principle, or mechanical power, or new mode of operation, producing a new kind of result, has been introduced. And the greater such utility, the stronger is such evidence. And if a manifest and very high degree of utility is obtained by such changes, it becomes full proof and conclusive, that a new principle, or mechanical power, or new mode of operation, producing a new kind or result, has been introduced. . . . (27) If the effect is a wheel of *greater* utility, that is evidence tending to show that some new principle, or mechanical power, or mode of operation, producing a new kind of result, has been introduced; and the higher the degree of utility, the stronger is such evidence. And it may arise to so high a degree as to become conclusive. From our inability to penetrate the secrets of nature, we may not be able to detect the new principle, or power, otherwise than by its effects. But this utility must be derived from the changes introduced — not from the use of better material, or greater skill or care in the manufacture."

In Household Co. *v.* Neilson (1843), 1 Web. 673, Hope, J. : (600) "Great utility is an important element in the question of novelty. For if the process is of great, manifest, striking, and immediate utility, that is of the utmost importance to the point. Could this have been previously in public use and exercise without clear and abundant proof?"

In nearly all the foregoing extracts, the subject of *actual* utility, as indicating discovery or inventive skill, is confused with that of *comparative* utility, as indicating the intrinsic novelty of the concrete invention. Actual utility directly and immediately bears upon the question of inventive skill, because it may be safely assumed that an invention of great actual utility would be at once produced if mechanical skill were sufficient for its creation, and, therefore, that where a want has long existed unsupplied, and has at last been satisfied, inventive skill must have been employed. This evidence is as available and as conclusive where the invention is the first of its kind, as if it had found inferior competitors already in the field. Comparative utility bears only upon the question of intrinsic novelty, though through this question it indirectly influences the conclusion as to the existence of inventive skill. Comparative utility (that is, an increase in utility over that of any invention of the kind heretofore known) may show that a substantial difference must exist between the present and all prior inventions, and thus that the new art or instrument

degree of this increase in value and effectiveness may be, though it not always is, sufficient to demonstrate that the

could have originated only in some new discovery.

See § 344 and notes, *post*.

Further, that superior utility in the invention indicates intrinsic novelty in the invention and hence the exercise of inventive skill, see Celluloid Mfg. Co. *v.* Comstock & Cheney Co. (1886), 27 Fed. Rep. 358; 36 O. G. 1356; Miller *v.* Pickering (1883), 16 Fed. Rep. 540; 25 O. G. 80; Hoe *v.* Cottrell (1880), 17 Blatch. 546; 18 O. G. 59; 1 Fed. Rep. 597; 5 Bann. & A. 256; U. S. Stamping Co. *v.* King (1879), 17 Blatch. 55; 7 Fed. Rep. 860; 17 O. G. 1309; 4 Bann. & A. 469; Dunbar *v.* Albert Field Tack Co. (1879), 4 Fed. Rep. 543; 4 Bann. & A. 518; Stilwell & Bierce Mfg. Co. *v.* Cincinnati Gas Light & Coke Co. (1875), 1 Bann. & A. 610; 7 O. G. 829; Monce *v.* Adams (1874), 7 O. G. 177; 12 Blatch. 1; 1 Bann. & A. 126; Birdsall *v.* McDonald (1874), 1 Bann. & A. 165; 6 O. G. 682; Smith *v.* Woodruff (1873), 4 O. G. 635; 1 MacArthur, 459; 6 Fisher, 476; Hitchcock *v.* Tremaine (1872), 1 O. G. 633; Sayles *v.* Chicago & Northwestern R. R. Co. (1871), 3 Bissell, 52; 4 Fisher, 584; Carter *v.* Baker (1871), 1 Sawyer, 512; 4 Fisher, 404; Woodman *v.* Stimpson (1866), 3 Fisher, 98; Singer *v.* Walmsley (1860), 1 Fisher, 558; Judson *v.* Moore (1859), 1 Bond, 285; 1 Fisher, 544; Morton *v.* Middleton (1863), 1 Cr. S. 3d Series, 722; Stevens *v.* Keating (1847), 2 Web. 181.

That this superiority may manifest itself in rapidity or economy of action, or in the simplicity or efficiency of the invention, see McFarland *v.* Spencer (1885), 23 Blatch. 155; 23 Fed. Rep. 150; 32 O. G. 893; Gottfried *v.* The Philip Best Brewing Co. (1879), 17 O. G. 675; 5 Bann. & A. 4; Dalton *v.* Nelson (1876), 9 O. G. 1112; 13 Blatch. 357; 2 Bann. & A. 225; Goodyear Dental Vulcanite Co. *v.* Willis (1874), 7 O. G. 41; 1 Flippin, 388; 1 Bann. & A. 569; Gallahue *v.* Butterfield (1872), 2 O. G. 645; 10 Blatch. 232; 6 Fisher, 203; Lister *v.* Leather (1858), 8 El. & B. 1004; Muntz's Patent (1846), 2 Web. 113.

That success is evidence of novelty, see Consolidated Valve Co. *v.* Crosby Valve Co. (1885), 113 U. S. 157; 30 O. G. 991; Wilson Packing Co. *v.* Chicago Packing & Provision Co. (1881), 21 O. G. 411; 10 Bissell, 559; 9 Fed. Rep. 547.

That immediate general use indicates intrinsic novelty, see Adams & Westlake Mfg. Co. *v.* Rathbone (1886), 26 Fed. Rep. 262; New York Belting & Packing Co. *v.* Magowan (1886), 27 Fed. Rep. 362.

That success is not conclusive evidence of the existence of intrinsic novelty, see Consolidated Fruit Jar Co. *v.* Bellaire Stamping Co. (1886), 28 Fed. Rep. 91; 36 O. G. 121.

That superior utility is not conclusive evidence of novelty, see Adams *v.* Bellaire Stamping Co. (1886), 28 Fed. Rep. 360; 36 O. G. 567; Wilson Packing Co. *v.* Chicago Packing & Provision Co. (1881), 10 Bissell, 559; 21 O. G. 411; 9 Fed. Rep. 547; Phillips *v.* Detroit (1879), 4 Bann. & A. 347; 17 O. G. 191; Monce *v.* Adams (1875), 7 O. G. 177; 12 Blatch. 1; 1 Bann. & A. 126.

And that where the entire invention is clearly old in its essential character, no increase in the degree of its speed, economy, or efficiency, will indicate the exercise of inventive skill, see Evory *v.* Burt (1883), 15 Fed. Rep. 112; 23 O. G. 2121; Guidet *v.* Brooklyn (1882), 105 U. S. 550; 21 O. G. 1692; Odiorne *v.* Denney (1878), 13 O. G. 965; *Ex parte* Greeley (1873), 4 O. G. 612; 6 Fisher, 575; Holmes, 284; Pitts *v.* Wemple (1855), 2 Fisher, 10; 1 Bissell,

invention is new, and hence that some new factor must have been discovered, and the creative powers have been employed.

§ 117. Intrinsic Novelty of a Concrete Invention Evidenced by the Novelty of the End Accomplished.

The intrinsic novelty of an invention is also sometimes indicated by the nature of the end which it accomplishes, when practically employed in the arts. In all departments of physical science, a given end is usually attainable through many different means. Seldom, if ever, in the material world does any effect rest so exclusively upon a single cause that no other operation of natural or artificial forces could produce the same results. Identity of end is, therefore, no proof of identity of means. Though an alleged invention achieves no other ends than have already been obtained by using other arts or instruments, the idea of means which it embodies may still be new, and a true product of creative skill.[1] The converse

87; Tatham *v.* Le Roy (1852), 2 Blatch. 474; Hotchkiss *v.* Greenwood (1848), 4 McLean, 456; 2 Robb, 730; Alden *v.* Dewey (1840), 1 Story, 336; 2 Robb, 17.

See for this whole subject of utility as bearing on novelty &c., § 344, *post*.

§ 117. [1] In Pitts *v.* Wemple (1855), 2 Fisher, 10, Drummond, J.: (19) "After a patent has been obtained for a particular thing by one person, another person without appropriating that patent may invent a new mode of accomplishing the same or a similar object, and the latter will be entitled to a patent for his discovery." 1 Bissell, 87 (97).

See, to the same point, Coes *v.* Collins Co. (1882), 9 Fed. Rep. 905; 20 Blatch. 221; 22 O. G. 417; Toohey *v.* Harding (1880), 1 Fed. Rep. 174; 4 Hughes, 253; Buerk *v.* Valentine (1872), 2 O. G. 295; 9 Blatch. 479; 5 Fisher, 366; Burden *v.* Corning (1864), 2 Fisher, 477; O'Reilly *v.* Morse (1853), 15 How. 62.

In Curtis *v.* Platt (1863), cited in note to Adie *v.* Clark (1876), L. R. 3 Ch. 134, Wood, V. C.: (136) "In all discoveries of course there are two *things*—there is an object to be achieved, and a means of achieving that object. Now the object to be achieved may be very old. Of course hundreds of patents have been taken out for achieving objects which in the history of mankind have been achieved by some means or other. No novelty is required as to the object, the novelty may be in the means for effecting the object whether old or new. . . . (139) If the invention be . . . nothing more than a particular means to attain to a given result which is perfectly well known, then you can no more say that the invention of one distinct set of means interferes with the invention of another than you could say originally that there ought not to be patents for the inventions of distinct means to an end. . . . They are the roads and means of attaining the end, and unless you can prove that one is a colorable imitation of the other, or bodily incorporates the other with merely an addition, it is impossible to

of this proposition, however, cannot be maintained. Diversity of ends never results from uniformity of means. In every cause perpetually resides every effect which it is able to produce, and as the nature of the effect depends entirely on the nature of the cause, no change can ever take place in the one without a corresponding alteration of the other. Thus, while identity of end is no proof of identity of means, diversity of end cannot exist without diversity of means, and every really new result furnishes in itself conclusive evidence that the cause by which it is produced is also new. Any invention, therefore, which accomplishes an end never before attained must be intrinsically new, and unless evidently a mere constructive union of known factors must, likewise, have originated in a new inventive act.[2] Caution is necessary, in this

say that they shall not be co-existent subjects of contemporaneous patents."

In Walton v. Potter (1841), 1 Web. 585, Tindal, C. J.: (590) "Now there can be no doubt whatever that, although one man has obtained a patent for a given object, there are many modes still open for other men of ingenuity to obtain a patent for the same object; there may be many roads leading to one place, and if a man has, by dint of his own genius and discovery after a patent has been obtained, been able to give to the public, without reference to the former one, or borrowing from the former one, a new and superior mode of arriving at the same end, there can be no objection to his taking out a patent for that purpose."

In Huddart *v.* Grimshaw (1803), 1 Web. 85, Ellenborough, C. J.: (92) "Now the object of this patent, and to be sure the objects of the two patents are substantially the same, . . . but it does not follow, that because the ends are materially the same, it is thereon open to the public. It has happened to me in the same morning to give, as far as I was concerned, my consent to the granting of three different patents for the same thing; but the modes of attaining it were all different." 1 Abb. P. C. 128 (153).

In a note to this case Webster says: (86) "It is important in this and similar cases, that the end or result, and the means by which such end or result is attained, should be carefully distinguished from each other; these means may, to all appearance, be trifling and insignificant, such as it would appear might have suggested themselves to any person. In all such cases the novelty or importance of the end attained may become a test as to the novelty of the means."

That there may be various patentable means to the same end, see also Russell *v.* Cowley (1835), 1 Web. 465.

[2] In Stanley Works *v.* Sargent & Co. (1871), 8 Blatch. 344, Shipman, J.: (346) "Utility is not an infallible test of originality. The patent law requires a thing to be new as well as useful, in order to entitle it to the protection of the statute. To be new, in the sense of the Act, it must be the product of original thought or inventive skill, and not a mere formal and mechanical change of what was old and well-known. But the effect produced by a change is often an appropriate, though not a con-

investigation of the end, not to confound ends never before perceived with ends which never before had been attained. A single means may accomplish many ends, and certain of

trolling, consideration in determining the character of the change itself." 4 Fisher, 443 (445).

In Waterbury Brass Co. *v.* New York and Brooklyn Brass Co. (1858), 3 Fisher, 43, Ingersoll, J.: (50) "It is a safe source of testimony, which can be relied upon with some degree of certainty, in order to ascertain whether the same means are used, to look at the result produced by the means used. Like means, provided the machine is in perfect order, will, in a measure, produce like results. And if like results cannot be produced by two separate devices, it is good evidence for the jury to consider, in coming to a conclusion as to whether like means were used; because, as a general rule, like results are produced by like means; and if like results are not produced by two separate devices, it is fair for the jury to infer that the means may not be alike in kind or character."

In Furbush *v.* Cook (1857), 2 Fisher, 668, Curtis, J.: (672) "And it is decisive evidence, though not the only evidence, that a new mode of operation has been introduced, if the practical effect of the new combination is either a new effect or a materially better effect; or as good an effect more economically attained by means of the change made in the combination of the patentee. A new or improved, or more economical effect, attributable to the change made by the patentee in the mode of operation of existing machinery, proves that the change has introduced a new mode of operation, which is the subject-matter of a patent; and when this is ascertained, it is not a legitimate subject of inquiry, at what cost to the patentee it was made, nor does the validity of the patent depend on an opinion formed after

the event respecting the ease or difficulty of attaining it."

That novelty in the end indicates novelty of means, see Enterprise Co. *v.* Sargent (1886), 28 Fed. Rep. 185; 37 O. G. 891; Sewing Mach. Co. *v.* Frame (1884), 24 Fed. Rep. 596; 28 O. G. 96; Reay *v.* Berlin & Jones Envelope Co. (1884), 28 O. G. 370; 20 Fed. Rep. 506; Barber *v.* Hallet (1879), 20 O. G. 449; 10 Fed. Rep. 130; Stewart *v.* Mahoney (1879), 5 Fed. Rep. 302; 4 Bann. & A. 84; Willimantic Linen Co. *v.* Clark Thread Co. (1879), 4 Bann. & A. 133; Pearl *v.* Ocean Mills Co. (1877), 2 Bann. & A. 469; 11 O. G. 2; Cornell *v.* Downer & Bemis Brewing Co. (1877), 7 Bissell, 346; 11 O. G. 331; 2 Bann. & A. 514; Stanley Works *v.* Sargent & Co. (1871), 8 Blatch. 344; 4 Fisher, 443; Turrill *v.* Illinois Central R. R. Co. (1867), 3 Bissell, 66; 3 Fisher, 330; Johnson *v.* Root (1858), 1 Fisher, 351; Sloat *v.* Patton (1852), 1 Fisher, 154; Hall *v.* Wiles (1851), 2 Blatch. 194.

That an improvement in the result does not prove novelty in the means, see Sax *v.* Taylor Iron Works (1887), 40 O. G. 118.

That a change in existing devices causing them to produce new results indicates new means, see Sewing Mach. Co. *v.* Frame (1884), 24 Fed. Rep. 596; 28 O. G. 96.

That if the result is the same *in kind* it does not prove novelty in the means, however different it may be in mere degree, see *Ex parte* Greeley (1873), 4 O. G. 612; Holmes, 284; 6 Fisher, 575.

That an invention saves labor and expense, or produces better results, does not alone prove inventive skill, see North *v.* Williams (1870), 17 Grant Ch. (Can.) 179.

these ends may easily remain unknown until extensive application of the means develops and exhibits all its capabilities. Rarely does the most thoughtful of inventors discern the entire results of his discovery or understand the various uses to which, in the incessant progress of the arts, it may eventually be applied. But the perception of these ends does not produce them. It does not change their character nor indicate an alteration in the means by which they are attained. All owe their origin to that creative act which generated the idea of means and, whether known or unknown, they have existed ever since that act was first performed. This is the reason of the rule, already noticed, that all the uses of an idea of means belong to its conceiver, whether or not he at the time perceives them, while those who simply recognize them and apply to their attainment the means which he devised, are practising his invention, not their own, as truly as if all these ends had been discovered and disclosed by him. The ends which indicate a novelty of means must be themselves actually new; not the long dormant ends unconsciously achieved by prior arts or instruments, but new results produced for the first time by that invention concerning whose intrinsic novelty the inquiry is made.

§ 118. Novelty of End, how Evidenced.

Novelty of end is ascertained by an examination of its nature, and by a comparison of its utility with that of other ends. The end to be accomplished is the satisfaction of a public want. The satisfaction of this want consists in a changed condition of affairs, in which the want entirely disappears. This changed condition is the effect produced by the invention, and is the ultimate end to which the means embodied in the invention tends. Novelty of end is thus a new condition of the things or persons upon which the action of the means embraced in the invention terminates, and when in their condition novelty appears, a novelty of means may safely be presumed. This novelty of end exists whenever the change in the condition of affairs is a substantial, as distinguished from a formal, change; and the change is substantial when it removes a want hitherto wholly unsupplied or satisfies it by a change essentially distinct from any previously known.

§ 119. Novelty of End is Evident whenever any Want is for the First Time Supplied.

In cases where a change in the condition of affairs removes a want hitherto unsupplied, the character of the change itself becomes of little moment. No want, however trifling, is for the first time satisfied without the existence of a state of things which never has occurred before; and the production of this state of things requires the operation of a cause which, in itself or in its mode of operation, must be also new. This test of novelty of end is at once the simplest and the most reliable. Given a pre-existing want, and its removal, and the condition of affairs, on whose production the want ceases, must be new.[1]

§ 120. Novelty of End is Evident whenever any Want is Supplied by a New Form of Satisfaction.

Where the same want may be removed by several different changes of condition, and one or more such changes have already been produced, the novelty of the present change is ascertained by a comparison between it and those previous changes of condition. Here the character of the change itself is of the greatest consequence. If the condition now developed so far departs from all the former as to become not merely a satisfaction or a better satisfaction of the want, but an essentially different satisfaction, it is a new condition, and not otherwise.[1] This can be true only where the distinc-

§ 119. [1] That the satisfaction of a want hitherto unsatisfied requires new *means*, see Judson *v.* Moore (1859), 1 Fisher, 544; 1 Bond, 285.

That inventive skill is indicated when the new art or article satisfies a long-felt want and is accepted as such satisfaction by the public, see Eames *v.* Andrews (1887), 122 U. S. 40; 39 O. G. 1319; Butler *v.* Bainbridge (1886), 29 Fed. Rep. 142; Consolidated Valve Co. *v.* Crosby Valve Co. (1885), 113 U. S. 157; 30 O. G. 991; United Nickel Co. *v.* California Electrical Works (1885), 25 Fed. Rep. 475; 11 Sawyer, 250; Washburn & Moen Mfg. Co. *v.* Grinnell Wire Co. (1885), 24 Fed. Rep. 23; Hicks *v.* Otto (1884), 29 O. G. 365; 22 Blatch. 94; 19 Fed. Rep. 749; Brown Mfg. Co. *v.* Deere (1884), 28 O. G. 1187; 21 Fed. Rep. 709; Shuter *v.* Davis (1883), 24 O. G. 303; 16 Fed. Rep. 564; Lindsay *v.* Stein (1882), 21 O. G. 1613, 10 Fed. Rep. 907; 20 Blatch. 370; Bruce *v.* Marder (1881), 22 O. G. 1039; 20 Blatch. 355; 10 Fed. Rep. 750.

§ 120. [1] That difference in the character of the result may indicate a difference in means, see Smith *v.* Woodruff (1874), 6 Fisher, 476; 4 O. G. 635; 1 MacArthur, 459; Singer *v.* Walmsley (1860), 1 Fisher, 558.

tion in conditions is one of kind, not simply of degree. Though a condition be more perfectly attained, its character is still the same, and its increase in perfection may have been secured by a more careful or persistent application of the same means.[2] But when the last condition is distinct in kind, the end accomplished is a different end, affording a new form of satisfaction to the ancient want, and proceeding from the operation of a different means.

§ 121. Novelty of Form of Satisfaction is Indicated by its Comparative Utility.

When this difference between the old and new conditions is not evident upon their face, it may be inferred from their comparative utility.[1] Wherever any want, already partially

[2] That an improved operation and better result, if of the *same kind*, do not indicate a difference in means, see *Ex parte* Greely (1873), 4 O. G. 612; Holmes, 284; 6 Fisher, 575.

§ 121. [1] In *Ex parte* Pennock (1874), 1 MacArthur, 531, MacArthur, J.: (537) "Inventions, like all other matters of inquiry, are subject to be judged of by practical results. A combination is not less an invention, although all the parts are well known, if the effect is a new or a better result, and it is the highest evidence possible of a patentable combination that it produces an article with a great economy of time and labor. In Furbush *v.* Cook (2 Fisher, 672), Judge Curtis remarked: 'And it is decisive evidence, though not the only evidence, that a new mode of operation has been introduced if the practical effect of the new combination is either a new effect or a materially better effect, or as good an effect more economically attained by means of the change made. A new improved or more economical effect attributable to the change made by the patentee in the mode of operating existing machinery proves that the change has introduced a new mode of operation which is the subject-matter of a patent; and when this is ascertained, it is not a legitimate subject of inquiry at what cost to the patentee it was made, nor does the validity of the patent depend on an opinion formed after the event, respecting the ease or difficulty of attaining it.' . . . (539) Whether the inventive faculty has been exercised, is mostly a question of evidence, and is always to be considered in reference to the condition of the art, and the results accomplished, and where the combination is confessedly new and the benefit great, the presumption is strongly in its favor. It is not always safe to consider that there has been no invention because it appears obvious and simple, for simplicity is often the chief merit of a patent. . . . If the thought was original and can be employed with substantial advantage, it becomes a meritorious invention within the meaning of the patent law." 5 O. G. 668 (668, 669).

In Smith *v.* Nichols (1872), 2 O. G. 649, Lowell, J.: (650) "The fact that an article is better and more useful in the trade is evidence of novelty; but if the superiority is attained by the application of known means in a known way to produce a known result, though a

supplied, after some further change in the condition of affairs is fully satisfied and ceases to exist, the difference in the usefulness of the two forms of satisfaction is often treated as sufficient evidence of substantial difference in the conditions. On the same principle a form of satisfaction, whose superiority to others is established by the fact that in its practical enjoyment by the public it has superseded every other, is usually regarded as a new condition, unless upon its face the contrary appears. If, on account of cheapness or any other greater ease of access by the public, it shows itself more useful than the old, this also, though of little consequence when other indications of novelty or similarity are present, may be sufficient to denote such a substantial variation as requires an actual difference in means.

§ 122. Discovery also Indicated by Prior Unsuccessful Efforts of Other Inventors.

Besides the evidence afforded by the nature of the end accomplished and its comparative utility, there is another fact

better one, the novelty required by the patent law is wanting." Holmes, 172, (175); 6 Fisher, 61 (64).

In Roberts *v.* Dickey (1872), 1 O. G. 4, Strong, J.: (5) "There are many cases in which the materiality of an invention, whether it be a machine or a process, can be judged of only by its effect on the result, and this effect is tested by the actual improvement in the process of producing an article, or in the article itself introduced by the alleged invention. Curtis, on Pat. § 9. 'In these cases,' says our author, (§ 10,) 'the subject of the invention is not the particular machinery or apparatus by which the new application is made to be available, but it is the new application itself of certain known substances or agents to produce a particular result, differing either in the process or in the article produced from the former methods of producing the same thing, and thereby producing a better article or producing it by superior and cheaper processes. It is obvious that the results in such cases furnish a complete test of the sufficiency of the inventions, because the importance of the result shows that, whether actually exercised or not, the possibility of the exercise of thought, design, ingenuity, and skill is not excluded.' Similar observations may be found in Webster on the subject-matter of patents, page 30, where it is said: 'The utility, then, of the change, as ascertained by its consequences, is the real practical test of the sufficiency of an invention, and since the one cannot exist without the other, the existence of the one may be presumed on proof of the existence of the other. Whenever the utility is proved to exist in any great degree, a sufficiency of invention to support the patent must be presumed.' These remarks are very pertinent to the present case and they are obviously founded in good sense." 4 Fisher, 532 (538); 4 Brews. 260 (264).

Further, that an increase of utility in

which indicates not only the novelty of the end, but the necessity for inventive skill in the creation of the means whereby it is attained. This fact consists in the unsuccessful attempts of others to produce the same results.[1] The

the effect produced by an invention is evidence of novelty in such effect, and so of novelty and inventive skill in the invention itself, see Roberts *v.* Schreiber (1880), 5 Bann. & A. 491; 18 O. G. 125; 2 Fed. Rep. 855; Hoe *v.* Cottrell (1880), 18 O. G. 59; 17 Blatch. 546; 1 Fed. Rep. 597; 5 Bann. & A. 256; Williams *v.* The Rome, Watertown, & Ogdensburgh R. R. Co. (1878), 15 Blatch. 200; 15 O. G. 653; 3 Bann. & A. 413; Eppinger *v.* Richey (1877), 12 O. G. 714; 14 Blatch. 307; 3 Bann. & A. 69; Smith *v.* Woodruff (1873), 6 Fisher, 476; 4 O. G. 635; 1 MacArthur, 459; Hitchcock *v.* Tremaine (1872), 1 O. G. 633; 5 Fisher, 537; 9 Blatch. 550; Howe *v.* Morton (1860), 1 Fisher, 586; Judson *v.* Moore (1859), 1 Bond. 285; 1 Fisher, 544.

But that no improvement in the effect can show inventive skill in the means, when the means and effect remain substantially the same, see Imlay *v.* Norwich & Worcester R. R. Co. (1858), 4 Blatch. 227; 1 Fisher, 340.

That the success of the result of a process tends to show the novelty of the process, but is not conclusive, see Wilson Packing Co. *v.* Chicago Packing & Provision Co. (1881), 21 O. G. 411; 10 Bissell, 559; 9 Fed. Rep. 547.

See §§ 113, 116, *ante*, 344, *post*.

§ 122. [1] In Pearl *v.* Ocean Mills (1877), 2 Bann. & A. 469, Shepley, J.: (476) "No more difficult task is imposed upon the court in patent causes than that of determining what constitutes invention, and of drawing the line of distinction between the work of the inventor and the constructor. The change from the old structure to the new may be one which one inventor but little thought and labor, and another would fail to accomplish after long and patient effort. It may be one, which one whose mind is fertile in invention will suggest almost instantaneously, when the skilled hand of the constructor will fail to reach the apparently simple result by the long and toilsome process of experiment. It may be one which, viewed in the light of the accomplished result, may seem so simple as to be obvious almost to an unskilled operative, and yet the proof may show that this apparently simple and obvious change has produced a result which has for years baffled the skill of the mechanical expert, eluded the search of the discoverer, and set at defiance the speculations of inventive genius." 11 O. G. 2 (4).

That the unsuccessful efforts of others to accomplish the same result indicates that the means by which the present inventor accomplishes it are the fruit of inventive skill, see Wilcox *v.* Bookwalter (1887), 31 Fed. Rep. 224; Celluloid Mfg. Co. *v.* American Zylonite Co. (1886), 28 Fed. Rep. 195; 36 O. G. 1043; Dudgeon *v.* Watson (1886), 29 Fed. Rep. 248; Davis *v.* Fredericks (1884), 21 Blatch. 556; 19 Fed. Rep. 99; Sewing Mach. Co. *v.* Frame (1884), 24 Fed. Rep. 596; 28 O. G. 96; Ward *v.* Grand Detour Plow Co. (1883), 14 Fed. Rep. 696; Bruce *v.* Marder (1882), 20 Blatch. 355; 10 Fed. Rep. 750; 22 O. G. 1039; Lindsay *v.* Stein (1882), 20 Blatch. 370; 10 Fed. Rep. 907; 21 O. G. 1613; Western Electric Light Co. *v.* Chicago Electric Light Mfg. Co. (1882), 11 Bissell, 427; 14 Fed. Rep. 691; Wallace *v.* Noyes (1882), 18

courts assume that no such efforts would be made unless the want existed and were felt, while from the failure of all previous endeavors to supply it they draw the inference that nothing then existed in the arts from which the imitative faculties alone could have constructed a method of attaining to the satisfaction now enjoyed.

§ 123. Discovery Evidenced by Oath of Inventor and his Personal Experiments unless the Concrete Invention is Devoid of Legal Novelty.

Upon this question of the intrinsic novelty of the invention, its legal novelty has no especial bearing, since any art or instrument may be well known in some parts of the world and still have never been in use in the United States, nor have been patented, nor described in any printed publication. Legal novelty, however, is a proper matter for consideration, in certain cases, upon the question whether the invention, though not intrinsically new, could have been new to the inventor and thus the actual product of his own creative skill. Intrinsic novelty in an invention is not essential to its patentability, and hence, although such novelty affords the

Fed. Rep. 172; 21 Blatch. 83; 23 O. G. 435; Mallory Mfg. Co. *v.* Marks (1881), 20 Blatch. 32; 11 Fed. Rep. 887; 20 O. G. 1521; Yale Lock Mfg. Co. *v.* Norwich Nat. Bank (1881), 6 Fed. Rep. 377; 19 Blatch. 123; Washburn & Moen Mfg. Co. *v.* Haish (1880), 4 Fed. Rep. 900; 10 Bissell, 65; 19 O. G. 173; Hoe *v.* Cottrell (1880), 1 Fed. Rep. 597; 17 Blatch. 546; 18 O. G. 59; 5 Bann. & A. 256; Eastman *v.* Hinkel (1879), 5 Bann. & A. 1; Terry Clock Co. *v.* New Haven Clock Co. (1879), 4 Bann. & A. 121; 17 O. G. 909; Campbell *v.* James (1879), 18 O. G. 979; 17 Blatch. 42; 4 Bann. & A. 456; Williams *v.* The Rome, Watertown, & Ogdensburgh R. R. Co. (1878), 15 Blatch. 200; 15 O. G. 653; 3 Bann. & A. 412; Eppinger *v.* Richey (1877), 14 Blatch. 307; 12 O. G. 714; 3 Bann. & A. 69; Goodyear Dental Vulcanite Co. *v.* Willis (1874), 1 Bann. & A. 569; 7 O. G. 41; 1 Flippin, 388; Many *v.* Jagger (1848), 1 Blatch. 372.

That prior unsuccessful efforts of others indicate discovery of new factors by the successful inventor, see Adams & Westlake Mfg. Co. *v.* Rathbone (1886), 26 Fed. Rep. 262; Niles Tool Works *v.* Betts Mach. Co. (1886), 27 Fed. Rep. 301; Enterprise Mfg. Co. *v.* Sargent (1886), 28 Fed. Rep. 185; 37 O. G. 891; Celluloid Mfg. Co. *v.* Chrolithion Collar & Cuff Co. (1885), 23 Blatch. 205; 23 Fed. Rep. 397; 31 O. G. 519; Bogart *v.* Hinds (1885), 26 Fed. Rep. 149; 34 O. G. 1510.

That the mere fact that others failed where the present inventor succeeded is not conclusive evidence of discovery, see Butler *v.* Steckel (1886), 27 Fed. Rep. 219; 36 O. G. 455.

strongest evidence of the existence of the inventive act, its absence is not conclusive proof that no inventive act has been performed. The law contemplates the possibility that an inventor in this country may generate an idea of means by processes of discovery and construction, notwithstanding the conception of the same idea and its embodiment in operative arts or instruments abroad, and it intends to secure and does secure to such inventors the fruits of their creative skill. Thus while legal novelty raises no presumption of intrinsic novelty, nor of the generation of the idea of means by the alleged inventor, it is an essential condition of that recognition which the law concedes to the inventor's efforts, and in its absence no claim of the inventor that the idea of means is due to his discovery and construction can be entertained. But where legal novelty is present the law permits the alleged inventor to prove, if he can do so, that the invention has originated in his own inventive skill. For this his individual statement under oath, if not opposed by other evidence, may be sufficient. His long research and repeated trials may confirm, or his opportunity to imitate the arts or instruments of others may contradict, his statement.[1] The whole question is here open for the exhibition of any competent testimony; his own oath constituting *prima facie* proof, and in a case of doubt the presumption always being in his favor.[2]

§ 124. General Statement of Facts which Indicate that the Mental Part of the Inventive Act has been Performed.

The principles which govern the sufficiency and application of the evidence concerning the performance of the mental part of the inventive act, may be summed up as follows: —

I. To prove the mental part of the inventive act the evi-

§ 123. [1] That an invention was reached by many steps and trials on the part of the inventor is evidence that it involved inventive skill, see Campbell *v.* James (1879), 18 O. G. 979; 17 Blatch. 42; 4 Bann. & A. 456; Williams *v.* Rome, Watertown, & Ogdensburgh R. R. Co. (1878), 15 Blatch. 200; 15 O. G. 653; 3 Bann. & A. 412.

[2] That discovery must be shown by independent evidence although legal novelty exists, see Celluloid Mfg. Co. *v.* Comstock & Cheney Co. (1886), 27 Fed. Rep. 358; 36 O. G. 1356.

dence must show that both the process of discovery and the process of construction have been performed by the alleged inventor;

II. Where the idea conceived is an idea of means it is certain that the constructive process was performed;

III. The performance of the process of discovery is demonstrated if either factor of the idea of means were hitherto unknown; it is rendered in the highest degree probable when the concrete invention is intrinsically new and is of great utility; it may be inferred from the unsuccessful efforts of others to achieve the same results; it may be proved by the oath of the inventor or other competent testimony when legal novelty exists in the invention; it is conclusively presumed against when legal novelty is wanting;

IV. Intrinsic novelty in the invention may manifest itself in its new essential attributes, or in its new mode of operation, or in its new effects; and novelty in mode of operation or effects may be inferred from their superior utility;

V. The legal novelty of the concrete invention does not prove its intrinsic novelty, nor the performance of the process of discovery by the alleged inventor;

VI. The inventor is presumed to have known all inventions and all factors which were familiar to persons skilled in the art to which his invention belongs; and none of these can he ever be permitted to claim as the result of his discoveries.

SECTION IV.

OF THE PHYSICAL PART OF THE INVENTIVE ACT: REDUCTION OF THE IDEA OF MEANS TO PRACTICE.

§ 125. Reduction to Practice Necessary to Complete the Inventive Act.

No mental operation, however definite and valuable may be its result, is a complete inventive act. That which rests in thought only, as a mere theory or intellectual conception, can never be a means producing physical effects. It is not "a

manufacture," in any sense in which that word has been applied in the industrial arts. It is neither "a thing made," nor "a manner of making." It improves no trade, confers no public benefit, and can be subject to no protection which the law is able to afford. An invention, therefore, does not exist until the generated idea has been reduced to practice.[1] It is not enough that as it lies in the inventor's mind, or can be explained to others, it is possible or even practicable. "Its possibility must become actuality." "Its practicability must be demonstrated by experience." The means which has been conceived must be made operative and useful in the arts. The spirit that has been created must be clothed with a body by which it is *brought into contact with the exterior* world, and through which its energies can act upon material substance.[2] In a word, the invention must be put into the

§ 125. [1] In Sawyer *v.* Edison (1883), 25 O. G. 597, Marble, Com. : (601) "An invention is complete when the thought conceived is embodied in some practical and operative form."

In Draper *v.* The Potomska Mills Co. (1878), 13 O. G. 276, Shepley, J. : (276) "An imperfect and incomplete invention, resting in mere theory, or in intellectual motion, or in uncertain experiments, and not actually reduced to practice and embodied in some distinct machinery, apparatus, manufacture, or composition of matter, is not, and indeed cannot be, patentable under our patent acts, since it is impossible, under such circumstances, to comply with the fundamental requisites of those acts." 3 Bann. & A. 214 (215).

In Andrews *v.* Carman (1876), 9 O. G. 1011, Benedict, J. : (1013) "There can be no patent for a principle ; but 'for a principle so far embodied and connected with corporeal substances as to be in a condition to act and produce effects in any trade, mystery, or manual occupation there may be a patent.' The idea or principle of forcing water from the earth into a well-pit by the use of artificial power is new, but is not by itself patentable. The idea, when made available by method whereby it is put to practical use, is patentable as a process, and is thus secured to the person who *has conceived the idea and invented* the method." 13 Blatch. 307 (312) ; 2 Bann. & A. 277 (281).

In McComb *v.* Brodie (1872), 2 O. G. 117, Woods, J. : (119) "A patent cannot be granted for a principle or an idea, or for any abstraction whatever ; for instance, for the naked idea of a slit, slot, or aperture, disconnected from any application. But when the idea is applied to a material thing, so as to *produce a new and useful effect* or result, it ceases to be abstract, and becomes a proper subject to be covered by a patent." 5 Fisher, 384 (391) ; 1 Woods, 153 (158).

[2] In Morton *v.* The New York Eye Infirmary (1862), 5 Blatch. 116, Shipman, J. : (121) "In its naked, ordinary sense, a discovery is not patentable. A discovery of a new principle, force, or law, operating, or which can be made to operate, on matter, will not entitle

hands of the public in a condition for immediate use, requiring no further speculation or experiment, but fitted, as it is, for the accomplishment of its intended ends.

the discoverer to a patent. It is only where the explorer has gone beyond the mere domain of discovery, and has laid hold of the new principle, force, or law, and connected it with some particular medium or mechanical contrivance, by which, or through which, it acts on the material world, that he can secure the exclusive control of it under the Patent Act. He then controls his discovery through the means by which *he has brought it into* practical action, or their equivalent, and only through them. It is then an invention, although it embraces a discovery. Sever the force or principle discovered from the means or mechanism through which he has brought it into the domain of invention, and it immediately falls out of that domain and eludes his grasp. It is then a naked discovery, and not an invention. . . . Every invention may, in a certain sense, embrace more or less of discovery, for it must always include something that is new; but it by no means follows that every discovery is an invention. It may be the *soul* of an invention, but it cannot be the subject of the exclusive control of the patentee, or of the patent law, until it inhabits a *body*, any more than a disembodied spirit can be subjected to the control of human laws." 2 Fisher, 320 (323).

In *Wintermute v. Redington* (1856), 1 Fisher, 239, Willson, J.: (247) "It is true that a patent cannot be sustained for a mere principle. For instance, Sir Isaac Newton's discovery of the principle of gravitation could not be the subject of a patent. But it is equally true, that a principle may be embodied and applied, so as to afford some result of practical utility in the arts and manufactures, and that under such circumstances a principle may be the subject of a patent. It is, however, *the embodiment and the application of the principle which constitute the grant of the patent.* And it has been justly said 'that the principle so embodied and applied, and the principle of *such* embodiment and application, are essentially distinct; the former being a truth of exact science, or a law of natural science, or a rule of practice; the latter a practice founded upon such truth, law, or rule.'"

In Detmold *v.* Reeves (1851), 1 Fisher, 127, Kane, J.: (130) "There is no doubt, that he who has discovered some new element or property of matter, may secure to himself the ownership of his discovery, so soon as he has been able to illustrate it practically, and to demonstrate its value. His patent, in such a case, will be commensurate with the principles, which it announces to the world, and may be so broad as the mental conception itself. But, then, the mental conception must have been susceptible of embodiment, and must have been, in fact, embodied in some mechanical device, or some process of art. The abstract must have been resolved into the concrete. The patent must be for a thing — not for an idea merely."

In Whitney *v.* Emmett (1831), Baldwin, 303, Baldwin, J.: (311) "Nor is a discovery of some new principle, theory, elementary truth, or an improvement upon it, abstracted from its application, a new invention. But when such discovery is applied to any practical purpose, in the new construction, operation or effects of machinery or composition of matter, producing a new substance, or an old one in a new way, by new machinery, or a new com-

§ 126. Reduction to Practice Requires the Practice of an Art or the Construction of an Instrument.

This requirement of the law is satisfied by nothing less than the actual practice of some art, or the construction of some article of manufacture.[1] . A written description of the pro-

bination of the parts of an old one, operating in a peculiar, better, cheaper, or quicker method, a new mechanical employment of principle already known, the organization of a machine embodied and reduced to practice on something visible, tangible, vendible, and capable of enjoyment, some new mode of practically employing human art or skill. It is a 'discovery,' 'invention' or 'improvement,' within the acts of congress, and a 'new manufacture' by the statute of James." 1 Robb, 567 (579).

That reduction to practice is essential, also see Judson *v.* Bradford (1878), 16 O. G. 171 ; 3 Bann. & A. 539 ; Burke *v.* Partridge (1878), 58 N. H. 349 ; Graham *v.* Gammon (1877), 7 Bissell, 490 ; 3 Bann. & A. 7 ; Smith *v.* Prior (1873), 2 Sawyer, 461 ; 6 Fisher, 469 ; Jones *v.* Sewall (1873), 3 Clifford, 563 ; 6 Fisher, 343 ; 3 O. G. 630 ; Webb *v.* Quintard (1872), 9 Blatch. 352 ; 5 Fisher, 276 ; 1 O. G. 525 ; Seymour *v.* Osborne (1870), 11 Wall. 516 ; Roberts *v.* Reed Torpedo Co. (1869), 3 Fisher, 629 ; Whitely *v.* Swayne (1868), 7 Wall. 685 ; Union Sugar Refinery *v.* Matthiesson (1865), 3 Clifford, 639 ; 2 Fisher, 600 ; White *v.* Allen (1863), 2 Clifford, 224 ; 2 Fisher, 440 ; Union Mfg. Co. *v.* Lounsbury (1863), 2 Fisher, 389 ; Johnson *v.* Root (1862), 2 Clifford, 108 ; 2 Fisher, 291 ; Cox *v.* Griggs (1861), 1 Bissell, 362 ; 2 Fisher, 174 ; Potter *v.* Wilson (1860), 2 Fisher, 102 ; Matthews *v.* Skates (1860), 1 Fisher, 602 ; Le Roy *v.* Tatham (1859), 22 How. 132 ; Ellithorp *v.* Robertson (1859), 4 Blatch. 307 ; 2 Fisher, 83 ; Poppenhusen *v.* N. Y. Gutta Percha Comb Co. (1858), 2 Fisher, 62 ; Sickels *v.* Borden (1856), 3 Blatch. 535 ; Parkhurst *v.* Kinsman (1849), 1 Blatch. 488 ; Many *v.* Jagger (1848), 1 Blatch. 372 ; Allen *v.* Blunt (1846), 2 W. & M. 121 ; 2 Robb, 530 ; Reed *v.* Cutter (1841), 1 Story, 590 ; 2 Robb, 81.

§ 126. [1] In White *v.* Allen, (1863), 2 Clifford, 224, Clifford, J.: (230) "While the suggested improvement, however, rests merely in the mind of the originator of the idea, the invention is not completed, within the meaning of the patent law, nor are crude and imperfect experiments sufficient to confer a right to a patent ; but in order to constitute an invention, in the sense in which that word is employed in the Patent Act, the party alleged to have produced it, must have proceeded so far as to have reduced his idea to practice, and embodied it in some distinct form. Gayler *v.* Wilder, 10 How. 498 ; Parkhurst *v.* Kinsman, 1 Blatch. 494 ; Curt. on Pat. § 43. Mere discovery of an improvement does not constitute it the subject-matter of a patent, although the ideas which it involves may be new, but the new set of ideas, in order to become patentable, must be embodied into working machinery and adapted to practical use. Sickels *v.* Borden, Law's Dig. 423, per Nelson, J." 2 Fisher, 440 (446).

In 11 Am Law Reg. N. S. 612, 665, (1872), an able writer, after discussing the cases on the subject, arrives at the following result: (679) "Before an invention can be considered as having been so reduced to practice as to give its author, without further effort on his part, an irrefragable title to it, if duly

posed invention, even when so fully illustrated by drawings that any person skilled in the art could carry out the ideas of the inventor, is not sufficient.[2] A model exhibiting the article in all its parts, disclosing its mode of operation and clearly showing its feasibility, is equally objectionable.[3] An application for a patent, in which description, drawings, and model are combined, comes no nearer to a compliance with the law;[4] nor does the granting of a patent, after due examination

asserted, it must have been embodied in a practical working machine, capable of being operated to perform its intended functions for business purposes. If not capable of such embodiment, it must have been brought to an equivalent state of perfection in some other way. Upon this point there is no conflict in our judicial tribunals."

[2] In Draper *v.* Potomska Mills Co. (1878), 13 O. G. 276, Shepley, J.: (276) "Illustrated drawings of conceived ideas do not constitute an invention, and unless they are followed up by a seasonable observance of the requirements of the patent laws, they can have no effect upon a subsequently granted patent to another." 3 Bann. & A. 214 (215).

In the Northwestern Fire Extinguisher Co. *v.* The Philadelphia Fire Extinguisher Co. (1874), 6 O. G. 34, McKennan, J.: (36) "A written description of a machine, although illustrated by drawings, which has not been given to the public, does not constitute an invention, within the meaning of the patent laws. It may be so full and precise as to enable any one, skilled in the art to which it appertains, to construct the machine described, but until it has been embodied in a form capable of useful operation, it has not attained the proportions or the character of a complete invention." 10 Phila. 227 (231); 1 Bann. & A. 177 (185).

See further Lyman Ventilating & Refrigerator Co. *v.* Lalor (1874), 6 O. G. 642; 12 Blatch. 303; 1 Bann. & A. 403; Reeves *v.* Keystone Bridge Co. (1872), 1 O. G. 466; 5 Fisher, 456; 9 Phila. 368; Ellithorp *v.* Robertson (1859), 4 Blatch. 307; 2 Fisher, 83; also cases cited to same point in § 318, n. 2.

That drawings may show conception but are not reduction to practice, see Odell *v.* Stout (1884), 22 Fed. Rep. 159; 29 O. G. 862.

[3] That a model is not reduction to practice, see Stilwell & Bierce Mfg. Co. *v.* Cincinnati Gaslight & Coke Co. (1875), 7 O. G. 829; 1 Bann. & A. 610; Johnson *v.* McCullough (1870), 4 Fisher, 170; and cases cited to same point in § 318, n. 2.

[4] That an application for a patent is not reduction to practice, see Howes *v.* McNeal (1878), 15 Blatch. 103; 15 O. G. 608; 3 Bann. & A. 376; Barker *v.* Stow (1878), 15 Blatch. 49; 14 O. G. 559; 3 Bann. & A. 337; Herring *v.* Nelson (1877), 14 Blatch. 293; 12 O. G. 753; 3 Bann. & A. 55; and cases cited to same point in § 318, n. 2.

That the filing of the application does not prove reduction to practice, though it may establish the fact of the conception of the idea, see Huntley *v.* Smith (1880), 18 O. G. 795.

That diligence in making his application shows that the inventor has faith in the practicability of his invention and may thus supply in some cases the necessity of reducing to practice, see Huntley *v.* Smith (1880), 18 O. G. 795.

by the proper officers, prove that this requisite has been fulfilled or relieve the inventor from its obligations.[6]

§ 127. Reduction to Practice must Demonstrate that the Idea of Means is Practically Useful.

Moreover, the law demands, for the completion of the inventive act, that the art shall be so practised, or the article of manufacture be so tested, that its efficacy and utility are fully demonstrated. "Reduction to practice" means "reduction to successful practice."[1] Experiments in the direction of the desired result are not such reduction, no matter how nearly they approximate that end. The work of the inventor must be finished, physically as well as mentally. Nothing must be left for the inventive genius of the public; and his invention must show this for itself before he is entitled to a patent. If his invention be an art, he must not only have practised it according to its theory, but in the same manner which the public must employ in order to render it of use to them. If it be an article, it must appear,

[6] That the granting of a patent does not prove reduction to practice, see Hitchcock *v.* Tremaine (1871), 8 Blatch. 440; 4 Fisher. 508; Whitely *v.* Swayne (1868), 7 Wall. 685.

That the granting of a patent, in which the invention is so clearly set forth by language and drawings, etc., that it shows itself to be practicable, is sufficient evidence of reduction to practice, see Starr *v.* Farmer (1883), 23 O. G. 2325, 2327.

See also Wheeler *v.* Mower & Reaper Co. (1872), 2 O. G. 442; 6 Fisher, 1; 10 Blatch. 181.

§ 127. [1] That "reduction to practice" means successful practice, see Lyman Ventilating & Refrigerator Co. *v.* Lalor (1874), 12 Blatch. 303; 6 O. G. 642; 1 Bann. & A. 403; Whitely *v.* Swayne (1868), 7 Wall. 685; Agawam Co. *v.* Jordan (1868), 7 Wall. 583; Cahoon *v.* Ring (1859), 1 Clifford, 592; 1 Fisher, 397.

That an invention is operative if it can be made so by mere mechanical skill, see Royer *v.* Coupe (1886), 39 O. G. 239.

The doctrine of this and the preceding paragraph is similar to that involved in Prior Use, so far as the latter requires the prior existence of a practically operative invention identical with the one whose novelty is questioned on the ground of such prior use. As to what constitutes a complete invention, as distinguished from a mere description or representation of the inventor's theory on one hand and from an unsuccessful experiment on the other, the principles discussed and the cases cited are the same. As their legal significance is more apparent in the latter connection than in the present one, the authorities are collected principally under the title Prior Use, in §§ 318, 319, etc., *post*, which see for further references.

either upon its face or through the tests to which it is subjected, that it is able to accomplish the purpose for which it was designed.

§ 128. Reduction to Practice does not in all Cases Require the Practical Use of the Invention.

Whether the art or article must have been practically used for business purposes seems to have been disputed. Cases of eminent authority are found in which this is regarded as indispensable.[1] In other cases of equal value it has been decided that if evidently capable of practical application in the arts the invention need not have been actually employed.[2] These propositions may be both correct, each governing a distinct class of inventions. Where the availability of an invention for immediate use is apparent from an inspection of the invention itself, as often may be true of a machine or manufacture, its actual employment in the arts is not essential to the establishment of its utility and efficacy. And, on the other hand, when nothing less than such employment can afford this evidence, as in the case of an art or chemical composition, and sometimes of machines and manufactures, such tests must be applied as will determine that the end which it purports to serve can be accomplished.[3] In either of these methods the object of the law will be attained; the invention itself manifesting that the inventive genius of the inventor

§ 128. [1] That unless an invention is actually used for the purpose designed the reduction to practice is incomplete, and the whole remains in experiment, see Cahoon *v.* Ring (1859), 1 Clifford, 592; 1 Fisher, 397. See also 11 Am. Law Reg. N. S. 665.

[2] That if the invention be so far completed as to be capable of practical use, and this is apparent from the construction of the invention itself, no actual use in the arts is required, see Broadnax *v.* Stock Yard & Transit Co. (1880), 4 Fed. Rep. 214; 5 Bann. & A. 609; Knox *v.* Loweree (1874), 6 O. G. 802; 1 Bann. & A. 589; Wheeler *v.* Clipper Mower & Reaper Co. (1872), 10 Blatch. 181; 6 Fisher, 1; 2 O. G. 442; Coffin *v.* Ogden (1869), 7 Blatch. 61; 3 Fisher, 640; Hayden *v.* Suffolk Mfg. Co. (1862), 4 Fisher, 86; Pitts *v.* Wemple (1855), 2 Fisher, 10; 1 Bissell, 87.

[3] That the invention must either be used or capable of useful operation, see Moore *v.* Thomas (1877), 3 Bann. & A. 13; 14 O. G. 1.

That successful practical use is evidence that the invention is complete, see Northwestern Fire Extinguisher Co. *v.* Philadelphia Fire Extinguisher Co. (1874), 1 Bann. & A. 177; 6 O. G. 34; 10 Phila. 227; Coffin *v.* Ogden (1869), 7 Blatch. 61; 3 Fisher, 640.

has occupied the whole field of the invention, and that for its entire appropriation to the public use no further exercise of the creative faculties will be required.

§ 129. Reduction to Practice does not Require Mechanical Perfection or Incapability of Improvement.

But while this practical embodiment of the idea of the inventor must contain and represent his whole invention, it is not necessary that the art or article should be mechanically perfect.[1] Mechanical perfection is the achievement of the artisan rather than the inventor, and does nothing to develop or to illustrate the idea of the invention. Possibilities of greater excellence in shape, location, arrangement, material, or adjustment do not affect the fact that the inventor has produced a practically operative means, and all such possibilities are legally embraced in what the inventor already has accomplished. Nor is it necessary that the invention, as a means, should be incapable of further improvement by the exercise of additional inventive skill. If it accomplishes the end desired it is a perfected invention, although some newly generated idea, or some better mode of application, may reach

§ 129. [1] In Seymour *v.* Marsh (1872), 2 O. G. 675, McKennan, J.: (676) "That a machine when first applied in practice does not perfectly accomplish the work for which it was designed, or does not accomplish all that its inventor supposed it would, is not enough to secure its rejection as a patentable invention. . . . Taken as a whole, in its construction and operation, if it is an advance upon the state of the art to which it appertains, furnishing a better though still imperfect method of performing a useful function than was before available, it is not to be discarded as destitute of patentable merit." 6 Fisher, 115 (120); 9 Phila. 380 (382).

In The American Hide & Leather Splitting & Dressing Machine Co. *v.* The American Tool & Machine Co. (1870), Holmes, 503, Shepley, J.: (513) "A perfect machine, in that sense of the word 'perfect,' means a perfected invention; not a perfectly constructed machine, but a machine so constructed as to embody all the essential elements of the invention, in a form that would make them practical and operative so as to accomplish the result. But it is not necessary that it should accomplish that result in the most perfect manner and be in a condition where it was not susceptible of a higher degree of perfection in its mere mechanical construction." 4 Fisher, 284 (299).

See also Dolbear *v.* American Bell Telephone Co. (1888), 43 O. G. 377.

That if mechanical skill can remedy the defects in an invention the patent may be valid, see Temple Pump Co. *v.* Goss Pump & Rubber Bucket Mfg. Co. (1887), 39 O. G. 467.

the same end in a more perfect manner. It is enough that the inventor has devised a means, has put his thought into a practical and useful form, and placed it where the public can at once employ it.

§ 130. Reduction to Practice does not Affect the Essence of the Invention, nor the Scope of the Patent Privilege.

Finally, it is to be remembered that although an idea of means not yet reduced to practice is not an invention, still it is the idea, and not the practical embodiment, which constitutes the essence of the invention and to which the protection of the patent is awarded.[1] If an idea is capable of tangible

§ 130. [1] In American Bell Telephone Co. *v.* Dolbear (1883), 15 Fed. Rep. 418, Gray, J.: (449) "There can be no patent for a mere principle. The discoverer of a natural force or a scientific fact cannot have a patent for that. But if he invents for the first time a process by which a certain effect of one of the forces of nature is made useful to mankind, and fully describes and claims that process, and also describes a mode or apparatus by which it may be usefully applied, he is, within the meaning and the very words of the patent law, 'a person who has invented or discovered any new and useful art;' and he is entitled to a patent for the process of which he is the first inventor, and is not restricted to the particular form of mechanism or apparatus by which he carries out that process. Another person, who afterwards invents an improved form of apparatus, embodying the same process, may indeed obtain a patent for his improvement, but he has no right to use the process, in his own or any other form of apparatus, without the consent of the first inventor of the process. . . . (453) If that art or process is . . . the only way by which [that effect of the natural force can be produced] that fact does not lessen the merit of his invention, or the protection which the law will give to it." 23 O. G. 535 (535, 537).

In Sewall *v.* Jones (1875), 91 U. S. 171, Hunt, J.: (184) "When a party has invented some mode of carrying into effect a law of natural science or a rule of practice, it is the application of that law or rule which constitutes the peculiar feature of the invention. He is entitled to protect himself from all other modes of making the same application; and every question of infringement will present the question, whether the different mode, be it better or worse, is in substance an application of the same principle." 9 O. G. 47 (49).

In Wintermute *v.* Redington (1856), 1 Fisher, 239, Willson, J.: (250) "We have already stated that when a person has invented some mode of carrying into effect a law of natural science, or a rule of practice, which constitutes the peculiar feature of his invention, such discovery may be secured to him by a patent. Hence it follows that he is entitled to protect himself from all other modes of making the same application. The substantial *identity*, therefore, that is to be looked to, respects that which constitutes the essence of the invention, namely, *the application of the principle*. If the mode of carrying the same principle into effect, adopted by the defend-

expression under different forms, the difference in these forms is merely formal, not substantial; and the concrete inventions, however varied in appearance, or arrangement, or capacity, are nevertheless identical.[2] If the idea can be embodied in but

ant, still shows that the principle admits of the same application in a variety of forms, or by a variety of apparatus, the jury will be authorized to treat such mode as a piracy of the invention. But if the defendant has adopted variations which show that the application of the principle is varied, that some other law, or rule of practice or science, is made to take the place of that which the patentee claims as the essence of his invention, then there is no infringement."

See also discussion of same doctrine and citations in §§ 134–143, 161, etc., and notes, *post*.

[2] In Jupe *v.* Pratt (1837), 1 Web. 145, Alderson, B.; (146) "You cannot take out a patent for a principle; you may take out a patent for a principle coupled with the mode of carrying the principle into effect, provided you have not only discovered the principle, but invented some mode of carrying it into effect. But then you must start with having invented some mode of carrying the principle into effect; if you have done that, then you are entitled to protect yourself from all other modes of carrying the same principle into effect." 2 Abb. P. C. 464 (467). The entire argument of Sir F. Pollock and Richards in this case is valuable as drawing clear distinctions between the principle or spirit of an invention and its form or embodiment, and exhibiting the relation which each occupies toward the other. The following extracts are especially worthy of attention: (145) "The fair mode of looking at a patent and the specification is, to inquire what is the spirit of the invention, or the principle; and this must be embodied in some mode or method, because it is admitted on all hands you cannot take out a patent for a principle. But although the law says, undoubtedly and correctly enough, that you cannot take out a patent for a principle, that is, for a barren principle, when you have clothed it with a form, and given it body and substance, in which the principle may live and produce the benefit which you claim to result from it, why then in many cases (and it is a consolation to every just and honest feeling one has on the subject of invention), although you cannot have a patent for a principle in substance, you can have a patent for the spirit of your invention; for if any other person comes and clothes the spirit of your invention with a different body, and puts that principle in use in any other shape or fashion, it is always a question for a jury, whether, however different in appearance, in shape, in form, in method — whether the article or the practice, if it be matter connected with the arts and manufactures, be or be not substantially an adaptation of the principle, applied with the same view, to answer the same end, and merely imitated in substance, whatever difference there may be in point of form." Again, (148) "However plain the principle may be, and however obvious when so given to the public, still the patentee must take care to lay it before the public in a practical shape, though he assumes to himself nothing in respect of that shape." Again, (148) "Is it to be said, if a man has discovered a principle, and goes to a mechanic and says — 'This is my view of an invention, just give me a little mechanical assistance in bringing that into effect;' and the man says, 'I think you might do it thus, and thus;' — is it

one art or article, no other art or article can be the application of the same idea, or constitute the same invention. In deciding conflicts between one invention and another, as well as in construing claims and specifications, the law draws this line of distinction very sharply; securing, in the one class of inventions, the original idea of means under whatever visible expression the subsequent development of the industrial arts may have led other persons to employ; confining, in the other class, the right of the inventor to the precise art or article in which his idea may have found its only practical embodiment.

§ 131. Reduction to Practice Effected by Mechanical Skill: Inventor may Employ Others for that Purpose.

The act of reducing to practice may be performed either by the inventor himself or by others working under his direction. The idea of means, in which resides the essence of the invention, must be his own; but having conceived this, its practical embodiment must often, in the ordinary course of events, be left to those skilled in the art to which the means belongs.[1] The inventor has the right thus to employ "an adroit hand to carry into effect the conceptions of his own original head;" and during this proceeding he may avail

to be said that person, who had merely is sometimes difficult to trace; nevertheless, in the eye of the law, it always subsists. The mechanic may greatly aid the inventor, but he cannot usurp his place. As long as the root of the original conception remains in its completeness, the outgrowth — whatever shape it may take — belongs to him with whom the conception originated."

Says Mr. Webster in a note: (1 Web. 126) "If a person be employed to perfect the details of or carry out into execution the original idea of the patentee, that which he suggests or invents while so employed, and subsidiary to such idea, is in law the invention of the patentee."

See also Allen *v.* Rawson (1845), 1 C. B. 551; Minter *v.* Wells (1834), 1 Web. 127: 2 Abb. P. C. 26; and §§ 393-395, *post*.

supplied, you might say, the tools or the materials, has a right to claim such invention?" 2 Abb. P. C. 464 (466, 470, 470).

§ 131. [1] In Blandy *v.* Griffith, (1869), 3 Fisher, 609, Swayne, J.: (616) "Invention is the work of the brain, and not of the hands. If the conception be practically complete, the artisan who gives it reflex and embodiment in a machine is no more the inventor than the tools with which he wrought. Both are instruments in the hands of him who sets them in motion and prescribes the work to be done. Mere mechanical skill can never rise to the sphere of invention. The latter involves higher thought, and brings into activity a different faculty. Their domains are distinct. The line which separates them

himself of any assistance or suggestions which do not change the essential character of the means he has created.

§ 132. Reduction to Practice fixes the Date of the Completion of the Inventive Act.

The date of the completion of the inventive act is thus the date when the idea of the inventor is embodied in a practically operative article or art. Up to that moment there is nothing which the law considers an invention, nothing of which either use or proprietorship can be predicated, or to which the protection of a patent can be extended.[1] For certain purposes, however, the law takes notice of the existence of the idea apart from its reduction to a physical form. Where there are rival claimants of the same invention, the one who first conceived the idea of means as now embodied in the invention is regarded as the first inventor, unless by his own negligence in reducing the idea to practice he has forfeited his right to such preferment; and, therefore, as between two, the first of whom has used due diligence, the date of the invention is the date of the conception of the complete idea.[2] When the inventor's previous knowledge of the invention is asserted on the ground of prior use or publication, the date of his inventive act is that of the development of his idea of means, not of its reduction to practical use.[3] But when the legal novelty

§ 132. [1] That the date of a patented invention is *prima facie* the date of the application for a patent, see Dane *v.* Chicago Mfg. Co. (1872), 3 Bissell, 380; 2. O. G. 677; 6 Fisher, 130.

That the actual date is that of reduction to practice, see §§ 126, 127 and notes, *ante.*

[2] That as between rival inventors the date is that of the complete conception of the idea of means, provided the inventor used due diligence in reducing to practice, see Kneeland *v.* Sheriff (1880), 5 Bann. & A. 482; 2 Fed. Rep. 901; 18 O. G. 242; National Filtering Oil Co. *v.* Arctic Oil Co. (1871), 8 Blatch. 416; 4 Fisher, 514; Colt *v.* Massachusetts Arms Co. (1851), 1 Fisher, 108. See also §§ 370–391, *post.*

[3] That when the question is whether the inventor drew his information from prior use, prior patent, or prior publication, the date of his invention is the date when he first clearly conceived the idea of means, see Woodman *v.* Stimpson (1866), 3 Fisher, 98.

That the date when the inventor conceived his idea of means may be shown by his drawings, statements, or any other relevant evidence, see Loom Co. *v.* Higgins (1881), 105 U. S. 580; 21 O. G. 2031; Kneeland *v.* Sheriff (1880), 18 O. G. 242; 5 Bann. & A. 482; 2 Fed. Rep. 901; Reeves *v.* Keystone Bridge Co. (1872,) 1 O. G. 466; 9 Phila. 368; 5 Fisher, 456; Philadelphia & Trenton R. R.

of the invention is attacked on the ground of prior use in this country or a prior patent or publication, the date of reduction to practice is regarded as the *prima facie* date of the invention;[4] although the inventor is still allowed to carry the date of his inventive act back to his conception of the idea of means in order to establish his own priority.

SECTION V.

OF THE NATURE OF THE COMPLETE RESULT OF THE INVENTIVE ACT.

§ 133. Concrete Invention an Art or Instrument: Not a Principle or Force, a Function, or an Effect.

From this analysis of the inventive act it is evident that its complete result must be either an art or an instrument. Every effect in the material world is produced by some force which, being applied through certain corporeal agents or in a certain method, accomplishes the end desired. The operative means is not the force alone, but the force acting through the specific agent, or in the specific manner; and the inventive faculties are exercised, not simply to supply the force, but also to devise the art or instrument by which the force can be directed to that end. A concrete invention is thus either a mode of practically applying force, or an instrument through which force is practically applied; and must, therefore, be distinguished alike from the principle or force which it employs, from the function which it performs, and from the effect which it produces.

§ 134. "Principle," a Term of Two Meanings.

No proposition has been more frequently or positively stated by the courts than that a principle is not a patentable inven-

Co. *v.* Stimpson (1840), 14 Peters, 448; 2 Robb, 46.

[4] That on the question of the legal novelty of an invention the date is that of reduction to practice, see National Spring Co. *v.* Union Car Spring Mfg. Co. (1874), 6 O. G. 224; 12 Blatch. 80; Webb *v.* Quintard (1872), 1 O. G. 525; 9 Blatch. 352; 5 Fisher, 276; but see § 321 and note 1, *post*.

tion,[1] and yet with almost equal positiveness and frequency they have declared that the subject-matter covered by a patent is the principle of the invention.[2] This apparent contradic-

§ 134. [1] In American Bell Telephone Co. *v.* Dolbear (1883), 15 Fed. Rep. 448, Gray, J.: (449) "There can be no patent for a mere principle. The discoverer of a natural force or a scientific fact cannot have a patent for that." 23 O. G. 535 (535).

In McComb *v.* Brodie (1872), 2 O. G. 117, Woods, J.: (119) "A patent cannot be granted for a principle or an iden, or for any abstraction whatever." 1 Woods, 153 (158); 5 Fisher, 384 (391).

In Morton *v.* N. Y. Eye Infirmary (1862), 5 Blatch. 116, Shipman, J.: (121) "In its naked, ordinary sense, a discovery is not patentable. A discovery of a new principle, force, or law, operating, or which can be made to operate, on matter, will not entitle the discoverer to a patent." 2 Fisher, 320 (323).

See also Boyd *v.* Cherry (1883), 4 McCrary, 70; Roberts *v.* Dickey (1872), 4 Fisher, 532; 1 O. G. 4; 4 Brews. 260; Burr *v.* Duryee (1863), 1 Wall. 531; Tilghman *v.* Werk (1862), 1 Bond, 511; 2 Fisher, 229; Le Roy *v.* Tatham (1859), 22 How. 132; Bell *v.* Daniels (1858), 1 Bond, 212; 1 Fisher, 372; Wintermute *v.* Redington (1856), 1 Fisher, 239; Rich *v.* Lippincott (1853), 2 Fisher, 1; O'Reilly *v.* Morse (1853), 15 How. 62; Detmold *v.* Reeves (1851), 1 Fisher, 127; Smith *v.* Downing (1850), 1 Fisher, 64; Smith *v.* Ely (1849), 5 McLean, 76; Wyeth *v.* Stone (1840), 1 Story, 273; 2 Robb, 23; Stone *v.* Sprague (1840), 1 Story, 270; 2 Robb, 10; Whitney *v.* Emmett (1831), Baldwin, 303; 1 Robb, 567; Evans *v.* Eaton (1816), 1 Peters C. C. 322; 1 Robb, 68; Crossley *v.* Potter (1853), Macrory's P. C. 240; Household Co. *v.* Neilson (1843), 1 Web. 673; Neilson *v.* Harford (1841), 1 Web. 331; Jupe *v.* Pratt (1837), 1 Web. 145; 2 Abb. P. C. 464; Hornblower *v.* Boulton (1799), 8 T. R. 95; 1 Abb. P. C. 98; Boulton *v.* Bull (1795), 2 H. Bl. 463; 1 Abb. P. C. 59.

That neither principles, nor abstract ideas, nor natural functions of matter, animate or inanimate, are patentable, see opinion Atty. Gen. (1856), 8 Op. At. Gen. 269.

[2] That the principle of the invention is the subject-matter of the patent, see Knapp *v.* Joubert (1881), 19 Blatch. 148; 7 Fed. Rep. 219; Boston Elastic Fabrics Co. *v.* East Hampton Rubber Thread Co. (1874), Holmes, 372; 5 O. G. 696; 1 Bann. & A. 222; Seymour *v.* Marsh (1872), 6 Fisher, 115; 9 Phila. 380; 2 O. G. 675; McComb *v.* Brodie (1872), 2 O. G. 117; 1 Woods, 153; 5 Fisher, 384; Bailey Washing & Wringing Mach. Co. *v.* Lincoln (1871), 4 Fisher, 379; Blanchard *v.* Puttman (1867), 2 Bond, 84; 3 Fisher, 186; Stainthorp *v.* Humiston (1864), 4 Fisher, 107; Burr *v.* Duryee (1863), 1 Wall. 531; Smith *v.* Higgins (1859), 1 Fisher, 537; Cahoon *v.* Ring (1859), 1 Fisher, 397; 1 Clifford, 592; Latta *v.* Shawk (1859), 1 Fisher, 465; 1 Bond, 259; Foss *v.* Herbert (1856), 1 Bissell, 121; 2 Fisher, 31; Sickels *v.* Borden (1856), 3 Blatch. 535; Blanchard *v.* Beers (1852), 2 Blatch. 411; Parker *v.* Stiles (1849), 5 McLean, 44; Roberts *v.* Ward (1849), 4 McLean, 565; 2 Robb, 746; Brooks *v.* Jenkins (1844), 3 McLean, 432; Brooks *v.* Bicknell (1843), 3 McLean, 250; 2 Robb, 118; Smith *v.* Pearce (1840), 2 McLean, 176; 2 Robb, 13; Evans *v.* Eaton (1822), 7 Wheaton, 356; 1 Robb, 336; Barrett *v.* Hall (1818), 1 Mason, 447; 1 Robb, 207; Evans *v.* Eaton (1818), 3 Wash.

tion has arisen from the use of the word "principle" to denote two entirely distinct entities, which have nothing in common except that both require corporeal expression in order to become serviceable in the arts. In the discussion of this common requisite, the word has sometimes been employed in its two different senses in the same connection, the peculiar attributes of one erroneously predicated also of the other, to the confusion of a subject which, in its fundamental truth, presents no special difficulty.[3] In this, as in most other cases, to properly distinguish is to comprehend.

443; 1 Robb, 193; Odiorne *v.* Winkley (1814), 2 Gallison, 51; 1 Robb, 52; Whittemore *v.* Cutter (1813), 1 Gallison, 478; 1 Robb, 40.

[3] In Detmold *v.* Reeves (1851), 1 Fisher, 127, Kane, J.: (130) "There is no doubt, that he who has discovered some new element or property of matter, may secure to himself the ownership of his discovery, so soon as he has been able to illustrate it practically, and to demonstrate its value. His patent, in such a case, will be commensurate with the principles, which it announces to the world, and may be so broad as the mental conception itself. But, then, the mental conception must have been susceptible of embodiment, and must have been, *in fact, embodied in some* mechanical device, or some process of art. The abstract must have been resolved into the concrete. The patent must be for a thing — not for an idea merely." This extract illustrates the method by which the real doctrine concerning a principle has been obscured by faulty language. The learned judge starts out with the idea of natural force, expressed in the terms "element" and "property of matter," and alleges that the discoverer of these can protect his discovery by a patent when he has practically illustrated it and demonstrated its value. This is, of course, untrue, no element or property of matter being under any circumstances patentable. In the second sentence his ground changes, and the scope of the patent is declared to be commensurate with the "mental conception" of the inventor. Now the mental conception of the inventor cannot be the same thing as the element or property of matter which he has discovered, nor can it be synonymous with the act of discovery, which is transient and already past. Obviously the only mental conception of an inventor which can, as the third sentence requires, be embodied, is his idea of a means in which the element or property of matter can be applied to some physical object with a beneficial result. But when this embodiment has taken place, it is not the abstract element or property of *matter that has now become concrete*, but the abstract idea of its application to an object; and this is the true and only principle protected by the patent.

Similar ambiguity occurs in the dissenting opinion of Judge Nelson in Le Roy *v.* Tatham (1852), 14 Howard, 156. Speaking of the patentability of a principle in the light of Forsyth's Case (1 Web. 94, 97, n.) he says: (185) "This case is founded upon a doctrine which has been recognized in several subsequent cases in England, namely, that where a person discovers a principle or property of nature, or where he conceives of a new application of a well-known principle or property of nature, and also, of some mode of carrying it out

§ 135. "Principle," in one sense, Means Force.

In one sense, the word "principle" denotes the physical force employed by an invention. The other appellations given to

into practice, so as to produce or attain a a principle, or element of nature. The new and useful effect or result, he is entitled to protection against all other modes of carrying the same principle or property into practice for obtaining the same effect or result." Here that which is true only of a principle in the sense of the mental conception of the inventor, is predicated of the principle or force for whose useful employment the inventor has devised or adopted a means. Then citing Neilson's Case (1 Web. 310, 342, 371), hereafter discussed in a note to § 143, he proceeds: (186) "The settled doctrine to be deduced from them, I think, is, that a person having discovered the application for the first time of a well-known law of nature, or well-known property of matter, by means of which a new result in the arts or in manufactures is produced, and has pointed out a mode by which it is produced, is entitled to a patent; and, if he has not tied himself down in the specification to the particular mode described, he is entitled to be protected *against all modes by which* the same result is produced, by an application of the same law of nature or property of matter. And *a fortiori*, if he has discovered the law of nature or property of matter, and applied it, is he entitled to the patent, and aforesaid protection. And why should not this be the law? The original conception — the novel idea in the one case, is the new application of the principle or property of matter, and the new product in the arts or manufactures — in the other, in the discovery of the principle or property, and application, with like result. The mode or means are but incidental, and flowing naturally from the original conception; and hence of inconsiderable merit. But, it is said, this is patenting

authorities to which I have referred, answer the objection. . . . And what if the principle is incorporated in the invention, and the inventor protected in the enjoyment for the fourteen years. He is protected only in the enjoyment of the application for the special purpose and object to which it has been newly applied by his genius and skill. For every other purpose and end, the principle is free for all mankind to use."

In considering the weight to be attached to the positions taken in this dissenting opinion, it is well to remember that there is one class of inventions to which the general doctrine here announced is truly applicable. Where the discovery relates to new susceptibilities in the object, and consists in the perception that it may be affected in a new way by the application to it of a force not hitherto known as capable of producing this effect upon it, the direction of such force upon this object is a new *and substantive invention, and may be* patented as a process, or mode of treatment of the object, without reference to the particular instruments employed. Of such *an invention it could be truly* said that one who had, for the first time, applied this force to this specific object might be protected against any other application of the same force to the same object in order to produce the same effect. It should also be remembered that the invention in the case at bar, as well as in the principal case cited by Judge Nelson, was apparently of this description. In Le Roy *v.* Tatham, the discovery had been made that lead possessed such properties that being subjected to certain forces certain results would follow; and hence it was true

this force are very numerous, and most of them are wholly inappropriate. It has been called "an elementary truth," "a principle of science," "a property of matter," "an element of matter," "a law of nature," the "root and ground of science;" but the idea which underlies these phrases is sufficiently apparent, and is neither less nor more than that of some natural power or energy, which operates with uniformity under given circumstances, and may thus be contemplated as obedient to law.[1] A principle, in this sense, is a necessary

that one, who had reduced this mode of treating lead to practice, was entitled to protection against all other methods of subjecting lead to the influence of the same force for the same purpose. In the Neilson patent the inventor had discovered that the charge in a smelting-furnace was susceptible to strong currents of hot air, and if so treated yielded peculiar results; and having put his discovery to practical use by proper apparatus he was entitled to regard all persons, who treated the same objects with currents of hot air for the same purpose, as infringing upon his invention. In the struggle of the judges, in both these cases, to support inventions which they saw to be meritorious and patentable, but whose real nature and scope were not then understood, on grounds applicable only to different classes of inventions, they were led into the use of language inappropriate to the discussion, and into the apparent declaration that when the novelty resides in the force or in the use of the force for a given purpose, all other uses of the force for the same purpose are covered by the patent; a declaration which is not correct unless the purpose is new, and can be accomplished only by applying to a certain object the force adopted and applied by the inventor. Conceding this to have been the doctrine they were endeavoring to elaborate, no criticism can be made upon the legal propositions stated. But the ambiguity of language resulting from the varied use of the word "principle" only becomes more evident when it is seen that in the discussion of this class of inventions it cannot be employed at all, except in its second sense of an idea of means.

An additional example of the confusion introduced into this subject by the equivocal use of the word "principle" may be found in the discussion between the court and counsel in Neilson *v.* Harford, 1 Web. 342, 343, and notes; where Alderson, B., uses the term to denote the force employed, and Sir F. Pollock employs it to describe the idea of means or spirit of the invention. The reader will never wonder at the difficulties which have arisen in so simple a subject, after examining this discussion, and remembering that neither the judge nor the lawyer were engaged in a mere contest of words, but were honestly endeavoring to understand each other.

§ 135. [1] Of the numerous phrases used as synonymous with "principle" in the sense of a physical force, those cited in the text may serve as fair examples. The real meaning intended is generally indicated by the explanations and illustrations given by the judges. Thus in Barrett *v.* Hall (1818), 1 Mason, 447, Story, J., having stated that the word "principle" is sometimes used to denote an "elementary truth or power," continues: (470) "So that [in that sense] all machines, which perform their appropriate functions by motion, in whatever

factor in every means which produces physical effects, whether such means be natural or artificial, and it is generally this which makes the chief impression on the senses of the observer; but it is in itself no true invention, nor can it be protected by a patent. And this for the three following reasons: —

§ 136. "Principle," as a Force, not the Result of Inventive Skill.

Firstly, a *principle*, considered as a *natural* physical *force*, is not the product of inventive skill. It exists in nature independently of human effort, and can neither be diminished nor increased by human power. Man can discover and employ it, but his employment of it in the modes or through the instruments by which it is applied in nature are mere imitations of what every man is able to perceive and reproduce as well as he. Not until some new instrument or method is

way produced, are alike in principle since motion is the element employed." In Le Roy *v.* Tatham (1852), 14 How. 156, McLean, J., after remarking that want of precision in the use of this term has led to much confusion, says: (175) "A principle . . . is a fundamental truth; an original cause; a motive;" and exemplifies the *non*-patentability of principles by reference to steam-power and electricity as principles. In O'Reilly *v.* Morse (1853), 15 How. 62, Grier, J., uses the phrase, (132) "element, or law, or principle of nature," as conveying the idea of some electrical, mechanical, or chemical force. A writer on this subject in 7 Am. Law Reg. N. S. 129 (1868), employs as synonymous the names "law of nature," "property of matter," and "mathematical principle." In the earlier English cases the same meaning is apparent, though the expressions used in defining a principle were somewhat more extraordinary. Thus in Boulton *v.* Bull (1795), 2 H. Bl. 463, Buller, J., describes it as "the first ground and rule for arts and sciences, or in other words the elements and rudiments of them." What this means he indicates by saying: "A patent must be for some new production from those elements, and not for the elements themselves . . . all machines which are worked by steam are worked on the same principle." In the same case Rooke, J.: "*The term principle* . . . may denote either the radical elementary truths of a science, or those consequential axioms which are founded on radical truths. . . . The radical principles, on which all steam-engines are founded, are the natural properties of steam, its expansiveness and condensibility." 1 Abb. P. C. 59 (80, etc.). These citations are sufficient to show that what is thus variously called a "truth," a "principle," a "law," an "axiom," a "ground and rule," etc., is really a natural force or energy manifesting itself through the properties of matter, and operating to produce physical effects.

That an invention is an application of principles or elementary powers, see Holden *v.* Curtis (1819), 2 N. H. 61.

contrived for its direction toward ends which it cannot naturally accomplish, does his creative genius manifest itself; but even these new instruments and methods effect no change within the force itself, nor do they render it in any manner the result of his inventive act.

§ 137. "Principle," as a Force, the Common Property of Mankind.

Secondly, a principle, considered as a natural physical force, is the common property of all mankind. It lacks the one essential attribute of private property, — the capability of exclusive appropriation by an individual to his own use.[1] In its degree, in its location, in the times and methods of its manifestations, it is wholly beyond his control. He must take it as he finds it, and having studied its phenomena and ascertained its laws, he must accommodate himself to its requirements, and be content with such advantages as he is thus enabled to secure. But all endeavors to confine it to himself are at once futile and unjust. It exists for all men, as well after his discovery as before; and if their artificial methods of employing it are unlike his, their use takes from

§ 137. [1] In Le Roy *v.* Tatham (1852), 14 How. 156, McLean, J.: (175) "A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right. Nor can an exclusive right exist to a new power, should one be discovered in addition to those already known. Through the agency of machinery a new steam power may be said to have been generated. But no one can appropriate this power exclusively to himself, under the patent laws. The same may be said of electricity, and of any other power in nature, which is alike open to all, and may be applied to useful purposes by the use of machinery."

In Detmold *v.* Reeves (1851), 1 Fisher, 127, Kane, J.: (131) "The more comprehensive truths of all philosophy, whatever specific name we give to them, cannot be specially appropriated by any one. They are almost elements of our being. We have not reasoned them out, perhaps, and may be even unconscious of their action; yet they are about us, and within us, entering into and influencing our habitual thoughts, and pursuits, and modes of life — contributing to our safety and happiness. And they belong to us as effectively as any of the gifts of Heaven. If we could search the laws of nature, they would be, like water and the air, the common property of mankind; and those theories of the learned which we dignify with this title, partake, just so far as they are true, of the same universally diffused ownership. It is their application to practical use, which brings them within the domain of individuals; and it is the novelty of such an application that constitutes it the proper subject of a patent."

him nothing which he can in any manner call his own. The law necessarily recognizes and protects this universal right. It does not suffer any man to debar others from the use of that which nature has bestowed on all, simply because he was the first one to discover it. Nor even when he has, by his inventive skill, devised a new mode of applying it to the attainment of a certain end, does the protection of the law extend beyond the scope of his invention, or prohibit the employment of the same force by others for the same purpose, provided their artificial instruments and methods are not identical with his.

§ 138. "Principle," as a Force, not an Operative Means.

Thirdly, a principle, considered as a natural physical force, is not a complete and operative means.[1] Before it can pro-

§ 138. [1] In Morton *v.* N. Y. Eye Infirmary (1862), 5 Blatch. 116, Shipman, J.: (121) "In its naked, ordinary sense, a discovery is not patentable. . . . It is only where the explorer has gone beyond the mere domain of discovery, and has laid hold of the new principle, force, or law, and connected it with some particular medium or mechanical contrivance, by which, or through which, it acts on the material world, that he can secure the exclusive control of it under the Patent Act. He then controls his discovery through the means by which he has brought it into practical action, or their equivalent, and only through them. It is then an invention, although it embraces a discovery." 2 Fisher, 320 (323). This is another instance of defective phraseology. Is the principle here spoken of a natural force, or the spirit of the invention, i. e., the idea of means? If it be the former, the patentee does *not* "secure the exclusive control of it under the Patent Act." If it be the latter, why is it treated as a *force* to be discovered? True, each is an abstraction, and must be connected with "some particular medium or mechanical contrivance" before it can come within the scope of patentable inventions, either as a new idea of means or a subordinate element in a new idea of means; but this common attribute does not make them identical in nature nor bring them into the same relation with the complete invention or with the patent by which it is protected.

In Winternute *v.* Redington (1856), 1 Fisher, 239, Willson, J.: (247) "It is true that a patent cannot be sustained for a mere principle. For instance, Sir Isaac Newton's discovery of the principle of gravitation could not be the subject of a patent. But it is equally true, that a principle may be embodied and applied, so as to afford some result of practical utility in the arts and manufactures, and that under such circumstances a principle may be the subject of a patent." In this opinion, the judge subsequently explains that by "principle," in this last sentence, he does not mean a force or property of matter, but the mode devised by the inventor for applying the force or property.

In O'Reilly *v.* Morse (1853), 15 How.

duce effects it must be brought in contact with its object, either through some substance which thereby becomes its instrument, or through some mode of operation in which its object is subjected to its influence. Until this is accomplished, although the force is material in itself, it remains in reference to its object practically a mere abstraction, and is of no more value to mankind, and has no higher right to the protection of a patent, than any other unapplied idea.

§ 139. "Principle," in the other sense, Signifies the Idea of Means.

In its second sense, the word "principle" denotes the spirit of the invention, that characteristic thought which is embodied in the operative means devised by the inventor. In reference to a machine, it is defined as its "*modus operandi*," its "structure and constituent parts;" in reference to all inventions, as "the mode of applying powers to produce results," the "operative cause by which a certain result is produced," "the manner of producing the effect."[1] All

62, Grier, J.: (132) "The mere discovery of a new element, or law, or principle of nature, without any valuable application of it to the arts, is not the subject of a patent. But he who takes this new element or power, as yet useless, from the laboratory of the philosopher, and makes it the servant of man; who applies it to the perfecting of a new and useful art, or to the improvement of one already known, is the benefactor to whom the patent law tenders its protection."

That the capacity of a chemical agent to produce a result is not an invention, see opinion Atty. Gen. (1856), 8 Op. At. Gen. 269.

That a patent cannot be granted for the discovery that certain natural substances will produce certain effects on the human body, see opinion Atty. Gen. (1856), 8 Op. At. Gen. 269.

That the production of insensibility, or suggestions of the ability to perform surgical operations while the patient is insensible, are not patentable, see opinion Atty. Gen. (1856), 8 Op. At. Gen. 269.

That a medicament, whose administration must depend on professional skill, is not patentable, see opinion Atty. Gen. (1856), 8 Op. At. Gen. 269.

§ 139. [1] For cases where the word "principle" is used in reference to a machine as synonymous with "*modus operandi*," or "mode of operation," see Latta *v.* Shawk (1859), 1 Fisher, 465; 1 Bond, 259; Smith *v.* Pearce (1840), 2 McLean, 176; 2 Robb, 13; Whittemore *v.* Cutter (1813), 1 Gallison, 478; 1 Robb, 40: as synonymous with "structure and constituent parts," see Barrett *v.* Hall (1818), 1 Mason, 447; 1 Robb, 207: as synonymous with "the mode of applying powers to produce results," see Smith *v.* Pearce (1840), 2 McLean, 176; 2 Robb, 13: as synonymous with "the operative cause by which a certain effect is produced," see Brooks *v.* Jenkins (1844), 3 McLean, 432: as synon-

these phrases evidently refer to the idea of means, the intellectual essence of that artificial method by which the inventor has applied, to some determinate end, the natural force described by the word "principle," as employed in its more general signification.[2] A principle, in this sense, thus differs *toto cœlo*

ymous with "the mode of effecting a result," see Pitts *v.* Wemple (1855), 2 Fisher, 10; 1 Bissell, 87: as synonymous with "the spirit or substance of the invention," see Lund, 7.

[2] Concurrently with all the involved and perplexing discussions concerning the status of a principle before the law, such explanations have been given, both from the bench and bar, of the true distinction between these two senses of the term "principle," as ought long ago to have removed all difficulties from the subject, and have placed this second meaning of the word in the clearest light as expressing the very essence of every patentable invention. In Boulton *v.* Bull (1795), 2 H. Bl. 463, a case pregnant with mischief, on account of the loose and almost meaningless language used by some of the judges, Lord Chief Justice Eyre remarked: (495) "Undoubtedly there can be no patent for a mere principle; but for a principle so far embodied and connected with corporeal substances, as to be in a condition to act, and to produce effects in any art, trade, mystery, or manual occupation, I think there may be a patent. Now this is, in my judgment, the thing for which the patent stated in the case was granted, and this is what the specification describes, though it miscalls it a principle. It is not that the patentee has conceived an abstract notion, that the consumption of steam in fire-engines may be lessened, but he has discovered a practical manner of doing it; and for that practical manner of doing it he has taken this patent. Surely this is a very different thing from taking a patent for a principle." 1 Abb. P. C. 59 (91). Thus, at a very early period, this sagacious and learned judge had perceived that the real thing protected by a patent was the method conceived by the inventor and reduced to practice; that it was not the force employed, on the one hand, nor the mere corporeal substance through which the idea of the inventor was expressed upon the other; but embraced the principle or abstract essence of the invention in whatever form it might be embodied.

Again, in the argument of counsel in the case of Jupe *v.* Pratt (1837), 1 Web. 145, the following remarks occur: (145) "The fair mode of looking at a patent and the specification is, to inquire what is the spirit of the invention, or the principle; and this must be embodied in some mode or method, because it is admitted on all hands you cannot take out a patent for a principle. But although the law says . . . that you cannot take out a patent for a principle, . . . you can have a patent for the spirit of your invention; for if any other person comes and clothes the spirit of your invention with a different body, and puts that principle in use in any other shape or fashion, it is always a question for a jury, whether . . . the article or the practice . . . be not substantially an adaptation of the principle, applied with the same view, to answer the same end, and merely imitated in substance, whatever difference there may be in point of form." 2 Abb. P. C. 464 (466).

In this country Judge Willson, in Wintermute *v.* Redington (1856), 1 Fisher, 239, after asserting the non-patentability of a property of matter, and the patentability of an embodied principle

from a principle considered as a force. The latter is the operative energy; the former is the means in which the latter operates. One is created by the author of the universe; the other owes its origin to human ingenuity. One belongs equally to all mankind; the other is the exclusive property of him who has devised it, until it pleases him to give it to the world.

§ 140. "Principle," as an Idea of Means, not an Operative Means.

The principle or essence of an invention, however, when taken by itself, is no more patentable than the principle or force which it proposes to employ.[1] Like that, it is but an abstraction, resting in theory alone, and not an operative means. Until reduced to practice it is not a complete invention, nor does it stand on any higher ground of legal merit than the discovery of an existing natural power. It must become "a principle, put in practice and applied," a "practice

continues: (247) "It is, however, *the embodiment and the application of the principle which constitute the grant of the patent.* And it has been justly said 'that the principle so embodied and applied, and the principle of *such* embodiment and application, are essentially distinct; the former being a truth of exact science, or a law of natural science, or a rule of practice; the latter, a practice founded upon such truth, law, or rule.'"

Many of the cases arising on machine-patents also discuss this same proposition, uniformly holding that the subject-matter of the patent is the principle, or idea of means, embodied in the machine, and that no change in the embodiment, as distinguished from the principle, can affect the identity of the invention.

See §§ 178, 179, and notes, *post.*

§ 140. [1] In Andrews *v.* Carman (1876), 9 O. G. 1011, Benedict, J.: (1013) "There can be no patent for a principle; but 'for a principle so far embodied and connected with corporeal substances as to be in a condition to act and to produce effects in any trade, mystery, or manual occupation there may be a patent.' The idea or principle of forcing water from the earth into a well-pit by the use of artificial power is new, but is not by itself patentable. The idea, when made available by a method whereby it is put to practical use, is patentable as a process, and is thus secured to the person who has conceived the idea and invented the method." 13 Blatch. 307 (312); 2 Bann. & A. 277 (281).

In McComb *v.* Brodie (1872), 2 O. G. 117, Woods, J.: (119) "A patent cannot be granted for a principle or an idea, or for any abstraction whatever; for instance, for the naked idea of a slit, slot, or aperture, disconnected from any application. But when the idea is applied to a material thing, so as to produce a new and useful effect or result, it ceases to be abstract, and becomes a proper subject to be covered by a patent." 1 Woods, 153 (158); 5 Fisher, 384 (391).

See also cases cited under Reduction to Practice, §§ 125–130, *ante.*

founded on principle," before it passes from the shadowy regions of mere intellectual apprehension into the domain of the industrial arts.[2]

§ 141. "Principle," as an Idea of Means, the Essence of the Concrete Invention.

Yet when once embodied in an operative means, this principle is the true subject-matter of the patented invention. Whatever forms of tangible expression it receives through the varied skill and industry of the mechanic, this idea and essence still remain unchanged. The exclusive right of the inventor is co-extensive with the limits of the original conception, and though its spirit may be clothed with many different bodies the individuality of the invention is not disturbed nor its identity destroyed.[1] One who has thus devised a principle,

[2] In Boulton *v.* Bull (1795), 2 H. Bl. 463, Buller, J.: (486) "I think it impossible to support a patent for a method only, without having carried it into effect and produced some new substance. But here it is necessary to enquire, what is meant by a principle reduced into practice. It can only mean a practice founded on principle, and that practice is the thing done or made." 1 Abb. P. C. 59 (81).

That an abstract principle or idea is not patentable, see Worswick Mfg. Co. *v.* City of Buffalo (1884), 20 Fed. Rep. 126; 27 O. G. 1239.

That a principle is not patentable except in connection with a mode of application, see Burke *v.* Partridge (1878), 58 N. H. 349.

§ 141. [1] In American Bell Telephone Co. *v.* Dolbear (1883), 15 Fed. Rep. 448, Gray, J.: (449) "There can be no patent for a mere principle. The discoverer of a natural force or a scientific fact cannot have a patent for that. But if he invents for the first time a process by which a certain effect of one of the forces of nature is made useful to mankind, and fully describes and claims that process, and also describes a mode or apparatus by which it may be usefully applied, he is, within the meaning and the very words of the patent law, 'a person who has invented or discovered any new and useful art;' and he is entitled to a patent for the process of which he is the first inventor, and is not restricted to the particular form of mechanism or apparatus by which he carries out that process. Another person, who afterwards invents an improved form of apparatus, embodying the same process, may indeed obtain a patent for his improvement, but he has no right to use the process, in his own or any other form of apparatus, without the consent of the first inventor of the process. . . . (453) If that art or process is the only way by which [that effect of the natural force can be produced] that fact does not lessen the merit of his invention, or the protection which the law will give to it." 23 O. G. 535 (535).

See also cases cited under § 130, *ante*.

In a brief, but able, discussion of this subject, in 7 Am. Law Reg. N. S. 129 (1868), after considering the leading

or mode of operation, in which a force is applied to the production of a given result, becomes thereby the inventor, not merely of the instrument he uses or the method he describes, but of all other instruments and methods embodying the same principle or mode of operation, however different in form or structure or arrangement such instruments or methods may appear.

§ 142. "Application of Principle" a phrase of Two Meanings.

This subject is still more confused by the use of the word "application," and of the phrase "application of a principle," in different significations. "Application," as predicated of a principle when considered as a force, is the specific artificial method in which that force is directed to the accomplishment of a given result. In other words, it is the idea of means, the principle of the invention in which the force is actually employed. In this sense, the "application of the principle" is the essence of the invention, the entire subject-matter of the patent, and any other application of the same principle or force, even for the same purpose, is a different invention. But "application," as predicated of a principle when considered as the spirit of an invention, is the embodiment of that spirit in some instrument or operation, or in other words, it is reduction to practice. In this sense, the "application of the principle" is not the essence of the invention nor the entire subject-matter of the patent, but is the means by which the inventor has secured the benefit of his invention. Under the American and English cases, the writer reaches the following conclusions: (143)

"1. Every discoverer of a new and useful application of any law of nature, any quality of matter, or any mathematical principle, is entitled to a patent for it [i. e. for the new application].

"2. It is not necessary to entitle him to a patent, that he should have been the first to search out and make known the law, quality, or principle which he has thus applied. And his having been the first to bring it to light adds nothing to his claims.

"3. He will be protected in his right by holding as infringements of his patent all mechanical equivalents for the devices for carrying his discovery into effect, which he has described and designated in his specification as his invention. And he can have *no other* protection, even though the principle he has applied was first discovered by him.

"4. No one can legally specify as his invention, and take out a patent for the exclusive use of any such law, quality, or principle when employed for the same purpose as his. No instance can be found where any such patent has been sustained, and they have been repeatedly pronounced invalid by the courts."

tire subject-matter of the patent. Here the essence of the invention and the subject-matter of the patent is the principle itself, and every other application of this principle, whatever be its purpose, belongs to the original inventor of the principle and can neither be used nor patented by others.

§ 143. Propositions Embracing these Phrases and Terms Interpreted.

When, therefore, courts lay down the doctrine that a principle cannot be patented, the proposition which they undertake to state is either that a natural force cannot be appropriated for any purpose to the exclusive use of any one, not even of its discoverer, or that an idea of means is not entitled to a patent until it is embodied in a practical and useful form. When they declare that a patent for the application of a principle covers only that specific mode of application, they refer solely to the application of a natural force in some peculiar manner in an artificial means.[1] When they assert that one who has discovered and applied a prin-

§ 143. [1] In Steam Gauge & Lantern Co. *v.* St. Louis Railway Supplies Mfg. Co. (1885), 25 Fed. Rep. 491, Treat, J.: (492) "The party supposes he has discovered a principle, and he thinks that any sort of device which covers that principle is within the terms of his patent. This court does not admit that. It is the device by which he may avail himself of the beneficial influence of his principle, and this court always restricts a party to his device. I think that is the meaning of all the rulings of the Supreme Court."

In Sewall *v.* Jones (1875), 91 U. S. 171, Hunt, J.: (184) "When a party has invented some mode of carrying into effect a law of natural science or a rule of practice, it is the application of that law or rule which constitutes the peculiar feature of the invention. He is entitled to protect himself from all other modes of making the same application." 9 O. G. 47 (49).

In Wintermute *v.* Redington (1856), 1 Fisher, 239, Willson, J.: (250) "We have already stated that when a person has invented some mode of carrying into effect a law of natural science, or a rule of practice, which constitutes the peculiar feature of his invention, such discovery may be secured to him by a patent. Hence it follows that he is entitled to protect himself from all other modes of making the same application. The substantial *identity*, therefore, that is to be looked to, respects that which constitutes the essence of the invention, namely, *the application of the principle*. If the mode of carrying the same principle into effect, adopted by the defendant, still shows that the principle admits of the same application in a variety of forms, or by a variety of apparatus, the jury will be authorized to treat such mode as a piracy of the invention."

ciple is entitled to all methods of applying it, they speak of an idea of means, capable of being applied or reduced to practice in different instruments or operations, each of which is the tangible embodiment of the same idea, and all of which are only formal variations of the same substantial means.[2]

[2] One of the leading cases in which the patentability of a principle has been discussed, and the doctrine announced that a patent for the application of a principle covers all modes of applying it, is Household Co. *v.* Neilson (1843), 1 Web. 673. As this case has been cited, criticised, and explored for additional light in almost every subsequent cause involving the same propositions, it deserves more than a passing reference. Before Neilson's invention only cold air had been employed for the blast in iron and similar furnaces. He discovered that to blow with hot air was better than to blow with cold. His method consisted in blowing the air through a heated receptacle into the furnace. In his specification he declared that the materials, size, &c., of the receptacle, as well as the mode of heating it, were immaterial, provided the air were heated between the bellows and the furnace. Practically, no other method of blowing with hot air is possible, and as a consequence his mode of heating the air covered all applications of hot air in blast. An analysis of this invention leads to the following results: (1) That a strong current of hot air directed into the furnace will produce certain effects upon the substances contained in the furnace is a fact in nature, open to discovery and use by all men; (2) By the discovery of this fact, Neilson invented nothing; the forces and susceptibilities discovered remained abstract and unapplied; (3) When he devised a method of producing such a current by blowing the air through a heated receptacle into the furnace his idea of means became complete; the three subordinate ideas of force, object, and mode of application were united into one idea and needed only practical embodiment to become an operative means; (4) He reduced this idea to practice by actually blowing the air through the heated receptacle into the furnace, and was, therefore, entitled to a patent for the process he had invented, whether the receptacle, the bellows, or other apparatus he employed were new or old.

Now three different views may be taken of the character of this inventive act, depending on which of the three subordinate ideas were evolved by its exercise. If the inventive act were directed toward the force said to be discovered in the heated air, the invention was a process of treating substances with air heated while in blast, and the character of the instruments used or the objects treated was immaterial, provided the force discovered were applied and effective. If the mode of application were the discovery, then the arrangement of bellows, receptacle, and furnace for that purpose was the invention, and any other arrangement by which hot air could be blown into the furnace would be a different invention. If the inventive act related to the object — the materials in the furnace — and consisted in discovering their susceptibility to a hot blast, and in applying to them a current of hot air, then the process of treating these materials with hot air was the invention, and any other application of a current of hot air to these materials, by any method or by any apparatus, would be covered by his patent. The two former views were both taken during the discussion and decision of the case. Those who adhered to the second view argued that

§ 144. "Function" Defined.

The distinction between a practically operative means and the function it performs is somewhat more obscure. When-

the specification was defective because it did not specifically describe the apparatus claimed to be invented. Those who adopted the first view regarded this as of less consequence, since the invention was a process of blowing with hot air, and as a general form of apparatus for that purpose was pointed out that was sufficient reduction to practice to warrant the issue of a patent. The court accepted this view, holding that the specification was sufficient, that the principle of the invention consisted in the use of air heated while in blast, and that all modes of embodying this principle, or idea of means, were covered by the patent. This is the view taken of the invention by text-writers and judges in more recent cases. See Curtis, § 133; O'Reilly *v.* Morse (1853), 15 How. 62; Le Roy *v.* Tatham (1852), 14 How. 156, &c.

But is not the third view more nearly in accordance with the truth, and more commensurate with the real merit of the inventor? Did his discovery relate to the properties of hot air in motion? Did he not rather discover the susceptibility of the materials contained in the furnace to the action of a strong current of heated air? And having discovered this did not his real invention consist in treating these materials with hot air instead of cold, and thus include every manner in which the hot air could be brought in contact with this new object? If his method of heating the air had been previously employed, as, for instance, to warm buildings or dry clothes, would the merit or originality or patentability of his invention have been any less; and was he not entitled to consider this part of the invention as a mere form of embodiment and claim protection for the process of subjecting the materials in the furnace to the action of a hot blast, in whatever manner the hot blast could be practically applied? I throw out this suggestion because not only in this case but in many others doubt has arisen in my mind whether by failing to recognize that discovery may relate to the object as well as the agent, and that the inventive act may consist in bringing a new object into relation with old forces as well as in bringing new forces into relation with old objects, much of the real merit of the invention has been lost sight of, and the rules of law have been incorrectly applied.

To return, however, to the case as it was regarded by the court, viz., as a process of blowing with hot air, in which the form and arrangement of the apparatus is of no consequence, provided the process can be carried out through them, the following extract from the decision, if carefully followed, will be found to contain an accurate and instructive dissertation on the relation of a principle to an invention. Hope, J., says: (683) "It is quite true that a patent cannot be taken out solely for an abstract philosophical principle — for instance, for any law of nature, or any property of matter, apart from any mode of turning it to account in the practical operations of manufacture, or the business, and arts, and utilities of life. The mere discovery of such a principle is not an invention, in the patent law sense of the term. Stating such a principle in a patent may be a promulgation of the principle, but it is no application of the principle to any practical purpose. And without that application of the principle to a practical object and end, and without the application of it to human industry, or to the purposes of human enjoyment, a person cannot in the abstract appropriate a principle to him-

ever any means, whether it be an instrument or operation, is employed for the attainment of an end, three facts become

self. But a patent will be good, though the subject of the patent consists in the discovery of a great, general, and most comprehensive principle in science or law of nature, if that principle is by the specification applied to any special purpose, so as thereby to effectuate a practical result and benefit not previously attained. The main merit, the most important part of the invention, may consist in the conception of the original idea — in the discovery of the principle in science, or of the law of nature, stated in the patent, and little or no pains may have been taken in working out the best manner and mode of the application of the principle to the purpose set forth in the patent. But still, if the principle is stated to be applicable to any special purpose, so as to produce any result previously unknown, in the way and for the objects described, the patent is good. It is no longer an abstract principle. It comes to be a principle turned to account, to a practical object, and applied to a special result. It becomes, then, not an abstract principle, which means a principle considered apart from any special purpose or practical operation, but the discovery and statement of a principle for a special purpose, that is, a practical invention, a mode of carrying a principle into effect. That such is the law, if a well-known principle is applied for the first time to produce a practical result for a special purpose, has never been disputed. It would be very strange and unjust to refuse the same legal effect, when the inventor has the additional merit of discovering the principle as well as its application to a practical object. The instant that the principle, although discovered for the first time, is stated, in actual application to, and as the agent of, producing a certain specified effect, it is no longer an abstract principle, it is then clothed with the language of practical application, and receives the impress of tangible direction to the actual business of human life. . . . (684) Is it, I next inquire, an objection to the patent, that, in its application of a new principle to a certain specified result, it includes every variety of mode of applying the principle according to the general statement of the object and benefit to be attained? You will observe that the greater part of the defender's case is truly directed to this objection. This is a question of law, and I must tell you distinctly, that this generality of claim, that is, for all modes of applying the principle to the purpose specified, according to or within a general statement of the object to be attained, and of the use to be made of the agent to be so applied, is no objection whatever to the patent. That the application or use of the agent for the purpose specified, may be carried out in a great variety of ways, only shows the beauty, and simplicity, and comprehensiveness of the invention. But the scientific and general utility of the proposed application of the principle, if directed to a specified purpose, is not an objection to its becoming the subject of a patent. That the proposed application may be very generally adopted in a great variety of ways, is the merit of the invention, not a legal objection to the patent. The defenders say — you announce a principle, that hot air will produce heat in the furnace; you direct us to take the blast without interrupting or rather without stopping it, to take the current in blast, to heat it after it leaves the blast, and to throw it hot into the furnace. But you tell us no more — you do not tell us how we are to heat it. You say — you may heat in any way, in any sort of form of vessel.

apparent: (1) the means employed; (2) the effect produced; and (3) the action of the means upon the object while pro-

You say — I leave you to do it how you best can. But my application of the discovered principle is, that if you heat the air, and heat it after it leaves the blowing engine (for it is plain you cannot do it before), you attain the result I state; that is the purpose to which I apply the principle. The benefit will be greater or less. I only say, benefit you will get, I have disclosed the principle; I so apply it to a specified purpose by a mechanical contrivance, viz., by getting the heat when in blast, after it leaves the furnace; but the mode and manner, and extent of heating, I leave to you, and the degree of benefit, on that very account, I do not state. The defenders say, the patent, on this account, is bad in law. I must tell you, that taking the patent to be of this general character, it is good in law. I state to you the law to be, that you may obtain a patent for a mode of carrying a principle into effect; and if you suggest and discover, not only the principle, but suggest and invent how it may be applied to a practical result by mechanical contrivance and apparatus, and show that you are aware that no particular sort or modification, or form of the apparatus, is essential, in order to obtain benefit from the principle, then you may take your patent for the mode of carrying it into effect, and are not under the necessity of describing and confining yourself to one form of apparatus. If that were necessary, you see, what would be the result? Why, that a patent could hardly ever be obtained for any mode of carrying a newly discovered principle into practical results, though the most valuable of all discoveries. For the best form and shape or modification of apparatus, cannot in matters of such vast range, and requiring observation on such a great scale, be attained at once; and so the thing would become known, and so the right lost, long before all the various kinds of apparatus could be tried. Hence, you may generally claim the mode of carrying the principle into effect by mechanical contrivance, so that any sort of apparatus applied in the way stated will, more or less, produce the benefit, and you are not tied down to any form. The best illustration I can give you, and I think it right to give you this illustration, is from a case as to the application of that familiar principle the lever to the construction of chairs, or what is called the self-adjusting lever. (Minter's patent. 1 Web. 126, 134.) This case, which afterwards came under the consideration of the whole court, was tried in the court of Exchequer during the presidency of Lord Lyndhurst. The case was as to the patent reclining chair, the luxury of which some of you may have tried; it had a self-adjusting lever, so that a person sitting or reclining, . . . in whatever situation he placed his back, there was sufficient resistance offered through means of the lever, to preserve the equilibrium. Now anything more general than that, I cannot conceive; it was the application of a well-known principle, but for the first time applied to a chair. He made no claim to any particular parts of the chair, nor did he prescribe any precise mode in which they should be made; [he did describe modes in which they *might* be made. R.], but what he claimed was a self-adjusting lever to be applied to the back of a chair, where the weight of the seat acts as a counterpoise to the back, in whatever posture the party might be sitting or reclining. Nothing could be more general. Well, a verdict passed for the patentee, with liberty to have it set aside; but Lord Lyndhurst

ducing the effect. The latter is the function of the means. It is the action of the means considered, not with reference

and the rest of the court hold, that this was not a claim to a principle, but to the construction of a chair on this principle, in whatever shape or form it may be constructed. Just so as to the hot blast, only the principle is also new. The *patentee says*, 'I find hot *air* will increase the heat in the furnace, that a blast of hot air is beneficial for that end.' Here is the way to attain it -- 'heat the air under blast, between the blowing apparatus and the furnace; if you do that, I care not how you may propose to do it — I neither propose to you, nor claim, any special mode of doing it; you may give the air more or less degrees of heat; but if you so heat it, you will get by that contrivance the benefit I have invented and disclosed, more or less, according to the degree of heat.' This is very simple, very general; but its simplicity is its beauty and its practical value — not an objection in law."

To gather the thread of thought running through this extended citation, and group the important propositions, may serve a useful purpose. The judge begins by stating that a principle, considered as a law of nature or force is not patentable apart from some mode of turning it to account in the practical affairs of life; but when turned to such account the patent will be good, though the principle or force be general and newly discovered. This position he bases, not upon the ground that the force is natural and merely discovered, not invented, by the patentee, but only on the ground that it is abstract and incapable of producing practical results. He then declares that the principle ceases to be abstract when discovered and stated to be useful for a special purpose, or "stated in actual application to, and as the agent of, producing a certain specified effect" and "clothed with the language of practical application, and receives the impress of tangible direction to the actual business of human life." From the context, and especially from what follows, it is apparent that the learned judge is not here speaking of the embodiment of the idea of the inventor in tangible materials, but of the complete conception in the mind of the inventor of the method by which the principle or force is to be applied to its objects in order to produce the specified effect. He then states that having thus brought the principle into relation with practical affairs, the particular form in which he reduces it to practice is immaterial, but that "all modes of applying the principle to the purpose specified, *according to or within a general statement of the object to be attained and of the use to be made of the agent* [principle or force] *to be so applied*" are within the patent. The remainder of the opinion, answering the objections of the defenders and illustrating the doctrine by a reference to Minter's patent, follows the same line of thought, and places the doctrine as to this kind of "principle" in the clearest light.

The discussion of this case in O'Reilly *v.* Morse (1853), 15 How. 62, and in the dissenting opinion of Judge Nelson in Le Roy *v.* Tatham (1852), 14 How. 156, shows at once the influence it has exercised upon the ideas entertained by the courts and the errors into which they have sometimes been led by following the language of the decision rather than the propositions intended to be conveyed. Still more recently, in Tilghman *v.* Proctor (1881), 102 U. S. 707; 19 O. G. 859, § 163, note, *post*, it has received another examination. All these reviews of this famous case are valuable and instructive, and the more thoroughly

to the subject acting, but with reference to the object acted on; and apart from such an object it can neither be apprehended by the senses nor contemplated by the mind. Thus when a machine for smoothing lumber is practically used, the eye and intellect of the observer perceive the machine or means employed, the smoothness or effect produced, and the function or act of smoothing to which the lumber is subjected. Or when a fulminating compound is applied to the ignition of explosives, he sees the means or fulminate, the effect or ignition of the explosive, and the function or the communication of heat to the explosive by the deflagrating fulminate.[1] That in these cases, as in all others, the presence of the object acted on is necessary to the manifestation of the function is evident. Though the machine be perfect and exhaust its capabilities of operation, it can perform no act of smoothing until the boards are placed between its whirling knives. The deflagrating fulminate communicates no heat unless the explosive comes within reach of its fiery tongue.

§ 145. Function Distinct both from Means and Effect.

Yet while no function can exist without the application of some operative means to the production of a physical effect, the function is essentially distinct both from the means and the effect. It is not included in the idea of means nor in the practical embodiment of that idea. Every means is neces-

§ 144. [1] In Corning *v.* Burden (1853), 15 How. 252, Grier, J.: (268) "But the term process is often used in a more vague sense, in which it cannot be the subject of a patent. Thus we say that a board is *undergoing* the process of being planed, grain of being ground, iron of being hammered, or rolled. Here the term is used subjectively or *passively as* applied to the material operated on, and not to the method or mode of producing that operation, which is by mechanical means, or the use of a machine, as distinguished from a process. In this use of the term it represents the function of a machine, or the effect produced by it on the material subjected to the action of the machine."

they are examined and the more carefully they are compared, does the true theory as stated in the text, and in the decision of Judge Gray (Am. Bell Telephone Co. *v.* Dolbear (1883), 23 O. G. 535; 15 Fed. Rep. 448), cited to § 141, *ante*, become apparent, viz., that the principle of the invention, or idea of means, consists in the application of the principle or natural force in some manner to a physical object; that a patent for this application covers and protects it only; but, that when this application or principle of the invention is embodied and practically applied in the arts, the forms of this embodiment and practical application are not material, and the same patent covers and protects them all.

sarily complete within itself, whether or not an object is subjected to its operation. Neither the planer nor the fulminate are changed in character or capability by the presence or the absence of the lumber or the explosive. They act with equal energy, and in precisely the same manner, whether their action terminates on the material objects in which their appropriate effects may be produced, or issues only in the beating of the air or in the illumination of surrounding space. And not only is every means thus independent of the function, but every function is in the same measure independent of any individual means. A function is so far identified with an effect that by whatever means the function is performed the effect must be produced. Smoothness will exist whenever an act of smoothing has preceded it, and this act is performed by every means which removes irregularities of surface, whether it be the attrition of some harder substance, the constant flow of water, the excision of the surface by a single knife or by a group of rapidly revolving blades. So the explosive is ignited whenever heat is communicated to it by some foreign substance; but this may be accomplished by a red-hot iron, the flame of burning paper, or the electric spark, as well as by the compound which deflagrates upon percussion. Whichever of these various means is used the effect and function are the same, the object acted on being subjected, under all these different methods, to the same operation, and exhibiting the same result. And yet the function is no part of the effect produced. Although in its relation to the means it has the character of an effect, it is not the ultimate effect which the means is intended to accomplish. The latter is a permanent, concrete effect, perpetually manifested in the object. The function is an abstract, fugitive effect, known only through its sensible results, and ceasing with the operation of the means. They are not even contemporaneous, for the effect comes into being only as the function ceases, and the completion of the one is thus conditioned on the termination of the other. As independent of the effect as of the means, a function is in law as well as fact a separate entity, possessing its own characteristic attributes, and governed by its own peculiar rules.

§ 146. Function Possesses no Attribute of an Invention.

The nature of a function, and its relation to the means and the effect, show that it is wanting in all the necessary attributes of an invention, and, therefore, cannot be protected by a patent.[1] Forming no part of the idea of means, it does not owe its origin to a creative act. As a prerequisite to the effect, it is discerned as soon as the desirability of the effect becomes apparent, and before the inventive faculties attempt to provide means by which the effect can be produced. It is incapable of tangible embodiment, almost of verbal or pictorial description; and is presented to the mind only through processes of abstract reasoning or by the observation of its practical results. Performed by many different means, it cannot be exclusively attributed to any, but remains open to attainment by all methods which human ingenuity is able to devise. Identified with the effect in origin though not in nature, it is, like the effect, the common property of all men; and could it be appropriated to the use of one, all others would be deprived of their right to the effect, whether produced by methods new or old. Thus for all reasons which can be applied to any subject-matter, a function is outside the sphere of an invention, and no patent for the means can be so extended as to protect the operation of the means upon the object in producing the effect.

§ 146. [1] In Corning *v.* Burden (1853), 15 How. 252, Grier, J.: (268) "But it is well settled that a man cannot have a patent for the function or abstract effect of a machine, but only for the machine which produces it."

Further, that a function is not patentable, see Excelsior Needle Co. *v.* Union Needle Co. (1885), 23 Blatch. 147; 32 Fed. Rep. 221; Reay *v.* Raynor (1884), 22 Blatch. 13; 19 Fed. Rep. 308; 26 O. G. 1111; Matthews *v.* Schoneberger (1880), 18 O. G. 1464; 4 Fed. Rep. 635; 18 Blatch. 357; Union Paper Collar Co. *v.* White (1875), 7 O. G. 693, 877; 2 Bann. & A. 60; Wheeler *v.* Simpson (1874), 1 Bann. & A. 420; 6 O. G. 435; Blanchard *v.* Sprague (1839), 3 Sumner, 535; 1 Robb, 734.

That where a new function is performed the real invention is either the physical structure, the combination of devices, or the process, see Matthews *v.* Schoneberger (1880), 18 O. G. 1464; 4 Fed. Rep. 635; 18 Blatch. 357.

That the means, not the function, is the invention, see Excelsior Needle Co. *v.* Union Needle Co. (1885), 23 Blatch. 147; 32 Fed. Rep. 221; Albany Steam Trap Co. *v.* Felthousen (1884), 22 Blatch. 169; 20 Fed. Rep. 633; Pattee *v.* Moline Plow Co. (1881), 22 O. G. 173; 10 Bissell, 377; 9 Fed. Rep. 821.

§ 147. "Effect" or "Result" Defined.

The line of demarcation between the means employed and the effect produced, though often difficult to draw in practice, in theory at least is broad and readily discernible. The want of technical language has resulted, here as elsewhere, in some needless ambiguity. The words "*result*" and "*product*" are sometimes employed to represent the idea more properly expressed by the term "effect." At other times they are used to denote the art or article in which the idea of means is practically embodied. The courts, employing these two words in different senses, have in some cases stated and in some denied that a "result" could be the subject-matter of a patent, without explaining in which sense the word was used.[1] A

§ 147. [1] In Fuller *v.* Yentzer (1876), 94 U. S. 288, Clifford, J.: (288) "Patents for a machine will not be sustained if the claim is for a result, the established rule being that the invention, if any, within the meaning of the patent act, consists in the means or apparatus by which the result is obtained." 11 O. G. 551 (551).

In Corning *v.* Burden (1853), 15 How. 252, Grier, J.: (268) "It is for the discovery or invention of some practicable method or means of producing a beneficial result or effect, that a patent is granted, and not for the result or effect itself."

In Le Roy *v.* Tatham (1852), 14 How. 156, McLean, J.: (175) "A patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever."

In Whittemore *v.* Cutter (1813), 1 Gallison, 478, Story, J.: (480 "A patent can, in no case, be for an effect only, but for an effect produced in a given manner, or by a peculiar operation. For instance, no patent can be obtained for the admeasurement of time, or the expansive operation of steam; but only for a new mode or new application of machinery, to produce these effects." 1 Robb, 40 (42).

See also Palmer *v.* Gatling Gun Co. (1881), 20 O. G. 815; 19 Blatch. 392; 8 Fed. Rep. 513; Anilin *v.* Higgin (1878), 14 O. G. 414; 3 Bann. & A. 462; 15 Blatch. 290; Union Paper Collar Co. *v.* White (1875), 7 O. G. 698, 877; 2 Bann. & A. 60; Hoe *v.* Simpson (1874), 6 O. G. 435; 1 Bann. & A. 420; *Ex parte* Merrill (1874), 5 O. G. 120; 1 MacArthur, 301: Marsh *v.* Dodge & Stevenson Mfg. Co. (1873), 5 O. G. 398; 6 Fisher, 562; Bailey Washing & Wringing Mach. Co. *v.* Lincoln (1871), 4 Fisher, 379; Morton *v.* N. Y. Eye Infirmary (1862), 5 Blatch. 116; 2 Fisher, 320; Case *v.* Brown (1862), 1 Bissell, 382; 2 Fisher, 268; Morris *v.* Barrett (1859), 1 Bond, 254; 1 Fisher, 461; Burr *v.* Cowperthwait (1858), 4 Blatch. 163; Potter *v.* Holland (1858), 4 Blatch. 238; 1 Fisher, 382; O'Reilly *v.* Morse (1853), 15 How. 62; Carver *v.* Hyde (1842), 16 Peters, 513.

That a patent cannot be granted for all modes of producing an effect, this being equivalent to a patent for the effect itself, see Marsh *v.* Dodge & Stevenson Mfg. Co. (1873), 6 Fisher, 562; 5 O. G. 398; O'Reilly *v.* Morse (1853), 15 How. 62.

But that for a result in the sense of a product, or new art or instrument,

moment's attention to the topic under discussion is usually sufficient to remove all obscurity. An effect is never an invention, whether described as a concrete and independent article or as a new condition of existing objects; but an instrument or operation, in which the idea of means has been embodied, is an invention and is always patentable, under whatever name it may be known.

§ 148. Effect not the Result of an Inventive Act.

Two attributes of an invention are wanting in an effect. In the first place, it is the end and not the means. It is that changed condition of affairs which constitutes the satisfaction of a human want. Although produced by an invented means, it is not the fruit of inventive skill, but has existed, at least in intellectual contemplation, ever since the want which it supplies arose. As the antithesis of this want, it is perceptible to every person to whom the want itself becomes apparent, and none can claim the merit of its sole discovery, or assert a superior title to its benefits. Like everything that is not due to the creative genius of an individual, it is the property of all, and neither indirectly nor directly can the public be restricted in its enjoyment.

§ 149. Effect Producible by Various Means and thus Peculiar to None.

Again, with few exceptions, every effect may be produced by several different means. Each of these means, if artificial, is a true invention and may properly be employed by its inventor for his exclusive benefit. But the invention of one means confers on its inventor no right, either natural or legal, to prohibit others from inventing, for their own use, other and substantially different means.[1] Yet this would be the result

a patent may be granted, see Anilin *v.* Higgin (1878), 14 O. G. 414; 3 Bann. & A. 462; 15 Blatch. 290; Arkell *v.* The Hurd Paper Bag Co. (1870), 7 Blatch. 475.

And that the inventor of a result (product) may protect it by whatever means it may be produced, see Anilin *v.* Higgin (1878), 4 O. G. 414; 8 Baun. & A. 462; also § 184 and notes, *post*.

§ 149. [1] In New Process Fermentation Co. *v.* Maus (1884), 20 Fed. Rep. 725, Drummond, J.: (732) "It

if one who had discovered an effect, and had invented means for its production, could patent the effect as well as means. The progress of inventive genius in the same direction, through whatever *different paths*, would be suspended. The public would be confined to the use of his means and his only, no matter how imperfect or expensive in comparison with others that might be devised. The rights of the inventor of the means would be subordinated to the claims of the discoverer of the effect, and thus a higher premium be placed on the perception of what all can see than on the creation of that useful and important agency which, but for the inventor, might never have been employed. The principles of justice give no support to such a claim. The scope of the inventor's right is limited by the means he has devised, and whether the effect be new or old, all others are at liberty to produce it by any method which is not substantially identical with his.

§ 150. Essential Requisites of a Concrete Invention.

Thus excluding from the sphere of the invention the principle or force which it employs, the function it performs, and the effect which it produces, we see that the complete result of the inventive act consists in an idea of means, embodied in some instrument or operation, and capable, when brought in contact with its proper object, of performing certain functions and thereby producing in the object certain definite effects. If any of these four essential requisites are wanting, there can

seems to be admitted in the various process cases decided in the supreme court, which have been referred to, and others which might be named, if the process consists of a chemical combination by which the particular result is produced, that does not prevent another inventor from making a mechanical combination which produces the same result. Otherwise, there would be a revolution in what has always been understood to be a principle of the patent law, that a person could not patent a result, but only the means or acts by which the result was produced; and that certainly should be true as well of a chemical as a mechanical combination."

Further, that a patent can cover only the method of effecting a result, not the result itself, see Steam Gauge & Lantern Co. *v.* St. Louis Railway Supplies Mfg. Co. (1886), 38 O. G. 107; Pattee *v.* Moline Plow Co. (1881), 22 O. G. 173; 10 Bissell, 377; 9 Fed. Rep. 821.

That a patent cannot cover all modes of producing a result, see Blake *v.* San Francisco (1885), 113 U. S. 679; 31 O. G. 380; § 147, note 1, *ante*.

be no invention. An idea other than an idea of means, whether it be of principle, of function, or effect; the complete embodiment of an incomplete idea of means; the incomplete embodiment of a complete idea of means; and the complete embodiment of a complete idea of means in any other than a practically operative form, — all these fall short of that result of the inventive act to which the law accords the title and prerogatives of an invention.

§ 151. Concrete Invention a Unit.

An invention, as thus defined, is necessarily a unit. The idea of means, which is its essence, is one, complete, invariable. Though capable of practical embodiment in instruments of different form, or in operations involving actions of apparently different character, its individuality is not affected and its identity remains unchanged. Each of these different instruments may be composed of many parts, each of these different operations may require the use of numerous agents or the performance of long series of acts, but the idea which underlies the instrument or operation is indivisible. Though its effects are various, in the production of each one of them it acts in its entirety, — the whole idea, in its complete embodiment, being employed in the accomplishment of every end.

§ 152. Principal and Subordinate Inventions are Distinct Units.

In most inventions, this attribute of unity is easily discerned and demands slight attention. But in two cases it becomes a matter of importance, and at the same time presents more formidable difficulties. It often happens in the industrial arts that an inventor, in attempting to accomplish some important end, is confronted with wants hitherto unknown, which must be satisfied before his greater want can be supplied. In his endeavors to produce an instrument, for instance, by which an ultimate effect can be performed, he finds himself compelled to devise operations by which the instrument may be produced; and for these operations still lesser agencies must be contrived until, in order to attain his principal result, various subordinate exertions of inventive skill must be exhibited, each bringing into being some new

means for the accomplishment of its subordinate end. But these various means, principal and subordinate, though tending toward the fulfilment of a common purpose, are not one invention. Each is complete within itself. Each is a separate idea of means, embodied in a separate instrument or operation, having its own essential factors, and capable of independent use.[1] A patent for the means in which the efforts of the inventor culminate, therefore, does not secure to him the right to the exclusive use of the subordinate means. Each is a true invention and the subject-matter of a patent, and in reference to legal rights and obligations must be regarded independently of all the rest.

§ 153. Combinations and their Elements Distinct Units: "Combination" Defined.

This doctrine of the unity of an invention becomes especially important in connection with that class of inventions known as "combinations." A combination is an instrument or operation, formed by uniting two or more subordinate instruments or operations in a new idea of means.[1] In one

§ 152. [1] Practical illustrations of this truth are found in cases where the inventor has not only devised a new product but the process by which it is produced, or constructed a new machine some of the subordinate parts of which are also new; or invented a new manufacture as well as the instruments by which it is made. In all such cases he is entitled to protect each of his inventions; sometimes under a single patent, sometimes under separate patents, according to their relation to each other. Otherwise his inventive acts would go unrewarded, since if only his ultimate invention could be patented, or the others were protected only as embraced within it, the subordinate inventions would become public property for every other purpose except the one for which they were specifically devised by him.

See *Ex parte* Bancroft (1881), 20 O. G. 1893.

That the same rule applies when the same inventor has invented both the elements of a combination and the combination as a whole, see Holly *v.* Vergennes Mach. Co. (1880), 18 O. G. 1177; 18 Blatch. 327; 4 Fed. Rep. 74; Herring *v.* Nelson (1877), 12 O. G. 753; 14 Blatch. 293; 3 Bann. & A. 55; Stevens *v.* Pritchard (1876), 10 O. G. 505.

§ 153. [1] In *Ex parte* Marshall (1883), 25 O. G. 882, Butterworth, Com.: (882)

"1. What is a combination, using the term in its generic sense?

"2. What is a patentable combination?

"Considered as a generic term, a combination may be defined to be *a co-ordination of individual functions, so as to constitute a common function. Co-ordination* necessarily implies *some modification* of the *individual* function

sense every invention is a combination, since every art and article is composed of elements which by inventive genius have been brought together to serve a common use. But the distinction between a combination in this general sense, and that in which the term is technically employed in Patent Law, seems to be this: that in a patentable combination every subordinate element must, in its separate state, have been an operative means, capable of discharging its own peculiar functions and producing its own physical effects, and also must, while in the combination, still perform its individual functions and, except perhaps in chemical compositions, retain its individual identity.

§ 154. Combination not a mere Aggregation.

Where operations or instruments are thus united, one of two results must follow. Either each element remains unchanged in function and effect; or by the action of the elements upon each other, or their joint action on their common object, they perform additional functions and accomplish additional effects. The former union is a mere collocation or aggregation of the elements.[1] Although they have been

of *each part* as it existed *prior* to the combination. This principle is recognized and asserted by the Supreme Court of the United States in many cases, notably Pickering *et al. v.* McCullough *et al.*, (14 Otto, 310,) Hailes *v.* Van Wormer, (20 Wall. 353,) and in case of J. D. Sarven *v.* Elihu Hall & Co., (U. S. C. C. District of Conn., reported in 11 Blatchf. 295.) To be patentable a combination must conform to the requirements of the definition given above, and must also contain two other elements — that is to say, there must be a *combination*. That combination must be *novel*. It must be *useful*."

In Yale & Greenleaf Mfg. Co. *v.* North (1867), 3 Fisher, 279, Shipman, J.: (287) "A combination in mechanism must consist of distinct mechanical parts, having some relation to each other, and each having some function in the organism." 5 Blatch. 455 (461).

That the combination of a new device with an existing machine is patentable, see Locomotive Engine Safety Truck Co. *v.* Penna. R. R. Co. (1874), 10 Phila. 252; 1 Bann. & A. 470; 6 O. G. 927.

That in a patent for a combination, the whole combination as such must be original with the inventor or the patent will be void, see Holliday *v.* Rheem (1852), 18 Pa. St. 465.

§ 154. [1] In Hoffman *v.* Young (1880), 2 Fed. Rep. 74, Butler, J.: (77) "A mere aggregation of old parts, without any new result issuing from their united action, is not patentable. The parts must combine in operation, and by their joint effect produce a new result. . . . It would seem . . . that two things are always necessary. *First*,

brought together in an apparent organism and rendered more available for use, they still remain the same distinct and in-

a novel assemblage of parts, exhibiting invention; *Second*, the co-operation of the parts in producing a new result. By the term co-operate, however, the courts do not mean merely acting together or simultaneously, but unitedly to a common end, a unitary result. Each and every part must have its sub-function to perform, and each must have a certain relation to, and dependence upon, the other." 18 O. G. 794 (794); 5 Bann. & A. 316 (318); 14 Phila. 428 (429).

In Reckendorfer *v.* Faber (1874), 5 O. G. 697, Woodruff, J.: (700) "When the functions and uses of each are unaffected by the union and the means of uniting has no novelty, it is not obvious, certainly, that anything of invention can be alleged of the combined implements. (Sawyer *v.* Bixby, 9 Blatch. 362.) That the aggregated result may be very convenient, may, for that reason, be popular, and may find a ready sale, and that such sales are very large and show a great demand does not determine the question. As suggested in several cases relating to aggregation as distinguished from patentable combinations, the aggregate result may be the production of a better structure as an aggregate than was ever before produced, and yet, for the lack of novelty of device or new result produced by the aggregation and due thereto, it may have no patentable quality." 12 Blatch. 68 (79); 1 Bann. & A. 229 (239).

In Hailes *v.* Van Wormer (1873), 20 Wall. 353, Strong, J.: (368) "Merely bringing old devices into juxta-position, and then allowing each to work out its own effect without the production of something novel, is not invention." 5 O. G. 89 (90).

That a union of elements is a mere aggregation unless by their united action they perform some function which they do not separately discharge, see Combined Patents Can Co. *v.* Lloyd (1882), 15 Phila. 485; 11 Fed. Rep. 153.

That collocation or aggregation of elements is not combination, see Thatcher Heating Co. *v.* Burtis (1887), 121 U. S. 286; 39 O. G. 587; Hasselman *v.* Gaar (1886), 29 Fed. Rep. 318; Stephenson *v.* Brooklyn R. R. Co. (1885), 114 U. S. 149; 31 O. G. 263; Mosler Safe & Lock Co. *v.* Mosler (1885), 31 O. G. 1689; 22 Fed. Rep. 901; Bussey *v.* Excelsior Mfg. Co. (1884), 110 U. S. 131; 26 O. G. 733; Hayes *v.* Bickelhoupt (1884), 22 Blatch. 463; 29 O. G. 367; 21 Fed. Rep. 566; Stutz *v.* Armstrong (1884), 20 Fed. Rep. 843; 28 O. G. 367; Double Pointed Tack Co. *v.* Two Rivers Mfg. Co. (1883), 109 U. S. 117; 25 O. G. 1075; Clark Pomace Holder Mfg. Co. *v.* Ferguson (1883), 21 Blatch. 376; 17 Fed. Rep. 79; 24 O. G. 1090; Wood *v.* Packer (1883), 17 Fed. Rep. 650; *Ex parte* Marshall (1883), 25 O. G. 882; Thatcher Heating Co. *v.* Burtis (1882), 22 O. G. 262; 12 Fed. Rep. 569; Perry *v.* Co-operative Foundry Co. (1882), 20 Blatch. 498; 22 O. G. 1623; 12 Fed. Rep. 436; Wilson Packing Co. *v.* Chicago Packing & Provision Co. (1882), 105 U. S. 566; 21 O. G. 1689; Combined Patents Can Co. *v.* Lloyd (1882), 11 Fed. Rep. 153; 15 Phila. 485; Pickering *v.* McCullough (1881), 104 U. S. 310; 21 O. G. 73; Strobridge *v.* Lauders (1881), 21 O. G. 1027; 11 Fed. Rep. 880; 20 Blatch. 73; Edgarton *v.* Furst & Bradley Mfg. Co. (1881), 21 O. G. 261; 10 Bissell, 402; 9 Fed. Rep. 450; Fisher *v.* Commissioner (1881), 1 Mackey, 212; 20 O. G. 957; Hoffman *v.* Young (1880), 14 Phila. 428; 2 Fed. Rep.

dependent means, still acting as so many separate units and not co-operating with each other to perform additional functions and accomplish additional results. Such unions, therefore, are not the creation of new means. They do not involve an exercise of the inventive faculties, nor can they be protected by a patent.

§ 155. Combination a New Means.

But when these elements are so united that by their reciprocal influence upon each other, or their joint action on their common object, they perform additional functions and accomplish additional results, the union is a true combination.[1]

74 ; 18 O. G. 794 ; 5 Bann. & A. 316 ; Doubleday *v.* Roess (1880), 11 Fed. Rep. 737 ; 22 O. G. 861 ; Slawson *v.* Grand St. R. R. Co. (1880), 4 Fed. Rep. 531 ; 17 Blatch. 512 ; Double Pointed Tack Co. *v.* Two Rivers Mfg. Co. (1880), 3 Fed. Rep. 26 ; 18 O. G. 683 ; 9 Bissell, 258 ; Double Pointed Tack Co. *v.* Mann (1880), 5 Bann. & A. 465 ; Perfection Window Cleaner Co. *v.* Bosley (1880), 5 Bann. & A. 449 ; 9 Bissell, 385 ; 2 Fed. Rep. 574 ; Alcott *v.* Young (1879), 16 Blatch. 134 ; 16 O. G. 403 ; 4 Bann. & A. 197 ; Webster Loom Co. *v.* Higgins (1879), 4 Bann. & A. 88 ; 15 Blatch. 446 ; 16 O. G. 675 ; Kerosene Lamp Heater Co. *v.* Littell (1878), 3 Bann. & A. 312 ; 13 O. G. 1009 ; Bussey *v.* Wager (1876), 9 O. G. 300 ; Sawyer *v.* Bixby (1872), 1 O. G. 165 ; 5 Fisher, 283 ; 9 Blatch. 361 ; Sarven *v.* Hall (1872), 1 O. G. 437 ; 9 Blatch. 524 ; 5 Fisher, 415 ; Swift *v.* Whisen (1867), 3 Fisher, 343 ; 2 Bond, 115.

That if the connecting means in an aggregation are new they may be an invention, but the claims of the patent must rest on these, see Thatcher Heating Co. *v.* Burtis (1887), 121 U. S. 286 ; 39 O. G. 587.

That no combination is patentable unless each element qualifies every other, producing a new device or a result due to a co-operation of all the forces, distinct from the sum of their collective action, see Peard *v.* Johnson (1885), 23 Fed. Rep. 507 ; 32 O. G. 895 ; Clark Pomace Holder Co. *v.* Ferguson (1883), 21 Blatch. 376 ; 17 Fed. Rep. 79 ; 24 O. G. 1090 ; Pickering *v.* McCullough (1881), 104 U. S. 310 ; 21 O. G. 73 ; Swift *v.* Whisen (1867), 2 Fisher, 343 ; 2 Bond, 115.

That to place old elements in juxtaposition, without a new function or effect, is not combination, see Dosh *v.* A. J. Medlar Co. (1887), 40 O. G. 1242 ; Thatcher Heating Co. *v.* Burtis (1887), 121 U. S. 286 ; 39 O. G. 587 ; Troy Laundry Mach. Co. *v.* Bunnell (1886), 27 Fed. Rep. 810 ; 23 Blatch. 558.

That a union of parts having no common purpose is not a combination, see Tower *v.* Bemis & Call Hardware & Tool Co. (1884), 19 Fed. Rep. 498.

§ 155. [1] In Stutz *v.* Armstrong (1884), 20 Fed. Rep. 843, Acheson, J.: (847) "Now, certainly there is no patentable combination in a mere aggregation of old devices which produce no new effect or result due to their concurrent or successive joint and co-operating action. But it is by no means essential to a patentable combination . . . that the several devices or elements thereof

While every element remains a unit, retaining its own individuality and identity as a complete and operative means,

should coact upon each other; it is sufficient if all the devices co-operate with respect to the work to be done, and in furtherance thereof, although each device may perform its own particular function only." 28 O. G. 367 (369).

In Stephenson *v.* Brooklyn Railroad Co. (1885), 114 U. S. 149, Woods, J.: (157) "A combination is patentable only when the several elements of which it is composed produce by their joint action a new and useful result, or an old result, in a cheaper or otherwise more advantageous way." 31 O. G. 263 (265).

In Clark Pomace Holder Co. *v.* Ferguson (1883), 21 Blatch. 376, Coxe, J.: (378) "All the component parts must so enter into a combination of old elements, that each qualifies every other. . . . If the elements of the combination act independently of each other, or, if one element acts independently of the others, it is an aggregation of parts, and not entitled to protection as a combination." 17 Fed. Rep. 79 (80); 24 O. G. 1090 (1091).

In this opinion there is a confusion of combination and result, as when the judge says that a new and useful result must be produced and "unless this is the case, even though the elements act reciprocally and in combination, the requirements of the law are not satisfied. The combination must be new; so must the result." If this means anything more than that the elements in combination must so coact as to produce a result essentially different from that obtained by their separated or aggregated action, it is erroneous. The result need not be new in any other sense than this. See § 156, note 1, *post.*

In Hall *v.* Johnson (1883), 23 O. G. 2411, Marble, Com.: (2412) "Combinations may be made up of parts entirely new or entirely old, or part new and part old; but if the parts when brought together so co-act as to produce a new and beneficial result, the party so bringing them together has made an invention, and is entitled, if he makes claim thereto, to a patent therefor. If new elements are added to an imperfect combination, and if by the addition of such new elements the combination is made perfect and operative, the person who adds such elements is entitled to claim the new combination."

In Wood *v.* Packer (1883), 17 Fed. Rep. 650, Nixon, J.: (651) "In a combination, the elemental parts must be so united that they will dependently co-operate and produce some new and useful result."

In Pickering *v.* McCullough (1881), 104 U. S. 310, Matthews, J.: (318) "In a patentable combination of old elements, all the constituents must so enter into it as that each qualifies every other; to draw an illustration from another branch of the law, they must be joint tenants of the domain of the invention, seized each of every part, *per my et per tout*, and not mere tenants in common, with separate interests and estates. It must form either a new machine of a distinct character and function, or produce a result due to the joint and co-operating action of all the elements, and which is not the mere adding together of separate contributions. Otherwise it is only a mechanical juxtaposition, and not a vital union." 21 O. G. 73 (75).

In Hailes *v.* Van Wormer (1870), 7 Blatch. 443, Woodruff, J.: (452) "The mere addition of an old device producing a specific result, to another old device producing its own result, in such wise that their combination produces these same two results, and no other, is not invention. . . . On the other hand, if

their combination embodies an entirely new idea of means, and thus becomes another unit, whose essential attributes depend on the co-operative union of the elements of which it is composed.[2] Such a combination is a different invention from the elements themselves, whether considered in their separate or their aggregated state, the method of their co-

the combination itself produces a new and useful result, not due to the separate action of either, nor attained thereby, but due to the co-operative or reciprocal action of the combined devices, a totally different question arises; for, obviously, invention generally (as distinguished from discovery) consists in new modes of employing what was before known, so as to produce thereby effects either not produced before, or not produced in that manner, or not produced so usefully. So, also, if the combination of the old devices be supplemented by other and new devices co-operating therewith, and thereby a new and useful result is produced, not attained by the action of the old devices, there, also, is invention."

But that the elements may coact upon each other only, see Hailes *v.* Van Wormer (1870), 7 Blatch. 443; or upon their common object only, see Stutz *v.* Armstrong (1884), 20 Fed. Rep. 843; 28 O. G. 367; Stilwell & Bierce Mfg. Co. *v.* Cincinnati Gas Light & Coke Co. (1875), 1 Bann. & A. 610; 7 O. G. 829.

That in a combination there must be coaction of the elements and a new function, see Scott Mfg. Co. *v.* Sayre (1885), 26 Fed. Rep. 153; 35 O. G. 255.

That the invention is a combination if some features of each of the elements coact, see Strobridge *v.* Landers (1881), 21 O. G. 1027; 11 Fed. Rep. 880; 20 Blatch. 73.

[2] That a combination is an entirety, a unit, see Rowell *v.* Lindsay (1881), 10 Bissell, 217; 6 Fed. Rep. 290; 19 O. G. 1565; Williams *v.* Rome, Watertown, & Ogdensburg R. R. Co. (1878), 15 O. G. 653; 15 Blatch. 200; 3 Bann. & A. 413; Schumacher *v.* Cornell (1877), 96 U. S. 549; *Ex parte* Gould (1874), 5 O. G. 121; 1 MacArthur, 410; Westlake *v.* Cartter (1873), 6 Fisher, 519; 4 O. G. 636; Watson *v.* Cunningham (1871), 4 Fisher, 528; Densmore *v.* Schofield (1868), 4 Fisher, 148; Case *v.* Brown (1864), 2 Wall. 320; Vance *v.* Campbell (1861), 1 Black, 427.

That the identity and individuality of a combination depend neither upon its elements alone, nor upon the manner of their co-operation alone, but upon the union of certain elements in a certain mode of co-operation, see Allis *v.* Buckstaff (1882), 13 Fed. Rep. 879; 22 O. G. 1705; Dederick *v.* Cassell (1881), 20 O. G. 1233; 9 Fed. Rep. 306; Rowell *v.* Lindsay (1881), 6 Fed. Rep. 290; 10 Bissell, 217; 19 O. G. 1565; Heberman *v.* Whitman (1880), 5 Bann. & A. 530; Water Meter Co. *v.* Desper (1879), 01 U. S. 332; Williams *v.* Boston & Albany R. R. Co. (1879), 16 O. G. 906; 17 Blatch. 21; 4 Bann. & A. 441; American Whip Co. *v.* Lombard (1878), 14 O. G. 900; 4 Clifford, 495; 3 Bann. & A. 598; Sanford *v.* Merrimac Hat Co. (1876), 4 Clifford, 494; 10 O. G. 466; 2 Bann. & A. 408; Converse *v.* Cannon (1873), 2 Woods, 7; 9 O. G. 105; Locomotive Engine Safety Truck Co. *v.* Erie Railway Co. (1872), 10 Blatch. 292; 3 O. G. 93; 6 Fisher, 187; Le Roy *v.* Tatham (1859), 22 How. 132; Curtis *v.* Platt (1864), 11 L. T. Rep. N. S. 245, and cases cited under § 282, *post*.

operation in the combination being the result of the inventive act.[3] Whether the elements are new or old,[4] and whether

[3] That the union of the elements in a mode of co-operation is the true inventive act in a combination, see Fuller v. Yentzer (1876), 94 U. S. 288; 11 O. G. 551; Smith v. Marshall (1876), 10 O. G. 375; 2 Bann. & A. 371; Gill v. Wells (1874), 22 Wall. 1; Harrison v. Anderson Foundry Co. (1876), L. R. 1 App. 574.

Thus that though the elements remain unchanged and the effect produced by the combination is the same, yet the mode of combining the elements may differ, and if so the combination is a different invention, see Allis v. Buckstaff (1882), 13 Fed. Rep. 879; 22 O. G. 1705; Pattee v. Moline Plow Co. (1881), 10 Bissell, 377; 9 Fed. Rep. 821; 22 O.G. 173; Dederick v. Cassell (1881), 9 Fed. Rep. 306; 20 O. G. 1233; Hebeman v. Whitman (1880), 5 Bann. & A. 530; Gallahue v. Butterfield (1872), 10 Blatch. 232; 2 O. G. 645; 6 Fisher, 203; Woodward v. Dinsmore (1870), 4 Fisher, 163; Murray v. Clayton (1872), L. R. 7 Ch. Ap. 570; Curtis v. Platt (1864), 11 L. T. Rep. N. S. 245; Carpenter v. Smith (1841), 1 Web. 530.

That the elements and the combination are separate inventions, see McMillin v. Rees (1880), 5 Bann. & A. 269; 17 O. G. 1222; 1 Fed. Rep. 722.

[4] In Dederick v. Cassell (1881), 20 O. G. 1233, Butler, J.: (1234) "If it be true . . . that all the parts embraced in the plaintiff's [combination] may be found in the various devices previously used [for the same purpose], the plaintiff's right to the new combination which he constructed would be none the less complete. It will not answer to say this required no invention, that any mechanic might have selected the parts and combined them. The same might be said with equal force in almost every instance in which a patent for combination is issued. The fact that no mechanic did select and combine the parts and produce such a [combination], notwithstanding the great need for it, is a sufficient answer to the suggestion." 9 Fed. Rep. 306 (309).

In Hoe v. Cottrell (1880), 18 O. G. 59, Shipman, J.: (61) "In the determination of the question whether there was invention in any particular combination the important point is to ascertain whether novelty and utility existed. It is true that these requisites may result from more mechanical skill, and a new and useful combination may be formed by the mere mechanical addition of an old member to an old set of members; but when a device has a new mode of operation which accomplishes beneficial results 'courts look with favor upon it,' and are not exacting as to the degree of inventive skill which was required to produce the new result. There must be some, but a little will suffice." 17 Blatch. 546 (552); 1 Fed. Rep. 597 (602); 5 Bann. & A. 256 (262).

In Imhaeuser v. Buerk (1879), 101 U. S. 647, Clifford, J.: (660) "Where the thing patented is an entirety, consisting of a single device or combination of old elements incapable of division or separate use, the respondent cannot escape the charge of infringement by alleging or proving that a part of the entire invention is found in one prior patent, printed publication, or machine, and another part in another prior exhibit, and still another part in a third exhibit, and from the three or any greater number of such exhibits draw the conclusion that the patentee is not the original and first inventor of the patented improvement." 17 O. G. 795 (797).

In Hailes v. Van Wormer (1873), 20 Wall. 353, Strong, J.: (368) "It must be conceded that a new combination, if

they coact successively or simultaneously is of no impor-

it produces new and useful results, is patentable, though all the constituents of the combination were well known and in common use before the combination was made." 5 O. G. 89 (90).

In Blake *v.* Stafford (1868), 6 Blatch. 195, Shipman, J.: (205) "The question is not whether the elements are new, but whether the combination is new. Though the separate parts are all as old as the art of the mechanic, if they are organized into a new machine, having a new mechanical operation, and the organization of this new machine involved the exercise of original thought and is productive of useful results, then it is patentable." 3 Fisher, 294 (305).

In The Union Sugar Refinery *v.* Matthiesson & Co. (1865), 3 Clifford, 639, Clifford, J.: (659) "A patented improvement, consisting of old elements, cannot be proved to be invalid by showing some one of the elements in some prior machine, and another in another prior machine, until it is shown that all the elements which constitute the improvement were in prior use, because the theory of such a patent is, that the elements are old, and the invention consists in a new combination, whereby a new and useful result is obtained." 2 Fisher, 600 (622).

In Ryan *v.* Goodwin (1839), 3 Sumner, 514, Story, J.: (518) "The true question is, whether the combination of materials by the patentee is substantially new. Each of these ingredients may have been in the most extensive and common use, and some of them may have been used for matches, or combined with other materials for other purposes. But if they have never been combined together in the manner stated in the patent, but the combination is new, then, I take it, the invention of the combination is patentable." 1 Robb, 725 (729).

That a new union of old elements is a new combination, see Shaver *v.* Skinner Mfg. Co. (1887), 41 O. G. 232; Hoe *v.* Knap (1886), 27 Fed. Rep. 204; 36 O. G. 1244; May *v.* County of Fond du Lac (1886), 27 Fed. Rep. 601; Scott Mfg. Co. *v.* Sayre (1885), 26 Fed. Rep. 153; 35 O. G. 255; Bell *v.* U. S. Stamping Co. (1884), 19 Fed. Rep. 312; 22 Blatch. 27; Webster Loom Co. *v.* Higgins (1882), 105 U. S. 580; 21 O. G. 2031; Gottfried *v.* Crescent Brewing Co. (1882), 13 Fed. Rep. 479; 22 O. G. 1447; Gale Mfg. Co. *v.* Prutzman (1880), 5 Bann. & A. 154; 17 O. G. 743; Wisner *v.* Grant (1880), 5 Bann. & A. 215; 17 O. G. 447; 7 Fed. Rep. 485; Williams *v.* Rome, Watertown, & Ogdensburg R. R. Co. (1879), 15 O. G. 653; 15 Blatch. 200; 3 Bann. & A. 413; Willimantic Linen Co. *v.* Clark Thread Co. (1879), 4 Bann. & A. 133; Bates *v.* Coe (1878), 98 U. S. 31; 15 O. G. 337; Albright *v.* Celluloid Harness Trimming Co. (1877), 12 O. G. 227; 2 Bann. & A. 629; Booth *v.* Parks (1874), 1 Flippin, 381; 1 Bann. & A. 225; *In re* Gould (1874), 1 MacArthur, 410; 5 O. G. 121; Eickemeyer Hat Blocking Mach. Co. *v.* Pearce (1873), 10 Blatch. 403; 3 O. G. 150; 6 Fisher, 219; Child *v.* Boston & Fairhaven Iron Works Co. (1873), 6 Fisher, 606; 5 O. G. 61; Holmes, 303; Forsyth *v.* Clapp (1873), 6 Fisher, 528; 4 O. G. 527; Holmes, 278; Westlake *v.* Cartter (1873), 6 Fisher, 519; 4 O. G. 636; Watson *v.* Cunningham (1871), 4 Fisher, 528; Woodward *v.* Dinsmore (1870), 4 Fisher, 163; Woodman *v.* Stimpson (1866), 3 Fisher, 98; Emigh *v.* Chicago, Burlington, & Quincy R. R. Co. (1863), 1 Bissell, 400; 2 Fisher, 387; Latta *v.* Shawk (1859), 1 Fisher, 465; 1 Bond, 259; Whipple *v.* Middlesex Co. (1859), 4 Fisher, 41; Furbush *v.* Cook (1857), 2 Fisher, 668; Pitts *v.* Edmonds (1857), 1 Bissell, 168; 2 Fisher, 52; Carr *v.*

tance.[5] To unite them in a new means by the exercise of

Rice (1850), 1 Fisher, 198; Pitts v. Wemple (1855), 6 McLean, 558; Crosby v. Lapouraille (1854), Taney, 374; Buck v. Hermance (1849), 1 Blatch. 398; Washburn v. Gould (1844), 3 Story. 122; 2 Robb, 206; Pitts v. Whitman (1843), 2 Story, 609; 2 Robb, 189; Earle v. Sawyer (1825), 4 Mason, 1; 1 Robb, 490; Ponnock v. Dialogue (1825), 4 Wash. 538; 1 Robb, 466; Barrett v. Hall (1818), 1 Mason, 447; 1 Robb, 207; Evans v. Eaton (1816), 1 Peters C. C. 322; 1 Robb, 68; Harrison v. Anderston Foundry Co. (1876), L. R. 1 App. 574; Murray v. Clayton (1872), L. R. 7 Ch. Ap. 570; Cannington v. Nuttall (1871), L. R. 5 H. L. 205; Morton v. Middleton (1863), 1 Cr. S. 3d Series, 721; Lister v. Leather (1858), 8 El. & B. 1004; Bovill v. Keyworth (1857), 7 El. & B. 725; Cornish v. Keene (1837), 3 Bing. N. C. 570; 2 Abb. P. C. 406; Brunton v. Hawkes (1821), 1 Carp. 410; 1 Abb. P. C. 336; Patric v. Sylvester (1876), 23 Grant Ch. (Can.) 573; Emery v. Isedale (1861), 11 Can. C. P. 106.

That in a combination of old elements other evidence of inventive skill than mere novelty and utility must appear, see Enterprise Mfg. Co. v. Sargent (1886), 28 Fed. Rep. 185; 37 O. G. 891.

That a combination of old elements may be a new invention, though many of them were combined in a similar device before, see Donoughe v. Hubbard (1886), 27 Fed. Rep. 742; 35 O. G. 1561.

That changes in the elements so as to enable them to enter into combination may be invention, see Troy Laundry Mach. Co. v. Bunnell (1886), 27 Fed. Rep. 810; 23 Blatch. 558.

[5] In McKesson v. Carndick (1881), 21 O. G. 137; Blatchford, J.: (138) "It is also objected that there is no combination between the comb-bar and needles and the pill-holder, but only an aggregation of parts. This is an erroneous view. The pill-holder holds the pill while the needle carried by the comb-bar is being thrust into the pill. The concert of action takes place when the needle enters the pill, and although such concert of action continues only from the time the needle enters the pill until the pill is removed by the needle from the holder, yet the combination made by such concert of action continues as long as it needs to continue, and the concert of action could not exist at all so as to impale the pill on the needle if the pill were not carried by the holder and the needle were not carried by the comb-bar. So, when the needle enters the pill, there is a combination or concert of action between the comb-bar and needle and the holder carrying the pill." 19 Blatch. 158 (161).

In Hoffman v. Young (1880), 14 Phila. 428, Butler, J.: (429) "The parts must combine in operation, and by their joint effect produce a new result. They need not act simultaneously. If so arranged that the successive action of each contributes to produce the result, which when obtained is the product of all the parts, viewed as a whole, a valid claim for this combination may be sustained. . . . By the term 'co-operate,' however, the courts do not mean, merely acting together, or simultaneously, but unitedly, to a common end — a unitary result. Each and every part must have its sub-function to perform, and each must have a certain relation to, and dependence upon, the other." 18 O. G. 794 (794); 2 Fed. Rep. 74 (77); 5 Bann. & A. 316 (318).

In Furbush v. Cook (1857), 2 Fisher, 668, Curtis, J.: (669) "To make a valid claim for a combination, it is not neces-

inventive skill is invention, and renders the combination, as an entirety, the subject-matter of a patent.

§ 156. Fact of Combination shown by its Result.

This union of elemental instruments or operations in a new operation or instrument must necessarily produce effects beyond the sum of the effects producible by all the elements in their separated state.[1] This is often the only test by which

sary that the several elementary parts of the combination should act simultaneously. If those elementary parts are so arranged that the successive action of each contributes to produce some one practical result, which result, when attained, is the product of the simultaneous or successive action of all the elementary parts, viewed as one entire whole, a valid claim for thus combining those elementary parts may be made."

Further, that the co-operation of the elements may be either successive or simultaneous, see Railway Register Mfg. Co. *v.* Broadway & Seventh Ave. R. R. Co. (1884), 22 Fed. Rep. 655; 30 O. G. 180; Hoe *v.* Cottrell (1880), 1 Fed. Rep. 597; 17 Blatch. 546; 18 O. G. 59; 5 Bann. & A. 256; Herring *v.* Nelson (1877), 14 Blatch. 293; 12 O. G. 753; 3 Bann. & A. 55; Birdsall *v.* McDonald (1874), 6 O. G. 682; 1 Bann. & A. 165.

That where one lock is set in motion by the injury done to another, it is a true combination, see Newbury *v.* Fowler (1886), 28 Fed. Rep. 454; 36 O. G. 817.

That if the elements coact for a time and then act separately it is a combination, see McKesson *v.* Carndick (1881), 21 O. G. 137; 19 Blatch. 158.

This doctrine reaches its present extreme limit in the case of the Yale Lock Mfg. Co. *v.* Norwich National Bank (1881), 19 Blatch. 123; 6 Fed. Rep. 877, where it is held that if two elements, when combined, produce only their separate results, but each result so operates in connection with the other that a net result is obtained beyond what either could accomplish alone, or both could accomplish if separately used, there is co-operation and a true combination.

That elements acting successively and independently are not a combination, see Yale Lock Mfg. Co. *v.* Berkshire Nat. Bank (1883), 17 Fed. Rep. 531; (denying Lock Case, 6 Fed. Rep. 377; 19 Blatch. 123 *ante*).

That dies used in succession and each doing its own work only are not a combination, see Beecher Mfg. Co. *v.* Atwater Mfg. Co. (1885), 114 U. S. 523; 31 O. G. 1306.

§ 156. [1] It is frequently stated in the decisions of the courts that no new combination can be produced unless its result or effect be also new. This is to be understood as referring to the effect of the combination as compared with the effect of its elements in their separate or aggregated state, not as compared with the effect of other combinations of the same or different elements. It is true that no combination can have been invented unless it is capable of producing effects beyond those resulting from the use of any or all the elements in their separated state. But it is not true that the same elements cannot be grouped into different combinations, governed by different co-operative laws, although their practical effect as arts or instruments may be the same. The decisions are to be read with this distinction in mind.

In Niles Tool Works *v.* Betts Ma-

a combination can be distinguished from an aggregation, and is the one usually applied by the courts. And it is certainly

chine Co. (1886), 27 Fed. Rep. 301, Wales, J. : (305) "The propositions established by these cases are that a combination is patentable (1) if it produces new and useful results, though all the constituents of the combination were well known and in common use before the combination was made, provided the results are a product of the combination, and not a mere aggregate of several results, each the product of one of the combined elements; (2) if it produces a different force, effect, or result in the combined forces or processes from that given by their separate parts, and a new result is produced by their union; (3) if it either forms a new machine of distinct character or formation, or produces a result which is not the mere aggregate of separate contributions, but is due to the joint and co-operating action of all the elements; (4) when the several elements of which it is composed produce, by their joint action, *either a new and useful result, or an old result in a cheaper or otherwise more advantageous way*. . . These are but varied expressions of the same doctrine."

In Loom Co. *v.* Higgins (1882), 105 U. S. 580, Bradley, J.: (591) "It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result, never attained before, it is evidence of invention." 21 O. G. 2031 (2035).

In Slawson *v.* Grand St., Prospect Park, & Flatbush R. R. Co. (1880), 4 Fed. Rep. 531, Benedict, J. : (534) "In order to constitute a patentable combination, the result must be some effect different from the effect of the separate parts, and produced by the combined forces. A new result must arise from the reunion of the elements of the combination, and not simply from the separate action of each element." 17 Blatch. 512 (515).

In Williams *v.* The Rome, Watertown, & Ogdensburg R. R. Co. (1879), 15 O. G. 653, Blatchford J.: (656) "The doctrine of Hailes *v.* Van Wormer (20 Wall. 353) is, that a mere combination, if it produces new and useful results, is patentable, though all the constituents of the combination were well known and in common use before the combination was made; that the results, however, must be a product of the combination, and not a mere aggregate of several results, each the complete product of one of the combined elements; that merely bringing old devices into juxta-position, and then allowing each to work out its own effect without the production of something novel, is not invention; and that no one, by bringing together several old devices without producing a new and useful result, the joint product of the elements of the combination, and something more than an aggregate of old results, can acquire a right to prevent others from using the same devices, either singly or in other combinations." 15 Blatch. 200 (211); 3 Bann. & A. 413 (423).

In Hailes *v.* Van Wormer (1873), 20 Wall. 353, Strong, J. : (368) "But the results must be a product of the combination, and not a mere aggregate of several results each the complete product of one of the combined elements. Combined results are not necessarily a novel result, nor are they an old result obtained in a new and improved manner. Merely bringing old devices into juxtaposition, and then allowing each to work out its own effect without the production of something novel, is not invention. No one by bringing together several old devices without pro-

reliable. For since diversity of end necessitates diversity of means, if the new combination accomplishes results that could not have been achieved either by its individual or collective

ducing a new and useful result the joint product of the elements of the combination and something more than an aggregate of old results, can acquire a right to prevent others from using the same devices, either singly or in other combinations, or, even if a new and useful result is obtained, can prevent others from using some of the devices, omitting others, in combination." 5 O. G. 89 (90).

That no combination is a new invention unless it presents a new force, or effect, or result, see Sawyer *v.* Miller (1882), 4 Woods, 472; 12 Fed. Rep. 725; Reckendorfer *v.* Faber (1876), 92 U. S. 347; 10 O. G. 71.

That a combination is patentable only when its elements produce by their joint action a new and useful effect, or an old effect in a better or cheaper manner, see Railway Register Mfg. Co. *v.* North Hudson Co. R. Co. (1886), 26 Fed. Rep. 411; Railway Register Mfg. Co. *v.* North Hudson Co. R. Co. (1885), 24 Fed. Rep. 793; 33 O. G. 355; Stephenson *v.* Brooklyn R. R. Co. (1885), 114 U. S. 149; 31 O. G. 263.

For other cases in which the novelty of the result is stated to be an essential characteristic of the new combination, see Millner *v.* Voss (1882), 4 Hughes, 262; Simpson *v.* Davis (1882), 20 Blatch. 413; 12 Fed. Rep. 144; *Ex parte* Fisher (1881), 20 O. G. 957; *Ex parte* Skinner (1881), 19 O. G. 662; Packing Co. Cases (1881), 105 U. S. 566; 21 O. G. 1689; *Ex parte* Strong (1880), 17 O. G. 446; Slawson *v.* Grand St. Prospect Park, & Flatbush R. R. Co. (1880), 17 Blatch. 512; 4 Fed. Rep. 531; Sharp *v.* Tifft (1880), 17 O. G. 1282; 2 Fed. Rep. 697; 18 Blatch. 132; 5 Bann. & A. 399; Double Pointed Tack Co. *v.* The Two Rivers Mfg. Co. (1880), 18 O. G. 683; 9 Bissell, 258; 3 Fed. Rep. 26; Gottfried *v.* Philip Best Brewing Co. (1879), 17 O. G. 675; 5 Bann. & A. 4; Webster Loom Co. *v.* Higgins (1879), 16 O. G. 675; 15 Blatch. 446; 4 Bann. & A. 88; Alcott *v.* Young (1879), 16 Blatch. 134; 16 O. G. 403; 4 Bann. & A. 197; Williams *v.* Boston & Albany R. R. Co. (1879), 16 O. G. 906; 17 Blatch. 21; 4 Bann. & A. 441; Kerosene Lamp Heater Co. *v.* Littell (1878), 13 O. G. 1009; 3 Bann. & A. 312; Reckendorfer *v.* Faber (1876), 92 U. S. 347; 10 O. G. 71; Reckendorfer *v.* Faber (1874), 12 Blatch. 68; 5 O. G. 697; 1 Bann. & A. 229; Gallahue *v.* Butterfield (1872), 10 Blatch. 232; 2 O. G. 645; 6 Fisher, 203; Sarven *v.* Hall (1872), 1 O. G. 437; 9 Blatch. 524; 5 Fisher, 415; Woodward *v.* Dinsmore (1870), 4 Fisher, 163; Swift *v.* Whisen (1867), 2 Bond, 115; 3 Fisher, 343; Saxby *v.* The Gloucester Wagon Co. (1881), L. R. 7 Q. B. 305; Cannington *v.* Nuttall (1871), L. R. 5 H. L. 205.

That on the other hand this new result need not be new with reference to other combinations even of the same elements, see Allis *v.* Buckstaff (1882), 13 Fed. Rep. 879; 22 O. G. 1705; Pattee *v.* Moline Plow Co. (1881), 10 Bissell, 377; 9 Fed. Rep. 821; 22 O. G. 173; Detroit Lubricator Mfg. Co. *v.* Renchard (1881), 9 Fed. Rep. 293; Murray *v.* Clayton (1872), L. R. 7 Ch. Ap. 570; Curtis *v.* Platt (1864), 11 L. T. Rep. N. S. 245.

That an alleged combination, if not operative without additions not covered by the combination as described, is not an invention, see Torrant *v.* Duluth Lumber Co. (1887), 30 Fed. Rep. 830.

elements, their union must inevitably have brought into action some new or as yet unawakened energy, which constitutes a new and independent means.[2]

[2] Although the characteristics of a combination, as distinguished from a simple invention, will hereafter more clearly appear, their statement in a few general propositions may be appropriate:—

1. A combination is a union of elemental means in a mode of co-operation; and, as such, it necessarily performs functions into which all its elements enter as operative agents, and produces results which depend upon the presence and action of every one of the elements combined.

2. A combination may result either from mechanical ingenuity and experiment or from the exercise of inventive skill; in the latter case only is it an invention, and the subject-matter of a patent.

3. A combination may be composed of elements wholly new, or wholly old, or partly new and partly old; in every case the combination is a means distinct from the elements, whether new or old, and is the proper subject for a different patent; or, if the elements are new inventions of the same inventor, for a different claim in the same patent.

4. Combinations belong to the same legal class as their elemental means; the co-operative union of elemental arts forming a new art; that of elemental machines, a new machine, etc.; the union of elements of different classes, where such union is possible (as of a manufacture with a machine), not being a true combination, but an improvement on the principal invention with which the subordinate is united.

5. The identity of a combination depends upon that of its elemental means and that of the co-operative law under which its elements are united; any substantial change in either means or law destroying its identity and resulting in the final segregation of the elements or in a new and wholly different combination.

6. This dependence of the identity of a combination upon the identity both of its elements and of their co-operative law requires a departure from the rules governing simple inventions upon several points, especially in relation to Equivalents, Double Use, &c.

7. A patented combination is the combination described and claimed in the patent; i. e., it is composed of the described elements coacting under the described co-operative law, whether or not such description correctly enumerates the true elements or sets forth the real mode of their co-operation.

CHAPTER II.

OF THE CLASSES OF PATENTABLE INVENTIONS.

§ 157. Patentable Invention an Operation or an Instrument: "Operation" and "Instrument" Defined.

EVERY invention in the industrial arts is either an operation or an instrument. An operation is an idea of means, embodied in some act or series of acts which is performed by some physical agent either animate or inanimate. An instrument is an idea of means, embodied in some article or combination of articles which, when employed in the manner designed by the inventor, is capable of producing a certain predetermined effect. In an operation the embodiment of the idea is temporary; the conception of the mind being apparent to the senses only while the means is actually accomplishing its ends. In an instrument, on the contrary, the embodiment of the idea is permanent; the conception of the mind being an object of perpetual observation, though often less clearly apprehended by the observer when the instrument is idle than when it is engaged in the performance of its appropriate functions. This difference between an operation and an instrument is essential, and results in some important variations in the rules by which the completeness and patentability of each is to be determined. To one or the other, however, all inventions must belong, and it has been the object of the Patent Laws, both of England and of the United States, to afford the protection of a patent to every improvement in the industrial arts which could properly be included under either of these two heads.

§ 158. Classes of Patentable Operations and Instruments.

Many attempts have been made by the English courts and writers to arrange subordinate classes, to some one of which

each individual invention might be referred. The statute of James I. embraces all under the term, "Manufacture;" but by the application of various definitions, literal and figurative, to this term it has been extended to include almost every possible species of improvement in the arts. In the United States the classification given in the acts of Congress is, perhaps, as complete as the subject will permit. Under the name "Art" it comprises every kind of operation, and divides instruments into four groups: "Machines," "Manufactures," "Compositions of Matter," and "Designs."[1]

SECTION I.

OF AN ART.

§ 159. "Art" Defined.

An art or operation is an act or a series of acts performed by some physical agent upon some physical object, and producing in such object some change either of character or of condition. It is also called a "process," or a "mode of treatment;" and is said to require that "certain things should be done with certain substances in a certain order."[1] It is so far abstract that it is capable of contemplation by the mind apart from any one of the specific instruments by which it is per-

§ 158. [1] In *Ex parte* Blythe (1884), 30 O. G. 1321, Butterworth, Com.: (1322). "It is evident that the words 'art,' 'machine,' 'manufacture,' and 'composition of matter,' were carefully chosen to cover what were regarded as four great and distinct classes of inventions. It is undoubtedly the intention of the law to distinguish as separate inventions 'a new art,' 'a new machine,' 'a new manufacture,' 'a new composition of matter,' 'an improved art,' 'an improved machine,' 'an improved manufacture,' 'an improved composition of matter,'—eight in all. These may be called the 'statutory classes of invention,' between which the lines of division are sharply drawn."

§ 159. [1] In Cochrane *v.* Deener (1876), 94 U. S. 780, Bradley, J.: (788) "A process is a mode of treatment of certain materials to produce a given result. It is an act, or series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable; while the process itself may be altogether new, and produce an en-

formed.[2] It is so far concrete that it consists in the application of physical force through physical agents to physical objects, and can thus become apparent to the senses only in connection with some tangible instrument and object.

§ 160. Patentability of an Art formerly Denied: not a "Vendible Substance."

This abstract character of an art was the occasion of much difficulty in the earlier development of Patent Law. Some of the English authors and judges held that an invention, to be useful to the public, must be a "vendible substance;" that unless a new mode of operation created a new "substance" its inventor had conferred no benefit upon the public and was not entitled to a patent; and that whenever a new operation

tirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence." 11 O. G. 687 (689).

That an art is "the application or operation of some element or power of nature or of *one* subject to another," see Boyd *v.* Cherry (1883), 4 McCrary, 70.

In Corning *v.* Burden (1853), 15 How. 252, Grier, J.: (267) "A process, *eo nomine*, is not made the subject of a patent in our act of Congress. It is included under the general term 'useful art.' An art may require one or more processes or machines in order to produce a certain result or manufacture. The term machine includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result. But where the result or effect is produced by chemical action, by the operation or application of some element or power of nature, or of one substance to another, such modes, methods, or operations, are called processes. A new process is usually the result of discovery; a machine, of invention. The arts of tanning, dyeing, making waterproof cloth, vulcanizing India rubber, smelting ores, and numerous others, are usually carried on by processes, as distinguished from machines. One may discover a new and useful improvement in the process of tanning, dyeing, &c., irrespective of any particular form of machinery or mechanical device. And another may invent a labor-saving machine by which this operation or process may be performed, and each may be entitled to his patent. . . . It is when the term process is used to represent the means or method of producing a result that it is patentable, and it will include all methods or means which are not effected by mechanism or mechanical combinations."

[2] That a patentable process must have an existence independent of the apparatus which performs it, see *Ex parte* Herr (1887), 41 O. G. 463.

That where the function of a machine cannot exist apart from that machine it cannot be a process, see *Ex parte* Herr (1887), 41 O. G. 463.

That the entirely separate action of two machines, each performing its independent function, may not be a process, see *Ex parte* Herr (1887), 41 O. G. 463.

had resulted in a new substance the patentable invention was the substance, and not the operation by which it was produced.[1] This error had its origin in a confusion of the idea

§ 160. [1] The doubt whether a process or art was the subject of a patent found perhaps its fullest and most pointed expression in the case of Boulton and Watt *v.* Bull (1795), 2 H. Bl. 463. Watt had invented a method of lessening the consumption of steam, and consequently of fuel, in engines. This method consisted in a mode of employing existing machines, not in the creation of a new machine nor in the production of any new vendible substance. He described his method as composed of certain "principles." This invention was eventually held to be patentable (Hornblower *v.* Boulton (1799), 8 T. R. 95); but in their opinions in the first case the dissenting judges advanced objections and stated doctrines which for a long time found adherents in the bar and on the bench. Thus Heath, J.: (481) "What then falls within the scope of the proviso [stat. Jac. I.]? Such manufactures as are reducible to two classes. The first class includes machinery, the second substances, (such as medicines), formed by chemical and other processes, where the vendible substance is the thing produced, and that which operates preserves no permanent form. In the first class the machine, and in the second the substance produced, is the subject of the patent. . . . (482) That which is the subject of the patent . . . ought to be that which is vendible, otherwise it cannot be a manufacture. . . . I asked in the argument for an instance of a patent for a *method*, and none such could be produced. I was then pressed with patents for chemical processes, many of which are for a *method*, but that is from an inaccuracy of expression, because the patent in truth is for a vendible substance." 1 Abb. P. C. (76). And Buller, J.: (486) "The method and the mode of doing a thing are the same; and I think it impossible to support a patent for a method only, without having carried it into effect and produced some new substance. But here it is necessary to enquire, what is meant by a principle reduced into practice. It can only mean a practice founded on principle, and that practice is the thing done or made, or in other words the manufacture which is invented. . . . In most of the instances of the different patents mentioned . . . the patents were for the manufacture, and the specification rightly stated the method by which the manufacture was made; but none of them go the length of proving, that the method of doing a thing without the thing being done, or actually reduced into practice, is a good foundation for a patent. When the thing is done or produced, then it becomes the manufacture which is the proper subject of a patent." 1 Abb. P. C. (81). Lord Chief Justice Eyre, taking a broader view, held that a method, as such, was patentable, and says: (492) "It was admitted in the argument at the bar, that the word 'manufacture' in the statute, was of extensive signification, that it applied not only to things made, but to the *practice of making*, to principles carried into practice in a new manner, to new results of principles carried into practice. Let us pursue this admission. Under *things made*, we may class in the first place, *new compositions of things*, such as manufactures in the most ordinary sense of the word: secondly, all mechanical inventions, whether made to produce old or new effects, for a new piece of mechanism is certainly a thing made. Under the *practice of making* we may class all new artificial manners

of end with that of means. The true and ultimate benefit which the public derive from any invention resides in the

of operating with the hand, or with instruments in common use, new processes in any art, producing effects useful to the public. When the effect produced is some new substance or composition of things, it should seem that the privilege of the sole working or making, ought to be for such new substance or composition, without regard to the mechanism or process by which it has been produced, which though perhaps also new, will be only useful as producing the new substance. . . . (493) When the effect produced is no substance or composition of things, the patent can only be for the mechanism, if new mechanism is used, or for the process, if it be a new method of operating, with or without old mechanism, by which the effect is produced. . . . (494) In the list of patents with which I have been furnished, there are several for *new methods* of manufacturing articles in common use, where the sole merit and the whole effect produced are the saving of time and expense, and thereby lowering the price of the article, and introducing it into more general use. Now I think these *methods* may be said to be *new manufactures*, in one of the common acceptations of the word, as we speak of the manufactory of glass, or any other thing of that kind. . . . The patent cannot be for the effect produced, for it is either no substance at all, or what is exactly the same thing as to the question upon a patent, no new substance, but an old one, produced advantageously for the public. It cannot be for the mechanism, for there is no new mechanism employed. It must then be, for the method; and I would say, in the very significant words of Lord Mansfield in the great case of the copyright [Miller *v.* Taylor (1769), 4 Burr. 2397], it must be for *method* [idea] detached *from all physical existence whatever*. . . . I believe I might say three fourths of all patents granted since the statute passed, are for *methods of operating* and of manufacturing, producing no new substances and employing no new machinery. . . . (495) An improper use of the word *principle* in the specification set forth in this case, has I think served to puzzle it. Undoubtedly there can be no patent for a mere principle; but for a principle so far embodied and connected with corporeal substances, as to be *in a condition to act*, and to *produce effects* in any art, trade, mystery, or manual occupation, I think there may be a patent. Now this is, in my judgment, the thing for which the patent stated in the case was granted, and this is what the specification describes, though it *miscalls it a principle*. It is not that the patentee has conceived an abstract notion, that the consumption of steam in fire engines may be lessened, but he has discovered a *practical manner* of doing it; and for that *practical manner of doing it* he has taken his patent. Surely this is a very different thing from taking a patent for a principle, it is *not for a principle*, but *for a process.*" 1 Abb. P. C. (87, 88, 89, 91). Rooke, J., supported his decision upon the theory that every new method of employing existing instruments presupposes some change in their construction. He says: (478) "What method can there be of saving steam or fuel in engines, but by some variation in the construction of them? A *new invented method* therefore conveys to my understanding, the idea of *a new mode of construction*. I think those words are tantamount to *fire engines of a newly invented construction*; at least I think they will bear this meaning, if they do not necessarily

end accomplished, not in the means employed, — in that changed condition of affairs in which the want ceases, not in

exclude every other." 1 Abb. P. C. (72). Heath and Buller, JJ., deciding against the patent, and Eyre, C. J., and Rooke, J., in its favor, though each on different grounds, the case itself was left undetermined. The same patent, however, came before King's Bench in 1799, in the case of Hornblower *et al. v.* Boulton *et al.* (8 T. R. 95), when the patent was sustained. The judges, in rendering their opinions, take various positions, not harmonious with each other except as to the result. Lord Kenyon, C. J., says: (99) "This is a patent for a manufacture, which I understand to be something made by the hands of man." Ashurst, J., assents without giving any reason other than the utility of the invention. Grose, J., says: (103) "He [the patentee] specifies the particular parts requisite to produce the effect intended, and states the manner how they are to be applied. . . . Can it then be said that the making and combining of these parts is not some manner of new manufacture? . . . I do not consider it as a patent for the old engine, but only for the addition to or improvement of the old engine. . . . (104) A patent cannot be granted for a mere principle; but I think that, although in words the privilege granted is to exercise a method of making or doing anything, yet if that thing is to be made or done by a manufacture, and the mode of making that manufacture is described, it then becomes in effect, (by whatever name it may be called), not a patent for a mere principle but for a manufacture, for the thing so made, and not merely for the principle upon which it is made." Lawrence, J., considers the patent, (106) "a patent for *an engine or mechanical contrivance* for lessening the consumption of steam in fire engines;" and construing the word "method" in the patent, says: "*Engine* and *method* mean the same thing and may be the subject of a patent. 'Method,' properly speaking, is only placing several things and performing several operations in the most convenient order: but it may signify a *contrivance*, or *device*; so may *engine*, and therefore I think it may answer the word 'method.'" In the King's Bench it will be seen that none of the judges followed the doctrine given by Eyre, C. J., in the former case, — a doctrine certainly correct and founded in the nature of things, but apparently inappreciable by minds in which the idea of a vendible substance had become identified with that of a "manufacture." 1 Abb. P. C. 98 (100, 104, 107, 108).

The same doubt is apparent in several subsequent cases and until a comparatively recent period. Thus in Rex *v.* Wheeler (1819), 2 B. & Ald. 345, Abbott, C. J., speaks of a process as follows: (349) "Now the word 'manufacture' has been generally understood to denote either a thing made, which is useful for its own sake, and vendible as such . . . or an engine or instrument. . . . (350) Or it may perhaps extend also to a new process to be carried on by known implements," &c. 1 Abb. P. C. 317 (321). The whole opinion in this case is permeated with the same conjectural tone.

In Crane *v.* Price (1842), 1 Web. 393, Tindal, C. J.: (409) "We are of opinion, that if the result produced by such a combination is either a new article, or a better article, or a cheaper article to the public, than that produced before by the old method, that such combination is an invention or manufacture intended by the statute, and may well become the subject of a patent. Such an assumed state of facts falls

the instrument or operation by which this change has been effected; and the real merit of every inventor thus consists, not in his invention of the means, as such, but in his removal or supply of the public want through the instruments or operations which he has invented. Now if the subject-matter of

clearly within the principle exemplified by Abbott, C. J. (Rex *v.* Wheeler, 2 B. & Ald. 349), where he is determining what is or what is not the subject of a patent, namely, it may, perhaps, extend to a new process to be carried on by known implements or elements acting upon known substances, and ultimately producing some other known substance, but producing it in a cheaper or more expeditious manner, or a better or more useful kind. . . . There are numerous instances of patents which have been granted, where the invention consisted in no more than in the use of things already known, and acting with them in a manner already known, and producing effects already known, but producing those effects so as to be more economically or beneficially enjoyed by the public."

In Gibson *v.* Brand (1842), 1 Web. 631, Tindal, C. J.: (633) "Undoubtedly there is a very strong reason to suppose, if the specification is carefully and properly prepared, so as to point out, with great distinctness and minuteness, what the process is, that such a patent may be good in law." The other judges (Erskine and Cresswell) speak in the same doubtful manner. The latter says: (639) "This patent right, as explained by the counsel for the plaintiffs, is undoubtedly of a very singular character. The plaintiffs do not claim any article produced by the process, they do not claim the machinery used in producing it, nor do they claim any ingredient used in producing it. They claim, it is said, merely a process. Certainly, there are dicta in the books, that a process may be the subject-matter of a patent. Whenever that question arises, of course, I shall be prepared to give it every consideration, and form the best judgment I can upon it."

In Crossley *v.* Potter (1853), Macrory's P. C. 240, Pollock, C. B.: (244) "It is very true that patents are continually taken out for what are called 'methods' or 'processes;' but the real object of the patent, the real end that is secured by the statute, the matter that is alone mentioned in it capable of being made the subject of a patent, is a new manufacture; and everybody who takes out a patent under the name of a process, really takes it out for that which is the result of the process, for the thing that is manufactured, or the process by which it is produced."

Mr. Godson, in discussing the patentability of a process in the light of the principles of Patent Law as then understood and of the cases then decided, thus writes in 1822: (79) "A patent, when it is said to be for a method, cannot be supported, unless the thing invented is a substance or machine. . . . (80) A patent must be for a vendible matter. . . . (88) In other words, though the patent is for *something called* a method, yet the *real subject* of the grant is either a substance, machine, improvement or combination. . . . (94) When an inventor obtains a patent for a new method, if he does not give to the world some new and useful substance, or machine, something material and tangible, the grant is invalid."

To the same effect see Coryton, 65–80, where the non-patentability of a process, as such, is strongly argued and the cases considered.

the patent were the end, as distinguished from the means, inasmuch as the end consists in the changed condition of material objects, the invention must be a material object in its changed condition, and the doctrine above stated would have been correct. But since the invention is the means and not the end, and since an end resulting from a means which becomes tangible only when in actual operation is as conducive to the public welfare as an end whose means is permanently apparent to the senses, both forms of means are equally useful to the public, and the inventor of the one deserves the same reward, encouragement, and protection as the inventor of the other.

§ 161. Patentability of an Art formerly Denied; Confounded with the Force which it Applies.

From the same characteristic of an art arose the further error that its protection by a patent must involve the grant of an exclusive right to the principle or force which it employs.[1] An art, considered apart from the specific physical agent by which it is performed, is simply a force in operation;

§ 161. [1] This objection to a process as patentable subject-matter appears, like the former (§ 160), in Boulton and Watt *v.* Bull (1795), 2 H. Bl. 463. Thus Buller, J.: (486) "I think it impossible to support a patent for a method only without having carried it into effect and produced some new substance. But here it is necessary to enquire what is meant by a principle reduced into practice. It can only mean a practice founded on principle, and that practice is the thing done or made or in other words the manufacture which is invented." Eyre, C. J., grasping the real truth of the matter, denied this, and stated the now universally received doctrine that (495) "a principle so far embodied and connected with corporeal substances as to be in a condition to act and to produce effects is patentable." 1 Abb. P. C. 59 (81, 91). But in Hornblower *v.* Boulton (1799), 8 T. R. 95, Grose, J., reiterated the old idea and said (104): "A patent cannot be granted for a mere principle; but I think that, although in words the privilege granted is to exercise a method of making or doing anything, yet if that thing is to be made or done by a manufacture, and the mode of making that manufacture is described, it then becomes in effect (by whatever name it may be called), not a patent for a mere principle but for a manufacture, for the thing so made, and not merely for the principle upon which it is made." 1 Abb. P. C. 97 (107).

The portions of Godson and of Coryton, referred to in the notes to § 160, *ante*, are also pervaded with the same notion, and further citations may be found in the notes to §§ 134–143, *ante*, where the patentability of a principle is considered.

and since a force in operation, unless applied to physical objects through tangible instruments contrived by man, must either be the force itself, as it exists and operates in nature, or be entirely without physical effects, it was assumed that the inventor of an art was merely the discoverer of the natural operative force, unless he also had devised the instruments through which the force was practically applied. The difficulty here proceeded from the failure to discern the character of the inventive act, and to distinguish between the three subordinate ideas which enter into the complete idea of means. The force, as it exists in nature, acts upon certain objects, and through certain instruments, and in a certain manner. In this condition it is a true subject of discovery, and of discovery only. But to bring other objects under its influence, or to change its mode of operation by applying it in other methods or through other instruments, is not the mere discovery and employment of the natural force in its natural operation for additional and cognate purposes, but is an inventive act resulting in the creation of new means, whether the objects, the modes of application, or the instruments in themselves be new or old. To grant a patent for such a means is not to grant a patent for a principle; nor does the exclusive right to use the force in this specific manner or upon this specific object constitute a wider privilege in the inventor, in relation to the natural force itself, than if the instruments through which he applies the force, or the object upon which it is directed, were made the subject-matter of the patent.

§ 162. Patentability of an Art finally Conceded.

The logical consequences of these errors were too momentous to allow them to remain long uncorrected. If rigorously maintained they would have excluded from the protection of a patent every exercise of inventive skill which did not result in some new vendible substance; and since several of the most important and valuable inventions, whose patentability was controverted in the courts, consisted of new processes and operations performed by well-known instruments, the judges were driven to the alternative of repudiating these

ancient theories, or of denying to the most meritorious of inventors those privileges which the spirit of the law would have certainly conferred upon them.[1] In this emergency, closer attention was devoted to the real nature of the inventive act and to the grounds on which the claims of the inventor rest; and after various struggles with the language of the law, as contained in the statutes and in previous decisions, the doctrine was established that a new "mode of operating," or a "manner of making," was equally patentable with an operating instrument or an object made.

§ 163. Patentability of an Art always Recognized in the United States.

In the Patent Law of the United States no such problems have arisen. Our earliest statute recognized an art as a true operative means, and as having the same title to protection as a machine or an article of manufacture.[1] In the endeavors of

§ 162. [1] The first person to definitely assert and attempt to prove that an application of force was patentable, without reference to the particular apparatus used or results produced, was Lord Chief Justice Eyre, in Boulton *v.* Bull (1795), 2 H. Bl. 463. 1 Abb. P. C. 59. The tardiness and hesitation with which his example was followed by later judges may be seen in the opinions quoted in notes to §§ 160, 161, *ante*. That the doctrine is now settled on the proper basis in England is apparent from Hills *v.* London Gas Light Co. (1860), 5 H. & N. 312; Ralston *v.* Smith (1865), 11 H. L. 222.

For further cases on the same subject see Hall *v.* Jarvis (1822), 1 Web. 100; 1 Abb. P. C. 363; Russell *v.* Cowley (1832), 1 Web. 457; Heath *v.* Unwin (1844), 2 Web. 218; Steiner *v.* Heald (1851), 6 Exch. 607; Wallington *v.* Dale (1852), 7 Exch. 888; Booth *v.* Kennard (1856), 1 Hurl. & N. 527; Higgs *v.* Godwin (1858), E. B. & E. 529; Young *v.* Fernie (1864), 4 Giff. 577; Simpson *v.* Holliday (1865), 11 L. T. N. S. 99; in which the history and development of the doctrine may be traced.

§ 163. [1] In New Process Fermentation Co. *v.* Maus (1884), 20 Fed. Rep. 725, Drummond, J.: (728) "It is well known that the term 'process' is not used in the statute, but it has been uniformly held that there may be a patent for a process, because it is regarded as an art, which *is* a word used in the statute. But it must be confessed that it is often one of the most difficult questions to decide, in the practical application of claims made in a patent, what is a process which may be the subject of a patent. To illustrate and prove this, it is only necessary to refer to the case of Mitchell *v.* Tilghman, 19 Wall. 287, which was most elaborately argued and fully considered, and where a majority of the court held that although the manufacture of fat acids and glycerine from fatty or oily substances by the action of water at a high temperature and pressure was a process, yet that the patentee was

the courts to define or describe it, and to draw the line between it and its principle or force on one side, and the instru-

limited to the particular method or means of applying highly-heated water under pressure, pointed out in the specifications, although the claim was on its face broader than that, and to the case of Tilghman *v.* Proctor, 102 U. S. 707, where the same patent was in question, and where the court held that it was a patent for a process, irrespective of the particular mode or form of apparatus for carrying it into effect. If, then, we now consider this last case in connection with one of the first cases decided by the Supreme Court, (Corning *v.* Burden, 15 How. 252), and some of the intervening cases where patents have been sustained for a process, we ought to be able to determine the rule established by that court as to what is a process for which a patent can issue. In Corning *v.* Burden the court said that one might discover a new and useful improvement in the process of dyeing, tanning, &c., irrespective of any particular form of machine or mechanical device, and another might invent a labor-saving machine, by which the same process might be performed, and each might be entitled to his patent; that one by exposing India rubber to a certain degree of heat, in mixture or connection with certain metallic salts, might produce a valuable product and be entitled to a patent for his discovery as a process or improvement in the art, irrespective of mechanical devices. And another might invent a furnace or stove, or some apparatus by which the same process might be carried on with a saving of labor and of expense, and he would be entitled to a patent for his machine as an improvement in the art, and yet one could not have a patent for a machine, nor the other for a process. Each would be entitled to a patent for the method of producing certain results, but not for the result itself. And the court further stated that it was when the term 'process' was used to represent the means of producing a result that it was patentable, and it would include all methods or means not effected by mechanism. This definition is intelligible. A part of it, but not the whole, is cited in Tilghman *v.* Proctor. In Corning *v.* Burden the court held that Burden had not discovered any new process, but a new machine or combination of mechanism by which the result was produced. In McClurg *v.* Kingsland, 1 How. 202, where the only change made in the method of casting iron rolls was by directing the metal into the mould, when in a liquid state, at a tangent, the patent was sustained, although there does not seem to have been much discussion directly upon the patentability of the claim. All that was done in that case was simply to change the direction of the tube which carried the metal into the mould, the old method being to convey it from the furnace to the mould in a horizontal or perpendicular direction. In Mowry *v.* Whitney, 14 Wall. 620, and Tilghman *v.* Proctor, *supra*, the court sustained the claim in each as a patent for a process. In the latter case, the court says that the patent law is not confined to new machines and new compositions of matter, but extends to any new or useful art and manufacture, and that a manufacturing process is an art. Goodyear's patent was for a process; namely, vulcanizing India Rubber. The apparatus for performing the process was not material, and was not patented, and the court then refers to Neilson's English patent. Neilson's patent was for the discovery, which he made, of applying a blast of hot air, instead of cold, to a smelting furnace, and for describing a method by which that was accomplished, that

ments which it employs upon the other, some ambiguity in the use of language has necessarily occurred; but this is dis-

method not being material, and the court declares that Neilson's patent was sustained as a process patent, and quotes the language of the Court of Exchequer, 'that the plaintiff did not merely claim a principle, but a machine embodying a principle, and a very valuable one;' and also the language of Lord Campbell, in the House of Lords, that 'the patent must be taken to extend to all machines, of whatever construction, whereby the air is heated intermediately between the blowing apparatus and the blast furnace;' and therefore it was unnecessary to compare one apparatus with another. The court, in Tilghman *v.* Proctor, also quotes the language of Chief Justice Taney in O'Reilly *v.* Morse, 15 How. 112, where he says, in commenting on Neilson's Case, 8 M. & W. 806, — 'That the manner in which air might be heated was immaterial. His patent was supported because he (Neilson) had invented the mechanical apparatus by which the current of hot air could be thrown in. The interposition of a heated receptacle in any form was the novelty he invented.' And, after quoting still further from the opinion of the Chief Justice in O'Reilly *v.* Morse, the court states: 'It seems to us that this clear and exact summary of the law affords the key to almost every case that can arise. "Whoever discovers that a certain useful result will be produced in any art by the use of certain means, is entitled to a patent for it, provided he specifies the means." It is very certain that the means need not be a machine or an apparatus; it may be, as the court says, a process. A machine is a thing. A process is an act or mode of acting. . . . The mixing of certain substances together, or the heating of a substance to a certain temperature, is a process. If the mode of doing it, or the apparatus in or by which it may be done, is sufficiently obvious to suggest itself to persons skilled in the particular art, it is enough in the patent to point out the process to be performed, without giving supererogatory directions as to the apparatus or method to be employed.' The majority of the court in O'Reilly *v.* Morse refused to sustain the eighth claim of Morse, because he disavowed the specific machinery or means mentioned, but claimed the use of the motive power of the electric current, however developed; and this was held to be a principle simply. There has always been some difference of opinion as to the true grounds upon which this rejection of the eighth claim of Morse was placed, it being maintained by some that Morse was not entitled to have a patent including all applications of what he termed electro-magnetism in the transmission of words, letters, and signs, but only his own particular application. It has been uniformly held that a patent for a mere principle, or what is sometimes called a law of nature, cannot be sustained; but in all the cases referred to, from the Neilson to the Tilghman patent, the law or laws of nature discovered were utilized, and it is said that in giving this construction to principle and process, a patent for a process leaves the field open to future inventors; whereas a patent for a principle or law of nature would give a monopoly to the person making that discovery. So that the rule established by the Supreme Court is said to be that the patent for a process will include every application of the principle that involves the use of the process described and claimed by the patentee, and this does not include the particular machine or apparatus described by the patentee, but the mode of operation which is carried out by means of the apparatus. Walk. Pat. § 14. In

appearing as the nature of the inventive act, and the relation of the end accomplished to the means applied, become more

Neilson's Case the defendant did not use the means employed by Neilson in throwing the hot air into the smelting furnace, for it was admitted he used a better device; but it was assumed that when once the idea existed in the mind of the superiority of a hot-air blast to a cold one, any person skilled in smelting could devise his own mode of introducing the hot air to the furnace. And see Cochrane *v.* Deener, 94 U. S. 780, and Rubber Co. *v.* Goodyear, 9 Wall. 796. It is to be regretted that the difficulty inherent in the subject is so great that a more intelligible distinction has not been made, for it must be admitted that the application of the rule which has been established by the Supreme Court to other cases, as they hereafter arise, may cause embarrassment, for there must be a method by which the principle or law which has been discovered is applied; and if that method is immaterial, then it is difficult to understand why it does not become substantially a patent for the discovery of the principle or the law of nature. Such seems to have been the opinion of Mr. Justice Nelson. See Foote *v.* Silsby, 1 Blatch. 445, and 2 Blatch. 260; and the case on appeal, 20 How. 378; Le Roy *v.* Tatham, 14 How. 156, and 22 How. 132."

In some portions of this opinion the learned judge seems not to distinguish between the "method" *in* which the principle or force is applied to its object, and the "mechanism" or "apparatus" *through* which it is applied. The "method" of treating ore in the Neilson case, rubber in the Goodyear case, metal in McClurg's case, wheels in Mowry's case, and fat in the Tilghman case, by subjecting them to certain forces in a certain order and degree, was a true process, entirely independent of the instruments by means of which these forces were applied. The forces or laws of nature and the susceptibility to them of the objects named existed, not by the creation of the inventor, but by the act of God. When the inventor discovered that the latter were capable of being influenced by the former with certain results, and devised a series of operations by which these influences might be brought to bear on these objects, his conception of the method or process was complete, although no idea of the particular utensils or instruments to be employed had been presented to him. The reduction of this method to practice, by selecting suitable apparatus or mechanism for carrying out this method, would be, so far as this invention was concerned, the work of the constructor, not of the inventor, and if the apparatus were wholly new and original with him, yet its relation to the method devised by him would be the same. As mechanism and apparatus it would be a new invention, but with reference to the method it would still be mere reduction to practice. In every case of invention a method and an instrumentality for employing that method must exist. Where the method is new it is patentable as a process. Where the method is old and the instrumentality new, the latter may be patented as a machine, a manufacture, or a composition, according to its form. But the method is never the natural force, nor the natural object, nor the instrumentality, but has a distinct physical and legal existence, and if possessing the other necessary requisites is a patentable subject-matter.

In Tilghman *v.* Proctor (1881), 102 U. S. 707; Bradley, J.: (722) "That a patent can be granted for a process, there can be no doubt. The patent law is not confined to new machines and

clearly understood. It has, however, always been the settled law of this country that any artificial operation performed by

new compositions of matter, but extends to any new and useful art of manufacture. A manufacturing process is clearly an art, within the meaning of the law. Goodyear's patent was for a process, namely, the process of vulcanizing india-rubber by subjecting it to a high degree of heat when mixed with sulphur and a mineral salt. The apparatus for performing the process was not patented, and was not material. The patent pointed out how the process could be effected, and that was deemed sufficient. Neilson's patent was for the process of applying the hot blast to furnaces by forcing the blast through a vessel or receptacle situated between the blowing apparatus and the furnace, and heated to a red heat; the form of the heated vessel being stated by the patent to be immaterial. These patents were sustained after the strictest scrutiny and against the strongest opposition. On the subject of patents for processes, Mr. Justice Grier, in delivering the opinion of this court in Corning *v.* Burden (1853, 15 How. p. 267) said: 'A process *eo nomine* is not made the subject of a patent in our act of Congress. It is included under the general term of "useful art." An art may require one or more processes in order to produce a certain result or manufacture. The term "machine" includes every mechanical device or combination of mechanical powers and devices to perform some function, or to produce a certain effect or result. But where the result or effect is produced by chemical action, by the operation or application of some element or power of nature, or of one substance to another, such modes, methods, or operations are called "processes." A new process is usually the result of a discovery; a machine of invention. The arts of tanning, dyeing, making waterproof cloth, vulcanizing india-rubber, smelting ores, and numerous others, are usually carried on by processes as distinguished from machines. One may discover a new and useful improvement in the process of tanning, dyeing, &c., irrespective of any particular form of machinery or mechanical device. And another may invent a labor saving machine, by which the operation or process may be performed, and each may be entitled to his patent. As, for instance: A has discovered that by exposing india rubber to a certain degree of heat, in mixture or in connection with certain metallic salts, he can produce a valuable product or manufacture; he is entitled to a patent for his discovery as a process or improvement in the art irrespective of any machine or mechanical device. B, on the contrary, may invent a new furnace or stove or steam apparatus by which this process may be carried on with much saving of labor and expense of fuel, and he will be entitled to a patent for his machine as an improvement in the art.' 15 How. 252, 267. Neilson's patent, above referred to, had some features very similar to those of Tilghman's. The strong objection urged against the latter is that the particular apparatus described in the specification is not that which is generally used, and that it cannot be used with much profit or success in large manufacturing operations; whereas the slower method of dissolving fats in a common boiler or digester at a lower temperature even than that of melting bismuth, which is not described in the specification, is the one which is generally adopted. Precisely this circumstance existed in reference to the patent of Neilson. The specification directed that the blast or current of air produced by the blowing apparatus should be

physical agents and producing physical effects, when within the domain of the industrial arts, is a true invention, and can

passed into an air vessel or receptacle heated to a red heat, and from thence into the furnace. Then, after stating that the air vessel or receptacle should be increased in size according to the size of the forge or furnace to be supplied, the specification adds: The form or shape of the vessel or receptacle is immaterial to the effect, and may be adapted to the local circumstances or situation. Now, the most simple and natural form of an air vessel for heating the blast, as here directed, would be a box or chamber or a cylindrical vessel; but it turned out in practice that a receptacle of this kind would answer the purpose but very imperfectly, and that the best and most useful method was to heat the blast in a series of tubes placed in a heated oven. This was held to be no ground for invalidating the patent, or for preventing it from covering intermediate tubes, as well as an intermediate box or chamber, the jury being of opinion that a man of ordinary skill and knowledge in the construction of blowing and air-heating apparatus would be able, from the information contained in the specification, to erect a machine which would answer some beneficial purpose in the application of the process, and would not be misled and prevented from so doing by the declaration that the form or shape of the vessel or receptacle was immaterial to the effect. In this view of the subject the patent was sustained after very great consideration. Some question has indeed been made whether Neilson's patent was sustained as a patent for a process. The Court of Exchequer, in reviewing the proceedings at the trial and answering the objection that it was a patent for a principle, said: 'It is very difficult to distinguish it from the specification of a patent for a principle, and this at first created in the minds of some of the court much difficulty; but after full consideration we think that the plaintiff does not merely claim a principle, but a machine embodying a principle, and a very valuable one. We think the case must be considered as if, the principle being well known, the plaintiff had first invented a mode of applying it by a mechanical apparatus to furnaces; and his invention consists in this, — by interposing a receptacle for heated air between the blowing apparatus and the furnace. In this receptacle he directs the air to be heated by the application of heat externally to the receptacle, and thus he accomplishes the object of applying the blast, which was before of cold air, in a heated state to the furnace.' Web. P. C. 275, 371. In this passage we think that the Court of Exchequer, (who spoke through Baron Parke), drew the true distinction between a mere principle as the subject of a patent and a process by which a principle is applied to effect a useful result. That a hot blast is better than a cold blast for smelting iron in a furnace was the principle or scientific fact discovered by Neilson; and yet, being nothing but a principle, he could not have a patent for that. But, having invented and practically exemplified a process for utilizing this principle, namely, that of heating the blast in a receptacle between the blowing apparatus and the furnace, he was entitled to a patent for that process, although he did not distinctly point out all the forms of apparatus by which the process might be applied, — having nevertheless pointed out a particular apparatus for that purpose, and having thus shown that the process could be practically and usefully applied. Another person might invent a better apparatus for applying the process than

be patented as such without reference to the specific instruments engaged or the specific objects in which its effects may be produced.

that pointed out by Neilson, and might obtain a patent for such improved apparatus, but he could not use the process without a license from Neilson. His improved apparatus would in this respect stand in a relation to the process analogous to that which an improvement on a patented machine bears to the machine itself. That Neilson's patent was regarded as for a process is apparent from what is said by the judges who had it under consideration. Thus Baron Parke at the trial had said: 'The specification and patent together make it clear what the discovery was; it was the introduction of hot air by means of heating it before it was introduced into the furnace between the blowing apparatus and the furnace.' Web. P. C. 275, 312. And when the matter came before the House of Lords, after a trial in Scotland, Lord Campbell said: 'After the construction first put upon it [the patent] by the learned judges of the Court of Exchequer, sanctioned by the high authority of my noble and learned friend now upon the woolsack, when presiding in the Court of Chancery, I think the patent must be taken to extend to all machines of whatever construction, whereby the air is heated intermediately between the blowing apparatus and the blast furnace. That being so, the learned judge was perfectly justified in telling the jury that it was unnecessary for them to compare one apparatus with another, because, confessedly, that system of conduit-pipes was a mode of heating air by an intermediate vessel between the blowing apparatus and the blast furnace, and therefore it was an infraction of the patent.' Id. 715. This case of the hot blast was commented upon in the great case of O'Reilly *v.* Morse (reported in 15 Howard, 62), and is there recognized and approved in the opinion of this court, delivered by Chief Justice Taney. After quoting the remarks of Baron Parke in the Court of Exchequer, cited above, the Chief Justice says: 'We see nothing in this opinion differing in any degree from the familiar principles of law applicable to patent cases. Neilson claimed no particular mode of constructing the receptacle or of heating it. He pointed out the manner in which it might be done, but admitted that it might also be done in a variety of ways, and at a higher or lower temperature, and that all of them would produce the effect in a greater or less degree, provided the air was heated by passing through a heated receptacle. . . . Whoever, therefore, used this method of throwing hot air into the furnace used the process he had invented, and thereby infringed his patent, although the form of the receptacle or the mechanical arrangements for heating it *might* be *different from those described* by the patentee. For whatever form was adopted for the receptacle, or whatever mechanical arrangements were made for heating it, the effect would be produced in a greater or less degree, if the heated receptacle was placed between the blower and the furnace, and the current of air passed through it. . . . The patent was supported because he [Neilson] had invented a mechanical apparatus by which a current of hot air, instead of cold, could be thrown in. And this new method was protected by the patent. The interposition of a heated receptacle in any form was the novelty he invented.' (15 How. 62, 115, 116.) We have quoted these remarks of the Chief Justice more fully because they show most clearly that he put the same construction upon Neilson's patent that

§ 164. An Art the most Comprehensive of Inventions.

As every patentable invention is either an instrument or an operation, and as the term "art" includes all those which

was put upon it by Lord Campbell, and that he fully acquiesced in the legality and validity of a patent for a process. Yet it has been supposed that the decision in O'Reilly *v.* Morse was adverse to patents for mere processes. The mistake has undoubtedly arisen from confounding a patent for a process with a patent for a mere principle. We think that a careful examination of the judgment in that case will show that nothing adverse to patents for processes is contained in it. The eighth claim of Morse's patent was held to be invalid, because it was regarded by the court as being not for a process, but for a mere principle. It amounted to this, namely, a claim of the exclusive right to the use of electro-magnetism as a motive power for making intelligible marks at a distance; that is, a claim to the exclusive use of one of the powers of nature for a particular purpose. It was not a claim of any particular machinery, nor a claim of any particular process for utilizing the power, but a claim of the power itself, — a claim put forward on the ground that the patentee was the first to discover that it could be thus employed. This claim the court held could not be sustained. That this was the true ground of the decision will be manifest from the following observations of the Chief Justice in the opinion already quoted from. He says: 'He [Morse] claims the exclusive right to every improvement where the motive power is the electric or galvanic current, and the result is the marking or printing intelligible characters, signs, or letters at a distance. If this claim can be maintained, it matters not by what process or machinery the result is accomplished. For aught that we now know, some future inventor, in the onward march of science, may discover a mode of writing or printing at a distance by means of the electric or galvanic current, without using any part of the process or combination set forth in the plaintiff's specification. . . . In fine, he claims an exclusive right to use a manner and process which he has not described, and indeed had not invented, and therefore could not describe, when he obtained his patent. The court is of opinion that the claim is too broad and not warranted by law. . . . It is the high praise of Professor Morse that he has been able by a new combination of known powers, of which electro-magnetism is one, to discover a method by which intelligible marks or signs may be printed at a distance. And for the method or process thus discovered he is entitled to a patent. But he has not discovered that the electro-magnetic current, used as a motive power in any other method and with any other combinations, will do as well.' After reviewing the statutes and decisions bearing upon the subject the Chief Justice makes a summary conclusion of the whole matter, as follows: 'Whoever discovers that a certain useful result will be produced in any art, machine, manufacture, or composition of matter by the use of certain means is entitled to a patent for it, provided he specifies the means he uses in a manner so full and exact that any one skilled in the science to which it appertains can, by using the means he specifies, without any addition to or subtraction from them, produce precisely the result he describes. And if this cannot be done by the means he describes, the patent is void. And if it can be done, then the patent confers on him the exclusive right to use the means he specifies to produce the result or effect he describes,

cannot be embraced under one or more of the four groups of instruments enumerated in the statute, its outer limits are less and nothing more. And it makes no difference in this respect whether the effect is produced by chemical agency or combination, or by the application of discoveries or principles in natural philosophy known or unknown before his invention, or by machinery acting altogether upon mechanical principles. In either case he must describe the manner or process as above mentioned, and the end it accomplishes. And any one may lawfully accomplish the same end without *infringing* the patent, if he uses means substantially different from those described.' Id. 110. It seems to us that this clear and exact summary of the law affords the key to almost every case that can arise. 'Whoever discovers that a certain useful result will be produced in any art by the use of certain means is entitled to a patent for it, provided he specifies the means.' But everything turns on the force and meaning of the word 'means.' It is very certain that the means need not be a machine or an apparatus; it may, as the court says, be a process. A machine is a thing. A process is an act or a mode of acting. The one is visible to the eye, — an object of perpetual observation. The other is a conception of the mind, seen only by its effects when being executed or performed. Either may be the means of producing a useful result. The mixing of certain substances together, or the heating of a substance to a certain temperature, is a process. If the mode of doing it, or the apparatus in or by which it may be done, is sufficiently obvious to suggest itself to a person skilled in the particular art, it is enough in the patent to point out the process to be performed, without giving supererogatory directions as to the apparatus or method to be employed. If the mode of applying the process is not obvious, then a description of a particular mode by which it may be applied is sufficient. There is, then, a description of the process and of one practical mode in which it may be applied. Perhaps the process is susceptible of being applied in many modes and by the use of many forms of apparatus. The inventor is not bound to describe them all in order to secure to himself the exclusive right to the process, if he is really its inventor or discoverer. But he must describe some particular mode or some apparatus by which the process can be applied with at least some beneficial result, in order to show that it is capable of being exhibited and performed in actual experience." 10 O. G. 859 (863).

In Mitchell *v.* Tilghman (1873), 19 Wall. 287, Clifford, J.: (392) "Doubtless an invention may be good though the subject of it consists in the discovery of some principle of science or property of matter never before known or used, by which some new and useful result is obtained; and such an invention or discovery may be the subject of a valid patent, without including in the claim any new arrangement of machinery to accomplish the object, provided the inventor describes, as required in the patent law, the method, process, or means of applying the invention to practical use, and of obtaining the described new and useful result. (Household Co. *v.* Neilson, 1 Web. 683; Curtis, p. 279; Foote *v.* Silsby, 2 Blatch. 260.)" 5 O. G. 299 (304).

In Roberts *v.* Dickey (1871), 1 O. G. 4, Strong, J.: (5) "It is not to be doubted that a novel process or method of operation, that amounts to a successful application of known things to a practical use, is patentable as an art." 4 Fisher, 532 (538).

In O'Reilly *v.* Morse (1853), 15 How.

easily discernible than those of any other class of operative means. These limits are, however, indicated by the charac-

62, Grier, J.: (130) "A new and useful art, or a new and useful improvement on any known art, is as much entitled to the protection of the law as a machine or manufacture. The English patent acts are confined to 'manufactures' in terms; but the courts have construed them to cover and protect arts as well as machines, yet without using the term, 'art.' Here we are not required to make any latitudinous construction of our statute for the sake of equity or policy; and surely we have no right, even if we had the disposition, to curtail or narrow its liberal policy by astute or fanciful construction. It is not easy to give a precise definition of what is meant by the term 'art' as used in the acts of Congress; some, if not all, the traits which distinguish an art from the other legitimate subjects of a patent are stated with clearness and accuracy by Mr. Curtis, in his Treatise on Patents. 'The term art applies,' says he, 'to all those cases where the application of a principle is the most important part of the invention, and where the machinery, apparatus, or other means, by which the principle is applied, are incidental only, and not of the essence of his invention. It applies also to all those cases where the result, effect, or manufactured article is old, but the invention consists in a new process or method of producing such result, effect, or manufacture.' Curt. on Pat. 80. A machine, though it may be composed of many parts, instruments, or devices combined together, still conveys the idea of unity. It may be said to be invented, but the term 'discovery' could not well be predicated of it. An art may employ many different machines, devices, processes, and manipulations, to produce some useful result. In a previously known art a man may discover some new process, or new application of a known principle, element, or power of nature, to the advancement of the art, and will be entitled to a patent for the same, as an 'improvement in the art,' or he may invent a machine to perform a given function, and then he will be entitled to a patent only for his machine. That improvements in the arts, which consist in the new application of some known element, power, or physical law, and not in any particular machine or combination of machinery, have been frequently the subject of patents, both in England and in this country, the cases in our books most amply demonstrate. . . . (133) When a new and hitherto unknown product or result, beneficial to mankind, is effected by a new application of any element of nature, and by means of machines and devices, whether new or old, it cannot be denied that such invention or discovery is entitled to the denomination of a 'new and useful art.' The statute gives the inventor of an art a monopoly in the exercise of it as fully as it does to the inventor of a mere machine. And any person who exercises such new art without the license of the inventor is an infringer of his patent, and of the franchise granted to him by the law as a reward for his labor and ingenuity in perfecting it."

In Whitney *v.* Emmett (1831), Baldwin, 303, Baldwin, J.: (312) "A patent may be for a mode, or method of doing a thing; mode, when referred to something permanent, means an engine or machine, when to something fugitive, a method, which may mean engine, contrivance, device, process, instrument, mode and manner of effecting the purpose; the word "principle" may mean engine, in an act of parliament under which the patent issued, or may mean

teristic attributes of three species of arts which lie upon the boundary line between the creative and the imitative acts; (1) The application of a new force to known objects, through known instruments used in their accustomed manner and producing previously known effects;[1] (2) The application of a known force to a new object, through known instruments used in their accustomed manner and producing known effects;[2] (3) The application of a known force to known objects, through known instruments used in a new manner and producing effects either new or old.[3] Each of these arts is a new operative means. In the first, the force is new; in the second, the object; and in the third, although the instrument is old as a concrete embodiment of one idea of means, its new use constitutes a means of an entirely different character in reference to the operation in which it is now employed. Beyond these three, no result of an inventive act can be imagined. Whatever lies between them and the concrete instruments must be an art or operation.

the constituent parts thereof. A patent for a method of producing a new thing may apply to the mechanism, a new method of operating with old machinery, or producing an old substance; a patent for a mode or method detached from all physical application would not refer to an engine or machine, but when referred to the mode of operation, so as to produce the effect, would be considered as for an engine or machine. The words used as mode or method are not the subject of the patent; it is the thing done by the invention, and patents are so construed *ut res magis valeat quam pereat.*" 1 Robb, 567 (579).

That an art or process is patentable without reference to new results or new apparatus, see also Goodyear *v.* Wait (1867), 3 Fisher, 242; 5 Blatch. 468; French *v.* Rogers (1851), 1 Fisher, 133.

That an art means a useful art, see Smith *v.* Downing (1850), 1 Fisher, 64.

§ 164. [1] That the practical application of a new or hitherto unapplied natural force is a new art, see Roberts *v.* Dickey (1871), 1 O. G. 4; 4 Fisher, 532; 4 Brews. 260; Poillon *v.* Schmidt (1869), 6 Blatch. 299; 37 How. Pr. 77; 3 Fisher, 476; Goodyear *v.* Wait (1867), 3 Fisher, 242; 5 Blatch. 468; Le Roy *v.* Tatham (1859), 22 How. 132; Smith *v.* Ely (1849), 5 McLean, 76.

[2] That the practical application of a known force to a new object is a new art, see Whitney *v.* Mowry (1867), 2 Bond, 45; 3 Fisher, 157; Steiner *v.* Heald (1851), 6 Exch. 607.

[3] That the application of a known force to known objects in a new manner is a new art, see Foote *v.* Silsby (1849), 1 Blatch. 445; Higgs *v.* Goodwin (1858), E. B. & E. 529.

That a new mode of using old apparatus may be a new art, see Lawther *v.* Hamilton (1888), 42 O. G. 487.

That to do by machine what had before been done by hand is not a new process though the machine may be new, see Marchand *v.* Emken (1886), 26 Fed. Rep. 629; 23 Blatch. 435; 34 O. G. 1275.

§ 165. An Art may be either a "Force Applied," a "Mode of Application," or the "Specific Treatment of a Specific Object."

An art may fall within either of the three great fundamental groups of means, according to the number of its essential factors, and the subject of the process of discovery. In many arts the force or capability has been discovered by the inventor of the art, and is made practically useful by its union with a mode of application. Such an art is a force applied, and its essential factors are the force and mode of application.[1] Other arts employ known forces on known objects in new methods, the availability of the art or instrument adopted as the connecting agency between the force and object being the subject of discovery. These arts are simply modes of application, and have no other essential factor than the mode itself. In still other arts the object or susceptibility is the discovered factor, and the art consists in operating with specific forces through specific modes of application on this object or susceptibility. To such arts the three factors are essential, and a substantial change in either constitutes a different art.

§ 166. An Art must Produce Physical Effects.

But though an art embraces so wide a field of inventive skill, it includes only such operations as are capable of producing physical effects. Every invention, when applied according to the design of its inventor, must accomplish some change in the character or condition of material objects. This is as essential in a patentable art as in an instrument.[1]

§ 165. [1] That the discovery that steam may be made to become self-packing is patentable as a process not merely as an apparatus, see Poillon *v.* Schmidt (1869), 37 How. Pr. 77 : 6 Blatch. 299 ; 3 Fisher, 476.

That a mode of controlling a natural force may be a patentable art, see Dolbear *v.* American Bell Telephone Co. (1888), 43 O. G. 877.

§ 166. [1] A distinction is necessarily drawn by the courts between a plan or project for doing something and the method by which it is to be physically effected. The former, if the ideas or mode of delineation are new, may be protected by copyright, not by patent ; since the plan or project though capable of being carried out by the use of means is not in itself a means. Thus an architectural plan for the building of a house, though new and original, is not an art or any other form of invention. See Jacobs *v.* Baker (1868), 7 Wall. 295.

A distinction is also drawn between a method by which a change is pro-

Hence a plan or theory of action which, if carried into practice, could produce no physical results proceeding directly from the operation of the theory or plan itself, is not an art within the meaning of the Patent Law, however greatly it may promote the comfort or the welfare of mankind. It is, indeed, a means and may accomplish an important end, but it lies outside the domain of the industrial arts; and its inventor, if he is entitled to protection from any source, must seek it from the Copyright and not the Patent Law.

§ 167. An Art is Distinct from the Instruments which it Employs: may Employ any Available Instrument.

While an art cannot be practised except by means of physical agents through which the force is brought in contact with or is directed toward its object, the existence of the art is not dependent on any of the special instruments employed. It is a legal, practical invention in itself. Its essence remains unchanged, whatever variation takes place in its instruments, as long as the acts of which it is composed are properly performed.[1]

duced in some physical substance and a mode of giving an agreeable appearance to the substance, unless such appearance amounts to a design. Thus a new manner of arranging articles for sale, or of packing simply, is not an art or an invention of any kind, see Forncrook *v.* Root (1884), 29 O. G. 774; 21 Fed. Rep. 328; King *v.* Gallun (1883), 109 U. S. 99; 25 O. G. 980; Langdon *v.* De Groot (1822), 1 Paine, 203; 1 Robb, 433.

§ 167. [1] In *Ex parte* Blythe (1884), 30 O. G. 1321, Butterworth, Com.: (1323) "Process and apparatus, therefore, constitute two separate inventions. If they are separate inventions when one has been invented by one person and the other by another, they must be separate inventions when both have been invented by the same person."

In James *v.* Campbell (1881), 104 U. S. 356, Bradley, J.: (377) "But a process and a machine for applying the process are not necessarily one and the same invention. They are generally distinct and different." 21 O. G. 337 (343).

In Goodyear *v.* The Railroad (1853), 2 Wall. Jr. 356, Grier, J.: (360) "It must be obvious, also, that there is not only a distinction, but a wide difference, between one who merely invents a new method or process by which a well known fabric, product, or manufacture is produced in a cheaper or better way, and the discovery of a new compound, substance, or manufacture, having qualities never found to exist together in any other material. In the first case, the inventor can patent nothing but his process, and not his composition of matter. In the latter, both are new and original, and both patentable, not severally, but as one discovery or invention. It is evident, also, that the question of infringement must, in such cases, depend on different condi-

These instruments, therefore, may be either new or old. If new, they are separate and complete inventions, even though useless outside of the art for which they were devised. Though old, the art in which they are now used may nevertheless be new. For the same reason these instruments may be either natural or artificial. The elements, the earth, the

tions. Steel is a well-known substance. Any one who could devise a new and cheaper method of combining the iron and carbon in order to form it could patent his process only; and every other person would be at liberty to devise any different process for effecting the same purpose. But if steel, as a substance, was before unknown, the person who first discovered that a composition of iron and carbon could be made to assume such valuable qualities, would have a right to patent not only his process, but his product. And no person who had thus taken the benefit of the patentee's discovery, and by it was informed of the valuable qualities of this compound of iron and carbon, could, by varying or improving the mode or process of its production, rob the patentee of his franchise." 1 Fisher, 626 (632).

In Foote *v.* Silsby (1851), 2 Blatch. 260, Nelson, J.: (264) "Where a party has discovered a new application of some property in nature never before known or in use, by which he has produced a new and useful result, the discovery is the subject of a patent, independently of any peculiar or new arrangement of machinery for the purpose of applying the new property in nature; and hence the inventor has a right to use any means, old or new, in the application of the new property to produce the new and useful result, to the exclusion of all other means."

That the process and instrument used are two different inventions, see also Dollbear *v.* American Bell Telephone Co. (1888), 43 O. G. 377; Phillips *v.* Kochert (1887), 31 Fed. Rep. 39; Eastern Paper Bag Co. *v.* Standard Paper Bag Co. (1887), 30 Fed. Rep. 63; 41 O. G. 231; New Process Fermentation Co. *v.* Maus (1887), 122 U. S. 413; 39 O. G. 1419; Scrivner *v.* Oakland Gas Co. (1884), 22 Fed. Rep. 98; 10 Sawyer, 390; New Process Fermentation Co. *v.* Koch (1884), 21 Fed. Rep. 580; 29 O. G. 535; Nichols *v.* Ross (1849), 8 C. B. 679.

That a process may be new though the apparatus is old, see Lawther *v.* Hamilton (1888), 42 O. G. 487; New Process Fermentation Co. *v.* Maus (1887), 122 U. S. 413; 39 O. G. 1419; Celluloid Mfg. Co. *v.* American Zylonite Co. (1887), 31 Fed. Rep. 904.

That an improvement in the apparatus used does not constitute a new process, see Lawther *v.* Hamilton (1884), 21 Fed. Rep. 811; 29 O. G. 449.

That a patentable process must have an existence distinct from the apparatus that performs it, see *Ex parte* Herr (1887), 41 O. G. 463.

That the process and product are two different inventions, see Excelsior Needle Co. *v.* Union Needle Co. (1885), 23 Blatch. 147; Tucker *v.* Dana (1881), 7 Fed. Rep. 213; Kelleher *v.* Darling (1878), 4 Clifford, 424; 14 O. G. 673; 3 Bann. & A. 438; Jones *v.* Sewall (1873), 3 Clifford, 563; 6 Fisher, 343; 3 O. G. 630; Waterbury Brass Co. *v.* Miller (1871), 5 Fisher, 48; 9 Blatch. 77; Goodyear *v.* Wait (1867), 3 Fisher, 242; 5 Blatch. 468; Goodyear *v.* Providence Rubber Co. (1864), 2 Clifford, 351; 2 Fisher, 499.

animal creation, the members of the human body are as available as the machines and chemical compositions which have resulted from inventive skill.[2] Their action may be positive or negative,— working their changes in material objects by adding to or altering their quantity or qualities, or by subtracting or suspending attributes which otherwise would hinder a desired result.[3] To the inventor of an art the entire universe thus offers itself as his armory, and all the works of God and man are ready to become his instruments. Whatever he may deem it best to use in the practical expression of his idea of means, the idea is not thereby changed, nor can another practise the same art, either by the same or any other instruments, without infringing upon his exclusive rights.

§ 168. An Art may be a Simple Art or a Combination.

An art may consist either of one act alone, or of a series of acts so related to each other as to co-operate in the production of an ultimate result.[1] There is no limit, on the one hand, to the simplicity or, on the other hand, to the complexity of the operations included in the practice of an art,— a single motion

[2] That a new use of the earth, or any other natural object may be a new art, see Andrews *v.* Cross (1881), 8 Fed. Rep. 269 ; 19 Blatch. 294 ; 19 O. G. 1705 ; *Andrews v. Carman* (1876), 9 O. G. 1011 ; 13 Blatch. 307 ; 2 Bann. & A. 277 ; Gilbert & Barker Mfg. Co. *v.* Tirrell (1874), 12 Blatch. 144 ; 8 O. G. 2 ; 1 Bann. & A. 315.

That a method of using heat which accomplishes a new purpose and result is a new process, see Cary *v.* Lowell Mfg. Co. (1887), 40 O. G. 1239.

That to employ the natural instincts of animals to induce them to move a machine is not a new art, see Merrill *v.* Cousins (1866), 26 U. C. Q. B. 49.

[3] That to discover that the presence of the mucous membrane prevents the effectual curing of fish, and to devise or adopt a method of removing it, is a new art of curing fish, see Crowell *v.* Harlow (1880), 1 Fed. Rep. 140 ; 5 Bann. & A. 63.

That to discover that the obstacles to the proper use of a chemical composition are caused by certain impurities therein, and to devise or adopt a method of removing them, constitutes a new and patentable process, see United Nickel Co. *v.* Harris (1878), 17 O. G. 325 ; 3 Bann. & A. 627 ; 15 Blatch. 319.

§ 168. [1] That a new combination of old processes constitutes a new process, see Wallace *v.* Noyes (1882), 23 O. G. 435; 21 Blatch. 83; 13 Fed. Rep. 172 ; Andrews *v.* Carman (1876), 9 O. G. 1011; 13 Blatch. 307 ; 2 Bann. & A. 277 ; Cannington *v.* Nuttall (1871), L. R. 5 H. L. 205 ; Bovill *v.* Keyworth (1857), 7 El. & B. 725.

of the human arm, or of some little instrument, as often constituting a new means as the prolonged action of many pieces of intricate machinery.

§ 169. Essential Attributes of an Art.

The essential attributes of an art reside either in the nature of the acts of which it is composed, or in their relation to the object upon which they act, or in the mode of their co-operation with each other. Where the art consists of a single act, the characteristics which distinguish it from every other art are found either in the nature of the act alone, or in its relation to the object upon which it operates; and such an act is a new art only when the act itself is new, or when it is for the first time directed toward an object whose susceptibility to its influence was hitherto unknown. Where it is composed of several acts, its essence is to be sought not only in the nature of the acts themselves, and in their individual relation to their common object, but also in their relation to each other, or the method in which they co-operate in the production of their joint result. This relation to each other may consist in the operation of one act upon another, modifying in some manner its natural activities, or in the simultaneous or successive influence exerted by these acts upon their common object; and may depend on the mere order of performance, or even on the interruption of one act by another at a particular period in its execution.

§ 170. An Art a Unit: its Unity how Destroyed.

An art, like every other invention, is a unit. Whatever number of acts it may employ, it is still one; and any variation in the number or the character of its elements which introduces a different idea of means constitutes a different art, and, if hitherto unknown, a new invention.[1] Thus the addi-

§ 170. [1] In New Process Fermentation Co. *v.* Maus (1884), 20 Fed. Rep. 725, Drummond, J.: (732) "Where, in a process, there is a combination of different substances, and to that combination another substance or element is added, by which a new result is obtained, that is a process which we can easily understand; and if unknown before, and it is useful, the person devising it may be entitled to a patent. . . . If a process exists which consists of different steps

tion to an existing art of a single step by which its essential character is changed, or the omission of one act which was a necessary element in the art as previously practised, or even a material alteration in the order of the acts performed, is sufficient to destroy its unity, and produce another art which is entitled to the same protection as the old.

§ 171. An Art not Complete until Reduced to Practice.

Although an art cannot be permanently embodied in a tangible form, it is no more the subject of a patent before it is reduced to practice than is an article of manufacture.[1] Indeed, the rule which governs this part of the inventive act seems to be more stringent in reference to an art than in regard to any other species of invention. An instrument may perhaps be considered as completed, within the meaning of the law, when it has been so far perfected as to be capable of

created by machinery, and there is an improvement in that process caused by a new element added to or taken away from the machinery, then, the process existing and being known, the party who added or took away the part of the machinery might, if it were useful, be entitled to a patent, not for the process which formerly existed and was well known, but only for that which had been added to or taken from the mechanism."

That no change in the proportions of materials used in a process will affect its identity, if it operates in the same way to produce the same result, see Rumford Chemical Works *v.* Lauer (1872), 10 Blatch. 122; 5 Fisher, 615; 3 O. G. 349.

That the omission of one step hitherto regarded as necessary to a process may constitute a new process, see Hammerschlag Mfg. Co. *v.* Judd (1886), 28 Fed. Rep. 621; Heller *v.* Bauer (1884), 19 Fed. Rep. 96; Arnold *v.* Phelps (1884), 20 Fed. Rep. 315; 29 O. G. 538; Hammerschlag *v.* Garrett (1882), 10 Fed. Rep. 479; 21 O. G. 1199; Dittmar *v.* Rix (1880), 17 O. G. 973; 1 Fed. Rep. 342; 5 Bann. & A. 240; Booth *v.* Kennard (1856), 1 H. & N. 527.

That a substantial alteration in one step in a process may make a new process, see Cotter *v.* New Haven Copper Co. (1882), 13 Fed. Rep. 234; 23 O. G. 740.

That the materials used in a process are "similar" to each other when they act or are acted on, in that process, in the same way, see American Wood Paper Co. *v.* Fibre Disintegrating Co. (1868), 3 Fisher, 362; 6 Blatch. 27.

§ 171. [1] That a process resting in idea only, no means being devised or adopted for carrying it into operation, is not a complete invention, see Downton *v.* Yaeger Milling Co. (1880), 1 McCrary, 26; 5 Bann. & A. 112; 17 O. G. 906; 1 Fed. Rep. 199.

That a process cannot be fully invented until apparatus is constructed by which the process can be performed, see Eastern Paper Bag Co. *v.* Standard Paper Bag Co. (1887), 30 Fed. Rep. 63; 41 O. G. 231.

immediate practical employment, though never actually used in the arts, — its capability of use being apparent from an inspection of the instrument itself. But an art cannot become known to the public as a practical means unless it has been tested by actual use, in the manner and for the purpose intended by the inventor; and the law, therefore, should and does require that it shall be subjected to such tests before it can receive the indorsement of a patent.

§ 172. An Art Reducible to Practice in Many Forms: all Identical Inventions.

It is evident from the nature of an art that the form of its embodiment is susceptible of great variations while the essence of the art itself remains unchanged. The acts of which it is composed are the same acts whenever they express the same idea, however they appear to differ from each other; and the essential nature of the acts is not diversified by any substitution of one instrument for another unless a new idea of action is thereby substituted for the old.[1] The scope of an

§ 172. [1] In Piper *v.* Brown (1870), Holmes, 20, Shepley, J.: (22) "It follows, from the law as expounded by the Supreme Court of the United States in Corning *v.* Burden, and in O'Reilly *v.* Morse, 15 How. 62, — where the true distinction between a principle and a process is clearly defined in the explanations given by the court of the case of Neilson *v.* Harford, — that where a result or effect is produced by mechanical action, the patent can ordinarily only be for the mechanical appliances or means employed; where the result is attained or effect produced by chemical action, by the operation or application of some element or power of nature, or of some property in matter, or of one substance to another, then the patent may be for the art, process, or method. It is essential to the validity of the process as an invention, to show how it may be adapted to practical use. In showing this, the inventor may describe mechanical means of applying, or peculiarly shaped vessels for containing, any of the ingredients used in his process or art. But they constitute no part of his invention. Another person may discover new and useful means of applying or using the inventor's process, and be entitled to a patent for that improvement, without the right to use the process. So the inventor himself may discover such new means or invent new appliances, which may be the subjects of a patent to him, separate and apart from his patent for the art itself." 4 Fisher, 175 (179).

That a patent for a process, describing one means for performing it, covers all other methods of performing the same process, see Bridge *v.* Brown (1871), Holmes, 53.

That the use of an old process upon a different object, involving no inventive skill in the use itself, does not affect the identity of the process, see

invention of this class is, therefore, very broad, reaching far beyond the limits of any of the machines or other instruments employed. Hence it is advisable, wherever the nature of an invention will permit, to treat it as an art in which various instruments may be indifferently used, rather than as an instrument itself. This may be done in every art unless the practice of the art consists only in the employment of an instrument which is also the invention of the same inventor.[2]

Brown *v.* Piper (1875), 91 U. S. 37 ; 10 O. G. 417.

That the use of anything in an art, without other invention than the mere employment of it for the first time in that art, is not a change in the art itself, see Morton *v.* N. Y. Eye Infirmary (1862), 5 Blatch. 116 ; 2 Fisher, 320.

[2] Where a process consists entirely in the operation of a machine or other instrument, it approaches so nearly to the function of the instrument employed that several decisions have been rendered identifying it therewith, and hence denying its patentability. But the process and the function are, after all, two entirely separate entities, both in intellectual and physical contemplation ; the former being capable of conception apart from any object acted on, the latter not so. The difficulty is another form of the old confusion between the end and the means, and is to be avoided by defining sharply the end to be accomplished, and determining whether the machine or the operation performed by it is the actual means. For if the operation performed by the machine is new in reference to the object upon which it is employed, a new process has been invented ; and this is no less true if the machine or instrument employed is new than if it were old, or if the process can be performed in no other known way than by this particular machine. While, on the other hand, if the operation is known in reference to the object, the invention of a new machine for performing it does not make a new process, but only a new instrument for applying it. Thus in the art of planing lumber, if the end to be accomplished were the smoothing of the boards, and there were no known methods of attaining this end, the process of smoothing by removing inequalities would be a means, and the inventor of this process would be entitled to a patent for it, no matter what method he may have employed. But it being once apparent that smoothness could be effected by removing inequalities, the removal of inequalities becomes the end, and a process for removing them the means ; and if the process now invented for that purpose be the cutting of the surface by a group of knives applied in a certain speed or order of succession, this also, as a new means, is a new invention. This peculiar excision of the surface now becomes an end, and every machine devised for performing it a means, and at this point invention passes from process into instrument, and every subsequent invention for the same end is only as broad as the new character of the instrument produced. Whether or not a new machine is the reduction to practice of a new process, or is a new instrument for the performance of an old process, is, therefore, to be determined by the state of the art at the date of the invention. If it is the former, the process is patentable, though the machine be new. If the latter, only the machine can be allowed the protection of the law. Thus in New Process

Here, as the art and the operation of the instrument are identical, a patent for the one would effectually protect the other. Such instances are, however, comparatively rare, and the possibility which always exists that some new instrument may be devised, by which the same act could be performed, renders a patent for an art the only sure protection to the inventor. By it, as by no other, he can appropriate to himself the entire benefit of his original conception, and yet remain free to employ in its embodiment every known or imaginable variety of instrument.

SECTION II.

OF A MACHINE.

§ 173. "Machine" Defined.

A machine is an instrument composed of one or more of the mechanical powers, and capable, when set in motion, of producing, by its own operation, certain predetermined physical effects. It is an artificial organism, governed by a permanent artificial rule of action, receiving crude mechanical force from the motive power, and multiplying, or transforming, or transmitting it, according to the mode established by that rule. This rule of action, imposed by the inventor on the material substances of which the machine consists, is what the courts have called the "principle of the machine;"

Fermentation Co. *v.* Koch (1884), 21 Fed. Rep. 580, Brown, J.: (582) "Indeed, we understand the law to be that, where a patent clearly shows and describes a machine whose use necessarily involves the production of a certain process, no other person can afterwards patent that process." 29 O. G. 535 (535).

See, also, that where the process is identical with the *modus operandi* of the machine, the machine alone is patentable, *Ex parte* Herr (1887), 41 O. G. 463; Excelsior Needle Co. *v.* Union Needle Co. (1885), 32 Fed. Rep. 221; 23 Blatch. 147; Dryfoos *v.* Wiese (1884), 26 O. G. 639; 19 Fed. Rep. 315; 22 Blatch. 19; Hatch *v.* Moffitt (1883), 15 Fed. Rep. 252; McKay *v.* Jackman (1882), 20 Blatch. 466; 22 O. G. 85; 12 Fed. Rep. 615; Brainard *v.* Cramme (1882), 20 Blatch. 530; 12 Fed. Rep. 621; 22 O. G. 769; New *v.* Warner (1882), 22 O. G. 587; Goss *v.* Cameron (1882), 11 Bissell, 389; 23 O. G. 741; 14 Fed. Rep. 576; Matthews *v.* Schoneberger (1880), 4 Fed. Rep. 635; 18 Blatch. 357; 18 O. G. 1464.

That the operation of a machine may be a patentable process, see *Ex parte* Herr (1887), 41 O. G. 463; McKay *v.* Dibert (1881), 19 O. G. 1351; 5 Fed. Rep. 587.

a phrase synonymous with "*modus operandi*" and "structural law." It is, however, neither more nor less than the idea of means, which is embodied in the machine itself.[1] It is the conception of a mechanical force operating in a specific manner through agents of a specific character; and the expression of that idea in any one of those specific agents constitutes the patentable machine.

§ 173. [1] In Burr *v.* Duryee (1863), 1 Wall. 531, Grier, J.: (570) "A machine is a concrete thing, consisting of parts, or of certain devices and combinations of devices. The principle of a machine is properly defined to be its 'mode of operation,' or that peculiar combination of devices which distinguish it from other machines."

In Roberts *v.* Ward (1849), 4 McLean: 565 (566) "The word 'principle,' as applied to mechanics, is where two machines or things are made to operate substantially in the same way so as to produce a similar result, they are considered the same in principle." 2 Robb, 746 (748).

In Brooks *v.* Jenkins (1844), 3 McLean, 432 (451) "The word 'principle' is not used here in its general signification, but as applied to the structure of a machine. It means the operative cause by which a certain effect is produced. I observe the board before you is made smooth upon its surface, on one edge of it a groove is formed and on the other a tongue. This has been done by the machine before you in one operation. That machine is formed, as you perceive, by a combination of certain mechanical powers. This combination of powers is what is called the principle of the machine. Now it does not follow that the same effect may not be produced by a machine different in principle from the plaintiff's. But where a similar effect is produced by a combination of the same mechanical powers, though the machines may be somewhat different in their structure, in principle they are the same."

In Smith *v.* Pearce (1840), 2 McLean, 176, the court say: (178) "The principle here spoken of is not a new mechanical power. . . . The principle consists in the mode of applying or combining mechanical powers which produce a certain result." 2 Robb, 13 (16).

In Barrett *v.* Hall (1818), 1 Mason, 447, Story, J.: (470) "The true legal meaning of the principle of a machine, with reference to the patent act, is the peculiar structure or constituent parts of such machine." 1 Robb, 207 (232).

In Whittemore *v.* Cutter (1813), 1 Gallison, 478, Story, J.: (480) "By the principles of a machine (as these words are used in the statute) is not meant the original elementary principles of motion, which philosophy and science have discovered, but the *modus operandi*, the peculiar device or manner of producing any given effect. The expansive powers of steam, and the mechanical powers of wheels, have been understood for many ages; yet a machine may well employ either the one or the other, and yet be so entirely new in its mode of applying these elements as to entitle the party to a patent for his whole combination. The intrinsic difficulty is to ascertain, in complicated cases like the present, the exact boundaries between what was known and used before, and what is new, in the *mode of operation*." 1 Robb, 40 (42).

See also Latta *v.* Shawk (1859), 1 Fisher, 465; 1 Bond, 259; Pitts *v.* Wemple (1855), 1 Bissell, 87; 2 Fisher, 10.

§ 174. Machine how Distinguished from an Art.

A machine thus differs from an art in that the act or series of acts which constitutes the art becomes, in the machine, inseparably connected with a specific physical structure. The idea, which in the one may be temporarily expressed through any instruments capable of performing the act, is in the other permanently expressed in a determinate instrument by which the act is not merely performed, but is performed in an invariable manner.[1] The art is, therefore, the primary conception; the machine, like every other instrument, the secondary,—the idea of the act to be performed necessarily preceding the idea of the special agent to be employed; and the union of the idea of the act with the idea of a particular instrument for performing it is thus a limitation, not an extension, of the scope of the invention.

§ 175. Machine how Distinguished from other Instruments.

A machine differs from all other mechanical instruments in that its rule of action resides within itself.[1] Such other in-

§ 174. [1] The distinction between the "operation" of a machine and its "mode of operation" is a necessary and fundamental one. The former is in its nature an art or process, and if new may be patented as such. See § 172, and notes. The latter is inseparable from the machine itself and cannot be patented apart from some mechanical structure in which it is embodied. It is to the latter only that the decisions hereafter cited can properly refer, although their language is broad enough to cover both. Thus in Burr *v.* Duryee (1863), 1 Wall. 531, Grier, J.: (570) "We find here no authority to grant a patent for a 'principle' or a 'mode of operation' or an *idea* or any other abstraction. . . . A machine is not a principle or an idea. The use of ill-defined abstract phraseology is the frequent source of error. It requires no great ingenuity to mystify a subject by the use of abstract terms of indefinite or equivocal meaning. Because the law requires a patentee to explain the mode of operation of his peculiar machine, which distinguishes it from others, it does not authorize a patent for a 'mode of operation as exhibited in a machine.'" This latter sentence must not be understood to deny that the mode of operation is *covered* by the patent, only that the mode of operation apart from the tangible embodiment, is not patentable subject-matter. See also Hatch *v.* Moffitt (1883), 15 Fed. Rep. 252, and cases named under § 172.

§ 175. [1] In spite of some doubts on the part of judges and law-writers as to the existence of such a distinction as is here indicated between machines and other instruments, it is nevertheless certain that the harmony of the law and the proper application of the decisions of the courts to their subject-matter require it to be drawn. The

struments receive their law of operation as well as their motive power from exterior sources, and act in a variety of methods according to the will of their employer or the *modus operandi* of the machine to which they may be temporarily attached. The structural law of a machine, however, is its

whole doctrine of "*modus operandi*," as the distinguishing element of a machine, is involved in it and inexplicable without it; and it has been sufficiently recognized to place it among the established features of our patent system. Thus in Hammerschlag *v.* Scamoni (1881), 7 Fed. Rep. 584, Blatchford, J.: (589) "In all machinery, the arrangement of it is designed to secure the operation of laws whose operation is certain to follow such arrangement of it, and those certain laws are the laws of nature; and it is because those known laws are certain to follow such arrangement, that the arrangement is made. The arrangement is none the less an invention because it brings into operation the laws of nature." 20 O. G. 75 (76).

So also in Parker *v.* Hulme (1849), 1 Fisher, 44, Kane, J.: (50) "All machines may be regarded as merely devices, by the instrumentality of which the laws of nature are made applicable and operative to the production of a particular result. He who first discovers that a law of nature can be so applied, and having devised machinery to make it operative, introduces it in a practical form to the knowledge of his fellow-men, is a discoverer and inventor of the highest grade, — not merely of the mechanism, the combination of iron, brass, and wood, in the form of levers, screws, or pulleys, but the force which operates through the mechanical medium — the principle — or, to use the synonyme given for this term in the act of 1793, the *character* of the machine, and this title, as a discoverer, he may lawfully assert, and secure to himself by letters-patent; thus establishing his property, not only in the formal device for which mechanical ingenuity can at once, as soon as the principle is known, imagine a thousand substitutes, — some as good, others better, perhaps all dissimilar, yet all illustrative of the same principle, and depending on it, — but in the essential principle which his machine was the first to embody, to exemplify, to illustrate, to make operative, and to announce to mankind."

That a machine is an organization of materials and that its characteristics are in the organism, not in the materials or their arrangement merely, see Bailey Washing & Wringing Mach. Co. *v.* Lincoln (1871), 4 Fisher, 379.

Among the statements which appear to deny this characteristic of a machine, the following may be cited: In Coupe *v.* Weatherhead (1883), 23 O. G., 1927, Lowell, J.: (1928) "The argument that a machine must be automatic in order to be patentable is not sound. A piano is not automatic, nor is any tool or implement intended for use by hand, but improvements in any such tool used in an art or industry are patentable." 16 Fed. Rep. 673 (675). But here it is evident that the term "machine" is employed as a synonyme of "instrument," and not in its technical sense as one class of instruments. A piano is not a machine, though the mechanism which is constituted by each of its keys, in connection with its own hammer, &c., might be so regarded; nor is a tool or an implement characterized by any *modus operandi*, but is an ordinary manufacture. See also *Ex parte* Blythe (1884), 30 O. G. 1321.

one enduring and essential characteristic. It becomes a complete invention only when it is capable of entire practical obedience to this law; and when its power to correspond therewith is interrupted or destroyed, it at once ceases to be the machine on which that law was formerly imposed.

§ 176. Machine may be a Simple Machine or a Combination.

A machine may be either a single organism or a combination of organisms so related to each other as to co-operate, successively or simultaneously, in the production of the required result.[1] When it is composed of parts, none of which

§ 176. [1] In Union Sugar Refinery *v.* Matthiesson & Co. (1865), 3 Clifford, 639, Clifford, J.: (641) "Inventions pertaining to machines may . . . be divided into four classes. First, where the invention embraces the entire machine, as a car for a railway, or a sewing-machine, as was decided by this court in a well-known case. Such inventions are seldom made, but when made, and duly patented, any person is an infringer who, without license, makes or uses any portion of the machine. Under such a patent the patentee holds the exclusive right to make, use, and vend to others to be used, the entire machine; and if another, without license, makes, uses, or vends any portion of it, he invades the right of the patentee. The second class of inventions referred to are those which embrace one or more of the elements of the machine, but not the entire machine; as the coulter of the plough, or the divider of the reaping-machine. In patents of that class any person may make, use, or vend all other parts of the machine or implement, and he may employ a coulter or a divider in the machine mentioned, provided it be substantially different from that embraced in the patent. The third class of machines which are to be mentioned are those which embrace both a new element, and a new combination of elements previously used and well-known. The property in the patent in such a case consists in the new element and in the new combination. No one can lawfully make, use, or vend the machine containing such new element or such new combination. They may make, vend, or use the machine without the patented improvements, if it is capable of such use; but they cannot use either of those improvements, without making themselves liable as infringers. The fourth class of machines to be mentioned are those where all the elements of the machine are old, and where the invention consists in a new combination of those elements, whereby a new and useful result is obtained. Most of the modern machines are of this class, and many of them are of great utility and value." 2 Fisher, 600 (605).

That any new combination or organization of old mechanical elements may be a machine, see Wintermute *v.* Redington (1856), 1 Fisher, 239.

But that no co-operation between the product and the machine while in action will make the two together a new machine, see Dederick *v.* Cassell (1881), 20 O. G. 1233; 9 Fed. Rep. 306.

That the combination of two existing machines is patentable, see Holliday *v.* Rheem (1852), 18 Penn. St. 465.

without all the others constitute a machine, or when certain of its parts form a complete machine but the other portions, whether taken singly or together, are incapable of organic action, the machine is a single organism. But when two or more machines, each in itself complete and operating in accordance with its own law, are united in a new organism the elemental machines of which co-operate to effect a single result, their union forms a combination, which is a new machine with a new rule of action, distinct in law as well as in mechanics from any and from all of the subordinate machines of which it is composed.

§ 177. Machine Distinct from its Integral Parts or Elements.

As its rule of action is the only essential characteristic of a machine, its various parts if it be a single organism, or if it be a combination its elemental machines, may either be original with its inventor or may be borrowed by him from nature or from the inventions of other men.[1] A union of old parts, or a combination of old machines, is as truly a new machine, provided the rule of action be new, as if all the parts or elements were previously unknown. In like manner, the force employed as the motive power of the machine, and the effect produced by it in the objects upon which it acts, may be old or new; for the machine still operates in obedience to its inherent law, from whatever source its energies are drawn, and on whatever substance its activities are exercised.

§ 178. Essential Attributes of a Machine.

The essence of a machine thus consists of its principle, or structural law. Its shape, appearance, size, materials, and arrangement are of no importance, except as they control its mode of operation.[1] No change in any of its parts, no sub-

§ 177. [1] That it is not necessary that every part of a machine be invented by the patentee, see Holliday *v.* Rheem (1852), 18 Penn. St. 465.

§ 178. [1] In Union Paper Bag Machine Co. *v.* Murphy (1877), 97 U. S. 120, Clifford, J.: (125) "The court or jury, as the case may be, are not to judge about similarities or differences by the names of things, but are to look at the machines or their several devices or elements in the light of what they do, or what office or function they perform and how they perform it, and to find that one thing is substantially the same as another if it performs sub-

stitution of a new part for an old where the same office is performed by both, or of another motive power for that origi-

stantially the same function in substantially the same way to obtain the same result, always bearing in mind that devices in a patented machine are different, in the sense of the patent law, when they perform different functions, or in a different way, or produce a substantially different result. Nor is it safe to give much heed to the fact that the corresponding device in two machines, organized to accomplish the same result, is different in shape or form, the one from the other, as it is necessary in every such investigation to look at the mode of operation or the way the device works, and at the result as well as at the means by which the result is attained. Inquiries of this kind are often attended with difficulty ; but if special attention is given to such portions of a given device as really do the work, so as not to give undue importance to other parts of the same, which are only used as a convenient mode of constructing the entire device, the difficulty attending the investigation will be greatly diminished, if not entirely overcome." 13 O G. 366 (367).

In Union Sugar Refinery *v.* Matthiesson & Co. (1865), 3 Clifford, 639, Clifford, J. : (663) " In determining that question, you are not to determine about similarities or differences merely by the names of things ; you are to look at the machines and their several devices and elements in the light of what they do, or what office or function they perform, and how they perform it ; and to find that a thing is substantially the same as another if it performs substantially the same function or office in substantially the same way, to attain substantially the same result ; and that the things are substantially different when they perform different duties in substantially a different way, or produce a substantially different result. For the same reasons you are not to judge about similarities or differences merely because things are apparently the same or apparently different in shape or form ; but the true test of similarity or difference in making the comparison is the same in regard to shape or form as in regard to name, and in both cases you must look at the mode of operation, — the way that the parts work, and at the result, as well as at the means by which the result is attained. In all your inquiries about the mode of operation of other machines, you are to inquire about and consider more particularly those portions of the particular part or element which really do the work, so as not to attach too much importance to the other portions of the same part, which are only used as a convenient method of constructing the entire part or device. You will regard a well-known substantial equivalent of a thing as being the same as the thing itself ; so that, if two machines, having the same mode of operation, do the same work in substantially the same way, and accomplish the same result, they are the same. And so, also, if the parts of two machines, having the same mode of operation, do the same work in substantially the same way, and accomplish substantially the same result, those parts are the same, although they may differ in name, form, or shape. But in both cases, if the two things perform a different work, or in a way substantially different, or do not accomplish the same result, then they are substantially different." 2 Fisher, 600 (626).

In Eames *v.* Cooke (1860), 2 Fisher, 146, Sprague, J. : (148) " In comparing the plaintiff's patent with any other machine in order to determine whether

nally employed by the inventor, although such change or substitution may increase the speed, capacity, or usefulness of the

the mechanism is the same, we must first see whether such other contains substantially the same devices, and if it does, then whether the arrangement or mode of applying them is substantially the same. . . . If either the devices or the mode of applying them, in any other machine, be substantially different from the plaintiff's, then it is not the same. In order to determine whether the mechanism of any other machine is the same as the plaintiff's, we may not only look at the mechanism itself, — that is, the devices and the arrangement of them, — but also at their mode of operation, and their effects or results. If the mode of operation be different, it is evidence that the mechanism is different. Or, if the result be different, then, reasoning from effects to causes, we may presume that some new instrumentality has been introduced. If, upon examining the mechanism, we find that it is substantially different in two machines, then they are not the same, although they may produce the same result. That would be the common case where the same end is attained by different processes or instrumentalities. But, if a materially different result is reached, it is evidence of some new course or means, although the mechanism may, apparently, be substantially the same. Hence a greater degree of utility being achieved by one machine is evidence, and sometimes conclusive evidence, of novelty in the means or instrumentalities which are used."

In Latta *v.* Shawk (1859), 1 Fisher, 465, Leavitt, J.: (470) "On the question of identity the law regards substance and not form, and the real question is, whether the machine used by the defendant is in *principle* the same as that patented to the plaintiff. . . . By the term 'principle of a machine' we understand its mode or manner of operation, and hence there may be two structures widely different in appearance or dimensions, and yet identically the same in principle." 1 Bond, 259 (264).

In Foss *v.* Herbert (1856), 1 Bissell, 121, Drummond, J.: (126) "A machine is an infringement of another if it incorporates in its structure and operation, the substance of the invention; that is, by an arrangement of mechanism which performs the same service, or produces the same effect in the same way, or substantially the same way. Mere colorable alterations, or adroit evasions, by substituting one mechanical equivalent for another in the combination which constitutes the machine, should never be allowed to protect a party. . . . (127) The question to be determined is, whether, under a variation of form, or by the use of a thing which bears a different name, the defendant accomplishes, in his machine, the same purpose, object or effect, as that accomplished by the patentee, or whether there is a real change of structure and purpose." 2 Fisher, 31 (36).

In Tatham *v.* Le Roy (1852), 2 Blatch. 474, Nelson, J.: (488) "It will be seen from these observations, that a difference in the mechanical arrangement and construction of the two machines is not necessarily a test by which to determine that the two are not identical. They may be, apparently, very different externally, and still embrace the same substantial identity in principle or mode of operation. So, on the other hand, the converse of the proposition is equally true. The two may, apparently, be very similar externally, and still in principle and mode of operation be very different. I do not know any better mode of examining a question of this kind, than to inquire

machine, can alter its essential character, as long as it still operates according to the same inherent law. Yet greater

whether the mechanical arrangement and construction of the two embrace the same set of ideas, the same leading features or ideas, which, in practical operation, produce the useful result. In other words, whether the arrangement and combination of the parts of machinery found in each are substantially the same, and operate in substantially the same way in producing the result. Hence, the real question in this case, as it respects the identity of the two machines, looks simply to their mechanical arrangement and construction, as to whether or not the defendant's incorporates, in its structure and operation, the spirit and substance of the plaintiff's improvement; that is, uses the arrangement and mechanism of the plaintiff's to perform the same functions or produce the same effect in the same way, or substantially the same way."

In Barrett *v.* Hall (1818), 1 Mason, 447, Story, J.: (470) "In the minds of some men, a principle means an elementary truth, or power, so that in the view of such men, all machines which perform their appropriate functions by motion, in whatever way produced, are alike in principle, since motion is the element employed. No one, however, in the least acquainted with law, would for a moment contend that a principle in this sense is the subject of a patent; and if it were otherwise, it would put an end to all patents for all machines which employed motion, for this has been known as a principle, or elementary power, from the beginning of time. The true legal meaning of the principle of a machine, with reference to the patent act, is the peculiar structure or constituent parts of such machine. And in this view the question may be very properly asked, in cases of doubt or complexity, of skilful persons, whether the principles of two machines be the same or different. Now the principles of two machines may be the same, although the form or proportions may be different. They may substantially employ the same power in the same way, though the external mechanism be apparently different. On the other hand, the principles of two machines may be very different, although their external structure may have great similarity in many respects." 1 Robb, 207 (231).

In Evans *v.* Eaton (1818), 3 Washington, 443, Washington, J.: (449) "We take the rule to be, and so it has been settled in this and other courts, that, if the two machines be substantially the same, and operate in the same manner, to produce the same result, though they may differ in form, proportions, and utility, they are the same in principle; and the one last discovered has no other merit than that of being an improved imitation of the one before discovered and in use, for which no valid patent can be granted to any one; &c." 1 Robb, 193 (199).

In Odiorne *v.* Winkley (1814), 2 Gallison, 51, Story, J.: (54) "It is often a point of intrinsic difficulty to decide whether one machine operates upon the same principles as another. In the present improved state of mechanics, the same elements of motion, and the same powers must be employed in almost all machines. The lever, the wheel, and the screw, are powers well known; and if no person could be entitled to a patent who used them in his machine, it would be in vain to seek for a patent. The material question, therefore, is not whether the same elements of motion, or the same component parts are used, but whether the given effect is produced substantially by

usefulness or an increased economy of time or power may, in the absence of all other evidence, sometimes suffice to demonstrate that the structural law itself has undergone a change, and therefore that a new machine has been created.

the same mode of operation and the same combination of powers in both machines." 1 Robb, 52 (55).

Further, that identity of machines consists in identity of principle or mode of operation, see Morley Sewing Mach. Co. *v.* Lancaster (1885), 23 Fed. Rep. 344; Blanchard *v.* Puttman (1867), 2 Bond, 84; 3 Fisher, 186; Cahoon *v.* Ring (1859), 1 Fisher, 397; 1 Clifford, 592; Foss *v.* Herbert (1856), 1 Bissell, 121; 2 Fisher, 31; Sickels *v.* Borden (1856), 3 Blatch. 535; Blanchard *v.* Beers (1852), 2 Blatch. 411; Parker *v.* Stiles (1849), 5 McLean, 44; Brooks *v.* Bicknell (1844), 3 McLean, 432; Evans *v.* Eaton (1822), 7 Wheaton, 356; 1 Robb, 336.

The same proposition is stated by the courts in various ways. Thus, for example, that machines are identical when they perform the same function, or attain the same result in the same way, see Cantrell *v.* Wallick (1886), 117 U. S. 689; 35 O. G. 871; Holly *v.* Vergennes Mach. Co. (1880), 4 Fed. Rep. 74; 18 Blatch. 327; 18 O. G. 1177; Wicke *v.* Ostrum (1880), 103 U. S. 461; 19 O. G. 867; Tatham *v.* Le Roy (1852), 2 Blatch. 474; Brooks *v.* Bicknell (1844), 3 McLean, 432.

That differences in the shape of the parts of the machine do not disturb its identity, if the mode of operation remains unchanged, see Blanchard *v.* Puttman (1867), 3 Fisher, 186; 2 Bond, 84; Sickels *v.* Borden (1856), 3 Blatch. 535; Wilson *v.* Barnum (1849), 2 Fisher, 635; 2 Robb, 749.

That difference in the arrangement of parts does not destroy the identity of the machine unless its structural law is changed, see Ives *v.* Hamilton (1875), 92 U. S. 426; 10 O. G. 336; Florence Sewing Mach. Co. *v.* Grover & Baker Sewing Mach. Co. (1872), 110 Mass. 70; Roberts *v.* Ward (1849), 4 McLean, 565; 2 Robb, 746.

That mode of use does not change the machine unless the structural law is also changed, see Sewing Mach. Co. *v.* Frame (1884), 24 Fed. Rep. 596; 28 O. G. 96.

But that any change producing a new result indicates a change in the mode of operation, and hence produces a new machine, see Sewing Mach. Co. *v.* Frame (1884), 24 Fed. Rep. 596; 28 O. G. 96; Barber *v.* Hallett (1879), 20 O. G. 449; 10 Fed. Rep. 130.

And that even a change in the rapidity or economy with which the machine operates may show the existence of a new mode of operation, see Gallahue *v.* Butterfield (1872), 2 O. G. 645; 10 Blatch. 232; 6 Fisher, 203.

That such a change in a machine that it requires fewer persons to operate it indicates that it is a different machine, see Coupe *v.* Weatherhead (1883), 23 O. G. 1927; 16 Fed. Rep. 673.

That changes in the materials of which a machine is composed, unless affecting the principle on which it operates, do not disturb its identity, see Bailey Washing & Wringing Mach. Co. *v.* Lincoln (1871), 4 Fisher, 379.

That to omit some parts of a machine and add others may make a new machine, see Coupe *v.* Weatherhead (1883), 23 O. G. 1927; 16 Fed. Rep. 673.

§ 179. Machine a Unit: its Unity how Destroyed.

The unity of a machine also resides in the same rule of action. Whether composed of a single organism or of several subordinate organisms, as a machine it is a unit, and is destroyed whenever any change, addition, or withdrawal of its elements results in the alteration of its structural law.[1]

§ 179. [1] All the cases cited in the notes to § 178 bear upon this question of the unity of a machine. In addition thereto are the following, equally germane perhaps to the doctrines of identity and individuality. In Seymour *v.* Osborne (1870), 11 Wall. 516, Clifford, J.: (548) "Particular changes may be made in the construction and operation of an old machine so as to adapt it to a new and valuable use not known before, and to which the old machine had not been, and could not be, applied without those changes; and under those circumstances, if the machine, as changed and modified, produces a new and useful result, it may be patented, and the patent will be upheld under the existing laws. Such a change in an old machine may consist merely of a new and useful combination of the several parts of which the old machine is composed, or it may consist of a material alteration or modification of one or more of the several devices which entered into its construction, and whether it be one or the other, if the change of construction and operation actually adapts the machine to a new and valuable use not known before, and it actually produces a new and useful result, then a patent may be granted for the same, and it will be upheld as a patentable improvement."

In Stainthorp *v.* Humiston (1864), 4 Fisher, 107, Hall, J.: (110) "Upon the question of identity of machines, or of mechanical devices, whenever that question arises in a patent case, the mode of operation and the result produced are important considerations; and if the modes of operation and the results produced are both clearly and substantially different, when the material or substance brought under their operation is the same, the question of identity must ordinarily, at least, be determined in the negative; and this is generally true, whether the invention patented is an organized machine, or an improvement upon an existing machine; and whether the patent is for a machine or a mechanical device, new in all its parts, or merely for a combination of two or more well known existing machines or mechanical devices."

In Brooks *v.* Bicknell (1843), 3 McLean, 250, McLean, J.: (262) "It may be proper, however, to remark, that a mere colorable or slight alteration of a machine, or a change in its proportions, gives no ground for a patent; nor can it shelter an individual from the consequences of an infringement. In such cases the inquiry always is, whether the principle of the two machines is the same. If the principle on which the machinery works is the same, and the effect is similar in both, in contemplation of law the machines are identical. A change in the position of the operating powers or in the thing on which the effect is produced, is of no importance. Such a modification does not rise to the dignity of an invention. There must be an essential difference in the application of the mechanical power, to make the machines dissimilar." 2 Robb, 118 (130).

That the principle is the essence of the machine, and may remain the same though the machine be apparently much

While this law remains undisturbed, any such change, addition, or subtraction is at the most an improvement on the old machine, however marked may be the effect produced upon its shape or usefulness. But when the increase or withdrawal of its parts introduces a new law or mode of operation, with or without a change in shape or usefulness, the unity of the machine disappears and a new instrument is substituted for the old.

§ 180. Machine not Complete until Reduced to Practice.

Although the *modus operandi* is thus the essence of the machine, it becomes entitled to protection by a patent only when reduced to practice and embodied in an operative instrument.[1] An operative instrument is one capable of immediate practical use in the arts, in the manner proposed by its inventor. The expression of his idea in language, drawings, or a model does not fulfil the requirements of the law. A machine must be constructed of sufficient size, strength, and capacity to serve

changed, see Smith *v.* Higgins (1859), 1 Fisher, 537.

That no change in the mode of use of the machine can make it a different machine unless the principle be changed, see Sewing Mach. Co. *v.* Frame (1884), 24 Fed. Rep. 596; 28 O. G. 96; Boston Elastic Fabrics Co. *v.* East Hampton Rubber Thread Co. (1874), Holmes, 372; 5 O. G. 696; 1 Bann. & A. 222.

That unless the organism be changed the unity of the machine is not affected, see Seymour *v.* Marsh (1872), 6 Fisher, 115; 9 Phila. 380; 2 O. G. 675.

And that the introduction into a compound machine of one new operating agency does change the principle and destroy the unity, see Sanford *v.* Merrimac Hat Co. (1876), 4 Clifford, 404; 10 O. G. 466; 2 Bann. & A. 408; Le Roy *v.* Tatham (1859), 22 How. 132.

§ 180. [1] That the inventive act is complete only when an operative machine is produced, see Knox *v.* Loweree (1874), 6 O. G. 802; 1 Bann. & A. 589; Burr *v.* Duryee (1863), 1 Wall. 531; Hayden *v.* Suffolk Mfg. Co. (1862), 4 Fisher, 86; Winans *v.* N. Y. & Harlem R. R. Co. (1855), 4 Fisher, 1; Pitts *v.* Wemple (1855), 2 Fisher, 10; 1 Bissell, 87.

That the machine, if clearly capable of use, need not have been actually operated in public, see Knox *v.* Loweree (1874), 6 O. G. 802; 1 Bann. & A. 589; Wheeler *v.* Clipper Mower & Reaper Co. (1872), 2 O. G. 442; 10 Blatch. 181; 6 Fisher, 1; Hayden *v.* Suffolk Mfg. Co. (1862), 4 Fisher, 86; Pitts *v.* Wemple (1855), 2 Fisher, 10; 1 Bissell, 87.

That a rude machine, made for experiment and then abandoned, is not a practically operative machine, see Gottfried *v.* Phillip Best Brewing Co. (1879), 17 O. G. 675; 5 Bann. & A. 4.

But that the machine need not be perfect provided it be practically operative, see Wheeler *v.* Clipper Mower & Reaper Co. (1872), 2 O. G. 442; 10 Blatch. 181; 6 Fisher, 1.

as an effective means for the accomplishment of its predetermined end. Its sufficiency, if not apparent on its face, must be demonstrated by such tests as prove its readiness for immediate public use. But otherwise than for the purposes of such demonstration, it need not have been actually employed; nor is it necessary that its mechanical execution be so perfect as to leave no room for further improvement.

§ 181. Machine Reducible to Practice in Many Forms: all Identical Inventions.

It is evident that the structural law or idea of means embodied in a machine must often be capable of expression through several mechanical structures, differing from each other either in the shape, the number, or the arrangement of their subordinate parts. Each of these different structures is, however, the same machine. The inventor may select whatever form he chooses for the embodiment of his idea, but all its various forms are supposed to be present to his mind, and to be equally his property with that which he adopted and delineated in his application for a patent. And therefore his letters-patent, when obtained, protect him as effectually against all other possible embodiments of the same structural law as against the imitation or appropriation of the one he has described.

SECTION III.

OF A MANUFACTURE.

§ 182. "Manufacture" Defined.

A manufacture is an instrument created by the exercise of mechanical forces and designed for the production of mechanical effects, but not capable, when set in motion, of attaining by its own operation to any predetermined result. It has no inherent law which compels it to perform its functions in a given method, but receives its rule of action from the external source which furnishes its motive power. In this absence of "principle" or "*modus operandi*" lies the distinction

between a manufacture and a machine, — the former requiring the constant guidance and control of some separate intelligent agent, the latter operating under the direction of that intelligence with which it was endowed by its inventor when he imposed on it its structural law.

§ 183. "Manufactures" a Comprehensive Class of Inventions.

The species of inventions belonging to this class are very numerous, comprehending every article devised by man except machinery upon the one side, and compositions of matter and designs upon the other. Thus the parts of a machine considered separately from the machine itself, all kinds of tools and fabrics, and every other vendible substance which is neither a complete machine nor produced by the mere union of ingredients, is included under the title "manufacture."[1] The mechanical effects which they are intended to produce are of all varieties, from the simple interruption of the action of natural forces to the direction and application of forces artificially developed. In this wide field of inventions many articles must, of course, be found lying so close to the dividing line that doubt may well arise whether they do not more properly belong to the class which follows or precedes it; but even here careful attention to the exact idea of means which the inventor has intended to express will usually remove all ambiguity.

§ 184. Manufacture Distinct from its Component Substances and from the Means Employed in its Production.

A manufacture is an entity distinct from the substances of which it is composed, and from the instruments or art by which it is produced.[1] It is an instrument by itself, embody-

§ 183. [1] That an article of ornament, if of new utility also, may be a manufacture, see Simpson *v.* Davis (1882), 20 Blatch. 413; 12 Fed. Rep. 144.

That a bond and coupon register, in the form of a book, is a manufacture, see Munson *v.* Mayor of N. Y. (1880), 3 Fed. Rep. 338; 18 Blatch. 237; 5 Bann. & A. 486.

That a wood pavement is a manufacture, see Stead *v.* Williams (1843), 2 Web. 126.

§ 184. [1] In Milligan & Higgins Glue Co. *v.* Upton (1874), 4 Clifford, 237, Clifford, J.: (251) "Nothing short of invention or discovery will support a patent for a manufacture, any more than for an art, machine, or composition

ing a separate and complete idea of means, and derives from this idea its own essential character. If known already to the

of matter, as is clearly illustrated in another case decided in this circuit: Merrill *v.* Yeomans, 5 Gaz. 267; where the circuit judge says that a patentee who has invented a process in the arts, whereby an article of manufacture is produced, new in kind and not before known, may separately claim and patent both the art and the manufacture, if both are new and useful in the sense of the patent law; and it is doubtless true, if the thing be new in and of itself, it is patentable as a new manufacture, and that the patent would be infringed by the unlicensed construction or use of the product, though produced by other means than those described in the specifications of the patent. Inventions of the kind are rare, as it much more frequently happens that the process is inseparable from the product, so that the patentee cannot claim the product if produced by hand tools, or by other means substantially different from those employed by the inventor or discoverer. Patentees in the former case may claim the new product without qualification, but in the latter, they should claim the product only when made by the described means or their equivalents, as the process inheres in the manufacture and constitutes an element of the invention." 6 O. G. 837 (842); 1 Bann. & A. 497 (512).

In Wooster *v.* Calhoun (1873), 11 Blatch. 215, Woodruff, J.: (216) "Nor am I prepared to assent to the proposition, that the product of a machine is patentable on the mere ground that it makes an already known article more perfectly than it has been, or can be, made without a machine. The idea being old, men strive to embody it perfectly. Human skill is exhausted in the effort. Human hands, less exact and unvarying in their movements, only approximate perfection. A machine is devised which makes it better than it has ever before been made. Another machine is invented which approaches more nearly. Still another machine is invented which performs, it may be, better, — it may be, not so well. Is the product of the best human skill, in such case, patentable? Is the product of each successive machine patentable? If all the makers are not entitled to a patent for the article, as a product, which of them is entitled? Surely, improvements in degree or quality are not the subject of a patent." 6 Fisher, 514 (516).

In The Wood-Paper Patent (1873), 23 Wall. 566, Strong, J.: (593) "It is quite obvious that a manufacture, or a product of a process, may be no novelty, while, at the same time, the process or agency by which it is produced may be both new and useful, — a great improvement on any previously known process, and therefore patentable as such. And it is equally clear, in cases of chemical inventions, that when, as in the present case, the manufacture claimed as novel is not a new composition of matter, but an extract, obtained by the decomposition or disintegration of material substances, it cannot be of importance from what it has been extracted. There are many things, well known and valuable in medicine, or in the arts, which may be extracted from divers substances. But the extract is the same, no matter from what it has been taken. A process to obtain it from a subject from which it has never been taken may be the creature of invention, but the thing itself, when obtained, cannot be called a new manufacture. It may have been in existence and in common use before the

arts, its production by a new process or by new instruments cannot make it new; nor if unknown is it the less a new invention that the agencies or methods by which it is now evolved are old. As to all the conditions required to render it a patentable invention it must stand or fall alone.

§ 185. Manufacture may be a Simple Manufacture or a Combination.

A manufacture may consist of a single instrument, or of a combination of instruments which act together for a common purpose. The instrument is single where none of the parts of which the manufacture is composed could be used without other parts in the production of mechanical effects. But where two or more single instruments are united in a new instrument, and co-operate with each other in the production of an effect beyond the sum of the effects of the individual instruments, they form a combination which is a new manufacture. The distinction between a combination and an aggregation is

new means of obtaining it was invented, and possibly before it was known that it could be extracted from the subject to which the new process is applied. Thus, if one should discover a mode, or contrive a process, by which prussic acid could be obtained from a subject in which it is not now known to exist, he might have a patent for his process, but not for prussic acid."

That a manufacture is not new and patentable unless the creative act in which it originated is distinct from that required to invent the process or apparatus by which it is made, see Union Paper Collar Co. *v.* Van Deusen (1875), 23 Wall. 530; 7 O. G. 919; Draper *v.* Hudson (1873), 3 O. G. 354; Holmes, 208; 6 Fisher, 327.

That a manufacture, if new in itself, may be patentable, whether the process or apparatus by which it is produced be new or old, see Anilin *v.* Hamilton Mfg. Co. (1878), 13 O. G. 273; 3 Bann. & A. 235; Draper *v.* Hudson (1873), 3 O. G. 354; 6 Fisher, 327; Holmes, 208; Young *v.* Lippman (1872), 2 O. G. 249; 9 Blatch. 277; 5 Fisher, 230; Woodward *v.* Morrison (1872), 2 O. G. 120; Holmes, 124; 5 Fisher, 357.

That a manufacture is an invention distinct from the mode of producing it, see United Nickel Co. *v.* Pendleton (1883), 21 Blatch. 226; 24 O. G. 704.

That a new process producing a new manufacture involves two separate inventive acts, see Tucker *v.* Dana (1881), 7 Fed. Rep. 213; *Ex parte* Bancroft (1881), 20 O. G. 1893.

That to make an article by a new process or new apparatus is not to produce a new manufacture, see McCloskey *v.* Dubois (1881), 19 Blatch. 205; 8 Fed. Rep. 710; 19 O. G. 1286; 20 O. G. 371; McCloskey *v.* Dubois (1881), 20 Blatch. 7; 9 Fed. Rep. 38; Anilin *v.* Hamilton Mfg. Co. (1878), 13 O. G. 273; 3 Bann. & A. 235; Draper *v.* Hudson (1873), 6 Fisher, 327; 3 O. G. 354; Holmes, 208; Rex *v.* Else (1735), 1 Web. 76; 1 Abb. P. C. 40.

not as easily discerned in this class of inventions as in the case of a machine. Where two machines, each having its own law of operation, are united, it is not generally difficult to ascertain whether each operates only according to its own peculiar law, or whether by their union a new structural law has been imposed on the conjoined machines, whereby they have become the expression of a new idea of means which severally and collectively they did not suggest. But in a manufacture the law of operation is in the source from which the motive power is drawn; and the action of the instruments in their united state, so far as it depends upon the instruments themselves, often remains the same as before they were united. In such cases the act of the inventor in the collocation of these instruments gives the resulting instrument no new inherent mode of operation, but simply places the collocated instruments in such relations to a common object that under the direction of the external motive power their co-action upon it or upon each other may produce some effect which, if they acted separately, could not be obtained. Thus it may be assumed as to most inventions of this class that a true combination has been formed whenever the action of the combined elements leads to a result essentially distinct from any that could be attained by the employment of the elements in a separated state, although the mode of their co-operation cannot be perceived;[1] while in a machine the principal if not the sole test of the formation of a new combination is to be sought, not in its product or result, but in its manifestation of a new structural law.

§ 185. [1] That a new end or result is accomplished by an art or instrument is conclusive evidence that the art or instrument is also new. Hence when the collocation of two simple manufactures produces an instrument capable of doing what neither manufacture could have done alone, and what both could not have done if each were used independently of the other, this resulting instrument is necessarily a different manufacture, whether the fact or the mode of the co-operation between the combined instruments is otherwise discernible or not. It may well be doubted whether many of the cases which have been decided against the patentees of manufactures on the ground that the instrument claimed was a mere aggregation have not been governed by principles applicable rather to machines than manufactures, and really meritorious inventions been thus denied the protection of the law.

§ 186. Manufacture may be Composed of Known Substances.

The substances of which a manufacture is composed form no part of its essential nature, except so far as their respective properties endow it with its characteristic attributes. The idea embodied in it is an idea distinct from that which is expressed in any of its integral elements, and may be capable of the same embodiment in an instrument composed of different members. That all these substances or elements have long been known, or even that they have previously been associated in an instrument effecting the same end, is immaterial. As in all other cases, the inventor of a manufacture is free to select any sufficient method of embodying his conception of the instrument, and does not imperil his own creation by using the same tangible materials which others have employed.

§ 187. Manufacture Identical however Produced.

Although every manufacture is an instrument essentially distinct in its idea of means from every other instrument, it has sometimes been held that the invention of a method whereby a natural substance can be artificially produced, or a product heretofore too costly for general use can be manufactured at an expense which places it for the first time within reach of the public, entitles the inventor to a monopoly of the substance or the product resulting from the employment of his method, as if it were a new product or substance, legally if not physically different from its natural or costly prototype.[1] This position is manifestly erroneous. The arti-

§ 187. [1] In Stevens *v.* Keating (1847), 2 Web. 181, Pollock, C. B.: (182) "All patents must be for a manufacture. The real invention may be not so much for the thing when produced as for the mode in which it is produced; and its novelty may consist not so much in its existence as a new substance, as in its being an old substance, but produced by a different process. In one sense, an old substance produced by a new process is a new manufacture; of that there cannot be a doubt; and therefore, although the language of the Act has been said to apply only to manufactures and not to processes, when you come to examine it, either literally or even strictly, it appears to me the expression 'manufacture' is free from objection, because, though an old thing, if made in a new way, the very making of it in a new way makes it a new manufacture." And in this country it has been held that to make by artificial means a substance, which as a natural product is already known in the arts, is

ficial or inexpensive substance, or, what is the same thing, the fact that the substance can be artificially or inexpensively produced, may indeed have been discovered by the inventor, but this discovery is not the creation of a means, it is merely the discerning of an end to be accomplished by the method which he has devised. Were the substance itself hitherto unknown an inventive act would be required for its production, but being known its reproduction by a new method cannot change its essential characteristics, nor demand any other exercise of the inventive faculties than such as are engaged in the creation of the method from which it results. While, therefore, the inventor may have added to the stock of scientific knowledge by his discovery that the substance can be manufactured artificially or cheaply, it is not this discovery which confers upon the public any practical advantage. It is only when he discovers and constructs a process or device by which the substance can be artificially or inexpensively supplied, that he increases the industrial appliances of mankind, and brings the fruit of his researches and experiments within the field of patentable inventions.

a new invention both as to the process and the product. See Anilin *v.* Cochrane (1879), 16 Blatch. 155; Anilin *v.* Higgin (1878), 15 Blatch. 290. So also it has been decided that where an article, though produced before, but at so great an expense as to be useless in the arts, is now supplied by a new method or new apparatus so cheaply as to be available for public use, it is to be treated as in itself a new invention, because although known before it was never reduced to practical utility. See Lamb *v.* Hamblen (1882), 11 Fed. Rep. 722; Hammerschlag *v.* Scamoni (1881), 7 Fed. Rep. 584; 20 O. G. 75.

These decisions have, however, now been overruled and the true doctrine stated in Cochrane *v.* Anilin (1884) 111 U. S. 293, where Blatchford, J., says: (311) "It was an old article. While a new process for producing it was patentable, the product itself could not be patented, even though it was a product made artificially for the first time, in contradistinction to being eliminated from the madder root. Calling it artificial alizarine did not make it a new composition of matter, and patentable as such, by reason of its having been prepared artificially for the first time from anthracine, if it was set forth as alizarine, a well-known substance." 27 O. G. 813 (818). See also Wooster *v.* Calhoun (1873), 11 Blatch. 215; 6 Fisher, 514.

That a new form of an old article may be a new manufacture, see Duff *v.* Calkins (1883), 25 O. G. 601.

That to perceive a hitherto unknown quality in an existing substance is not the invention of a new substance, see Ansonia Brass and Copper Co. *v.* Electrical Supply Co. (1887), 32 Fed. Rep. 81; 42 O. G. 1168.

§ 188. Essential Attributes of a Manufacture.

The essence of a manufacture resides in the idea of means which it embodies. A manufacture, being a finished product, usually impresses the observer as a complete realization of the purposes of the inventor, and suggests the idea of an end accomplished rather than that of a means by which an end may be attained. This impression is, however, incorrect. Until applied by some one, a manufacture is as useless as an unemployed machine; and when applied it benefits the public, not by its mere existence nor by its simple application, but by producing some change in the condition of material objects. Those qualities of the manufacture which enable it, when so applied, to produce those changed conditions are the expression of its idea of means, and by these, as a group of attributes, its essential character is manifested. Whenever its shape, materials, size, or proportions are among these attributes they become the necessary features of the invention, and any change in either constitutes a different means.[1] But when unnecessary to enable it to effect such changes of condition, these qualities of the manufacture may be subjected to any number or degree of substitutions and alterations without destroying its identity.

§ 188. [1] In Emerson *v.* Howe (1881), 8 Fed. Rep. 327, Lowell, J.: (329) "In these patents for small articles slight differences are often important; and, if such things are patentable at all, it must almost always be in virtue of a more useful adaptation to the needs of commerce by small changes of structure, which in a great machine might be merely alternate modes of reaching a part of a general result."

In Glue Co. *v.* Upton (1877), 97 U. S. 3, Field, J.: (6) "A distinction must be observed between a new article of commerce and a new article which, as such, is patentable. Any change in form from a previous condition may render the article new in commerce; as powdered sugar is a different article in commerce from loaf sugar, and ground coffee is a different article in commerce from coffee in the berry. But to render the article new in the sense of the patent law, it must be more or less efficacious, or possess new properties by a combination with other ingredients; not from a mere change of form produced by a mechanical division. It is only where one of these results follows that the product of the compound can be treated as the result of invention or discovery, and be regarded as a new and useful article."

That to pulverize or comminute an existing product, involving no change in its actual properties, though rendering it more convenient for transportation and use, is not to invent a new product, see The Milligan & Higgins Glue Co. *v.* Upton (1874), 4 Clifford, 237; 6 O. G. 837; 1 Bann. & A. 497.

§ 189. Manufacture a Unit: its Unity how Destroyed.

A manufacture is a unit to whose existence the presence of each one of its characteristic attributes is necessary. When the manufacture is a simple instrument, the withdrawal of any attribute destroys its unity; and if those which remain constitute an operative means, the means so constituted is a different manufacture from the former. The addition of an attribute, which so far modifies the action of the others that they can no longer produce the same effects, is also the creation of a new instrument and the destruction of the old; while if the former action and effect are still preserved, but have been brought, by the addition, to a higher excellence or a wider application, the unity of the manufacture continues undisturbed, and the addition is a mere improvement. When the manufacture is a combination of several instruments its unity consists in the correlation of its elemental instruments, and is dissolved by the withdrawal of any one of these essential elements, or by the substitution for either of one which is not in the combination the equivalent of that whose place it occupies, or by any rearrangement of the elements which introduces different methods of co-operation, or by the addition of new elements which modify the action of existing elements upon each other, or upon their common object, in such a manner that their action is no longer able to produce the old result. But when the withdrawal, substitution, or addition leaves the previous co-operation of the elements undisturbed, merely enabling them to achieve their joint result in a more perfect or more serviceable manner, an improvement only has been effected, and the unity of the manufacture still remains unbroken.

§ 190. Manufacture not Complete until Reduced to Practice.

Reduction to practice, in reference to this species of inventions, consists in the production of an operative instrument adapted for immediate public use. The requirements in regard to tests and practical employment are the same as those which govern a machine. Whatever may be necessary, in order to establish the sufficiency of the manufacture for the accomplishment of its proposed results, must be performed

by its inventor before his inventive act is considered as complete and his invention becomes entitled to the protection of the law. Sometimes the instrument carries in itself the evidence of its own capabilities; in other cases actual use is indispensable.

§ 191. Manufacture Reducible to Practice in Many Forms: all Identical Inventions.

The inventor of a manufacture, as of other instruments, by the embodiment of his idea in one operative instrument appropriates to himself all other practical expressions of the same idea. The scope of an idea which is embodied in a manufacture may be very broad, as in the case of most generic simple manufactures, or may be very narrow, as in improvements and in combinations. But whether broad or narrow, under whatever form or name it is embodied, it is always the same manufacture, and belongs to the originator of its characteristic idea.

SECTION IV.

OF A COMPOSITION OF MATTER.

§ 192. "Composition" Defined.

A composition of matter is an instrument formed by the intermixture of two or more ingredients, and possessing properties which belong to none of these ingredients in their separate state. An ingredient is a substance which, though capable of independent existence, may yet so far lose its identity and individuality, when mingled with other substances, as no longer to be distinguishable from them. In this respect it differs from a part or element of a machine or manufacture which, however closely united with its associated parts or elements, always preserves its own identity, and is discernible in its independent as well as in its combined condition. The intermixture of ingredients in a composition of matter may be produced by mechanical or chemical operations, and its result may be a compound substance resolvable

into its constituent elements by mechanical processes, or a new substance which can be destroyed only by chemical analysis. Its properties may be entirely new, — never before possessed by any substance, simple or compound; or may be new only in relation to its own ingredients, being essentially distinct from any with which they are separately or collectively endowed.

§ 193. Composition a True Combination.

A composition of matter is always a true combination. Each of its ingredients is itself a means whose operative forces manifest themselves through the chemical or mechanical properties by which it is distinguished. The intermixture of these ingredients results in the co-operation of their respective forces in such a manner as to produce a new force, which is distinct both from the forces of the individual elements and from the sum of their collective forces, and is exhibited in the new qualities with which the composition is endowed. It differs from all other combinations in that its ingredients or elemental means, when once united in the combination, often become individually undiscernible by human sense, and can be recovered and distinguished only by the destruction of the combination as a whole. This difference leads to radical differences in the rules by which the identity of these elemental forces is determined, as will hereafter be particularly explained.[1]

§ 193. [1] Although the rule is often stated to be that chemical and mechanical equivalents rest on the same basis of principle, the statement cannot be taken without material qualification. As will hereafter (§ 254 and notes) appear, the rule which governs equivalents in mechanical combinations is not the same as that which applies to equivalents in a simple machine or manufacture, — the test in the latter case being that the alleged equivalents perform the same function in the mechanism; in the former case, that they perform the same function in the same way. Chemical equivalents generally follow the rule of equivalents in simple instruments, and are equivalent when they discharge the same office in the composition, and were known as such at the date of its invention. See § 254 and notes; also Roots *v.* Hyndman (1873), 6 Fisher, 439; 4 O. G. 29: Rumford Chemical Works *v.* Lauer (1872), 10 Blatch. 122; 5 Fisher, 615; 3 O. G. 349; Woodward *v.* Morrison (1872), 2 O. G. 120; Holmes, 124; 5 Fisher, 357; Poppenhusen *v.* Falke (1862), 2 Fisher, 213; 5 Blatch. 46; Goodyear *v.* Railroad (1853), 2 Wall. Jr. 356; 1 Fisher, 626.

§ 194. Composition Distinct from its Elements and from their Mode of Intermixture.

A composition of matter is a complete and independent means, having an existence distinct from that of the substances of which it is composed, and from the processes by which it is created. Though these substances are old, the composition may be new. Though they have been already grouped together, the forces then called into action and co-operating in that union may have resulted in a different composition. Though the same mode of intermixture may have been employed in reference to various substances, its application to the present elements may produce a compound never previously known. The character of a composition of matter cannot, therefore, be determined from an examination of its elements alone, nor of the method by which they have been combined. It must be judged also by its own intrinsic attributes. While it must be composed of substances, no particular substance is essential unless it is the only one by which the necessary elemental force can be supplied. While some mode of intermixture must be employed, no special mode is indispensable unless the substances can by no other mode be so united that the same properties will be developed in the composition as a whole.

§ 195. Essential Attributes of a Composition.

The essence of a composition of matter resides in the idea of means expressed by the co-operation of its specific elemental forces in the production of its new and characteristic force. While two compositions which possess different properties are essentially distinct, two compositions which possess the same properties are not necessarily the same. Such compositions are identical only when the forces which are manifested through their characteristic properties result from the same co-operation of the same elemental forces; and this requires that the composition should consist of the same grouping of the same ingredients.[1] Ingredients are the same,

§ 195. [1] In Goodyear v. Berry (1868), 3 Fisher, 439, Leavitt, J.: (449) "The principle is conceded that a patent for a mechanical structure or contrivance, producing a new and useful result, is no protection against the use of an invention producing the same result by appliances and on principles substantially different

however they may differ as mere substances, when they furnish to the composition the same elemental force; and groupings of ingredients are the same when in each grouping every elemental force co-operates with every other in the same manner to produce the new resulting force.[2] Hence no addition, substitution, or withdrawal of ingredients can affect the identity of the composition unless it introduces, or removes, or modifies the action of an elemental force; nor can a change in the proportions of ingredients, or in the order of their intermixture, vary the character of the result unless it summons into action, in the same ingredients, some new elemental force or imposes on existing forces some new method of co-operation.[3]

§ 196. Composition a Unit: its Unity how Destroyed.

A composition of matter is a unit, whose integrity depends upon the preservation of the precise union and co-operation

from the patented invention. The rights of the patentee or proprietor of the patent are only invaded by a result like that of his invention, effected by what are substantially the same means. And so in the case of patented chemical combinations; the exclusive right to the invention imports nothing but protection against the use of the same or substantially the same elements, compounded and treated on principles substantially the same as those of the patented article. In brief, a patent right does not cover every possible mode of accomplishing the result proposed by an inventor." 2 Bond, 189 (202).

That compositions are the same where the same or equivalent ingredients are compounded and treated on principles substantially the same, see Francis *v.* Mellor (1871), 5 Fisher, 153; 1 O. G. 48; Goodyear *v.* Berry (1868), 2 Bond, 189; 3 Fisher, 439.

[2] That two substances are not the same ingredient unless they perform the same office in the composition, though chemically they may be the same, see Bridgeport Wood Finishing Co. *v.* Hooper (1880), 5 Fed. Rep. 63; 20 O. G. 156; 18 Blatch. 459.

That substances are the same ingredient when, in reference to the composition, they have similar properties and produce the same effects, see Matthews *v.* Skates (1860), 1 Fisher, 602.

[3] That the addition of substances which do not change the properties, effect, or usefulness of the composition, do not destroy its identity, see Klein *v.* Russell (1873), 19 Wall. 433.

That the substitution of purer materials, rendering the composition more useful, or useful for additional purposes, analogous to the former ones, if the materials perform the same office, is no change of ingredients or of the composition itself, see Buchan *v.* McKesson (1880), 7 Fed. Rep. 100; 19 O. G. 222; 18 Blatch. 485.

That no change in the shape or appearance of a composition destroys its identity while its properties remain unchanged, see Milligan & Higgins Glue Co. *v.* Upton (1874), 4 Clifford, 237; 6 O. G. 837; 1 Bann. & A. 497.

of those elemental forces which are furnished to it by its essential ingredients. Substances which neither supply the composition with an elemental force nor affect the operation of its elemental forces are not ingredients, and may be added, altered, or withdrawn without attacking its integrity.[1] A change in the ingredients or in their mode of intermixture which leaves the elemental forces and their method of co-operation undisturbed, but yet endows the composition with increased efficiency, is an improvement in the existing composition, not a new one. But every modification in the ingredients or the process of combining them, which varies either the number, character, or co-operation of its elemental forces, is a destruction of its unity, and any composition which results from such a modification of another must be essentially different therefrom.[2]

§ 197. Composition Identical however Produced.

A composition of matter, in order to be patentable, must, like a manufacture, differ in its essential characteristics from any substance previously known.[1] The artificial combination

§196. [1] In Loutrel *v.* Mellor (1871), 1 O. G. 48, McKennan, J.: (51) "While characteristic resemblance is preserved they may, perhaps, be considered as identical within the meaning of the patent law, although one of them may not contain some of the constituents of the other, which are not necessary to impart to it its peculiar attributes."

[2] That to change the proportions of the ingredients and thus secure new properties in the resulting composition is a new invention, see Loutrel *v.* Mellor (1871), 1 O. G. 48; Francis *v.* Mellor (1871), 5 Fisher, 153; 1 O. G. 48.

That to add an ingredient producing new properties in the compound makes a new composition, see Rogers *v.* Ennis (1878), 14 O. G. 601; 15 Blatch. 47.

That to omit one essential ingredient makes of the remainder a different composition, see Tarr *v.* Folsom (1874), 1 Bann. & A. 24; 5 O. G. 92; Holmes, 312.

That to discover the causes of defects in a chemical composition, and devise means to remove them, is the invention of a new chemical composition and covers all modes of curing the defects, see United Nickel Co. *v.* Harris (1878), 15 Blatch. 319; 17 O. G. 325; 3 Bann. & A. 627.

That a composition consisting of certain substances of a given quality, mixed in a specific manner, and producing certain resultant properties, is a different composition from one comprising the same substances but mingled without reference to any particular quality or any special mode of mixing, and possessing different properties, see Muntz *v.* Foster (1843), 2 Web. 93, 96.

§ 197. [1] If the position that a manufacture for the first time made accessible to the public is to be regarded as a new manufacture were correct, the same rule would, of course, apply to compositions

of ingredients into a substance which exists in nature is simply a new process for the production of that substance, not the creation of a new substance; and in such cases the process, not the substance, is the patentable invention.

§ 198. Composition not Complete until Reduced to Practice.

Reduction to practice, in reference to a composition of matter, consists in the actual intermixture of those ingredients which are necessary to supply it with its elemental forces, in such a manner that the co-operation of these forces will endow the resulting compound with its essential characteristic properties.[1] The specific substances employed as ingredients are of no consequence, since all substances are the same ingredient when they furnish to the composition the same elemental force. The particular mode of intermixture is also immaterial, since all modes which subject these elemental forces to the required law of co-operation are identical. A practically operative compound must, however, be produced, capable of immediate useful application. Neither recipes, formulæ, nor descriptions are sufficient. Nor, where tests are necessary in order to determine whether or not the composition possesses those properties which constitute its essential character as an operative means, can the invention be re-

also. The lower courts have been divided on this subject. On one hand it has been urged that an artificial substance is not identical either legally or scientifically with a natural substance, though both are composed of the same constituents and possess the same properties. (See § 187, and notes, *ante.*) On the other hand it has been claimed that the only invention in such cases is a process, either consisting in a specific treatment of new objects, or in applying new forces to the treatment of known objects, and that a patent for the process adequately protects the inventor. (See § 187, and notes, *ante.*) The latter view is correct in principle and has recently been sanctioned by the Supreme Court of the United States. (See Cochrane *v.* Anilin (1884), 111 U. S. 293; 27 O. G. 813.) If proper protection is given in the patent to the process by which the artificial substance is produced, the inventor may secure the exclusive right to the artificial substance resulting from his process or from any process equivalent thereto. To go further and award him a patent for the substance, however produced, would create in him a monopoly in the scientific fact which he has discovered, namely, that the substance can be artificially produced, — a fact which is an effect and not a means.

§ 198. [1] That a chemical invention is not complete if experiment is still necessary to render it operative, see Tyler *v.* Boston (1868), 7 Wall. 327.

garded as complete until such tests have been applied and have been successfully endured.

§ 199. Composition Reducible to Practice in Many Forms: all Identical Inventions.

As a composition of matter is a union of elemental forces, each of which may be supplied by various substances, it is evident that the idea of means which it embodies may often be expressed by several combinations composed of different substances or intermingled in different methods. But in such cases all these combinations are the same composition, representing the same intellectual conception and furnishing to the industrial arts the same operative means. All are therefore presumed to have been contemplated by the inventor, whose idea has been reduced to practice in but one, and by his patent for that one all are alike appropriated to his exclusive use.

SECTION V

OF A DESIGN.

§ 200. "Design" Defined.

A design is an instrument created by the imposition upon a physical substance of some peculiar shape or ornamentation which produces a particular impression upon the human eye, and through the eye upon the mind. Its creation involves a change in the substance itself, and not merely in the mode of presenting it for sale; and affects, not its abstract qualities, nor those on which its practical utility depends, but those only which determine its appearance to the sight.[1] Thus, while an

§ 200. [1] In Theberath *v.* Harness Trimming Co. (1883), 23 O. G. 1121, Nixon, J.: (1122) "They differ from patents for inventions or discoveries in this respect, that they have reference to appearance rather than utility. Their object is to encourage the arts of decoration more than the invention of useful products. A picture or design that merely pleases the eye is a proper subject for such a patent, without regard to the question of utility which is always an essential ingredient in an invention or discovery patent." 15 Fed. Rep. 246 (250).

In Gorham Manufacturing Co. *v.* White (1871), 14 Wall. 511, Strong, J.: (524) "The Acts of Congress, which

increase in the beauty of the substance is the purpose of this species of invention, a mere increase in beauty, without an alteration in the shape or ornamentation of the substance, does not possess the characteristics of a design; nor, on the other hand, does a change of shape or ornament intended to increase the practical value of an instrument in the industrial arts, although such change augments the beauty of the instrument, bring it within this species of invention. When a new design is created by the exercise of the inventive faculties, and not otherwise, it is a patentable invention.[2]

authorize the grant of patents for designs, were plainly intended to give encouragement to the decorative arts. They contemplate not so much utility as appearance, and that not an abstract impression or picture, but an aspect given to those objects mentioned in the acts. . . . And the thing invented or produced, for which a patent is given, is that which gives a peculiar or distinctive appearance to the manufacture or article to which it may be applied or to which it gives form." 2 O. G. 592 (593); 6 Fisher, 94 (100).

That a design must be new and original, but not useful, see Miller *v.* Young (1864), 33 Ill. 354.

That a design is a matter of decoration, of "æsthetic 'art," which reaches the mind through the eye, not a matter of industrial utility, see *Ex parte* Schulze-Berge (1888), 42 O. G. 293.

That "utility" in a design is the power to create agreeable sensations through the eye, see *Ex parte* Schulze-Berge (1888), 42 O. G. 293.

That a mere beautiful appearance is not a design, but a new appearance resulting from inventive skill, see Northrup *v.* Adams (1877), 2 Bann. & A. 567; 12 O. G. 430; *Ex parte* Noidringhaus (1875), 8 O. G. 279; 2 MacArthur, 140; Adams *v.* Clementson (1879), L. R. 12 Ch. D. 714; Lazarus *v.* Charles (1873), L. R. 16 Eq. 117.

That the new appearance must result from a change in the substance itself, not merely in the mode of presenting it for sale, see Pratt *v.* Rosenfeld (1880), 18 Blatch. 234; 3 Fed. Rep. 335; 21 O. G. 866.

That a design is an entirely different thing from the substance to which it is applied, see Mulloney *v.* Stevens (1864), 10 L. T. N. S. 100; Norton *v.* Nichols (1859), 1 El. & El. 761.

That a design is patentable though not more beautiful than former ones, see Lehnbeuter *v.* Holthaus (1882), 105 U. S. 94; 21 O. G. 1783.

[2] In Western Electric Mfg. Co. *v.* Odell (1883), 18 Fed. Rep. 321, Blodgett, J.: (322) "I find the law on the subject of design patents so well condensed and stated in a little work lately published by Mr. Simonds, that I cannot do better than read his summary, as stated on page 212: 'For a time it was the practice of the patent-office to grant these design patents for almost any subject-matter presented, and with little or no inquiry as to whether any degree of patentable origination had been exercised. It is now tolerably well settled that design patents stand on as high a plane as utility patents, and require as high a degree of exercise of the inventive or originative faculty. In patentable designs a person cannot be permitted to select an existing form and simply put it to a new use any more than he can be permitted to take

§ 201. Design Distinct from its Component Parts.

A design is to be distinguished both from the elements of which it is composed and from the impression which it makes upon the mind of the observer.[1] Its elements are the lines

a patent for a mere double use of a machine; but the selection and adaptation of an existing form may amount to patentable design as the adaptation of an existing mechanical device may amount to patentable invention.' In support of this enunciation of the law, Mr. Simonds quotes from Wooster *v.* Crane, 2 Fisher, Pat. Cas. 583, as follows: 'The act, although it does not require utility in order to secure the benefit of its provisions, does require that the shape produced shall be the result of industry, effort, genius, or expense, and must also, I think, be held to require that the shape or configuration sought to be secured shall at least be new and original as applied to articles of manufacture.' So, also, in Northrup *v.* Adams, 2 Bann. & A. 567, it is said: 'The same general principles of construction extend to both. To entitle a party to the benefit of the act, in either case, there must be originality and the exercise of the inventive faculty. In the one there must be novelty and utility; in the other, originality and beauty. There must be something akin to genius, — an effort of the brain as well as the hand. The adaptation of old devices or forms to new purposes, however convenient, useful, or beautiful they may be in their new role, is not invention. . . . If a combination of old designs be patentable at all, — of which I have some doubt, — the combination must be such as to produce a new appearance. If the effect produced be simply the aggregation of familiar designs it would not be patentable. For example, if one should paint upon a familiar vase a copy of Stuart's portrait of Washington, it would not be patentable, because both elements of the combination, — the portrait and the vase, — are old; but if "*any new and original impression* or ornament" were placed upon the same vase, it would fall within the express language of the section.' In Gorham Co. *v.* White, 14 Wall. 511, the Supreme Court said: 'In whatever way produced it is the new thing produced which the patent law regards.'"

That there are two kinds of patents, mechanical patents and design patents, see C. A. Yale Cigar Mfg. Co. *v.* Yale (1884), 30 O. G. 1183.

That where industrial utility depends on shape or configuration the invention is a manufacture, not a design, see *Ex parte* Schulze-Berge (1888), 42 O. G. 293.

That a design is not less a design because the substance as shaped has industrial utility, see Kraus *v.* Fitzpatrick (1888), 42 O. G. 1292.

That all patent regulations apply to designs, see Theberath *v.* Rubber & Celluloid Harness Trimming Co. (1883), 23 O. G. 1121; 15 Fed. Rep. 246.

§ 201. [1] The distinction between the design or appearance given to the substance and the means by which it is produced was clearly indicated in the case of Gorham Manufacturing Co. *v.* White. In the Circuit Court (1870), 7 Blatch. 513, Judge Blatchford treated the appearance as the effect, and the arrangement of lines, etc., as the means from which the appearance resulted, and held that the latter, not the former, was the patentable design. Thus he says: (521) "A patent for a design, like a patent for an improvement in machinery, must be for the means of produc-

and images which, when imposed upon the substance, result in the design. But though the design results from these, arranged in certain courses or groupings, they do not enter into its essential character except in cases where no other lines or images could be employed to effect the same apparent change. Every design containing more than one line or image is in its nature a true combination. Each of its elements, when taken by itself, produces an impression on the eye. Combined together, each co-operates with all the others in the creation of a form or decoration which, taken as a whole, makes an impression entirely different from that of either of its separated elements. The essence of a design, therefore, resides not in its elements alone, nor in their method of arrangement alone, but in that appearance which results from the co-operation of these elements as they are employed in the design.

ing a certain result or appearance, and not for the result or appearance itself. . . . Even if the same appearance is produced by another design, if the means used in such other design to produce the appearance are substantially different from the means used in the prior patented design to produce such appearance, the later design is not an infringement of the patented one."

That the appearance given to the substance is an effect of the arrangement of lines, etc., is undoubtedly true; and if the appearance, as predicable of the substance, had been the end to be accomplished by the invention, the decision of the learned judge would have been correct. But the real end to be attained was the impression upon the mind of the observer; that is, the appearance of the substance not in itself but to the eye; and this end is achieved by giving to the substance any appearance which produces this impression. Hence the true means invented and patentable is the aspect assumed by the substance in consequence of the configuration or decoration imposed upon it; and this means is always the same as long as the appearance of the substance is the same, no matter what lines or ornaments be employed to produce it.

This is the view taken by the Supreme Court in the same case (1871), 14 Wall. 511; overruling the decision of Judge Blatchford upon this point. Says Strong, J.: (526) "We are now prepared to inquire what is the true test of identity of design. Plainly it must be sameness of appearance, and mere difference of lines in the drawing or sketch, a greater or smaller number of lines or slight variances in configuration, if insufficient to change the effect upon the eye, will not destroy the substantial identity. An engraving which has many lines may present to the eye the same picture, and to the mind the same idea or conception, as another with much fewer lines. The design, however, would be the same. . . . The same conception was in the mind of the designer, and to that conception he gave expression." 2 O. G. 592 (593); 6 Fisher, 94 (101).

That a design and a device for producing it are different inventions, see Clark *v.* Bousfield (1869), 10 Wall. 133.

§ 202. Design Distinct from the Impression it makes on the Mind of the Observer.

Again, though a design is an instrument created for the purpose of making an impression, through the eye, upon the mind of the observer, this impression cannot be regarded as necessarily corresponding with the design itself. The accuracy with which an eye whose visual powers are unimpaired perceives an object cannot be called in question; for the same rays of light, reflected from the same surfaces, must form the same image upon every healthy retina. But the accuracy of a mental impression depends not only on the accuracy of physical vision, but on the degree of attention with which the mind contemplates the object, and on its acquaintance with the class of objects in which the one now subject to inspection is embraced. The image formed upon the retina may often differ widely from that formed in the mind, — one being the exact representation of the object as it really is; the other being composed of certain features of the object only, or of those features in connection with such elements as are suggested by the imagination or the memory. Hence, while no test can be applied to the character of a design except by the mind through the eye,[1] this test is not reliable unless the impression made upon the mind corresponds in all its essential characteristics with the appearance presented to the eye.

§ 203. Design is an Appearance Imparted to an Object.

A design is thus a specific physical means for the production of a specific physical effect. The idea, as it lies in the mind

§ 202. [1] In Holdsworth *v.* McCrea (1867), L. R. 2 H. L. 380, Lord Westbury: (388) "Now in the case of those things as to which the merit of the invention lies in the drawing, or in forms that can be copied, the appeal is to the eye, and the eye alone is the judge of the identity of the two things. Whether, therefore, there be piracy or not is referred at once to an unerring judge, namely, the eye, which takes the one figure and the other figure, and ascertains whether they are or are not the same."

In Harrison *v.* Taylor (1859), 4 H. & N. 815, Cockburn, C. J.: (819) "The question is one of fact, viz.; whether this is a new and original design. . . . This is a question to be determined by the eye — is it a design in the sense of drawing? . . . That leads to the question, is it in its present shape . . . a new design? That is a matter of which anybody can satisfy himself by looking at it. There is a new combination, which is in substance a new design."

of the inventor, is that of an appearance imparted to a material substance by imposing upon it whatever lines or images may be necessary and sufficient for that purpose. The appearance thus imparted to the substance, when presented to the eye in such a manner that the eye receives and transmits to the mind of the observer its essential characteristics, becomes an operative means and produces its appropriate effect. If any of these essential characteristics escape the eye and mind of the observer, the appearance of the substance to him is not identical with that imparted to the substance by the inventor.[1] If in addition to those essential characteristics, he

§ 203. [1] The fact that the impressions made upon the mind do not always correspond with the actual appearance presented by the object becomes important in reference to the question whether the true design is that perceived by the ordinary careless observer or that which is detected by the experienced and cautious examiner. It must be conceded that the eye is the sole judge; but whose eye? and how carefully applied? The principal authority in this country is the case of Gorham Manufacturing Co. *v.* White (1871), 14 Wall. 511. In the Circuit Court (1870), 7 Blatch. 513, the presiding judge had said: (519) "It is impossible to assent to the view, that the test, in regard to a patent for a design, is the eye of an ordinary observer. . . . (520) There must be a uniform test, and that test can only be, as in the case of a patent in respect to machinery, substantial identity, not in view of the observation of a person whose observation is worthless, because it is casual, heedless and unintelligent, and who sees one of the articles in question at one time and place and the other of such articles at another time and place, but in view of the observation of a person versed in the business of designs in the particular trade in question. . . . The question is not whether one design will be mistaken for another by a person who examines the two so carelessly as to be sure to be deceived, but whether the two designs can be said to be substantially the same when examined intelligently side by side. There must be such a comparison of the features which make up the two designs. As against an existing patented design, a patent for another design cannot be withheld because, to a casual observer, the general appearance of the later design is so like that of the earlier one as to lead him, without proper attention, to mistake the one for the other."

This view was the logical consequence of the position taken by the learned judge as to the real nature of a design (see § 201, n. 1, *ante*). If the design be the particular arrangement of lines, etc., by which the appearance is imparted to the substance, it is evident that as only a skilled and careful observer can determine whether two similar appearances are produced by the same arrangement of the same lines, etc., such an observer alone is competent to judge as to the identity of two designs. Thus the decision of Judge Blatchford, if not correct in principle, was at least consistent with itself.

In overruling this doctrine as to the essential nature of a design, the Supreme Court went also to the opposite extreme upon the question now under consideration. Thus Strong, J.: (527) "If then identity of appearance, or (as ex-

perceives the individual elements by whose arrangement and co-operation the appearance is produced, the impressions made

pressed in McCrea v. Holdsworth) sameness of effect upon the eye, is the main test of substantial identity of design, the only remaining question upon this part of the case is, whether it is essential that the appearance should be the same to the eye of an expert. The court below was of opinion that the test of a patent for a design is not the eye of an ordinary observer. . . . With this we cannot concur. Such a test would destroy all the protection which the act of Congress intended to give. There never could be piracy of a patented design, for human ingenuity has never yet produced a design in all its details exactly like another, so like, that an expert could not distinguish them. . . . (528) Experts, therefore, are not the persons to be deceived. Much less than that which would be substantial identity in their eyes would be undistinguishable in the eyes of men generally, of observers of ordinary acuteness, bringing to the examination of the article upon which the design has been placed that degree of observation which men of ordinary intelligence give. . . . We hold, therefore, that if, in the eye of an ordinary observer, giving such attention as a purchaser usually gives, two designs are substantially the same, if the resemblance is such as to deceive such an observer, inducing him to purchase one supposing it to be the other, the first one patented is infringed by the other." 2 O. G. 592 (593); 6 Fisher, 94 (102).

Here the court seem to regard a design as subject to very much the same rule as a trade-mark, although in all its essential characteristics it is entirely different. It is not the primary object of a design, in the eye of the law at least, to distinguish one class of goods, or the product of one manufactory, from others; for a design is the same invention, to whatever substance it may be applied, and it is the appearance imparted to the substance, not the substance to which the appearance is given, that is the subject-matter of the patent. And it is not in harmony with the spirit of the age or of the law which represents it, that when one person has devised an appearance of a certain general character, the field of invention is closed in that direction against every designer, unless his production differ so widely from the former that "an ordinary observer, giving such attention as a purchaser usually gives" would detect essential variations between them. A design is a work of art, a thing of beauty; and shades of difference, wholly imperceptible to the uneducated eye, may have required for their creation a high degree of inventive skill, and in the opinion of any competent observer may constitute entirely separate designs. It is submitted that this doctrine was too broadly stated in the case at bar, and that distinctions must be made among observers to correspond with those which exist between different classes of designs. Simple designs, such for example as spoon-patterns, may well be left to the judgment of the ordinary observer. But the triumphs of a higher art demand for their discrimination a more experienced and cultured eye.

The English case which the Supreme Court professed to follow in this decision does not sustain the extreme view advanced by Mr. Justice Strong. In that case (McCrea *v.* Holdsworth (1865), 5 B. & S. 495), Blackburn, J., had said: (504) "In all cases . . . the question must arise, what is the design? More or less of what is there seen may be the design, and that is a question of fact to be asked of the jury.

upon his eye and mind are incorrect unless he distinguishes the appearance produced by the employment of these elements from the appearance of the elements themselves. What characteristics are essential to any given appearance is a matter to be determined by the evidence of persons who are able to perceive and competent to judge. In this respect certain designs may well present far greater difficulties than others, and demand for their accurate discernment a high degree of experience and skill.

§ 204. Design may Consist in Configuration or Ornamentation or Both.

A design may consist in the simple configuration of a substance or the form given to it as a whole, or in the ornamentation imposed upon it without reference to its general form, or in such configuration and ornamentation both.[1] Thus the

It may be difficult to say what degree of evidence is necessary; but it must be a question for the jury, applying their eyes to the article before them." And Cockburn, C. J., stated: (502) "The combination which is what the fabric itself, *when submitted to the eye of a competent judge*, shows to be the design," &c. It was thus evidently in the minds of the judges that the question of identity between two similar designs might be one of some difficulty, and that it could be determined only by the eye of a person competent to distinguish their essential characteristics. As the opinion in our own tribunal was given by a divided court, it is not improbable that, upon further consideration, it may be so far modified as to recognize that differences may exist between designs which, though they escape the notice of an "ordinary observer, giving such attention as a purchaser usually gives," may nevertheless constitute substantial advances in art and deserve the recompense awarded to inventive skill. The rule there laid down has, however, been since adopted in numerous cases, and must be regarded as settled, until further discussion in the higher court. Thus in Jennings *v.* Kibbe (1882), 20 Blatch. 353, Blatchford, J.: (354) "In Gorham Co. *v.* White (14 Wallace, 511), the Supreme Court considered directly the question of identity in regard to a patent for a design. It held that the true test of identity of design is sameness of appearance, in other words, sameness of effect upon the eye; that it is not necessary that the appearance should be the same to the eye of an expert; and that the test is the eye of an ordinary observer, the eyes of men generally, of observers of ordinary acuteness, bringing to the examination of the article, upon which the design has been placed, that degree of observation which men of ordinary intelligence give." 10 Fed. Rep. 669 (670).

See also Miller *v.* Smith (1880), 5 Fed. Rep. 359; 18 O. G. 1047; Cone *v.* Morgan Envelope Co. (1879), 4 Bann. & A. 107; Perry *v.* Starrett (1878), 3 Bann. & A. 485; 14 O. G. 599.

§ 204. [1] In *Ex parte* Traitel (1883),

essential characteristics of the appearance imparted to a substance may reside in its exterior outlines only, or in the decorations formed by lines or images imposed upon its surface, or in the union of certain outlines and decorations to produce the given design. The same substance, therefore, may exhibit two entirely different designs, one in its outline, the other in its ornament; or one design alone, into which both its form and decoration enter as essential elements.

§ 205. Design may be a Simple Design or a Combination.

A design may either be composed of single lines or images, or it may be created by combining two or more separate designs.[1] But in the latter case the new design must differ in

25 O. G. 783, Butterworth, Com. (783) "A design is merely a delineation of form or figure, either plane or solid — a shape or configuration. The construction of an article in accordance with that delineation is the materialization of the conception of design. The conception of a building of some particular shape, form, or configuration, and which is delineated on paper or described in language, is a design. The various shapes and figures which appear in colors on the surface of prints and carpets are the expression of so many different designs. The material out of which the building is constructed, whether of stone, brick, wood, or glass, forms no part of a design. The character of the material, whether velvet, cloth, cotton, or wool, upon which the designs find expression, forms no part of the design. The colors in which they find expression are of no possible importance in describing the design itself. A combination of red and blue and green may be beautiful, and the effect very desirable, but it forms no part of the design, but is the medium through which a design, which relates solely to form and configuration, finds expression, or materializes. Then since a design, as used in the statute, relates solely to form and configuration, how should it be described? There is no design which is not capable of delineation and description on paper, one or both, such delineations being the primary means. Where the forms are known forms, as in the case of geometrical figures, language may be employed as an auxiliary to describe them. And it follows as a corollary to the foregoing that the applicant's design, if he has one, is capable of being described or delineated on paper without reference to the materials used, or the colors employed, or the mode of their utilization in the construction of the article for which the design is intended."

In Gorham Mfg. Co. *v.* White (1871), 14 Wall. 511, Strong, J.: (525) "The appearance may be the result of peculiarity of configuration, or of ornament alone, or of both conjointly; but in whatever way produced, it is the new thing or product which the patent law regards." 2 O. G. 592 (593) 6 Fisher, 94 (100).

§ 205. [1] In Simpson *v.* Davis (1882), 20 Blatch. 413, Benedict, J.: (414) "In the matter of ornamentation, mere juxtaposition of old forms is, doubtless, sufficient to authorize a patent for an ornament, when, by means of such jux-

its essence both from its individual and collective elements, presenting a new appearance and making a new and different impression on the eye. The collocation of designs, without such new resulting appearance, is a mere aggregation and possesses no attribute of an invention.

§ 206. Essential Attributes of a Design.

The essence of a design resides in the idea of that configuration or ornamentation which constitutes the new appearance given to the substance. If this idea embraces outline only, no change in decoration will disturb its identity unless the apparent configuration of the substance be also changed. If it relates to the adornment of a substance of some known external form, the form may be indefinitely varied and yet the design of ornament remain the same. Where both configuration and adornment, being new, enter into the same design, a change in the necessary attributes of either changes the essence of the whole design; but when though new they are

taposition, accomplished by industry, genius, effort, and expense, the old forms are made to become component parts of an ornament substantially new in its effect. But the result of the industry, genius, effort and expense employed must, as I suppose, be a single ornament, which, taken as a whole, can be considered to be the embodiment of a new idea in ornamentation. The amount of the novelty may be small, but the effect of the ornament must, to some extent, at least, be new." 12 Fed. Rep. 144 (145).

In Harrison *v.* Taylor (1859), 4 H. & N. 815, Wightman, J.: (820) "The Act uses the words 'any new and original design.' That is not a project or idea in the nature of an invention, but the representation of something which a draughtsman has for the first time produced. If that be the true meaning of the word 'design,' there is no doubt in this case that there was a design; for there was a drawing and it was an original drawing. It is true that all its component parts had already been produced; but no one had produced such a pattern. It was said in the court below, that this was 'a mere' combination in a manner well known; so it is with a picture, all its parts may be old; but the combination forms a new design. It seems to me that it was properly left to the jury to say whether this was substantially a new and original design; and the jury have found that it was."

That a new design may consist of a combination of old designs, see Kraus *v.* Fitzpatrick (1888), 42 O. G. 1292; Northrup *v.* Adams (1877), 2 Bann. & A. 567; 12 O. G. 430; Holdsworth *v.* McCrea (1867), L. R. 2 H. L. 380; McCrea *v.* Holdsworth (1864), 5 B. & S. 495; Norton *v.* Nichols (1859), 1 El. & El. 761.

But that a mere aggregation of old designs is not a new design, see Northrup *v.* Adams (1877), 2 Bann. & A. 567; 12 O. G. 430.

distinct designs, each stands upon a separate foundation and can be affected only by a variation in its own essential elements. Moreover, the identity of a design is not destroyed by its imposition upon different substances unless the inherent qualities of the substance cause the outline or the ornament to assume a different appearance; and hence the impartation of an old appearance to a new material is not alone sufficient to create a new design.[1]

§ 207. Design a Unit: its Unity how Destroyed.

The unity of a design remains unbroken, notwithstanding any changes in its elements, as long as its essential character as an appearance is preserved. Any addition, substitution, or withdrawal of lines or images, which simply increases its beauty without destroying the identity of the impression made upon the eye, is a mere improvement. But if its elements are dissociated from each other and reorganized into a new appearance, making a distinct impression, the former design ceases to exist and a new one is substituted in its place.[1]

§ 208. Design not Complete until Reduced to Practice.

Reduction to practice, in reference to a design, consists in the embodiment of the idea of the appearance, as conceived

§ 206. [1] That a design is the same, to whatever substances it may be applied, see *Ex parte* Traitel (1883), 25 O. G. 783; Mulloney *v.* Stevens (1864), 10 L. T. N. S. 190.

That the transfer of an old appearance to a different object is not a new design, but the appearance itself must be new, see New York Belting & Packing Co. *v.* New Jersey Car Spring & Rubber Co. (1887), 30 Fed. Rep. 785; Wooster *v.* Crane (1865), 5 Blatch. 282; 2 Fisher, 583.

That a design, though embodying certain features of another design, may nevertheless be so unlike the former in outline and detail as to be a new design, see Wood *v.* Dolbey (1881), 20 O. G. 523; 7 Fed. Rep. 475; 19 Blatch. 214.

That novelty is required in designs as in other inventions, see Northrup *v.* Adams (1877), 2 Bann. & A. 567; 12 O. G. 430; Niedringhaus *v.* Commissioner (1875), 2 MacArthur, 149; 8 O. G. 279.

§ 207. [1] That a design is an entirety, and any substantial change, by addition, substitution, or rearrangement, makes a new design, see Holdsworth *v.* McCrea (1867), L. R. 2 H. L. 380.

But that though details may differ, yet if the impression upon the eye is the same, it is the same design, see Wood *v.* Dolbey (1881), 7 Fed. Rep. 475; 20 O. G. 523; 19 Blatch. 214; McCrea *v.* Holdsworth (1870), L. R. 6 Ch. Ap. 418.

by the inventor, in such a visible, substantial form as produces the intended effect upon the eye of an observer. A design differs from the preceding classes of inventions in that it accomplishes the end for which it was created through its mere perception by the sense to which it is addressed; and this perception may often be as perfect when obtained from a mere drawing of the design as from a permanent form or ornamentation imparted to a physical substance. Having been once impressed upon the eye in any manner, the design thereby becomes a practically operative means.[1] Whether the inventor need go farther, except where his design relates to a particular substance only, and embody his idea in a material object upon which his conception of the appearance is permanently imposed, or whether the requirements of the law are satisfied by any method of communication which will serve to convey to others this conception, is not yet determined.

§ 209. Design Reducible to Practice in Many Forms: all Identical Inventions.

In view of the distinction already taken between the appearance of the design as a whole and the lines and images by whose arrangement it is created, it is evident that the same idea of an appearance may sometimes be embodied by several different methods. As the idea of the appearance first forms itself in the mind of the inventor the elements of which it is

§ 208. [1] Although not directed to the question of reduction to practice, many of the opinions, both of our own and the English courts, contain statements which indicate that any representation sufficient to convey the idea of the new appearance would comply with this requirement. Thus in Harrison *v.* Taylor (1859), 4 H. & N. 815, Crompton, J.: (821) "A design means something in the nature of a drawing, picture, or diagram, applicable to the ornamentation of some article of manufacture. . . . When we look at a picture or drawing we can say whether it is an original design or the same as one which has been already painted or drawn." And in Gorham Mfg. Co. *v.* White (1871), 14 Wall. 511, Strong, J.: (526) "Mere difference of lines in the drawing or sketch . . . if insufficient to change the effect upon the eye will not destroy the substantial identity." And since, unless the design derives some of its essential characteristics from the qualities of the substance on which it is imposed, the impression made upon the eye by drawings and sketches may be as accurate and complete as by any other way, and thus bring the design fully to the tests of novelty and utility, reason would indicate that any of those methods would answer the provisions of the law.

composed are not necessarily present to his mental vision. All its essential characteristics, whether of form or ornament, must indeed enter into his conception, but the lines and their arrangement by which these essential characteristics are imparted to the physical substance are obviously matters of second thought, perhaps of long study and experiment. All modes of fashioning by which the essential characteristics of the design can be produced thus lie open to employment by the inventor. His use of one is legally equivalent to the use of all, and hence his patent for the design, expressed in any mode, covers the same design by whatever other elements or arrangement it can be produced.

SECTION VI.

OF AN IMPROVEMENT.

§ 210. "Improvement" Defined.

An improvement is an addition to or alteration in some existing means, which increases its efficiency without destroying its identity.[1] It includes two necessary ideas: first, the idea of a complete and practically operative art or instrument, either natural or artificial, as the original to be improved; and second, the idea of some change in such art or instrument, not affecting its essential character, but enabling it to produce its appropriate results in a more perfect or a more economical manner. When such a change involves the exercise of the inventive faculties it is a true invention and is known as an improvement.[2]

§ 210. [1] In Geiger *v.* Cook (1842), 3 Watts & Serg. 266, Sergeant, J.: (269) "When there is an addition to an old machine or parts of a machine, or a mere alteration in some of its subordinate parts, the claim may be for an improvement only; but where the whole mode of forming the thing, and its effect are new, it may be claimed as new." See also §§ 307–313 and notes, *post*.

[2] In his commentary on the stat. Jac. I. Sir Edward Coke declared, upon the authority of Bircot's Case, E. T. 15, E. 4, in the Exchequer, that "if the substance was *in esse* before, and a new addition thereunto, though that addition made the former more profitable, yet it is not a new manufacture in law." 3 Inst. 184.

In Morris *v.* Bramsom (1776), Buller, N. P. 76; 1 Abb. P. C. 21, Lord Mansfield discarded this doctrine and held

§ 211. Improvement Implies an Original.

An improvement is thus neither the creation of a means entirely new nor a mere formal variation of the old. It occupies an intermediate position; yet often practically it approaches so nearly to the one or to the other that the line of demarcation becomes quite obscure. An inaccurate use of language adds to this obscurity; for in the title and specification of a patent an entirely new means is often described as an "improvement;" and even courts have said that an "improved machine" and an "improvement in a machine" are phrases expressive of the same idea. But in theory, at least, the distinction is always clear, and an examination of the principles which underlie this theory will furnish rules by which the separation of the three may generally be accomplished.[1]

that an addition or improvement was a good subject-matter for a patent. This decision was followed in Boulton *v.* Bull (1795), 2 H. Bl. 463; 1 Abb. P. C. 59; Hornblower *v.* Boulton (1799), 8 T. R. 95; 1 Abb. P. C. 98; Lister *v.* Leather (1858), 8 El. & B. 1004.

In this country the patentability of an improvement has never been doubted. In Kirby *v.* Dodge & Stevenson Mfg. Co. (1872), 10 Blatch. 307, Woodruff, J.: (318) "Invention may be as necessary to reform or adapt an existing machine to the performance of work which it would not, as originally constructed, perform as it is to make a new machine; and whether this is done by removing a device or by adding one, by removing a bolt or by inserting a bolt, by making an apparently great mechanical change or a small one, the principle governing the subject is the same. The change being a substantial one, and producing a different result, may, if it be new, be the subject of a new patent," &c. 3 O. G. 181 (185); 6 Fisher, 156 (172).

See also Barrett *v.* Hall (1818), 1 Mason, 447; 1 Robb, 207; Seymour *v.* Osborn (1870), 11 Wall. 516.

§ 211. [1] Confusion on this point may be avoided by distinguishing between an improvement and an independent invention on another ground. An independent invention always stands alone, or as a separable element in a combination. An improvement is always relative to an original, and, as an improvement, cannot be contemplated by the mind apart from that original. At the same time any art or article may occupy both of these positions. Considered by itself it may be an independent invention and may be used for numerous purposes. Considered as inserted into or conjoined with other inventions it may develop their ideas of means, and as applied to them be an improvement. Thus a new instrument may be in its own nature a new manufacture and patentable as such; but when introduced into a machine as an integral part thereof, it may be an improvement in the machine; and if its introduction be the result of inventive skill, it may, in its new relation, be patented as an improvement. Combinations may also be improved by substituting for an existing element an improved element of the same character, although the improvement in the element is a distinct patentable invention.

§ 212. Improvement not a Mere Variation in the Mode of Reducing to Practice.

We have already seen that the inventive act consists in the conception of an idea of means and in the reduction of that idea to practice; that when the idea of means has been conceived it may be reduced to practice either by the inventor himself or by any other person to whom he has communicated his idea; and that in whatsoever form he first embodies it, all other forms are merely imitations of his own. A variation, therefore, in the method of reducing an idea to practice can never require an exercise of the inventive faculties. It is, at most, a change of form; not an invention, not even an improvement.

§ 213. Improvement a Development of, but not a Departure from, the Original Idea of Means.

The change which enters into an improvement must thus be a change in the idea of means as conceived by the original inventor. Although this idea must be complete, and capable of embodiment in a practically operative means, before any act of invention can be said to be performed, it is not essential that it be developed to its highest degree of efficiency and usefulness. Vast possibilities may still reside in the same idea, which can be actualized only by some further effort of inventive skill; and in the discovery of these possibilities, and the contrivance of a method for employing them, lies the field of improvement as distinguished from original invention. But inasmuch as no improvement can subsist without an original on which to rest, this development must always leave the essence of the original invention unimpaired.[1] Whenever, in extending the efficiency of an idea of means, the line which separates that means from every other is crossed, through any change in its essential characteristics, identity is lost, the idea of the original invention is excluded, and the result of the inventive act becomes a new and substantive invention.

§ 213. [1] In Evans *v.* Eaton (1818), 3 Wash. 443, Washington, J.: (453) "An improvement necessarily implies *an original*; and unless the patentee is acquainted with the original, which he supposes he has improved, he must talk idly, when he calls his invention an improvement." 1 Robb, 193 (205).

See also *Page v. Ferry* (1857), 1 Fisher, 298.

§ 214. Improvement is a Change in, but not a Change of, the Essential Factors of the Idea of Means.

Again, we have seen that every idea of means embraces three subordinate ideas: the force employed, the method of its application, and the object upon which it acts; and that the identity of an invention is destroyed either by the introduction of a different force, or of a different object, or of a different mode of application. Hence an improvement, being a variation in the idea of means, necessitates a change either in the force, the object, or the mode of application, yet such a change as leaves all their essential characteristics unimpaired. Thus any increase in the efficacy or availability of the force, or in the susceptibility or retentive powers of the object, or in the completeness or economy of the mode of application, unless accomplished by such obvious changes as are presumed to be within the mechanical skill of all persons familiar with the art to which the invention pertains, is a true improvement and has all the attributes of an invention. In theory, therefore, an improvement is not a new art or instrument, nor yet a formal and mechanical alteration in an old one; it is a new development of an old idea embodied in some change effected in an existing operative means.[1]

§ 215. Improvement how Distinguished from Change of Form and from Independent Invention.

Practically, changes in an art or instrument are effected either by the addition of new elements, or by a withdrawal of existing elements, or by an alteration in their qualities or arrangement, or by the substitution of a new element for one previously employed. Each of these changes may be a mere change of form, or may result in an improvement of the old invention, or may create a new invention. If it involves only a variation in the method of reducing the original idea to practice, or if, while varying the idea of means, it neither changes its essential character nor gives substantial increase to its practical efficiency, it is a mere change of form, requir-

§ 214. [1] That an improvement is identical with its original in general construction, arrangement, principles of operation, and results, though in some respects better, see Aspinwall Mfg. Co. *v.* Gill (1887), 40 O. G. 1133.

ing no invention. If the change indicates the introduction into the idea of means of a different force, a different object, or a different mode of application, it is more than a change of form, more even than an improvement; it is a separate invention. If it preserves the essential characteristics of the original invention, applying the same force to the same object by the same method, but accomplishing results with higher excellence or with greater economy of time or power, and is not the product of mechanical skill alone, it is an improvement.

§ 216. Improvement Indicated by its own Character, its mode of Operation, or its Effects.

The tests by which the character of these changes is to be ascertained are the same as those employed in reference to independent and original inventions. Where the apparent variation in the original invention produces no change in its effects or in the economy of time or power, if the factors and the mode of operation of the original and improved inventions are the same, the variation must be in embodiment alone; if different, the inventions are entirely independent of each other. Where the effects produced by the invention in its changed condition differ in nature from those accomplished by it in the old, the change has passed beyond the limits of a mere improvement and has resulted in a new invention. If the effects, although the same in nature, are so enhanced in excellence that the original idea of means, in no form of embodiment, could have produced them, the change is more than formal, but may be either an improvement or a new original invention. In this case, as in that wherein no change occurs in the effects, the original and improved inventions must be compared as operative means, and examined in their mode of action as well as in the subordinate ideas of which each is composed. If this examination discloses a substantial difference either in the nature or the operation of the means, the two inventions are distinct; otherwise the later is a mere improvement on the earlier.

§ 217. Improvements in Simple Inventions and in Combinations.

In applying any of these principles and tests to actual inventions it is necessary to distinguish between simple inventions and combinations. In a simple invention the identity of the invention as a whole does not depend upon the identity of the individual elements of which it is composed; and any substantial change in these is only an improvement of the invention as a whole, unless its entire character is also changed. Thus in an art consisting of a single act, no alteration in the mode or instruments of its performance which does not vary the essential nature of the act itself is more than an improvement. Or in a manufacture or machine, composed of elements which in themselves are not independent manufactures or machines, a variation in the number, qualities, or arrangement of these elements, if neither merely formal nor destroying the identity of the entire machine or manufacture, is only an improvement.[1] But in a combination the identity of the invention as a whole does depend upon the identity of its subordinate means. The idea which it embodies involves the idea of a group of elements, each being in itself an independent means, and the idea of a law or method of co-operation by which these independent elements become united in a means entirely new. The identity of the combination remains undisturbed only while both of these essential ideas are preserved. Different elements co-operating according to the same law, or the same elements co-operating according to a different law, constitute different combinations. A change in any one of these subordinate elements, other than a mere change of form, either develops the idea of means which it embodies or alters the essential character of that idea itself. If it does the first it is an improvement, both as to the subordinate means and the whole combination; but if it does the last the combination is entirely new. A change in the ar-

§ 217. [1] That a change in the shape of parts of a machine may be a patentable improvement, see Williams *v.* Barker (1879), 18 O. G. 243; 2 Fed. Rep. 649.

That a device may be improved in structure without changing its capacity, see Sinclair *v.* Backus (1880), 17 O. G. 1503; 4 Fed. Rep. 539; 5 Bann. & A. 81.

That cheapness may indicate improvement, see Cornish *v.* Keene (1835), 1 Web. 501; 2 Abb. P. C. 139.

rangement of these elements is either the imposition upon them of a new law of co-operation or the more perfect and effectual application of the existing law, — in the former case producing a new combination; in the latter an improvement of the old.[2] Thus in an art consisting of a series of acts each of which is a subordinate art, the addition of any new act which is itself a means, or the withdrawal of one heretofore employed, or the substitution for it of a different act, or any change in the order of their performance introducing a new method of co-operation, is a new invention, not a mere improvement. So also in a composition of matter or a design, and in such a manufacture or machine as is a true combination, a change in any of its elements or in their arrangement is an improvement only when, not being merely formal, it yet leaves undisturbed the identity of each of its subordinate means and also of their co-operative law. The field of improvement in combinations is, therefore, much narrower than in simple inventions, — an apparently far slighter change sufficing to destroy the identity of the combination and to substitute a different invention in its place.

§ 218. Improvement a Unit: its Essential Attributes.

Although an improvement implies the existence of an original on which it rests, it is a complete invention in itself, and has a unity and an identity of its own.[1] Its essence consists

[2] In Bliss *v.* The City of Brooklyn (1873), 10 Blatch. 521, Benedict, J.: (523) "An added element, which increases the efficiency of a combination of itself effective, is of the nature of an improvement; but when the added element is essential to the production of any useful result, such an addition is not an improvement, but its use gives birth to the only patentable, because the first useful, combination." 8 O. G. 269 (270); 6 Fisher, 289 (292).

See also Rheem *v.* Holliday (1851), 16 Pa. St. 347.

That an improvement may be made in a combination by changes either in the elements themselves or in their arrangement, see Foxwell *v.* Bostock (1864), 12 W. R. 723; 10 L. T. N. S. 144.

That a substantial change in the nature of the elements is not a mere improvement but a new combination, see Hale *v.* Stimpson (1865), 2 Fisher, 565.

That to improve the form or capacity of the elements is invention, and may make an improvement or a new combination, see Sharp *v.* Tifft (1880), 17 O. G. 1282; 18 Blatch. 132; 2 Fed. Rep. 697; 5 Bann. & A. 399.

§ 218. [1] That the original and improvement are two separate inventions, and that the latter does not include and

in that particular extension or development of the original idea of means which finds expression in the specific change introduced into the actual invention. It is entirely independent of all other extensions or developments that may be given to the same idea, and is to be distinguished from them by the application of the same tests which are employed in discriminating between original inventions. It may become, in its turn, the basis for further improvements by the same process of development through which it was evolved from its original. But from whatever past improvement it has grown, and to whatever new improvements it may lead, it is still distinct from both. It is not an "improved invention," nor an "original invention with improvements;" it is simply "an improvement," a separate, complete, and definite result of the inventive act.

§ 219. Improvement not Complete until Reduced to Practice.

The method by which the idea of means embraced in an improvement is reduced to practice depends upon the nature of the original invention. Its practical utility must be in some manner demonstrated, and its availability for immediate public use be made apparent.[1] If the original invention is one whose actual employment in the arts, or whose subjection to specific tests, alone can satisfy this obligation, the improvement must be submitted to the same ordeal. And on the other hand, if the mere inspection of the original invention, in connection with the improvement, is sufficient to disclose its character as an operative means, embodiment in tangible materials, in a condition suitable for an immediate use, fulfils the requirements of the law.

protect the former after the patent for the former expires, see Plimpton *v.* Winslow (1880), 3 Fed. Rep. 333.

That no improvement upon an old invention can make the whole invention new, see Carstnedt *v.* U. S. Corset Co. (1876), 10 O. G. 3; 13 Blatch. 371; 2 Bann. & A. 331. See also §§ 892–896 and notes, *post*.

That the inventor of an improvement acquires no rights in the original, see Leach *v.* Dresser (1879), 69 Me. 129.

That slight improvements do not affect the rights of inventors, see Cowan *v.* Dodd (1866), 3 Cold. 278.

§ 219. [1] That reduction to practice is as essential in the case of improvements as of other inventions, see Judson *v.* Bradford (1878), 16 O. G. 171; 3 Bann. & A. 539.

§ 220. Improvement Reducible to Practice in many Forms: all Identical Inventions.

As in all other inventions, the idea which constitutes the essence of an improvement may often be embodied under several different forms. In such cases these various forms are substantially the same, however they may differ in appearance.[1] All shapes, materials, sizes, and arrangements, which can express the peculiar extension given by the inventor of the improvement to the original idea of means, are his as truly as is the specific size, arrangement, shape, or material that he has employed, and all are alike covered by the patent he obtains.

§ 220. [1] That a patent for an improvement to one machine covers it in its application to all other machines, see Burke *v.* Partridge (1878), 58 N. H. 349.

CHAPTER III.

OF THE NOVELTY OF INVENTIONS.

§ 221. Novelty and Utility Requisite to Patentability.

AN inventor does not become entitled to a patent merely by exercising his creative faculties in the production of an art or instrument. The consideration for the grant of his exclusive privilege is the benefit which he confers upon the public by placing in their hands a means through the use of which their wants may be supplied. If the same means has been already made accessible to them by the inventive genius of a prior inventor, or if though they receive it first from him it is incapable of useful application, no benefit results to them from his inventive act and there is no consideration for his patent. When this want of consideration becomes apparent before a patent has been granted it will be refused; when afterward, the patent is defeated. In order, therefore, that an invention may be patented or protected by a patent, it must be *new*, that is, bestowed for the first time upon the public by the patentee; and *useful*, that is, capable of such employment as results in practical advantage. Of Novelty and Utility, as two essential requisites of every patentable invention, it is thus our next duty to inquire.

§ 222. "Novelty" Defined.

Legal novelty may be predicated of an invention whenever it is new to the public as a practically operative means. Every invention which is not already accessible to the public is regarded in law as new to the public, and no invention is accessible to the public until it is perfected and communicated to them in a practically available form. Novelty, therefore, exists unless the invention is already in the possession of the

public as an operative art or instrument, and this occurs only when the invention itself is a matter of existing public knowledge, or is derivable from what is known without the further exercise of inventive skill. In other words, as every variation of form, as distinguished from variation in substance, is considered as effected by the imitative faculties, novelty consists in the substantial variation of the invention in question from all inventions which in contemplation of law are already open to the public.[1]

§ 223. Novelty formerly Absolute and Universal.

Formerly, the novelty required as a condition of patentability was absolute both as to place and time. If the invention were known anywhere before the date of the letters-patent, it was regarded as having become public property and no longer entitled to protection. The statute of James I. authorized the granting of a patent only for some "new manufacture which others, at the time of making such Letters Patents and Grants, did not use." By the act of 1790 Congress limited the privilege to inventions "not before known or used," and by the act of 1800 expressly excluded from the provisions of the law every invention which had been previously known and used in this or any foreign country.[1] But such

§ 222. [1] In Whitney *v.* Emmett (1831), Baldwin, 303, Baldwin, J.: (311) "The novelty of the invention is either the manufacture produced, or the manner of producing an old one; if the patent is for the former it must be for something substantially new, different from what was before known; if the latter, the mode of operation must be different, not a mere change of the form and proportions; if both are the same in principle, structure, mode of operation, and produce the same result, they are not new, though there may be a variance in some small matter for the purpose of evasion, or as a color for a patent." 1 Robb, 567 (579).

That novelty is essential difference from what was before known, and this must be evidenced by the invention itself, not by the degree of inventive skill exercised in producing it, see Wood *v.* Packer (1883), 17 Fed. Rep. 650.

§ 223. [1] In Whitney *v.* Emmett (1831), Baldwin, 303, Baldwin, J.: (311) "As to the novelty of the invention the rule is this, 'It must be new to all the world, not the abstract discovery, but the thing invented, not the new secret principle, but the manufacture resulting from it; it must be new at the time of the application for the patent, in the words of the law; 2 Peters 20, 22; but it will be considered as new then, if the application is within a reasonable time after the discovery, if the patentee has not sold or permitted the use of the invention.'" 1 Robb, 567 (578).

restrictions were soon seen to be disastrous to inventors and needless to the public. The most meritorious of discoverers might be deprived of his reward if it appeared that in some distant corner of the earth the same invention had been in a single instance practically employed before his own discovery had been given to the public, although such use were utterly unknown in his own country until long after the issue of his patent, and though the public for whose benefit he labored had received their only knowledge of the art or instrument from him. And on the other hand, since the existence of such use and knowledge in one nation did not necessarily render the invention accessible to any other, especially in periods of limited commercial intercourse, the prohibition of a patent to an original domestic inventor on account of such foreign use, so far from promoting the public welfare by securing to them the unrestricted enjoyment of the invention, tended rather to deprive them of it altogether, either by discouraging the efforts of that inventor through whom alone they could receive it, or by compelling him to place his discoveries before the public prematurely and in such an imperfect condition as to seriously impair their usefulness. Hence, though the letter of the law carried its restrictions to the last extremity, the courts, as usual, found methods of interpreting it in harmony with the true interests both of inventors and the public; and these interpretations, adopted or ratified by subsequent legislative action, have now become permanently incorporated in the law.

§ 224. Novelty, under the English Law, is Novelty "within the Realm."

The English judges, taking advantage of a phrase occurring in another connection in the statute, early held that prior use and knowledge, to operate against an original inventor, must be "within the realm;" and in this manner they secured the rights of native discoverers.[1] At the same time, by placing the importer of a foreign discovery on an equal footing with domestic inventors, as already noticed, they stimulated the

§ 224. [1] See Edgebury *v.* Stephens 1 Abb. P. C. 8. See §§ 315-324 and (1691), 1 Web. 35; 2 Salk. 447; notes, *post.*

examination of the arts of other nations and the reproduction of the same industries within their own. But though unnecessary restrictions as to place were thus removed, the limitations as to time remained until the act 15 and 16 Vict. (1852), which provided for the filing of a provisional specification by the inventor, whose date instead of that of his patent fixed the time before which use or knowledge must exist in order to prevent or to defeat the patent. Thus under the English law, an invention is considered now unless known or used within the realm before the application of its inventor for a patent.

§ 225. Novelty, under the American Law, is Novelty within the United States.

In this country the restriction as to place continued in full vigor until the act of 1836. Its inconvenience and injustice were always recognized, but the courts were bound by the express language of the statute, and rigidly enforced its provisions. In the revision of the law and the reconstruction of the patent system in 1836, however, knowledge and use in a foreign country was excluded from among the causes which prevent or defeat a patent, and the limitations of our law on that subject as to place were brought into harmony with those of the law of England. The restriction as to time has been more widely modified. The act of 1793 substituted for the phrase "not before known and used," as it occurred in the act of 1790, the words "not known or used before the application," establishing the same rule afterward adopted in the English statute of 1852. But by a strange construction of these words, in connection with other sections of the same act which provided for the repeal of patents fraudulently obtained by others than the real inventor, our courts soon held that "before the application" was to be regarded as synonymous with "before discovery by the patentee," thus recognizing no use or knowledge as anticipating the invention unless it had preceded the inventive act. This construction was accepted by Congress in the act of 1836, and duly formulated as one of the provisions of that statute. According to our present law, therefore, novelty exists unless the knowl-

edge or use of the invention in this country preceded its conception by the patentee.

§ 226. "Knowledge" and "Use" Defined.

Specific interpretations have also been given to the terms "use" and "knowledge," as employed in reference to this subject. In the statute of James I. no mention is made of prior knowledge as a bar to a patent. The courts, however, held that any such knowledge on the part of the English public as put the invention fairly in their possession was equivalent to actual use, making a prior patent or publication within the realm of the same effect as practical employment in the arts. In our own statutes the phrase "known or used" has always been adopted, and the fact that knowledge may exist without use has been recognized.[1] Thus as use necessarily implies knowledge, the proof of use anywhere, before the act of 1836, was sufficient evidence of knowledge everywhere; and if no use could be shown, knowledge might be

§ 226. [1] In Stitt *v.* Eastern R. R. Co. (1884), 22 Fed. Rep. 649, Colt, J.: (650) "By § 4886 of the Revised Statutes, to entitle a person to a patent, the invention must be one 'not known or used by others in this country.' The plaintiff contends that, upon a proper construction of the patent law as a whole, both prior knowledge and use must be proved to negative novelty. We think this statement of the rule somewhat too broad. The prior invention relied upon as a defence must be complete and capable of producing the result to be accomplished. It must not be inchoate or rest in speculation or experiment. Coffin *v.* Ogden, 18 Wall. 120. The evidence is sufficient to support the defence of prior knowledge and use, if it proves the invention was complete and capable of working; if it had been put to use and was known to any considerable number of persons. Judson *v.* Bradford, 16 O. G. 174. If the construction of the prior thing of itself demonstrates that it is within the principle of the patent, then, perhaps, no use need be established, for it might be said to prove itself. Sayles *v.* Chicago & N. W. R. Co., 4 Fisher, 584. It is not necessary that the prior invention should have been actually used for the purpose contemplated, but it must have been capable of such use. Pitts *v.* Wemple, 2 Fisher, 10. . . . The primary inquiry is one of identity between two things. If the identity can only be known by actual use such use should be proved. If the identity is apparent on inspection, it is not necessary to prove actual use. If there is a reasonable doubt as to identity, want of novelty is not made out. Walk. Pat. § 72. By the weight of authority and of reason, it would seem that if the prior invention was the same as that described in the patent; if it was complete, and capable of producing the same result, and was known in this country — it is sufficient to sustain the defence of want of novelty."

inferred from any other evidence. But when the distinction between use at home and use abroad was drawn in that act, and foreign use became no longer evidence of knowledge anywhere, the doctrine of the English courts that public knowledge, though derived from foreign use, is equivalent to use at home, was embraced by Congress, and incorporated in the act. But while the English courts had given to foreign use this significance only when the foreign invention had been patented within the realm, or had been described in some publication accessible to the English public, our legislators enacted that a foreign patent or a foreign publication were to be considered equally within the knowledge of our people, and to constitute the same evidence of prior knowledge as if the invention had been actually employed at home. Thus, as our law now stands, a prior use in this country, or a prior patent or publication either at home or abroad, puts the invention before the public so completely that no subsequent inventor can confer on them that benefit which constitutes the only consideration for a patent.

§ 227. Knowledge, to Defeat Novelty, must be Practical and Complete.

It is to be remembered, however, that "knowledge," in this sense, means such an acquaintance with the invention, on the part of the public, as renders it available to them as a practically operative means. If their knowledge is derived from use in this country, the use must be of such a kind as imparts this information. If it rests on any foreign or domestic patent or publication these must be sufficient to accomplish the same result. In neither of these cases must there be any necessity for the exercise of additional inventive skill, since with the employment of the creative faculties, in the adaptation of any invention to the public use, another obligation is incurred which can only be discharged by protecting that inventor in the exclusive use of the invention. Thus we arrive at a more perfect and exhaustive definition of this attribute of novelty, and see that an invention is to be regarded as new whenever it has not already been brought within the practical knowledge of the public as an operative means, either through

prior use at home, or through a prior patent or a prior publication.

§ 228. Novelty Involves two Questions: Identity and Priority.

It is evident that this attribute of novelty can become a subject for examination only when two or more inventions are presented for consideration, both of which are claimed to be identical in substance, and one of which is said to have been known before the other was invented. In every such case, two questions arise: (1) Are the inventions identical? (2) Was the invention, by whose priority to the other the patentability of the latter is sought to be defeated, in use in this country, or had it been patented or described in a printed publication at home or abroad, before the other was invented? In our discussion of the subject in detail, the same questions will be presented, and the same division will be found both serviceable and sufficient.

SECTION I.

OF THE NOVELTY OF INVENTIONS: IDENTITY: FORM AND SUBSTANCE.

§ 229. Identity is Identity of Idea or Substance, not of Form or Embodiment.

In comparing inventions for the purpose of determining their identity, it is first necessary to ascertain the essential character of each by an examination of the idea of means which it embodies. Two inventions cannot be the same unless the same creative act, resulting in the same idea of means, has been performed by both inventors; and therefore no investigation which stops short of this idea, or which accepts as a basis for its conclusions any conception not involved in this idea, can lead to a reliable decision. Hence the importance, in every such investigation, of constantly distinguishing between those attributes of each invention which relate to its substance, and those which relate merely

to its form.[1] This can be done with entire accuracy only by passing through the tangible and concrete art or instru-

§ 220. [1] This distinction between the substance and the form of the invention was early drawn by the courts, and even in cases where no intelligible rule was suggested for discriminating one from the other. Thus in Brooks *v.* Jenkins (1844), 3 McLean, 432, the court said: (456) "An objection is made to the use of the term 'substantial,' as having no definite signification. It is true the word as applied in this case is not susceptible of an exact definition. But it is generally used in the same sense. No word is more familiar in the action of a court of justice. And in a larger sense it applies to all human affairs. In the exact sciences we look for precision. But beyond the mathematics in human transactions, we may be said to reach the truth more by approximation than by absolute demonstration. A pleading in a civil or criminal case may be substantially good, *though* it may not be *technically* formal. An instrument substantially described in a declaration or indictment may be given in evidence. We look more to the substance of things than their forms. In asking you, then, to determine whether the machines are substantially alike or substantially different, you are called to perform only a common duty; not as regards the questions before you so much, as in the discharge of your ordinary duties in life."

Thus also in Walton *v.* Potter (1841), 1 Web. 585, Tindal, C. J.: (586) "Where a party has obtained a patent for a new invention, or a discovery he has made by his own ingenuity, it is not in the power of any other person, simply by varying in form or in immaterial circumstances the nature or subject-matter of that discovery, to obtain either a patent for it himself, or to use it without the leave of the patentee, because that would be in effect and in substance an invasion of the right; and therefore what you have to look at upon the present occasion is not simply whether in form or in circumstances that may be more or less immaterial that which has been done by the defendants varies from the specification of the plaintiffs' patent, but to see whether in reality, in substance, and in effect, the defendants have availed themselves of the plaintiffs' invention. . . . And therefore it will not be immaterial to call to your attention, upon this first head of inquiry, the specification of the plaintiffs, and next that of the defendants' patent, in order that we may compare them together, and see whether there really is that variation in substance so as to give the denomination of a new discovery to what the defendants have done, or whether they are not following out the invention of the plaintiff with some variation in the description which may not allow it the name of a new discovery. . . . (589) Now, what you have to say is, as I before stated, whether you are satisfied that the [article made by defendants] that was produced before you in evidence . . . is a specious variation in form only, an ingenious alteration in the mode of adaptation, or whether it is really and substantially a new discovery on the part of the defendants."

In Morgan *v.* Seaward (1836), 1 Web. 170, Alderson, B.: (171) "Therefore the two machines are alike in principle; one man was the first inventor of the principle, and the other has adopted it; and though he may have carried it into effect by substituting one mechanical equivalent for another, still you are to look to the substance and not to the mere form, and if it is in substance an infringement, you

ment which is presented to the physical senses, and contemplating the idea of means as it lies unembodied in the mind of the inventor.

§ 230. Identity of Idea not Proved by Identity of Embodiment.

For while it is true that almost every idea of means is capable of embodiment in several different forms, it is equally true that the form which is selected for its expression may in some cases also serve as the embodiment of an entirely different idea.[1] Probably no concrete invention has ever so

ought to find that it is so. If in principle it is not the same, but really different, then the defendants cannot be said to have infringed the patent. . . . So you see you ought to look always to the substance, and not to the form." 2 Abb. P. C. 262 (317).

See also Carter *v.* Baker (1871), 1 Sawyer, 512; 4 Fisher, 404; and cases cited under § 236, *post.*

That identity is identity of means, see New American File Co. *v.* Nicholson File Co. (1887), 31 Fed. Rep. 289; Electric R. R. Signal Co. *v.* Hall R. R. Signal Co. (1885), 114 U. S. 87; 31 O. G. 515.

That if the means is different the inventions cannot be identical, see Hall *v.* Stern (1882), 24 O. G. 206; 15 Fed. Rep. 463.

That the same idea must be the same invention, see May *v.* County of Fond du Lac (1886), 27 Fed. Rep. 691.

That identity is identity of means, not of name, see Converse *v.* Cannon (1873), 2 Woods, 7; 9 O. G. 105; Union Sugar Refinery *v.* Matthiesson & Co. (1865), 3 Clifford, 639; 2 Fisher, 600; Howe *v.* Williams (1862), 2 Fisher, 395; Cahoon *v.* Ring (1861), 1 Clifford, 592; 1 Fisher, 397; Cutler's Patent (1839), 1 Web. 418.

That the intention of the inventor to make a different means does not indicate that the means is not identical, see Henderson *v.* Cleveland Co-operative Stove Co. (1877), 2 Bann. & A. 604; 12 O. G. 4.

That similarity in structure, appearance, and effect may indicate identity, see Matthews *v.* Skates (1860), 1 Fisher, 602.

But that such similarity does not constitute identity, see McComb *v.* Ernest (1871), 1 Woods, 195; Howes *v.* Nute (1870), 4 Clifford, 173; 4 Fisher, 263; Cahoon *v.* Ring (1861), 1 Clifford, 592; 1 Fisher, 397.

That similarity in substance is identity, see Union Sugar Refinery Co. *v.* Matthiesson & Co. (1865), 3 Clifford, 639; 2 Fisher, 600.

That identity is identity in the practically operative means, not in the mere theory upon which they operate, see Foss *v.* Herbert (1856), 1 Bissell, 121; 2 Fisher, 31.

That immaterial changes do not affect identity, see Brighton *v.* Wilson (1883), 18 Fed. Rep. 378.

That colorable differences do not show a want of identity, see Byam *v.* Eddy (1853), 24 Vt. 666.

That an invention is the same under every form of embodiment, see Florence Sewing Mach. Co. *v.* Grover & Baker Sewing Mach. Co. (1872), 110 Mass. 70; Blanchard *v.* Beers (1852), 2 Blatch. 411.

§ 230. [1] That the same tangible embodiment may represent two entirely distinct ideas of means, see Newton *v.* Vaucher (1851), 6 Exch. 859.

exactly represented the idea of means conceived by its inventor that when considered by itself, as a mere art or instrument, it communicated that idea, without superfluity or ambiguity, to an observer. Thus an examiner of the concrete invention only is liable to err, either by imputing to the essential character of the invention such attributes as are indifferent and formal, or by discerning in it an idea of means distinct from that which its inventor intended to express.[2] For this reason it is indispensable that the examiner should study the invention from the point of view occupied by the inventor when he first contemplated it as an operative means, and before it became interwoven in his mind with those ideas, derived from his mechanical knowledge, which determined its embodiment in this peculiar form.

§ 231. Identity of Idea to be Examined as the Idea lies in the Mind of the Inventor; the Idea of End the Primary Conception.

Of whatever mental processes an inventor may be conscious, the idea of an end to be accomplished must be regarded as his primary conception. Even where his discovery is the result of accident, he cannot be considered as devising methods of applying forces to their objects, without a previous intention that some particular effect should flow from his endeavors. To feel the pressure of an existing want, to recognize that change in the condition of affairs which will result in its supply, and then to contrive means by which this change may be produced, — this is necessarily the order in which the mental part of the inventive act proceeds, the only order possible to any exercise of the creative faculties. The inventor thus approaches his invention through the end which he designs it to accomplish. To him, its scope and purpose are measured by that end; and its completeness and perfection in his eyes depend on the exactness with which it performs the functions necessary to effect the change pro-

[2] Collender *v.* Griffith (1880), 2 Fed. Rep. 206; 18 O. G. 241; 18 Blatch. 110; is an instance where the same article embodied both the idea of a manufacture and the idea of a design. Other instances noted in the reports will readily suggest themselves.

posed. If in addition to inventive genius he possesses great industrial skill, the concrete form in which his idea is embodied may so nearly coincide therewith in its essential characteristics that in the art or instrument there will be neither element nor quality which does not enter into the operative means, and contribute to the production of the desired result. Or, on the contrary, his carelessness or ignorance as to industrial details may lead him to select a method of expressing his idea in which the essential features of his invention will be overlaid with superfluities of attribute or element, until from every eye except his own its actual character is almost hopelessly concealed. Still, in whatever form embodied, it remains intelligible and distinct to him as a specific agency achieving a particular result; and one who would perceive it as he perceives it must, like him, contemplate it through the end which he intends it to accomplish, and find in the requirements of that end the precise limitations of its means.

§ 232. Ultimate End or Effect Distinguished from Proximate End or Function.

In contemplating an invention through the end which it accomplishes, it is essential to distinguish between the changed condition of affairs resulting from the operation of the means, and the change produced in their condition by the means while actually in operation. The former is the ultimate end proposed by the inventor, the permanent effect on the material world which remains after the means has ceased to act, and which constitutes the condition of a want supplied. The latter is a proximate end lying between the ultimate end and the operative means, a fugitive effect which exists only while the force is acting upon its appropriate object, and which constitutes the operation to which the object is subjected by the means. Considered in itself, this intermediate end is the exact difference between the unchanged and the changed condition of affairs, the addition, alteration, or subtraction through which the object passes on its way from one condition to another. Considered in reference to the object only, it is a true effect produced upon it by the art or instrument

employed. Considered in relation to the means, it is its function, its action on the object while reducing it to the desired condition.

§ 233. Effect the Primary Idea; Function the Secondary; Means the Tertiary and Final.

Of these two ends, the ultimate and permanent is the one first presented to the mind of the inventor. It is the natural and complete antithesis of the want which he perceives, and is inevitably suggested to him by the want itself. The contemplation of this ultimate effect, in connection with the existing condition of affairs, discloses to him the difference between them, and the proximate effect or change through which the object to be acted on must pass in order to attain the new condition he requires. This brings him face to face with his true problem, — the invention of a means by which this change can be effected, — and demands from him the employment of such forces through such modes of application as will produce this intermediate effect and leave the object in the changed condition he desires. Thus, for example, in the invention of the planing machine the inventor first perceived the want arising from the roughness of the lumber, and this suggested to him that smoothness in the lumber would supply the want. Considering smooth lumber in connection with the rough, he saw that the real difference between them consisted in the retention by the one of an uneven surface which had been removed from the other; and this disclosed to him that the change through which the first must pass before it reached the condition of the latter was a change of surface by the obliteration of its inequalities. He then perceived that in order to effect this change he must apply force to the lumber in such a manner as to remove these inequalities; and by the exercise of his creative faculties he brought the required force into contact with the lumber, through his machine, in such a manner that the change was effected, the difference between the roughness and the smoothness of the surface disappeared, and the ultimate and permanent end of his invention was accomplished.

§ 234. Means and End Meet in the Function; Function the Measure of Means.

It is, moreover, evident that the true place of meeting between the end and the means is in the proximate result or function of the means, and that the point from which the examiner must contemplate the means, in order to discover its essential character, is its function, not its ultimate effect. The inspection of lumber in its smoothed condition may not disclose whether that smoothness has been attained by removing former irregularities of surface, or by covering the surface with some foreign substance whose smoothness has concealed the roughness of the wood. Though it appears that actual removal has occurred, there may be nothing to suggest its method, whether by slow, continuous attrition or violent, instantaneous excision; and even when excision is clearly indicated, it may still be impossible to discern whether it was accomplished by one progressive movement of a single knife, or by the swift rotation of a group of blades. But when the function of the means is made the subject of examination, these questions are immediately solved. An inspection of the lumber as it undergoes the changes which result in smoothness, or of the machine while it removes the uneven surface of the wood, brings the mind of the observer to the precise point from which the inventor contemplates his own idea of means, and gives him, in the proximate end which it accomplishes, an exact measure of the scope of that idea.

§ 235. Idea of Means Includes whatever is Essential to Performance of Function; the Rest belongs to Form or Embodiment.

The first duty, therefore, of one who examines an invention for the purpose of determining its essential character is to discover the real nature of the function it performs. Having perceived the want which the inventor has endeavored to supply, and the changed condition of affairs which in the inventor's view supplies the want, he must discern the actual change wrought by the invention on its object while engaged in the production of its ultimate result. Then, since the

means devised by the inventor can be a means only so far as it accomplishes effects, and can exist in his mind only so far as it performs the functions he intends it to discharge, the limits of the means become at once apparent through their correspondence with the functions thus discerned. Applying the same principles to the concrete invention, the tests whereby those of its attributes which relate to substance may be distinguished from those which relate to form are easily discovered. Whatever qualities of any art or instrument are indispensable to its discharge of any of the functions for which it was designed by its inventor enter into its essential character, and thus become matters of substance, not of form;[1] and every part and attribute whose presence is unnecessary to the performance of these functions lies outside of its essence, and is a matter of mere form.

§ 236. Identity of Inventions is Identity of Effect, of Function, and of Means, not Identity of Tangible Embodiment.

These tests are constantly employed by the courts in cases requiring the discrimination of apparent from actual diversities. Whether or not a given diversity in the concrete invention is consistent with identity of essential character must always be determined by a reference of the diversity to the standard here erected for distinguishing the substance or idea of means from its form of embodiment. Inventions cannot be identical unless they are identical in substance; nor can they be identical in substance unless they are identical in effect, in function, and in the means by which their functions are per-

§ 235. [1] In Treadwell *v.* Bladen (1827), 4 Wash. 703, Washington, J.: (706) "What constitutes form, and what principle, is often a nice question to decide; and upon none are the witnesses who are examined in patent causes, even those who are skilled in the particular art, more apt to disagree. It seems to me that the safest guide to accuracy in making the distinction is, first to ascertain what is the result to be obtained by the discovery; and whatever is essential to that object, independent of the mere form and proportions of the thing used for the purpose, may generally, if not universally, be considered as the principles of the invention." 1 Robb, 531 (537).

That the essence or substance of an invention is to be distinguished from its mere form by ascertaining what function it performs and how it performs it, see also Converse *v.* Cannon (1873), 2 Woods, 7; 9 O. G. 105; Cahoon *v.* Ring (1861), 1 Clifford, 592; 1 Fisher, 397.

formed.[1] And when identical in these respects, they are the same invention, whatever differences may exist in the concrete arts or instruments in which they have been reduced to practice.

§ 236. [1] In *Adams v.* Edwards (1848), 1 Fisher, 1; Woodbury, J.: (7) "When we say a thing is substantially the same, we mean it is the same in all important particulars. It must be of the same material, when the material is important; it must be of the same thickness, when thickness is important; it must be applied in the same way, condition, and extent, . . . when either of these circumstances makes an essential difference."

In Gray *v.* James (1817), 1 Peters C. C. 394, Washington, J.: (397) "What constitutes a difference in principle between two machines is frequently a question of difficulty, more especially if the difference in form is considerable, and the machinery complicated. But we think it may safely be laid down as a general rule that when the machines are substantially the same, and operate in the same manner to produce the same result, they must be in principle the same. I say *substantially* in order to exclude all formal differences; and when I speak of the same result, I must be understood as meaning the same kind of result, though it may differ in extent." 1 Robb, 120 (124).

Further, that where two inventions discharge the same function in the same way, they are identical in substance, however they may differ in form, see Shaver *v.* Skinner Mfg. Co. (1887), 41 O. G. 232; Pennsylvania Diamond Drill Co. *v.* Simpson (1886), 29 Fed. Rep. 288; Holly *v.* Vergennes Mach. Co. (1880), 18 O. G. 1177; 4 Fed. Rep. 74; 18 Blatch. 327; Cone *v.* Morgan Envelope Co. (1879), 4 Bann. & A. 107; Brown *v.* Rubber Step Mfg. Co. (1878), 3 Bann. & A. 232; 13 O. G. 369; Collender *v.* Came (1876), 4 Clifford, 393; 10 O. G. 467; Myers *v.* Duker (1874), 1 Bann. & A. 535; Converse *v.* Cannon (1873), 9 O. G. 105; 2 Woods, 7; McComb *v.* Brodie (1872), 2 O. G. 117; 5 Fisher, 384; 1 Woods, 153; Cahoon *v.* Ring (1861), 1 Clifford, 592; 1 Fisher, 397; Lee *v.* Blandy (1860), 1 Bond, 361; 2 Fisher, 89; Judson *v.* Cope (1860), 1 Bond, 327; 1 Fisher, 615; Page *v.* Ferry (1857), 1 Fisher, 298; Smith *v.* Downing (1850), 1 Fisher, 64; Brooks *v.* Bicknell (1844), 3 McLean, 432; Bush *v.* Fox (1856), 5 H. L. 707.

But that if the same function be performed in a different way the inventions are not identical, see Wicke *v.* Ostrum (1881), 103 U. S. 461; 19 O. G. 867; Gottfried *v.* Bartholomae (1878), 8 Bissell, 219; 13 O. G. 1128; Fuller *v.* Yentzer (1874), 6 Bissell, 203; 1 Bann. & A. 520; Morris *v.* Barrett (1859), 1 Fisher, 461; 1 Bond, 254; Heinrich *v.* Luther (1855), 6 McLean, 345; Tatham *v.* Le Roy (1852), 2 Blatch. 474; Hullett *v.* Hague (1831), 2 B. & Ad. 370; 1 Abb. P. C. 452.

That modes of applying an old idea, if differing in operation and result, are not identical, see Field *v.* De Comeau (1881), 116 U. S. 187: 34 O. G. 559.

That changes in an old device, causing a difference in principle and result, render it a different invention, see Parker *v.* Stow (1885), 31 O. G. 1171; 23 Fed. Rep. 252.

That a device which cannot be a substitute in actual use cannot be the same invention, see Crandall *v.* Parker Carriage Goods Co. (1884), 28 O. G. 369; 20 Fed. Rep. 851; Crandal *v.* Watters (1881), 9 Fed. Rep. 659; 20 Blatch. 97.

That when the same means produce the same result the inventions must be the same, see Halliday *v.* Covel (1886), 27 Fed. Rep. 217; 37 O. G. 785.

SECTION II.

OF THE NOVELTY OF INVENTIONS: IDENTITY: DIVERSITIES OF SHAPE, SIZE, CAPACITY, PROPORTIONS, ARRANGEMENT, AND MATERIALS.

§ 237. Diversities of Shape, Size, Capacity, Proportions, Arrangement, and Materials, are sometimes Diversities of Substance, but usually of Form.

The principal diversities manifested by inventions which perform or appear to perform the same functions consist in differences of shape, size, capacity, proportions, arrangement, or materials. Each of these diversities may result from a change in the form of embodiment selected as the external expression of the idea of means, or from a variation in the idea itself, or from the development of that idea by a further exercise of inventive skill. Hence every such diversity may be a new invention, or an improvement on an old invention, or a more formal change; and which of these it is in any given case must be determined by that universal test which serves always to distinguish form and substance. Any diversity which introduces a new function, or a new method of performing the old function, is a new and independent invention. Any diversity which enables the invention to discharge its accustomed functions with greater excellence or economy, and which has been produced by inventive skill, is an improvement. And a diversity which leaves the function and the mode of its performance entirely unaffected, or which did not involve an exercise of the creative faculties, relates only to the method of embodiment, and works no change of substance in the old invention.[1]

§ 237. [1] That changes in the form of embodiment do not affect the identity of the invention, see Theberath v. Rubber & Celluloid Harness Trimming Co. (1883), 15 Fed. Rep. 246; 23 O. G. 1121; Smith v. Nichols (1874), 21 Wall. 112.

That mechanical differences, where the product and mode of construction remain unchanged, do not affect identity, see Collender v. Came (1876), 4 Clifford, 393; 10 O. G. 467.

§ 238. Diversities of Shape.

Except in a design the shape of an invention, or of its integral elements, does not necessarily affect its essential character. In a design the shape is the invention; and hence any diversity of shape which makes a different impression on the eye changes the substance of the invention, and creates a new design. But in the other instruments this attribute is usually of little consequence.[1] Diversities of shape in a

§ 238. [1] In *Ex parte* Grecley (1873), Holmes, 284, Shipley, J.: (286) "Such structural changes of form and proportions, although they improve the operation without changing the mode of operation, and produce a much better result, although one of the same kind, are only different and better forms of embodying the same idea, and illustrate the difference between mechanical skill and inventive genius." 6 Fisher, 575 (581); 4 O. G. 612 (612).

In Winans *v.* Denmead (1853), 15 How. 330, Curtis, J.: (341) "Under our law a patent cannot be granted merely for a change of form. The act of February 21, 1793, § 2, so declared in express terms; and though this declaratory law was not re-enacted in the Patent Act of 1836, it is a principle which necessarily makes part of every system of law, granting patents for new inventions. Merely to change the form of a machine is the work of a constructor, not of an inventor; such a change cannot be deemed an invention. . . . To change the form of an existing machine, and by means of such change to introduce and employ other mechanical principles or natural powers, or, as it is termed, a new mode of operation, and thus attain a new and useful result, is the subject of a patent."

That no change of shape affects the identity of the invention unless it involves a change of function or of mode of operation, see Asmus *v.* Alden (1886), 27 Fed. Rep. 684; 36 O. G. 231; Pennsylvania Diamond Drill Co. *v.* Simpson (1880), 20 Fed. Rep. 286; Fryer *v.* Maurer (1884), 22 Blatch. 208; Hatch *v.* Moffit (1883), 16 Fed. Rep. 252; Lull *v.* Clark (1882), 21 Blatch. 95; 22 O. G. 1535; 13 Fed. Rep. 456; Gosling *v.* Roberts (1882), 106 U. S. 39; 22 O. G. 1785; Putnam *v.* Hutchinson (1882), 11 Bissell, 240; 12 Fed. Rep. 131; Loorhor *v.* Crandal (1881), 11 Fed. Rep. 872; 20 Blatch. 106; 21 O. G. 863; Colligon *v.* Hayes (1881), 8 Fed. Rep. 912; 20 O. G. 447; Singer Mfg. Co. *v.* Stewart Mfg. Co. (1881), 8 Fed. Rep. 920; 20 O. G. 524; Graham *v.* Geneva L. C. Mfg. Co. (1880), 11 Fed. Rep. 138; 21 O. G. 1536; Holly *v.* Vergennes Mach. Co. (1880), 4 Fed. Rep. 74; 18 O. G. 1177; 15 Blatch. 327; Double Pointed Tack Co. *v.* Mann (1880), 5 Bann. & A. 465; American Diamond Rock Boring Co. *v.* Sheldon (1879), 17 Blatch. 208; 4 Bann. & A. 551; Wilson Packing Co. *v.* Clapp (1879), 8 Bissell, 545; 4 Bann. & A. 355; *Ex parte* Greeley (1873), 6 Fisher, 575; Holmes, 284; 4 O. G. 612; King *v.* Louisville Cement Co. (1878), 6 Fisher, 336; 4 O. G. 181; Murphy *v.* Eastham (1872), Holmes, 113; 2 O. G. 61; 5 Fisher, 306; McComb *v.* Brodie (1871), 1 Woods, 153; 5 Fisher, 384; 2 O. G. 117; Taylor *v.* Garretson (1871), 5 Fisher, 116; 9 Blatch. 156; Dennis *v.* Eddy (1871), 4 Fisher, 423; Flood *v.* Hicks (1869), 4 Fisher, 156; 2 Bissell, 169; Potter *v.* Schenck (1866), 1 Bissell, 515; 3 Fisher, 82; Sangster *v.* Miller (1865), 5 Blatch. 243; 2 Fisher, 563; Case *v.* Brown (1862), 1 Bissell, 382; 2 Fisher, 268;

machine, or in its subordinate parts, are merely formal variations, unless they indicate a change in its principle or mode of operation; and similar alterations in a manufacture do not disturb its identity, unless its functions, or its method of performing them, are also changed. Yet in both these classes of inventions, and perhaps even among compositions of matter, there are peculiar cases where the specific shape given to the instrument by the inventor is the only one which can express his idea of means, and can accomplish the result which he desires.[2] In that event, its shape becomes of the

Potter *v.* Wilson (1860), 2 Fisher, 102; Lee *v.* Blandy (1860), 2 Fisher, 89; 1 Bond, 361; Cahoon *v.* Ring (1859), 1 Fisher, 397; 1 Clifford, 592; Latta *v.* Shawk (1859), 1 Fisher, 465; 1 Bond, 259; Conover *v.* Roach (1857), 4 Fisher, 12; Pitts *v.* Edmonds (1857), 2 Fisher, 52; 1 Bissell, 168; Page *v.* Ferry (1857), 1 Fisher, 298; Carr *v.* Rice (1856), 1 Fisher, 193; Allen *v.* Hunter (1855), 6 McLean, 303; Tatham *v.* Le Roy (1852), 2 Blatch. 474; Hall *v.* Wiles (1851), 2 Blatch. 194; Blanchard *v.* Reeves (1850), 1 Fisher, 103; Wilbur *v.* Beecher (1850), 2 Blatch. 132; Wilson *v.* Barnum (1849), 2 Fisher, 635; Parker *v.* Stiles (1849), 5 McLean, 44; Buck *v.* Hermance (1849), 1 Blatch. 398; Parker *v.* Haworth (1848), 4 McLean, 370; 2 Robb, 725; Many *v.* Jagger (1848), 1 Blatch. 372; Wyeth *v.* Stone (1840), 1 Story, 273; 2 Robb, 23; Smith *v.* Pearce (1840), 2 McLean, 176; 2 Robb, 13; Odiorne *v.* Winkley (1814), 2 Gallison, 51; 1 Robb, 52; Woodcock *v.* Parker (1813), 1 Gallison, 438; 1 Robb, 37; Routgen *v.* Kanowrs (1804), 1 Wash. 168; 1 Robb, 1; Bramah *v.* Hardcastle (1789), 1 Carp. 168; 1 Abb. P. C. 51.

[2] In Winans *v.* Denmead (1853), 15 How. 330, Curtis, J.: (342) "Patentable improvements in machinery are almost always made by changing some one or more forms of one or more parts, and thereby introducing some mechanical principle or mode of action not previously existing in the machine, and so securing a new or improved result. And in the numerous cases in which it has been held that to copy the patentee's mode of operation was an infringement, the infringer had got forms and proportions not described, and not in terms claimed. If it were not so, no question of infringement could arise. If the machine complained of were a copy, in form, of the machine described in the specification, of course it would be at once seen to be an infringement. It could be nothing else. It is only ingenious diversities of form and proportion, presenting the appearance of something unlike the thing patented, which give rise to questions; and the property of inventors would be valueless, if it were enough for the defendant to say: Your improvement consisted in a change of form; you describe and claim but one form; I have not taken that, and so have not infringed. The answer is, my improvement did not consist in a change of form, but in the new employment of principles or powers in a new mode of operation, embodied in a form by means of which a new or better result is produced; it was this which constituted my invention; this you have copied, *changing only the form*. . . . Undoubtedly there may be cases in which the letters-patent do include only the particular form described and claimed. Davis *v.* Palmer, 2 Brock. 309, seems to

essence of the invention, and cannot be departed from without the introduction of a new and different idea.

have been one of those cases. But they are in entire accordance with what is above stated. The reason why such a patent covers only one geometrical form is not that the patentee has described and claimed that form only; it is because that form only is capable of embodying his invention, and consequently if the form is not copied, the invention is not used. Where form and substance are inseparable, it is enough to look at the form only. Where they are separable, where the whole substance of the invention may be copied in a different form, it is the duty of courts and juries to look through the form for the substance of the invention, — for that which entitled the inventor to his patent, and which the patent was designed to secure; where that is found, there is an infringement; and it is not a defence, that it is embodied in a form not described, and in terms claimed, by the patentee. Patentees sometimes add to their claims an express declaration, to the effect that the claim extends to the thing patented, however its form or proportions may be varied. But this is unnecessary. The law so interprets the claim without the addition of these words. The exclusive right to the thing patented is not secured if the public are at liberty to make substantial copies of it, varying its form or proportions. And therefore the patentee, having described his invention, and shown its principles, and claimed it in that form which most perfectly embodies it, is, in contemplation of law, deemed to claim every form in which his invention may be copied, unless he manifests an intention to disclaim some of those forms."

In Davis *v.* Palmer (1827), 2 Brock. 298, Marshall, C. J.: (310) "It is not every change of form and proportion which is declared to be no discovery, but that which is *simply* a change of form and proportion, and nothing more. If, by changing the form and proportion, a new effect is produced, there is not simply a change of form and proportion, but a change of principle also." 1 Robb, 518 (531).

In all the foregoing extracts the word "form" is used as synonymous with "shape," as well as expressive of "embodiment" in distinction from "substance or idea." It is not, however, difficult to perceive when the one meaning is intended and when the other.

That a change of shape producing a new result is invention, see Sharp *v.* Tifft (1880), 17 O. G. 1282; 18 Blatch. 132; 2 Fed. Rep. 697; 5 Bann. & A. 399; Strobridge *v.* Lindsay (1880), 18 O. G. 62; 2 Fed. Rep. 692; 5 Bann. & A. 411; Miller's Falls Co. *v.* Backus (1879), 17 O. G. 852; 5 Bann. & A. 531; Eppinger *v.* Richey (1877), 12 O. G. 714; 14 Blatch. 367; 3 Bann. & A. 69; Swain Turbine & Mfg. Co. *v.* Ladd (1877), 11 O. G. 153; Aiken *v.* Dolan (1867), 3 Fisher, 197; Wintermute *v.* Redington (1856), 1 Fisher, 239.

That a change in shape increasing utility may be a new invention, see Starrett *v.* Athol Mach. Co. (1883), 23 O. G. 1729; 14 Fed. Rep. 910.

That shape may be of the essence of the invention, see Scott *v.* Evans (1882), 11 Fed Rep. 726; N. Y. Bung & Bushing Co. *v.* Hoffman (1881), 20 O. G. 1451; 9 Fed. Rep. 199; 20 Blatch. 3; Williams *v.* Barker (1880), 18 O. G. 243; 2 Fed. Rep. 649; Swain Turbine & Mfg. Co. *v.* Ladd (1877), 11 O. G. 153; Pearl *v.* Ocean Mills (1877), 11 O. G. 2; 2 Bann. & A. 469; Dennis *v.* Eddy (1871), 4 Fisher, 423.

That where shape is of the essence of the invention, any change of shape is a new invention, see Toepfer *v.* Goetz

§ 239. Diversities of Size.

The size of an invention is also generally a matter of mere form.[1] A mode of operation may be as accurately exhibited

(1887), 41 O. G. 933; Dosh *v.* A. J. Medlar Co. (1887), 40 O. G. 1242; Morley Sewing Mach. Co. *v.* Lancaster (1885), 23 Fed. Rep. 344; Duff *v.* Sterling Pump Co. (1882), 107 U. S. 636; 23 O. G. 1622.

That in a combination, if the elements, their mode of operation, and the result remain unchanged, no change of shape can affect the essence of the combination, see Storrs *v.* Howe (1876), 4 Clifford, 388; 10 O. G. 421; *Ex parte* Greeley (1873), 4 O. G. 612; Holmes, 284; 6 Fisher, 575; Case *v.* Brown (1864), 2 Wall. 320; Howe *v.* Williams (1868), 2 Fisher, 395; 2 Clifford, 245; Foss *v.* Herbert (1856), 2 Fisher, 31; 1 Bissell, 121; Winans *v.* Denmead (1853), 15 How. 330; O'Reilly *v.* Morse (1853), 15 How. 62.

That any alteration in the shape of the elements of a combination enabling it to produce a new result, or an old result in a new method, is invention, see Sharp *v.* Tifft (1880), 17 O. G. 1282; 18 Blatch. 132; 2 Fed. Rep. 697; 5 Bann. & A. 399.

That a change in the shape of the parts of a machine may create a new invention, see Williams *v.* Barker (1880), 18 O. G. 243; 2 Fed. Rep. 649.

But that no change in the shape of the parts will affect the identity of the machine unless the purpose or effect is also changed, see Wilson *v.* Barnum (1849), 2 Fisher, 635.

That a change in the shape of a composition of matter does not affect its identity unless its properties are thereby varied, see Milligan & Higgins Glue Co. *v.* Upton (1874), 4 Clifford, 237; 6 O. G. 837; 1 Bann. & A. 497.

That a change in the shape of a manufacture caused by a peculiar mode of packing may produce a useful result

Richey (1877), 14 Blatch. 307; 12 O. G. 714; 3 Bann. & A. 69.

But that merely to make it attractive to purchasers by changing its shape is not invention, see Reed *v.* Reed (1874), 8 O. G. 193; 12 Blatch. 366; 1 Bann. & A. 515; Langdon *v.* De Groot (1822), 1 Paine, 203; 1 Robb, 433.

That a change of shape producing a new mode of operation creates a different invention, see N. Y. Bung & Bushing Co. *v.* Hoffman, (1881), 20 Blatch. 3; 9 Fed. Rep. 199; 20 O. G. 1451; Strobridge *v.* Lindsay (1880), 5 Bann. & A. 411; 18 O. G. 62; 2 Fed. Rep. 692; Sharp *v.* Tifft (1880), 17 O. G. 1282; 2 Fed. Rep. 697; 18 Blatch. 132; 5 Bann. & A. 399; Willimantic Linen Co. *v.* Clark Thread Co. (1879), 4 Bann. & A. 123; Wilson Packing Co. *v.* Clapp (1879), 4 Bann. & A. 355; 8 Bissell, 545; Thatcher Heating Co. *v.* Carbon Stove Co. (1878), 4 Bann. & A. 68; 15 O. G. 1051; Isaacs *v.* Abrams (1878), 3 Bann. & A. 616; 14 O. G. 861; Pearl *v.* Ocean Mills Co. (1877), 2 Bann. & A. 469; 11 O. G. 2; Union Paper Collar Co. *v.* White (1875), 2 Bann. & A. 60; 7 O. G. 698, 877; 11 Phila. 479.

But that a change of shape enabling the instrument to perform new functions is invention, see Wilson *v.* Coon (1880), 19 O. G. 482; 18 Blatch. 532; 6 Fed. Rep. 611; Union Paper Collar Co. *v.* White (1875), 7 O. G. 698, 877; 2 Bann. & A. 60; 11 Phila. 479.

§ 239. [1] In Cahoon *v.* Ring (1861), 1 Clifford, 592, Clifford, J.: (612) "Difference in size and proportions, so long as the construction, arrangement, principles, and mode of operation are substantially the same, is entirely immaterial." 1 Fisher, 397 (411).

That difference in size is not dif-

in a diminutive and fragile model as in a ponderous machine; and all the essential characteristics of a manufacture or a composition or design may subsist equally in its smallest and its largest specimens. The same is true, though with more limitation, in reference to the integral parts both of machines and manufactures, an alteration in the size of which is rarely followed by a change of function, or by a variation in the method in which its functions are fulfilled. Still, instances occur where diminution or increase in this respect affects the mode in which the force employed is brought in contact with its object, changing perhaps the function, perhaps only the means by which it is performed, and producing a diversity of substance which amounts either to a new invention, or to a patentable improvement on the old.

§ 240. Diversities of Capacity.

The capacity of an invention to produce results of greater or less quantity in a given period of time is likewise dependent rather on the mode of its embodiment than upon its essential character.[1] Speed and productive power are gov-

ference in inventions, see Montross *v.* Bullard (1886), 27 Fed. Rep. 64; Asmus *v.* Alden (1886), 27 Fed. Rep. 684; 36 O. G. 231; Baldwin *v.* Haynes (1886), 28 Fed. Rep. 99; 37 O. G. 565; Belt *v.* Crittenden (1880), 2 Fed. Rep. 82; 18 O. G. 191; 1 McCrary, 209; 5 Bann. & A. 131; Double Pointed Tack Co. *v.* Mann (1880), 5 Bann. & A. 465; Glue Co. *v.* Upton (1877), 97 U. S. 3; Phillips *v.* Page (1860), 24 How. 164.

§ 240. [1] In Loom Co. *v.* Higgins (1881), 105 U. S. 580, Bradley, J.: (591) "It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result never attained before, it is evidence of invention. It was certainly a new and useful result to make a loom produce fifty yards a day when it never before had produced more than forty; and we think that the combination of elements by which this was effected, even if those elements were separately known before, was invention sufficient to form the basis of a patent." 21 O. G. 2031 (2035).

In the above case it was the fact that, although it had long been desirable to increase the capacity of the loom, no one had found out how to do it that indicated invention, not the mere increase *per se*.

In Imlay *v.* The Norwich & Worcester R. R. Co. (1858), 1 Fisher, 340, Ingersoll, J.: (349) "Where, in two devices, the end to be accomplished is the same, and the substantial means to accomplish the end are the same, the two devices are identical, though one may accomplish the end more effectu-

erned generally by the degree of force employed, or by the size of the invention through which it is applied. Diversities in these respects, however, may arise from other causes than from changes in the magnitude of the instrument or the degree of force; and in such cases, though the function still remains the same, the variation in capacity may be so great, or hitherto so unattainable, as to denote either the development of the old idea of means or the introduction of a new and independent idea.[3]

§ 241. Diversities of Proportion.

The proportion of one part of an invention to the others is frequently a matter of essential consequence. This is especially the case in chemical compositions, whose entire law of ingrediental co-operation often depends upon the strictest preservation of the due proportions between their several elements. To a less extent it is true also of designs,

ally than the other." 4 Blatch. 227 (237).

That changes in capacity or power do not necessarily affect the identity of an invention, see Brainard *v.* Evening Post Association (1884), 22 Blatch. 61; 19 Fed. Rep. 422; Belt *v.* Crittenden (1880), 18 O. G. 191; 1 McCrary, 209; 2 Fed. Rep. 82; 5 Bann. & A. 131; Planing Mach. Co. *v.* Keith (1879), 101 U. S. 479; 17 O. G. 1031; Stow *v.* Chicago (1877), 8 Bissell, 47; 3 Bann. & A. 83; Putnam *v.* Yerrington (1876), 9 O. G. 689; 2 Bann. & A. 237; Day *v.* Bankers & Brokers Telegraph Co. (1872), 5 Fisher, 268; 9 Blatch. 345; 1 O. G. 551; Roberts *v.* Harnden (1865), 2 Clifford, 500; Forbes *v.* Baratow Stove Co. (1864), 2 Clifford, 379; Cahoon *v.* Ring (1861), 1 Clifford, 592; 1 Fisher, 397; Phillips *v.* Page (1860), 24 How. 164.

That an increase of excellence and convenience do not *per se* change the character of an invention, see Perry *v.* Co-operative Foundry Co. (1882), 12 Fed. Rep. 149; 20 Blatch. 505; 22 O. G. 1624; Guidet *v.* Brooklyn (1881), 105 U. S. 550; 21 O. G. 1692; Putnam *v.* Yerrington (1876), 9 O. G. 689; 2 Bann. & A. 237; Stevens *v.* Pierpont (1875), 42 Conn. 360; Pitts *v.* Wemple (1855), 2 Fisher, 10; 1 Bissell, 87; Tatham *v.* Le Roy (1852), 2 Blatch. 474; Alden *v.* Dewey (1840), 1 Story, 336; 2 Robb, 17.

That a mere increase in simplicity and cheapness may not affect identity, see Evory *v.* Burt (1883), 15 Fed. Rep. 112; 23 O. G. 2121; Odiorne *v.* Denney (1878), 13 O. G. 965.

[3] That changes in capacity or economy of action may sometimes indicate a change in the essence of the invention, see Sharp *v.* Tifft (1880), 17 O. G. 1282; 18 Blatch. 132; 2 Fed. Rep. 697; 5 Bann. & A. 399.

That changes in degree are not invention, see Asmus *v.* Alden (1888), 27 Fed. Rep. 684; 36 O. G. 23; May *v.* County of Fond du Lac (1886), 27 Fed. Rep. 691; Guidet *v.* Brooklyn (1882), 105 U. S. 550; 21 O. G. 1692.

and may be so in reference to any manufacture or machine. Wherever the proportions are essential, diversity therein is of course diversity in substance, whether the change results in the ability of the invention to perform new functions, or works an alteration only in its mode of operation. When they are not essential their variations, however great, affect only the form of the embodiment, and leave the identity of the invention undisturbed.[1]

§ 242. Diversities of Arrangement.

The arrangement of the parts of an invention, also, sometimes expresses an essential characteristic of its idea of means.[1]

§ 241. [1] That a mere change of proportions, no new mode of operation being introduced, does not affect the identity of an invention, see Miller's Falls Co. *v.* Backus (1879), 17 O. G. 852; 5 Bann. & A. 53; Roberts *v.* Ryer (1875), 91 U. S. 151; 10 O. G. 204; Tatham *v.* Le Roy (1852), 2 Blatch. 474; Hall *v.* Wiles (1851), 2 Blatch. 194; Parker *v.* Stiles (1849), 5 McLean, 44; Reutgen *v.* Kanowrs (1804), 1 Wash. 168; 1 Robb, 1.

That where the elements, mode of operation, and result of a combination remain the same, no change of proportions can make the combination a new one, see Isaacs *v.* Abrams (1878), 14 O. G. 861; 3 Bann. & A. 616; *Ex parte* Greeley (1873), 4 O. G. 612; 6 Fisher, 575; Holmes, 284; Winans *v.* Denmead (1853), 15 How. 330.

That the same rule applies in chemical processes and compositions, see Rumford Chemical Works *v.* Lauer (1872), 10 Blatch. 122; 5 Fisher, 615; 3 O. G. 349.

§ 242. [1] In Gilbert & Barker Mfg. Co. *v.* Walworth Mfg. Co. (1876), 9 O. G. 746, Shepley, J.: (746) "Mere change of location is not patentable, but where change of location brings into existence a new combination . . . to produce a new and useful result, such new combination is patentable." 2 Bann. & A. 271 (272).

In Marsh *v.* Dodge & Stevenson Mfg. Co. (1873), 6 Fisher, 562, Woodruff, J.: (565) "Is the mere location of devices, such devices not being new, patentable? To this the answer must be that it is not. If the result is the same, and nothing new is required to adapt an apparatus to operate in its new location, nothing has been done which can be called invention. If such change of location produced a new combination of devices, producing a new result, then, indeed, something patentable may have been devised; but mere change of location is not invention. On the other hand, where change of location involves the employment of new devices to adapt an apparatus for use in the new position, and a beneficial result is produced, then this location, in its connection with such new devices, — that is, the means by which the result is produced, and not the result itself, — is patentable. And where such change of location brings into existence a new combination of devices, operating by reason of such new combination to produce a new and useful result, such new combination is patentable." 5 O. G. 398 (399).

That a mere change in the location or arrangement of the parts of an inven-

A process usually consists of a series of acts performed in a certain order. A combination is a group of subordinate

tion, without changing its function or mode of operation, does not affect its identity, see Kirk *v.* Du Bois (1887), 42 O. G. 207; Aron *v.* Manhattan Ry. Co. (1886), 26 Fed. Rep. 314; 34 O. G. 1508; Straw Sowing Mach. Co. *v.* Eames (1880), 19 O. G. 359; 18 Blatch. 520; 6 Fed. Rep. 181; Knox *v.* Great Western Quicksilver Mining Co. (1878), 14 O. G. 897; 6 Sawyer, 430; Pearl *v.* Ocean Mills (1877), 11 O. G. 2; 2 Bann. & A. 469; Adams *v.* Joliet Mfg. Co. (1877), 3 Bann. & A. 1; 12 O. G. 93; Gilbert & Barker Mfg. Co. *v.* Tirrell (1874), 8 O. G. 2; 1 Bann. & A. 315; 12 Blatch. 144; Buerk *v.* Imhaeuser (1874), 1 Bann. & A. 337; 5 O. G 752; Dane *v.* Illinois Mfg. Co. (1872), 2 O. G. 680; 6 Fisher, 124; 3 Bissell, 374; King *v.* Maudelbaum (1871), 8 Blatch. 468; 4 Fisher, 577; Blake *v.* Eagle Works Mfg. Co. (1871), 3 Bissell, 77; 4 Fisher, 591; Brooks *v.* Bicknell (1844), 3 McLean, 432; Bovill *v.* Keyworth (1857), 7 El. & B. 725.

That to change the attachment of one part of a machine to another does not necessarily affect its identity, see Ives *v.* Hamilton (1875), 92 U. S. 426; 10 O. G. 336.

That to reverse the order of parts without changing the idea of the invention does not affect identity, see Minter *v.* Wells (1834), 1 Web. 127; 2 Abb. P. C. 26.

That a change in arrangement by which one part performs a double function, which it before did separately, is not invention, see Adams *v.* Bellaire Stamping Co. (1886), 28 Fed. Rep. 360; 36 O. G. 567.

That a change of arrangement without change of function or result is not invention, see Belle Patent Button Fastener Co. *v.* Lucas (1886), 28 Fed. Rep. 371; 37 O. G. 1004; Hancock Inspirator Co. *v.* Lally (1886), 27 Fed. Rep. 88; 35 O. G. 1001; Adams *v.* Bellaire Stamping Co. (1886), 28 Fed. Rep. 360; 36 O. G. 567.

That to change the location of one element in a combination without change of function or mode of operation does not affect the identity of the combination, even though the change enables the inventor to dispense with other elements whose functions are now performed by the one thus changed, see Dane *v.* Illinois Mfg. Co. (1872), 3 Bissell, 374; 6 Fisher, 124; 2 O. G. 680.

That to change the location of *the* elements in a combination does not make it a new combination simply because the change enables it to produce a *better* effect, see Adams *v.* Joliet Mfg. Co. (1877), 12 O. G. 93; 3 Bann. & A. 1.

That change in arrangement may be invention, see Brown Mfg. Co. *v.* Deere (1884), 28 O. G. 1187; 21 Fed. Rep. 709; Florence Sewing Mach. Co. *v.* Grover & Baker Sewing Mach. Co. (1872), 110 Mass. 70.

That a change of location of parts producing a *new* result makes a new invention, see Reay *v.* Berlin & Jones Envelope Co. (1884), 28 O. G. 370; 20 Fed. Rep. 506; Barber *v.* Hallett (1881), 20 O. G. 449; 10 Fed. Rep. 130; Gilbert & Barker Mfg. Co. *v.* Walworth Mfg. Co. (1876), 9 O. G. 746; 2 Bann. & A. 271; Carstaedt *v.* U. S. Corset Co. (1875), 13 Blatch. 119; 9 O. G. 151; 2 Bann. & A. 119; Calkins *v.* Bertraud (1875), 6 Bissell, 494; 2 Bann. & A. 215; 9 O. G. 795; Gilbert & Barker Mfg. Co. *v.* Tirrell (1874), 12 Blatch. 144; 8 O. G. 2; 1 Bann. & A. 315.

That to rearrange a well-known article, if changing its idea of means, is to

means, so located with reference to each other that they obey a new law of co-operation. The identity of a design depends upon the place occupied by each line or image in relation to the others. Even a simple machine or manufacture may be unable to discharge its functions, unless the situation of every portion of the instrument remains unchanged. In many of these cases, any variation in arrangement destroys the entire availability of the invention, and renders it incapable of useful action. In others, while it still accomplishes its ends, it does so by a different application of the force which it employs, and thus becomes a different invention. Diversity of arrangement, therefore, though the parts themselves are not affected, is often a diversity of substance, and always must be such when the result of re-arrangement is either a new function or the performance of the old one in a different manner. But when, notwithstanding differences of location or arrangement, the function and the mode of operation are in all respects the same, the diversity is only formal, and the character of the invention is not changed.

§ 243. Diversities of Material.

The materials of which the parts of an invention are composed are not often essential to its identity, except in compositions of matter.[1] In these compositions, the prop-

make a new invention, see Stanley Works *v.* Sargent (1871), 8 Blatch. 844; 4 Fisher, 443.

That to rearrange the elements of a combination, thereby producing a new effect, creates a new combination, see Woodward *v.* Dinsmore (1870), 4 Fisher, 163; Foxwell *v.* Bostock (1864), 12 W. R. 723; 10 L. T. N. S. 144.

And this, though the general principle of the combination remains unchanged, see Zane *v.* Peck (1877), 12 O. G. 518.

And though the action of certain of the elements is unchanged, see Fitch *v.* Bragg (1831), 20 O. G. 1589; 8 Fed. Rep. 588; Adams *v.* Joliet Mfg. Co. (1877), 12 O. G. 93; 3 Bann. & A. 1; Turrill *v.* Illinois Central R. R. Co. (1867), 3 Fisher, 330; 3 Bissell, 66.

§ 243. [1] A "change of material," in reference to an invention, may take place in two ways: (1) By a change in the materials of which the invention itself consists; (2) By a change in the materials of the object upon which the invention is intended to act. Instances of the first change occur where in a process different substances are used, or in a machine or manufacture brass or wood are substituted for iron, &c. Instances of the second change are found where an art or instrument heretofore employed upon one fabric or material is now for the first time directed toward another. These changes

erties of the ingredients are the elemental forces whose union constitutes the new invention; and hence a change which in-

are essentially distinct, and raise entirely different questions in Patent Law. In the former change, these questions relate to the identity of the invention in which the change has taken place, and are answered by determining whether the substitution affects the idea of means previously expressed in the invention. In the latter change, these questions relate to the use of the existing invention, and are answered by determining whether its use upon the new material embodies a new idea of means, involving the exercise of inventive skill, or is a mere analogous or double use. Only the former change and former questions are referred to in this paragraph and the present note. The latter will be found sufficiently discussed in Section IV., §§ 259–271, under the head of "Double Use." Yet in examining the citations and references under both topics, the reader will discover that these two changes are frequently spoken of by the courts as if they were but one, and caution to distinguish what is applicable to each is therefore always necessary.

In Gardner *v.* Herz (1886), 118 U. S. 180, Blatchford, J.: (192) "But a patent cannot be taken out for an article, old in purpose and shape and mode of use, when made for the first time out of an existing material, and with accompaniments before applied to such an article, merely because the idea has occurred that it would be a good thing to make the article out of that particular old material." 35 O. G. 999 (1000).

In Isaacs *v.* Abrams (1878), 14 O. G. 861, Lowell, J.: (862) "It is not invention to change one well-known material for another, or to apply a well-known process, without some adaptation more than every skilled mechanic could apply, to a new art or subject; but a change in the form of a machine or instrument, though slight, if it works a successful result not before accomplished in a similar way in the art to which it is applied, or in any other, is patentable." 3 Bann. & A. 616 (617).

In Smith *v.* The Goodyear Dental Vulcanite Co. (1876), 93 U. S. 486, Strong, J.: (496) "The patent in that case [Hotchkiss *v.* Greenwood, 11 How. 248, see *post*] was for an improvement in making door and other knobs for doors, locks, and furniture; and the improvement consisted in making them of clay or porcelain in the same manner in which knobs of iron, brass, wood, or glass had been previously made. Neither the clay knob nor the described method of attaching it to the shank were novel. The improvement therefore was nothing more than the substitution of one material for another in constructing an article. The clay or porcelain door-knob had no properties or functions which other door-knobs, made of different materials, had not. It was cheaper and perhaps more durable; but it could be applied to no new use, and it remedied no defects which existed in other knobs. Hence it was ruled that the alleged improvement was not a patentable invention. The case does decide that employing one known material in place of another is not invention, if the result be only greater cheapness and durability of the product. But this is all. It does not decide that no use of one material in lieu of another, in the formation of a manufacture, can in any case amount to invention, or be the subject of a patent. If such a substitution involves a new mode of construction, or develops new uses and properties of the article formed, it may amount to invention. The substitution may be

troduces different ingredients must be a variation in the substance of the means. But in the other classes of inventions

something more than formal. It may flame of oil to finish cloth. These require contrivance, in which case the mode of making it would be patentable; or the result may be the production of an analogous but substantially different manufacture. This was intimated very clearly in the case of Hicks *v.* Kelsey (18 Wall. 670), where it was said 'the use of one material instead of another in constructing a known machine is, *in most cases*, so obviously a matter of mere mechanical judgment and not of invention, that it cannot be called an invention *unless* some new and useful result, as increase of efficiency or a decided saving in the operation, be obtained.' But where there is some such new and useful result, where a machine has acquired new functions and useful properties, it may be patentable as an invention, though the only change made in the machine has been supplanting one of its materials by another. This is true of all combinations whether they be of materials or processes. In Crane *v.* Price (1 Webster's Patent Cases, 393), where the whole invention consisted in the substitution of anthracite for bituminous coal in combination with a hot-air blast for smelting iron ore, a patent for it was sustained. The doctrine asserted was that if the result of the substitution was a new, a better, or a cheaper article, the introduction of the substituted material into an old process was patentable as an invention. This case has been doubted, but it has not been overruled; and the doubts have arisen from the uncertainty whether any new result was obtained by the use of anthracite. In Kneass *v.* The Schuylkill Bank (4 Wash. C. C. 9), the use of steel plates instead of copper for engraving was held patentable. So has been the flame of gas instead of the cases rest on the fact that a superior product has been the result of the substitution, a product that has new capabilities, and that performs new functions." 11 O. G. 246 (249).

In The Goodyear Dental Vulcanite Co. *v.* Smith (1874), Holmes, 354, Shepley, J.: (364) "Strictly speaking, no new manufacture is anything more than a new combination and arrangement of old materials; and whenever such new combination and arrangement produces a new and useful result, there being diversity of method and diversity of result, the invention is patentable." 5 O. G. 585 (589); 1 Bann. & A. 201 (213). In this case also, Hotchkiss *v.* Greenwood, 11 How. 248, is commented on, and explained in accordance with this doctrine.

In Hicks *v.* Kelsey (1873), 18 Wall. 670, Bradley, J.: (673) "The use of one material instead of another in constructing a known machine is in most cases so obviously a matter of mere mechanical judgment, and not of invention, that it cannot be called an invention unless some new and useful result — an increase of efficiency, or a decided saving in the operation — is clearly attained. . . . (674) In Crane *v.* Price (Webster's Pat. Ca. 409), it is true the use of anthracite, instead of bituminous coal, with the hot blast in smelting iron ore was held to be a good invention, inasmuch as it produced a better article of iron at a less expense. But that was a process of manufacture, and in such processes a different article, replacing another article in the combination, often produces different results. The latter case is more analogous to the cases of compositions of matter than it is to those of machinery; and in compositions of

it is seldom necessary that any specific material should be employed. In manufactures and machines, any material ca-

matter, a different ingredient changes the identity of the compound, whereas an iron bar in place of a wooden one and subserving the same purpose, does not change the identity of the machine." 5 O. G. 94 (94).

In Hotchkiss v. Greenwood (1850), 11 How. 248, Nelson, J. : (265) "The instruction assumes and, as was admitted on the argument, properly assumes that knobs of metal, wood, etc., connected with a shank and spindle in the mode and by the means used by the patentees in their manufacture had been before known, and were in public use at the date of the patent ; and hence the only novelty which could be claimed on their part was the adaptation of this old contrivance to knobs of potter's clay or porcelain ; in other words, the novelty consisted in the substitution of the clay knob in the place of one made of metal or wood, as the case might be. And in order to appreciate still more clearly the extent of the novelty claimed, it is proper to add that this knob of potter's clay is not new, and therefore constitutes no part of the discovery. If it was, a very different question would arise ; as it might very well be urged, and successfully urged, that a knob of a new composition of matter, to which this old contrivance had been applied, and which resulted in a new and useful article, was the proper subject of a patent. The novelty would consist in the new composition, made practically useful for the purposes of life by the means and contrivances mentioned. It would be a new manufacture, and none the less so, within the meaning of the patent law, because the means employed to adapt the new composition to a useful purpose was old or well-known. But in the case before us, the knob is not new, nor the metallic shank or spindle, nor the dovetail form of the cavity in the knob, nor the means by which the metallic shank is securely fastened therein. All these were well known and in common use ; and the only thing new is the substitution of a knob of a different material from that heretofore used in connection with this arrangement. Now it may very well be that by connecting the clay or porcelain knob with the metallic shank in this well-known mode, an article is produced better and cheaper than in the case of the metallic or wood knob ; but this does not result from any new mechanical device or contrivance, but from the fact that the material of which the knob is composed happens to be better adapted to the purpose for which it is made. The improvement consists in the superiority of the material, and which is not new, over that previously employed in making the knob. But this of itself can never be the subject of a patent. No one will pretend that a machine, made in whole or in part of materials better adapted to the purpose for which it is used than the materials of which the old one is constructed, and for that reason better and cheaper, can be distinguished from the old one, or in the sense of the patent law can entitle the manufacturer to a patent. The difference is formal, and destitute of ingenuity or invention. It may afford evidence of judgment and skill in the selection and adaptation of the materials in the manufacture of the instrument for the purposes intended, but nothing more."

That a mere change of the materials of which an invention consists, no new idea of means being thereby expressed, is not invention, see Florsheim v. Schilling (1886), 26 Fed. Rep. 256 ;

pable of receiving and retaining the forms of their essential parts is usually sufficient for the performance of their func-

35 O. G. 1435; N. Y. Bung & Bushing Co. v. Doelger (1885), 23 Fed. Rep. 101; 32 O. G. 651; 23 Blatch. 167; Palmenbing v. Buchholz (1882), 23 O. G. 632; 13 Fed. Rep. 672; U. S. Stamping Co. v. King (1879), 17 Blatch. 55; 17 O. G. 1399; 4 Bann. & A. 469; Phillips v. Detroit (1879), 4 Bann. & A. 347; 17 O. G. 191; Stow v. Chicago (1877), 8 Bissell, 47; 3 Bann. & A. 88; Dalton v. Nelson (1876), 2 Bann. & A. 225; 13 Blatch. 357; 9 O. G. 1112; Dunbar v. Myers (1876), 94 U. S. 187; 11 O. G. 35; Reckendorfer v. Faber (1876), 92 U. S. 347; 10 O. G. 71; Putnam v. Yerrington (1876), 9 O. G. 689; 2 Bann. & A. 237; Holbrook v. Small (1876), 2 Bann. & A. 396; 10 O. G. 503; Ingersoll v. Turner (1875), 2 Bann. & A. 89; 12 O. G. 189; 7 Fed. Rep. 859; Welling v. Rubber Coated Harness Trimming Co. (1874), 1 Bann. & A. 282; 7 O. G. 606; Opinion Atty. Gen. (1827), 2 Op. At. Gen. 52; Thompson v. James (1863), 32 Beav. 570; Mackelcan v. Rennie (1862), 13 C. B. N. S. 52.

That to substitute for any of the materials used in the parts of a machine a new material discovered by the substitutor does not affect the identity of the machine unless its mode of operation be thereby changed, see Bailey Washing & Wringing Mach. Co. v. Lincoln (1871), 4 Fisher, 379.

That the fact that the materials are cheaper and better makes no difference, see Florsheim v. Schilling (1886), 26 Fed. Rep. 256; 35 O. G. 1435; Putnam v. Weatherbee (1875), Holmes, 497; 8 O. G. 320; Hotchkiss v. Greenwood (1848), 4 McLean, 456; 2 Robb, 730.

That the fact that the material substituted was never before used for the same purpose is of no consequence, see Rushton v. Crawley (1870), L. R. 10 Eq. 522; Jordan v. Moore (1868), L. R. 1 C. P. 624.

That the substitution of purer materials, whereby a compound becomes more useful, or useful for additional but analogous purposes, does not affect its identity, see Buchan v. McKesson (1880), 7 Fed. Rep. 100; 18 Blatch. 485; 19 O. G. 222.

That where the material is of the essence of the invention, a change in material destroys its identity, see Western & Wells Mfg. Co. v. Rosenstock (1887), 30 Fed. Rep. 67; 41 O. G. 354; Aiken v. Bemis (1847), 3 Wood. & Min. 348; 2 Robb, 644.

That where the substitution of different materials enables the invention to effect a new result, it may produce substantial change in the invention, see Dalton v. Nelson (1876), 2 Bann. & A. 225; 13 Blatch. 357; 9 O. G. 1112; Goodyear Dental Vulcanite Co. v. Willis (1874), 1 Bann. & A. 569; 7 O. G. 41; 1 Flippin, 388.

And that such substantial change may be evidenced by the increased efficiency or economy with which the invention operates, see Dalton v. Nelson (1876), 9 O. G. 1112; 13 Blatch. 357; 2 Bann. & A. 225; Goodyear Dental Vulcanite Co. v. Willis (1875), 7 O. G. 41; 1 Flippin, 388; 1 Bann. & A. 568.

That where the substitution of a different material involves the employment of a different process, such substitution may be an invention, see Goodyear Dental Vulcanite Co. v. Davis (1880), 102 U. S. 222; 19 O. G. 543.

That to use an old material for an entirely new purpose may be invention, see Jenkins v. Walker (1872), Holmes, 120; Newton v. Vaucher (1851), 6 Exch. 859.

That to improve an existing material

tions, and the expression of their ideas of means. A change in such materials may affect the durability of the instrument, or the perfection with which it produces its results, but these attributes relate to the form of embodiment alone, not to the essence of the invention. Yet if diversity of the material employed requires a new mode of construction, or develops new capacities in the invention, as indicated either in the instrument itself or its effects, the change is one of substance, and produces an improvement or a new invention.

§ 244. Degree of these Diversities Immaterial unless they Affect the Substance of the Invention.

It is obvious that neither of these diversities can be accurately judged except by its effect upon the invention as a whole, and that this effect can be ascertained only by studying the art or instrument while in actual operation. However great the apparent magnitude of the diversity, it exists merely in embodiment unless the function or the mode of its performance is also changed. And slight as is the variation to the eye, if a new function is discharged, or if former functions are accomplished by a different force or by different applications of the same force, the variation is essential, and each invention is a distinct and independent means.

SECTION III.

OF THE NOVELTY OF INVENTIONS: IDENTITY: THE DOCTRINE OF EQUIVALENTS.

§ 245. Diversities of Integral Parts are sometimes Diversities of Substance, sometimes of Form.

Inventions which perform the same functions may differ not only in shape, size, capacity, proportions, arrangement, and materials, but also in the individual character of the parts or elements of which they are composed. When such diver-

so as to adapt it to a new use, and then apply it to that use, may be invention, see Hoffman v. Aronson (1871), 8 Blatch. 324; 4 Fisher, 456.

sity results in the expression of a different idea of means, the diversity is one of substance, and each of the inventions is distinct from and independent of the other. When the idea of means in both inventions is essentially the same, the variation either indicates a different development of this idea, by which the later invention becomes an improvement on the earlier, or is a simple alteration in the form of its embodiment. The rules which govern these diversities are based on the familiar principles already stated, and taken together, constitute the "Doctrine of Equivalents."

§ 246. "Equivalent" a Term Relating either to Substance or to Form: Equivalence in Form Alone here Considered.

The term "equivalent" is used in Patent Law in two different senses, and in relation to two different subjects. In one sense it denotes the correspondence between agencies which not only perform the same functions, but are in themselves the same operative means. In this sense it is synonymous with "identical;" and can be properly employed only in reference to an invention as a whole.[1] In its second and more

§ 246. [1] The courts, in using this term "equivalent" have not always been careful to distinguish between these two meanings of the word. Thus in Gottfried *v.* Phillip Best Brewing Co. (1879), 17 O. G. 675, Dyer, J.: (685) "To make one mechanical device the equivalent of another, it must appear not only that it produces the same effect, but that such effect is produced by substantially the same mode of operation." 5 Bann. & A. 4 (34).

In Conover *v.* Roach (1857), 4 Fisher, 12, Hall, J.: (26) "It is not enough, in order to show that one mechanical device is the equivalent of another, that it accomplishes the same result; that it produces the same effect unless that effect is produced by substantially the same mode of operation. In other words, the ultimate end and object of a machine may be to produce a fabric or manufacture of a certain kind, and it may well appear in the progress of invention that several different inventors may have invented different machines, producing the fabric or that manufacture by entirely different modes of operation, and in that event each successful inventor might be entitled to his patent. They might perhaps be so entirely distinct and different, and independent in their organization and mode of operation, that a patent for each might stand, covering the whole machine as an entirely distinct and independent organization; . . . or they might stand, one being an improvement on the other. It is not therefore sufficient, in order to authorize the jury to find that one device, or a series of devices all operating to the same end, is or are mechanical equivalents for other devices, unless they effect the same substantial purpose by substantially the same mode of operation."

There can be no question that in

technical sense it signifies the interchangeability of agencies which are known in the arts to be capable of serving the same purpose as integral parts of some particular invention.[2] In this sense it is applicable to the elements or ingredi-

both these decisions the judges used "equivalent" in the sense of "identical;" and were comparing complete inventions as distinguished from integral parts. The doctrine here stated, however, is applicable, as we shall hereafter see (§ 254, *post*), to the elements of mechanical combinations, which cannot be equivalents unless they are identical both in function and in mode of operation.

Another distinction between "equivalence" as predicated of entire inventions, and "equivalence" as used in reference to elements and factors of inventions, is well stated in Johnson *v.* Root (1858), 1 Fisher, 351, by Sprague, J.: (363) "The term 'equivalent,' gentlemen, has two meanings as used in this class of cases. The one relates to the results that are produced, and the other to the mechanism by which those results are produced. Two things may be equivalent; that is, the one equivalent to the other as producing the same result when they are not the same mechanical means. Mechanical equivalents are spoken of as different from equivalents that merely produce the same result. A mechanical equivalent, I suppose, as generally understood, is where the one may be adopted instead of the other by a person skilled in the art from his knowledge of the art. Thus, an instrumentality is used in a mechanism; you wish to produce a pressure downward; it can be done by a spring, or it can be done by a weight. A machine is presented to a person conversant with machines. He sees that the force applied downward in the one before him is by a weight; from the knowledge of his art he can pass at once to another force — the spring — to press it downward, and these are mechanical equivalents. But, gentlemen, there may be equivalents in producing the same results, each of which is an independent matter of invention, and in that sense they are not mechanical equivalents. To illustrate my meaning, suppose, in early days, the problem was to get water from a well to the surface of the earth. One man takes a rope made of grass, and draws up a pail of water; another would see that, as a mechanical equivalent, a rope of hemp would accomplish the same result. But suppose another person comes, and for the first time invents a pump. That is equivalent in the result of bringing the water to the surface of the ground; in that respect it is equivalent in producing that result to hauling it up by a rope, but is not mechanically equivalent; it brings into operation, as you know, very different powers and forces, and would require invention to introduce it."

That an "equivalent" is the identical art or device, see May *v.* County of Fond du Lac (1886), 27 Fed. Rep. 691; Cahoon *v.* Ring (1859), 1 Fisher, 397; 1 Clifford, 592.

That whether two arts or devices are "equivalent" is a question of fact for the jury, see May *v.* County of Fond du Lac (1886), 27 Fed. Rep. 691; Tatham *v.* Le Roy (1852), 2 Blatch. 474; Blanchard's Gunstock Turning Factory *v.* Warner (1848), 1 Blatch. 258.

[2] In the second sense equivalents are defined as "obvious and customary" interchanges, see Smith *v.* Downing (1850), 1 Fisher, 64.

ents by whose union in one art or instrument the inventor has embodied his idea of means. It does not indicate identity either in essential character or individual function, but merely the ability to produce the same effects when brought into connection with the other elements in the invention. It is in this sense that the word is used in speaking of the "Doctrine of Equivalents."

§ 247. "Equivalent" in Form, Defined.

An equivalent is therefore any act or substance which is known in the arts as a proper substitute for some other act or substance employed already as an element in an invention, and whose substitution for that other act or substance does not in any manner vary the idea of means.[1] Thus it possesses three characteristics: (1) It must be capable of performing the same office in the invention as the act or substance whose place it supplies;[2] (2) It must relate to the form of embodiment alone and not affect in any degree the idea of means; and (3) It must have been known in the arts, at the date of the patent, as endowed with this capability, or have subsequently become so known without the further exercise of inventive skill.[3] Each of these requisites demands a more extended explanation.

§ 248. Equivalence Depends on Capability of Substitution in the Concrete Invention.

The first essential attribute of an equivalent is its capability of serving as a substitute for the act or substance in whose

§ 247. [1] That the substitution of equivalents does not vary the idea of means, see Hobbie *v.* Smith (1886), 27 Fed. Rep. 656; Adams *v.* Bellaire Stamping Co. (1886), 28 Fed. Rep. 360; 36 O. G. 567; Brighton *v.* Wilson (1883), 18 Fed. Rep. 378; Putnam *v.* Hutchinson (1882), 11 Bissell, 240; 12 Fed. Rep. 131. See also §§ 253–255, *post*.

[2] That a device must perform the same function, in order to be an equivalent, see Piper *v.* Shedd (1885), 26 Fed. Rep. 151; 35 O. G. 256. See also §§ 248–252, *post*.

[3] That one thing is an equivalent for another when a skilful workman from one would have known the other, see May *v.* County of Fond du Lac (1886), 27 Fed. Rep. 691; Carter *v.* Baker (1871), 4 Fisher, 404; 1 Sawyer, 512.

That equivalence must have been known at the date of the patent, see Gould *v.* Rees (1872), 15 Wall. 187; 6 Fisher, 106; 2 O. G. 624. See also § 256, *post*.

place it is employed. The existence of this capability cannot be ascertained by an examination of the alleged equivalent alone, nor by comparing the two acts or substances in their separated state. It depends entirely upon the relation which each occupies toward the invention into which they enter, and on the manner in which each co-operates in the invention with the other acts or substances to which it is there united. Equivalence can therefore be determined only by contrasting the two acts or substances when associated with the other elements of the invention, and engaged in the performance of the functions which they are intended to discharge. If, when subjected to this test, it is discovered that each so operates in the invention as to perform the precise function of the other, each is, in reference to that particular invention, the equivalent of the other, provided it effects no alteration in the idea of means, and had become known in the arts as such equivalent before the patent for the invention had been granted, or afterwards became known without the exercise of inventive skill.[1]

§ 248. [1] In American Whip Co. *v.* Lombard (1878), 4 Clifford, 495, Clifford, J.: (505) "By an equivalent in such a case, it is meant that the element or ingredient substituted for the one withdrawn performs the same function as the other, and that it was well known at the date of the patent in question as a proper substitute for the one omitted in the patented combination." 3 Bann. & A. 598 (604); 14 O. G. 900 (902).

In Carter *v.* Baker (1871), 1 Sawyer, 512, Sawyer, J.: (516) "When in mechanics, one device does a particular thing, or accomplishes a particular result, every other device known and used in mechanics which skilful and experienced workmen know will produce the same result, or do the same particular thing, is a known mechanical substitute for the first device mentioned for doing that thing, or accomplishing that result, although the first device may never before have been detached from its work and the second one put in its place. It is sufficient to constitute known mechanical substitutes that, when a skilful mechanic sees one device doing a particular thing, he knows the other devices, whose uses he is acquainted with, will do the same thing." 4 Fisher, 404 (409).

In Foss *v.* Herbert (1856), 1 Bissell, 121, Drummond, J.: (126) "The question whether one thing is a mechanical equivalent for another is a question of fact, depending on the testimony of experts, on an inspection of the machines; and it is an inference to be drawn from all the circumstances of the case, by attending to the consideration whether the contrivance used by the defendant is used for the same purpose, performs the same functions, or is applicable to the same object as the contrivance used by the patentee." 2 Fisher, 31 (36).

That an equivalent is such by the effect which it produces as an element in the invention, see Wilt *v.* Grier (1881),

§ 249. Equivalence not Dependent on Identity of Individual Attributes.

Hence it is evident that similarity in individual character does not create, nor does diversity in individual character destroy, equivalence between such acts and substances as are thus capable of substitution for each other.[1] However unlike in name, shape, size, capacity, proportions, arrangement, or material they may appear to be, when studied only in connection with each other, if when brought into their position in the art or instrument their interchangeability is manifest, these individual variations become of no importance. Equivalence resides in use, not in intrinsic attributes; and similarity of use alone is necessary to make one act or substance the equivalent of another.

§ 250. Equivalence not Dependent on Capability of Substitution in other Inventions.

Nor is it of the slightest consequence that in reference to some different invention, of which one of these acts or substances is an essential element, this interchange would be impossible. The function of an act or substance depends not

19 O. G. 427; 5 Fed. Rep. 450; Clarke v. Johnson (1880), 4 Fed. Rep. 437; 18 O. G. 1276; 18 Blatch. 450; Smith v. Marshall (1876), 10 O. G. 375; 2 Bann. & A. 371; Storrs v. Howe (1876), 10 O. G. 421; 4 Clifford, 388.

That nothing can be an equivalent if its substitution produces a substantial change in the result, see Clarke v. Johnson (1880), 4 Fed. Rep. 437; 18 O. G. 1276; 18 Blatch. 450.

§ 249. [1] In Blake v. Rawson (1873), Holmes, 200, Shepley, J.: (203) "It is not always enough to prove that two combinations of elements are equivalent to show that each element of the combination in one may be regarded under some circumstances as the equivalent of the corresponding element in the other, when the elements are separately considered. If the mechanical combination of the members of the two machines be such that the action and mode of operation differ in the two machines, then one is something more than a mere mechanical equivalent for the other." 3 O. G. 122 (123); 6 Fisher, 74 (80).

That a device, as used in a combination, may be an equivalent for one formerly used, although out of the combination it may be entirely unlike the device for which it is substituted, see Cochrane v. Deener (1876), 94 U. S. 780; 11 O. G. 687; Foster v. Moore (1852), 1 Curtis, 279.

That equivalence resides in use, not in name, see Graham v. Mason (1869), 5 Fisher, 1.

That equivalents may differ in shape, see Graham v. Geneva Lake Crawford Mfg. Co. (1880), 21 O. G. 1536; 11 Fed. Rep. 138.

merely on its individual character and mode of operation, but also on the character and operation of the elements with which it is associated, and hence with every change in the association the function of each element may likewise change. Thus where an act or substance is employed in different inventions and fulfils in each a different purpose, the acts and substances which, as to one of those inventions, are its true equivalents, cease to be such when it has been transferred from this invention to another, and a new class of acts or substances become its obvious and customary substitutes. Equivalence resides therefore not only in the use, but in the use in a particular invention, and similarity or diversity of use in one is consequently of little service in determining the interchangeability of use in others.

§ 251. Equivalence Possible though One of the Equivalents Performs Additional Functions.

Again, equivalence is not affected by the fact that the new element performs in the invention some function in addition to the old.[1] While it is necessary that the entire service rendered by the act or substance, whose place another occupies, should be discharged, it is not essential that the operation of the substitute should be confined within the same limits as the former. It is sufficient that it serves the same use; if it serves others also, or better serves the old, it is no less an

§ 251. [1] In Atlantic Giant Powder Co. *v.* Goodyear (1877), 13 O. G. 45, Shepley, J.: (46) "The books are full of cases proving that when a substitute is used for one ingredient in a patented combination which has every property and performs every function of the original in the combination, it does not cease to be an equivalent because in addition it does something more and better." 3 Bann. & A. 161 (164).

See also Loercher *v.* Crandall (1881), 11 Fed. Rep. 872; 20 Blatch. 106; 21 O. G. 863; Wilt *v.* Grier (1881), 5 Fed. Rep. 450; 19 O. G. 427; Crouch *v.* Roemer (1880), 103 U. S. 797; 19 O. G. 1067; Maynadier *v.* Tenney (1877), 2 Bann. & A. 615; Holbrook *v.* Small (1876), 2 Bann. & A. 396; 10 O. G. 508; Carstaedt *v.* U. S. Corset Co. (1876), 2 Bann. & A. 331; 13 Blatch. 371; 10 O. G. 3; Kendrick *v.* Emmons (1875), 2 Bann. & A. 208; 9 O. G. 201; Fisher *v.* Craig (1874), 3 Sawyer, 69; 1 Bann. & A. 365; Sarven *v.* Hall (1873), 4 O. G. 666; 11 Blatch. 295; 6 Fisher, 495; Converse *v.* Cannon (1873), 2 Woods, 7; 9 O. G. 105; Sarven *v.* Hall (1872), 1 O. G. 437; 9 Blatch. 524; 5 Fisher, 415; Wheeler *v.* Clipper Mower & Reaper Co. (1872), 10 Blatch. 181; 6 Fisher, 1; 2 O. G. 442; Foss *v.* Herbert (1856), 2 Fisher, 31; 1 Bissell, 121.

equivalent than if the entire functions of each, as elements in the invention, were identical. One act or substance may thus be the equivalent of another, although the latter, if the former had been first employed, could not have been regarded by itself alone as its complete and perfect substitute in the invention. Yet as to the one use which both alike subserve, they stand on the same footing as if no other use were possible to either, and as to that are interchangeable equivalents.

§ 252. Equivalence not Dependent on the Number of the Substituted Parts.

For this reason any single act or substance may be an equivalent for two or more already used in the invention; and, on the contrary, two or more acts or substances may be together capable of substitution for and so become equivalents of a single one.[1] In both these cases neither member of the group of elements is a perfect substitute for the one element whose function they unitedly perform, although that single element is an entire equivalent for each as well as all the members of the substituted group. Yet, as in each case precisely the same service must be rendered and the same purposes fulfilled, both by the single element and by the group of elements, in spite of the numerical diversity and the want of exact separate correspondence, the essential characteristics of equivalence are still preserved. The same is true of every other possible diversity; if it does not affect the use of the acts or substances in the invention, it has no bearing on the question of equivalence, and furnishes no criterion of interchangeability.

§ 252. [1] That two acts or substances may be the equivalent of one, see Strobridge *v.* Lindsay (1881), 6 Fed. Rep. 510; 19 O. G. 1285.

That one act or substance may be the equivalent of two or more, see Brooks *v.* Norcross (1851), 2 Fisher, 661; Heath *v.* Unwin (1852), 2 Web. 236; Martin & Keating's Patents (1848), 2 Web. 195, n.

That while a single cam may be the equivalent of a single wedge, two cams may not be the equivalent of two wedges, see Gray *v.* Bangs (1887), 31 Fed. Rep. 342.

That a compound may be an equivalent for its elements and *vice versa*, see Heath *v.* Unwin (1852), 2 Web. 236; Martin & Keating's Patents (1848), 2 Web. 195, n.

§ 253. Equivalence Impossible when the Idea of Means is Changed.

The second essential requisite in an equivalent is that its use in the invention must not involve a change in the idea of means. A change in the idea of means is a change of substance, demanding an operation of the creative faculties, and producing either a new invention or an improvement on the old. The substitution of equivalents is, on the contrary, a mere change of form, involving no inventive skill, but suggested by the invention itself to every person familiar with the art to which the invention appertains.[1] Any act or substance, therefore, however accurately it performs the function of the element whose place in the invention it supplies, is not a mere equivalent if in addition it has also introduced a new idea or a development of the old idea of means.[2] While an equivalent may actually accomplish more, or operate to better purpose than the former, its excess of action must be consistent with the unity and identity of the idea embodied in the original invention.

§ 253. [1] In Foster *v.* Moore (1852), 1 Curtis, 279, Curtis, J.: (291) "I do not think the doctrine respecting the use of mechanical equivalents is confined by the Patent Law to those elements which are strictly known as such in the science of mechanics. In the present advanced state of that science there are different well-known devices, any one of which may be adopted to effect a given result according to the judgment of the constructor. And the mere substitution of one of these for another cannot be treated as an invention. It does not belong to the subject of invention, but of construction. One constructor may adopt a spring-catch, another a catch and spring; but whether he takes one or the other is matter of judgment in construction, as long as both are designed to accomplish the same end, and both are in common use to accomplish it."

[2] That where no inventive skill is involved in the substitution, the thing substituted is an equivalent, see Coes *v.* Collins Co. (1882), 9 Fed. Rep. 905; 20 Blatch. 221; 22 O. G 417; Crouch *v.* Roemer (1880), 103 U. S. 797; 19 O. G. 1067; Whittlesey *v.* Ames (1880), 9 Bissell, 225; 18 O. G. 357; 5 Bann. & A. 96; 13 Fed. Rep. 893; Schumacher *v.* Cornell (1877), 96 U. S. 549; Smith *v.* Marshall (1876), 10 O. G. 375; 2 Bann. & A. 371; Fisher *v.* Craig (1874), 3 Sawyer, 69; 1 Bann. & A. 365; Westlake *v.* Cartter (1873), 6 Fisher, 519; 4 O. G. 636; King *v.* Louisville Cement Co. (1873), 6 Fisher, 336; 4 O. G. 181; Taylor *v.* Garretson (1871), 5 Fisher, 116; 9 Blatch. 156; Case *v.* Brown (1864), 2 Wall. 320; Burden *v.* Corning (1864), 2 Fisher, 477; Johnson *v.* Root (1858), 1 Fisher, 351; Tatham *v.* Le Roy (1852), 2 Blatch. 474; Blanchard's Gunstock Turning Factory *v.* Warner (1848), 1 Blatch. 258; Heath *v.* Unwin (1845), 2 Web. 223.

§ 254. Equivalence in Combinations.

In examining alleged equivalents with reference to this second attribute, it is important that the radical distinction between a combination and a simple invention should be constantly remembered; for the same apparent change which, in a simple invention, would be but a substitution of equivalents might, in a combination, introduce a new idea of means. A combination is not a mere union of integral parts into a single art or instrument; it is a grouping of subordinate means, each perfect in itself, each retaining its own individuality of character and function, and each performing its own function by its own peculiar mode of operation, under a common law of action, in obedience to which all the members of the group co-operate in the production of a given result; and its identity depends upon the presence of each one of those specific elemental means, and upon the obedience of all to that co-operative law. The essential nature of this co-operative law being determined by and dependent upon the specific methods in which the individual elements perform their several functions, any variation in the mode in which an individual element operates must produce corresponding variations in the mode in which all co-operate, and must, consequently, subject them to a new co-operative law. Hence the removal of a single one of these subordinate means destroys the combination, and the substitution for the one removed of any element which differs from it in essential character, as a means, is the introduction not only of a different element but of a different co-operative law, and the creation of a new invention. In reference, therefore, to such elements in any combination as constitute its subordinate means, no other elements can be equivalent unless they are equivalent inventions; that is, unless they not merely perform the same functions but perform them by applying the same force to the same object through the same mode of application;[1] in other words,

§ 254. [1] In the Goodyear Dental Vulcanite Company *v.* Davis (1880), 102 U. S. 222, Strong, J.: (230) "When a product arrived at by certain defined stages or processes is patented, only those things can be considered equivalents for the elements of the manufacture which perform the same function in substantially the same way." 19 O. G. 543 (545).

That combination equivalents must not only perform the same function, but

unless they differ from the elements whose place they occupy only in the form in which their several ideas of means have

also perform it in the same way, see Schmidt v. Freese (1882), 12 Fed. Rep. 503; 21 O. G. 1876; Singer Mfg. Co. v. Stewart Mfg. Co. (1881), 8 Fed. Rep. 920; 20 O. G. 524; Merriam v. Van Nest (1878), 13 O. G. 597; Maynadier v. Tenny (1877), 2 Bann. & A. 615; Westlake v. Cartter (1873), 4 O. G. 636; 6 Fisher, 519; Roberts v. Roter (1872), 5 Fisher, 295; Crompton v. Belknap Mills Co. (1869), 3 Fisher, 536; Roberts v. Harnden (1865), 2 Clifford, 500; Eames v. Godfrey (1863), 1 Wall. 78; Conover v. Rapp (1859), 4 Fisher, 57; Cahoon v. Ring (1859), 1 Fisher, 397; 1 Clifford, 592.

The reason for this distinction is stated in Crompton v. Belknap Mills (1869), 3 Fisher, 536, to be as follows: that in a combination the mode of operation of the combination as a whole is not covered by the patent, — only the union of certain elements in a mode of operation; and that the substitution of a different element, though in the same mode of operation, affects the substance of the invention, not its mere embodiment, as in the case of a machine whose mode of operation as a whole is covered.

Notwithstanding the clearness of this doctrine, both on principle and on authority, cases are to be found in which this peculiarity of combination equivalents is not noticed, even by judges who in other cases have distinctly recognized it. But this omission evidently results from an incompleteness of the definition attempted, not from a difference in doctrine. For instances of this see Potter v. Stewart (1881), 19 O. G. 997; 7 Fed. Rep. 215; 18 Blatch. 561; Babcock v. Judd (1880), 17 O. G. 1351; 1 Fed. Rep. 408; 5 Bann. & A. 127; American Whip Co. v. Lombard (1878), 14 O. G. 900; 4 Clifford, 495; 3 Bann. & A. 598; Webster v. New Brunswick Carpet Co. (1874), 5 O. G. 522; 1 Bann. & A. 84; Welling v. Rubber Coated Harness Trimming Co. (1874), 1 Bann. & A. 282; 7 O. G. 606; Rees v. Gould (1872), 15 Wall. 187; 2 O. G. 624; 6 Fisher, 106; Sands v. Wardwell (1869), 3 Clifford, 277. In several of these cases the courts speak of a "new" device as not an equivalent, and also say that, to be an equivalent, the device must have been known at the date of the patent. If "new" is not synonymous with "not before known," in these instances it may mean "essentially different," and thus put even these cases in harmony with the true doctrine.

In applying this doctrine to compositions of matter, however, a new difficulty arises. These are always true *combinations*, of *which the ingredients* are the constituent elements; and hence it should be true of these also that no element can be the equivalent of another unless it performs the same function in the same way. But in most chemical compositions, and in some mechanical ones, it is impossible to ascertain by what methods the elements do perform their respective functions; and the courts are compelled either to regard them as non-equivalents — for want of sufficient proof of identity of method, even although each is a well-known substitute for the other — or to accept the fact that each fulfils the same office as proof that the methods in which they fulfil it are the same. In this dilemma the latter mode has been adopted, and it is held that in such combinations elements are equivalents if they discharge the same function and were so known at the date of the patent, — thus returning in such cases to the practical rule which governs simple inventions.

This exception to the law of combination equivalents is admirably dis-

been expressed. But other changes, not affecting the identity of these subordinate means, such as the changes in their own

cussed by Pollock, C. B., in Stevens *v.* Keating (1847), 2 Web. 181. He says: (188) "It has been said that this borax which the defendant uses is a chemical equivalent. I may say that I do not quite go along with the doctrine of equivalents in chemistry, applied in the same way as in mechanics and those matters to which you can apply the principles of the exact sciences. If a man discovers a machine that can be successfully used to produce any effect, whether to print a newspaper, to make a stucco, to light an apartment, or to do any process whatever, it is well known that if he uses a crank there are two or three substitutes for a crank; if he uses one mode of changing the direction of motion there are three or four perfectly well-known means of doing that; and if he puts in a specification, describing his machine, and somebody comes and instead of a crank substitutes something else; or if instead of a pulley to change motion he substitutes a wheel or some adaptation of wheels to change the motion, — everybody will at once see that to be an evasion of the patent, and for this plain reason, that all these equivalents are perfectly well known; they are just as well known as that 10 added to 6 makes 16, and that 8 added to 8 makes also 16. In the mechanical sciences, or wherever you can apply the exact sciences, you can frequently predict the results without the slightest difficulty, and with the same certainty as that with which a skilful arithmetician can tell you what will be the amount of certain numbers added together, and that a certain other set of numbers apparently differing from them altogether will, when added together, produce the same result. With precisely the same certainty a skilful mechanic will tell you that such and such a combination will produce a result, and that such and such another combination, to the ordinary eye apparently totally different, will produce precisely the same result, but looked at with the experienced eye of a mechanic he would say, Yes, there appears to be a great difference; here is a lever instead of an inclined plane, a pulley instead of two wheels to change the motion, and so on; but a skilful mechanic will say, The general expression in all these might be put down as exactly the same; so that, however different they may appear to the eye, they are to the mind precisely the same. I do not think that doctrine applies altogether to the case of chemistry, because, although you can predict with confidence in mechanics in some instances, and in some cases where mathematics can be applied, in chemistry you almost entirely fail. You cannot, because sulphuric acid will succeed, tell at all that nitric acid will succeed, or that any other acid will succeed until you have tried. They do not exist in any relation to each other as numbers do, or as mechanical science presents to you the different mechanical powers. You cannot anticipate the result, — it is a mere question of result upon experiment."

In this country the same exception has been admitted, in reference to chemical compositions, in Tyler *v.* Boston (1868), 7 Wall. 327.

But that as to mechanical compounds, in which the mode of operation of the elements can be detected, the general rule of combination equivalents is adhered to, see Atlantic Giant Powder Co. *v.* Dittmar Co. (1881), 9 Fed. Rep. 316; 20 O. G. 1380; Atlantic Giant Powder Co. *v.* Mowbray (1876), 12 O. G. 111; 2 Bann. & A. 442.

In some cases the courts have en-

integral parts or in the non-essential elements of the combination, follow the usual rule, and are but substitutions of equivalents if the same functions are performed by both.

§ 255. Equivalence in Simple Inventions.

In simple inventions, on the other hand, identity depends only upon the mode of operation of the art or instrument considered as a whole, and any change in the integral parts consistent with the preservation of this mode of operation is only change of form. The function of these individual parts,

deavored to draw a distinction between *combinations of old elements* and *combinations* in which the elements themselves are new, and to make this distinction the basis of another difference in the application of the doctrine of combination equivalents. See Sands *v.* Wardwell (1869), 3 Clifford, 277; McCormick *v.* Talcott (1857), 20 Howard, 402, etc. From such an endeavor only confusion is likely to result. Every combination, considered as a combination, occupies precisely the same legal status, whether its elements are new or old. It is a complete invention, an entirety, a unit; and its unity is destroyed by any substitution of elements not performing the same office in the same way, while the substitution of elements which do fulfil the same purpose in the same manner does not affect the substance of the invention, but its form only. If the elements are old, and such of their individual characteristics as are involved in the performance of their functions were well known, the scope of the inventive act is limited to the union of these elements under their co-operative law. But if the elements are wholly new, or if although old in themselves their qualities which are now serviceable in the combination have been discovered and applied by the combiner, an additional inventive act has been performed, which, if properly claimed, should be protected by a patent. Still, as inventions, these are distinct from the combinations in which they are *now united*; and any subsequent inventor, who produces acts or substances discharging the same functions in the same manner, must be regarded as a mere imitator and infringer of the former. Now, when the courts undertake to establish one rule of equivalents where the elements are old, and another where the elements are new, what is it but an endeavor to protect the rights of the inventor of the new element in an indirect manner, instead of requiring him to protect himself by claiming the new element in his patent in the usual mode? And if by describing and not claiming it he has abandoned it to the public, has he not reduced himself to the position of the inventor of an ordinary combination (that is, of the union of certain elements under a co-operative law); and how can he, under color of equivalents, reclaim the idea of means embodied in the element abandoned? The symmetry and precision of the law can be preserved only by keeping things distinct which are legally or naturally independent of each other. The combination is an invention by itself. Its essence is the union of several elemental means in one co-operating means; and whether the inventor of the combination is the inventor of the elemental means or not cannot vary any of the rules by which the identity of the combination is to be determined.

therefore, alone becomes important, and everything which performs in the same function when incorporated into the invention conduces equally to the attainment, through the same method, of the ultimate result. The field of equivalents is thus far wider in regard to these inventions than with reference to combinations. In these a substitute, in order to escape equivalence, must differ in its function, not merely as a means, and must subvert or modify the principle of the entire invention, while any substitution in the essential elements of a combination which affects either the means or function of the single element passes beyond the region of equivalents into the sphere of substantive invention.

§ 256. Equivalence Impossible if the Alleged Equivalent has been Invented since the Original Invention was Patented.

The third essential attribute of an equivalent is that it must have been known as such at the date of the patent, or have since become known without the exercise of inventive skill.[1]

§ 256. [1] In Crompton *v.* Knowles (1881), 7 Fed. Rep. 199, Lowell, J.: (203) "That doctrine [known substitutes], first announced by Mr. Justice Clifford, and often applied by him, is that one who has invented and patented a new combination, however small and easy, if it be patentable at all, may treat as an infringement anything which is a purely colorable variation of his invention, obtained by substituting one well-known part or ingredient for another equally well-known, and fully understood, by persons skilled in the art, to be exchangeable in similar combinations for the part or ingredient which it replaces. It is a doctrine of very limited application, and as a formula, is perhaps rather misleading. The true question always is whether the defendant uses anything which the plaintiff invented."

In Imhaeuser *v.* Buerk (1879), 101 U. S. 647, Clifford, J.: (656) "Patentees of an invention consisting merely of a combination of old ingredients are entitled to equivalents; by which is meant that the patent in respect to each of the respective ingredients comprising the invention covers every other ingredient which, in the same arrangement of the parts, will perform the same function, if it was well known as a proper substitute for the one described in the specification at the date of the patent." 17 O. G. 795 (795).

In Gill *v.* Wells (1874), 22 Wall. 1, Clifford, J.: (15) "Old ingredients known at the date of letters-patent granted for an invention consisting of a new combination of old ingredients, if also known at that date as a proper substitute for one or more of the ingredients of the invention secured by the letters-patent, are the equivalents of the corresponding ingredients of the patented combination. Such old ingredients, *so known* at the date of the letters-patent granted, are the equivalents of the ingredients of the patented combination, and no others; and it may be added that *that*, and that only, is what is meant by the rule that inventors

The substitution of one equivalent for another is a change in the form of embodiment only; and as all forms of embodiment

of a new combination of old ingredients are as much entitled to claim equivalents as any other class of inventors." 6 O. G. 881 (881).

In Unwin *v.* Heath (1854), 5 H. L. 505, Williams, J.: (523) "Though the use of a chemical or mechanical substitute which is a known equivalent to the thing pointed out by the specification and claimed as the invention amounts to an infringement of the patent, yet if the equivalent were not known to be so at the time of the patent and specification, the use of it is no infringement." Parke, B.: (538) "The specification must be read as persons acquainted with the subject would read it at the time it was made; and if it could be construed as containing any chemical equivalents, it must be such as are known to such persons at that time; but those which are not known at the time as equivalents, and afterwards are found to answer the same purpose, are not included in the specification. They are new inventions." Pollock, L. C. B.: (541) "The patent . . . covers and protects not only the process actually specified, but any process with chemical equivalents known as such at the date of the patent, but not chemical equivalents discovered afterwards; for this would be giving the patentee not only the benefit of his own discovery, but the benefit of the discoveries of other persons subsequently to the date of the patent. The process used by the defendant was not known as a chemical equivalent at the date of the patent. . . . Then assuming it to be a chemical equivalent . . . it is not a chemical equivalent that was known to scientific persons at the date of the patent, and it stands, therefore, on the footing of an entirely new discovery."

In Heath *v.* Unwin (1852), 2 Web. 236, Coleridge, J.: (243) "The specification, to be perfect, must be taken to specify impliedly all the chemical equivalents of those chemical means expressly stated for producing the promised result which were at the time of specifying known to ordinarily skilled chemists or to the patentee himself. . . . (244) If that equivalent were known at the date of the specification . . . then it is within the specification, and the use of it is an infringement. If not, the contrary conclusion follows, and the use of it is an improvement in virtue of a new discovery; and the knowledge I speak of is, of course, . . . the knowledge that the component parts thus applied were equivalents to the thing itself, applied according to the specification for producing the desired result." . . . In the same case Alderson, B.: (245) "But it may be that there are equivalents, mechanical or chemical, existing, but previously unknown to ordinarily skilful mechanics or chemists. These are not included in the specification but must be expressly stated therein. These are, in fact, new discoveries, in themselves wholly independent of the specification which omits them, and for these there is no specification or patent at all. They may be used by all persons without infringing the patent. . . . (246) If the equivalent be not before known, he who discovers *de novo* the equivalent, if it be better than the original for which it was the equivalent, has by the use of the equivalent improved upon, not infringed, the original invention."

That the equivalent must have been known as such at the date of the patent, see also Rowell *v.* Lindsay (1885), 113 U. S. 97; 31 O. G. 120; Kuhl *v.* Mueller (1884), 21 Fed. Rep. 510; 28 O. G. 541; Rowell *v.* Lindsay (1881), 19 O. G. 1565; 10 Bissell, 217; 6 Fed. Rep. 290; Babcock *v.* Judd (1880), 17 O. G.

known in the arts are presumed to have been also known to the inventor and to have been open to his selection, his choice of one and its employment points out the mode of using all the rest, and thus renders every other an imitation of his own. But acts and substances which have been invented, or whose availability for the embodiment of his idea of means has been discovered and applied by the exercise of additional inventive skill, since he completed his invention and bestowed it on the public by his patent, are not imitations of the elements in which he has embodied his idea. Their creation or discovery, and their adaptation to the purposes of his invention have resulted from a subsequent and separate inventive act, — an act performed after the completion and publication of his invention, and hence, though capable of exact substitution for the acts or substances he has employed, they are not true equivalents whose use causes a mere diversity of form, but new inventions expressing a diversity of substance. The attribute of knowledge, at the point of time when the inventor's right received the positive sanction of the law, thus enters into the character of an equivalent. If then known as a substitute, the substitution is an alteration in the form of the embodiment, a simple equivalent and nothing more. If then unknown, its subsequent creation and adaptation to the invention, by the exercise of inventive skill, if not resulting in an essential alteration in the idea of means, is at least a development of that idea, and constitutes an improvement.[2]

1351 ; 1 Fed. Rep. 408 ; 5 Bann. & A. 127 ; Wicke *v.* Ostrum (1880), 103 U. S. 461; 19 O. G. 867 ; Colgate *v.* Law Telegraph Co. (1880), 5 Bann. & A. 437 ; Fuller *v.* Yentzer (1876), 94 U. S. 299 ; 11 O. G. 597 ; Welling *v.* Rubber Coated Harness Trimming Co. (1874), 7 O. G. 606; 1 Bann. & A. 282 ; Smith *v.* Woodruff (1874), 4 O. G. 635 ; 1 MacArthur, 459 ; 6 Fisher, 476 ; King *v.* Louisville Cement Co. (1873), 4 O. G. 181 ; 6 Fisher, 336 ; Gould *v.* Rees (1872), 15 Wall. 187; 2 O. G. 624 ; 6 Fisher, 106 ; Woodward *v.* Morrison (1872), Holmes, 124 ; 5 Fisher, 357 ; 2 O. G. 120 ; Heath *v.* Unwin (1852), 2 Web. 236.

In a very few cases doubt has been expressed whether the date at which the equivalent must have been known is not the date of the invention rather than that of the patent (see Goodyear Dental Vulcanite Co. *v.* Preterre (1878), 14 O. G. 346 ; 15 Blatch. 274 ; and cases there referred to). But on principle, as explained in the text, and on the authorities above cited, there can be no serious question but that the date of the patent is the true one.

[2] It may well be questioned whether

§ 257. All Equivalents Covered by the Patent.

As the substitution of equivalents works no variation in the substance of an invention, so all equivalents, whether this portion of the doctrine of equivalents has not often been pressed far beyond its legitimate scope and been made the basis for conclusions which it does not justify. Its first appearance in the law was as a rule governing the construction of a patent; and it was then formulated in the proposition that a patentee, having specified certain acts or substances as capable of expressing his idea of means, might treat all other acts or substances then known in the arts to be equally capable of expressing that idea, as identical with those which he employed, and consequently as covered by his patent. This proposition is incontrovertible, and had the doctrine been limited to this, no doubt as to its truth could ever have arisen.

But, as has often happened in reference to other subjects, the courts assumed that an exclusive form of statement must be equally correct with the inclusive, and hence declared that no act or substance could be legally the same as that employed in the patented invention unless it were known in the arts as practically the same at the date of the patent. This proposition they supported partly on the ground that the new act or substance not being known when the patent was granted, it cannot be supposed to have been claimed by the patentee, and partly on the ground that the inventor of the new act or substance is entitled to its exclusive use and its protection by a patent. And hence they have inferred that the use of such new act or substance, as a substitute for those described in the patent, is not forbidden by that patent, and that the practice of the invention with such substitution is not an infringement.

Whatever judicial authority may be urged in defence of these positions, they cannot stand the test of logical or scientific inquiry. Where an act or substance not known in the arts at the date of the patent afterwards becomes known, its introduction into the arts is either the result of an inventive act or the consequence of that gradual extension of human knowledge to whose exclusive benefits no individual can lay claim. In the first case the inventor of the new act or substance is entitled to protection in its use, even though in its use it is an exact substitute for acts or substances previously employed, and therefore the inventor of the invention in which the new act or substance could be thus substituted has no right to adopt it in the embodiment of his idea of means. But it does not thence follow that the inventor of the new act or substance, can appropriate to himself the idea of means conceived by the former inventor. Unless the substitution of the new act or substance essentially changes that idea of means, in which case there is no question of equivalence or substitution, it either develops that idea or leaves it wholly undisturbed. If it develops the idea the substitution is an improvement. If it leaves the idea wholly undisturbed the change is a mere change of form. But whether an *improvement* or a mere *change of form*, the substitution does not enlarge the privileges of the substitutor nor curtail those of the original inventor, and any use of the invention with the substitution, unless consented to by the original inventor, must be an infringement.

In the second case, where the new acts or substances are not inventions but become known through the gradual development of human information, the rights of the original inventor are no

actually known to the inventor or not, are covered by his patent.[1] To reproduce his idea, in an art or instrument

less extensive and secure. His idea to embrace the idea of means expressed in the original invention, nor so exercised as to restrict the rights of the original inventor. It is not correct in the conclusions to which it has led, because no change in the embodiment of an idea of means, whether the substituted acts or substances are new or old, or are new inventions or are mere discoveries, can evade the prohibition of the patent or enable an unauthorized employer of the idea of means to escape the penalty of his infringement.

of means is equally unaffected by any substitution of such acts or substances, and those who employ that idea expressed through the new acts or substances equally invade the exclusive privileges which his patent has conferred upon him. Though by such substitution that idea is carried forward to a wider application or more excellent result, the substitution is at best a mere improvement, and the improver, here as in the former case, is guilty of infringement if he uses the invention without the permission of the original inventor.

From these considerations it is evident that the second proposition is not correct either in its statement, or the grounds on which it rests, or the conclusions to which it has led. It is not correct in statement, because although such acts or substances as were not known at the date of the patent express a diversity of substance wherever they have resulted from an inventive act, if they have simply become known through the development of human information, and no inventive skill has been exercised in substituting them for the acts or substances formerly employed, the sole change that has taken place in the invention is a change of form, and the new act or substance is as truly an equivalent as if it had been known before the issue of the patent. It is not correct in the grounds on which it rests because, firstly, the patentee never claims nor does his patent cover any form of embodiment new or old, but the idea of means or essence of the invention in whatever acts or substances it may be capable of embodiment; and secondly, the right of the inventor of the new act or substance to the exclusive use of his invention can never be extended

The doctrine to which this inquiry leads, and which must sooner or later receive recognition from the courts, may be thus stated: —

I. That every act or substance which is known at the date of the patent as an obvious and customary substitute for any act or substance employed by the inventor for the expression of his idea of means is its true equivalent, whose use creates a mere diversity of form and not of substance.

II. That any act or substance which without the exercise of inventive skill subsequently becomes known as such substitute, and is introduced into the invention, is also a mere equivalent, producing only a diversity of form.

III. That where the new act or substance, or its introduction into the invention, is due to the exercise of the inventive faculties, its creator or introducer has effected an improvement in the original invention which can be protected by a patent.

IV. That neither the creation nor the introduction of the new act or substance confers upon its introducer or creator any right to use the original invention, or to apply its idea of means in any form of embodiment whatever.

§ 257. [1] That all equivalents are covered by the patent, see Reay *v.* Ray-

composed of different integral parts, is no less imitation than if the tangible embodiment had been an exact copy

nor (1884), 22 Blatch. 13; 26 O. G. 1111; 19 Fed. Rep. 308; Clough *v.* Barker (1882), 106 U. S. 166; 22 O. G. 2157; Wilt *v.* Grier (1881), 5 Fed. Rep. 450; 19 O. G. 427; Babcock *v.* Judd (1880), 5 Bann. & A. 127; 1 Fed. Rep. 408; 17 O. G. 1351; Megraw *v.* Carroll (1880), 5 Bann. & A. 324, Ready Roofing Co. *v.* Taylor (1878), 15 Blatch. 94; 3 Bann. & A. 368; American Whip Co. *v.* Lombard (1878), 4 Clifford 495; 14 O. G. 900; 3 Bann. & A. 598; Union Metallic Cartridge Co. *v.* U. S. Cartridge Co. (1877), 11 O. G. 1113; 2 Bann. & A. 593; Storrs *v.* Howe (1876), 10 O. G. 421; 2 Bann. & A. 420; 4 Clifford, 388; Gould *v.* Rees (1872), 15 Wall. 187; 2 O. G. 624; 6 Fisher, 106; Sayles *v.* Chicago & Northwestern R. R. Co. (1871), 3 Bissell, 52; 4 Fisher, 584; Roberts *v.* Harnden (1865), 2 Clifford, 500; Burden *v.* Corning (1864), 2 Fisher, 477; Pitts *v.* Edmonds (1857), 2 Fisher, 52; 1 Bissell, 168; Ryan *v.* Goodwin (1839), 3 Sumner, 514; 1 Robb, 725; Bateman *v.* Gray (1853), Macrory's P. C. 93.

That the same rule obtains in patents for chemical combinations, see Matthews *v.* Skates (1860), 1 Fisher 602; and for combinations in general, see Dederick *v.* Whitman Agricultural Co. (1886), 26 Fed. Rep. 763; 36 O. G. 570; Dederick *v.* Cassell (1881), 20 O. G. 1233; 9 Fed. Rep. 306; Gill *v.* Wells (1874), 22 Wall. 1; 6 O. G. 881; Rees *v.* Gould (1871), 15 Wall. 187; 2 O. G. 624; 6 Fisher, 106.

That a pioneer combination patent covers all equivalent constructions producing the same results by using the same mechanical equivalents, see Tarrant *v.* Duluth Lumber Co. (1887), 39 O. G. 1425; 30 Fed. Rep. 830.

The patentee cannot, however, invoke the doctrine of equivalents beyond the scope of his invention, as indicated by the character of the idea which it embodies. This idea may either be that of an entirely new means accomplishing an entirely new result, or an entirely new means producing an old result, or the improvement of an existing means. In the former the scope of the invention is the widest possible; in the latter, the narrowest; and equivalents in one, therefore, necessarily embrace a far broader field than in the other, although the tests by which equivalence is determined always remain the same. This difference is clearly stated in Curtis *v.* Platt (1863), cited in a note to Adie *v.* Clark (1876), L. R. 3 Ch. 134, where Woods, V. C., says: (136) "Where the thing is wholly novel and one which has never been achieved before, the machine itself which is invented necessarily contains a great amount of novelty in all its parts, and one looks very narrowly and very jealously upon any other machines for effecting the same object, to see whether or not they are merely colorable contrivances for evading that which has been before done. When the object itself is one which is not new, but the means only are new, one is not inclined to say that a person who invents a particular means of doing something that has been known to all the world long before has a right to extend very largely the interpretation of those means which he has adopted for carrying it into effect. Because otherwise that would be to say that the whole world is to be precluded from achieving some desirable and well-known object which everybody has had in view for years. In such a case it may be said that the means taken are simply mechanical equivalents for the means previously adopted for arriving at the same object. One looks more jealously

of his own. By his inventive act he has discovered and declared the usefulness, in his invention, of all industrial appliances which had been recognized before the granting of his patent as endowed with qualities enabling them to serve for the expression of some part of his idea; and the appropriation to him of the use of all, in this particular association, is justified by the same principles that warrant the protection of his exclusive rights in that idea.

§ 258. Doctrine of Equivalents Applicable to all Inventions.

The doctrine of equivalents applies alike to all classes of inventions, and to all inventions of whatever class. Equivalents in an art or process are such acts as, in accordance with preceding rules, are interchangeable with those which the inventor has himself employed. In a machine or manufacture, any known agency which can be substituted for one or more of the integral parts of which the instrument consists, without affecting the idea of means, is a mechanical equivalent.[1] In compositions of matter, substances which at the granting of the patent were known as capable of serving the same purpose in the composition as the ingredients actually employed become thereby their chemical equivalents. In a design, the use of other lines or images, impressing the eye in the same manner as the old when grouped with other elements in the design, and known as able to produce the same effect, are mere equivalents. And in improvements, any substitution of an act or substance which

at the claims of inventors seeking to limit the rights of the public at large for effecting that which has been commonly known to all the world long ago. Of course no patent can be taken out for effecting this as a new object, but only for effecting it by a new means."

See also Singer *v.* Walmsley (1860), 1 Fisher, 558.

§ 258. [1] That a mechanical equivalent is any mechanical appliance which will produce the same effect in the invention, and was so well known at the date of the patent that it would naturally have been applied to the same purpose by a person skilled in the art, without the exercise of his own inventive powers, see Wilt *v.* Grier (1881), 19 O. G. 427; 5 Fed. Rep. 450; Smith *v.* Marshall (1876), 10 O. G. 375; 2 Bann. & A. 371; Burden *v.* Corning (1864), 2 Fisher, 477; Johnson *v.* Root (1858), 1 Fisher, 351; Blanchard's Gun Stock Turning Factory *v.* Warner (1848), 1 Blatch. 258.

would be an equivalent if the improvement were an independent art or instrument will occupy toward it the same relation.[2]

SECTION IV.

OF THE NOVELTY OF INVENTIONS: IDENTITY: DIVERSITIES OF USE: THE DOCTRINE OF DOUBLE USE.

§ 259. Diversity of Use sometimes a Diversity of Substance, sometimes of Form.

The diversities heretofore discussed have arisen out of real or apparent variations in the art or instrument itself. There is, however, a diversity occasioned by the use of the invention under different circumstances, or in reference to different objects, which presents difficulties of a similar character and of equal moment.[1] To almost every operative

[2] That the doctrine of equivalents applies to improvements as well as to original inventions, see Forbes *v.* Barstow Stove Co. (1864), 2 Clifford, 379; McCormick *v.* Talcott (1857), 20 How. 402.

That the field of equivalents in an improvement is necessarily very narrow, and that any change introducing a different development of the original idea of means is not a mere substitution of equivalents, is self-evident. In the attempt to formulate this proposition it has sometimes been stated that the rule governing equivalents in improvements is different from the general rule. The true doctrine is nevertheless apparent even in these statements, as in the following example.

In Morley Sewing Mach. Co. *v.* Lancaster (1885), 23 Fed. Rep. 344, Colt, J.: (345) "When an invention is simply an improvement on a known machine by a mere change of form or combination of parts, the inventor is only entitled to the specific form of device which he produces, and he cannot invoke the doctrine of equivalents to suppress other improvements which are not colorable invasions of his own. But where an inventor precedes all the rest, and his machine performs a function never performed by any earlier machine, the court will treat as infringers all who accomplish the same result by substantially the same, or substantially equivalent, means. In the one class of inventions slight differences may avoid infringement. In the other class there must be substantial difference to escape such a charge." Yet here the court apparently uses the word "equivalent" in its technical sense in reference to improvements, and in its general sense in reference to machines.

§ 259. [1] The subject of "Double Use" may be considered from several points of view, most, if not all, of which may be reduced to two: viz. (1) The rights of the inventor of the invention used; and, subject to these, (2) The rights of the alleged inventor of the use. As to the first, it is an undisputed proposition that the discovery of new

means uses are possible which depart from the inventor's method of employing it in such essential particulars that

uses for a patented invention cannot under any circumstances confer upon their discoverer a right to use the invention without the consent of the patentee. This is the meaning of the *dicta* and decisions of the judges that "all uses of an invention belong to the inventor;" that "the inventor is entitled to all the benefits derivable from his invention, whether known or unknown to him," etc. Thus a machine devised for one purpose remains the same machine, no matter for what purpose it may be employed; and whoever uses it uses the invention of the creator of the machine, and if he does this without his consent is guilty of an infringement of his patent. The cases to this point are very numerous.

Thus see Byerly *v.* Cleveland Linseed Oil Works (1887), 31 Fed. Rep. 73; Union Stone Co. *v.* Allen (1882), 15 Phila. 508; 14 Fed. Rep. 353; California Artificial Stone Paving Co. *v.* Perine (1881), 20 O. G. 813; 7 Sawyer, 100; 8 Fed. Rep. 821; Stow *v.* Chicago (1881), 104 U. S. 547; 21 O. G. 790; Eagleton Mfg. Co. *v.* West, Bradley & Cary Mfg. Co. (1880), 17 O. G. 1504; 18 Blatch. 218; 2 Fed. Rep. 774; Tinker *v.* Mower & Reaper Mfg. Co. (1880), 1 Fed. Rep. 138; 5 Bann. & A. 92; Woodbury Patent Planing Mach. Co. *v.* Keith (1879), 4 Bann. & A. 100; Stow *v.* Chicago (1877), 8 Bissell, 47; 3 Bann. & A. 83; Putnam *v.* Yerrington (1876), 2 Bann. & A. 237; 9 O. G. 689; Roberts *v.* Ryer (1875), 91 U. S. 150; 10 O. G. 204; Wells *v.* Jacques (1874), 5 O. G. 364; 1 Bann. & A. 60; Ingels *v.* Mast (1873), 6 Fisher, 415; McComb *v.* Brodie (1872), 2 O. G. 117; 1 Woods, 153; 5 Fisher, 384; Woodman *v.* Stimpson (1866), 3 Fisher, 98.

And that this is true though the possibility of such uses were unknown to the inventor, see Woodbury Patent Planing Mach. Co. *v.* Keith (1879), 4 Bann. & A. 100; Roberts *v.* Ryer (1875), 91 U. S. 150; 10 O. G. 204; Welling *v.* Rubber Coated Harness Trimming Co. (1875), 7 O. G. 606; 1 Bann. & A. 282; McComb *v.* Brodie (1872), 1 Woods, 153; 5 Fisher, 384; 2 O. G. 117.

Conceding, then, that no discovery of a new use for an invention can confer the right to use it without the consent of its inventor, what are the rights, if any, of the discoverer of the use? Has he an exclusive right to the use which he has discovered, and can he protect it by a patent, or have others the same right to enjoy it as himself? This question is determined by the nature of the use as compared with other uses to which the invention was applied or was known to be applicable at the date of his discovery of the use. If the alleged new use so nearly resembles these that it might have been suggested by them to persons skilled in the art, the new use is regarded as resulting from an exercise of the imitative not the creative faculties, and hence is not an invention in which the discoverer can have an exclusive right. If, on the other hand, the new use is so unlike in its essential character to the preceding ones that it required an exercise of inventive skill to produce it, then the use is a new invention and is patentable. The courts and text-writers have expressed this distinction by the terms "analogous use" and "non-analogous use." An analogous use is one suggested by former uses; a non-analogous use is one not so suggested but originating in an inventive act. The former is the true double use, and of course is not an invention. The latter is not double use, but a new means, employing it is true a former means, but embodying new ideas and accomplishing either new results or old

they could only have originated in an inventive act distinct from and posterior to his, and thus, as uses, constitute sep-

results in an essentially different manner. Whether or not the use is analogous—that is, whether an inventive act was necessary to produce it—is to be ascertained in the same manner as in other cases of invention, as described in Sec. III. of Ch. I.

The authorities upon the points involved in this view of the subject are as follows:—

That an analogous use is one suggested by former uses:—

In Penn *v.* Bibby (1866), L. R. 2 Ch. Ap. 127, Chelmsford, L. C.: (136) "In every case of this description one main consideration seems to be whether the new application lies so much out of the track of the former use as not naturally to suggest itself to a person turning his mind to the subject, but to require some application of thought and study."

In Harrison *v.* Railway Co. (1860), 6 Jur. N. S. 993, Cockburn, C. J.: (995) "Conceding that the authorities establish that a person cannot use the same mechanical contrivance for the same purpose, and that that principle is extended to the application of the same mechanical contrivance to purposes so nearly cognate and similar as that the application in the one case naturally leads to its application when required in some other, yet, if there be that which substantially is a distinct purpose, although it may have the appearance at first sight of being in some degree connected, the question must be one of the degree of affinity or similarity which exists between the two given purposes, and by that the question whether the invention is sufficiently meritorious to be deserving of a patent must be determined."

See also Vinton *v.* Hamilton (1882), 104 U. S. 485; 21 O. G. 557; Horton *v.* Mabon (1862), 12 C. B. N. S. 437.

That a non-analogous use, or one requiring inventive skill, is not double use but a new invention, see the following:—

In Crandal *v.* Watters (1881), 20 Blatch. 97, Blatchford, J.: (102) "Almost all inventions at this day that become the subjects of patents are the embodiment and adaptation of mechanical appliances that are old. In that consists the invention. When the thing appears it is new and useful. No one saw it before, no one produced it before, it supplies a need, it is at once adopted, all in the trade desire to make and use it, yet it is said to have been perfectly obvious and not to have been patentable. Where an article exists in a given form and applied to a given use, and is taken in substantially the same form and applied to an analogous use, so as to make a case of merely double use, there is no invention. But it is very rarely that a thing of that kind secures a patent." 21 O. G. 945 (946); 9 Fed. Rep. 659 (663).

In *Ex parte* Arkell (1879), 15 Blatch. 437, Shipman, J.: (439) "The application of an old contrivance to a new purpose is not patentable when the old and new purposes, and the objects to which the contrivance is applied, are merely analogous. If the use of an old contrivance produces a new effect, the new manufacture or process may be patentable, because the new use is not analogous to the former one; but if the new use is simply upon a new occasion, not producing a new effect, the use is analogous to what had been done before. . . . (440) If the effect of the old contrivance when applied to the new object is simply a better and therefore more useful accomplishment of the old effect, in an analogous object, by the use of precisely the same means,

arate inventions. And there are other uses, even more widely different from his in their appearance, which nevertheless

the application of the new use is not patentable." 4 Bann. & A. 80 (82).

See also Strauss *v.* King (1880), 2 Fed. Rep. 236; 18 Blatch. 88; 17 O. G. 1450; 5 Bann. & A. 338; Wisner *v.* Grant (1880), 5 Bann. & A. 215; 17 O. G. 447; 7 Fed. Rep. 485; Megraw *v.* Carroll (1880), 5 Bann. & A. 324; Gottfried *v.* Philip Best Brewing Co. (1879), 5 Bann. & A. 4; 17 O. G. 675; Union Paper Collar Co. *v.* White (1875), 2 Bann. & A. 60; 7 O. G. 698, 877; 11 Phila. 479; Fuller *v.* Yentzer (1874), 1 Bann. & A. 520; 6 Bissell, 208; Minter *v.* Wells (1834), 1 Web. 134; 2 Abb. P. C. 47.

That an analogous or cognate use of an invention is mere double use is affirmed in the following cases: —

In Pennsylvania R. R. Co. *v.* Locomotive Truck Co. (1884), 110 U. S. 490, Gray, J.: (494) "It is settled by many decisions of this court, which it is unnecessary to quote from or refer to in detail, that the application of an old process or machine to a similar or analogous subject, with no change in the manner of application and no result substantially distinct in its nature, will not sustain a patent, even if the new form of result has not before been contemplated." 27 O. G. 207 (208).

See also Celluloid Mfg. Co. *v.* Noyes (1885), 25 Fed. Rep. 319; Royer *v.* Chicago Mfg. Co. (1884), 20 Fed. Rep. 853; Collins Co. *v.* Coes (1884), 28 O. G. 1010; 21 Fed. Rep. 38; Spill *v.* Celluloid Mfg. Co. (1884), 21 Fed. Rep. 631; 22 Blatch. 441; Howe Mach. Co. *v.* National Needle Co. (1884), 21 Fed. Rep. 630; American Iron Co. *v.* Anglo-American Roofing Co. (1883), 21 Blatch. 324; 24 O. G. 1274; 16 Fed. Rep. 915; Slawson *v.* Grand St., Prospect Park, & Flatbush R. R. Co. (1883), 107 U. S. 649; 24 O. G. 99; Palmenbing *v.* Buchholz (1882), 23 O. G. 622; 13 Fed. Rep. 672; Gottfried *v.* Crescent Brewing Co. (1882), 22 O. G. 497; 9 Fed. Rep. 702; Vinton *v.* Hamilton (1881), 104 U. S. 485; 21 O. G. 557; Crandal *v.* Watters (1881), 20 Blatch. 97; 21 O. G. 945; 9 Fed. Rep. 659; Western Electric Mfg. Co. *v.* Ansonia Brass & Copper Co. (1881), 20 Blatch. 170; 9 Fed. Rep. 706; Judd *v.* Babcock (1881), 8 Fed. Rep. 605; 23 O. G. 92; Rowell *v.* Lindsay (1881), 6 Fed. Rep. 290; 10 Bissell, 217; 19 O. G. 1565; Knox *v.* Quicksilver Mining Co. (1880), 4 Fed. Rep. 809; Adams *v.* Loft (1879), 4 Bann. & A. 495; Couse *v.* Johnson (1879), 4 Bann. & A. 501; 16 O. G. 719; Jordan *v.* Moore (1866), L. R. 1 C. P. 624; Brooks *v.* Aston (1859), 5 Jur. N. S. 1025; Patent Bottle Envelope Co. *v.* Seymer (1858), 5 C. B. N. S. 164; North *v.* Williams (1870), 17 Grant Ch. (Can.), 179; Abell *v.* McPherson (1870), 17 Grant Ch. (Can.), 23; Waterous *v.* Bishop (1869), 20 C. P. (Can.) 29.

For particular applications of these doctrines to specific inventions, see also the following: —

I. The Use a New Invention: —

That where inventive skill is exercised the use is not double use, see Penn. Salt Mfg. Co. *v.* Thomas (1871), 5 Phila. 144; 5 Fisher, 148.

That a new use not analogous to the old is a new invention, see Union Paper Collar Co. *v.* White (1875), 11 Phila. 479; 7 O. G. 698, 877; 2 Bann. & A. 60.

That to put an old process or device into use in such a manner as to accomplish a result which could not have been accomplished by using the same process or device in any manner heretofore known is not double use but invention, see Campbell *v.* Mayor of New York (1881), 20 O. G. 1817; 20 Blatch.

are, in their essence, merely imitations of his own, and therefore are embraced in his invention. This latter class

67 ; 9 Fed. Rep. 500 ; Colgate *v.* Western Union Telegraph Co. (1878), 14 O. G. 943 ; 15 Blatch. 365 ; 4 Bann. & A. 36 ; Roberts *v.* Dickey (1871), 1 O. G. 4 ; 4 Fisher, 532 ; 4 Brews. 260.

That though new means is used in carrying out an old process its discoverer has no right to use the process if patented, see Tilghman *v.* Mitchell (1864), 2 Fisher, 518.

That the use of a device may be new though the device itself be old, and is then a new application of a known force, see Dunbar *v.* Marden (1842), 13 N.H. 311.

That to use the same article in a different situation may be invention, see Nickels *v.* Ross (1849), 8 C. B. 679.

That the application of old devices with alterations and adaptations may be a new invention, see Crandal *v.* Watters (1881), 21 O. G. 945 ; 20 Blatch. 97 ; 9 Fed. Rep. 659.

That to use an old device as before used is double use, but to rearrange and connect it so as to adapt it for use as an element may be a new invention, see Mundy *v.* Lidgerwood Mfg. Co. (1884), 27 O. G. 718 ; 20 Fed. Rep. 114.

That the use of old materials with a new effect is a new invention, see Geiger *v.* Cook (1842), 3 Watts & Serg. 266.

II. The Use a Double Use : —

That the use for all purposes like the old to which the invention can be applied is mere double use, see Blake *v.* San Francisco (1885), 113 U. S. 679 ; 31 O. G. 380.

That the application of an old invention to an analogous use with no change in the mode of applying it and no new result, is double use, though the result be in a form never before contemplated, see Miller *v.* Foree (1885), 116 U. S. 22 ; 33 O. G. 1497 ; Pennsylvania R. R. Co. *v.* Locomotive Engine Safety Truck Co. (1884), 110 U. S. 490; 27 O. G. 207.

That where no new mode of adapting the old invention to the new use is employed, the use is double, see Smith *v.* Elliott (1872), 1 O. G. 381 ; 9 Blatch. 400 ; 5 Fisher, 315 ; Merriam *v.* Drake (1872), 9 Blatch. 336 ; 5 Fisher, 259.

That a use may be analogous though it improve the thing to which it is applied, or carry the use beyond any formerly known, see Putnam *v.* Yerrington (1876), 9 O. G. 689 ; 2 Bann. & A. 237 ; Roberts *v.* Ryer (1875), 91 U. S. 150 ; 10 O. G. 204 ; Horton *v.* Mabon (1862), 12 C. B. N. S. 437.

That to apply an old process to an old material to obtain an old result, is double use, see Gardner *v.* Herz (1882), 22 O. G. 683 ; 20 Blatch. 538 ; 12 Fed. Rep. 491.

That the use of an old process in the same way, or on the same subject, and with the same result, is double use, see Western Electric Co. *v.* Ansonia Co. (1885), 114 U. S. 447 ; 31 O. G. 1305.

That the new use of an old process is double use even if the new form of result was never before contemplated, see Spill *v.* Celluloid Mfg. Co. (1884), 22 Blatch. 441 ; 21 Fed. Rep. 631.

That to apply the same plan to the same purpose, though varying the details of the process, is mere double use, see Sewall *v.* Jones (1875), 91 U. S. 171 ; 9 O. G. 47.

That to use an old process or device, without material change in a way which, though not heretofore employed, is well known, is not a new invention, see Couse *v.* Johnson (1879), 16 O. G. 719 ; 4 Bann. & A. 501 ; Dunbar *v.* Myers (1876), 94 U. S. 187 ; 11 O. G. 35 ; Brown *v.* Piper (1875), 91 U. S. 37 ; 10 O. G. 417 ; Roberts *v.* Ryer (1875), 91 U. S. 150 ; 10 O. G. 204.

That to apply an old form of a

of uses long ago received the name of "Double Uses;" and the rules by which they are distinguished from the former are known as the "Doctrine of Double Use."

§ 260. Diversity of Use is not Diversity in the Invention Used.

In the opinions of the courts, as well as in the dissertations of text-writers, this doctrine is needlessly confused by the introduction of language applicable only to diversities in the art or instrument, whose use alone is properly the matter for consideration. All those decisions which declare, in any form of words, that double use does not consist in such employment of the invention as indicates a change in its idea of means are foreign to this subject.[1] A new effect, depend-

hand tool to a corresponding machine is double use, see Busell Trimmer Co. *v.* Stevens (1886), 28 Fed. Rep. 575; 37 O. G. 1249.

That to discover that a particular advantage may be obtained by using a known thing in a known way is not invention, but mere double use, see Tetley *v.* Easton (1857), 2 C. B. N. S. 706.

That a patent for the use of an article already known and used in the same manner, is void, see Brown *v.* Texas Cactus Hedge Co. (1885), 64 Tex. 396.

That the mere use of a known substance in a known form for any purpose is not invention, see Tarr *v.* Webb (1872), 2 O. G. 568; 10 Blatch. 96; 5 Fisher, 593.

That the application of an old material to an analogous use is not invention, see Palmenbing *v.* Buchholz (1882), 13 Fed. Rep. 672; 23 O. G. 632.

That the use of an old material in an old way to accomplish an old result, is double use, see Celluloid Mfg. Co. *v.* Tower (1885), 26 Fed. Rep. 451.

That the doctrine of double use applies to designs, see Western Electric Mfg. Co. *v.* Odell (1883), 18 Fed. Rep. 321; Neidringhaus *v.* Com. (1875), 2 MacArthur, 149; 8 O. G. 279.

From this sketch of the practical side of the subject it is apparent that the doctrine of double use is simple enough when its several propositions are logically arranged, and their distinctions apprehended. In the text I have endeavored to go deeper and present the ultimate reasons on which the doctrine is based, and from which all the tests in cases of novel application must be drawn. The practical view is, however, as might be expected, the one most fully occupying the attention of the courts, and hence most largely discussed in the decisions.

§ 260. [1] As many of the difficulties which have surrounded the doctrine of double use and its application have arisen from the inconsiderate adoption, as rules of law, of the casual expressions of former judges, it may serve a useful purpose to examine some of the principal decisions in detail, in order to discriminate between the principles announced and the misleading *dicta* in which the errors have originated.

In Bean *v.* Smallwood (1843), 2 Story, 408, the claim of the patent was for the application to a chair of an apparatus which had long been in use in other articles for similar purposes. The facts make a clear case of double or an-

ont on substantial variation in the art or instrument itself, cannot result from any use of the original invention, whether

alogous use. Judge Story, in deciding the case, said: (411) "Now I take it to be clear that a machine or apparatus, or other mechanical contrivance, in order to give the party a claim to a patent therefor, must in itself be substantially new. If it is old and well known, and applied only to a new purpose, that does not make it patentable. A coffee-mill applied for the first time to grind oats or corn or mustard, would not give a title to a patent for the machine. A cotton-gin applied without alteration to clean hemp, would not give a title to a patent for the gin as new. A loom to weave cotton yarn would not, if unaltered, become a patentable machine as a new invention by first applying it to weave woollen yarn. A steam-engine if ordinarily applied to turn a grist-mill, would not entitle a party to a patent for it if it were first applied by him to turn the main wheel of a cotton factory. In short, the machine must be new, not merely the purpose to which it is applied. A purpose is not patentable, but the machinery only, if new, by which it is to be accomplished. In other words, the thing itself which is patented must be new, and not the mere application of it to a new purpose or object." 2 Robb, 133 (135).

This statement evidently embraces two propositions: (1) That the new use of an invention does not make the invention itself new; (2) That a new use is not of itself the subject-matter of a patent. The first proposition is undoubtedly correct. The latter is as evidently false unless qualified by the condition that the new use, as in the case at bar, is analogous to former uses. The last two sentences of the opinion, as quoted, are therefore wrong. A purpose in the sense of a use may be patentable as a process; and the mere application of a thing to a new purpose or object, if the application involve inventive skill, does constitute a new invention.

In Conover *v.* Roach (1857), 4 Fisher, 12, the court had occasion to discuss this doctrine, and said *per* Hall, J.: (16) "In connection with this question of invention it is proper to state to you, that the mere application of an existing machine or organization to a new use is not the subject-matter of a patent. If a party finding a machine calculated and intended for the accomplishment of one purpose, discovers or conceives that it is able to accomplish another purpose, and that purpose can be accomplished by the organization which has before been produced, he can have no patent for the application of this old machine to a new use. In other words the invention patented, when a patent is taken out for a machine, is the machine itself — the mechanical means and devices by which certain results in the operation of the machine can be obtained; and when the inventor has obtained a patent for his invention he is entitled to the exclusive use of it, if that invention is a machine, for all the uses and purposes to which that machine, without the exercise of any inventive power, can be usefully applied. In other words, when he patents a machine he cannot patent either a purpose or an effect, but the mechanical means, devices, and organization which his machine embodies, and when these means, devices, and organization are patented, the patentee is entitled to the exclusive use of this mechanical organization, device, or means, for all the uses and purposes to which they can be applied, to every function, power, and capacity of his patented machine, with-

the use itself be new or old. It will assist us in our own investigation of this doctrine to remember: (1) That in all

out regard to the purposes to which he supposed originally it was most applicable, or to which he supposed it was solely applicable, if such were his original view."

In this passage the learned judge confuses the two opposite points of view from which, as we have seen in the note to § 259, the doctrine of double use may be regarded. So much as states that the inventor of a patented machine has the sole right to use it for any purpose is true. So much as states that *the application of an old machine to a new use is not patentable* is not true, unless qualified in the manner previously indicated. But in the second and third sentences he treats these two propositions as synonymous, as if the declaration that "the application of an old machine to a new use is not patentable," were equivalent to the declaration that "an inventor of a machine is entitled to all the uses which can be made of it," which is clearly wrong. In the latter part of the third sentence, however, there is a single clause which may have been intended to, and if understood in a proper sense, certainly does make the whole statement correct. He says "he is entitled to the exclusive use of it . . . for all the uses and purposes to which that machine, *without the exercise of any inventive power*, can be usefully applied." If by this he meant inventive power *exercised upon the machine*, changing its character as an operative means, the error before pointed out is still inherent in the statement. If he referred to inventive power *exercised in applying the existing machine to the new purpose*, the passage, though obscure for want of separation between its different ideas, is on the whole correct.

In Bray *v.* Hartshorn (1860), 1 Clifford, 538, Clifford, J.: (540) "Invention or discovery is required as the proper foundation of a patent, and where both are wanting the applicant cannot *legally secure the privilege*. Consequently where the claim rests merely upon the application of an old machine to a new use or to a new purpose, or upon the application of an old process to a new result, the patent cannot be sustained, because the patentee under those circumstances has not invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement on any art, machine, manufacture, or composition of matter not known or used by others, for which alone a patent can be legally granted. Judge Story held, nearly twenty years ago, in Bean *v.* Smallwood, 2 Story, 408, that the application of an old machine to a new purpose was not patentable; and the same principle has since been adopted in the highest court in England, and by the Supreme Court of the United States. Kay *v.* Marshall, 8 Cl. & Finn. 245; Phillips *v.* Page, 24 How. 167. New contrivances, though applied to old objects, are patentable; but old contrivances, whether the objects to which they are applied are new or old are not patentable, because the mere application of the contrivance, without more, involves neither invention nor discovery, and when both those elements are wanting, no patent issued under existing laws can have any validity. Particular changes, however, may be made in the construction and operation of an old machine so as to adapt it to a new and valuable use not known before, and to which the old machine had not and could not be applied without those changes; and under these circumstances and conditions, if the machine as changed and modified produces a new

cases turning on diversity of use it is assumed that the identity of the invention used remains entirely undisturbed;

and useful result, it may be patented and upheld under existing laws. Losh *v.* Hague, Web. Pat. Cas. 207; Hindm. on Pat. 95. Such change in an old machine may consist alone of a new and useful combination of the several parts of which it is composed, or it may consist of a material alteration or modification of one or more of the several devices which enter into its construction, or it may consist in adding new devices; and whether it be one or another of the suggested modifications, if the change of construction and operation actually adapt the machine to a new and valuable use, not known before, and to which the machine had not been applied, and without the change suggested was not in any degree fitted to be applied, and actually produces a new and useful result, then the case falls within the rule already laid down, and a patent may be granted for the same and be upheld."

Taken as it reads, this decision denies the patentability of new applications of existing inventions *in toto*. It places the denial on the ground that "the mere application of the contrivance, without more, involves neither invention or discovery," etc., and then declares that only by some change in the existing invention itself, producing a new result, can inventive skill be manifested and patentability attained. Here again the error is in the use of too general language, though the qualifying phrase "without more," hints at the possession by the learned judge of a perception of the true limits of his statement, had he seen fit to express them. But his assertion that "the application of an old machine to a new use or to a new purpose," or "the application of an old process to a new result," is not a "new and useful art," etc., is neither correct in principle nor borne out by the cases cited. What the decision of Judge Story in Bean *v.* Smallwood really was, we have already seen, as well as that his *dictum* was too broad in itself, and went altogether beyond the requirements of his case. In Kay *v.* Marshall it was not held that an application of an old machine to a new purpose was not patentable, but that such an application did not change the essential character of the machine and render it patentable as a new machine; and in discussing this question it was distinctly stated that the new process growing out of the new use of the machine was patentable. (See note to § 260, *post.*) In Losh *v.* Hague (1837), 1 Web. 202; 2 Abb. P. C. 501, the English court fell into numerous errors of language, if not of doctrine, although in some respects its opinion, as a whole, was extraordinarily luminous and correct in view of the general confusion then existing in regard to this subject. (See note to § 271, *post.*) But the opinion, truly understood, does not sustain the position of Judge Clifford in denying the patentability of a new use, however it may support his affirmation that a change in the machine itself may render it a new invention. The state of learning and opinion in this country in reference to double use, at the date of this decision (1860), is rather remarkable, when in this English case (decided in 1838) Lord Abinger had clearly announced the true principle, "that you cannot have a patent for applying a well-known thing . . . to an operation which is exactly analogous to what was done before;" and Mr. Webster, in a note on page 229 of the volume referred to by the American judge, gives numerous instances in which a new, or non-analogous, use was regarded as patentable, and declares that "the novelty or invention will then

and (2) That the real question is, whether the changed employment of the unchanged invention involves an exercise of

consist in the simple use and application of that substance." See note to § 266, *post*. As examples of the more recent statements by our own courts the following are cited : —

In Gottfried *v.* The Phillip Best Brewing Co. (1879), 17 O. G. 675, Dyer, J. : (684) "It is an elementary principle that the mere application of an old thing to a new use is not patentable, or, as the court says in Smith *v.* Nichols (21 Wall. 119), 'A mere carrying forward or new or more extended application of the original thought ; a change only in form, proportions, or degree ; the substitution of equivalents doing substantially the same thing in the same way by substantially the same means, with better results, — is not such invention as will sustain a patent.' And again, in Roberts *v.* Ryer (1 Otto, 157) it is said : 'It is no new invention to use an old machine for a new purpose, and the inventor of the machine is entitled to the benefit of all the uses to which it can be put, no matter whether he had conceived the idea of the use or not.' It is not understood, however, that these principles are to be so applied as to deny patentability to improvements which disclose inventive skill and produce new and useful results. It is true, it may be said, that the several parts which make up complainant's mechanism are old ; but as is stated by the court in Strong *v.* Noble (3 Fish. 589), 'There is scarcely a patent granted that does not involve the application of an old thing to a new use, and that does not, in one sense, fail to involve anything more ; but the merit consists in being the first to make the application, and the first to show how it can be made, and the first to show that there is utility in making it.' . . . And again, with reference to the application of old means to a new use, as is stated in one case cited on the argument : 'Particular changes may be made in the construction and operation of an old machine, so as to adapt it to a new and valuable use not known before, and to which the old machine had not and could not be applied without those changes; and under these circumstances and conditions, if the machine as changed and modified produces a new and useful result, it may be patentable and upheld under existing laws.'" 5 Bann. & A. 4 (33, 34).

Here the court seems inclined to modify the sweeping statements indulged in by its predecessors and to bring their general assertions within the proper limits by applying to all cases the infallible test of the presence or absence of inventive skill. Though the precision of the rule given by the English bench, and at this date (1879) adopted and fully explained by the leading American authority (Curtis §§ 55–66), is not observed, it is evident that the incorrectness of the older decisions was perceived and the true doctrine substantially defined.

In Dunbar *v.* Albert Field Tack Co. (1879), 4 Bann. & A. 518, Lowell, J.: (519) "If an old machine or process is put to a new use, invention is positively excluded, although the new use may apparently be very remote from the old, requiring experiment to ascertain its practicability ; and though the actual operation of the machine or process may not be exactly the same in the new as in the old application, provided no new means are, in fact, employed." 4 Fed. Rep. 543 (544).

This language is accurate only when understood as applying to the process or machine employed, and not to the art resulting from a new use of such process or machine. No use of the old invention, however remote, can change the character of the invention itself.

the creative powers, and introduces a new idea of means, not into the art or instrument itself, but into the manner of its use, and so makes the new mode of its employment a new and separate invention. The answer to this question must be sought by applying to the use of the invention the same principles in which we have already found a solution for so many interesting and important problems.

§ 261. Distinction between an Invention and its Use.

And in the first place it is necessary to clearly draw the line between an invention and its use. This is sometimes extremely difficult, even in mental contemplation, but becomes still more so when the art or instrument itself is submitted to immediate inspection. It is, however, the only method by which diversity of use, as distinguished from diversity of means, can be made the subject of investigation; and by descending into those fundamental truths which underlie the idea of means we shall probably be able to discover where the means ceases and the use begins. The

This is a proposition axiomatically correct. But that any use of it, apparently near or remote, which on account of the novelty of the force which it employs, or the object to which it is applied, involves the exercise of inventive skill in the discovery of the qualities of such force or object and the application thereto of the old invention, is a new and independent invention is a proposition equally established. Thus the same judge alludes to the true rule, though in somewhat doubtful phraseology, in Moffitt *v.* Rogers (1881), 8 Fed. Rep. 147, (148) "I am not aware that a patent has ever been sustained for a process or method which consisted of employing an old machine for the very purpose for which it was made. If any person discovers how to use an old machine to the best advantage, he is only a skilful workman not an inventor. . . . (149) I do not mean to say that a patent cannot possibly be supported for a process or method which consists only of applying an old machine to a new use. Many of the ablest writers and jurists assert that such a claim is possible. I have never seen a case in which a patent of this sort has been sustained, and there are some in which it has been rejected. If one is ever supported, it will be when the new use is so remote from the old use that a court or jury can say that a new idea has been discovered."

The cases here discussed are not, by any means, all that are open to criticisms of the same general character. But they show the current of opinion and expression on this subject, and are sufficient to indicate the sources from which mistakes have originated, and to point out the dangers which are encountered in following too closely the language of judges, who viewing a doctrine from one side only make statements which are erroneous when considered from a different standpoint. They afford another illustration of the necessity of studying cases in the light of the law rather than the law in the light of the cases.

same research will demonstrate that this line is differently drawn in different inventions, enlarging or contracting the sphere of use, and correspondingly increasing or diminishing the scope of the invention.

§ 262. Essential Differences between a "Force Applied," a "Mode of Application," and a "Specific Treatment of a Specific Object."

Every idea of means embraces three subordinate factors, — the force, the object, and the mode of application. The inventive act which results in the conception of that idea consists either in the discovery of a force and its adaptation to an existing object through an existing mode of application, or in the discovery of a mode of application and its adaptation to an existing force and object, or in the discovery of an object and its adaptation to an existing force and mode of application, or in two or more of these discoveries and adaptations.[1] Inventions, when regarded from this point of view, are of three classes: (1) Where the force is new, the object and the mode of application being new or old; (2) Where the mode of application is new, the force and object being new or old; (3) Where the object is new, the force and mode of the invention. Other forces may be applied through it to other objects without changing its character as a mode of application, and hence, in inventions of the second class, without disturbing the identity of the invention. But in itself the mode of application can never be subjected to essential alteration without a departure from the original idea of means and the introduction of new elements requiring a new exercise of the inventive powers. In determining whether any given diversity is a diversity of invention or a diversity of use, this element is the first, therefore, to be examined, and often settles the whole question without further inquiry.

For a discussion of the matters stated in this paragraph, see also §§ 91–108, *ante*.

§ 262. [1] It will be observed that in each of these three groups of inventions one factor, to wit, the mode of application, is always present. It may embrace the entire concrete invention, as in the second class; or may be joined with a specific force, as in the first; or with a specific force and object, as in the third. This factor is the most tangible and apparent to the sense of any contained in the invention. In a process it is expressed by the act or instrument through which the force is applied. In many machines and manufactures it is alone represented in the substantive invention itself. In compositions of matter it resides in the physical compound in which the chemical or mechanical forces inhere. This element is thus a constant quantity, incapable of material variation without destroying the essence

of application being new or old. In the first class the aim of the inventor is to utilize his new force; and when he has found for it a mode of application, his invention is complete without reference to the object upon which it acts. In the second class it is his purpose to discover and adapt a mode of application or an intermediate agency by which forces may be united to their objects; and when he has brought his mode of application into practice in connection with one force and object, his invention is complete as to all other forces and their objects. In the third class the sole endeavor of the inventor is to render useful to himself and to the public some object of whose properties he is the first discoverer, by so directing force upon it as to develop or employ its newly recognized susceptibilities; and his invention is complete when he has subjected this object to the action of some specific force in such a manner as to render its new properties available. The first invention is a force applied; the second is a mode of application; the third is the subjection of a specific object to a specific application of specific forces, producing in the object a certain specific result.

§ 263. Dividing Line between Invention and Use Different in Each of these Three Groups of Inventions.

In each of these three classes the character of the use is indicated by the scope of the invention. As in the first class the invention is a force applied, so the direction of that force to any object upon which it can act through this mode of application is the use of the invention. Thus, for example, in a chemical composition, in which a specific force inheres and through which it acts, the use consists in bringing any substance upon which the composition can exert its force within its sphere of operation. Or in a process, where certain forces are applied through certain acts or instruments, the invention passes from inaction into use when any object upon which it can operate is submitted to its influence. In the second class, as the invention is a mode of application, its use consists in bringing any force into connection with any object through its means. Thus in some machines and manufactures the invention is the same by whatever force it is im-

pelled and on whatever object it may act; and hence its union with any force or any object belongs to the domain of use, and not of invention. In the third class, as the invention consists in the subjection of a specific object to the influence of a specific force acting through a specific mode of application, there is no use which can be severed, even in thought, from the invention. Thus in those processes where the entire art consists in treating some particular material in some special method, the inherent qualities of the object, as well as the specific force and the specific mode of application, are essential to the existence of the idea of means, and the invention cannot be conceived of otherwise than as effecting its specified result. In each of these three classes the scope of use is, therefore, widely different. Inventions of the third class are incapable of any use except the one to which they were originally applied by their inventor, unless employed as elements in a new combination. Those of the second are available for as many different uses as there are forces which can operate through them, or objects upon which the operation of such forces can be directed. While an invention of the first class occupies an intermediate position, and may be used in as many different methods as there are objects upon which its inherent force can, through its peculiar mode of application, be determined.

§ 264. Four Diversities of Use Possible: Use with Different Force; Use with Different Object; Use in a Different Combination; Use out of Combination.

With these distinctions between inventions and their uses clearly understood it becomes far less difficult to separate the uses which involve inventive skill from those which are mere imitations or double uses. In each of the three groups of inventions the mode of application is an essential factor, and hence no substitution of one mode of application for another can ever be a mere diversity of use, but must destroy the identity of the invention. The only possible diversities of use are, therefore, these: (1) Use with a different force; (2) Use with a different object; (3) Use in a different combination; (4) Use out of combination. Each of these four

diversities of use is related to the three groups of inventions in a different manner.

§ 265. Use with New Force can be Diversity of Use only in Reference to a "Mode of Application:" When Double Use.

It is apparent that in no invention either of the first class or the third can the first diversity be a diversity of use alone. In such inventions the specific force employed by the inventor is of the essence of the invention, and any variation of that force destroys the identity of the invention, and substitutes for it a different means.[1] Inventions of the second class are, however, capable of this diversity of use. Being mere modes of application, any force which can be directed through them may be substituted for the one employed by the inventor, thereby introducing an apparently new use of the invention without affecting its essential character. Whether or not the use is really new depends upon the nature of the substituted force, and its relation in the arts to that whose place it fills. If its capability of application through this intermediate agency were first discovered and employed by him who makes the substitution, the use is new; for the union of the old mode of application with this new force involves an exercise of creative skill, expresses a new idea of means in which the mode of application, still unchanged, becomes an element, and constitutes, therefore, a new invention belonging to the first class, or a force applied. But if the force

§ 265. [1] In Foote *v.* Silsby (1851), 2 Blatch. 260, Nelson, J.: (264) "Where a party has discovered a new application of some property in nature never before known or in use, by which he has produced a new and useful result, the discovery is the subject of a patent, independently of any peculiar or new arrangement of machinery for the purpose of applying the new property in nature, and hence the inventor has a right to use any means, old or new, in the application of the new property to produce the new and useful result to the exclusion of all other means."

In Household Co. *v.* Neilson (1843), 1 Web. 673, Hope, J.: (690) "Even if the principle had been a known principle, still if it is for the first time applied by mechanical contrivance and apparatus to certain processes, in which it had not been previously used as an agent, the patent would be good."

See also Jenkins *v.* Walker (1872), 1 O. G. 359; Holmes, 120; 5 Fisher, 347; Poillon *v.* Schmidt (1869), 6 Blatch. 299; 3 Fisher, 476; 37 How. Pr. 77.

were known in the arts before the substitution, as capable of union with its objects through this mode of application, the force is not new; the use of the invention for directing it demands no other than constructive skill, is a mere imitation of its use by the inventor, and falls within the definition of a double use.

§ 266. Use with New Object can be Diversity of Use only in Reference to a "Force Applied" and a "Mode of Application:" When Double Use.

The second diversity of use is impossible in all inventions of the third class. In these inventions the object is an essential part of the idea of means, and the substitution for it of a different object is a substantial change in the invention. If the inventor has employed a single object in the original invention, all other objects which are known in the arts as susceptible in the same manner to this specific application of this specific force are identical with the original object; and their employment, therefore, does not vary either use or means. If a new object is discovered, or some new qualities in an existing object which render it susceptible to the same application, the union of this force and mode of application with this new object is a new inventive act, and produces, not a change of use, but a new and independent means. But in the first and second classes this diversity of use often appears.[1] One object may be substituted for another with-

§ 266. [1] That a new use constituting a new invention may consist in the novelty of the object upon which, in the new use, the old invention is employed, is clearly recognized in Harwood *v.* Railway Co. (1865), 11 H. L. 654. The patent was for the use of "fishes and fishjoints" for connecting the rails of railways. The fishes themselves were old. It was conceded that they had been used for various purposes before; but that their use for this purpose originated with the patentee. The case was tried in the Queen's Bench, then in the Court of Exchequer Chamber, and finally in the House of Lords. The patent was held invalid on the ground of double use. All the judges concur in the statement of the doctrine of double use as follows, — in the words of Blackburn, J.: (667) "A mere application of an old contrivance in the old way to an analogous subject without any novelty or invention in the mode of applying such old contrivance to the new purpose, is not a valid subject-matter of a patent." See opinions of Channel, J. (673), of Westbury, L. C. (682), of Lord Cranworth (684), and of Lord Wensleydale (686). Double use thus exists wherever the invention used is old, the mode of use is old, and the ob-

out affecting the idea of means embodied in the old invention, though creating an apparent variation in its use; a

ject upon which it is used is old, — that is, known as susceptible to such use from its analogy to other objects on which the same invention has been already used in the same manner. *Per contra*, a new use exists when a known invention is applied in a known manner to an object not heretofore known to be susceptible to such application from its analogy to other objects, but whose susceptibility has been discovered by the inventor of the use.

One of the most instructive cases on this subject is the "Spent-Madder Case," so called, or Steiner *v.* Heald (1851), 6 Exch. 607. In this case the invention used was old, and the only novelty possible was in the object to which the invention was applied. In reference to the patentability of such an application, Patterson, J., says: (620) "Here is no new contrivance, for the process used under the plaintiff's patent with 'spent madder' is the same as that previously used with 'fresh madder;' neither is the product new, for the garancine produced from the one and the other appears to have precisely the same qualities. If, therefore, the patent be good, it must be on account of the old contrivance being applied to a new object, under such circumstances as to support the patent. Now 'spent madder' might be a very different thing from 'fresh madder' in its properties, chemical or otherwise. Or it might be, in effect, the same thing as 'fresh madder' in its properties, chemical and otherwise, with the difference only that part of its coloring-matter had been already extracted. Again, the properties, chemical and otherwise, of both might or might not have been known to chemists and other scientific persons, so that they could tell whether 'fresh madder' and 'spent madder' were different things, or substantially the same thing. These points appear to us to be questions of fact, and materially to affect the validity or invalidity of the patent."

In the argument of this case, Watson, with whom was Webster, to an objection by Maule, J., that this was nothing but a double use of an old process, replied: "Where the process is old, but the combination of the materials upon which the process is brought to bear is new, the patent is sustainable. Here the plaintiff has introduced a new element;" and instanced Crane *v.* Price (1 Web. 377); Cornish *v.* Keene (1 Web. 501); and Hill *v.* Thompson (1 Web. 232).

In another case — Muntz *v.* Foster (1844), 2 Web. 96 — the inventor had discovered that plates composed of an alloy of zinc and copper in certain proportions, if applied to the sheathing of vessels, answered an important purpose, since the oxidation which then took place upon the surface of the plates kept the bottom of the vessel free from impurities. The plates themselves were old, but the application to vessels was new. It was held that the application to this new object was a new use of the plates, developing new utility therein and constituting a new invention. Thus Tindal J.: (103) "I look upon it that there is as much merit in discovering the hidden and concealed virtue of a compound alloy of metal, as there would be in discovering an unknown quality which a natural earth or stone possessed. We know by the cases that have been determined that where such unknown qualities have, from the result of experiments, been applied to useful purposes of life, that such application has been considered as the ground and a proper ground of a patent; and there-

variation which is merely double use when the substituted object was known in the arts as capable of subjection to

fore, when . . . they seek to show this same after having been so prepared." is not so because these metal plates In claiming his invention he covered have been invented before, — that is, only the macerating-vessels, a trough persons have used them before, — in my for holding the rovings, and the adjustjudgment it will not go far enough, unment of the spinning machine at a less they can show there has been some certain reach. The specification was application of them before to this very evidently drawn under the impression useful purpose." *Was not* this inven*that the patent must be for some ven*tion really the discovery of a new *force*, *dible substance*, to wit, for the maand thus a "force applied" through an chinery employed in the process or for old mode of application ? the product resulting from the process (neither of which was the true invention here), and the draughtsman chose The case of Kay *v.* Marshall (1835), the former. The court properly decided 2 Web. 36, has sometimes been regarded that no new invention was claimed and as having a reference to the doctrine of protected by the patent, since the new double use, and as confirming the posiuse of old machinery does not constitute tion that the application of an old cona new machine. In the trial at law, trivance to a new object is not patentParke, B., perceived the real nature of able. Kay had discovered a process by the invention, and held that the discovwhich flax could be treated in a manner ery of these properties of flax and the hitherto unknown, with results vastly application of the machinery to flax for beneficial to the trade. His process the purpose of rendering its properties consisted in macerating the flax and available was new and patentable, respinning it at a reach of two and a half serving the validity of the patent for inches. Maceration, as a process, was the consideration of the court above. old. Spinning was old also. The ma-The judgment there was adverse to the chine employed by him was well known, patent, on the ground before mentioned. was capable of adjustment at different Finally, in the House of Lords, the reaches, and had been used to spin at same view of the patent was taken, and various distances. But Kay was the its validity denied for the reason that first to discover that flax possessed such the invention was not an improved peculiar properties that if macerated machine. and spun at this exact distance certain effects could be produced. Thus his In a note to this case, on p. 84, Mr. real invention was the application of a Webster says that the judgment of the known force, through a known mode, to court is an authority to show that "the a new object, — that is, to an object in spinning of macerated flax by known which new susceptibilities had been dismachinery would have been the subjectcovered. This was a true process, and matter of valid letters-patent, if the was patentable as such. But in his title and specification had been properly patent Kay declared the nature of his adapted thereto;" and that "the flax invention (34) "to consist in new so spun would be a new manufacture machinery for macerating flax and both in respect of the method and reother similar fibrous substances previous sult; spun flax had not been obtained to drawing and spinning it, which pro-in that manner, even if spun flax of cess I call preparing it; and also in im-similar properties and quality had been proved machinery for spinning the

the operation of the means, but which becomes a new use and a substantive invention if the object, or its capability

obtained before." Then he proceeds: "The invention in such cases is the special manufacture, by means of the use of the particular machine or substance, and is clearly distinguishable from cases which are not any manner of manufacture, as the new use of a medicine to cure diseases for which it had not been previously adopted, or the use of a paint to a new cement, or the use of a broom to sweep a new description of carpet or tapestry, or the use of a spoon to eat a particular description of food; applications or uses of the latter class have never been supposed to constitute any manner of manufacture, whereas applications and uses of the former class are the essence of the greatest improvements in the manufactures of the country."

To avoid the danger of being misled by these illustrations, not entirely apt to the subject illustrated, it must be remembered that Mr. Webster, as well as the judge from whom he borrows them, assumes that the above uses were strictly analogous. Suppose a method of curing diseases and alleviating pain were patentable (see *per contra* Morton *v.* N. Y. Eye Infirmary, 5 Blatch. 116; 2 Fisher, 320), can it be doubted that one who discovered that consumption might be cured by existing remedies could patent the use of these remedies for that purpose, although the remedies were already covered by a patent? Such a use of the remedies is not a double or analogous use, — its non-patentability rests on entirely different grounds. So with the discoverer that a species of carpet or tapestry hitherto believed to be unsweepable could be swept with a broom if used in a specific, though not necessarily a new, manner; or one who has contrived or adapted a method of eating with a spoon certain articles of food previously unknown as possessing that susceptibility (if such an invention is supposable); is there not in each case an exercise of the inventive faculties, perceiving new attributes in the object, and rendering them available by adapting to them some existing force and mode of application; and wherever the law undertakes to protect such classes of inventions are they not truly patentable? The logical position would be to deny their patentability on the ground that the statute did not include inventions of this nature, not on the ground that they were double uses, and therefore not the products of inventive skill.

Instances in which the application of an old contrivance to a new object was recognized by the courts as a substantive invention were quite numerous in the earlier history of the Patent Law. Mr. Webster, in a note to Hill's Patent, (1 Web. 229), thus refers to several: "They would appear to be more appropriately described as the use and application of a known substance for a specific purpose; which general description is in practice limited and defined by the condition of novelty which is essential to and implied in the term 'invention.' The substance itself may be old and well known; the manner in which it is used and applied also old and well known; the specific result or purpose old and well-known; the novelty or invention will then consist in the simple use and application of that substance. Of this class are Dudley's, for the use of pit or sea coal instead of charcoal in the manufacture of iron; Mansell's, for the use of coal instead of wood in the manufacture of glass; Hall's, for the use of gas in singeing lace; Derosne's, for the use of charcoal in filtering sugar; Crane's, for the use of anthracite in the

of use, is first discovered by the alleged inventor of the use.

manufacture of iron, . . . instead of other coal or coke; . . . Hartley's, for the use of iron plates to prevent fire; Forsyth's, for the application of detonating powder in the discharge of fire-arms; Neilson's, for the hot blast; . . . Buck's, for melting down iron and other metals with stone coal and other coals, without charking, etc." As to most of these inventions Mr. Webster concedes patentability on the ground of the novelty and utility of the vendible substance in which they result, but admits that as to some, for instance to Hartley's, Forsyth's, and Neilson's, this test will not apply. He also adopts concerning them the description given by Lord Eldon in Hill *v.* Thompson (1 Web. 229), and affirmed by Tindal, C. J., in Crane *v.* Price (1 Web. 393), which classes them among combinations of materials. But is it not evident that all these new inventions were true arts or processes; that the inventive act consisted in applying an existing human contrivance to an object whose susceptibilities to the action of this old contrivance had just been discovered; that the old contrivance was a force applied, now united with an object hitherto unknown as capable of being subjected to its operation; and that the new invention was an art consisting of the application of a known force through a known mode of application to a new object? Thus in Dudley's patent, the old contrivance was the process of smelting iron in a blast furnace; the object in which new susceptibilities had been perceived was pit or sea coal; the utility was in the saving of the wood formerly consumed in making charcoal for the same purpose. In Mansell's, the old contrivance was the process of making glass; the new discovery was that pit or sea coal had the same qualities as wood in reference to this particular manufacture; and the utility, here as in Dudley's patent, was the saving of the wood. Not to multiply words, was not the new object in Hall's patent the lace, now for the first time found capable of treatment by the Argand gas flame; in Crane's, the anthracite whose susceptibility to the action of the hot blast he had discovered; in Neilson's, the contents of the smelting-furnace, by him found to be subject to the action of the long-known heated air? Numerous other examples, in addition to those given by Mr. Webster, might be cited in which, in spite of the loose language and false theories of the courts, the character of the invention, and the true ground of its patentable merit become apparent the moment it is placed before the eye as the discovery of new susceptibilities in the object, made available by directing upon them known forces through well-known modes of application, which, though a use of the old contrivance in the same manner as of old, is not a double or analogous use, because requiring an inventive act for its production.

The following are selected from among the numerous cases confirming and illustrating the proposition that the discovery of new objects or new susceptibilities in old objects, and subjecting them to the action of old inventions is not double use:

In Union Paper Collar Co. *v.* White (1875), 11 Phi . 479, McKennan, J.: (479) "It is true that paper and muslin or linen cloth were before united, and used as a fabric for maps, etc.; but this was not analogous to the use to which Hunt adapted them, nor was it in any wise suggestive of his invention. He was the first to discover the adaptability of this material to a use not cognate to

§ 267. Use in Combination a True Diversity of Use: never Double Use.

The third diversity of use arises where the entire invention is employed as a subordinate means in a true combination.

any to which it had before been applied, and by appropriate manipulation, to give it a useful and practical form. He thus not only supplied the public with a new article of manufacture, but he demonstrated unknown susceptibilities of the material out of which it was made. This is something more than the mere application of an old thing to a new purpose. It is the production of a new device, by giving a new form to an old substance, and by suitable manipulation making its peculiar properties available for a use to which it had not before been applied, thereby distinguishing it from all other fabrics of the class to which it belongs. This seems to me to involve an exercise of the inventive faculty, and in view of the great practical benefits resulting from it, to invest the product with special patentable merit." 2 Bann. & A. 60 (61); 7 O. G. 698 (698), 877 (877).

That unless inventive skill is necessary to apply an old invention to a different object, the application is not an invention, see Reed *v.* Reed (1874), 12 Blatch. 366; 8 O. G. 193; 1 Bann. & A. 515; Gallahue *v.* Butterfield (1872), 10 Blatch. 232; 6 Fisher, 203; 2 O. G. 645; Bray *v.* Hartshorn (1860), 1 Clifford, 538; Ames *v.* Howard (1833), 1 Sumner, 482; 1 Robb, 689.

That to apply an old process to a different object, producing a new result in that object, is invention, see Whitney *v.* Mowry (1867), 2 Bond, 45; 3 Fisher, 157.

That to apply the same process to the same materials for a different purpose is invention, though the former purpose be incidentally accomplished, see Higgs *v.* Goodwin (1858), E. B. & E. 529.

That the new application of an old process with a new result, dependent on newly discovered susceptibilities in the object, is not double use, see Cary *v.* Wolff (1885), 32 O. G. 257; 23 Blatch. 92; 24 Fed. Rep. 130.

That to discover that an invention can be applied to other and different machines may be a new invention, see Holmes *v.* Plainville Mfg. Co. (1881), 20 Blatch. 123; 9 Fed. Rep. 757.

That to discover unknown susceptibilities of a material and make it useful by old appliances is invention, see Union Paper Collar Co. *v.* White (1875), 2 Bann. & A. 60; 7 O G. 698, 877; 11 Phila. 470.

That putting a known material to a known use is not double use, if its capability of use in that way depends on its possession of newly discovered qualities, see Celluloid Mfg. Co. *v.* Tower (1885), 26 Fed. Rep. 451; Celluloid Mfg. Co. *v.* Pratt (1884), 21 Fed. Rep. 313.

That the use of a substance whose properties were heretofore unknown in reference to this particular use is invention, see Dalton *v.* Nelson (1876), 2 Bann. & A. 225; 13 Blatch. 357; 9 O. G. 1112.

That to so improve on an existing material as to adapt it to a new use, and then apply it to that new use, is invention, see Hoffman *v.* Aronson (1871), 8 Blatch. 324; 4 Fisher, 456.

That to apply a known process to a known material to make a known article, is not invention, though the material was never before used for the same purpose, see Hotchkiss *v.* Greenwood (1850), 11 How. 248; Rushton *v.* Crawley (1870), L. R. 10 Eq. 522.

That the use of the same material, in

Here the original use of the invention remains unchanged, but it is made to serve additional uses in its influence upon the action of the other members of the combination or in its co-operation with them on their common object. In this diversity there can be no question of an imitative or double use. The union of this invention with the others, and the new uses to which it is thereby devoted, are the result of an inventive act, producing a new means essentially distinct from each and all of the subordinate inventions from whose combination it arises.

the same manner, for another and analogous purpose, is not invention, see Jordan *v.* Moore (1866), L. R. 1 C. P. 624.

That though the user of an old material may have discovered some new value (not new property) in it, yet if used in the same way for the same purpose it is not invention, see The Bailey Washing & Wringing Machine Co. *v.* Lincoln (1871) 4 Fisher, 379.

That when an old material is used for a new purpose, it may be an invention, see Jenkins *v.* Walker (1872), Holmes, 120; 5 Fisher, 347; 1 O. G. 359.

That to apply the general principles of mechanics to a manufacture to which they had not before been applied, for a particular purpose and with a beneficial result, is invention, see Dangerfield *v.* Jones (1865), 13 L. T. Rep. N. S. 142.

That the use of a well-known substance whose capability of such use was hitherto unknown is invention, see Walton *v.* Potter (1841), 1 Web. 597.

That to ascertain by experiment that certain well-known materials, if subjected to certain known processes, will yield useful products is invention, see Young *v.* Fernie (1864), 4 Giffard, 577.

But that to apply an old contrivance to an object to which it was never before applied, there being no novelty either in the object or the mode of application, is not invention, see Pow *v.* Taunton (1845), 9 Jur. 1056.

That a new use, without new means or new effect, is only double use, see Sawyer *v.* Bixby (1872), 1 O. G. 165; 9 Blatch. 361; 5 Fisher, 283.

The cases cited under § 243 in reference to change of material may also be consulted. Such as relate to variations in the materials of which the invention used is composed are not germane to the present subject. Such as discuss the effect upon patentability of a change in the material upon which the invention is employed are directly in point. But in examining these, especially the earlier cases, caution is required in distinguishing between the rule laid down and its application to the facts; the latter being often erroneous even where the language of the former is correct. An example may be found in Howe *v.* Abbott (1842), 2 Story, 190, 2 Robb, 99, where the invention claimed was the application to palm-leaf of a process formerly in use in preparing hair for mattresses, etc. Judge Story assumed that the use was analogous, and decided the question from that point of view. But the real issue was one of fact, whether the application to palm-leaf was an analogous use; that is, whether the applier had discovered some new susceptibility in palm-leaf and made it available through the use upon it of this known process, — an issue which should have gone to the jury as in Steiner *v.* Heald, *ante*, and other cases. See a similar avoidance of the question in Klein *v.* Russell (1873), 19 Wall. 433.

§ 268. Use out of Combination a True Diversity of Use: never Double Use.

The fourth diversity of use occurs when the original invention is a combination, capable of separation into several independent means. Whatever be the uses which these members serve in their co-operation with each other, the use of less than all must be a different use from that which they performed in the original invention. Here also there can be no question of a double use. The severed element or elements, acting apart from any of their previous associations, become different means; their independent use, when not suggested by their use in combination, involves a separate inventive act; and though this act, in practice, usually precedes the one in which the combination has its origin, it is always possible that the inventor of the combination may not have perceived the character of the subordinate means which he employs, or the co-operative capabilities of a less number than the whole, and that he thus has left new fields of invention open among the very elements which he has combined. Hence to break up existing combinations into independent means, or into lesser combinations, is a new use of their subordinate elements, and when for the first time performed, becomes a new invention.

§ 269. Diversity of Use when a New Invention.

To sum up the results of this investigation we may formulate the following rules: —

I. Where an invention consists of a specific force applied in a specific manner to a specific object, no diversity of use is possible, except when the invention is employed as an element in a new combination, and if diversity of use apparently exists, the real diversity is in the invention.

II. Where an invention consists of a specific force applied in a specific manner, but without reference to specific objects, diversity of use may arise from a change of objects, the diversity being double use if the substituted object were already known as capable of substitution, but being a new invention if this susceptibility of that object were first discovered by its user.

III. Where an invention consists only of a mode of application, without reference to specific forces or specific objects, diversity of use is possible both in regard to forces and to objects,—being a double use when the substituted force or substituted object was previously known as capable of such substitution, but a new use, and hence a new invention, when the capabilities of either force or object were first discovered by the alleged inventor of the use.

IV. The use of an invention as an element in a new combination, or the separate use of an invention previously known only as a member of a combination, is not double use, but the creation of a new and independent means.

§ 270. New Inventions consisting in Diversity of Use Belong to what Classes of Inventions.

The new invention resulting from diversity of use is often of a different species from the original invention in whose employment it consists. If the original invention is a force applied, to whichsoever of the five species of inventions it belongs, the new invention created by its use is generally a process. Thus an art applied to a new object is still an art, although a different one from the old; but the new use of a machine or manufacture, when they express the idea of a force applied, or of a composition of matter in which a specific force always resides, is not a new composition, or a new manufacture or machine, but a new process for effecting in the new object some desired result.[1] When the original inven-

§ 270. [1] As the third class of inventions, namely, the subjection of a new object to an old force applied in a known manner, is incapable of any diversity of use except by introduction into or severance from a combination, its legal character and that of its use must always be the same. But in the other two classes, while the new mode of use does not affect the character of the invention used, so neither does the character of the invention used determine that of the new invention which consists in this new use. To this effect are various decisions.

Thus that the application of an old device to a new use does not constitute a new device, see Yuengling *v.* Johnson (1877), 3 Bann. & A. 99; 1 Hughes, 607; Northwestern Fire Extinguisher Co. *v.* Philadelphia Fire Extinguisher Co. (1874), 1 Bann. & A. 177; 6 O. G. 34; 10 Phila. 227.

See also §§ 259, 260, and notes, *ante*.

That a new mode of using old instru-

tion is a mode of application the same consequences follow; whether it be an art, or manufacture, or machine, its employment in connection with new forces or new objects is usually an act applying force or influencing objects, and not another instrument.[2] But in diversities of use, created by combining elements or by disrupting combinations, the result is different. Here the new invention does not vary in its species. The union or the severance of arts produces only arts; the combination or the dissociation of instruments brings forth new instruments of the same order as the old.

§ 271. Doctrine of Double Use Unnecessarily Confused.

From this discussion of the principles which underlie the doctrine of double use it is obvious that the subject in itself is not obscure, and that its difficulties have arisen mostly from the failure to distinguish properly between inventions and their uses, and between the different diversities of use which are possible to different classes of inventions.[1] If the decis-

ments may be a new art, see Lawther *v.* Hamilton (1888), 42 O. G. 487; Roberts *v.* Dickey (1872), 4 Brews. (Pa.) 260; 1 O. G. 4; 4 Fisher, 532; Smith *v.* Frazer (1872), 3 Pittsb. 397; 5 Fisher, 543; 2 O. G. 175.

That a new use of a composition of matter is not a new composition of matter, see U. S. & Foreign Salamander Co. *v.* Haven (1875), 3 Dillon, 131; 9 O. G. 253.

[2] That a new use of old instruments may result in a new manufacture, see Judd *v.* Babcock (1881), 8 Fed. Rep. 605; 23 O. G. 92; Union Paper Collar Co. *v.* White (1875), 2 Bann. & A. 60; 7 O. G. 698, 877; 11 *Phila.* 479.

§ 271. [1] In Boulton *v.* Bull (1795), 2 H. Bl. 463, the origin of many of the difficulties which have attended the doctrine of double use may be traced to that erroneous idea of the real nature of "a manufacture" from which so many other perplexities have also arisen. If an invention must be a vendible substance, — that is, either a machine for making or a thing made, — it is evident that no use of an invention can ever be the subject of a patent. Every use, therefore, to which an invention can be put, without changing its essential character and thus creating a different substance, must be an analogous or double use, whether the new mode of use require inventive skill either in itself or in its adaptation of the invention to the newly discovered qualities of the object acted on. This doctrine is stated by Buller, J., in his opinion in this case, illustrating his argument by reference to medical compounds, and declaring that any new use of such compounds, though involving the highest skill and productive of the greatest benefit, could not be a new invention. Thus he says: (487) "The medicine is the manufacture, and the only object of a patent; and as the medicine is not new, any patent for it, or for the use of it, would be void." He also instances the water-tabbies, where the

ions of the courts are examined in the light of these principles, it will be found that in most cases the result arrived

patentee had discovered that by mixing water with oils and colors in a certain manner peculiar effects could be produced, but had patented only certain vendible substances obtained by that method, and continues: (488) "Suppose painted floor-cloths to be produced on the same principle, yet as the floor-cloth and the tabby are distinct substances, calculated for distinct purposes, and were unknown to the world before, a patent for one would be no objection to a patent for another;" the statement of another strange doctrine, though a true logical result of his fundamental proposition, that when a more method of producing a thing is invented each separate vendible substance produced in that method may, if a new substance, be patented. Thus every application of a method to a new object is a new use of the method, resulting in a new patentable substance. But no application of a patented substance to a new object, though producing new effects therein, can be the subject of a patent unless the object so affected becomes also a new substance. 1 Abb. P. C. 59 (82, 83).

The same idea is expressed in Bush *v.* Fox (1852-6), Macrory's P. C. 152, where Pollock, C. B., in directing the jury denies that any application of an old invention can be patented, and affirms that if a new application results in a new product, the new product only is the subject of a patent. Thus he says: (163) "An invention must be a production of something that can be used or sold or made use of for some purpose, or some method which results in something of the same sort. And I think that a man cannot, if he has applied . . . an old invention . . . to a new purpose, obtain a patent for such an application. Now if [this contrivance] is to be looked upon as old, and the object of the patent is for applying it to a new purpose, that is not a manufacture, and the application is such an operation . . . that nothing new which results from it can, I think, be the subject of a patent." In the Exchequer Chamber, this direction was held correct, taking into consideration the evidence in the cause, and was affirmed on the same ground in the House of Lords (5 H. L. 707).

In Losh *v.* Hague (1838), 1 Web. 202, Abinger, C. B.: (207) "The learned counsel has stated to you, and very properly, and it is a circumstance to be attended to, that Mr. Losh has taken out his patent to use his wheels on railways. Now, he says, the wheels made by Mr. Paton, or by the other workmen who were called as witnesses, were never applied to railways at all. That opens this question whether or not a man who finds a wheel ready made to his hand, and applies that wheel to a railway, shall get a patent for applying it to a railway. There is some nicety in considering that subject. The learned counsel has mentioned to you a particular case, in which an argand lamp burning oil having been applied for singeing ganze, somebody else afterwards applied a lamp supplied with gas for singeing lace (Hall's Patent, 1 Web. 97), which was a novel invention, and for which an argand lamp is not applicable because gas does not burn in the same way as oil in an argand lamp. But a man having discovered by the application of gas he could more effectually burn the cottony parts of the gauze by passing it over the gas, his patent is good. That was the application of a new contrivance to the same purpose; but it is a different thing when you take out a patent for applying a new contrivance to an

at has been in the main correct; and if their language be amended by excluding all phrases which confound diversity

old object, and applying an old contri- vance to a new object; that is a very *different thing*; if I am wrong, I shall be corrected. In the case the learned counsel put, he says, 'If a surgeon goes into a mercer's shop and sees the mercer cutting velvet or silk with a pair of scissors with a knob to them, he seeing that would have a right to take out a patent, in order to apply the same scissors to cutting a sore, or a patient's skin.' I do not quite agree with that law. I think if the surgeon had gone to him and said, 'I see how well your scissors cut,' and he said, 'I can apply them instead of a lancet by putting a knob at the end,' that would be quite a different thing, and he might get a patent for that; but it would be a very extraordinary thing to say that, because all mankind have been accustomed to eat soup with a spoon, that a man could take out a patent because he says you might eat peas with a spoon. The law on the subject is this; that you cannot have a patent for applying a well-known thing, which might be applied to fifty thousand different purposes, for applying it to an operation which is exactly analogous to what was done before. Suppose a man invents a pair of scissors to cut cloth with; if the scissors were never invented before, he could take out a patent for it. If another man found he could cut silk with them, why should he take out a patent for that? I must own, therefore, that it strikes me if you are of opinion this wheel has been constructed according to the defendant's evidence, by the persons who have been mentioned, long before the plaintiff's patent, that although there were no railroads then to apply them to and no demand for such wheels, yet that the application of them to railroads afterwards by Mr. Losh will not give effect to his patent, if part of that which is claimed as a new improvement by him is in fact an old improvement invented by other people and used for other purposes." 2 Abb. P. C. 501 (508).

As this case, and the propositions above quoted from the learned judge who presided at its trial, may perhaps be regarded as the first clear recognition and explanation of the doctrine of double use, it deserves a careful examination; but especially from the fact that in the language of the judge are found the seeds of several of the most important errors and mistakes that have arisen in reference to this doctrine. The statement that "you cannot have a patent for applying a well-known thing . . . to an operation *which is exactly analogous* to what was done before," is undoubtedly correct. Such an application can, in the nature of things, be nothing but a repetition and imitation of some previous application, and necessarily excludes the exercise of any inventive skill in the applier, as well as any novelty in the application. But in referring the facts in the case at bar to this rule, the judge assumes that the use, for railroad purposes, of an old wheel invented before railroads were known, must be an analogous use, without directing the jury to inquire whether the patentee had been the first to discover the requirements of a successful railroad-wheel, to perceive in this wheel a capability of satisfying those requirements, and to adapt the wheel to its more recent uses; but leaving them to decide the cause upon the question whether or not the wheel itself was new, thus making all uses of an instrument analogous where the instrument itself remains unchanged. This error resulted, in part at least, from the old idea, not yet entirely expunged

of use with diversity of means, they would become, almost without exception, intelligible and harmonious.

from the English mind, that a patentable invention must have some tangible, permanent manifestation, — either being in itself a vendible substance or resulting in the production of a vendible substance; the court here perceiving that the only vendible substance was the wheel, and presuming that if this were old nothing could be new. Mr. Webster, in a note to this part of the decision, says: (208) "It is at once evident that applications of this nature cannot be said to be 'any manner of new manufacture;' they may be called inventions, in one sense of the term, inasmuch as something may be said to have been found out, some discovery may be said to have been made; but they are not such as can be the subject-matter of letters-patent. Suppose any one to have discovered that a medicine known as a valuable specific in one class of complaints, fevers for instance, had also great efficacy for curing consumptions, the application of that medicine to such a new purpose would not be the subject-matter of letters-patent. The medicine is a manufacture, and the making or compounding it might be the subject of a patent; but the medicine being known, the discovery of any new application is not any manner of manufacture. Cases of this kind are well described by the term 'double use;' and under such circumstances it is truly said there cannot be a patent for a double or new use of a known thing, because such use cannot be said to lead to any manner of new manufacture. There is, however, a large class of cases in which a new use of a known thing is the substance or essence of the invention, as the use of gas in improving lace, or the use of charcoal in filtering sugar; but in all these and similar cases a new manufacture is the result, and if the invention or discovery be examined according to this test, no difficulty can arise in determining whether the new case is such as can be protected by letters-patent."

As stated by the court in the case at bar, and explained in Mr. Webster's note, the new use of a known thing is thus an analogous or double use when it does not result in a new vendible substance, and is not an analogous or double use when it does result in a new vendible substance. The use itself may be as new in the one case as in the other; it may require as much invention, and may be as beneficial to the public; but whether it is "analogous" and "double" depends not on its similarity or dissimilarity to any former use, but on the patentability of its result as a "new manner of manufacture." In other words, the character of the use is determined not by anything in the use itself, nor in the nature of its effect, but by its capability of being classified under either of the species of inventions mentioned in the statute. The absurdity of this position is evident, and its adoption can be accounted for only by remembering the ease with which even the legal mind falls into confusion when fundamental distinctions are once ignored. To have said that an analogous use is a use similar to and suggested by the old, — as the illustrations given by Lord Abinger clearly show, — and to have held, that even a new use is not patentable unless producing a new vendible substance, would have been a position consistent with itself although erroneous in law, and would have preserved subsequent generations of jurists from innumerable perplexities.

An instance of the facility with which mistakes in the use of language have been made and propagated in the history of Patent Law occurs in the same

SECTION V.

OF THE NOVELTY OF INVENTIONS: TESTS OF IDENTITY IN SIMPLE INVENTIONS AND IN COMBINATIONS.

§ 272. Identity a Question of Fact.

Subject to the foregoing rules the question of the identity or diversity of two inventions is a question of fact, to be determined by industrial research and discrimination.[1] Every controversy in reference to inventions relates not only to their legal *status* but to their actual *status* in the arts, and is decided by the application both of principles of law and principles of science. The decisions of the courts in cases of this character therefore serve two important purposes. They declare the doctrines of the law concerning inventions in general; they also propound and explain those scientific truths in view of which the doctrines of the law must be applied to individual inventions. Having examined them in both these aspects, and formulated our results in certain rules, it now becomes

decision and in reference to the same subject. The learned judge says: "It is a different thing when you take out a patent for applying a new contrivance to an old object, and applying an old contrivance to a new object." Here note the equivocal use of the word "new." In reference to "contrivance," it means "newly invented," "never before known;" in reference to "object," it means "another" simply, not "newly invented" or "hitherto unknown." All the examples cited by the court show this, and on principle the statement is correct only when these different meanings are given to the word in its different connections; since it is as truly an invention to apply a known contrivance to an object whose susceptibilities are just discovered, as to apply a newly invented contrivance to a known object, — both standing on the same footing as results of an inventive act. Yet without distinguishing this double meaning of the adjective, this proposition has been taken as declaring that every application of an old contrivance to any object, whether old or new, was necessarily a "double use," devoid alike of inventive skill and patentable merit; and has thus been a stumbling-block to lawyers, authors, and judges during the past fifty years. See Coryton, 66; Lund, 17; Norman, 13; Curtis, §§ 55, etc.

§ 272. [1] That where two inventions are identical in fact they are also identical in law, see *In re* Merrill (1874), 1 MacArthur, 301; 5 O. G. 120.

That identity is a question of fact, see Tillotson *v.* Ramsay (1878), 51 Vt. 309; Stevens *v.* Fierpont (1875), 42 Conn. 360; Morgan *v.* Seaward (1835), 1 Web. 167; 2 Abb. P. C 113.

necessary to discuss those rules in their application to concrete arts and instruments.

§ 273. Two Inventions are either Identical, or Diverse, or related as an Original and an Improvement.

Whenever two inventions are compared, they are seen to occupy toward each other one of three relations: either (1) They are identical, each possessing every essential characteristic of the other, and the later thus a reproduction of the earlier; or (2) They are entirely independent, differing in the ideas of means which they express, and tracing their origin to separate inventive acts; or (3) The later is an improvement on the earlier, identical with it up to a certain point beyond which a new exercise of the creative faculties has developed the original idea, making the difference a new and substantive invention. To ascertain in which of these relations the inventions stand is the purpose both of science and the law.

§ 274. Identity of Inventions Impossible without Identity of Function.

The first decisive test to be applied is that afforded by the functions performed by the inventions. As diversity of ends cannot result from uniformity of means, if the functions of the two inventions are essentially distinct the inventions also must be independent of each other, and the question of identity is thus immediately settled. But if their functions are essentially the same, the question is still open, since similar effects may be accomplished by the use of very different means.[1] In this event additional tests, derived from an examination of each invention as an operative means, are necessary.

§ 275. Identity of Inventions Independent of Diversities of Form.

In order to apply these further tests, each of the two inventions must be contemplated as the embodiment of its idea of means, and as that alone. Formal diversities of every kind must be excluded from consideration. The equivalence of different elements must be detected. Essential variances in

§ 274. [1] That identity of function does not show identity of inventions, see Bruff *v.* Waterbury Buckle Co. (1886), 29 Fed. Rep. 214. See also §§ 117, 236, and notes, *ante*.

employment must be distinguished from mere double use, and the intrinsic character of each invention, stripped of all adventitious attributes, be made apparent to the mental vision. This being done, the two inventions are in a position to be accurately compared in respect to those essential qualities in which the identity of each consists.

§ 276. Identity of Inventions is Identity of Essential Factors.

The qualities essential to an invention depend on the relation of the inventive act to its subordinate ideas. This principle has already been sufficiently considered, and in connection with the present subject may be disposed of in a single proposition: Where the inventive act has been concerned in the discovery and adaptation of a force, an object, a mode of application, or two or more of these, the essential qualities of such new force or object or mode of application thereby become essential qualities of the invention, and any difference in this respect between the two inventions is a difference in the idea of means. In applying this principle, and in considering the identity of force with force, of object with object, and especially of one mode of application with another, it will avoid confusion to examine separately each of the six species of inventions. And since in every species there are combinations whose essential qualities are controlled by rules which are peculiar to themselves, and at the same time are additional to those which govern simple arts and instruments, the explanation of these rules will naturally precede an inquiry into the individual characteristics of particular species, and being apprehended here will simplify the questions then to be discussed.

§ 277. Identity of Combinations, how Tested.

A combination is a group of elements united in a method of co-operation. In its identity two subordinate identities concur: identity of elements; identity in the mode of their co-operation.[1] The essential qualities of a combination thus include the essential qualities of each of its constituent ele-

§ 277. [1] That combinations are identical only when their elements and modes of combination are the same, see Electric R. R. Signal Co. *v.* Hall R. R. Signal Co. (1885), 114 U. S. 87; 31 O. G. 515; Gill *v.* Wells (1874), 22 Wall. 1; Gould *v.* Rees (1872), 15 Wall. 187; 6 Fisher, 106; 2 O. G.

ments, the essential qualities of their method of co-operation, and the essential qualities resulting from the union of these elements under this co-operative law. Hence in determining the identity of a combination the investigator meets, and is required to answer, the four following questions: (1) What are its constituent elements? (2) What are the essential qualities of each? (3) What is the nature of its co-operative law? and (4) What are the new intrinsic attributes resulting from the combination of the old?

§ 278. Identity of Combinations: "Elements of Combination" Defined.

The constituent elements of a combination are those subordinate arts or instruments by whose co-operation the functions of the combination are performed.[1] A combination may, and often does, embrace other substances or acts, whose presence is not necessary to its integrity; but these are accidents of

624; Seymour *v.* Osborne (1870), 11 Wall. 516; Prouty *v.* Ruggles (1842), 16 Pet. 336; 2 Robb, 92.

That combinations composed of the same or equivalent elements, combined in the same way and operating in the same manner, are identical, see American Box Mach. Co. *v.* Day (1887), 32 Fed. Rep. 585. See also cases cited in § 155, note 2, *ante*.

§ 278. [1] That such parts of any combination as are not essential to the performance of its functions, according to the method of co-operation devised by its inventor, are immaterial and may be discarded without changing the character of the combination, see McWilliams Mfg. Co. *v.* Blundell (1882), 11 Fed. Rep. 419; 22 O. G. 177; Stow *v.* Chicago (1877), 8 Bissell, 47; 3 Bann. & A. 83; Smith *v.* Fay & Co. (1873), 6 Fisher, 446; Carlton *v.* Bokee (1873), 17 Wall. 463; 6 Fisher, 40; 2 O. G. 520; Waterbury Brass Co. *v.* Miller (1871), 5 Fisher, 48; 9 Blatch. 77; Rich *v.* Close (1870), 8 Blatch. 41; 4 Fisher, 279; Hale *v.* Stimpson (1865), 2 Fisher, 565; Sellers *v.* Dickinson (1850), 5 Exch. 312.

That all elements which aid in producing the general result enter into the combination, see Shaver *v.* Skinner Mfg. Co. (1887), 41 O. G. 232.

That though the product while in the machine aids the machine in performing some special functions, it does not thereby become an element in the combination constituting the machine, see Dederick *v.* Cassell (1881), 20 O. G. 1233; 9 Fed. Rep. 306.

That a part not indispensable, though serviceable, is not an element, see Bradley *v.* Dull 1884), 27 O. G. 625; 19 Fed. Rep. 913.

Where a combination has been patented, and in the patent is described and claimed as consisting of certain elements, each of such elements is thereby made an essential feature of the combination, whether necessary to the performance of its functions or not, and cannot be repudiated by the patentee. Hence in comparing a patented combination with an infringing or prior combination, the comparison must not be instituted between the two concrete inventions as they actually exist in the

construction, not embodiments of an idea. Among these are those parts of the invention which have no special function to discharge, those tributary devices which do not influence the operation of the constituent elements, and those objects upon which the combination acts when practically employed although they aid the combination in its operations. Diversity in these does not affect the identity of the combination, and they must, therefore, be excluded from the mind whenever its essential qualities become the subject of investigation.

§ 279. Identity of Combinations: Subcombinations to be Resolved into Elements.

In order that the essential qualities of a constituent element may be discovered, it is necessary that this element should be a simple means. An element itself is sometimes a combination, formed by the union of subordinate arts or instruments under its own peculiar method of co-operation. The intrinsic character of such an element or sub-combination depends upon the nature of its integral elements and of their co-operative law; and it must, therefore, be resolved into its several members, and if these members are true combinations still further resolution must occur, until each element can be examined as a simple art or instrument, expressing a distinct idea of means.[1] When this reduction is accomplished, the

arts, but between the prior or infringing combination and the description and claims of the patent. Under this rule the patent may, of course, fail to protect the invention of the patentee, or may be held invalid on account of the apparent, though unreal, identity of his invention with the prior combination. But the fault is his own, and by its consequences he must abide. See Royer *v.* Schultz Belting Co. (1886), 28 Fed. Rep. 850; Fay *v.* Cordesman (1883), 109 U. S. 408; Coolidge *v.* McCone (1874), 2 Sawyer, 571; 5 O. G. 458.

§ 279. [1] It is essential to the idea of a combination that its elements should be, in themselves, operative means, and hence that their identity should depend, not merely upon the function which they perform, but upon the manner in which they perform it. This is exemplified in the doctrine of combination-equivalents, § 254, *ante*, and in many other propositions having reference to this class of inventions. When, therefore, an element in a combination is itself a combination, its character cannot be determined by its mere function (except in chemical compositions), but the method in which it performs its functions must also be examined. This necessitates an inquiry into the nature of its elements and of their co-operative law. It is not until each element is thus reduced to its simplest terms that the identity of one element with another can be safely asserted or denied.

simple elements, whether subordinate or principal, may be subjected to a final and decisive scrutiny, in which the force, the object, and the mode of application which each represents become apparent, and the essential qualities of each are thus disclosed.

§ 280. Identity of Combinations: "Co-operative Law" Defined.

The co-operative law of a combination is incapable of definition, or even of exact description. It embodies a complete idea of means, embracing the subordinate ideas of force, of object, and of mode of application. Its force includes all the forces employed by each of the constituent elements, not united into a new and homogeneous force, but remaining separate from each other as though the elements were still distinct. Its object comprehends every constituent element whose natural activities are influenced by the forces of the other elements, as well as that remoter substance toward which the energies of the whole combination are directed. Its mode of application is that method of arrangement, that adjustment of each element with reference to every other, by which the force of each is enabled so to act upon the others and their common object that the intended functions of the combination are performed. Thus in a chemical composition, for example, the co-operative law expresses the idea of the forces represented by the properties of each ingredient, operating upon the properties of every other ingredient, as well as on the substances to which the combination is to be applied, through that mode of application which is adopted when the several ingredients are intermingled in such order, method, and proportions, as permits the exercise of this reciprocal and joint activity. Thus, also, in a process, it is that relation of each art toward the others which is created by performing every art in a specific time and method, whereby the force of each acts in a certain manner on the forces of the others and on the common fabric or material. This co-operative law is sometimes ascertainable from an immediate inspection of the combination, and sometimes from the permanent effects which follow its employment, but far more accurately and reliably from an examination of it while in actual opera-

tion, when its subordinate forces are applied to its subordinate objects in that degree or measure which produces its peculiar ultimate results.

§ 281. Identity of Combinations: Essential Attributes of Combinations.

A combination, as a whole, possesses attributes distinct from those of its constituent elements and of their co-operative law. It represents an independent and original idea of means. Its force is a resultant from the union of the individual forces of its elements. Its object is the material on which its functions are performed. Its mode of application is the method in which the co-operating action of its elements directs its force upon their common object. The inventive act by which it is created may manifest itself in the production of a new force by the union of the old, as in a chemical combination; or in the subjection of a new object to the co-operative forces of its elements, as in some special arts; or in the contrivance of a new method for applying these united forces to their object, as in many forms of manufactures and machines. But on whichever one of these subordinate ideas the genius of the inventor is exerted, each is, in its relation to the combination, distinct from the corresponding ideas which underlie the individual elements or their co-operative law; and the essential qualities of each, whether they differ from or are identical with those out of whose union they arise, are equally essential to the identity of the combination. These are the substance of the combination, taken as a whole, — the attributes by which it is enabled to perform its functions in the mode designed by its inventor, and which results from the possession, by its elements and by its co-operative law, of their particular and individual qualities.

§ 282. Identity of Combinations Requires Identity of Elements, of Co-operative Law, and of Essential Attributes.

This method of investigation discloses those essential characteristics of the two combinations, by a comparison of which their identity or diversity is to be determined. Assuming that their functions are the same, since without this no iden-

tity is possible, the mode in which each combination performs these functions, or its intrinsic attributes when taken as a whole, first demand attention. If the forces, objects, or modes of application which constitute the essential factors of the two combinations are evidently different, the combinations must be distinct inventions; if evidently the same, the constituent elements of each combination and their co-operative laws must be examined. When every element in one is represented by an equivalent element in the other, so that a complete interchange of elements would work no alteration in the functions of the combination or in its co-operative law, the elements of both combinations are identical; but otherwise the elements are diverse and the combinations are independent inventions.[1] When all the elements are the

§ 282. [1] As a combination is the union of certain specific elements under one law of co-operation, two combinations cannot be identical unless the elements united in each are the same. This does not require, however, that the elements should be the same concrete inventions, for all elements are the same in reference to the combination if each is a true substitute for the other, according to the doctrine of equivalents. Nor is it necessary that the elements be the same in number, for one may be the equivalent of two or more, or two or more may be substituted in the place of one. But it is essential that when all immaterial parts are excluded, and the true constituent elements of each combination alone remain, these elements in each should be equivalents for all those in the other; and this is what is meant by the proposition that to drop an element, or to add an element, makes the result a different combination. Thus in Royer *v.* Schultz Belting Co. (1886), 28 Fed. Rep., 850, Treat, J.: (851) "The ordinary doctrine in law concerning patents is that if a party insists on a patent for a combination of devices (whether new or old is immaterial), each element of the combination is an essential element; so that one who uses a combination in some respects, but omits one of the elements that the patentee chooses to describe as essential, the supposed infringer does not infringe. The patentee is supposed to describe clearly and fully all the elements which he thinks essential to produce the result desired. If he chooses to crowd his supposed inventions or combinations with elements that have no functions whatsoever, and a party chooses to use a like contrivance, omitting some of those elements, he does not infringe. The reason of the rule, as explained by the Supreme Court very frequently, is this: that, first, a party claiming the patent should not incumber the combination or device with matters that are wholly unessential, and thereby block the path of improvement or invention. If he chooses to put such in his contrivance, he must abide by the result."

In Rowell *v.* Lindsay (1881), 6 Fed. Rep., 290, Dyer, J.: (293) "It is a settled rule of law that where a patent is for a combination of known parts, it is not infringed by the use of any number of the parts less than the whole; for the patent, in every such case, is for

same, identity depends upon identity of co-operative law. The co-operative laws of two combinations can scarcely differ

that identical combination, and nothing else, and a combination of any less number of parts is a different thing. . . . (205) The combination is an entirety. Unless it is maintained as such, the whole of the invention fails. If one of the elements is given up the thing claimed disappears. . . . The different parts may perform more or less important functions, but each and all *are essential to make the thing which* the patentee has claimed as his invention." 10 Bissell, 217 (220, 222); 19 O. G. 1565 (1565).

In Waterbury Brass Co. *v.* Miller (1871), 5 Fisher, 48, Woodruff, J.: (69) "In any proposed application of this principle it should be borne in mind that, in a certain sense, nearly all new machines are but combinations of old devices; that is to say, they do, or may, combine frames, bolts, screws and nuts, rods and pulleys, cranks and wheels, levers and pins, nails and boards, and, as the case may be, various other and more complicated devices, none of which, regarded singly or separately, are new; and yet the machine formed by the combination is new as a structure, new in its operation, and new in the effect produced. The patent, in such case, is not for a mere combination under the rule above referred to; and another machine, having the like construction, operation, and effect, in all that constitutes the principle of the machine, and the efficient means of its operation, is an infringement of the patent, notwithstanding it may be moved by a less number of wheels, or be held together by a less number of clamps, screws or nails, bolts or keys, and notwithstanding drum and pulley may be substituted for cog-wheels or other gear, or bolts for screws and nuts, or like changes be made in other devices employed to construct the machine. Such machine, notwithstanding such changes, is substantially the same in its patentable characteristics, and would be, within the terms of the specification, 'substantially as described.'" 9 Blatch. 77 (98).

In Rich *v.* Close (1870), 8 Blatch. 41, Woodruff, J.: (44) "It is true that inventions in general involve combinations of old devices. No machine is made that *does not, in various of its parts, require* for its construction the use of what is known and open to the use of all the world. Hence, when a machine is patented as an aggregate, third parties may not deny an infringement on the ground that they omit immaterial parts, or use fewer of the original old elements or substitute equivalents. The question will still recur: Is the alleged infringement substantially the same machine?" 4 Fisher, 279 (283).

In Roberts *v.* Harnden (1865), 2 Clifford, 500, Clifford, J.: (504) "Where all the elements of a machine are old, and the invention consists solely in the combination by which a new and useful result is effected, as compared with the old machine on which the improvement is made, no one can be held as an infringer who does not use all of the elements of the new combination. The reason of the rule is that others as well as the first patentee may improve the old machine; and if they do so by the use of a substantially different combination they are not infringers, although they may have used all of the elements of the first invention, except one, and their machine may perform substantially the same functions."

In Hill *v.* Thompson (1818), 1 Web. 239, Dallas, J.: (242) "It is a patent for a combination of processes, altogether new, leading to one end; and this being the nature of the alleged discovery, any

when, all their elements being identical, the union of these elements has resulted in combinations performing the same

use made of any of the ingredients singly, or any use made of such ingredients in partial combination, some of them being omitted, or any use of all or some of such ingredients in proportions essentially different from those specified, and yet producing a result equally beneficial (if not more so) with the result obtained by the proportions specified, will not constitute an infringement of the patent." 1 Abb. P. C. 304 (308).

That to omit one element of a combination destroys that combination, see Royer *v.* Schultz Belting Co. (1886), 28 Fed. Rep. 850; Schillinger *v.* Cranford (1885), 4 Mackay, 450; 37 O. G. 1349; Abbott *v.* Hoole Mfg. Co. (1885), 31 O. G. 1561; Travers *v.* Palmer (1885), 31 O. G. 382; 23 Fed. Rep. 511; Hayes *v.* Bickelhoupt (1885), 32 O. G. 133; 23 Fed. Rep. 183; Arnold *v.* Phelps (1884), 29 O. G. 538; Pacific Submarine Co. *v.* United States (1884), 19 Ct. of Claims, 234; Gould *v.* Spicers (1884), 20 Fed. Rep. 317; Gage *v.* Herring (1883), 107 U. S. 640; 23 O. G. 2119; Howe *v.* Neemes (1883), 18 Fed. Rep. 40; Matteson *v.* Caine (1883), 17 Fed. Rep. 525; 8 Sawyer, 498; Cotter *v.* New Haven Copper Co. (1882), 23 O. G. 740; 13 Fed. Rep. 284; New *v.* Warren (1882), 22 O. G. 587; Schmidt *v.* Freese (1882), 21 O. G. 1876; 12 Fed. Rep. 563; Tod *v.* Wick Bros. (1881), 36 Ohio St. 370; Cross *v.* Livermore (1881), 21 O. G. 139; 9 Fed. Rep. 607; American Ballast Log Co. *v.* Barnes (1881), 21 O. G. 1029; 9 Fed. Rep. 465; 4 Hughes, 278; Rowell *v.* Lindsay (1881), 10 Bissell, 217; 6 Fed. Rep. 290; 19 O. G. 1565; Faurott *v.* Hawes (1880), 3 Fed. Rep. 456; Gale Mfg. Co. *v.* Prutzman (1880), 5 Bann. & A. 154; 17 O. G. 743; Dittmar *v.* Rix (1880), 5 Bann. & A. 240; 17 O. G. 973; 1 Fed. Rep. 342; Sharp *v.* Tifft (1880), 17 O. G. 1282; 18 Blatch. 132; 2 Fed. Rep. 697; 5 Bann. & A. 399; Water Meter Co. *v.* Desper (1879), 101 U. S. 332; Burdett *v.* Estey (1879), 16 Blatch. 105; 4 Bann. & A. 141; Miller *v.* Bridgeport Brass Co. (1877), 3 Bann. & A. 20; 14 Blatch. 282; 12 O. G. 667; Stow *v.* Chicago (1877), 3 Bann. & A. 83; 8 Bissell, 47; Schumacher *v.* Cornell (1877), 96 U. S. 549; Smith *v.* Marshall (1876), 2 Bann. & A. 371; 10 O. G. 375; Sanford *v.* Merrimac Hat Co. (1876), 4 Clifford, 404; 2 Bann. & A. 408; 10 O. G. 466; Storrs *v.* Howe (1876), 2 Bann. & A. 420; 10 O. G. 421; 4 Clifford, 388; Dunbar *v.* Meyers (1876), 94 U. S. 187; 11 O. G. 35; Fisher *v.* Craig (1874), 1 Bann. & A. 365; 3 Sawyer, 69; Craig *v.* Smith (1874), 1 Bann. & A. 556; 4 Dillon, 349; Coolidge *v.* McCone (1874), 2 Sawyer, 571; 5 O. G. 458; Smith *v.* Woodruff (1874), 1 MacArthur, 459; 4 O. G. 635; 6 Fisher, 476; Westlake *v.* Cartter (1873), 4 O. G. 636; 6 Fisher, 519; Brown *v.* Hinkley (1873), 3 O. G. 384; 6 Fisher, 370; Bridge *v.* Brown (1873), Holmes, 205; 3 O. G. 121; King *v.* Louisville Cement Co. (1873), 6 Fisher, 336; 4 O. G. 181; Sarven *v.* Hall (1872), 1 O. G. 437; 9 Blatch. 524; 5 Fisher, 415; Gould *v.* Rees (1872), 15 Wall. 187; 6 Fisher, 106; 2 O. G. 624; Wallace *v.* Holmes (1871), 1 O. G. 117; 5 Fisher, 37; 9 Blatch. 65; Waterbury Brass Co. *v.* Miller (1871), 9 Blatch. 77; 5 Fisher, 48; Carter *v.* Baker (1871), 1 Sawyer, 512; 4 Fisher, 404; Watson *v.* Cunningham (1871), 4 Fisher, 528; Seymour *v.* Osborne (1870), 11 Wall. 516; Rich *v.* Close (1870), 8 Blatch. 41; 4 Fisher, 279; Stimpson *v.* Woodman (1869), 10 Wall. 117; Crompton *v.* Belknap Mills (1869), 3 Fisher, 536; Nicholson Pave-

functions in the same manner; still this test is not infallible, and only an analysis of that law itself, as manifested in each

ment Co. *v.* Hatch (1868), 4 Sawyer, 602; 3 Fisher, 432; Blanchard *v.* Puttman (1867), 2 Bond, 84; 3 Fisher, 186; Mabie *v.* Haskell (1865), 2 Clifford, 507; Roberts *v.* Harnden (1865), 2 Clifford, 500; Hale *v.* Stimpson (1865), 2 Fisher, 565; Eames *v.* Godfrey (1863), 1 Wall. 78; Vance *v.* Campbell (1861), 1 Black, 427; Dodge *v.* Card (1860), 1 Bond, 393; 2 Fisher, 116; Lee *v.* Blandy (1860), 1 Bond, 361; 2 Fisher, 89; Smith *v.* Higgins (1860), 2 Fisher, 97; Latta *v.* Shawk (1859), 1 Fisher, 465; 1 Bond, 259; Bell *v.* Daniels (1858), 1 Fisher, 372; 1 Bond, 212: McCormick *v.* Talcott (1857), 20 How. 402; Foss *v.* Herbert (1856), 2 Fisher, 31; 1 Bissell, 121; Pitts *v.* Wemple (1855), 6 McLean, 558; Pitts *v.* Wemple (1855), 2 Fisher, 10; 1 Bissell, 87; McCormick *v.* Manny (1855), 6 McLean, 539; Brooks *v.* Fiske (1853), 15 How. 212; Silsby *v.* Foote (1852), 14 How. 218; Smith *v.* Downing (1850), 1 Fisher, 64; Parker *v.* Haworth (1848), 4 McLean, 370; 2 Robb, 725; Root *v.* Ball (1846), 4 McLean, 177; 2 Robb, 513; Brooks *v.* Bicknell (1845), 4 McLean, 70; Brooks *v.* Bicknell (1844), 3 McLean, 432; Prouty *v.* Ruggles (1842), 16 Peters, 336; 2 Robb, 92; Prouty *v.* Draper (1841), 1 Story, 568; 2 Robb, 75; Barrett *v.* Hall (1818), 1 Mason, 447; 1 Robb, 207; Harrison *v.* Anderston Foundry Co. (1876), L. R. 1 App. 574; Clark *v.* Adie (1875), L. R. 10 Ch. Ap. 667; Booth *v.* Kennard (1856), 1 H. & N. 527.

In quite a number of the foregoing cases the courts distinguish between combinations of old elements and combinations consistiug entirely or in part of new elements, and apply this doctrine in its fulness only to the former. It was their real desire to announce that new elements and sub-combinations were protected by the patent for the combination as a whole, though not specifically claimed therein; and being unable to assume this position without violence to accepted rules of interpretation, they endeavored to attain the same result by declaring that the new combination itself is used whenever any of its new elements are employed. This is manifestly inconsistent with any true theory of the nature of a combination, which can exist only where all its elements are present and co-operate in the mode devised by its inventor. See also § 254, note 1, *ante*.

That a combination of three elements is a different invention from a combination of two of them, see Bernard *v.* Heimann (1881) 21 O. G. 140; 20 Blatch. 21; 9 Fed. Rep. 400.

That the omission of one element in a combination, if its function is not performed by the remaining elements, makes a different combination, see Tobey Furniture Co. *v.* Colby (1885), 26 Fed. Rep. 100; 34 O. G. 1276.

That less than all the elements make a different combination, though the former was suggested by the latter, see Snow *v.* Lake Shore & M. S. R. R. Co. (1883), 18 Fed. Rep. 602; 25 O. G. 1280.

That where a combination has heretofore been used in connection with a certain element, it does not become a new combination by dropping that element, if the function and effect of the combination remain unchanged, the abandoned element being thus shown to have been immaterial, see Stow *v.* Chicago (1877), 8 Bissell, 47; 3 Bann. & A. 83; Smith *v.* Fay & Co. (1873), 6 Fisher, 446; Carlton *v.* Bokee (1873), 17 Wall. 463; 2 O. G. 520; 6 Fisher, 40; Waterbury Brass Co. *v.* Miller (1871), 5 Fisher, 48; 9 Blatch. 77;

combination, and an examination of the force, the object,

Hale *v.* Stimpson (1865), 2 Fisher, 565.

That the rejection of superfluous parts from a combination does not always require inventive skill, nor the union of the remaining parts constitute a new patentable combination, see McClain *v.* Ortmayer (1888), 42 O. G. 724; Smith *v.* Fay & Co. (1873), 6 Fisher, 446.

That to dismember an old combination and use some of the elements for the same function they performed while in the combination, may produce a different combination, but not a new and patentable one, see Stow *v.* Chicago (1877), 3 Bann. & A. 83; 8 Bissell, 47.

That where there is already a combination of certain elements, the selection of the most useful among their equivalents and uniting these into a combination of the same character for the same purpose, though better performed, is not invention, but mere mechanical skill, see Welling *v.* Crane (1882), 14 Fed. Rep. 571; 23 O. G. 189.

That combinations differ if any of their parts are substantially different, see Norton *v.* Haight (1884), 22 Fed. Rep. 787.

That where one element is new the combination must be new, see Temple Pump Co. *v.* Goss Pump & Rubber Bucket Mfg. Co. (1887), 39 O. G. 467; 30 Fed. Rep. 440.

That the substitution of a new element, producing an additional result, makes a different combination, see Smith *v.* Murray (1886), 27 Fed. Rep. 69.

That the substitution of a new element may make a different combination, though the new was suggested by the old, see American Ballast Log Co. *v.* Barnes (1881), 21 O. G. 1029; 9 Fed. Rep. 465; 4 Hughes, 278.

That to add to an existing combination some new constituent element is to create another combination, see Rowell *v.* Lindsay (1881), 6 Fed. Rep. 290; 10 Bissell, 217; 19 O. G. 1565; Babcock *v.* Judd (1880), 1 Fed. Rep. 408; 17 O. G. 1351; 5 Bann. & A. 127; Sanford *v.* Merrimac Hat Co. (1876), 4 Clifford, 404; 10 O. G. 466; 2 Bann. & A. 408; Robertson *v.* Hill (1873), 4 O. G. 132; 6 Fisher, 465; Gallahue *v.* Butterfield (1872), 10 Blatch. 232; 6 Fisher, 203; 2 O. G. 645; Le Roy *v.* Tatham (1859), 22 How. 132.

But that the former combination still remains the same in itself though used as an element in the new one, see Pitts *v.* Wemple (1855), 6 McLean, 558.

And that the inventor of the new combination obtains no right to claim or use the old as against its patentee, see Williams *v.* Boston & Albany R. R. Co. (1879), 17 Blatch. 21; 16 O. G. 906; 4 Bann. & A. 441; Howes *v.* Nute (1870), 4 Clifford, 173; 4 Fisher, 263; Evans *v.* Eaton, (1822), 7 Wheaton, 356; 1 Robb, 336.

That where the elements of a combination are found in different prior inventions, composing combinations to effect the same result, and could have been selected and combined as at present by mechanical skill alone, there is no new invention, see Saxby *v.* Gloucester Waggon Co. (1881), L. R. 7 Q. B. 305.

That the use of a combination in a different machine does not change the combination, see La Rue *v.* Western Electric Co. (1886), 28 Fed. Rep. 85; 36 O. G. 453.

That the rule concerning equivalents applies equally to combinations as to simple inventions is evident from the cases cited under §§ 253, 254, etc., *ante*. That in mechanical combinations at least, the characteristics of an equivalent differ from those of an equivalent in simple inventions is apparent from § 254,

and the mode of application which it represents, can finally

ante, and cases there referred to. This difference has led to some general statements that the doctrine of equivalents is not fully applicable to combinations. Thus in Sands *v.* Wardwell (1869), 3 Clifford, 277, Clifford, J.: (282) "Technical equivalents do not belong to a mere combination of old elements. Such a combination is regarded merely as an improvement upon what was before known, and which, without such new combination, would have belonged to the public. Inventors of such improvements, if their rights are secured by letters-patent, may treat all others as infringers who make, use, or vend to others to be used, any and every subsequent combination of those elements not substantially different; and no such subsequent combination is substantially different merely because the person constructing a machine under it employs a different device for one of the elements, provided such device was, at the date of the first patent, a well-known substitute for such omitted element. Other inventors may secure valid patents for subsequent combinations of the same elements, provided the combination is substantially different and the invention produces a new and useful result; but no person can be treated as an infringer who does not use all of the elements of the first combination, unless the change is merely formal or colorable, as every subsequent combination is which is not substantially different; and no subsequent change can be regarded as substantially different merely because it drops one of the elements of the one patented and employs in its stead another, which, though different in form, was well known at the date of the patent as a common substitute for the element so dropped."

In Roberts *v.* Harnden (1865), 2 Clifford, 500, Clifford, J.: (504) "The property of the first inventor consists in the new combination he has made, and to that and its result he is fairly and fully entitled, but he cannot invoke the doctrine of equivalents to suppress any other improvement which does not embrace his improvement, and which is substantially different. Formal differences or colorable evasions, however, are not sufficient to confer any right as against the first patent, but the patentee and all those claiming under him will treat all such as culpable infringements."

All this class of statements, nevertheless, recognize that equivalent elements in combination are legally the same elements. For further cases to the same effect, see Williams *v.* Boston & Albany R. R. Co. (1879), 16 O. G. 906; 17 Blatch. 21; 4 Bann & A. 441; Fuller *v.* Yentzer (1876), 94 U. S. 288; 11 O. G. 551; Locomotive Engine Safety Truck Co. *v.* Erie Railway Co. (1872), 10 Blatch. 292; 3 O. G. 93; 6 Fisher, 187; and cases cited under §§ 254, 258, *ante*.

That any substantial change in the character of the elements of a combination makes the combination a different invention, see Hale *v.* Stimpson (1865), 2 Fisher, 565.

The effects of various changes in the elements of a combination is well described by Shepley, J., in Maynadier *v.* Tenney (1877), 2 Bann. & A. 615. The learned judge says: (616) "Under these circumstances this being [a combination], it was competent for any person to do three things: He might, in the first place, dispensing with one of the elements of that combination in its precise form, introduce into it a known equivalent, . . . equivalent in the sense that in that combination it was the use of another well-known device, performing the same operation in the same way. That would be a naked infringement. It was competent, secondly, for a person

exhaust the field of inquiry by reaching a result as certain as physical science can attain.[2]

to make the change in the machine by introducing, in the place of any one of the elements of that combination, another device not known before as an equivalent device; that would not be an infringement under the decisions of the Supreme Court, which say it is not an infringement where the device substituted was not a known equivalent at the date of the patent. It was competent, in the third place, for a party desiring to change the features of the machine, to substitute for one of the elements in the combination features which should accomplish the same result by the same mode of operation that this element accomplished; and which, in addition to it, should perform some other function which was novel and useful. That, without being a naked infringement, would be the subject of a patent for an improvement, in consequence of the additional new features which it introduced, but would still be subject to the original patent, having embodied in it that which was novel and useful in the original combination."

[2] That one combination of elements is not identical with another combination of the same elements, see Otis Bros. Mfg. Co. *v.* Crane Bros. Mfg. Co. (1886), 27 Fed. Rep. 550; Pattee *v.* Moline Plow Co. (1881), 22 O. G. 173; 10 Bissell, 377; 9 Fed. Rep. 821.

That unless the co-operative laws of two combinations are the same, the combinations are distinct, notwithstanding the identity of their elements, see Dederick *v.* Cassell (1881), 9 Fed. Rep. 306; 20 O. G. 1233; Pattee *v.* Moline Plow Co. (1881), 10 Bissell, 377; 9 Fed. Rep. 821; 22 O. G. 173; Detroit Lubricator Mfg. Co. *v.* Renchard (1881), 9 Fed. Rep. 293; Habeman *v.* Whitman (1880), 5 Bann. & A. 530; Lyman Ventilating & Refrigerator Co. *v.* Lalor (1874), 12 Blatch. 303; 6 O. G. 642; 1 Bann. & A. 403; Murray *v.* Clayton (1872), L. R. 7 Ch. Ap. 570.

That the arrangement of the same elements under a different co-operative law, though producing the same results, is a different combination, see Railway Register Mfg. Co. *v.* Third Avenue R. R. Co. (1887), 42 O. G. 379.

That a mere difference in the relative position of the elements may produce a new combination, by creating a difference in their mode of co-operation, see Fitch *v.* Bragg (1881), 20 O. G. 1589; 8 Fed. Rep. 588; Haberman *v.* Whitman (1880), 5 Bann. & A. 530; Adams *v.* Joliet Mfg. Co. (1877), 12 O. G. 93; 3 Bann. & A. 1; Fuller *v.* Yentzer (1876), 94 U. S. 288; 11 O. G. 551; Gilbert & Barker Mfg. Co. *v.* Walworth Mfg. Co. (1876), 9 O. G. 746; 2 Bann. & A. 271; Carstaedt *v.* U. S. Corset Co. (1875), 13 Blatch. 119; 9 O. G. 151; 2 Bann. & A. 119; Calkins *v.* Bertraud (1875), 6 Bissell, 494; 9 O. G. 795; 2 Bann. & A. 215; Gilbert & Barker Mfg. Co. *v.* Tirrel (1874), 12 Blatch. 144; 1 Bann. & A. 315; 8 O. G. 2; Woodward *v.* Dinsmore (1870), 4 Fisher, 163.

That changes in the arrangement of the elements do not change the combination unless they also change its function or the function of an element, see Phipps *v.* Yost (1886), 26 Fed. Rep. 447; Dederick *v.* Whitman Agricultural Co. (1886), 26 Fed. Rep. 755; 36 O. G. 571.

That where the ideas of means embodied in two combinations are the same, the combinations are identical whatever other differences exist, see Howe *v.* Williams (1863), 2 Clifford, 245; 2 Fisher, 395.

The principal questions in which a comparison of two or more combinations is involved are three: (1) Whether a

SECTION VI.

OF THE NOVELTY OF INVENTIONS: IDENTITY OF ARTS, MACHINES, MANUFACTURES, COMPOSITIONS OF MATTER, DESIGNS, AND IMPROVEMENTS.

§ 283. Identity of Inventions of Particular Classes.

With the exception of compositions of matter, inventions of every species may be either simple or compound; and

given combination is anticipated by which is essential to the issue of a
a prior combination; (2) Whether a patent.

patented combination is infringed by a later combination; (3) Whether, in view of previously existing combinations, a new combination has originated in inventive skill. Each of these questions requires the consideration of the identity of two or more combinations, and to that extent all are answered in the same manner. But each also requires the consideration of matters peculiar to itself, and in reference to these matters the answers may be widely different. It is essential, in reading the decisions in which the identity of combinations is discussed, to remember that the declarations of the courts in one class of cases are not always applicable to the others.

1. A combination is anticipated by another whenever the same elemental means or their known equivalents, united under the same co-operative law, have been in prior use in this country or have been patented or described in a printed publication either at home or abroad. In this case it is immaterial whether the prior combination was patented or not, or whether it existed as a separate and independent means, or merely as a subordinate part of a larger combination; the possession of it by the public in any form recognizable by them, deprives the later combination of that legal novelty

2. A combination is infringed whenever the elements described in the patent, or their known equivalents, united under the co-operative law also therein described, are made, used, or sold, without the permission of the patentee. In this case the real nature of the combination as an invention is of no consequence. Only the exact combination described and claimed in the patent is capable of infringement, and any variation in the elements or the co-operative law which leaves the claimed combination unappropriated does not invade the rights of the patentee. The use of less than all the elements, or the union of the same elements under a different co-operative law, is not the employment of the patented combination; but if the patented combination be taken as a member of new combinations, or be in any manner added to or varied, while still preserving its own means coacting under its own law, the patent is infringed, however great is the improvement in the arts, and however different in other respects the new combination may appear to be.

3. No combination can be a new invention and patentable as such unless it is the fruit of inventive skill. A substantial difference between combinations does not, therefore, show that the later

as in these the indications of identity and the methods of examination are dissimilar, the first point to be ascertained in any given case is whether the art or instrument is a simple invention or a combination. In considering each species in detail we shall therefore contemplate it both as simple and combined; and since the characteristics of the simple constitute the characteristics of the elements of the combined, they are entitled to the foremost place in our discussion.

§ 284. Identity of Simple Arts.

A simple art is a single act or operation. As the result of an inventive act it is essentially distinct from and independent of the concrete agencies by which it is performed, and can be accurately apprehended only by abstracting it from these, and contemplating it as an idea embodied in an act alone. If we regard the means from the view-point of the end, this act is the first step beyond the proximate effect, and is thus intermediate between the function and the tangible instrument employed in its production. It differs from the function only in that the latter cannot be conceived by the mind apart from some effect actually produced in the object acted on, while the idea of the former is complete when the effect is apprehended as producible by the application to the object of the agencies employed. For this reason, as we have previously seen, an art is the most comprehensive of all species of inventions; and except in the single instance where the act or operation can be performed only by some specific instrument it is superior to all exterior agencies, and may indifferently employ them as its own subsidiary means.

combination is a true invention. Whether the new combination is formed by dropping elements from known combinations, or by adding new elements, or by rearranging existing elements, the question of invention and of patentability is still to be determined by the application of the same tests to which all other supposed inventions are subjected. If the later combination is suggested by the former, or has been arrived at by the gradual development of mechanical knowledge, it is not a patentable invention, however useful or different it may be. And on the other hand, if actually requiring the exercise of the creative faculties for its production it is a new invention, without reference to its degree of deviation from the old. See further on these topics §§ 153–156, 168, 176, 185, 193, 205, 217, 254, 465, 472, 496, 523–528, 670–672, 922–924, and notes.

§ 285. Identity of Simple Arts is Identity of their Essential Factors.

The idea of a simple art includes the subordinate ideas of a force, an object, and a mode of application; and any given art may belong to either one of those three great classes of inventions whose differences depend on the relation of the inventive act to each of these subordinate ideas. As the most comprehensive of inventions, an art may either be a force applied, a mode of application, or a specific force directed in a specific manner toward a specific object; and the attributes essential to its identity vary in character and number according to the class in which it is embraced. Thus arts which are mere modes of application, capable of employing various forces and of producing their effects on various objects, have few essential attributes, sometimes perhaps but one, and hence are wider in their scope, and of more universal adaptation than any other operative means. An art which is a force applied, employing a particular force in a particular manner, has more essential attributes, and therefore is of narrower scope and a more limited utility. And one consisting in the application of a specific force in a specific manner to a specific object possesses the most numerous essential qualities, and hence is more restricted in its scope and usefulness than any other species of invention. To ascertain the essential characteristics of an art, it is therefore necessary, first of all, to determine to which of these three great classes it belongs; thus fixing the number and nature of those attributes which have resulted from the inventive act and are embraced in its idea of means. If it be found to be an act applying force, without reference to particular forces or particular objects, its characteristics must be sought only in the method in which it is performed, in the degree, direction, or order in which through it the forces are applied. If it prove to be a force applied, its attributes include, not merely the essential qualities of the mode of application, but those of the force also, as employed in that peculiar operation. And if it be the application of specific forces in a specific manner to specific objects, those qualities of the object which render it susceptible to this specific influence, as well as those of the

force and application, become essential qualities of the invention, no one of which can be removed without destroying its identity.[1]

§ 286. Identity of Simple Arts Determined by Relegating Each to its Proper Group and Comparing their Essential Factors.

The method of comparing simple arts with one another is thus clearly indicated. The exact idea embodied in each art is first to be distinguished by excluding from the mind every conception which pertains merely to the concrete instrument on one side, or to the function of the means upon the other. Each art is then to be referred to its appropriate class, as denoted by that one or more of its subordinate factors in whose discovery the inventive faculties have been employed. If the two arts belong in separate classes, they are essentially distinct, though one may be included in the other. If both are of the same class, a comparison of the subordinate ideas, in which the essential qualities of each reside, is necessary. In one class the two arts will be the same when the same act is performed in the same manner, whatever be the nature of the force or object.[1] Arts of another class will be identical only when both apply the same force by the same methods to their several objects. And in the third class, unless they direct the same force on the same object through the same mode of application, they differ in their substance and each is a complete and separate invention.

§ 285. [1] That in a process a similar substance is one which acts or is acted on in the same way, see American Wood Paper Co. *v.* The Fibre Disintegrating Co. (1868), 3 Fisher, 362; 6 Blatch. 27.

§ 286. [1] That when an inventor has discovered that the obstacles encountered in a chemical process are due to certain impurities present in the ingredients, and has devised a method of removing them, any other method of removing the same impurities from the ingredients is the same improvement in the chemical process, see United Nickel Co. *v.* Harris (1878), 17 O. G. 325; 15 Blatch. 319; 3 Bann. & A. 627.

That the identity of two processes may be inferred from the chemical identity of their results, see Pickhardt *v.* Packard (1884), 22 Fed. Rep. 530.

See also §§ 107, 170, and notes, *ante*.

§ 287. Identity of Combination Arts.

An art may be a combination of two or more simple arts.[1] In that case its identity depends on the identity of its constituent elements, on the identity of their co-operative law, and on the identity of the essential characteristics of the combination taken as a whole. The identity of its constituent arts is ascertained according to the method described in reference to simple arts. The essential qualities of its co-operative law are indicated by the effect produced by each constituent art upon the function of the others and upon their common object. The attributes of the combination, taken as a whole, are manifested by the mode in which it operates upon the common fabric or material in the production of the ultimate result.

§ 288. Identity of Combination Arts Determined by Comparing their Elements, Co-operative Laws, and Essential Attributes.

The comparison of two compound arts thus consists in ascertaining whether both are constituted by the union of the same elemental arts, or their equivalents, under the same co-operative law, and operate in the same manner to produce the same results. Diversity in either of these three particulars is fatal to the identity of the arts compared.[1] The

§ 287. [1] That a new process may consist of a combination of old processes, see Wallace *v.* Noyes (1882), 13 Fed. Rep. 172; 21 Blatch. 83; 23 O. G. 435; Cannington *v.* Nuttall (1871), L. R. 5 H. L. 205; Bovill *v.* Keyworth, (1857), 7 El. & B. 725.

§ 288. [1] That a process from which one element of another and otherwise identical process is omitted is a different process, see Lawther *v.* Hamilton (1888), 42 O. G., 487; Arnold *v.* Phelps (1884), 29 O. G. 538; Hammerschlag *v.* Garrett (1882), 10 Fed. Rep. 479; 21 O. G. 1199; Dittmar *v.* Rix (1880), 17 O. G. 973; 1 Fed. Rep. 342; 5 Bann. & A. 240; Booth *v.* Kennard (1856), 1 H. & N. 527.

That any substantial difference between any of the subordinate arts embraced in two otherwise identical processes makes them essentially different processes, see Cotter *v.* New Haven Copper Co. (1882), 13 Fed. Rep. 234; 23 O. G. 740.

That a difference in the proportions of ingredients used in two chemical processes does not make the processes different, if the ingredients discharge the same functions and accomplish the same results in both processes, see Rumford Chemical Works *v.* Lauer (1872), 10 Blatch. 122; 5 Fisher, 615; 3 O. G. 349.

That an art may be the same, though the order of its acts varies, and its apparatus is changed, see Hammerschlag Mfg. Co. *v.* Bancroft (1887), 32 Fed. Rep. 585.

See also § 170, and notes, *ante*.

omission from one combination of a single art which is a constituent element in the other; or any change in the degree or order or direction of any elemental art by which a variation is introduced into the co-operative law; or the addition of a new art performing functions not discharged by any in the old; or the substitution of new elements which are not true equivalents for those whose place they seem to occupy, — renders the arts essentially dissimilar, requiring for each its own inventive act.

§ 289. Identity of Simple Machines.

A simple machine is a machine composed of parts which are not, in themselves, complete machines. The idea which it embodies necessarily includes the subordinate ideas of a force, an object, and a mode of application; but the inventive act by which it is created usually relates only to the latter, and in such cases the concrete machine expresses that idea alone. Still there may be machines which generate the force that they apply, and others, possibly, which represent the specific application of a specific force to a specific object. These would be, however, rather arts than mere machines, involving the invention of something more than the mechanical apparatus by which the force and object were connected, and never could be fully covered by a patent for the instrument employed, unless by that instrument alone the force could be united with its object. But to whichever of these classes an individual machine belongs, it may be properly considered as a mode of operation embodied in tangible materials, and its essential characteristics are those by which it is enabled to perform its functions according to the structural law imposed on it by its inventor. To ascertain these it is only necessary to exclude from contemplation every part of the machine which is not indispensable to the performance of its functions, and by observing what remains in actual operation, determine at once the number and the nature of its integral parts, and the attributes and limitations of its structural law.

§ 290. Identity of Simple Machines Determined by Identity of Essential Parts and of Structural Laws.

Practically difficult as the comparison of two machines may be, even to persons who possess the widest experience and the highest industrial skill, the rules which govern this comparison and its results are easily intelligible. The first subject for examination is the function of each machine, and if diversity be here discovered the conclusion that the two machines are not the same becomes inevitable.[1] If their functions prove to be identical two points remain to be considered; the number and the nature of their essential parts, and the character of their respective structural laws. If the integral parts of each are interchangeable with those of the other without disturbance of its functions, these parts are mere equivalents, and therefore legally identical; and being thus identical, if each essential part of each machine performs its office in the same order and direction and degree as its equivalent in the other, the structural law of each must also be the same.[2] The

§ 290. [1] In Gottfried *v.* The Phillip Best Brewing Co. (1879), 17 O. G. 675, Dyer, J.: (684) "In Rice *v.* Heald (13 Pac. L. R. 34), the court said that no machine can be an anticipation of the patented invention which could not be made to produce, without altering its construction, substantially the same results as were produced by the patented machine. Any prior machine which would not produce substantially the same results as the one patented could not be substantially the same machine, no matter how strongly the prior machine may resemble the patented machine in its construction." 5 Bann. & A. 4 (34).

Further, that difference of function or effect indicates substantial difference in the machines, see Barber *v.* Hallett (1879), 20 O. G. 449; 10 Fed. Rep. 130; Johnson *v.* Root (1858), 1 Fisher, 351; Brooks *v.* Bicknell (1844), 3 McLean, 432.

That differences in the excellence, rapidity, or economy of the action of two machines may denote essential differences in their real character, see Gallahue *v.* Butterfield (1872), 2 O. G. 645; 10 Blatch. 232; 6 Fisher, 203; Seymour *v.* Marsh (1872), 6 Fisher, 115; 9 Phila. 380; 2 O. G. 675; Johnson *v.* Root (1858), 1 Fisher, 351.

That whether the new result arises from a change in the parts of the machines, or in their mode of operation, it still indicates substantial difference in the machines, see Cornell *v.* Downer & Bemis Brewing Co. (1877), 7 Bissell, 346; 11 O. G. 331; 2 Bann. & A. 514; Turrill *v.* Illinois Central R. R. Co. (1867), 3 Bissell, 66; 3 Fisher, 330.

But that the new result must be produced by changes in the machine itself, not by mere difference in its mode of use, see Boston Elastic Fabrics Co. *v.* East Hampton Rubber Thread Co. (1874), Holmes, 372; 5 O. G. 696; 1 Bann. & A. 222.

[2] That where the same or equivalent parts operate in the same manner in the two machines to produce the same ef-

determination of either of these points assists in the decision of the other. Where two machines, the integral parts of each of which are equivalents for those of the other, perform the same function, it is measurably certain that the structural laws of both will be the same; and conversely, when two machines perform the same functions and are governed by the same structural law, their integral parts are almost always, if not always, interchangeable, however widely they appear to differ from each other.

§ 291. Identity of Combination Machines.

A compound machine consists of two or more simple machines united under a co-operative law. Its identity is conditioned upon the employment of the same elemental machines in the same co-operative union, with the same function and the same ultimate effect.[1] Hence, the withdrawal of any one of these constituent machines, or the substitution for it of another which is not its true equivalent, or an alteration in it which changes its essential character as an operative means, or the addition of a new subordinate machine, — destroys the former combination and creates another and a different ma-

fect, the two machines are the same, see Holly *v.* Vergennes Mach. Co. (1880), 4 Fed. Rep. 74; 18 Blatch. 327; 18 O. G. 1177; Blanchard *v.* Puttman (1867), 3 Fisher, 186; 2 Bond, 84; Cahoon *v.* Ring (1859), 1 Fisher, 397; 1 Clifford, 592; Sickels *v.* Borden (1856), 3 Blatch. 535; Foss *v.* Herbert (1856), 1 Bissell, 121; 2 Fisher, 31; Blanchard *v.* Beers (1852), 2 Blatch. 411; Parker *v.* Stiles (1849), 5 McLean, 44; Brooks *v.* Bicknell (1844), 3 McLean, 432.

On the contrary, that a substantial difference, either in structure or in mode of operation, shows that the two machines are essentially distinct, see Stebbins Hydraulic Elevator Mfg. Co. *v.* Stebbins (1880), 17 O. G. 1348; 4 Fed. Rep. 445; Wicke *v.* Ostrum (1880), 103 U. S. 461; 19 O. G. 867; Clarke Patent Steam & Fire Regulator Co. *v.* Copeland (1862), 2 Fisher, 221; Tatham *v.* Le Roy (1852), 2 Blatch. 474.

§ 291. [1] That a machine combination is the same when it embodies the same idea, though it be different to the eye, see Smith *v.* Higgins (1859), 1 Fisher, 537.

See also §§ 173–175, 178, 179, and notes, *ante*.

That where the elements, their function, mode of operation, and result remain the same, no change in form or proportion can change the essence of the combination, see Storrs *v.* Howe (1876), 4 Clifford, 388; 10 O. G. 421; 2 Bann. & A. 420; Case *v.* Brown (1864), 2 Wall. 320; Howe *v.* Williams (1863), 2 Fisher, 395; 2 Clifford, 245; Foss *v.* Herbert (1856), 2 Fisher, 31; 1 Bissell, 121; Winans *v.* Denmead (1853), 15 How. 330; O'Reilly *v.* Morse (1853), 15 How. 62.

chine. So also when, although the elements remain the same in substance, their rearrangement or some formal variation in themselves disturbs their previous relations to each other, and thus introduces a new co-operative law; or where, if this can be mechanically possible, with unchanged elements and the same co-operative law the combination as a whole assumes a different character and performs different functions or the same functions in a different manner, the conditions of identity are defeated and the combination is itself destroyed.

§ 292. Identity of Combination Machines Determined by Comparing their Elements, Co-operative Laws, and Essential Attributes.

In comparing two compound machines whose functions are identical, the mode of operation of each combination as a whole is first to be examined. If these are found to be the same, the elements of each and their co-operative laws are next to be considered. If one embraces more constituent machines than does the other, or if their elements are not equivalent according to the rule which governs these in combinations, or if the influence which each exerts upon the rest in one is not the same which it exerts upon them in the other, whether this difference results from differences in the size, capacity, material, or arrangement of the elements themselves, the two machines are not identical.

§ 293. Identity of Simple Manufactures.

A manufacture is any instrument other than a machine, a composition of matter, or a design. It may be either simple or compound. If it is simple, the parts of which it is composed, although each in its separate state may be a complete and operative instrument, lose their identity of character and function when united in the manufacture, and exist only as integral members of its one idea of means.[1] In a simple manu-

§ 293. [1] This attribute of a simple manufacture has sometimes been overlooked by the courts, and patentability thus denied to meritorious inventions on the ground that the parts of which they were composed did not coact in the production of a unitary result. It cannot be assumed that every assemblage of parts, even though each part in its separate state be an operative means,

facture, therefore, no qualities are essential except those without which the idea of means embodied in it could not be expressed; and the presence of these qualities is often found consistent with the widest diversities in shape, size, capacity, arrangement, and materials, as well as in the method of its use and the perfection with which it accomplishes its results. The exclusion of these merely formal variations, and the consequent reduction of the concrete instrument to its necessary attributes, at once determines its real character and defines the scope of the inventive act from which it sprang.

§ 294. Identity of Simple Manufactures: Manufacture generally a "Mode of Application."

Although the inventor of a manufacture must necessarily have conceived the three ideas of force, of mode of application, and of object, yet rarely, if ever, does his complete invention represent a new idea of either force or object. A true manufacture is generally, perhaps always, a mere mode of application. The force which it applies is derived from sources exterior to itself, and may be independently varied, both in character and quantity, without affecting the nature of the instrument through which it operates. The objects upon which its functions are performed also lie outside the scope of the invention, and however they may differ among themselves, neither require nor indicate a change in the essential attributes of the instrument to which they are subjected.

purports to be a combination; and hence that it is not to be regarded as a true invention unless it endures the tests applied to patentable combinations. Where the several parts still perform their individual functions, the union constitutes either a combination or an aggregation; the former if they co-operate; the latter if their operation is several and distinct. But where the different parts cease, when united, to perform their individual functions, and become merged in the manufacture as a whole, the patentability of the instrument is not to be judged by the rules governing combinations but by the novelty and utility of the instrument itself and the inventive skill employed in its production. The arrangement of numerous tools upon a single handle may thus be an invention, if new and useful and resulting from inventive skill, though no two of the tools can be used at once or for the same purpose, — the real invention consisting, not in the "combination of functions," but in the shape or proportions of the handle, and the mode in which the tools are located thereon.

When an inventor has discovered that specific forces may be made available through a specific instrument, or that the qualities of a specific object render it susceptible to certain forces when applied through a specific article, his real invention is an art, not a mere manufacture, by whatever name he may himself entitle or describe it. If his instrument is old, its new use does not change its nature nor endow it with new properties; if it is new, his use of it is one invention and the instrument itself another, unless the use and instrument are so related that by no other instrument the same use could be served.

§ 295. Identity of Simple Manufactures: Danger of Being Misled by Diversity of Use.

In comparing simple manufactures with each other, care, therefore, must especially be taken lest the examiner be misled by a diversity of use, as well as by the formal differences which the two instruments present. All manufactures are identical which, when used in connection with the same force and in reference to the same object, produce the same effect upon the object by the same method of applying the force. That one is customarily employed upon a different class of objects, or as a medium for a different class of forces, from the other indicates no essential distinction between them, if without alteration in the instrument itself, or by mere formal variations in its size, capacity, or other attributes, each could employ the forces and perform the functions usually regarded as peculiar to the other. Beneath these accidents of tangible embodiment always lies the substance of the invention, — that idea among whose essential characteristics nothing is embraced which is not indispensable to the production of the desired effect through this specific method of applying force. And while this principle is as correct and true in reference to machines as to manufactures, yet in considering the latter it should be particularly remembered, since, being not only mere modes of application but also destitute of structural law, they are of wider scope than any other class of instruments, having the fewest necessary attributes, and consequently are most liable to be mistaken for each other.

§ 296. Identity of Simple Manufactures Determined by Comparing their Integral Parts.

Whenever, having reconciled these differences of customary use and excluded formal variations, the functions of two simple manufactures are perceived to be the same, their identity or diversity may be determined by comparing their integral parts and the office which they fill in each invention. This comparison consists principally in an application of the doctrine of equivalents. If the integral parts of each instrument are the equivalents of those which constitute the other, the instruments themselves must be the same. A simple manufacture is either a single substance, or a group of substances whose members are so collocated that the whole is capable of being used for certain purposes, according to the will of its employer. Having no *modus operandi*, no intrinsic structural law, its identity resides solely in those qualities of its constituent substances which are involved in the performance of their functions, and which have been so brought together in the invention as to unite in the one quality or set of qualities by which its ultimate effects are produced. Hence when a manufacture is composed of a single substance, any other substance having the same qualities is its equivalent and constitutes the same invention. And in a group of substances, any change which removes some of its constituent members and replaces them with others, manifesting in the same collocation the same operative attributes, is a mere substitution of equivalents, and leaves the individuality of the invention undisturbed. When the apparent differences between two manufactures can be thus accounted for, their identity may be regarded as established.

§ 297. Identity of Simple Manufactures: Slight Differences Important.

Where each of the two manufactures consists of a single substance, diversities, otherwise formal, are sometimes of the most essential character. In such cases the idea itself may be, and often is, expressed by the mere shape given to the substance by the inventor, or by the proportions of one part to another, or even by the nature or the quality of the ma-

terials of which it is composed. Slight differences in these respects may thus indicate an entire difference in the method of applying force, and hence a radical distinction between the two inventions. In a less, but still a great, degree this is true of simple manufactures composed of several substances. As these, when united, constitute, for nearly all the purposes of the complete invention, but a single substance, the method in which they perform their functions usually depends, to a considerable extent, on their possession of those qualities which, in most other species of inventions, are regarded as pertaining not to substance but to form.

§ 298. Identity of Combination Manufactures.

A compound manufacture consists of two or more simple manufactures united under a co-operative law. Practically, most manufactures, however simple in appearance, are really combinations, — each elemental instrument preserving in the compound instrument its distinctive character and performing its distinctive function, though co-operating with the others in producing the common result. The identity of such a combination resides in the identity of the simple manufactures of which it consists, in the identity of its co-operative law, and in the identity of the resultant qualities inhering in the combination as a whole. Hence, as in other combinations, the withdrawal or substantial alteration of any one of its constituent elements, or the addition of an element which introduces a new function or performs the old by operations essentially distinct from those by which it has been previously accomplished, or the rearrangement of existing elements under a different co-operative law, or any variation in the combination as a whole which changes its method of applying force to the common object, is fatal to its identity, and brings into existence a different invention.

§ 299. Identity of Combination Manufactures: Determined by Comparing their Elements, Co-operative Laws, and Essential Attributes.

The comparison of two manufactures, each of which is a combination performing the same functions by the same

method of applying force, requires, first, an examination of their elemental manufactures; and second, the detection of their co-operative laws. To analyze a compound manufacture, and distinguish its essential elements from one another, is a task often attended with much difficulty; partly because so many manufactures, apparently the most simple, are in reality combinations; partly because its individual elements, being characterized by no inherent *modus operandi*, or structural law, depend for their identity upon the presence of qualities which as to other species of inventions would be merely formal. An equal difficulty is experienced in the endeavor to discover their co-operative law. When several arts or machines are brought together and set in operation by the application of the impelling force, it is generally easy to determine whether each performs only its appropriate function according to its own interior law, or whether in addition it so influences the action of the others that new modes of operation and new functions are created. But in a manufacture not only the impelling force but the directing law lies outside of the instrument itself; and the true question is not simply whether, when employed in one mode or for one purpose, the different elements coact upon each other or their common object, but whether they are capable of any use in which this mutual cooperation is developed. In other words, whether a manufacture composed of other manufactures is a true combination, or a mere aggregation having no co-operative law, is not to be decided by the mere inspection of the instrument itself, either when idle or employed in one or more especial occupations, but by referring it to all the uses of which it is capable, and ascertaining if in any one of these the instrument, though as to all the others destitute of a co-operative law, is as to this a unit or a simple aggregation. But when these difficulties are removed, the comparison of two compound manufactures is readily accomplished. If all the elements in each are the equivalents of those in the other, and are so arranged in each as to be subject to the same co-operative law, the manufactures are the same, not otherwise. And here, as elsewhere, the inference is almost irresistible that, given the same elements and the same characteristics in each combination taken as a

whole, the methods of interior co-operation are the same; and on the other hand, that where the combinations exhibit the same methods of applying force, and their constituent elements are under the control of the same co-operative law, the elements themselves must be identical.[1]

§ 300. Identity of Compositions: Compositions Governed by Peculiar Rules.

A composition of matter, though generally regarded as a combination, is governed by rules peculiar to itself. It is composed of ingredients each of which, in its separate state, is an operative means, and its own properties are the result of the co-operation of these elemental means upon each other and upon the objects to which, while united in the composition, they may be applied. But when thus intermingled, the individuality of these constituent elements, though not so far destroyed as to be irrecoverable by mechanical or chemical analysis, is in most cases removed from human observation, and it becomes impossible to ascertain whether, while in the composition, each ingredient operates according to its individual law, and in addition thereto performs new functions in connection with, or in consequence of its association to, the others, or whether its entire original properties are for the time being lost, and the new composition thus becomes a simple substance endowed with properties resulting from the mixture of these separate elements in one. While, therefore, since a composition of matter is formed by uniting certain existing well-known elements which in themselves are operative means, the rules which govern it must in some respects resemble those controlling ordinary combinations; in others, on account of the impossibility of pushing any method of analysis far enough to determine the real character of its constituent elements or the true mode of their co-operation with each other in the composition, these rules are similar to those which are applied to simple arts and instruments.[1]

§ 299. [1] See § 184–189, and notes, *ante*, as to the various points involved in the identity of simple and combination manufactures.

§ 300. [1] See §§ 192–195, 254, 282, and notes, *ante*.

§ 301. Identity of Compositions Depends on Identity of Elements, of Co-operative Laws, and of Essential Attributes.

A composition of matter is a force applied. The existence of this force depends upon the union and co-operation of certain other forces which are manifested through the properties of the individual ingredients. The inventive act by which the composition is created thus consists in the discovery of the ability of these elemental forces to unite in the production of the new force, and the contrivance of such a method of commingling them as will develop the new force desired. The scope of this inventive act indicates the scope of the invention. The invention is not the resulting composition alone, without reference to the ingredients from which it is compounded or to the method of their intermixture. Nor is it solely the group of elements, without regard to the mode by which they are united or the characteristics of the substance in which they result. Nor is it the mere process of commingling, apart from the ingredients employed and the nature of the compound thus produced. The invention is a substance possessing certain properties and formed by uniting certain other substances in a peculiar manner. Its identity depends upon the identity of its constituent elements, upon the identity of their co-operative law, and upon the identity of the properties exhibited in the composition as a whole.[1] In this respect it

§ 301. [1] That where one composition of matter contains ingredients which are neither present nor represented by equivalents in the other, the *two are essentially different*, see Rogers *v.* Ennis (1878), 14 O. G. 601 ; 15 Blatch. 47 ; Tarr *v.* Folsom (1874), 1 Bann. & A. 24 ; 5 O. G. 92 ; Holmes, 312.

But that the absence from one of substances which are included in the other, but perform therein no ingredi-ental function, does not make the compositions distinct, see Klein *v.* Russell (1873), 19 Wall. 433.

That though the substances of which two compositions are composed are different in themselves, yet if they serve the same purposes in the two compositions, the compositions *may* be the same, see Francis *v.* Mellor (1871), 5 Fisher, 153 ; 1 O. G. 48.

That a composition of matter consisting of certain substances of a given *quality, intermixed in a specific manner* and possessing certain properties, is not identical with a composition formed of the same ingredients without reference to quality or mode of intermixture, *and not possessing the same* properties, see Muntz *v.* Foster (1843), 2 Web. 93, 96.

That where the same or equivalent ingredients are united under the same co-operative law, and the resulting compositions have the same properties, these compositions are the same, see Goodyear *v.* Berry (1868), 2 Bond, 189 ; 3 Fisher, 439.

See also § 196, and notes, *ante*.

resembles a true combination; and like other combinations, its identity is lost by the removal or substantial change of any of its elements, or by the introduction of a new ingredient which calls into activity some elemental force hitherto absent or inoperative, or by the union of its present elements under a new co-operative law.

§ 302. Identity of Compositions: Identity of Elements Assumed when their Functions are Identical.

But when the question of the identity of its constituent elements and of their co-operative law arises, the rule of combinations can be no longer strictly followed. Elements of a combination are identical only when, in their individual character, they are the same operative means; not merely furnishing to the combination the same subordinate function, but performing this by the same mode of operation. But in a composition of matter such a test is not always practicable. In some mechanical compositions, the individuality of whose ingredients is not wholly obscured, and which on that account might more properly be regarded as manufactures than compositions, the method in which each ingredient performs its office in the combination is discernible; and in such cases the identity of their constituent elements depends both on identity of function and identity of means. In other mechanical and all chemical compositions, however, the individuality of the ingredients is lost, and though it may be known that each ingredient furnishes to the compound a specific elemental force, the essential character of the ingredient as an operative means, and the method by which it performs its functions in the combination, may be entirely undiscernible. In cases of this character, the rule that elements are to be regarded as the same only when they serve the same purpose in the combination, by the same method of applying force, would be both useless and unreasonable. The law requires no further certainty than science can afford, and when no evidence of the identity of two ingredients can be obtained, except that they perform the same function in the composition, this evidence is accepted as sufficient and the ingredients are held to be the same. The doctrine of equivalents, in reference

to compositions of matter, thus differs according to the nature of the composition and the state of scientific knowledge. In compositions, where the mode in which the individual ingredients furnish to the composition the required elemental force is ascertainable, equivalence is determined by the rule which governs other combinations; otherwise, the rule followed is that applied to simple arts and instruments, and all ingredients are equivalents which, at the date of the patent, were known as possessing properties that in the given composition make them interchangeable.[1]

§ 303. Identity of Compositions: Identity of Co-operative Laws Assumed when Effect of Combining Elements is Identical.

The same diversity of rule obtains in reference to their co-operative law. In compositions where the mode of action of the individual ingredients can be detected after their union in the combination, the law of their co-operation is also usually perceptible and can be considered as an independent factor in determining the identity of the composition as a whole. But in those compositions where the individuality of the ingredients vanishes in the intermixture, and their mode of action can be ascertained only through the functions they perform, nothing is able to be known concerning their co-operative law, except that when grouped in a certain manner they will co-operate in the production of a given resul ; and the co-operative law must therefore be regarded as the same in every grouping of the same ingredients which manifests the same resultant force. In compositions of the former class, although the ingredients remain unchanged and the entire composition still possesses the same properties, by some change in the

§ 302. [1] That one ingredient in a chemical combination is the equivalent of another when each fulfils the same office in the combination, and was known as such at the date of the patent, see Bridgeport Wood Finishing Co. *v.* Hooper (1880), 5 Fed. Rep. 63; 18 Blatch. 459; 20 O. G. 156; Wonson *v.* Gilman (1877), 2 Bann. & A. 590; 11 O. G. 1011; Roots *v.* Hyndman (1873), 6 Fisher, 439; 4 O. G. 29; Woodward *v.* Morrison (1872), 2 O. G. 120; Holmes, 124; 5 Fisher, 357; Rumford Chemical Works *v.* Lauer (1872), 10 Blatch. 122; 5 Fisher, 615; 3 O. G. 349; Poppenhusen *v.* Falke (1862), 2 Fisher, 213; 5 Blatch. 46; Matthews *v.* Skates (1860), 1 Fisher, 602; Goodyear *v.* The Railroad (1853), 2 Wall. Jr. 356; 1 Fisher, 628.

processes of intermixture a variation may take place in their co-operative law, and a new composition thus be substituted for the old. But in the latter class no alteration in the method of co-operation can be contemplated. Though possible, it is not practically ascertainable, and therefore is regarded as impossible; and hence no change in the proportions of ingredients or in their mode of union can disturb the identity of the composition as a whole, while its resultant properties remain unchanged.

§ 304. Identity of Compositions Determined by Comparing their Elements, Co-operative Laws, and Essential Attributes.

In comparing one composition of matter with another, inquiry is first directed to the characteristic properties of each composition as a whole. If these are found to differ the compositions are of course distinct; when they are the same the question as to the identity of their constituent elements is next considered. If the two compositions are of such a character that the mode in which their individual ingredients perform their several functions is discernible, the elements of each are identical with those of the other only when their action and effect are both the same. But in compositions of a different character, the mode of action of their elements being undiscernible, these elements are regarded as identical if known as interchangeable without affecting the essential properties of the entire composition. When the ingredients of both compositions prove to be the same, their co-operative laws are then to be compared. Ingredients and result being identical, a variation here becomes improbable, but cannot be regarded as impossible except in compositions where if it exists it must be undiscoverable, and where on that account its identity is conclusively presumed from the identity of the ingredients and their result. If the ingredients coact in different methods through differences in proportions or in modes of intermixture, a difference in the character of the inventive act is indicated, and the two compositions are two separate inventions. But if, either through research in the former cases or through presumption in the latter, the co-operative laws of both compositions are shown

to be identical, the identity of the two compositions is established.

§ 303. Identity of Designs: Designs Subject to Peculiar Rules.

A design is also subject to peculiar rules. The ultimate end proposed by its inventor is the production of a certain impression on the mind through the eye. The proximate end, or function, is the formation on the retina of a certain image. The means employed is such a configuration or ornamentation, imparted to an exterior physical substance, as will reflect light in a certain manner and thus produce the desired image in the eye.[1] In this species of invention there is no room for variety either in the end, the function, or the means. Every configuration, every ornament, which can perform the function, necessarily performs it by precisely the same mode of operation. No matter how diverse in details or arrangement the design may be, if it produces the same image on the retina it does so by directing light upon it in exactly the same manner; and nothing is essential to the performance of its functions except those attributes by which the required directions and reflections of the rays of light can be produced. All variations in a design are, therefore, merely formal, unless they change its character as a director and reflector of light, — that is, unless they change the image which it forms within the eye;[2] and hence the function and the means become the exact measures of each other, neither being capable of alteration without a corresponding alteration in the other, and the identity of one establishing the identity of the other. Furthermore, the image formed upon the retina becomes known only through the impression thereby made upon the mind; and thus the ultimate effect becomes the measure of the function, as the function is the measure of the means. Whatever, then, may be the intrinsic attributes of the shape

§ 305. [1] That a design is the appearance imparted to a substance, and is distinct from the means by which such appearance is produced, see Gorham Mfg. Co. *v.* White (1871), 14 Wall. 511; 2 O. G. 592; 6 Fisher, 94; and cases cited under §§ 201, 203, *ante*.

[2] That designs may be identical though their elements differ, see *Ex parte* Pope (1883), 25 O. G. 290.

That a slight variation in a design does not destroy its identity, see Lehnbeuter *v.* Holthaus (1882), 105 U. S. 94; 21 O. G. 1783.

given to the object to which the design adheres, the essential character of the design itself can be determined only by examining its ultimate effect, and the sole test of its identity thus resides in the impression which it makes upon the mind.

§ 306. Identity of Designs Determined by Comparing their Effect on the Minds of Observers.

In consequence of these peculiarities, whenever two designs are to be compared, the first duty of the observer is to disregard all those particulars of the invention which, in other species, he considers most important. Neither the elements of the design nor their co-operative law, not even their functions, occupy his thoughts. Excluding those, his attention is directed to their ultimate effects alone, and these are studied as the design produces them, not merely in his own mind but within the minds of others,—a task of some uncertainty, but still the only mode to be pursued.[1] If in this method, he dis-

§ 306. [1] In Foster *v.* Crossin (1885), 23 Fed. Rep. 400, Carpenter, J.: (402) "Design, of course, relates solely to the appearance of the article to the ordinary purchaser, and when the question is whether a difference of design be substantial and valuable, surely there can be no test better than the practical test which is furnished by observing the effect of the two designs on the appreciating observation of the purchasing public."

In Tomkinson *v.* Willets Mfg. Co. (1884), 23 Fed. Rep. 895, Coxe, J.: (896): "It is by no means necessary that the patented thing should be copied in every particular. If the infringing design has the same general appearance, if the variations are slight, if to the eye of an ordinary person the two are substantially similar, it is enough. It is of no consequence that persons skilled in the art are able to detect differences. Those who have devoted time and study to the subject, who have spent their lives in dealing in articles similar to those in controversy, may see at a glance features which are wholly unimportant, and unobserved by those whose pursuits are in other directions, and who are attracted only by general appearances. If the resemblance is such that a purchaser would be deceived, it will not aid the infringer to show that he has deviated slightly from a straight line in one place, and from a curved line in another, or that he has added or omitted something which an expert can discover." 32 O. G. 382 (383); 31 O. G. 918 (918).

In Dryfoos *v.* Friedman (1884), 18 Fed. Rep. 824, Wheeler, J.: (826) "As this patent, as before mentioned, does not cover the patterns, the improvements would consist in the design of the arrangement of them on the fabric, advantageously to be divided, for the fabric was not intended for use whole, but only by cutting the patterns apart. The spaces for seams and lines in them to divide by were prominent and important. The appearance of the pieces of fabric, with and without these spaces and lines, might be so nearly the same

covers that the impressions made by the inventions are substantially distinct, the inventions must essentially differ from each other. If, on the contrary, the impressions are the same, the conclusion is inevitable that the inventions are identical.

§ 307. Identity of Improvements: Depends partly on the Character of the Original Invention.

Hitherto we have discussed this question of identity only in reference to generic inventions, — to arts, machines, manufactures, compositions, and designs, which are wholly new or wholly old. Compared with the entire body of inventions these are practically few in number, most inventions being superstructures raised on old foundations, improvements made upon existing means. In these the concrete art or instrument embodies both the old and the new idea of means, the old originating in the inventive act by which the generic invention

that the difference would not attract the attention of a disinterested observer, but it would at once be noticeable to ordinary purchasers or users of such material. The differences in designs necessary to take away their identity in law are understood to be such appearances as would attract the attention of an ordinary observer, giving such attention as a purchaser usually gives. Gorham Co. *v.* White, 14 Wall. 511. This, of course, means purchasers of the articles in question for the purposes for which they were intended and are purchased. A purchaser of these fabrics would ordinarily be a person intending to cut them up and make them into skirts or sell them to others to make into skirts. A purchaser of ordinary observation with that intention would notice at once these prominent facilities for accomplishing those purposes. To such a person the design patented and that used by the defendant would be quite different." 21 Blatch. 563 (565).

That two designs are identical when they present the same appearance to the eyes of ordinary observers, no matter what may be their differences of detail, see Dobson *v.* Dornan (1886), 118 U. S. 10; 35 O. G. 750; Untermeyer *v.* Jeannot (1884), 20 Fed. Rep. 503; Jennings *v.* Kibbe (1882), 22 O. G. 331; 10 Fed. Rep. 669; 20 Blatch. 353; Wood *v.* Dolby (1881), 7 Fed. Rep. 475; 19 Blatch. 214; 20 O. G. 523; Miller *v.* Smith (1880), 5 Fed. Rep. 359; 18 O. G. 1047; Cone *v.* Morgan Envelope Co. (1879), 4 Bann. & A. 107; Perry *v.* Starrett (1878), 3 Bann. & A. 485; 14 O. G. 599; McCrea *v.* Holdsworth (1870), L. R. 6 Ch. Ap. 418. See also §§ 201–207, and notes, *ante*.

That the court may determine the identity of designs by inspection, see Western Electric Mfg. Co. *v.* Odell (1883), 18 Fed. Rep. 321; Jennings *v.* Kibbe (1882), 22 O. G. 321; 10 Fed. Rep. 669; 20 Blatch. 353.

§ 307. [1] In Mills *v.* Scott (1849), 6 U. C. Q. B. 205, Robinson, C. J. (206) defines an improvement as "an improvement in the principle of something which had before been patented."

was created, the new developed from the old by a subsequent exercise of inventive skill.[1] To place before the mind the exact limits of the inventive act by which the later idea was evolved, and thence to ascertain its nature and identity, it thus becomes essential to determine the true character and scope of the original invention, as it stood at the date of this later exercise of the inventor's powers.

§ 308. Identity of Improvements; Whole State of the Art to be Considered.

To ascertain the extent to which the fundamental idea of the invention was developed before this later forward step was taken requires a knowledge of the whole state of the art to which the invention belongs. The inventor of an improvement must be assumed to have possessed this knowledge, and to have contemplated from the point of view afforded by it, not only the end to be accomplished, but the function and the mode of operation of his means. From the same point of view must the examiner consider the improvement, if he would comprehend its purpose and its character, and accurately define the place it fills in the development of the industrial art in which it is embraced.

§ 309. Identity of Improvements: Improvements of Two Classes: in the Means as a Whole; in its Integral Parts.

The end proposed by the inventor of an improvement may reside either in the ultimate effect produced by the invention on its object, or in the method by which the invention operates in the attainment of its usual results. When he endeavors to produce a better ultimate result, all changes which he introduces into the function or the mode of operation of the old invention relate to his development of the idea of means, and if not merely formal, represent his new improvement. When he endeavors to produce the same result in a more economical or speedy manner, all changes in the function or the mode of operation of the old invention are included in the end, and only those alterations in the invention by which these changes in the function or the mode of operation are effected are embraced in his idea of means. Thus in

regard to all generic arts and instruments, two fields for improvement are open to inventors: in one of which the whole idea of the original invention is carried forward, resulting in a wider or more perfect ultimate effect; in the other some subordinate idea alone is developed, creating not a change in the condition of the product, but a change in the condition of the means.[1] To one of these two classes all improvements must belong, and the first step in ascertaining the real character of an improvement is to refer it to its proper class, and thus determine the true scope of its idea of means.

§ 310. Identity of Improvements: Distinctions between Substance and Form.

The end proposed by the inventor of an improvement being ascertained, the examiner should next attempt to discover the essential attributes of his invention, and to distinguish that which is included in its substance from that which relates only to its form. The principle of distinction is the same here as elsewhere. Whatever qualities of the invention are indispensable to the attainment of its end, according to the method of attainment conceived by its inventor, are included in its essence. If he accomplishes a better ultimate effect, every change in the function or the mode of operation which is necessary to the fulfilment of his purpose as he endeavors to fulfil it belongs to the substance of his invention, and the sum of all these changes constitutes his improvement. If he achieves merely a speedier or cheaper mode of operation in the means, only those changes in the details of the art or instrument which are essential to its operation in the speedier or cheaper mode are of the substance of his invention. Hence if two separate inventors, each attempting to produce the same change in the ultimate effect, accomplish it by introducing different changes into the function or the mode of operation of the original means, although both are improvements in the same art or instrument and both improvements fulfil the same purpose, yet as improvements they are separate

§ 309. [1] That an improvement may be made in the structure of an invention as well as in its entire operation, see Sinclair *v.* Backus (1880), 17 O. G. 1503; 4 Fed. Rep. 539; 5 Bann. & A. 81.

inventions. Hence, also, when two variations in the same integral parts, or in the arrangement of integral parts, increase the speed or the economy of the original means, they will be different inventions unless the variations are substantially the same.

§ 311. Identity of Improvements: Improvements how Effected; not Mere Diversities of Use.

The nature of the variations by which an improvement is effected depends upon the species of invention to which the original belongs. An improvement in an art consists in some change in the act or acts of which it is composed, or in the order in which they are performed. Improvements in a simple instrument are made by altering the shape, size, or material of its integral parts, or by a rearrangement of such parts among themselves.[1] Improvements in a compound instrument are introduced by modifying its constituent elements or their co-operative law.[2] But in examining these changes as they are produced in any species of inventions, its fundamental character, as determined by that one or more of its subordinate factors on which the inventive act that gave it birth was exercised, must never be forgotten. To whatever species it belongs, a mode of application cannot be improved by adopting it as the connecting link between another force and object, nor is a force applied improved by a mere change of objects. If these new uses are the fruit of an inventive act and thus escape the limits of a double use, they become new and independent means, and not mere improvements in the means employed. Inventions are improved only by a

§ 311. [1] That an improvement may be made in a machine by merely altering the shape of one or more of its parts, see Williams *v.* Barker (1880), 18 O. G. 243; 2 Fed. Rep. 649.

[2] That an improvement may be made in a combination by changing the shape or capacity of the elements, or modifying their arrangement, see Sharp *v.* Tifft (1880), 17 O. G. 1282; 2 Fed. Rep. 697; 18 Blatch. 132; 5 Bann. & A. 399; Whitney *v.* Emmett (1831), Baldwin, 303; 1 Robb, 567; Foxwell *v.* Bostock (1864), 12 W. R. 723; 10 L. T. Rep. N. S. 144.

But that if any change is made either in the essential character of the elements or in their co-operative law, the result is not an improvement, but a new combination, see Bliss *v.* City of Brooklyn (1873), 3 O. G. 269; 10 Blatch. 521; 6 Fisher, 289; Hale *v.* Stimpson (1865), 2 Fisher, 565.

development of the original idea of means, — that is, by carrying forward the same inventive act from which the original invention sprang; and this occurs only when the process of discovery is further exercised upon the same subordinate factor, whether it be the force, the object, or the mode of application.

§ 312. Identity of Improvements: Character of an Improvement Depends on the Nature and Effect of the Variation in the Old Invention.

The character of an improvement, as an invention, is thus determined by the nature of the variations which produce it when viewed in their relations to the end proposed. A variation in the acts or in their order in an art, affecting only its own mode of operation, is not the same improvement as a variation producing better ultimate effects, however nearly the two variations may resemble one another. And changes in an instrument whereby simply the speed or cheapness of its action is increased, though differing but slightly from the changes which enable it to furnish better products, are not the same improvement as that by which the latter object is attained. This distinction is but another application of the axiom that different effects can only be produced by different means.

§ 313. Identity of Improvements Determined by Comparing their Classes, their Mode of Operation, and their Effect.

Wherefore, in comparing two improvements on the same original invention, the first point for investigation is the class to which they severally belong. If they are of different classes, contemplating and achieving different ends, — the one securing a better ultimate effect, the other only a better mode of operation in the means, — the improvements must necessarily be distinct. If they are of the same class, the precise effect produced by each is then to be considered; for though both are directed toward the ultimate result or toward the mode of operation of the means, the changes which they accomplish in either may be different, and thus a true diversity of ends may still exist, proving a true diversity of means. When in this respect also

the improvements coincide, the variations which they introduce into the idea of the original invention, so far as these are necessary to the fulfilment of their common purpose, require attention, and if these variations are in each substantially the same, the improvements are to be regarded as identical.[1]

§ 314. Identity of Inventions Practically a Subject of Great Difficulty.

The duty of determining the identity or the diversity of inventions, according to the principles discussed in this and the foregoing sections, pertains rather to the expert than to the lawyer or the judge; still, neither judge nor lawyer can properly discharge the functions of his office in connection with inventions unless his own industrial skill and knowledge are sufficient to enable him to understand and follow the inquiries and reasonings of experts, and argue or decide intelligently upon their conclusions. This is the region where nearly all the difficulties of the subject are encountered. It is the field in which originates the greater proportion of contested cases, and which furnishes perennial crops of new and puzzling questions as science and the arts advance together to subdue the earth. In the investigation of the novelty or relative priority of inventions, it proves often a veritable "Slough of Despond;" but when it is once safely crossed, and the identity of the competing arts or instruments is established, all other questions become comparatively easy and their solution definite and sure.[1]

§ 313. [1] That one improvement to an invention may not be identical with another though both produce the same effect, see Otis Bros. Mfg. Co. *v.* Crane Bros. Mfg. Co. (1886), 27 Fed. Rep. 550. See also as to improvements §§ 210–218, and notes, *ante*.

§ 314. [1] In Butterworth *v.* Hoe (1884), 112 U. S. 50, Matthews, J.: (59) "The questions of fact arising in this field find their answers in every department of physical science, in every branch of mechanical art; the questions of law necessary to be applied in the settlement of this class of public and private rights have founded a special branch of technical jurisprudence. The investigation of every claim presented involves the adjudication of disputed questions of fact, upon scientific or legal principles, and is, therefore, essentially judicial in its character, and requires the intelligent judgment of a trained body of skilled officials, expert in the various branches of science and art, learned in the history of invention, and proceeding by fixed rules to systematic conclusions."

SECTION VII.

OF THE NOVELTY OF INVENTIONS: PRIORITY: PRIOR USE.

§ 315. Novelty, as between Identical Inventions, Determined by Priority.

The identity of two inventions having been established, the legal novelty of either depends upon the state of public knowledge, at the date of its invention, concerning the existence and the nature of the other. If one existed in a manner accessible to the public when the other was invented, the latter is not new to the public, whatever it may be to the inventor;[1] and, on the other hand, though the earlier were a complete art or instrument at the date of the invention of the later, yet if it were concealed and inaccessible, so that the public had derived no benefit from its invention, the later, if first introduced to public use, becomes in reference to them a new invention, entitling the inventor from whom they receive it to a patent.

§ 316. Priority Evidenced by Use, by Publication, and by Patent.

The law has recognized three methods in which inventions may be made accessible to the public: by use, by publication, and by patent.[1] In each of these three methods it requires

§ 315. [1] In Patterson *v.* Gas Light & Coke Co. (1877), L. R. 3 App. 239, Lord Blackburn: (244) "The consideration for a patent is the communication to the public of a process that is new. In Hindmarch on Patents (1st ed., 1846, p. 33) it is laid down that 'if the public once becomes possessed of an invention by any means whatever, no subsequent patent for it can be granted, either to the true or first inventor himself or any other person; for the public cannot be deprived of the right to use the invention, and a patentee of the invention could not give any consideration to the public for the grant, the public already possessing everything that he could give.' This is, in my opinion, a correct statement of the law. It is not necessary that the invention should be used by the public as well as known to the public. If the invention and the mode in which it can be used has been made known to the public by a description in a work which has been publicly circulated, . . . or in a specification duly enrolled, . . . it avoids the patent, though it is not shown that it ever was actually put in use."

§ 316. [1] In Plimpton *v.* Malcolmson

the presence of certain qualities before it will receive them as sufficient evidence of public knowledge. The use, the publi-

to the public and part of common knowledge, of course you do not mean that every individual member of the public knows it. That would be absurd. What is meant is that if it is a manufacture connected with a particular trade, the people in the trade shall know something about it; if it is a thing connected with a chemical invention, people conversant with chemistry shall know something about it. And it need not go so far as that. You need not show that the bulk, or even a large number, of those people know it. If a sufficient number know it, or if the communication is such that a sufficient number may be presumed, or assumed, to know it, that will do. Now how are they to know it? They are to know it by being told of it, or informed of it in some way. You may show that they knew it, by showing that the trade had commonly used it. That is the best evidence you can have. You may show the thing was known because it was used and brought into practice. . . . But you may show they knew it in another way, — that it was published or made known to the public. . . . How made known to the public? It has been held that if it is in a specification, certainly in a modern specification, which had been enrolled in the Patent Office, and not published besides, that will do. And it has also been held that, as a common rule, if the description has been printed in England, and published in England, in a book which circulates in England, that will do. But after all, it is a question of fact. The judge must decide, from the evidence brought before him, whether it has in fact been sufficiently published to come within the definition of being made known

(1875), L. R. 3 Ch. 531, Jessel, M. R.: (556) "When you say a thing is known to the public and part of common knowledge, of course you do not mean that every individual member of the public knows it. That would be absurd. What is meant is that if it is a manufacture connected with a particular trade, the people in the trade shall know something about it; if it is a thing connected with a chemical invention, people conversant with chemistry shall know something about it. And it need not go so far as that. You need not show that the bulk, or even a large number, of those people know it. If a sufficient number know it, or if the communication is such that a sufficient number may be presumed, or assumed, to know it, that will do. Now how are they to know it? They are to know it by being told of it, or informed of it in some way. You may show that they knew it, by showing that the trade had commonly used it. That is the best evidence you can have. You may show the thing was known because it was used and brought into practice. . . . But you may show they knew it in another way, — that it was published or made known to the public. . . . How made known to the public? It has been held that if it is in a specification, certainly in a modern specification, which had been enrolled in the Patent Office, and not published besides, that will do. And it has also been held that, as a common rule, if the description has been printed in England, and published in England, in a book which circulates in England, that will do. But after all, it is a question of fact. The judge must decide, from the evidence brought before him, whether it has in fact been sufficiently published to come within the definition of being made known within the realm. The cases cited [Household Co. *v.* Neilson, 1 Web. 673; Stead *v.* Williams, 2 Web. 120; Stead *v.* Anderson, 2 Web. 147; Hourteloupe's Patent, 1 Web. 553; Lang *v.* Gisborne, 31 Beav. 133] may be rather used as illustrations of what will amount to sufficient evidence than as deciding anything in principle beyond this, that it must be sufficiently known." See also, Muntz *v.* Foster (1844), 2 Web. 93.

That under the patent laws of the United States there can be no prior knowledge of the invention except by use in this country, or by publication or by patent, see Searls *v.* Bouton (1882), 12 Fed. Rep. 140; 21 O. G. 1784; 20 Blatch. 426; Judson *v.* Bradford (1878), 3 Bann. & A. 539; 16 O. G. 171.

That mere knowledge without prior use, patent, or publication is no bar, see Judson *v.* Bradford (1878), 3 Bann. & A. 539; 16 O. G. 171.

That prior use in this country will bar a patent, see Kelleher *v.* Darling (1878), 4 Clifford, 424; 14 O. G. 673; 3 Bann. & A. 438; Roemer *v.* Simm (1874), 5 O. G. 555; Hiatt *v.* Twomey (1836), 1 Dev. & Bat. Eq. 315.

That the same effect follows under the law of England, see Card's Patent, (1848), 2 Web. 161.

That "prior use intimates prior knowledge and shows prior invention," see Household Co. *v.* Neilson (1843), 1 Web. 673 (699).

That such use must be affirmatively proved, see American Bell Telephone Co. *v.* People's Telephone Co. (1884), 29 O. G. 1029; 22 Fed. Rep. 309; 22 Blatch. 531; Washburn & Moen Mfg. Co. *v.* Haish (1880), 10 Bissell, 65; 4 Fed. Rep. 900.

That knowledge of a general property of matter does not prevent a patent for

cation, or the patent must have attained a specified degree both of completeness and publicity, and it must have existed at the date of the invention of the art or instrument whose novelty is called in question. The consideration of each of the three methods thus involves an examination of both of these essential qualities. And first, of Prior Use.

§ 317. Prior Use: its Essential Requisites.

An invention becomes accessible to the public through its use, only when it is employed in such a manner as to disclose fully to the public the idea of means which it embodies.[1] To this end it is necessary: (1) That the invention be complete and operative; (2) That it be practically employed; and (3) That its employment be in public. Unless the invention is complete and operative it does not, in the eye of the law, as yet exist, and therefore is incapable of use. Unless it is practically employed it does not, as a general rule, clearly exhibit its idea of means. Unless employed in public it does not confer upon the public such a knowledge as places the invention fully in their reach. Thus, when either of these requisites is wanting, the use does not destroy the novelty of subsequent inventions.

the application of that property to a first place was it known as an article having those properties? Did any person know what he was buying? . . . (619) Then even supposing that that article did embody the principle of the plaintiffs, so as to present to persons using it the properties, qualities, and advantages in principle of that article which the plaintiff makes, the question for you will be, whether that user is not to be considered rather in the nature of an experiment than of any public use of the article."

That unless the use of the invention so discloses its character that it can be made by any person skilled in the art, from a mere inspection or use of it, it is not prior use, see Hancock *v.* Somerville, (1851), 39 New. L. J. 158. See also § 324, and notes, *post*.

particular use, see Hills *v.* Gas Light Co. (1860), 5 H. & N. 312.

§ 317. [1] In Walton *v.* Bateman (1842), 1 Web. 613, Cresswell, J. (616): "With respect to this not being a new invention, the nature of that objection is distinct and clear upon the face of it. It involves two questions for your consideration. First, was any article made before, answering the purposes and having the properties of that which the plaintiff has made and claims as the patent? . . . They must show that the article made before had the same properties as that in respect of which the patent was granted. . . . Now, if it had not, it cannot be put in competition with this; if it had, then was it known and in use? That would involve another question. Now in the

§ 318. Prior Use: Prior Invention must have been Complete and Practically Available.

To constitute a prior use the identical idea of means expressed in the present invention must have been reduced to practice and made available for immediate use.[1] Neither a sketch of the projected art or instrument as the inventor has conceived it, nor drawings whether with or without verbal

§ 318. [1] In Worswick Mfg. Co. *v.* Steiger (1883), 17 Fed. Rep. 250, Wolker, J.: (251) "It will be noticed that the claim of this patent is a combination claim consisting of several elements that co-operate together to produce the device claimed. This device, then, can only be anticipated by a prior device, having identically the same elements, or the mechanical equivalents of those that are not used. It will not do to find in older devices a portion of these elements in one machine, another portion in a second machine, another in a third, and so on, and then say that this device is anticipated."

That there can be no prior use unless the device used were identical with the present invention, see Judson *v.* Bradford (1878), 16 O. G. 171; 3 Bann. & A. 539; Ellithorp *v.* Robertson (1859), 4 Blatch. 307; 2 Fisher, 83; Livingston *v.* Jones (1859), 1 Fisher, 521; Pitts *v.* Wemple (1855), 1 Bissell, 87; 2 Fisher, 10; Foote *v.* Silsby (1851), 2 Blatch. 260; Parker *v.* Stiles (1849), 5 McLean, 44; Woodcock *v.* Parker (1813), 1 Gallison, 438; 1 Robb, 37. See also note 4, *post*.

That what would infringe if later will anticipate if earlier, see Peters *v.* Active Mfg. Co. (1884), 21 Fed. Rep. 319; 28 O. G. 1102. This is not true unless both inventions are of the same class and scope.

That the size of the prior invention is immaterial, see Peters *v.* Active Mfg. Co. (1884), 21 Fed. Rep. 319; 28 O. G. 1102.

That apparatus does not anticipate a process, see Everest *v.* Buffalo Lubricating Oil Co. (1884), 20 Fed. Rep. 848; 28 O. G. 1101.

That a prophetic intimation is not prior use, see Celluloid Mfg. Co. *v.* Chrolithion Collar & Cuff Co. (1885), 23 Blatch. 205; 23 Fed. Rep. 397; 31 O. G. 510.

That accidental operations not discovered at the time are not prior use, see Boyd *v.* Cherry (1883), 4 McCrary, 70.

That the prior use of all the elements of a combination does not anticipate the combination itself, see Kelleher *v.* Darling (1878), 3 Bann. & A. 438; 14 O. G. 673; 4 Clifford, 424.

That the prior invention must have been complete and operative, see Allis *v.* Buckstaff (1882), 13 Fed. Rep. 879; 22 O. G. 1705; Stephenson *v.* Brooklyn Cross-Town R. R. Co. (1881) 19 Blatch. 473; 14 Fed. Rep. 457; Judson *v.* Bradford (1878), 16 O. G. 171; 3 Bann. & A. 539; Shoup *v.* Henrici (1876), 2 Bann. & A. 249; 9 O. G. 1162; Lyman Ventilating & Refrigerator Co. *v.* Chamberlain (1876), 2 Bann. & A. 433; 10 O. G. 588; Johnson *v.* McCullough (1870), 4 Fisher, 170; Woodman *v.* Stimpson (1866), 3 Fisher, 98; Ellithorp *v.* Robertson (1859), 4 Blatch. 307; 2 Fisher, 83; Cahoon *v.* Ring (1859), 1 Fisher, 397; 1 Clifford, 592; Sickels *v.* Borden (1856), 3 Blatch. 535; Winans *v.* N. Y. & Harlem R. R. Co. (1855), 4 Fisher, 1; Pitts *v.* Wemple (1855), 1 Bissell, 87; 2 Fisher, 10; Lang *v.* Gisborne (1862), 31 Beav. 133. See also cases cited in note 3, *post*.

description, nor any model other than a practical and working instrument, nor even an application for a patent, can fulfil this requirement, since each or all of these can be produced without the existence of an operative and available invention.[2] Mere experiments, if unsuccessful, however nearly they approach to the complete invention, and even although patented,[3]

[2] That neither written description nor drawing constitutes prior use, see Detroit Lubricator Mfg. Co. *v.* Renchard (1881), 9 Fed. Rep. 203; Lyman Ventilating & Refrigerator Co. *v.* Lalor (1874), 6 O. G. 642; 12 Blatch. 303; 1 Bann. & A. 403; Northwestern Fire Extinguisher Co. *v.* Philadelphia Fire Extinguisher Co. (1874), 6 O. G. 34; 10 Phila. 227; 1 Bann. & A. 177; Reeves *v.* Keystone Bridge Co. (1872), 1 O. G. 466; 5 Fisher, 456; 9 Phila. 368; Ellithorp *v.* Robertson (1859), 4 Blatch. 307; 2 Fisher, 83; Winans *v.* N. Y. & Harlem R. R. Co. (1855), 4 Fisher, 1; Lewis *v.* Marling (1829), 1 Web. 490; 1 Abb. P. C. 417.

That the construction of a model is not prior use, see Union Paper Bag Mach. Co. *v.* Pultz & Walkley Co. (1879), 16 Blatch. 76; 4 Bann. & A. 181; Kelleher *v.* Darling (1878), 14 O. G. 673; 4 Clifford, 424; 3 Bann. & A. 438; Stilwell & Bierce Mfg. Co. *v.* Cincinnati Gas Light & Coke Co. (1875), 7 O. G. 829; 1 Bann. & A. 610; Johnson *v.* McCullough (1870), 4 Fisher, 170; Cahoon *v.* Ring (1859), 1 Fisher, 397; 1 Clifford, 592; Lewis *v.* Marling (1829), 1 Web. 490; 1 Abb. P. C. 417.

That an application for a patent does not show prior use or knowledge unless it be also shown that the invention was then complete and operative, see Adams *v.* Howard (1884), 26 O. G. 825; 19 Fed. Rep. 317; Howes *v.* McNeal (1878), 15 Blatch. 103; 15 O. G. 608; 3 Bann. & A. 376; Barker *v.* Stowe (1878), 14 O. G. 559; 15 Blatch. 49; 3 Bann. & A. 337; Lyman Ventilating & Refrigerator Co. *v.* Newell (1876), 10 O. G. 588; 2 Bann. & A. 433; Northwestern Fire Extinguisher Co. *v.* Philadelphia Fire Extinguisher Co. (1874), 6 O. G. 34; 10 Phila. 227; 1 Bann. & A. 177; Case *v.* Brown (1862), 1 Bissell, 382; 2 Fisher, 268.

[3] In Gottfried *v.* The Phillip Best Brewing Co. (1879), 5 Bann. & A. 4, Dyer, J.: (24) "It will be admitted that, to justify the court in overthrowing a patent granted for what appears to be a new and useful invention or improvement, on the ground that the device has been anticipated by another and earlier invention, the court should be well satisfied by clear and credible testimony that the alleged earlier invention actually existed; that it was a perfected device, capable of practical use; that it was embodied in distinct form, and carried into operation as a complete thing, and was not of such a character as to entitle it only to be regarded as an unperfected or abandoned experiment." 17 O. G. 675 (681).

In Coffin *v.* Ogden (1873), 18 Wall. 120, Swayne, J.: (124) "If the thing were embryotic or inchoate, if it rested in speculation or experiment, if the process pursued for its development had failed to reach the point of consummation, it cannot avail to defeat a patent founded upon a discovery or invention which was completed, while in the other case there was only progress, however near that progress may have approximated to the end in view. The law requires not conjecture, but certainty. If the question relates to a machine, the conception must have been clothed in substantial forms, which demonstrate at

the union of all parts of the invention for a different purpose, or the production of an art or instrument embody-

once its practical efficacy and utility." 5 O. G. 270 (271).

In Wayne *v.* Holmes (1850), 2 Fisher, 20, Leavitt, J.: (23) "And proof of prior experiments on the principle of this invention, if not carried on to completion, does not make out the fact of prior knowledge or use, within the meaning of the patent laws. The machine or structure alleged to be similar to that patented must have been so far perfected as to be of practical utility. And if abandoned after experimental trials as useless, a presumption would arise that the alleged invention was not identical with one subsequently patented to another person, the merits and utility of which are proved by its general use, and admitted superiority over all others." 1 Bond, 27 (35).

In Howe *v.* Underwood (1854), 1 Fisher, 160, Sprague, J.: (166) "The patent law goes undoubtedly upon the ground that when a man, by his knowledge and skill, has made and perfected a machine, the public are then put in possession of the invention, and have the benefit, in some form, of that knowledge and skill; and that the man who comes afterward cannot deprive the public of that benefit, though he may be an original inventor of the machine. He has not given the consideration for an exclusive privilege, because the public had it before; and although he may have the merit of invention, he cannot have the right to take from the community that which they possess by the invention of another. A machine, therefore, in order to anticipate any subsequent discovery, must be perfected; that is, made so as to be of practical utility, and not to be merely experimental and end in experiment. The terms 'being an experiment,' and 'ending in experiment,' are used in contradistinction to the term 'being of practical utility.' Until of practical utility the public attention is not called to the invention; it does not give to the public that which the public lays hold of as beneficial. If it is an experiment only, and ends in experiment, and is laid aside as unsuccessful, however far it may have been advanced, however many ideas may have been combined in it which, subsequently taken up, might, when perfected, make a good machine, still, not being perfected, it has not come before the public as a useful thing, and is therefore entirely inoperative as affecting the rights of those coming afterward. This is important to be understood, because the idea has been carried all along, that if a prior inventor has gone to a certain extent, although he fall short of making a complete machine, practically useful, those who come after him have no right to secure to themselves the advantage of their invention. That is not the law."

In Galloway *v.* Bleaden (1839), 1 Web. 521, Tindal, C. J.: (525) "The law is undoubtedly now understood to be this: — a mere experiment, or a mere course of experiments, for the purpose of producing a result which is not brought to its completion, but begins and ends in uncertain experiments — that is not such an invention as should prevent another person, who is more successful, or pursues with greater industry the chain in the line that has been laid out for him by the preceding inventor, from availing himself of it and having the benefit of it. . . . (526) The question you are to determine is whether on the evidence the thing itself was complete, so as to be used, or whether only a series of experiments were going on. Up to this time the model had been shown, but not any actual

ing the same ideas but in a lower state of development, are equally insufficient, — neither being an invention whose employ-

paddle-wheel made; much less up to the time we are now discussing had any one been applied to any real practical use. . . . (529) That there had been many experiments made upon the same line, and almost tending, if not entirely, to the same result, is clear from the testimony you have heard; and that these were experiments known to various persons; but if they rested in experiment only, and had not attained the object for which the patent was taken out, mere experiment, afterwards supposed by the parties to be fruitless, and abandoned because they had not brought it to a complete result, that will not prevent a more successful competitor, who may avail himself as far as his predecessors have gone of their discoveries, and add the last link of improvements, in bringing it to perfection."

In Jones *v.* Pearce (1832), 1 Web. 122, Patterson, J.: (124) "If on the whole of this evidence . . . it appeared this wheel [in prior use] was a wheel on the same principles and in substance the same wheel as the other for which the plaintiff has taken out his patent, and that was used openly in public so that everybody might see it, and had continued to use the same thing up to the time of taking out the patent, undoubtedly then that would be a ground to say that the plaintiff's invention is not new . . . but if, on the other hand, you are of opinion that [the alleged prior invention] was an experiment, and that [its inventor] found it did not answer, and ceased to use it altogether, and abandoned it as useless, and nobody else followed it up, and that the plaintiff's invention which came afterwards was his own invention and remedied the defects, . . . then there is no reason for saying the plaintiff's patent is not good." 1 Abb. P. C. 472 (475).

That abandoned experiments are not prior use, see American Bell Telephone Co. *v.* Molecular Telephone Co. (1885), 32 Fed. Rep. 214; 23 Blatch. 253; Fay *v.* Allen (1885), 24 Fed. Rep. 804; 32 O. G. 1355; Celluloid Mfg. Co. *v.* Chrolithion Collar & Cuff Co. (1885), 23 Blatch. 205; 23 Fed. Rep. 397; 31 O. G. 519; Phillips *v.* Carroll (1885), 23 Fed. Rep. 249; 31 O. G. 265; Miller *v.* Pickering (1883), 25 O. G. 89; 16 Fed. Rep. 540; 16 Phila. 533; Sheridan *v.* Latus (1883), 25 O. G. 501; Allis *v.* Buckstaff (1882), 13 Fed. Rep. 879; 22 O. G. 1705; Davis *v.* Brown (1881), 19 Blatch. 263; 9 Fed. Rep. 647; 20 O. G. 1021; Putnam *v.* Hollender (1881), 19 Blatch. 48; 6 Fed. Rep. 882; 19 O. G. 1423; Roberts *v.* Schrieber (1880), 5 Bann. & A. 491; 18 O. G. 125; 2 Fed. Rep. 855; Whittlesey *v.* Ames (1880), 13 Fed. Rep. 893; 9 Bissell, 225; 5 Bann. & A. 96; 18 O. G. 357; Union Paper Bag Mach. Co. *v.* Pultz & Walkley Co. (1879), 15 Blatch. 160; 16 Blatch. 76; 4 Bann. & A. 181; Kelleher *v.* Darling (1878), 14 O. G. 673; 4 Clifford, 424; 3 Bann. & A. 438; Albright *v.* Celluloid Harness Trimming Co. (1877), 2 Bann. & A. 629; 12 O. G. 227; La Baw *v.* Hawkins (1874), 1 Bann. & A. 428; 6 O. G. 724; Wood Paper Patent (1874), 23 Wall. 566; Corn Planter Patent (1874), 23 Wall. 181; 6 O. G. 392; Aultman *v.* Holley (1873), 11 Blatch. 317; 6 Fisher, 534; 5 O. G. 3; Decker *v.* Grote (1873), 10 Blatch. 331; 3 O. G. 65; 6 Fisher, 143; Smith *v.* O'Connor (1873), 4 O. G. 633; 2 Sawyer, 461; 6 Fisher, 469; Blake *v.* Rawson (1872), 3 O. G. 122; 6 Fisher, 74; Holmes, 200; Murphy *v.* Eastham (1872), 2 O. G. 61; Holmes, 113; 5 Fisher, 306; Roberts *v.* Dickey (1871), 1 O. G. 4; 4 Fisher, 532; 4 Brews. 260; Sayles *v.* Chicago & N. W.

ment, under any circumstances, can confer upon the public such an acquaintance with the new idea of means as will

R. R. Co. (1871), 3 Bissell, 52 ; 4 Fisher, 584 ; Wood *v.* Cleveland Rolling Mill Co. (1871), 4 Fisher, 550 ; Turrill *v.* Illinois Central R. R. Co. (1867), 3 Bissell, 66; 3 Fisher, 330 ; Union Sugar Refinery *v.* Matthiesson (1865), 3 Clifford, 639 ; 2 Fisher, 600 ; White *v.* Allen (1863), 2 Fisher, 440 ; 2 Clifford, 224 ; Union Mfg. Co. *v.* Lounsbury (1863), 2 Fisher, 389 ; Hayden *v.* Suffolk Mfg. Co. (1862), 4 Fisher, 86 ; Matthews *v.* Skates (1860), 1 Fisher, 602 ; Singer *v.* Walmsley (1860), 1 Fisher, 558; Ellithorp *v.* Robertson (1859), 4 Blatch. 307; 2 Fisher, 83; Judson *v.* Moore (1859), 1 Bond, 285 ; 1 Fisher, 544 ; Latta *v.* Shawk (1859), 1 Bond, 259 ; 1 Fisher, 465 ; Cahoon *v.* Ring (1859), 1 Fisher, 397; 1 Clifford, 592 ; Bell *v.* Daniels (1858), 1 Bond, 212 ; 1 Fisher, 372 ; Pitts *v.* Edmonds (1857), 1 Bissell, 168 ; 2 Fisher, 52 ; Wayne *v.* Holmes (1856), 1 Bond, 27; 2 Fisher, 20 ; Ransom *v.* Mayor of New York (1856), 1 Fisher, 252 ; Allen *v.* Hunter (1855), 6 McLean, 303; Winans *v.* N. Y. & Harlem R. R. Co. (1855), 4 Fisher, 1 ; Howe *v.* Underwood (1854), 1 Fisher, 160; Many *v.* Sizer (1849), 1 Fisher, 17 ; Parkhurst *v.* Kinsman (1849), 1 Blatch. 488 ; Many *v.* Jagger (1848), 1 Blatch. 372 ; Murray *v.* Clayton (1872), L. R. 7 Ch. Ap. 570 ; Daw *v.* Eley (1867), L. R. 3 Eq. 496 ; Stead *v.* Williams (1843), 2 Web. 126 ; Gibson *v.* Brand (1841), 1 Web. 627 ; Cornish *v.* Keene (1835), 1 Web. 501; 2 Abb. P. C. 139; Jones *v.* Pearce (1832), 1 Web. 121 ; 1 Abb. P. C. 472.

That an unsuccessful experiment was patented does not indicate prior use, see Hitchcock *v.* Tremaine (1871), 8 Blatch. 440; 4 Fisher, 508 ; Whitely *v.* Swayne (1868), 7 Wall. 685.

As to what constitutes an unsuccessful experiment : —

That a rude machine, made for experiment and then abandoned, is an unsuccessful experiment, see Hoyt *v.* Slocum (1886), 26 Fed. Rep. 329 ; Gottfried *v.* Phillip Best Brewing Co. (1879), 17 O. G. 675 ; 5 Bann. & A. 4.

That a partial embodiment of the idea, but wanting the qualities necessary to make it operative, is an unsuccessful experiment, see Roberts *v.* Schrieber (1880), 18 O. G. 125; 2 Fed. Rep. 855 ; 5 Bann. & A. 491; Richardson *v.* Noyes (1876), 10 O. G. 507.

That to make one article, use it in one situation without subjecting it to the tests required to demonstrate its practicability in general use, and then throw it away, is an unsuccessful experiment, see Putnam *v.* Hollender (1881), 19 O. G. 1423 ; 19 Blatch. 48; 6 Fed. Rep. 882 ; Swift *v.* Whisen (1867), 2 Bond, 115 ; 3 Fisher, 343.

That to bring together all the parts of an invention, but to fail in accomplishing the desired result from want of knowledge how to use them, is an unsuccessful experiment, see Campbell *v.* Mayor of N. Y. (1881), 20 O. G. 1817; 9 Fed. Rep. 500 ; 20 Blatch. 67.

That experiments made with the abandoned and unsuccessful devices of others are still unsuccessful experiments, see Latta *v.* Shawk (1859), 1 Fisher, 465; 1 Bond, 259.

That the throwing aside of an invention does not *ipso facto* show that it was an unsuccessful experiment, see Brush *v.* Condit (1884), 20 Fed. Rep. 826 ; 22 Blatch. 246 ; 28 O. G. 451 ; Pickering *v.* McCullough (1878), 13 O. G. 818 ; 8 Bann. & A. 279 ; Snow *v.* Tapley (1878), 13 O. G. 548.

That the abandonment of an experiment shows that it was unsuccessful, see Fay *v.* Allen (1885), 24 Fed. Rep. 804 ; 32 O. G. 1355 ; Brush *v.* Condit,

enable them to apply it practically in the arts.[4] Yet the invention used, if embodying the same idea, need not, in all respects, be as mechanically perfect, nor perform its operations with the same degree of excellence, as that which it anticipates. For though formal diversities exist, and though by the application of industrial skill the later may have been made more serviceable or attractive than the earlier, the earlier may still exhibit the complete idea of the invention in the same stage of development.

(1884), 20 Fed. Rep. 826; 22 Blatch. 246; 28 O. G. 451; American Bell Telephone Co. *v.* People's Telephone Co. (1884), 20 O. G. 1029; 22 Fed. Rep. 309; 22 Blatch. 531.

That the want of success with the public indicates that the invention was a mere experiment, see Hicks *v.* Otto (1884), 20 O. G. 365; 22 Blatch. 94; 19 Fed. Rep. 749.

That long neglect of an invention (seventeen years) may show that it was an unsuccessful experiment, see Yale Lock Mfg. Co. *v.* Berkshire Nat. Bank (1885), 26 Fed. Rep. 104.

That lost and disused inventions may be regarded as abandoned experiments, see Adams & Westlake Mfg. Co. *v.* Rathbone (1886), 26 Fed. Rep. 262.

That the prior invention must have been reduced to practice, see Roberts *v.* Reed Torpedo Co. (1869), 3 Brews. 558; 3 Fisher, 629.

That a device not put in practical use nor claimed, though afterwards embodied in other articles, is an abandoned experiment, see Hutchinson *v.* Everett (1885), 26 Fed. Rep. 531; 35 O. G. 1110.

That any use which shows that the article is practically available is prior use, see Brush *v.* Condit (1884), 20 Fed. Rep. 826; 22 Blatch. 246; 28 O. G. 451.

[4] That the union of all the parts of the invention for a different purpose is not prior use, see Campbell *v.* Mayor of N. Y. (1881), 20 O. G. 1817; 20 Blatch. 67; 9 Fed. Rep. 500.

That however nearly the device in prior use approached the present invention, it cannot anticipate it unless it were in every essential respect the same, see Livingston *v.* Jones (1859), 1 Fisher, 521.

That no prior use existed unless the prior inventor had attained to such a clear idea of the invention as would enable him to bestow it on the public, see Boyd *v.* Cherry (1883), 4 McCrary, 70; Minter *v.* Mower (1835), 1 Web. 138; 2 Abb. P. C. 178.

That a device does not anticipate when radical changes would be necessary to enable it to perform the work of the patented invention, see Consolidated Bunging Apparatus Co. *v.* Woerle (1887), 29 Fed. Rep. 449: 38 O. G. 1015.

That it is no defence in a suit for infringement that a prior machine might have been modified so as to do the work of the plaintiff's invention, see Wood *v.* Cleveland Rolling Mill Co. (1871), 4 Fisher, 550.

§ 319. Prior Use: Prior Invention must have been Practically Employed.

The earlier invention having been complete and operative, the idea which it embodies must have been manifested through its practical employment. Possibly there are cases where an instrument itself discloses the essential attributes of its idea of means as fully as if it had been practically used, and in these cases actual use of the invention may not be essential.[1] But, as a general rule, the invention must be practically employed. To conceive the idea and to embody it, or to embody an idea by chance without conceiving or perceiving it, is not enough. The idea, as it lies in the mind of the inventor, must not only be completely expressed in his invention, but must be fully and intelligibly communicated through it; and though his art or instrument be perfect in itself, if it is not applied in practice in such a manner as to demonstrate that it accomplishes the end for which it was created, and to indicate the method by which it attains that end, the idea is not within the actual possession of the public.[2] Still, on the other hand,

§ 319. [1] Mr. Webster (1 Web. 719, n.) referring to evidence contradicting novelty, remarks: "The third class of evidence is the production of a machine or article of manufacture with or without proof of actual user anterior to the date of the patent. On the authority of the above case [Household Co. *v.* Neilson, 1 Web. 673] it would appear that the production of such a machine or article of manufacture, without actual proof as to its use, or any evidence as to whence it originally came, or as to its mode of manufacture, would vitiate subsequent letters-patent for such a machine or article of manufacture, as negativing the grantee of such letters-patent being the true and first inventor. With reference to this head two distinct cases may occur: the one in which the machine or article of manufacture so produced shows at once its mode of manufacture; the other in which the machine or article of manufacture does not present any means of knowledge to the public so as to enable any person to reproduce the same. . . . An arrangement of material parts, as a simple combination of the elements of machinery, discloses its mode of manufacture to the eye on inspection, but with respect to a paint, or a dye, or a medicine, and many other inventions, a mere inspection of the result attained will convey no information as to the mode of manufacture." See also Sayles *v.* Chicago & Northwestern R. R. Co. (1871), 3 Bissell, 52; 4 Fisher, 584; Parker *v.* Ferguson (1849), 1 Blatch. 407.

[2] In Andrews *v.* Carman (1876), 13 Blatch. 307, Benedict, J.: (323) "A chance operation of a principle, unrecognized by any one at the time, and from which no information of its existence, and no knowledge of a method of its employment is derived by any one, if proved to have occurred, will not be sufficient to defeat the claim of him who

the law does not require extensive practical employment. A single instance of efficient use suffices, although the art or instrument be thenceforth abandoned.[3] Nor is it necessary that the earlier invention have been used for the same purpose as the later, nor that it pass beyond the region of experiment if the experiment were evidently successful, nor that it be under a patent, nor if under a patent that the patent should be valid.[4]

first discovers the principle, and, by putting it to a practical and intelligent use, first makes it available to man." 2 Bann. & A. 277 (292); 9 O. G. 1011 (1016). See also Maxheimer *v.* Mayer (1881), 20 Blatch. 17; 9 Fed. Rep. 460; 20 O. G. 1162.

Thus that where an invention embodies two distinct ideas of means its use as one is not prior use as to the other if the latter is not thereby disclosed, see Clough *v.* Barker (1882), 106 U. S. 166; 22 O. G. 2157; Minter *v.* Mower (1835), 1 Web. 133; 2 Abb. P. C. 178.

That to construct the invention is not necessarily prior use, see Parker *v.* Hulme (1849), 1 Fisher, 44; Lewis *v.* Marling (1829), 1 Web. 490; 1 Abb. P. C. 417.

That prior invention does not constitute prior use, see Colt *v.* Massachusetts Arms Co. (1851), 1 Fisher, 108.

That sale of the invention is not necessary, — use in the country of itself defeats the subsequent invention, — see Betts *v.* Neilson (1868), L. R. 3 Ch. Ap. 429.

That sale to any one who desires to purchase evidences prior use, see Gibson *v.* Brand (1841), 1 Web. 627.

That the prior existence of a similar machine, without use, does not show a want of novelty, unless the later invention was derived from the former, see Butch *v.* Boyer (1871), 8 Phila. 57.

[3] That a single instance of prior use will prove a want of novelty, see Brush *v.* Condit (1884), 22 Blatch. 246; 28 O. G. 451; 20 Fed. Rep. 826; Miller *v.* Force (1882), 9 Fed. Rep. 603; 21 O. G. 947; Boston Elastic Fabrics Co. *v.* East Hampton Rubber Thread Co., (1876), 2 Bann. & A. 268; 9 O. G. 745; Rice *v.* Garnhart (1874), 34 Wis. 453; Sayles *v.* Chicago & Northwestern R. R. Co. (1871), 3 Bissell, 52; 4 Fisher, 584; Sayles *v.* Chicago & Northwestern R. R. Co. (1865), 1 Bissell, 468; 2 Fisher, 523; Rich *v.* Lippincott (1853), 2 Fisher, 1.

That the abandonment of the invention after its successful use does not prevent this use from operating as prior use, see McNish *v.* Everson (1880), 5 Bann. & A. 484; 17 O. G. 1506; 2 Fed. Rep. 899; Shoup *v.* Henrici (1876), 2 Bann. & A. 249; 9 O. G. 1162; Northwestern Fire Extinguisher Co. *v.* Philadelphia Fire Extinguisher Co. (1874), 6 O. G. 34; 1 Bann. & A. 177; 10 Phila. 227; Evans *v.* Hettick (1822), 7 Wheaton, 453; 1 Robb, 417; Evans *v.* Hettick (1818), 3 Wash. 408; 1 Robb, 166.

[4] That the prior use need not have been for the same purpose, see Stephenson *v.* Brooklyn Cross-Town R. R. Co. (1881), 19 Blatch. 473; 14 Fed. Rep. 457.

That its use in combination with other things, if its real character is thereby disclosed, is prior use, see Carpenter *v.* Smith (1841), 1 Web. 530.

That the use is prior use, though only experimental, if the experiment were successful, see Northwestern Fire Extinguisher Co. *v.* Philadelphia Fire Extinguisher Co. (1874), 6 O. G. 34; 1 Bann. & A. 177; 10 Phila. 227; Rice

For any use of an invention whereby the end proposed by the inventor is practically accomplished, by the employment of the means which he devised in order to attain it, discloses his idea as fully as if the operation of his art or instrument were indefinitely prolonged.

§ 320. Prior Use: Prior Invention must have been Practically Employed in Public.

But even the practical employment of a complete and operative art or instrument does not confer the invention on the public, unless the use of the invention be in public. A use *in* public is not necessarily a use *by* the public. It is distinguished, not from an individual, but from a secret use. It is a use which places the invention in such a relation to the public that if they choose to be acquainted with it, they can do so.[1]

v. Garnhart (1874), 34 Wis. 453; Watson *v.* Bladen (1826), 4 Wash. 580; 1 Robb, 510.

That though the prior user may not have employed the invention with the same skill and profit as the present inventor, the latter cannot have a patent, see Waterman *v.* Thompson (1863), 2 Fisher, 461.

That whether a prior inventor in this country succeeded in patenting his invention or not is immaterial, if known and used it defeats any subsequent inventor's right to a patent, see Coffin *v.* Ogden (1873), 18 Wall. 120; 5 O. G. 270; Whipple *v.* The Baldwin Mfg. Co. (1858), 4 Fisher, 29; Colt *v.* The Massachusetts Arms Co. (1851), 1 Fisher, 108.

§ 320. [1] In Perkins *v.* Nashua Card & Glazed Paper Co. (1880), 2 Fed. Rep. 451, Lowell, J.: (452) "The law desires to encourage inventors to make their discoveries known for the improvement of the art, and to discourage an extension of the monopoly beyond the statutory period. For these reasons, and because of the difficulty of ascertaining the amount of knowledge which may have been derived from the exhibition, publication, or use of the invention, it has always been held that when the public have had means of knowledge they have had knowledge of the invention. Thus if a book has been published describing the invention, it is not important that no one has read it. Stead *v.* Williams, 7 M. & G. 818. If a pier has been placed in the bed of a river, or a pipe under ground, it is conclusively presumed to be known to all men. It has been intimated that a use in a workshop, where the workmen are pledged to secrecy, may not be a public use. Kendall *v.* Winsor, 21 How. 322, charge of Curtis, J.; Bevin *v.* Easthampton Bell Co., 9 Blatch. 50; Heath *v.* Smith, 3 Ell. & B. 255. In the last of these cases it is held that if the invention has been worked in the ordinary way, without an injunction of secrecy, the use is public. In McClurg *v.* Kingsland, 1 How. 202, it is said by Mr. Justice Baldwin, *obiter*, that use in a factory is a public use. A use very trifling in amount, or a publication purely technical, or a single sale, have often been held to deprive an inventor of his patent,

Thus while a use by the inventor in the seclusion of his private laboratory or workshop, as a secret of his trade, does

without evidence that any one interested to acquire knowledge of the invention had acquired it. Henry *v.* Prov. Tool Co., 14 O. G. 855; Egbert *v.* Lippman, Ib. 822; McMillan *v.* Barclay, 5 Fisher, 189; *Re* Adamson's Patent, 6 De G. M. & G. 420; Patterson *v.* Gas Light Co., 3 App. Cas. 239; Lang *v.* Gisborne, 31 Beav. 133. . . . Taking these decisions together, I understand the law to be, that actual knowledge of the invention need not have been derived by any one interested to practise it; it is enough that any one or more persons, not under a pledge of secrecy, saw the invention practised, or even might have seen it if they had used their opportunities, provided it was in fact practised in the ordinary way after being completed. And it must be held either that the workmen and visitors were a part of the public, or that they were persons from whom the public might have acquired the art without a breach of trust." 5 Bann. & A. 395 (396); 17 O. G. 1285 (1286).

In Carpenter *v.* Smith (1841), 1 Web. 530, Abinger, C. B.: (534) "The plaintiff's counsel has referred to the words of the statute to show that the words 'public use and exercise,' formed a part of the patent, from which he desires you to take the definition of what he calls the legal meaning of the word 'new;' and he draws this inference, that unless it has been in public use and in public exercise before, it is new. . . . Now I differ altogether from the learned counsel in that respect; and I think what is meant by 'public use and exercise,' as has been held by my predecessors before (and I think one's own common sense leads one to adopt that definition), is this, — a man is entitled to a patent for a new invention, and if his invention is new and useful he shall not be prejudiced by any other man having invented that before and not made any use of it, because the mere speculations of ingenious men, which may be fruitful of a great variety of inventions, if they are not brought into actual use, ought not to stand in the way of other men equally ingenious, who may afterwards make the same inventions and apply them. . . . So that the meaning of the words 'public use' is this, — that a man shall not, by his own private invention, which he keeps locked up in his own breast, or in his own desk, and never communicates it, take away the right that another man has to a patent for the same invention. Now 'public use' means this — that the use of it shall not be secret, but public. . . . (535) Therefore if a man invents a thing for his own use, whether he sells it or not, if he invents a lock and puts it on his own gate and has used it for a dozen years, that is a public use of it. If it were otherwise, see what the consequence would be. . . . If that was not a public use of it which prevented a man from taking out a patent, any man might go and take a model of that lock, and get a patent for it. How can he be the inventor of it? Because, to obtain a patent, a man must be the *inventor*; and if it has been once in public use (that is, used in a public manner, not used by the public), yet, if it has been used by half a dozen individuals, or one, in a public manner, any man having access to it, how can he be said to be the inventor, if by merely gaining access to that he takes out a patent? . . . (539) Gentlemen, in my opinion, if you believe the witness, that the lock was on Mr. Davis's gate sixteen years ago, and that he saw it every day of his life, and repaired it twelve years ago, and has brought it here and described it to you

not show public knowledge,[2] the practical employment of the invention by others than the inventor, in their trade or profession, though in concealment from the general public, is, in the present sense, a use in public.[3] But foreign use, at least un-

now, it appears to me, if you are of that opinion, that that was a public use of the invention. The application and the practical utility of that before the eyes of the public comes within the meaning of the words, as I understand them, of *this patent*, and it is only used in contradistinction of a public use and exercise, to which the public has no access."

This case came up in the exchequer on motion for a new trial on this instruction, the plaintiff claiming that the use of an invention in such a manner that a particular portion of the public in a particular locality may have access to it without its being sold or brought into market, does not defeat a subsequent patent. In giving the opinion of the court the judges held as follows: Alderson, B.: (542) "I think there ought to be *no* rule in this case. I have not the least doubt that that is the right construction of the law which my lord has put upon it. Public use means a use in public, so as to come to the knowledge of others than the inventor, as contradistinguished from the use of it by himself in his chamber." Gurney, B., concurred. Abinger, C. B.: (543) "The public use and exercise of an invention means a use and exercise in public, not by the public."

Mr. Webster, in a note to this case, p. 543, criticises the decision on the ground that the lock, being possibly of secret construction, did not by its mere use disclose to the public the method of making it; and compares it to a chemical compound of unknown ingredients and preparation. Doubtless the true rule in all cases is this, that the article used must render the invention embraced in its construction accessible to the public; and this principle is recognized by Abinger, C. B., in various parts of the above opinion, especially where he supposes that "any man might go and take a model of that lock and get a patent for it."

That no use can be prior use unless it existed in a manner accessible to the public, see Bullock Printing Press Co. *v.* Jones (1878), 13 O. G. 124.

That to make and sell an article without secrecy in the realm, for the purpose of exporting and use abroad, is use in public and prior use, see Carpenter *v.* Smith (1841), 1 Wob. 530.

[2] In Stead *v.* Williams (1843), 2 Web. 126, Cresswell, J., speaking of the former use of the invention, says: (136) "That appears to have been . . . used by him in public; not concealed; no secrecy about it; made known to all persons who came to his house, so far as their ocular inspection could make them. It was intended to be public, not to be made a matter of merchandise certainly, but merely for his own private use; but the knowledge of it exposed to the public an article in public use, and continued to be used down to the time in question. . . . Whether it had been used by one or used by five, I do not think it makes any difference."

That secret use is not prior use, see Smith *v.* Davidson (1857), 19 C. S. 691; Carpenter *v.* Smith (1842), 1 Web. 540; Carpenter *v.* Smith (1841), 1 Web. 530.

[3] In Cornish *v.* Keene (1835), 1 Web. 501, Tindal, C. J.: (508) "If this [invention] was at the time these letters-patent were granted in any degree of general use; if it was known at all to the world publicly and practised openly, so that any other person might have the means of acquiring the knowledge

der the provisions of our present statutes, does not communi-

of it as well as this person who obtained the patent, then the letters-patent are void; on the other hand, if it were not known and used at the time in England, then as far as this question is concerned the letters-patent will stand. Now, it will be a question for you, gentlemen, to say, whether upon the evidence which you have heard you are satisfied that the invention was or was not in use and operation, public use and operation, at the time the letters-patent were granted. It is obvious that there are certain limits to that question; the bringing it within that precise description which I have just given must depend upon the particular facts that are brought before a jury. A man may make experiments in his own closet for the purpose of improving any art or manufacture in public use; if he makes these experiments and never communicates them to the world, and lays them by as forgotten things, another person who has made the same experiments, or has gone a little further, or is satisfied with the experiments, may take out a patent, and protect himself in the privilege of the sole making of the article for fourteen years; and it will be no answer to him to say that another person before him made the same experiments, and therefore that he was not the first discoverer of it; because there may be many discoverers starting at the same time, many rivals that may be running on the same road at the same time, and the first which comes to the crown and takes out a patent, it not being generally known to the public, is the man who has a right to clothe himself with the authority of the patent and enjoy its benefits. That would be an extreme case on one side; but if the evidence that is brought in any case, when properly considered, classes itself under the description of experiment only, and unsuccessful experiment, that would be no answer to the validity of the patent. On the other hand, the use of an article may be so general as to be almost universal. In a case like that, you can hardly suppose that any one would incur the expense and trouble of taking out a patent. That would be a case where all mankind would say, 'You have no right to step in and take that which is in almost universal use, for that is, in fact, to create a monopoly to yourself in this article, without either giving the benefit to the world of the new discovery, or the personal right to the value of the patent to which you would be entitled from your ingenuity and from your application.' Therefore it must be between those two (if I may so call it) limits that cases will range themselves in evidence, and it must be for a jury to say whether, supposing those points to be out of the question in any particular case, evidence which has been brought before them convinces them to their understandings that this subject of the patent was in public use and operation at that time — at the time when the patent itself was granted by the crown. If it was in public use and operation, then the patent is a void patent. . . . if it was not, the patent stands good. . . . (512) I am not aware that by going more fully into it I can make you better acquainted with the discovery than you must be already. I would only observe that it must not be such a practice of it as is only referable to mere experiments for the purpose of making a discovery, or something secret, or confined to the party who was making it at the time; but that it must be, in order to set aside the patent, a case where it was in public use and operation among persons in that trade and likely to know it." 2 Abb. P. C. 139 (171, 177).

In Dollond's Case (1766), cited in

cate to the public, in this country, any knowledge of the invention.[4]

Boulton *v.* Bull (1795), 2 H. Bl. 470, it was held, as *per* Buller, J.: "The objection to Dollond's patent was, that he was not the inventor of the new method of making object-glasses, but that Dr. Hall had made the same discovery before him. But it was holden that as Dr. Hall had confined it to his closet, and the public were not acquainted with it, Dollond was to be considered as the inventor." 1 Abb. P. C. 9.

That if the invention has been actually practised by others than the inventor, though in private, it is prior use, see Reed *v.* Cutter (1841); 1 Story, 590; 2 Robb, 81.

In Tennant's Case (1798), cited 1 Web. 125, n., the same invention had been used in the course of trade, but concealed from the outside world, before the patent. This was held to invalidate the patent.

That sales to any one who wishes to buy indicate prior use, see Gibson *v.* Brand (1841), 1 Web. 627.

[4] In Doyle *v.* Spaulding (1884), 19 Fed. Rep. 744, Nixon, J.: (746) "After a careful consideration of the provisions of the three sections of the Patent Act which bear upon the subject (sections 4886, 4920, 4923, Rev. St.), we are of the opinion that the use or a knowledge of the use of an invention in a foreign country by persons residing in this country will not defeat a patent which has here been granted to a *bona fide* patentee who, at the time, was ignorant of the existence of the invention or its use abroad." 27 O. G. 300 (301).

That foreign use is not prior use, see McFarland *v.* Spencer (1885), 23 Fed. Rep. 150; 32 O. G. 893; 23 Blatch. 155; Cornely *v.* Marckwald (1883), 17 Fed. Rep. 83; 24 O. G. 498; 21 Blatch. 367; Worswick Mfg. Co. *v.* Steiger (1883), 17 Fed. Rep. 250; Schillinger *v.* Greenway Brewing Co. (1883), 24 O. G. 495; 17 Fed. Rep. 244; Illingworth *v.* Spalding (1881), 9 Fed. Rep. 611; Adams *v.* Loft (1879), 4 Bann. & A. 495; Roemer *v.* Simon (1877), 95 U. S. 214; 12 O. G. 796; Roemer *v.* Simm (1874), 5 O. G. 555; Jones *v.* Sewall (1873), 3 O. G. 630; 3 Clifford, 563; 6 Fisher, 342; Swift *v.* Whison (1867), 2 Bond, 115; 3 Fisher, 343; Judson *v.* Cope (1860), 1 Bond, 327; 1 Fisher, 615; Hays *v.* Sulsor (1859), 1 Bond, 279; 1 Fisher, 532; Bartholomew *v.* Sawyer (1859), 1 Fisher, 516; 4 Blatch. 347; Furbush *v.* Cook (1857), 2 Fisher, 668; O'Reilly *v.* Morse (1853), 15 How. 62; Parker *v.* Stiles (1849), 5 McLean, 44; Opinion Atty. Gen. (1843), 5 Op. At. Gen. 18; Lewis *v.* Marling (1829), 1 Web. 490.

That if the person claiming a patent derived his knowledge of the invention from such prior foreign use, his claim must be denied on the ground that it is not his own invention, see the above cases also.

That under the act of 1793, prior use in any part of the world was a bar, see Evans *v.* Eaton (1818), 3 Wheaton, 454; 1 Robb, 243; Evans *v.* Hettick, (1818), 3 Wash. 408; 1 Robb, 166; Evans *v.* Eaton (1816), 1 Pet. C. C. 322; 1 Robb, 68; Dawson *v.* Follen (1808), 2 Wash. 311; 1 Robb, 9; Reutgen *v.* Kanowrs (1804), 1 Wash. 168; 1 Robb, 1.

That prior use in Scotland is no bar to a patent in England, see Haworth *v.* Hardcastle (1833), 1 Abb. P. C. 485; *contra*, Brown *v.* Annandale (1842), 1 Web. 433; Roebuck *v.* Stirling, (1774), 1 Web. 45, 451, n.; 1 Abb. P. C. 12.

That the phrase "within the realm" in the stat. Jac. I. includes the colo-

§ 321. Prior Use: Knowledge thence Derived must be in Possession of Public at Date of Later Invention: Lost Arts.

The point of time at which the earlier invention must be in possession of the public in order to destroy the novelty of the later, is the date of the invention of the later.[1] It is entirely

nies, see Brown *v.* Annandale (1842), 1 Web. 433.

But not if the colony has a separate patent system, see Rolls *v.* Isaacs (1881), L. R. 19 Ch. 268.

That knowledge in this country of use abroad is not prior use and knowledge, see Doyle *v.* Spaulding (1884), 19 Fed. Rep. 744; 27 O. G. 300; Illingworth *v.* Spaulding (1881), 9 Fed. Rep. 611.

That foreign patents, even after issued two years, do not show prior knowledge in the United States, see Florence Sewing Mach. Co. *v.* Grover & Baker Sewing Mach. Co. (1872), 110 Mass. 70.

§ 321. [1] That prior use must be prior to the invention of the later art or instrument in order to defeat a patent for it, see McWilliams Mfg. Co. *v.* Blundell (1882), 11 Fed. Rep. 419; 22 O. G. 177; Brodie *v.* Ophir Silver Mining Co. (1867), 4 Fisher, 137; 5 Sawyer, 608; Whitney *v.* Emmett (1831), Baldwin, 303; 1 Robb, 567; Treadwell *v.* Bladen (1827), 4 Wash. 703; 1 Robb, 581.

That the date of the invention to which the use must be prior is the date of the embodiment of the idea, or its expression in writing or in drawings, see Byerly *v.* Cleveland Linseed Oil Works (1887), 31 Fed. Rep. 73.

That prior use dates back to the patent covering the invention used, though the patent may not be set up in defence, see Atlantic Works *v.* Brady (1882), 107 U. S. 192; 23 O. G. 1330.

Prior use, like prior publication and prior patent, has a bearing upon two requisites of a patentable invention: (1) The performance of an inventive act by the alleged inventor; (2) The legal novelty of the invention. In reference to the first, the existence of prior use, or patent, or publication is material only when it precedes the conception of the idea of means by the inventor. In that case he is presumed to have derived his idea from such prior use, etc., and not to have performed an independent inventive act. But if his conception precedes the use, etc., no such presumption exists, and his inventive act may be evidenced in any proper manner. In this phase of the subject the date of his reduction to practice or of his application for a patent is of no importance. In reference to the second, or legal novelty of the invention, prior use, etc., must, in the language of the statute, precede its "invention or discovery." The date of "invention or discovery" is that on which the inventive act was completed and the inventor became able to confer his new art or instrument upon the public. Now an inventor, has completed his inventive act, and is in a position to bestow the invention on the public, only when he has embodied his conception in a practically operative art or instrument. Before this reduction of his idea to practice he has nothing to offer to the public. The idea as it lies in his mind may be fully conceived and comprehended by him, yet it may prove, on embodiment, to be impracticable or already anticipated by others. The law cannot regard it as an invention of which novelty is predicable, until it is in a condition for communication to the public and has either been put to practical tests or in some other manner shows

possible that an art or instrument, once fully known and understood, should be abandoned and so totally forgotten that

its efficiency and value. Upon the question of the legal novelty of the invention, therefore, the date of reduction to practice, or of such exterior expression of the idea of means as demonstrates its character and availability, is the date prior to which the use or publication, etc., must have occurred; and if the art or instrument had then been in prior use or made known through a patent, or a printed publication, the claim of its inventor to a patent must be denied on the ground that his invention was not now.

But though this rule is sound in principle and could be practically applied if uncomplicated with any other rule affecting the rights of the inventor, yet under the American theory that the chief merit of invention resides in the conception of the idea of means, a further qualification becomes necessary. It is our law that an inventive act is an indivisible act, and that where the conceiver of an idea of means uses reasonable diligence in reduction to practice, the whole act relates back to and dates from the time of the conception of the idea, and thus the earliest conceiver, if a diligent reducer, is entitled to a patent for the invention, although between his actual conception and reduction others may have invented, used, described, or patented the same invention. It will be observed that this doctrine bears upon the personality of the patentee, not upon the novelty of the invention itself, and answers the question, Who is entitled to the monopoly? not, Is the invention the subject of a monopoly? As far as the invention itself is concerned it cannot be new to the public if at the time the present inventor was ready to confer it, they were already cognizant of its existence and essential attributes. But when the invention has been placed before the public subsequently to its conception by the present inventor, and the question is whether he shall be thereby defeated of his monopoly, either in favor of a rival inventor or of the public, the policy of our law awards him the patent on the ground of prior conception, if his diligence in reducing the idea to practice has been reasonable. That this rule introduces an apparent inconsistency into the law is certain, since it departs from the general doctrine as to one patentable requisite in order to preserve our interpretation of another. But as no court would now hesitate to protect the conceiver of an idea against the surreptitious publication of his conception by one to whom he had in confidence imparted it, so with equal justice he may be secured in his rights as first conceiver against rivals who innocently anticipate his bestowal of the invention on the public. Hence though certain decisions (Webb *v.* Quintard (1872), 1 O. G. 525; 9 Blatch. 352; etc.) seem to require that reduction to practice must precede the publication or prior patent in order to render the later patent valid, these should properly be restricted to the pure question of legal novelty alone, and not be considered as determining the exclusive rights of the earliest conceiver though he is the latest patentee. See also §§ 370–391, 963, 1026–1028 and notes *post*.

The rules deducible from these principles may be thus stated: (1) The prior use, publication, or patent must precede the reduction of the idea to practice by the present inventor; (2) If the prior use, etc., precede such reduction, the present inventor may connect his act of reduction with his act of conception by showing that he exercised reasonable diligence in the reduction,

the public are as destitute of any practical and useful knowledge of the subject as if it never had existed; and instances have repeatedly occurred where most valuable and wonderful inventions have thus been completely lost to man. In all such cases, one who re-invents precisely the same art or instrument, and communicates it to the public of his day, confers upon them the same benefit, and is entitled to the same reward, as if the invention never were before produced. Hence, though it may be evident that the same invention now presented to the public has been, at some past time, not only in existence but employed for the same purpose, yet if at the date of the invention of the later it had become a lost art and has thus been truly re-created, the later invention is still new and is not, on that account, deprived of the protection of a patent.[2]

and thus establish his claim to the patent notwithstanding the possession of the invention by the public before its complete embodiment by him; (3) If the prior use, etc., precede his conception of the idea, his invention is not only not new in any aspect, but he is conclusively presumed not to have performed in reference to it any inventive act.

See § 132 and note, *ante*.

[2] In Household Co. *v.* Neilson (1843), 1 Web. 673, Lyndhurst, L. C.: (709) "If it is proved distinctly that a machine of the same kind was in existence, and was in public use, that is, if use or if trials had been made of it in the eye and in the presence of the public, it is not necessary that it should come down to the time when the patent was granted. If it was discontinued, still that is sufficient evidence in support of the prior use so as to invalidate the letters-patent. . . . (710) If it is discontinued, provided it has been once in public use, and the recollection of it has not been altogether lost, if it has been once publicly used, it will be sufficient to invalidate the letters-patent, although the use may be discontinued at the time when the letters-patent were granted." Again: (717) "It must not be understood that your lordships, in the judgment you are about to pronounce, have given any decision upon this state of facts, namely, if an invention had been formerly used and abandoned many years ago, and the whole thing had been lost sight of. That is a state of facts not now before us. Therefore it must not be understood that we have pronounced any opinion whatever upon that state of things. It is possible that an invention may have existed fifty years ago, and may have been entirely lost sight of, and not known to the public. What the effect of this state of things might be it is not necessary for us to pronounce upon." Lord Brougham: "It becomes like a new discovery."

That an invention once practised and then abandoned and forgotten is a lost art, and is no bar to a subsequent invention and patenting of the same device, see Taylor *v.* Wood (1875), 12 Blatch. 110; 8 O. G. 90; 1 Bann. & A. 270; Haselden *v.* Ogden (1868), 3 Fisher, 378; Cahoon *v.* Ring (1859), 1 Clifford, 592; 1 Fisher, 397; Rich *v.* Lippincott (1853), 2 Fisher, 1.

§ 322. Prior Use: "Lost Art" Defined.

An invention, once in use, is considered as inaccessible to the public when it has been abandoned and forgotten, and can no longer be completely known, by persons skilled in the art to which it belongs, from anything which still remains in the possession of the public.[1] If from the analysis of existing

§ 322. [1] In Gayler *v.* Wilder (1850), 10 How. 477, Taney, C. J.: (496) "The act of 1836, ch. 357, § 6, authorizes a patent where the party has discovered or invented a new and useful improvement, 'not known or used by others before his discovery or invention.' And the 15th section provides that, if it appears on the trial of an action brought for the infringement of a patent that the patentee 'was not the original and first inventor or discoverer of the thing patented,' the verdict shall be for the defendant. Upon a literal construction of these particular words, the patentee in this case certainly was not the original and first inventor or discoverer, if the Conner safe was the same with his, and preceded his discovery. But we do not think that this construction would carry into effect the intention of the legislature. It is not by detached words and phrases that a statute ought to be expounded. The whole act must be taken together, and a fair interpretation given to it, neither extending or restricting it beyond the legitimate import of its language, and its obvious policy and object. And in the 15th section, after making the provision above-mentioned, there is a further provision, that if it shall appear that the patentee at the time of his application for the patent believed himself to be the first inventor the patent shall not be void on account of the invention or discovery having been known or used in any foreign country, it not appearing that it had been before patented or described in any printed publication. In the case thus provided for, the party who invents is not, strictly speaking, the first and original inventor. The law assumes that the improvement may have been known and used before his discovery. Yet his patent is valid if he discovered it by the efforts of his own genius, and believed himself to be the original inventor. The clause in question qualifies the words before used, and shows that by knowledge and use the legislature meant knowledge and use existing in a manner accessible to the public. If the foreign invention had been printed or patented, it was already given to the world and open to the people of this country, as well as of others, upon reasonable inquiry. They would, therefore, derive no advantage from the invention here. It would confer no benefit upon the community, and the inventor, therefore, is not considered to be entitled to the reward. But if the foreign discovery is not patented, nor described in any printed publication, it might be known and used in remote places for ages, and the people of this country be unable to profit by it. The means of obtaining knowledge would not be within their reach; and as far as their interest is concerned, it would be the same thing as if the improvement had never been discovered. It is the inventor here that brings it to them, and places it in their possession. And as he does this by the effort of his own genius, the law regards him as the first and original inventor, and protects his patent, although the improvement had in fact been invented before, and used by others. So too, as to the lost arts. It is well-known that centuries ago discoveries were made in

products the processes by which they were produced can be discovered, or if through the effects resulting from the employment of an instrument the essential character of the instrument itself can be determined, the instrument or process is now within the public reach, however long disused or lost to public memory.[2] But when connecting links like these are

certain arts the fruits of which have come down to us, but the means by which the work was accomplished are at this day unknown. The knowledge has been lost for ages. Yet it would hardly be doubted, if any one now discovered an art thus lost, and it was a useful improvement, that, upon a fair construction of the act of Congress, he would be entitled to a patent. Yet he would not literally be the first and original inventor. But he would be the first to confer on the public the benefit of the invention. He would discover what is unknown, and communicate knowledge which the public had not the means of obtaining without his invention. Upon the same principle and upon the same rule of construction, we think that Fitzgerald must be regarded as the first and original inventor of the safe in question. The case as to this point admits that, although Conner's safe had been kept and used for years, yet no test had been applied to it, and its capacity for resisting heat was not known; there was no evidence to show that any particular value was attached to it after it passed from his possession, or that it was ever afterwards used as a place of security for papers; and it appeared that he himself did not attempt to make another like the one he is supposed to have invented, but used a different one. And upon this state of the evidence, the court put it to the jury to say whether this safe had been finally forgotten or abandoned before Fitzgerald's invention, and whether he was the original inventor of the safe for which he obtained the patent; directing them, if they found these two facts, that their verdict must be for the plaintiff. We think there is no error in this instruction. For if the Conner safe had passed away from the memory of Conner himself, and of those who had seen it, and the safe itself had disappeared, the knowledge of the improvement was as completely lost as if it had never been discovered. The public could derive no benefit from it until it was discovered by another inventor. And if Fitzgerald made his discovery by his own efforts, without any knowledge of Conner's, he invented an improvement that was then new, and at that time unknown; and it was not the less new and unknown, because Conner's safe was recalled to his memory by the success of Fitzgerald's. . . . And if the jury found the fact to be so, and that Fitzgerald again discovered it, we regard him as standing upon the same ground with the discoverer of a lost art, or an unpatented and unpublished foreign invention, and like him entitled to a patent. For there was no existing and living knowledge of this improvement, or of its former use at the time he made the discovery. And whatever benefit any individual may derive from it in the safety of his papers, he owes entirely to the genius and exertions of Fitzgerald." McLean, J. dissenting, Daniel and Grier, JJ. also.

[2] As to lost arts, Mr. Webster (1 Web. 720, n.), says in substance this: Suppose an article of manufacture . . . to have been manufactured at a certain period in this country in secret, or if not in secret that the whole knowledge of the art was lost, and some man

wanting, and no industrial skill could reproduce the old invention, its revival by the present inventor must depend wholly on his own creative act and possess all the attributes of a new invention.

§ 323. Prior Use: Invention Abandoned before Known to Public a Lost Art.

The length of time for which an invention has been lost, and the degree of public ignorance which may prevail, are of no consequence, provided only that it be actually lost out of the practical knowledge of the public. Thus if an art or instrument has been invented and employed in this country within the present generation and then has been abandoned and forgotten, though its re-invention recalls it to the memory not only of its first inventor but of others who were once familiar with its use, it is a new invention, and is now conferred upon the public as truly as if never known before.[1] Even although the original instrument were not destroyed, but meanwhile has remained disused and unremembered, and since the publication of the later has been recovered and employed, and manifests the same idea of means, it cannot negative the claim of the inventor of the later to have produced a new invention, and to have been the true and only benefactor of the public.[2]

discovered a mode by which apparently the same article could be produced, could he obtain a patent? The knowledge of the fact of the existence of the article, or its daily use, cannot be the knowledge and use of the art by which it is produced. If the article or its use convey at once the requisite information as to its mode of manufacture, the case is different. What has once been given to the public cannot be resumed; the public being in possession of any species of knowledge, there is no consideration for the exclusive privileges granted by subsequent letters-patent.

§ 323. [1] That if a machine be the only one, and be destroyed, never given to the public, and now remembered by the inventor only because reminded of it by the new invention, it was a lost art, and is no bar to a patent, see Cahoon *v.* Ring (1859), 1 Clifford, 592; 1 Fisher, 397.

[2] That an abandoned and forgotten machine, though still in existence, does not show prior use, see Hall *v.* Bird (1869), 6 Blatch. 438; 3 Fisher, 595.

That the completion of a machine, and testing it, is not prior use if it be afterward taken to pieces and not reconstructed for use till after the patentee's invention is put on the market, see Fay *v.* Allen (1885), 24 Fed. Rep. 804.

§ 324. Prior Use Tested by the Knowledge it Confers on the Public.

It is thus evident that the real test of prior use is the degree of knowledge it confers upon that public to whom the last inventor has communicated his ideas, and from whom he endeavors to obtain his recompense. What knowledge he himself derived from the inventions and experiments of others has reference to another question, not to this. If his examination of their efforts has suggested to him his entire idea, that fact may defeat his claim to any exercise of his inventive faculties, and show that, whether his invention be new or old in reference to the public, he is not entitled to a patent for it as his own.[1] But on the question of the legal novelty of his art or instrument itself, the sources of his personal knowledge are not to be considered. Here his rights stand or fall according to the state of public knowledge; and his invention is a new one to the public, unless, at the date of its creation, it was accessible to them as fully as his inventive act has made it.[2]

§ 324. [1] That a prior use, as well as a prior patent or publication, defeats the claim of a patentee for two reasons,—(1) By showing that he is not a true inventor; (2) By showing that the invention is not new, — see Muntz *v.* Foster (1844), 2 Web. 96.

That if, as a matter of fact, the patentee had knowledge of such prior use or publication, he could not have performed the inventive act, see Stead *v.* Williams (1843), 2 Web. 126.

That whether a patentee is chargeable with knowledge of every lost and forgotten machine in the line of his art, and must therefore prove that his invention anticipated all such, is doubted, see Sinclair *v.* Backus (1880), 17 O. G. 1503; 4 Fed. Rep. 539; 5 Bann. & A. 81.

That his knowledge of the invention as in foreign use before his own invention is a bar, see Adams *v.* Loft (1879), 4 Bann. & A. 495; Roemer *v.* Simon (1877), 95 U. S. 214; 12 O. G. 796; Roemer *v.* Simm (1874), 5 O. G. 555; Hays *v.* Sulsor (1859), 1 Bond, 279; 1 Fisher, 532; Bartholomew *v.* Sawyer (1859), 1 Fisher, 516; 4 Blatch. 347; Furbush *v.* Cook (1857), 2 Fisher, 668; O'Reilly *v.* Morse (1853), 15 How. 62; Parker *v.* Stiles (1849), 5 McLean, 44; Lewis *v.* Marling (1829), 1 Web. 490; 1 Abb. P. C. 417.

That knowledge by the patentee, at the date of his application, that the invention had been made before his own discovery thereof, is a bar, see Singer *v.* Walmsley (1860), 1 Fisher, 558.

[2] That where prior use has made the same means accessible to the public there can be no novelty in the later invention, see Holden *v.* Curtis (1819), 2 N. H. 61.

SECTION VIII.

OF THE NOVELTY OF INVENTIONS: PRIORITY: PRIOR PUBLICATION.

§ 325. Prior Publication: its Essential Requisites.

The second method recognized by law in which an earlier invention may be made accessible to the public is by Prior Publication.[1] To have this effect the publication must

§ 325. [1] In Reeves *v.* The Keystone Bridge Co. (1872), 5 Fisher, 456, McKennan, J.: (467) "Section 15 of the patent act of 1836 — and it has been incorporated in the act of 1870 — provides *that a patent may be successfully* opposed by showing that the thing patented 'had been described in some public work anterior to the supposed discovery thereof by the patentee.' It is obvious that this provision requires, first, a description of the alleged invention; second, that it shall be contained in a work of a public character and intended for the public; and third, that this work was made accessible to the public by publication, before the discovery of the invention by the patentee." 1 O. G. 466 (470); 9 Phila. 368 (374).

In Soames's Patent (1843), 1 Web. 729, Lord Campbell states that publication in a foreign journal, whether known in England or not, may be considered upon the question of the extension of a patent, but that to defeat a patent the publication must have been known in England. In a comment on this *dictum* (1 Web. 719), Mr. Webster says: "The distinction thus made between the legal effect of a publication in an English and in a foreign book would appear to establish this important doctrine, that it is a question for the jury whether such foreign work was known in England at the time the letters-patent were granted; or the question would rather appear to be, whether the inventor derived his knowledge from such source, or whether the work was so known that the inventor must be presumed to have derived his knowledge from that source."

In Stead *v.* Williams (1844), 2 Web. 137, Tindal, C. J.: (142) "If the invention has already been made public in England, by a description contained in a work — whether written or printed — which has been publicly circulated, in such case the patentee is not the first and true inventor within the meaning of the statute, whether he has himself borrowed his invention from such publication or not; because we think the public cannot be precluded from the right of using such information as they were already possessed of at the time the patent was granted. It is obvious that the application of this principle must depend upon the particular circumstances which are brought to bear on each particular case. The existence of a single copy of a work, though printed, brought from a depository where it has long been kept in a state of obscurity, would afford a very different inference from the production of an encyclopædia or other work in general circulation."

Mr. Webster (1 Web. 718, n.) says: "With respect to the legal effect of the publication in a book, — on the principle . . . that knowledge and the means of knowledge on the part of the public are the same, and that the pub-

be: (1) A work of public character, intended for general use; (2) Within reach of the public; (3) Published before the date of the later invention; (4) A description of the same complete and operative art or instrument; and (5) So precise and so particular that any person skilled in the art to which the invention belongs can construct and operate it without experiments and without further exercise of inventive skill. Unless a publication possesses all these characteristics it does not place the invention in the possession of the public, nor defeat the claim of its re-inventor to a patent.

§ 326. Prior Publication: Publication must be a Printed Document Intended for General Use.

A work of public character is such a book or other printed document as is intended and employed for the communication of ideas to persons in general, as distinguished from particular individuals.[1] Private communications, although printed, do not come under this description, whether designed for the use of single persons or of a few restricted groups of persons.[2] But though the subject of the publication may be highly technical, and therefore interesting only to a single

lic has acquired little or nothing by the specification which it did not possess before, — it has been generally assumed that the production of a book which was in the hands of the public before the date of the patent will negative the title of the patentee as the true and first inventor."

§ 326. [1] That a written but unpublished description is not a publication, see Northwestern Fire Extinguisher Co. *v.* Philadelphia Fire Extinguisher Co. (1874), 6 O. G. 34; 1 Bann. & A. 177; 10 Phila. 227.

That a picture or drawing without printed text is not a publication, see New Process Fermentation Co. *v.* Koch (1884), 21 Fed. Rep. 580; 29 O. G. 535; Reeves *v.* Keystone Bridge Co. (1872), 1 O. G. 466; 5 Fisher, 456; 9 Phila. 368; Judson *v.* Cope (1860), 1 Bond, 327; 1 Fisher, 615.

[2] In New Process Fermentation Co. *v.* Koch (1884), 21 Fed. Rep. 580, Brown, J.: (587) "It has been held generally, and perhaps universally, that business circulars which are sent only to persons engaged or supposed to be engaged in the trade, are not such publications as the law contemplates in § 4886. Pierson *v.* Colgate, 24 O. G. 203; *In re* Atterbury, 9 O. G. 640; Judson *v.* Cope, 1 Fisher, 615; Reeves *v.* Keystone Co., 5 Fisher, 456; Seymour *v.* Osborne, 11 Wall. 555." 29 O. G. 535 (538).

That a catalogue showing features of the invention is not a publication, see Forschner *v.* Baumgarten (1886), 26 Fed. Rep. 858; 35 O. G. 137.

See also Pennock *v.* Dialogue (1825), 4 Wash. 538; 1 Robb, 466.

class of individuals, yet if prepared for general circulation in that class, it is a public, not a private work.[3] Thus the application for a patent, although printed, unless intended, as in England, as a method of communicating the invention to the world, is not a publication.[4]

§ 327. Prior Publication: Publication must be Put into Circulation.

The publication must not only be intended for the public; it must also have been placed within their reach. In other words, it must have been actually published in such a manner that any one who chooses may avail himself of the information it contains.[1] It is not necessary that many copies of the

[3] That a journal devoted to a special science, printed in German, and deposited in the library of the Patent Office, and in the library of the Institute of Civil Engineers, — a society of 3000 members, — and there accessible to them, and catalogued under the head of "Journals" only, though proved to have been read by but one person, is a sufficient publication, see United Telephone Co. *v.* Harrison, Cox-Walker, & Co. (1882), L. R. 21 Ch. 720.

[4] That a description in an application for a patent, filed in the Patent Office, is not a publication, see Northwestern Fire Extinguisher Co. *v.* Philadelphia Fire Extinguisher Co. (1874), 6 O. G. 34; 1 Bann. & A. 177; 10 Phila. 227; Lyman Ventilating and Refrigerator Co. *v.* Lalor (1874), 6 O. G. 642; 12 Blatch. 303; 1 Bann. & A. 403; Corn Planter Patent (1873), 23 Wall. 181; 6 O. G. 392.

That a printed English provisional specification is a publication when once published, see Cohn *v.* U. S. Corset Co. (1874), 6 O. G. 259; 12 Blatch. 225; 1 Bann. & A. 340.

But not unless full and specific, see Goff *v.* Stafford (1878), 3 Bann. & A. 610; 14 O. G. 748.

That an English specification is not a publication till completed and published, see Coburn *v.* Schroeder (1882), 11 Fed. Rep. 425; 22 O. G. 419; 20 Blatch. 392.

§ 327. [1] In Cottier *v.* Stimson (1884), 10 Sawyer, 212, Deady, J.: (217) "But something besides printing is required. The statute goes upon the theory that the work has been made accessible to the public, and that the invention has been thereby given to the public, and is no longer patentable by any one. Publication means put into general circulation or on sale where the work is accessible to the public." 20 Fed. Rep. 906 (910).

In Rumpff *v.* Köhler (1882), 23 O. G. 1831, Marble, Com.: (1831) "In all the cases which I have been able to find the word 'patented' has been given its ordinary construction, — that is, *made known*. An invention cannot be considered as *made known* or patented until a complete description of it is given. The testimony, in order to be material, should be such as would prevent the issuance of a patent to another party. Under the section above quoted it is not sufficient that the invention has been known or used in a foreign country; it must have been patented, — that is, *made known*, or it must have been described in some printed publication in such country, in order to make it a bar to the issuance of the patent here."

In Stead *v.* Williams (1844), 2 Web.

work should have been printed, nor that its distribution should have been extensive; for the deposit of a single copy in a library to which the public have or can obtain admission places the work within the reach of all. Nor is it requisite that any person should have read or seen it, since the accessibility of knowledge, and not its actual possession, is all that any inventor can secure. And even though the information be so intermingled with discussions relative to other subjects that it may easily escape attention, and would require some skill and patience to extricate it, the publication will still be sufficient.

§ 328. Prior Publication: Publication must be Put into Circulation before Date of Later Invention.

The publication must precede the date of the invention of the later art or instrument, since otherwise the public could not already be possessed of that which its inventor is now able to bestow.[1] The date of the publication, however, is not

137, Tindal, J.: (143) "The existence of a single copy of a work, though printed, brought from a depository where it has long been kept in a state of obscurity, would afford a very different inference from the production of an encyclopædia or other work in general circulation. The question will be, whether upon the whole evidence there has been such a publication as to make the description a part of the public stock of information."

That a book placed in a bookstore for sale, and sold to several persons, is sufficiently published, see Lang *v.* Gisborne (1862), 31 Beav. 133.

But that a book received at a public library, there mislaid and never catalogued nor made known to the librarian, and, so far as known, never seen by any one except an assistant-librarian, is not thereby made accessible to the public, see Plimpton *v.* Spiller (1877), L. R. 6 Ch. 412; Plimpton *v.* Malcolmson (1876), L. R. 3 Ch. 531.

In Plimpton *v.* Spiller (1877), L. R. 6 Ch. 412, Brett, L. J., stating the doctrine still more emphatically, said: (435) "I cannot agree . . . that it is sufficient to show that the thing has been printed in a book, and that that book has been so placed that it might have been known to the public. It must not only be printed in a book, but that book must be placed in such a position and so used that you may fairly infer or assume that the contents of the book have become known to a sufficient number of people."

§ 328. [1] In *Ex parte* Palmer (1881), 21 O. G. 1111, Marble, Com.: (1111) "As the statute requires, in order to defeat the grant of a patent, that a publication shall be made before the invention or production of the subject-matter thereof, it does not appear how the previous mechanical patent can have such effect. If the design was invented by the patentee at all it must have been invented before the filing of the application for the mechanical patent in which it is shown, and hence a publication, to be

necessarily the same as that of the printing of the work, nor is it conclusively indicated by any allegation in the work itself.[2] Its publication is its issue to the public, — a fact the date of which may be established by any evidence sufficient for the purpose; and if the date, so proved, precede the date of the invention in dispute, the latter cannot be a new invention.

§ 329. Prior Publication: Publication must Describe the same Invention.

The invention described in the publication must be identical in all respects with that whose novelty it contradicts.[1]

a bar, must have been made before the invention of the mechanism embodying the design."

In Bartholomew *v.* Sawyer (1859), 4 Blatch. 347, Ingersoll, J.: (352) "It is claimed that the time referred to by the terms 'having been before known or used in any foreign country' is the time when the application for the patent was made; and that the terms 'had been before patented or described in any printed publication' refer also to the time when such application was made, and not to the time when the original invention or discovery was made. If there be any doubt as to the construction which this proviso should receive, when considered by itself, the true construction of it is free from doubt when it is considered in connection with other sections and with the whole scope of the act. Viewed in such connection, it must be held that the time referred to by the terms above recited is the time when the original invention or discovery of the patentee was made, and not the time when he presented his application to the Commissioner." 1 Fisher, 516 (521).

But see Kelleher *v.* Darling (1878), 14 O. G. 673; 4 Clifford, 424; 3 Bann. & A. 438.

That the date of the invention described in the publication is presumed to be that of the publication itself, see Bates *v.* Coe (1878), 98 U. S. 31; 15 O. G. 337.

That the date of the later invention is the date of its reduction to practice, see Webb *v.* Quintard (1872), 1 O. G. 525; 9 Blatch. 352; 5 Fisher, 276.

That the reduction to practice must precede the publication, see Byerly *v.* Cleveland Linseed Oil Works (1887), 31 Fed. Rep. 73; National Spring Co. *v.* Union Car Spring Mfg. Co. (1874), 6 O. G. 224; 12 Blatch. 80; Webb *v.* Quintard (1872), 1 O. G. 525; 9 Blatch. 352; 5 Fisher, 276.

See also § 321 and notes, and § 132 and note, *ante*, and § 334 and notes, *post*.

That the publication need not have taken place two years before the date of the invention, see Parks *v.* Booth (1880), 102 U. S. 96; 17 O. G. 1089.

[2] That the date of printing is only *prima facie* the date of publication, see Reeves *v.* Keystone Bridge Co. (1872), 5 Fisher, 456; 1 O. G. 466; 9 Phila. 368.

§ 329. [1] In Gottfried *v.* The Phillip Best Brewing Co. (1877), 17 O. G. 675, Dyer, J.: (681) "In the case of the Clark Patent Steam and Fire Regulator Co. *v.* Copeland (1862), 2 Fisher, 222, it was held that in order to find an invention anticipated in a prior printed publication, it must be found from the evidence that the description embodied

The same idea of means, in the same stage of development, as that which the inventor of the later has embodied, must be thereby communicated to the public. The invention thus described must also have been a complete and operative art or instrument, ready for immediate employment by the public.[2] And it must be described, not as a mere hypothesis either in method or in possibility, but as an existing fact already known.[3]

§ 330. Prior Publication: Publication must Fully Communicate the Invention to the Public.

Finally, the description must place the invention in the possession of the public as fully as if the art or instrument itself had been practically and publicly employed.[1] In order to ac-

substantially the same organized mechanism, operating substantially in the same manner as that described in the patent claimed to have been anticipated." 5 Bann. & A. 4 (22).

See also Cohn *v.* U. S. Corset Co. (1874), 12 Blatch. 225; 1 Bann. & A. 340; 6 O. G. 259; Brooks *v.* Bicknell (1843), 3 McLean, 250; 2 Robb, 118.

[2] In Seymour *v.* Osborne (1870), 11 Wall. 516, Clifford, J.: (555) "Whatever may be the particular circumstances under which the publication takes place, the account published, to be of any effect to support such a defence, must be an account of a complete and operative invention, capable of being put into practical operation."

[3] Mr. Webster (1 Web. 719, n.), remarks: "Whatever may be the peculiar circumstances under which the publication takes place, the account so published, to be of any effect in law as a publication, must . . . be an account of a complete and perfected invention, and published as such. If the invention be not described and published as a complete, perfected, and successful invention, but be published as an account of some experiment, or by way of suggestion and speculation, as something which peradventure might succeed, it is not such an account as will vitiate subsequent letters-patent."

That a prior publication must describe the invention as a practical art or instrument, not as a mere scientific experiment, see United Nickel Co. *v.* California Electrical Works (1885), 25 Fed. Rep. 475.

That a prior publication must do more than describe speculations and suggestions of scientific writers, never practically tested and demonstrated, see Jensen *v.* Keasbey (1885), 24 Fed. Rep. 144; Celluloid Mfg. Co. *v.* Chrolithion Collar & Cuff Co. (1885), 23 Fed. Rep. 397; 31 O. G. 519; 23 Blatch. 205.

§ 330. [1] In Cahill *v.* Brown (1878), 15 O. G. 697, Clifford, J.: (699) "Inventions patented here cannot be superseded by the mere introduction of a foreign patent or publication, though of prior date, unless the description or drawings contain and exhibit a substantial representation of the patented improvement in such full, clear, and exact terms as to enable any person skilled in the art or science to which it appertains, without the necessity of resorting to experiments, to make, con-

complish this, it must be so particular and definite that from it alone, without experiment or the exertion of his own inven-

would be enabled to do from a prior patent for the same invention." 3 Bann. & A. 580 (587).

In Seymour *v.* Osborne (1870), 11 Wall. 516, Clifford, J. : (555) "Patented inventions cannot be superseded by the mere introduction of a foreign publication of the kind, though of prior date, unless the description and drawings contain and exhibit a substantial representation of the patented improvement, in such full, clear, and exact terms as to enable any person skilled in the art or science to which it appertains to make, construct, and practise the invention to the same practical extent as they would be enabled to do if the information was derived from a prior patent. More vague and general representations will not support such a defence, as the knowledge supposed to be derived from the publication must be sufficient to enable those skilled in the art or science to understand the nature and operation of the invention, and to carry it into practical use."

In Plimpton *v.* Malcolmson (1876), L. R. 3 Ch. 531, Jessel, M. R. : (567) "What is required as regards prior description? I should have thought, independently of authority, that no prior description ought to invalidate a patent, unless you could make the thing from the description, — I mean unless a person of ordinary skill in the trade could make it from the description. But it has been alleged that something less will do. As I read the authorities that is not so. The question has been before the House of Lords in the case of Neilson *v.* Betts (L. R. 5 H. L. 1). The judgments of Lord Westbury and Lord Colonsay come to this — that the description in the book must be equivalent to a specification.

struct, and practise the invention as he . . . Now what is the meaning of it being a sufficient specification? Upon that there has been a very great deal of authority. Judges have stated it in different ways, no doubt, but I do not think there is much difference in substance. In the first place, it is plain that the specification of a patent is not addressed to people who are ignorant of the subject-matter. It is addressed to people who know something about it. But there are various kinds of people who know something about it. If it is a mechanical invention, as this is, you have, first of all, scientific mechanicians of the first class, — eminent engineers; then you have scientific mechanicians of the second class, — managers of great manufactories, great employers of labor, persons who have studied mechanics — not to the same extent as the first class, the scientific engineers, but still to great extent — for the purpose of conducting manufactories of complicated and unusual machines, and who therefore must have made the subject a matter of very considerable study; and in this class I should include foremen, being men of superior intelligence, who like their masters would be capable of invention, and like the scientific engineers would be able to find out what was meant even from slight hints, and still more from imperfect descriptions, and would be able to supplement, so as to succeed even from a defective description, and even more than that, would be able to correct an erroneous description. That is what I would say of the two first classes, which I will call the scientific classes. The other class consists of the ordinary workman, using that amount of skill and intelligence which is fairly to be expected from him, — not a careless man, but a careful man, though not possessing that

tive skill, any person versed in the art to which it appertains could construct and use it. But this requirement relates only to the precise idea expressed in the invention. If, for example, this should be a manufacture, the method of producing it forms no part of the invention and therefore need not be described.[2]

great scientific knowledge or power of invention which would enable him by himself, unaided, to supplement a defective description, or correct an erroneous description. Now, as I understand, to be a good specification it must be intelligible to the third class I have mentioned, and that is the result of the law. It will be a bad specification if the first two classes only understand it, and if the third class do not. I do not think, when the cases come to be examined, there is really any difference between the judges on this point. Their language differs, but I do not think the cases differ."

That the description in the publication must so describe the invention that those skilled in the art could construct and practise the invention from the description alone, see Eames *v.* Andrews (1887), 122 U. S. 40; 39 O. G. 1319; Cary *v.* Lovell Mfg. Co. (1887), 31 Fed. Rep. 344; Adams *v.* Bellaire Stamping Co. (1886), 28 Fed. Rep. 360; 36 O. G. 567; Hood *v.* Boston Car Spring Co. (1884), 21 Fed. Rep. 67; Downton *v.* Yeager Milling Co. (1883), 108 U. S. 466; 25 O. G. 697; Miller *v.* Pickering (1883), 16 Phila. 533; 25 O. G. 89; 16 Fed. Rep. 540; Nathan *v.* Elevated R. R. Co. (1880), 5 Bann. & A. 280; 2 Fed. Rep. 225; Bignall *v.* Harvey (1880), 18 O. G. 1275; 18 Blatch. 353; 4 Fed. Rep. 334; Parks *v.* Booth (1880), 102 U. S. 96; 17 O. G. 1089; Atlantic Giant Powder Co. *v.* Parker (1879), 16 O. G. 495; 16 Blatch. 281; Goff *v.* Stafford (1878), 14 O. G. 748; 3 Bann. & A. 610; Cohn *v.* U. S. Corset Co. (1876), 93 U. S. 366; 11 O. G. 457; Westinghouse *v.* Gardner & Rawson Air Brake Co. (1875), 2 Bann. & A. 55; 9 O. G. 538; McMillin *v.* Barclay (1872), 5 Fisher, 189; Roberts *v.* Dickey (1871), 1 O. G. 4; 4 Fisher, 532; 4 Brews. (Pa.) 260; Seymour *v.* Osborne (1870), 11 Wall. 516; Hays *v.* Sulsor (1859), 1 Bond, 279; 1 Fisher, 532; Parker *v.* Stiles (1849), 4 McLean, 44; Plimpton *v.* Malcolmson (1876), L. R. 3 Ch. 531; Woodcroft's Patent (1846), 2 Web. 18.

That the description must be sufficient at the time when it is published, not merely in the light of subsequent discoveries, see Betts *v.* Neilson (1868), L. R. 3 Ch. Ap. 429.

That the publication must describe the invention as fully as does the patent to which it is offered as a bar, see New Process Fermentation Co. *v.* Koch (1884), 21 Fed. Rep. 580; 29 O. G. 535; Downton *v.* Yeager Milling Co. (1883), 108 U. S. 466; 25 O. G. 697; Hills *v.* Evans (1862), 6 L. T. N. S. 90.

That an invention can be described by compiling extracts from various books is not enough, — the publication must give by itself a full account of the invention, — see Van Heyden *v.* Neustadt (1880), 42 L. T. N. S. 300.

[2] That the publication need not describe the method by which the invention is produced, provided the description of the invention itself is sufficient to enable others to make it, see Cohn *v.* U. S. Corset Co. (1876), 93 U. S. 366; 11 O. G. 457.

That the sufficiency of the publication is a question for the jury, see Adams *v.* Bellaire Stamping Co. (1886), 28 Fed. Rep. 360; 36 O. G. 567.

SECTION IX.

OF THE NOVELTY OF INVENTIONS: PRIORITY: PRIOR PATENT.

§ 331. Prior Patent: its Essential Requisites.

The third method in which the knowledge of an invention can be communicated to the public is by the issue of a patent. In effect, this method is merely another form of the second; the idea embodied in the invention being, here as there, exhibited in words and not through any art or instrument in actual operation.[1] Like that, the patent must be: (1) A public document; (2) Accessible to the public; (3) Issued before the date of the later invention; (4) For the same operative means; and (5) Sufficient to place the idea of the inventor fully in the possession of the public. Such differences as exist in the details of the two methods will be made apparent as we proceed in this discussion of the third.

§ 331. [1] In Cornish *v.* Keene (1835), 1 Web. 501, Tindal, C. J.: (510) "Undoubtedly if you could show under the hand of the plaintiff, or any body's hand, that the secret had been publicly communicated to the world, which was intended to be covered by the subsequent patent, there is an end of that patent; if the world at large had been informed by this specification of the color, fabric, and manufacture which is intended to be effected by the subsequent patent, the subsequent patent must fall to the ground." 2 Abb. P. C. 139 (175).

Mr. Webster, in a note to Household Co. *v.* Neilson, 1 Web. 718, says: "The specification of a prior patent . . . has always been held sufficient of itself to invalidate subsequent letters-patent for the invention therein described, without any evidence of user." In support of this proposition he refers to Huddart *v.* Grimshaw, 1 Web. 85, and gives as the reasons underlying it: (1) That knowledge and the means of knowledge are the same *thing*; (2) That a patent being a public record, the public are bound to take notice of it; (3) That it negatives the claim of the patentee to be the true and first inventor; and (4) That the granting of the patent is conclusive evidence that the invention is complete and available for public use. Not all these reasons are now recognized as valid.

That a prior patent and a prior publication stand on the same ground, see Webb *v.* Quintard (1872), 9 Blatch. 352; 5 Fisher, 276; 1 O. G. 525.

That a prior patent defeats a patent for an invention subsequently made, see Kelleher *v.* Darling (1878), 14 O. G. 673; 4 Clifford, 424; 3 Bann. & A. 438; Muntz *v.* Foster (1844), 2 Web. 96.

§ 332. Prior Patent: Patent must be a Public Document.

A patent becomes a public document when duly granted by the state and issued to the patentee. Prior to that event, whatever be the character of the proceedings, it is but a private matter between the government and the inventor, with which the public, as such, have no immediate concern. Thus a mere application although known to many, or printed matter such as notes of evidence, briefs of counsel, or interlocutory decisions of the Patent Office and the courts, however fully they describe the invention or however widely circulated, are no part of the patent, nor can they, unless they fulfil the usual requirements of a printed publication as recited in the last section, be regarded as bestowing the invention on the public.[1] Nor is the patent, although issued to the patentee, a complete public document, in the sense here intended, unless it contains or has annexed to it the specification of the patented invention.[2] Where, as in this country, the law requires the specification to be made part of the patent, the patent is a public document from the moment of its issue. But if the letters-patent constitute a separate document and the specification is subsequently given to the world, the patent is complete, for the present purpose, only when the publication of the full description has been made.[3]

§ 332. [1] That description in a prior specification, the patent not having been issued, is no bar, see Graham *v.* McCormick (1880), 10 Bissell, 39; 11 Fed. Rep. 859; 21 O. G. 1533; 5 Bann. & A. 244; Barker *v.* Stowe (1878), 14 O. G. 559; 15 Blatch. 49; 3 Bann. & A. 337; Lyman Ventilating & Refrigerator Co. *v.* Chamberlain (1876), 10 O. G. 588; 2 Bann. & A. 433; Corn Planter Patent (1874), 23 Wall. 181; 6 O. G. 392.

That this is true though the prior specification were filed by the same inventor, see Graham *v.* McCormick (1880), 10 Bissell, 39; 11 Fed. Rep. 859; 21 O. G. 1533; 5 Bann. & A. 244.

[2] That an English patent is not issued until the complete specification is enrolled, see *Ex parte* Mann (1880), 17 O. G. 330.

That an English patent dates from the filing of the specification, see Lorillard *v.* Dohan (1881), 20 O. G. 1587; 20 Blatch. 63; 9 Fed. Rep. 509; Bell *v.* Brooks (1881), 19 O. G. 290; American Diamond Rock Boring Co. *v.* Sheldon (1879), 17 Blatch. 303; Chambers *v.* Duncan (1876), 9 O. G. 741.

That a Canadian patent dates from its date and issue, not from its delivery, see Bate Refrigerating Co. *v.* Gillett (1882), 22 O. G. 1205; 13 Fed. Rep. 553.

[3] That a provisional specification in England is not a publication until published, and not then unless it completely describes the invention, see Co-

§ 333. Prior Patent: Patent must be Accessible to the Public.

Moreover, the patent must have been accessible to the public. This generally occurs as soon as the patent issues to the patentee. But if, for any cause, the patent is kept secret in the archives of the government, as in some foreign countries may be done in certain cases, it has no effect as a prior patent or publication.[1] The same is true as long as any portion of the patent, essential to its integrity, remains concealed; but when once completely published, no matter in how distant a community or how great a period of time must intervene before it can be known in other nations, it is regarded as accessible to all.[2]

§ 334. Prior Patent: Patent must be Issued before the Date of the Later Invention.

In order to anticipate an alleged later invention, the prior patent, like other forms of publication, must be completely issued before the inventor of the later has reduced his own idea to practice.[1] But the duration of the intermediate

burn *v.* Schroeder (1882), 11 Fed. Rep. 425; 22 O. G. 419; 20 Blatch. 392; Goff *v.* Stafford (1878), 3 Bann. & A. 610; 14 O. G. 748.

That an English patent becomes complete as a prior patent only when the specifications are filed in the office of the Great Seal, see Lorillard *v.* Dohan (1881), 20 O. G. 1587; 20 Blatch. 63; 9 Fed. Rep. 509; Smith *v.* Goodyear Dental Vulcanite Co. (1876), 93 U. S. 486; 11 O. G. 246; Howe *v.* Morton (1860), 1 Fisher, 586; Cornish *v.* Keene (1836), 1 Web. 513; 2 Abb. P. C. 406.

§ 333. [1] That a patent, though issued, is no bar while kept secret, see Schoerken *v.* Swift & Courtney & Beecher Mfg. Co. (1881), 19 O. G. 1493; 7 Fed. Rep. 469; 19 Blatch. 209.

[2] That a foreign patent takes effect as such only from the period of its enrolment, see Willimantic Linen Co. *v.* Clark Thread Co (1879), 4 Bann. & A. 133.

That "patented," in Sec. 4886, means "made known," and this is not true of a British patent until the completed specification is filed, see Rumpf *v.* Köhler (1882), 23 O. G. 1831; Howe *v.* Morton (1860), 1 Fisher, 586.

§ 334. [1] That the date of the later invention is the date of its reduction to practice, see National Spring Co. *v.* Union Car Spring Mfg. Co. (1874), 6 O. G. 224; 12 Blatch. 80; Webb *v.* Quintard (1872), 1 O. G. 525; 9 Blatch. 352; 5 Fisher, 276.

That the date of the invention described in the prior patent is the date of the patent, see Rumpf *v.* Köhler (1882), 23 O. G. 1831, 1832; *Ex parte* Lanfrey (1881), 20 O. G. 892; Bell *v.* Brooks (1881), 19 O. G. 290; De Florez *v.* Raynolds (1880), 17 O. G. 503; 17 Blatch. 436; 8 Fed. Rep. 434; 5 Bann. & A. 140; Kelleher *v.* Darling (1878), 3 Bann. & A. 438; 4 Clifford, 424; 14 O. G. 673; Bates *v.* Coe (1878), 98 U. S. 31;

period is immaterial. The patent being fully published the invention passes at once into the possession of the public and can no longer be conferred upon them by another. Under the American law, however, the rights of an actual prior conceiver are protected against the public as well as the prior patentee, if he has diligently reduced his own ideas to practice.[2]

§ 335. Prior Patent: Patent must Cover the Same Invention.

Again, the patent must be issued for the same complete and operative means. Unless the alleged earlier invention were an operative art or instrument the patent would not only, in itself, be void, but its descriptions would be merely speculative, and not the statement of existing facts. The patent, also, must relate to an invention of the same intrinsic character, and cover the exact idea of means which the inventor of the later has conceived.[1] Hence, where the same device

15 O. G. 337; Elizabeth *v.* Pavement Co. (1877), 97 U. S. 126; Cochrane *v.* Deener (1876), 94 U. S. 780; 11 O. G. 687; White *v.* Allen (1863), 2 Fisher, 440; 2 Clifford, 224; Howe *v.* Morton (1860), 1 Fisher, 586.

That unless the date of the reduction to practice of the later invention precedes the date of the publication of the alleged prior patent, such patent will be a bar, see Byerly *v.* Cleveland Linseed Oil Works (1887), 31 Fed. Rep. 73; National Spring Co. *v.* Union Car Spring Mfg. Co. (1874), 6 O. G. 224; 12 Blatch. 80; Webb *v.* Quintard (1872), 1 O. G. 525; 9 Blatch. 352; 5 Fisher, 276.

That a prior patent, issued by the United States, does not defeat a patent the application for which was filed before the filing of the application for such prior patent, see Allen *v.* City of New York (1879), 17 O. G. 1281; Singer *v.* Braunsdorf (1870), 7 Blatch. 521.

That a prior patent, in order to defeat a later one, need not have been issued two years before the date of reduction to practice by the later patentee, see Parks *v.* Booth (1880), 102 U. S. 96; 17 O. G. 1089.

That in a defence of prior patent the question is whether the plaintiff made his invention before the date of the patent, not before the inventive act of the alleged patentee, see Tyler *v.* Crane (1880), 7 Fed. Rep. 775; 19 O. G. 128.

[2] That to avoid the effect of an alleged prior patent an inventor may show the date of his conception if he has diligently reduced to practice, see Bates *v.* Coe (1878), 98 U. S. 31; 15 O. G. 337; Kelleher *v.* Darling (1878), 3 Bann. & A. 438; 4 Clifford, 424; 14 O. G. 673.

See §§ 132, 321, 328, and notes, *ante*.

§ 335. [1] That the prior patent must be for the same invention, see Cohn *v.* U. S. Corset Co. (1874), 12 Blatch. 225; 6 O. G. 259; 1 Bann. & A. 340; Clark Patent Steam & Fire Regulator Co. *v.* Copeland (1862), 2 Fisher, 221; Brooks *v.* Bicknell (1843), 3 McLean, 250; 2 Robb, 118.

That the prior patent must cover the

embodies two distinct ideas of means, but is so patented that only one of these is made accessible to the public through the patent, the same device, as the embodiment of the other, still remains unknown, and when discovered and completed is a new invention.[3] So when the inventor of the patented invention has included in his art or instrument some act or part, without perceiving its significance, and thus in patenting it fails to specifically describe such part or act, although if his invention had been practically employed such act or part might have become known to the public, his patent does not place it in their reach, nor, if reissued after the later inven-

whole of the invention, not merely a part of it, see Frearson *v.* Loe (1878), L. R. 9 Ch. 48; Stoner *v.* Todd (1875), L. R. 4 Ch. 58. But see Florsheim *v.* Schilling (1886), 26 Fed. Rep. 256; 35 O. G. 1435.

That a prior patent for a device does not defeat a patent for a combination of which such device forms one element, see McMillin *v.* Rees (1880), 17 O. G. 1222; 1 Fed. Rep. 722; 5 Bann. & A. 269.

That several prior patents for the several devices afterward employed as elements of a new combination cannot defeat the patent for such combination, see Bates *v.* Coe (1878), 98 U. S. 31; 15 O. G. 337.

That two separate patents, though taken together they would cover the invention, cannot defeat a patent for it as a whole, see Munson *v.* Gilbert & Barker Mfg. Co. (1878), 3 Bann. & A. 595; 18 O. G. 194.

But that where a prior patent covers a whole, no subsequent patent can be issued for any part which is included in such whole and is so described, see Stow *v.* Chicago (1877), 3 Bann. & A. 83; 8 Bissell, 47.

That where a prior patent describes a class of substances when only certain ones of the class can answer the purposes of the invention, it does not defeat a patent for the discovery of the particular substances which will answer, see Hills *v.* Gas Light Co. (1860), 5 H. & N. 312.

That a patent suggesting a result is no bar to a patent for the means by which the result is produced, see Graham *v.* Gammon (1877), 3 Bann. & A. 7; 7 Bissell, 490.

That a prior patent for one means of producing a result does not defeat a patent for a different means of producing the same result, see Hullett *v.* Hague (1831), 2 B. & Ad. 370; 2 Abb. P. C. 453. See also § 90 and notes, *ante*.

[3] That a prior patent for a design does not defeat a patent for the same substance in the same form as a device, the ideas of means being distinct, see Collender *v.* Griffith (1880), 2 Fed. Rep. 206; 18 O. G. 241; 18 Blatch. 110. This could be true only where the mechanical idea of means was not apparent on the face or from the use of the invention as a design, but was the result of subsequent discovery.

That a prior patent for a manufacture is no bar to a patent to the same inventor for the same matter as a design, unless there has been an abandonment by two years' public use or sale, see *Ex parte* Palmer (1881), 21 O. G. 1111. See also § 360 and notes, *post*.

tion is perfected, can it, as a mere publication by a prior patent, bar the last inventor's right.[3] The patent, as it stands at the date of the later invention, must give to the world the same idea, in the same state of completeness, as the later, or the novelty of the later cannot thereby be defeated.

§ 336. Prior Patent: Patent must Fully Communicate the Invention to the Public.

The rules which govern the sufficiency of the description in the prior patent are the same as in regard to other forms of publication. It must place the invention in the possession of the public as fully as an examination of the practically operative art or instrument could do.[1] It must describe every essen-

[3] That a prior patent not *describing* an invention subsequently patented, but after the issue of the later patent reissued in such a manner as to embrace it, cannot defeat the later *as a prior patent*, see Vogler *v.* Semple (1877), 11 O. G. 923; 7 Bissell, 382; 2 Bann. & A. 556.

That no reissue of a prior patent can affect the plaintiff's patent unless the original did so, see Hitchcock *v.* Tremaine (1872), 5 Fisher, 537; 1 O. G. 633; 9 Blatch. 550.

§ 336. [1] That the invention described in the patent must be complete and practical, see Downton *v.* Yaeger Milling Co. (1880), 1 Fed. Rep. 199; 1 McCrary, 26; 17 O. G. 906; 5 Bann. & A. 112; Betts *v.* Menzies (1857), 3 Jur. N. S. 357. See also §§ 318, 329, and notes, *ante*.

That the prior patent must contain a full and precise description of the entire invention, see Hammerschlag *v.* Scamoni (1881), 20 O. G. 1449; Nathan *v.* N. Y. Elevated R. R. Co (1880), 2 Fed. Rep. 225; 5 Bann. & A. 280; Parks *v.* Booth (1880), 102 U. S. 96; 17 O. G. 1089; Atlantic Giant Powder Co. *v.* Rand (1879), 4 Bann. & A. 263; 16 Blatch. 250; 16 O. G. 87; Cahill *v.* Brown (1878), 3 Bann. & A. 580; 15 O. G. 697; Vogler *v.* Semple (1877), 11 O. G. 923; 7 Bissell, 382; 2 Bann. & A. 556; Cohn *v.* U. S. Corset Co. (1876), 93 U. S. 366; 11 O. G. 457; Cohn *v.* U. S. Corset Co. (1874), 12 Blatch. 225; 6 O. G. 259; 1 Bann. & A. 340; Woodman *v.* Stimpson (1866), 3 Fisher, 98; Cornish *v.* Keene (1836), 1 Web. 513; 2 Abb. P. C. 406.

That the prior patent must have been sufficient to enable the invention to be practised from it alone, at the date of the patent, not merely in the light of subsequent discoveries, see Betts *v.* Neilson (1868), L. R. 3 Ch. Ap. 429.

That where the invention is a product, the prior patent need not have described the method of producing it, see Cohn *v.* U. S. Corset Co. (1876), 93 U. S. 366; 11 O. G. 457; Cohn *v.* U. S. Corset Co. (1874), 12 Blatch. 225; 6 O. G. 259; 1 Bann. & A. 340.

That a prior patent, which varies from the one in question only in matters not requiring inventive skill, may anticipate it, see Sax *v.* Taylor Iron Works (1887), 40 O. G. 118.

That if a prior foreign patent so far suggests the invention that any skilled workman could make it, the anticipation is established, see United States Bung Mfg. Co. *v.* Independent Bung

tial element of the invention so clearly and completely that any person skilled in the art could construct and use it from the directions given in the patent, without experimenting or exerting his inventive powers.

§ 337. Prior Patent: Patent has the same Effect to Whomsoever Issued.

To whom the prior patent has been issued is a matter of no consequence. If to a different inventor, the public are indebted to him, not to the present claimant, for the benefits conferred by the invention, and he, if either, is entitled to a patent. If to the present claimant, although the merit of discovery and publication may be his alone, yet having once completed the invention and given it to the world by his prior patent, he cannot re-invent it nor present it as a new invention, nor again justly seek for and obtain such recognition.[1] His former patent has assured him all the compensation which was legally his due, and any effort to prolong the period of

& Bushing Co. (1887), 31 Fed. Rep. 76. See also § 330 and notes, *ante*.

§ 337. [1] In Mathews *v.* Flower (1885), 25 Fed. Rep. 830, Brown, J.: (830) "If it were true that complainants had previously obtained a patent for the same invention secured to them by the patent in suit, and that this prior patent had expired, it would doubtless be a complete answer to this bill, since a man cannot have two patents for the same invention. James *v.* Campbell, 104 U. S. 356; Suffolk Co. *v.* Hayden, 3 Wall. 315; Morris *v.* Huntington, 1 Paine, 348."

In James *v.* Campbell (1882), 104 U. S. 356, Bradley, J.: (382) "It is hardly necessary to remark that the patentee could not include in a subsequent patent any invention embraced or described in a prior one granted to himself any more than he could an invention embraced or described in a prior patent granted to a third person. Indeed, not so well; because he might get a patent for an invention before patented to a third person in this country if he could show that he was the first and original inventor, and if he should have an interference declared." 21 O. G. 337 (344).

See also McMillin *v.* Rees (1880), 5 Bann. & A. 269; 1 Fed. Rep. 722; 17 O. G. 1222; Corn Planter Patent (1873), 23 Wall. 181; 6 O. G. 392.

That an invention described but not claimed in a former patent to the same inventor may be patented in a later patent unless abandoned, see Vermont Farm Mach. Co. *v.* Marble (1884), 22 Blatch. 32; 19 Fed. Rep. 307; 27 O. G. 621.

That an inventor and patentee of a combination may afterward obtain a patent for a sub-combination unless it has been abandoned, see Cahn *v.* Wong Town On (1884), 9 Sawyer, 630; 27 O. G. 299; 19 Fed. Rep. 424.

See also §§ 352, 460–467, 506, and notes, *post*.

his monopoly by embracing his old discovery in a new patent, whether alone or in connection with improvements, is in vain. A single exception to this latter rule arises where the inventor, having taken out a foreign patent for the same invention, endeavors to secure exclusive rights in this country by applying for a patent within two years after the introduction of his invention into actual use in the United States. The prior foreign patent is in such a case no bar.[2]

[2] Rev. Stat., 1874, § 4887.

That a prior foreign patent to the same inventor is not a bar unless there has been two years' public use in this country under Sec. 4887, Rev. Stat., see Vogeley *v.* Noel (1884), 18 Fed. Rep. 827. See also § 461 and notes, *post.*

CHAPTER IV.

OF THE UTILITY OF INVENTIONS.

§ 338. Utility Essential to Patentability.

In order that an invention may be patentable it must not only be bestowed upon the public by its inventor, but when bestowed it must confer on them a benefit. The invention must therefore be useful as well as new.[1] No recompense can properly be made to one from whom the community re-

§ 338. [1] In Morgan *v.* Seaward (1837), 1 Web. 187, Parke, B.: (197) "A grant of a monopoly for an invention which is altogether useless may well be considered as 'mischievous to the State, to the hurt of trade, or generally inconvenient,' within the meaning of the statute of Jac. I., which requires, as a condition of the grant, that it should not be so; for no addition or improvement of such an invention could be made by any one during the continuance of the monopoly, without obliging the person making use of it to purchase the useless invention; and on a review of the cases, it may be doubted whether the question of utility is anything more than a compendious mode, introduced in comparatively modern times, of deciding the question whether the patent be void under the Statute of Monopolies." 2 Abb. P. C. 419 (431).

In speaking of the common-law patents, before the stat. Jac. I., Webster says: "The utility of the invention is distinctly recognized in all of them as part of the motive or consideration; but this condition would appear to differ from the others, in admitting of degrees. If an invention be totally useless, the purposes and object of the grant would fail, and such grant would consequently be void, not only on the ground of false suggestion and failure of consideration, but also on the ground of its being prejudicial, as having a tendency to stop improvement." 1 Web. 8, n.

That utility is necessary, see Page *v.* Ferry (1857), 1 Fisher, 298; Earle *v.* Sawyer (1825), 4 Mason, 1; 1 Robb, 491; Langdon *v.* De Groot (1822), 1 Paine, 203; 1 Robb, 433; Lowell *v.* Lewis (1817), 1 Mason, 182; 1 Robb, 131.

That utility in an improvement will support a patent for the improvement whether the original were useful or not, see Lewis *v.* Davis (1829), 1 Web. 488; 1 Abb. P. C. 406.

In Lewis *v.* Marling (1829), 1 Web. 493, it was stated that utility was not required by the stat. Jac. I.; but that it is essential under that statute as interpreted by the courts, see Bovill *v.* Moore (1816), Dav. P. C. 361; 1 Abb. P. C. 231; Manton *v.* Manton (1815), Dav. P. C. 333; 1 Abb. P. C. 189.

That utility is a question of fact for the jury, see Losh *v.* Hague (1838), 1 Web. 202; 2 Abb. P. C. 501.

ceives no consideration; and hence no patent can be granted for a worthless art or instrument, nor, although granted, can it be sustained after the uselessness of the invention is established.

§ 339. Utility Means Industrial Value.

Utility, as predicated of inventions, means industrial value; the capability of being so applied in practical affairs as to prove advantageous in the ordinary pursuits of life, or add to the enjoyment of mankind.[1] But a mere curiosity, a scientific process exciting wonder yet not producing physical results, or any frivolous or trifling article or operation not aiding in the progress nor increasing the possessions of the human race, whatever be its novelty, and whatever skill has been in-

§ 339. [1] In Rowe *v.* Blanchard (1864), 18 Wis. 441, Dixon, J.: (442) "The 'practical uses' to which the invention may be applied, or of which 'it shall be capable,' we understand to be the uses intended by the patentee, and named in the patent. Upon the question of its practicability in this case, there was a conflict of testimony. It was a question to be decided by the jury, under proper instructions from the court. Park *v.* Little, 1 Robb's Cases, 17 (3 Wash. 196.) If it was practically useless, then there was no consideration for the notes. Dickinson *v.* Hall, and Lester *v.* Palmer, *supra*. The defendant's counsel asked the court to give the jury the following instruction, which was refused: 'If you find from the testimony that this harrow is impracticable to be used for the purpose for which it was patented, then the defense of want or failure of consideration is established.' This was error. The instruction should have been given." See also Parkhurst *v.* Kinsman (1849), 1 Blatch. 488.

That an invention is useful if available for one of the purposes proposed by the inventor, though not for others, see Phillips *v.* Risser (1885), 26 Fed. Rep. 308; Morgan *v.* Seaward (1837), 1 Web. 187; 2 Abb. P. C. 419; Haworth *v.* Hardcastle (1834), 2 Abb. P. C. 19.

That utility is absence of frivolity and mischievousness, and utility for some beneficial purpose, see McComb *v.* Ernest (1871), 1 Woods, 195; Crompton *v.* Belknap Mills (1869), 3 Fisher, 536; Cox *v.* Griggs (1861), 1 Bissell, 362; 2 Fisher, 174; Wintermute *v.* Redington (1856), 1 Fisher, 239; Parker *v.* Stiles (1849), 5 McLean, 44; Dunbar *v.* Marden (1842), 13 N. H. 311; Dickinson *v.* Hall (1833), 14 Pick. 217; Whitney *v.* Emmett (1831), Baldwin, 303; 1 Robb, 567; Kneass *v.* Schuylkill Bank (1820), 4 Wash. 9; 1 Robb, 303; Lowell *v.* Lewis (1817), 1 Mason, 182; 1 Robb, 131; Bedford *v.* Hunt (1817), 1 Mason, 302; 1 Robb, 148.

That if a design is attractive it is useful, see *Ex parte* Norton (1882), 22 O. G. 1205.

That in an ornament superior beauty indicates utility, see Magic Ruffle Co. *v.* Douglass (1863), 2 Fisher, 330.

That cheapness is not utility, see Cornish *v.* Keene (1835), 1 Web. 501; 2 Abb. P. C. 139.

That an invention is useful where it increases the salability of an article, see Newbury *v.* Fowler (1886), 28 Fed. Rep. 454; 36 O. G. 817.

volved in its production, does not fall within the class of useful inventions nor become the subject-matter of a patent.

§ 340. Utility Absent if the Invention is Immoral or too Dangerous for Use.

Inventions which accomplish definite practical results may nevertheless possess such attributes as destroy the benefits that otherwise they would bestow upon the public. Inventions whose chief or only value resides in the facilities which they afford to men to perpetrate some wrongful injury either by fraud or violence against each other are thus regarded as destitute of true utility.[1] For the same reason arts or instruments which if completed and in actual use might be of benefit to their employer are sometimes held to be devoid of real utility on account of the great risks incurred in their construction.[2] The courts, in their consideration of this subject, must necessarily contemplate the entire effects of the invention, as well upon the maker and the operator as upon the consumer; and if the net result to the community at large is not a benefit, the inventor has no claim upon the public.

§ 341. Degree of Utility Immaterial.

When actual utility exists, its degree is unimportant.[1] However slight the advantage which the public have received from

§ 340. [1] That an invention which is useful only to commit fraud has no patentable utility, see Klein *v.* Russell (1873), 19 Wall. 433.

That an invention which can be used only for immoral purposes is not patentable, see Dunbar *v.* Marden (1842), 13 N. H. 311; Lowell *v.* Lewis (1817), 1 Mason, 182; 1 Robb, 131.

[2] In Mitchell *v.* Tilghman (1873), 19 Wall. 287, Clifford, J.: (396) "It cannot be held that the invention is useful if it appears that the operator, in using the described means, is constantly exposed to imminent danger, either from the explosive tendency of the substance to be used, or from the liability of the vessel to burst which is required to be employed as a means of accomplishing the patented result. . . . as it is quite clear that Congress, in making provision to secure to inventors the exclusive right to their discoveries, never intended to promote any such as were in their nature constantly dangerous to the operator in employing the described means to accomplish the described result." 5 O. G. 299 (305).

§ 341. [1] In Morgan *v.* Seaward, (1836), 1 Web. 170, Alderson, B.: (172) "It is not for you to consider to what extent the thing is useful. If it is a useful invention, then it is a subject to be protected by patent, and if,

the inventor, it offers a sufficient reason for his compensation; and as he could withhold this slight advantage if he chose, his surrender of it to the public places him on the same plane of merit with every other inventor. Nor is it necessary that this advantage, whether great or small, should flow directly from his art or instrument, considered by itself. For though it is a mere improvement upon pre-existing arts or instruments, or is incapable of serving any purpose except as an integral part or element of some different invention, or embodies an idea of means whose highest value can be realized only by advancing it to a more perfect state of development, it still has an inherent usefulness which satisfies this requirement of the law.[2]

on the other hand, it is of no use, then it is no subject to be protected by patent. The issue is, whether it is of any use at all."

That the degree of utility is not material, see Gibbs *v.* Hoefner (1884), 22 Blatch. 36; 19 Fed. Rep. 323; Crouch *v.* Speer (1874), 6 O.G. 187; 1 Bann. & A. 145; Westlake *v.* Cartter (1873), 4 O. G. 636; 6 Fisher, 519; Smith *v.* O Connor (1873), 4 O. G. 633; 2 Sawyer, 461; 6 Fisher, 469; Whitney *v.* Mowry (1867), 2 Bond, 45; 3 Fisher, 157; Hoffheins *v.* Brandt (1867), 3 Fisher, 218; Rowe *v.* Blanchard (1864), 18 Wis. 441; Tilghman *v.* Werk (1862), 1 Bond, 511; 2 Fisher, 229; Vance *v.* Campbell (1859), 1 Fisher, 483; Johnson *v.* Root (1858), 1 Fisher, 351; Bierce *v.* Stocking (1858), 11 Gray, 174; Wintermute *v.* Redington (1856), 1 Fisher, 239; Dunbar *v.* Marden (1842), 13 N. H. 311.

That an invention is useful if it is capable of any beneficial use, see Tod *v.* Wick Bros. (1881), 36 Ohio St. 370; Gillett *v.* Bate (1881), 86 N. Y. 87; 10 Abb. N. C. 88,

[2] In Wheeler *v.* The Clipper Mower & Reaper Co. (1872), 10 Blatch. 181, Woodruff, J.: (185) "On the other hand, if it be meant that no device is patentable which has not in itself, apart from any connection with, or application to, other known devices or instrumentalities, capacity to produce practically useful results, then the proposition is not true. Patents for simple devices, and patents for parts of machines, are almost numberless, of which it may be truly said that it is only by connection with other devices or instrumentalities, to which they are intended to be applied, that they can be made to produce any result whatever. True, the patentee is bound to disclose a mode in which they may be rendered practically useful, and it may be one of many modes, and it may necessarily involve the use of many other known devices which are required in order to the useful result. Patents may be granted for combinations in which some of the parts are old and some are new, and whatever in the several parts is new may be separately secured to the inventor; and yet it may be true that only in the combination described, or in some similar combination, is the new part thus secured to the inventor of any practical use whatever." 2 O. G. 442 (443); 6 Fisher 1 (17).

See also Williams *v.* Boston & Albany R. R. Co. (1879), 17 Blatch. 21; 16 O. G. 906; 4 Bann. & A. 441; Wells *v.* Jacques (1874), 1 Bann. & A. 60;

§ 342. Utility Actual, not Comparative.

The existence of utility in an invention is not determined by comparing it with other arts or instruments.[1] It is not essential to its patentability that an invention should supersede or be superior to others theretofore employed for the same purpose; nor is it inconsistent with its usefulness that it should, in its turn, have been displaced by subsequent inventions. It must be useful in itself, in some degree, at the date of its bestowal on the public. This being true, it is a sufficient consideration for the grant of an exclusive right, although the value of that right to the inventor may depend almost entirely on the relative superiority of his invention when compared with others.

5 O. G. 364; Morgan *v.* Seaward (1837), 1 Web. 187; 2 Abb. P. C. 419.

That an invention is useful if capable of such development as to render it practically useful, see Wheeler *v.* Clipper Mower & Reaper Co. (1872), 10 Blatch. 181; 6 Fisher, 1; 2 O. G. 442; Gray *v.* James (1817), 1 Peters C. C. 476; 1 Robb, 140.

That an invention may be useful though susceptible of great improvement, see Neilson *v.* Harford (1841), 1 Web. 295.

That a patent is valid if the invention serves any use though it will not apply to all the uses claimed for it, see Phillips *v.* Risser (1885), 26 Fed. Rep. 308.

§ 342. [1] In Cook *v.* Ernest (1872), 2 O. G. 89, Woods, J.: (92) "All the law requires as to utility is that the invention shall not be frivolous or dangerous. It does not require any degree of utility. It does not exact that the subject of the patent shall be better than anything invented before or that shall come after. If the invention is useful at all that suffices." 5 Fisher, 396 (405).

In Roberts *v.* Ward (1849), 4 McLean, 565, Per Curiam: (566), "In ascertaining its usefulness, it is not important that it should be more valuable than other modes of accomplishing the same result; but it must be a practicable method of doing the thing designed, in which its utility will more or less consist." 2 Robb, 746 (748).

That an invention has utility even though it does not excel all other means for the same end, see also Shaw *v.* Colwell Lead Co. (1882), 20 Blatch. 417; 11 Fed. Rep. 711; Adams *v.* Lofft (1879), 4 Bann. & A. 495; Miller & Peters Mfg. Co. *v.* Du Brul (1877), 2 Bann. & A. 618; 12 O. G. 351; Crouch *v.* Speer (1874), 1 Bann. & A. 145; 6 O. G. 187; Doherty *v.* Haynes (1874), 1 Bann. & A. 289; 4 Clifford, 291; 6 O. G. 118; McComb *v.* Ernest (1871), 1 Woods, 195; Seymour *v.* Osborne (1870), 11 Wall. 516; Rowe *v.* Blanchard (1864), 18 Wis. 441; Wilbur *v.* Beecher (1850), 2 Blatch. 132; Many *v.* Jagger (1848), 1 Blatch. 372; Dunbar *v.* Marden (1842), 13 N. H. 311; Tetley *v.* Easton (1852), Macrory's P. C. 48.

That utility at date of patent is enough, though the invention be afterward superseded, see Poppenhusen *v.* N. Y. Gutta Percha Comb Co. (1858), 2 Fisher, 62.

§ 343. Utility how Ascertained.

The utility of an invention may be ascertained by an inspection of the art or instrument itself, or of the place it fills in that particular department of human industry to which it belongs. But these do not afford the only, or perhaps the most conclusive, evidence. Where an invention passes into general use, and is sought after and employed by those to satisfy whose needs it was invented, its use and sale supply the strongest proof that the public welfare is advanced by its existence, and that the inventor has conferred substantial benefits upon mankind.[1]

§ 344. Utility as Evidence of Inventive Skill: of Novelty.

The utility of an invention is often properly considered by the courts in their investigation of two different topics, with which otherwise it has no connection. First, upon the question whether or not a given art or instrument was produced by the exercise of inventive as distinguished from mechanical skill, the actual utility of the invention may become important. If its utility is very great, as evidenced by its extensive use and sale, and if it satisfies an ancient and well-recognized necessity, it is presumed that if mechanical skill alone could have derived it from any means already known, it would have

§ 343. [1] That use and sale indicate utility, see Niles Tool Works *v.* Betts Mach. Co. (1886), 27 Fed. Rep. 301; Goodyear Dental Vulcanite Co. *v.* Smith (1874), Holmes, 354; 5 O. G. 585; 1 Bann. & A. 201; Smith *v.* Prior (1873), 2 Sawyer, 461; 6 Fisher, 469; 4 O. G. 633; Robertson *v.* Secombe Mfg. Co. (1873), 6 Fisher, 268; 3 O. G. 412; Magie Ruffle Co. *v.* Douglass (1863), 2 Fisher, 330; Dunbar *v.* Marden (1842), 13 N. H. 311; Cornish *v.* Keene (1835), 1 Web. 501; 2 Abb. P. C. 139.

That the extensive use of the simplest device shows its utility, see Lorillard *v.* McDowell (1877), 13 Phila. 461; 11 O. G. 640; 2 Bann. & A. 531.

That want of public recognition indicates want of utility, see *In re* Hughes' Patent (1879), L. R. 4 App. 174; *In re* Herbert's Patent (1867), L. R. 1 P. C. 399; 4 Moore P. C. N. S. 300; *In re* Allan's Patent (1867), L. R. 1 P. C. 507; 4 Moore P. C. N. S. 443; *In re* Pinkus' Patent (1848), 12 Jur. 233; Morgan *v.* Seaward (1836), 1 Web. 170.

That it is assumed that a useful invention, when once known, will be in demand, see *In re* Simister's Patent (1842), 1 Web. 721.

That experiment is the only test of utility, and until tested the patent is *prima facie* evidence thereof, see Case *v.* Morey (1818), 1 N. H. 347.

That the value of an invention can often be determined only by its results, see Roberts *v.* Dickey (1872), 1 O. G. 4; 4 Fisher, 532; 4 Brews. (Pa.), 260.

long ago been brought into existence; and, hence, that it could now have originated only in an inventive act.[1] Second, upon the question of novelty, where doubt arises concerning

§ 344. [1] In Washburn & Moon Mfg. Co. *v.* Haish (1880), 19 O. G. 173, Drummond and Blodgett, JJ.: (175) "In the absence of any other test the courts have seemed to assume that the fact of the acceptance of a new device or combination by the public and putting it into extensive use, was evidence that it was the product of invention; or as one of the counsel for plaintiff expressed it, 'utility is suggestive of originality.'" 4 Fed. Rep. 900 (907).

In Smith *v.* Goodyear Dental Vulcanite Co. (1876), 93 U. S. 486, Strong, J.: (495) "Undoubtedly the results or consequences of a process or manufacture may in some cases be regarded as of importance when the inquiry is whether the process or manufacture exhibits invention, thought, and ingenuity. Webster, on the subject-matter of patents, page 30, says: 'The utility of the change, as ascertained by its consequences, is the real practical test of the sufficiency of an invention; and since the one cannot exist without the other, the existence of the one may be presumed on proof of the existence of the other.' . . . We do not say the single fact that a device has gone into general use, and has displaced other devices which had previously been employed for analogous uses, establishes in all cases that the later device involves a patentable invention. It may, however, always be considered, and when the other facts in the case leave the question in doubt, it is sufficient to turn the scale.'" 11 O. G. 246 (248).

In Eppinger *v.* Richey (1877), 14 Blatch. 307, Shipman, J.: (312) "Without giving to the general use of the invention, as a test of its patentability, any greater importance than the Supreme Court in the case of Smith *v.* Goodyear Dental Vulcanite Co., 3 Otto, 486, indicate should be given to this circumstance, I am of opinion that the facts in the case fully establish the conclusions: (1) That however simple the change in the method of manufacture apparently may have been, yet it was a change which required invention for its accomplishment; (2) That the improvement resulting from the changed method of manufacture has been so great that the article which is produced is, within the meaning of the patent acts, a new and useful article of manufacture." 12 O. G. 714 (716); 3 Bann. & A. 69 (74).

In Stanley Works *v.* Sargent (1871), 8 Blatch. 344, Shipman, J.: (346) "Utility is not an infallible test of originality. The Patent Law requires a thing to be new as well as useful in order to entitle it to the protection of the statute. To be new in the sense of the act it must be the product of original thought or inventive skill, and not a mere formal or mechanical change of what was old and well known. But the effect produced by a change is often an appropriate, though not a controlling, consideration in determining the character of the change itself." 4 Fisher, 443 (445).

Curtis on Patents, cited with approval in Roberts *v.* Dickey (1871), 1 O. G. 4, by Strong, J., speaking of inventions of recognized utility says: (§ 36) "It is obvious that the results in such cases furnish a complete test of the sufficiency of invention, because the importance of the result shows that, whether actually exercised or not, the possibility of the exercise of thought, design, ingenuity, and skill is not excluded."

Webster on Patents, 30, also cited in the same case, remarks: "Whenever

the identity of two inventions, and whether the apparent diversities between them are formal or substantial, the superior utility of one may be sufficient to remove the doubt. For though the apparent difference be small, the difference in the usefulness of their results may be great enough to demonstrate that, notwithstanding all external similarities, such variations must exist between their modes of operation that the ideas which they embody cannot be the same.[2] The relation

the utility is proved to exist in any great degree, a sufficiency of invention to support the patent must be presumed."

That utility often indicates patentability, see Penn. Salt Mfg. Co. *v.* Thomas (1871), 8 Phila. 144; 5 Fisher, 148.

That utility is evidence of inventive skill, see Hill *v.* Biddle (1886), 27 Fed. Rep. 560; Wallace *v.* Noyes (1882), 21 Blatch. 83; 23 O. G. 435; 13 Fed. Rep. 172; Bruce *v.* Marder (1882), 22 O. G. 1039; 20 Blatch. 355; 10 Fed. Rep. 750; Roberts *v.* Schreiber (1880), 5 Bann. & A. 491; 18 O. G. 125; 2 Fed. Rep. 855; Hoe *v.* Cottrell (1880), 18 O. G. 59; 17 Blatch. 546; 1 Fed. Rep. 597; 5 Bann. & A. 256; U. S. Stamping Co. *v.* King (1879), 17 Blatch. 55; 17 O. G. 1399; 4 Bann. & A. 469; Williams *v.* Rome, Watertown, & Ogdensburgh R. R. Co. (1878), 15 Blatch. 200; 15 O. G. 653; 3 Bann. & A. 413; Monce *v.* Adams (1874), 12 Blatch. 1; 7 O. G. 177; 1 Bann. & A. 126; *In re* Pennock (1874), 1 MacArthur, 531; 5 O. G. 668; Smith *v.* Woodruff (1874), 4 O. G. 635; 1 MacArthur, 459; 6 Fisher, 476; Hitchcock *v.* Tremaine (1872), 1 O. G. 633; 9 Blatch. 550; 5 Fisher, 537.

That utility does not conclusively indicate the exercise of inventive skill, see Phillips *v.* Detroit (1879), 4 Bann. & A. 347; 17 O. G. 191; Monce *v.* Adams (1874), 7 O. G. 177; 12 Blatch. 1; 1 Bann. & A. 126; *Ex parte* Greeley (1873), 4 O. G. 612; Holmes, 284; 6 Fisher, 575.

See § 113 and notes, *ante*.

[2] In Smith *v.* Nichols (1872), Holmes, 172, Lowell, J.: (175) "The fact that an article is better and more useful in the trade is evidence of novelty; but if the superiority is attained by the application of known means, in a known way, and to produce a known result, though a better one, the novelty required by the Patent Law is wanting." 2 O. G. 649 (650); 6 Fisher, 61 (64).

In Judson *v.* Cope (1860), 1 Bond, 327, Leavitt, J.: (337) "It will be obvious that where there is doubt upon the question of novelty . . . evidence of the superior performance and utility of the patented improvement would have a direct bearing upon the question of novelty. In other words, if the jury are satisfied that the invention patented produces a result decidedly and clearly different from any which had been produced by the action of any prior [device], and that it was decidedly superior to any other in its operation, it would certainly afford a ground for the presumption that the thing itself had not been known before." 1 Fisher, 615 (624).

In Many *v.* Sizer (1849), 1 Fisher, 17, Sprague, J.: (24) "If the changes made by the defendant have rendered his wheel one of greater utility than the plaintiff's, such utility is evidence that some new principle, or mechanical power, or new mode of operation, producing a new kind of result, has been introduced. And the greater such utility, the stronger is such evidence.

of these two kinds of utility, the actual and the comparative, to these two questions of novelty and inventive skill is often much confused, through failure to regard the real distinctions which obtain between them. But they are utterly dissimilar in character and in effect, as well as in the principles upon which those relations are established; and their real value in affording a solution of these questions is lost whenever those distinctions are ignored.

And if a manifest and very high degree of utility is obtained by such changes, it becomes full proof and conclusive that a new principle, or mechanical power, or new mode of operation, producing a new kind of result, has been introduced. . . . (27) If the effect is a wheel of *greater utility*, that is evidence tending to show that some new principle, or mechanical power, or mode of operation producing a new kind of result has been introduced; and the higher the degree of utility, the stronger is such evidence. And it may arise to so high a degree as to become conclusive." See also the remarks of Shipman, J., in Eppinger *v.* Richey, 14 Blatch. 307, and in Stanley Works *v.* Sargent, 8 Blatch. 344, cited in note 1, *ante*.

In Household Co. *v.* Neilson (1843), 1 Web. 673, Hope, J.: (690) "Great utility is one important element in the question of novelty. For if the process is of great, manifest, striking, and immediate utility, that is of the utmost importance to the point. Could this have been previously in public use and exercise without clear and abundant proof?"

That superior utility is not conclusive evidence of novelty, see Wilson Packing Co. *v.* Chicago Packing & Provision Co. (1881), 10 Bissell, 559; 21 O. G. 411; 9 Fed. Rep. 547; Pitts *v.* Wemple (1855), 2 Fisher, 10; 1 Bissell, 87.

That comparative utility indicates novelty, see Miller *v.* Pickering (1883), 16 Fed. Rep. 540; 25 O. G. 89; Dunbar *v.* Albert Field Tack Co. (1879), 4 Fed. Rep. 543; 4 Bann. & A. 518; Stilwell & Bierce Mfg. Co. *v.* Cincinnati Gas Light & Coke Co. (1875), 1 Bann. & A. 610; 7 O. G. 829; Birdsall *v.* McDonald (1874), 6 O. G. 682; 1 Bann. & A. 165; Sayles *v.* Chicago & Northwestern R. R. Co. (1871), 3 Bissell, 52; 4 Fisher, 584; Carter *v.* Baker (1871), 1 Sawyer, 512; 4 Fisher, 404; Woodman *v.* Stimpson (1866), 3 Fisher, 98; Singer *v.* Walmsley (1860), 1 Fisher, 558; Howe *v.* Morton (1860), 1 Fisher, 586; Judson *v.* Moore (1859), 1 Bond, 285; 1 Fisher, 544; Morton *v.* Middleton (1863), 1 Cr. S. 3d Series, 722.

That superior utility indicates substantial difference and hence novelty, see Roberts *v.* Schreiber (1880), 5 Bann. & A. 491; 18 O. G. 125; 2 Fed. Rep. 855; Stevens *v.* Keating (1847), 2 Web. 181.

That immediate and extensive use of an invention is evidence of its novelty and originality, see Hitchcock *v.* Tremaine (1872), 1 O. G. 633; 9 Blatch. 550; 5 Fisher, 537; Judson *v.* Moore (1859), 1 Bond, 285; 1 Fisher, 544.

See §§ 116–121 and notes, *ante*.

CHAPTER V.

OF ABANDONMENT TO THE PUBLIC.

§ 345. Inventions not Patentable if once Abandoned to the Public.

The fifth and final requisite of a patentable invention is that it must remain under the exclusive control of its inventor until the issue of his letters-patent. The patent is designed to temporarily secure to him the continuance of that dominion over his discovery which without the patent he might still be able to maintain, but which, in consideration of the patent, he permanently surrenders to the public after the period of his patent has expired. But if, before the patent issues, he has voluntarily relinquished this exclusive right, there is not only nothing to protect, but no consideration can now move from him toward the public by which the grant of the patent can be sustained. Here the element of contract between the inventor and the public becomes especially apparent. The patent privilege is not a mere reward bestowed upon the inventor for past services, the payment of a debt of gratitude toward one who has already conferred a benefit upon the state; it is also a purchase by the government, acting on behalf of the whole people, of some new art or instrument, capable of beneficial use, for which it recompenses the inventor by securing to him for a time its sole enjoyment; and when, without this recompense, it has obtained the invention through his voluntary act, so far from recognizing him as entitled to remuneration, it unhesitatingly appropriates his invention to itself, whatever loss and difficulty may result to him.[1] Still, while

§ 345. [1] That abandonment bars a patent, see Egbert *v.* Lippman (1881), 104 U. S. 333; 21 O. G. 75; Consolidated Fruit Jar Co. *v.* Wright (1876), 94 U. S. 92; Consolidated Fruit Jar Co. *v.* Wright (1874), 12

the law thus stringently adheres to the fundamental principle on which are based all the relations of the public to the inventor, it liberally interprets in his favor the specific rules that govern the dedication of inventions to the public, as well as all those acts of his from which such dedication might be inferred.[2]

§ 346. Three Meanings of "Abandonment:" "Abandoned Experiment;" "Abandoned Inventions;" "Abandonment to the Public."

The dedication of an invention to the public by the inventor is generally called "abandonment." This word is used in reference to three different acts of an inventor, and in each use has an entirely different meaning. Where one who has endeavored to produce a new invention either fails to develop a complete and practicable idea of means, or having fully conceived the idea neglects to reduce it to practice as an operative art or instrument, and in this state of incompleteness relinquishes his efforts without intending to resume them, he is said (though perhaps improperly) to have abandoned the invention; and that which, had he persevered, might have become a patentable invention, is a mere unsuccessful or abandoned experiment. Again, where an inventor has completed his inventive act, and has produced an operative art or instrument capable of practical employment, but has thrown it aside without communicating it to the public, and has temporarily or permanently forgotten it, the invention

Blatch. 149; 6 O. G. 327; 1 Bann. & A. 320; Wayne *v.* Holmes (1856), 2 Fisher, 20; 1 Bond, 27; Ransom *v.* Mayor of New York (1856), 1 Fisher, 252; Wyeth *v.* Stone (1840), 1 Story, 273; 2 Robb, 23; Whittemore *v.* Cutter (1813), 1 Gallison, 478; 1 Robb, 40.

That the presumption is always against abandonment, see Graham *v.* McCormick (1880), 10 Bissell, 39; 11 Fed. Rep. 859; 21 O. G. 1533; 5 Bann. & A. 244.

That an invention once abandoned to the public can never be recalled by the inventor, see Consolidated Fruit Jar Co. *v.* Bellaire Stamping Co. (1886), 27 Fed. Rep. 377; 35 O. G. 627; Ransom *v.* Mayor of New York (1856), 1 Fisher, 252; McCay *v.* Burr (1847), 6 Pa. St. 147; Whittemore *v.* Cutter (1813), 1 Gallison, 478; 1 Robb, 40.

[2] In this chapter only abandonment before the issue of a patent is considered. The dedication of a patented invention to the public does not affect its patentable character or rest on any doctrine peculiar to Patent Law. See §§ 981, 1046, 1114, 1194, 1195, and notes, *post.*

has become a "lost art," and is sometimes spoken of as an abandoned invention. But in the third and only proper sense of the term, "abandonment" is applied solely to cases where the inventor, having fully performed his inventive act, and having embodied his idea in tangible materials ready for immediate public use, freely gives it to the public without intending to claim from them the protection to which he is entitled.[1] The first abandonment is an abandonment of his

§ 346. [1] In Consolidated Fruit Jar Co. *v.* Bellaire Stamping Co. (1886), 27 Fed. Rep. 377, Sage, J.: (381) "If it appears that the inventor, after perfecting his invention and applying for a patent, and thereby irretrievably committing himself to the proposition that his invention is ripe for introduction to the public, accept the decision rejecting his application, and cast aside his invention as no longer of any value to him, he thereby makes it forever public property, and it is not in his power to take it back and make it again his own." 35 O. G. 627 (629).

In American Hide and Leather Splitting and Dressing Mach. Co. *v.* American Tool and Mach. Co. (1870), Holmes, 503, Shepley, J.: (513) "A person is sometimes said to have abandoned his invention when he gives up the idea, abandons it in the popular sense, relinquishes the intention of perfecting his invention, so that another person may take up the same thing and become the original and first inventor. But that is not the kind of abandonment that is referred to here. There is another kind of abandonment, and that is where a party, having made an invention, allows the public to use it, with his knowledge and consent; allows it to be incorporated into other machines with his knowledge and consent, and to be used by anybody without objection; as, for instance, if you should invent a machine, put it into public use and sell it to everybody who chose to buy it, and if you should attach to that machine another invention of yours, and allow everybody who chose to buy that and use it, without objection on your part, with your consent, with your permission, with your allowance, not for the mere purpose of experiment, but for the purpose of profit and gain, that would be an abandonment of it to the public; and you could not afterward rightfully, honestly, honorably, legally, take out a patent for that invention." 4 Fisher, 284 (299).

That there can be no abandonment, in the technical sense, unless the invention is complete and operative, see Locomotive Engine Safety Truck Co. *v.* Penna. R. R. Co. (1874), 10 Phila. 252; 6 O. G. 927; 1 Bann. & A. 470.

That the abandonment of such an invention enures to the benefit of the public, not to that of a subsequent inventor, see Consolidated Fruit Jar Co. *v.* Bellaire Stamping Co. (1886), 27 Fed. Rep. 377; 35 O. G. 627; Pickering *v.* McCullough (1878), 3 Bann. & A. 279; 13 O. G. 818; Shoup *v.* Henrici (1876), 2 Bann. & A. 249; 9 O. G. 1162; Rich *v.* Lippincott (1853), 2 Fisher, 1.

That an abandoned invention cannot be patented unless, having become a "lost art," it is re-invented and again bestowed upon the public, see Rich *v.* Lippincott (1853), 2 Fisher, 1.

Closely akin to the doctrine of abandonment, though relating to the personality of the patentee, not to the patentability of the invention, is the question which

intention to become an inventor; and leaves the field open for subsequent inventors to conceive such new ideas, or such improvements upon his idea, as will complete the invention and enable them to appropriate it to their exclusive use. The second abandonment is an abandonment of his intention to render the invention practically available for any purpose, and thereupon it is regarded as never having been conceived. The third and true form of abandonment is a dedication of the invention to the public, and closes the field forever against not only himself but every subsequent inventor, until the art or instrument shall once more pass from public knowledge and thus become a subject for re-invention.

§ 347. Abandonment to the Public Depends on Intention.

A completed invention may be abandoned by its inventor by various methods. In general, any act which places the

arises when the earlier inventor, having completed his inventive act, withholds his invention from the public without himself abandoning or forgetting it. This question may become of practical importance in two cases: (1) Where after a long delay the inventor seeks the protection of a patent as against the public; (2) Where during his delay a later rival inventor applies for or obtains a patent, and the first inventor thereupon endeavors to secure the legal recognition of his own monopoly, on the ground of priority of invention. In the first case it may be regarded as still a doctrine of our law that the mere delay of the inventor does not prejudice his rights, although his delay may have been intended for his own advantage in the secret use of his invention as long as it could be kept secret, and in the prolongation of his exclusive privilege by a patent when the invention could not further be concealed. See § 351 note 2, *post*. A due consideration for the rights of the public might well express itself in applying the rules of estoppel to such an inventor, and meeting his own bad faith with a denial of that legal immunity which is created for the encouragement of inventors, who honestly attempt to advance the welfare of the public as well as of themselves. See Sheriff *v.* A. Fulton's Son (1882), 12 Fed. Rep. 136; 22 O. G. 87; Sprague *v.* Adriance (1877), 3 Bann. & A. 124; 14 O. G. 308; U. S. Rifle & Cartridge Co. *v.* Whitney Arms Co. (1877), 14 Blatch. 94; 11 O. G. 373; 2 Bann. & A. 493; Consolidated Fruit Jar Co. *v.* Wright (1874), 2 Blatch. 149; 6 O. G. 327; 1 Bann. & A. 320. But in the second case the wilful delay of the first inventor ought not to be thus overlooked. The later rival patentee may justly claim that his own time and efforts have been expended on the faith that any other inventor who had previously made the same invention was dealing honestly with the public, and would, within a reasonable period after its reduction to practice, communicate his invention to the public by applying for a patent. The inclination of the courts, in more recent decisions, is to recognize this claim and to hold that the prior inventor has forfeited his rights in favor of the later, whenever he has unreasonably

invention within reach of the public, if unaccompanied by indications that the inventor claims his rightful privilege, amounts to an abandonment. But in all cases the real question is one of intention; and hence while no one but the inventor can abandon the invention, he can abandon it only by such conduct as clearly denotes the voluntary surrender of his rights.[1] Yet the law recognizes radical differences between the effects of different acts in reference to this matter. From some acts it raises no presumption, but leaves it for a jury to decide whether from them an intention of abandonment appears. From others, on the contrary, it conclusively presumes abandonment, and when these are established it does not permit the inventor to deny that he intended to bestow his invention on the public without reward.

§ 348. Intention to Abandon Presumed from Public Use or Sale.

The act from which alone the law presumes the abandonment of an invention is its public use or sale for more than two years before his application for a patent. While other acts, although they show that the inventor does not intend to exercise at present his exclusive privileges, may still leave something to be done before the public can be considered as in full possession of the invention, the use of the invention by the public

delayed his application for a patent. But this rule must not be confounded with the doctrine of abandonment, in any of its forms. It rests, if it exists at all, on broad principles of equity, which must be applied to each instance as it arises, and it cannot be formulated into more specific details as to time and conduct without danger of causing the injustice which it endeavors to avoid. See § 351, note 2, and §§ 388–390, *post*.

§ 347. [1] That abandonment is a question of fact, not of law, see Sprague *v.* Adriance (1877), 3 Bann. & A. 124; 14 O. G. 308; Russell & Erwin Mfg. Co. *v.* Mallory (1872), 2 O. G. 495; 10 Blatch. 140; 5 Fisher, 632.

That abandonment is a question of intention, see Johnsen *v.* Fassman (1872), 2 O. G. 94; 1 Woods, 138; 5 Fisher, 471; McMillin *v.* Barclay (1871), 5 Fisher, 189; 4 Brews. (Pa.) 275; Kendall *v.* Winsor (1858), 21 How. 322; McCormick *v.* Seymour (1851), 2 Blatch. 240.

That the law governing abandonment is that in force at the date of the application, see Beedle *v.* Bennett (1887), 122 U. S. 71; 39 O. G. 1326.

That no one but the inventor himself can abandon his invention to the public, see Jones *v.* Sewall (1873), 3 Clifford, 563; 3 O. G. 630; 6 Fisher, 343.

That one joint inventor cannot abandon the invention to the public, see Sawyer *v.* Edison (1883), 25 O. G. 597.

exhausts all that the inventor can bestow. The law cannot permit him to aver that he intended to retain that which he has thus unequivocally surrendered, or to resume it after it has once become a portion of the common stock of knowledge.[1] It therefore treats as an abandonment, whatever he intended it to be, all public use of his invention, except in cases specially provided for, and which hereafter will be more particularly discussed.

§ 349. Abandonment by Various Methods.

In considering the subject of abandonment two topics thus present themselves: (1) Abandonment by conduct from which the jury may infer an intention on the part of the inventor to dedicate his invention to the public; (2) Abandonment by public use or sale.[1] Under these heads we may conveniently arrange the rules established by the legislature and the courts, and best preserve those distinctions without which the doctrine of abandonment cannot be understood.

§ 348. [1] Though somewhat confused with the question of prior knowledge and use on the part of the public as indicating want of novelty, the English courts have always recognized the doctrine that if the real inventor himself suffered his invention to go into the hands of the public he had thereby lost his right to a patent. Thus in Househill Co. *v.* Neilson (1843), 1 Web. 673, Brougham, J.: (712) "In cases of inventions, the patent right, or monopoly, may be granted by the crown to a person, provided he be, 'the true and first inventor,' and provided also, secondly, that at the time of the grant of the monopoly of the patent, others shall not have used the same. Consequently, observe the result, if either he is proved *not to be the true inventor, or if, being* the true inventor, nevertheless it be proved that there has been a user at the time of the patent by others; in either the one case or the other the right flies off, the condition does not attach which condition precedent must have existed in both those particulars, etc."

§ 349. [1] In Jones *v.* Sewall (1873), 3 Clifford, 563, the court declares that abandonment and public use are two different things. This language can only mean that abandonment and public use are not always the same thing. Abandonment may occur in many other ways than by public use; public use may not in every instance afford evidence of an abandonment. But the rule of law is clear enough that public use for over two years with consent of the inventor always is abandonment; that public use with his consent for less than two years may be accompanied by other circumstances which, taken in connection with the use, prove an abandonment; and that by any conduct and at any time the inventor may evince his intention to abandon his invention to the public, and having done so, loses his right to a patent. 3 O. G. 630; 6 Fisher, 343.

SECTION I.

OF ABANDONMENT INFERRED FROM CONDUCT.

§ 350. Abandonment by Conduct a Question of Fact.

Abandonment of an invention may be inferred from any action or omission of the inventor which, in the opinion of the jury, is sufficient to establish it. No precise test, therefore, can be applied; but in view of all the circumstances of the given case, the jury are to say whether the inventor intended to surrender or retain control over his invention. Still, as the same act differs in significance according to its relation in point of time to the application for a patent, it is necessary to consider it in reference to this relation and to separately discuss: (1) Abandonment before application; (2) Abandonment by application; and (3) Abandonment after application.

§ 351. Abandonment before Application.

An abandonment before application consists in any conduct of the inventor in regard to his invention which indicates an intention upon his part to dedicate it thenceforth to the public. Such conduct may occur at any time before the application.[1] It may comprise a single instantaneous act, or a long series of acts, or mere neglect to act when action is required. Thus where an invention is completed and fully published to the world by the inventor, and then is thrown aside and neither used nor patented by him; or where in words, written or spoken, he expressly bestows it on the public, disclaiming any right exclusive to himself; or where a public use or sale of the invention, though for less than two years, is accompanied by other circumstances showing that the inventor has relinquished his monopoly therein; in these and similar

§ 351. [1] In Elizabeth *v.* Pavement Co. (1877), 97 U. S. 126, Bradley, J.: (134) "An abandonment of the invention to the public may be evinced by the conduct of the inventor at any time, even within the two years named in the law."

That abandonment may be inferred from delay or other causes, see Locomotive Engine Safety Truck Co. *v.* Penna. R. R. Co. (1874), 10 Phila. 252; 6 O. G. 927; 1 Bann. & A. 470.

instances it has been decided that the actions or omissions of the inventor were sufficient evidence of an abandonment.[2] But in all cases of this kind the strict presumption is in favor of the inventor; and no conduct which is not entirely volun-

[2] In the United States Rifle & Cartridge Co. *v.* Whitney Arms Co. (1877), 14 Blatch. 94, Shipman, J.: (101) "A person may forfeit his rights as an inventor by 'a wilful or negligent postponement of his claims or by an attempt to withhold the benefit of his improvement from the public until a similar or the same improvement should have been made and introduced by others.' (Kendall *v.* Winsor, 21 Howard, 322.) If there was no purpose on the part of [the plaintiff's patentee] to withhold his improvement from the public, there was a negligent postponement of his claims until after other inventors had acquired equities which it seems unjust to destroy. The language of Judge Woodruff in Consolidated Fruit Jar Co. *v.* Wright (12 Blatch. C. C. R. 149) though not necessary to the decision of that case, is just and is pertinent to the facts which are here disclosed: 'If an inventor, without substantial reason or excuse, abandons the use of his invention, and for nine years sleeps on his rights, and in the meantime others, in good faith, employ their industry, skill, and money in producing the same thing, and give the public the benefit thereof, putting it into extensive use and on sale, such a state of facts not only warrants the inference of abandonment by the first inventor, but it also creates, as between him and the others, the same equity as would arise if such others had gone further and taken out a patent. Whether the device be patented or has "gone into use without a patent" should make no difference. (Kendall *v.* Winsor, 21 How. 322.) This is not because lapse of time, *per se*, deprives an inventor of his right, but because the circumstances giving character to the delay indicate abandonment; and also because the intervening rights of others make it inequitable that he should thereafter be permitted to assert any such exclusive title to the invention.'" 11 O. G. 378 (375); 2 Bann. & A. 493 (500).

That to abandon experiments, destroying the experimental structures, is evidence of an intention to abandon the invention in its then existing state, see Seymour *v.* Osborne (1870), 11 Wall. 516; Johnson *v.* Root (1862), 2 Fisher, 201; 2 Clifford, 108.

That where an intention to resume the experiments exists, it is not abandonment, see White *v.* Allen (1863), 2 Clifford, 224; 2 Fisher, 440.

That delay in applying for a patent after the invention is completed does not, *per se*, indicate an intention to abandon the invention, see Kelleher *v.* Darling (1878), 3 Bann. & A. 438; 4 Clifford, 424; 14 O. G. 673; Henry *v.* Francestown Soapstone Stove Co. (1876), 2 Bann. & A. 221; 9 O. G. 408; Andrews *v.* Carman (1876), 13 Blatch. 307; 9 O. G. 1011; 2 Bann. & A. 277; Russell & Erwin Mfg. Co. *v.* Mallory (1872), 2 O. G. 495; 10 Blatch. 140; 5 Fisher, 632; Johnsen *v.* Fassman (1872), 2 O. G. 94; 1 Woods, 138; 5 Fisher, 471; Wood *v.* Cleveland Rolling Mill Co. (1871), 4 Fisher, 550; Agawam Co. *v.* Jordan (1868), 7 Wall. 583; Kendall *v.* Winsor (1858), 21 How. 322; Bentley *v.* Fleming (1844), 1 C. & K. 587.

That a delay of solicitors in making application is no abandonment, see Birdsall *v.* McDonald (1874), 1 Bann. & A. 165; 6 O. G. 682.

That no presumption of abandonment arises from delay in procuring

tary, or can reasonably be regarded as consistent with an honest intention to obtain for his invention the protection offered by the law, is ever taken as proof of an abandonment, or allowed to stand between him and the privilege to which every successful and diligent inventor is entitled.

§ 352. Abandonment by Application.

Abandonment by application occurs when the application for a patent, either taken by itself or in connection with other circumstances, indicates an intention on the part of the inventor to surrender to the public some element or attribute of his invention. An application for a patent embraces, among other things, a document known as a specification, which consists of two parts, — a description of the invention, and a statement pointing out such of its peculiar characteristics as the inventor claims to be exclusively his own. These two parts of the specification do not necessarily agree. Though the inventor has described his entire idea of means with each of its

a patent when the delay is caused by sickness, poverty, or insanity, see Celluloid Mfg. Co. *v.* Crofut (1885), 24 Fed. Rep. 796 ; 33 O. G. 235.

That to delay an application in order to make further experiments is not abandonment, see Locomotive Engine Safety Truck Co. *v.* Penna. R. R. Co. (1874), 10 Phila. 252; 1 Bann. & A. 470 ; 6 O. G. 927.

That long delay in applying for a patent, coupled with the sale of devices embracing the invention, is abandonment, see Craver *v.* Weyhrich (1887), 31 Fed. Rep. 607.

That an inventor may abandon his invention by permitting it to go into general use for any lapse of time under circumstances which denote an intention on his part to dedicate it to the public, see Consolidated Fruit Jar Co. *v.* Wright (1874), 6 O. G. 327 ; 12 Blatch. 149 ; 1 Bann. & A. 320.

That no general use will of itself indicate such intention unless it be for more than two years, see Elizabeth *v.* Pavement Co. (1877), 97 U. S. 126 ; McMillin *v.* Barclay (1872), 5 Fisher, 189 ; 4 Brews. (Pa.) 275 ; Root *v.* Ball (1846), 4 McLean, 177 ; 2 Robb, 513.

That a sale of the invention within two years before the application is not evidence of an intention to abandon, see McCormick *v.* Seymour (1851), 2 Blatch. 240 ; Pitts *v.* Hall (1851), 2 Blatch. 229.

That mere words, unaccompanied by acts or omissions, do not indicate abandonment, see Pitts *v.* Hall (1851), 2 Blatch. 229.

That suggestions to others as to the nature of his invention, or consultations with them in regard to it, do not indicate an intention to abandon it, see Locomotive Engine Safety Truck Co. *v.* Pennsylvania R. R. Co. (1874), 1 Bann. & A. 470 ; 6 O. G. 927 ; 10 Phila. 252 ; Whitney *v.* Emmett (1831), Baldwin, 303 ; 1 Robb, 567.

That forfeiture by abandonment is not favored, see Emery *v.* Cavanagh (1883), 17 Fed. Rep. 242 ; Pitts *v.* Hall (1851), 2 Blatch. 229.

subordinate ideas, he may neglect to claim them with such breadth and detail as he ought; and since his patent is commensurate only with his claim, it may fail to protect the whole invention as he has created and described it. The public in this manner are put in possession of the entire invention, while the exclusive right of the inventor is confined to but a part, and thence arises the question whether the failure of the inventor to claim his whole idea operates as an abandonment of the part unclaimed. Here also the decisive fact is the intention of the inventor, and the presumption is in favor of the maintenance of his exclusive rights.[1] If, therefore, there is

§ 352. [1] In *Ex parte* Derby (1884), 26 O. G. 1208, *Butterworth, Com.*: (1209) "It is a well-settled principle that abandonment is not to be presumed. It must be affirmatively established by satisfactory proof. An inventor, if he so elects, may, by express declaration, abandon or dedicate his invention to the public. But in the case at bar there is no evidence that the invention has been abandoned by the expressed intention of the inventor. On the contrary, the reverse appears in the very evidence relied upon to prove abandonment. Has the invention been abandoned by the acts of the inventor? In the case of Shaw *v.* Cooper (7 Peters, 292), the Supreme Court say: 'No matter by what means an invention may be communicated to the public before a patent is obtained, any acquiescence in the public use by the inventor will be an abandonment of his right. If the right were asserted by him who fraudulently obtained it, perhaps no lapse of time could give it validity. But the public stand in an entirely different relation to the inventor. The invention passes into the possession of innocent persons who have no knowledge of the fraud, and at a considerable expense, perhaps, they appropriate it to their own use. The inventor or his agent has full knowledge of these facts, but *fails to assert* his right. Shall he afterward be permitted to assert it with effect? Is not this such evidence of acquiescence in the public use on his part as justly forfeits his right? If an individual witness a sale and transfer of real estate under certain circumstances, in which he has an equitable lien or interest, and does not make known this interest, he shall not afterward be permitted to assert it. On *this principle* it is that a discoverer abandons his right if before the attainment of his patent his discovery goes into public use. His right would be *secured by giving public notice* that he was the inventor of the thing used, and that he *should apply for a patent.*' And further on in the same decision the following language is employed: 'Whatever may be the intention of the inventor, if he suffers his invention to go into public use *through any means whatsoever*, without an immediate *assertion* of his right, he is not entitled to a patent, nor will a patent obtained under such circumstances protect his right.' In this decision, rendered more than fifty years ago, in the infancy of the patent system of this country, we find a clear and accurate exposition of the principle underlying the doctrine of constructive abandonment. In whatever manner the public gains a knowledge of the invention, the right to the use of this knowledge becomes absolute,

nothing, either in the document itself or in the conduct of the inventor, which proves that he intended in this method to

unless the inventor immediately assert his right. The manner pointed out in the decision for asserting his right is 'by giving *public notice* that he was the inventor of the thing used, and that he *should apply for a patent.*' The facts before the court in Shaw *v.* Cooper were that the invention had been publicly used, and thereby the public had gained a knowledge of it; but the language of the court and the principle upon which the decision rests cover a case where information of the invention was communicated to the public through the medium of a patent. In The Suffolk Co. *v.* Hayden (3 Wall. 315), the point was raised that a description of an invention in a patent and *omission to claim it therein* operated as an abandonment or dedication of it to the public, and for that reason a subsequent patent claiming the said invention was void. The court said: 'But the answer to this ground of defence is that it appeared that Hayden, the patentee, had pending before the Commissioner of Patents an application for the same improvement at the time he described it in the specification of the 17th of March, which was doubtless the reason for not claiming it in this patent. The description in no sense affected this application thus pending before the Commissioner, and while it remained before him repelled any inference of abandonment or dedication from the omission to again claim it.' Here the principle announced in Shaw *v.* Cooper, *supra*, is again recognized, and applied to the extent called for by the facts; for abandonment or dedication to the public was held not to result from a description of an invention in a patent, even though it was not claimed therein, in case *another application claiming such invention was pending before the Commissioner at the time the patent was issued.* In other words, the pending application negatived the idea of abandonment of the inventor's right to the invention which was described though not claimed in the patent. In the case of O'Reilly *v.* Morse (15 How. 62) the court said: 'It is said, however, that this alleged improvement is not new, and is embraced in his former specification, and that if some portion of it is new it is not so described as to distinguish the new from the old. . . . All that we think is useful or necessary to say is that after a careful examination of the patents, we think the objection on this ground is not tenable.' In this case, though the point now in controversy was raised, yet the decision seems to have turned on the correctness of the counsel's apprehension of the facts upon which the point was based, and as the court found an error in the statement of the facts it was unnecessary to examine the legal proposition involved. In the case of Campbell *v.* James (21 O. G. 337) the following language is used: 'The same combination of postmarker and blotter was also exhibited in Norton's patent of August 9, 1859. As he did not *then reserve* the process of stamping letters with such an instrument, nor the combination of a postmarker and a blotter, and did not make any 'simultaneous application therefor, he could not afterward obtain a patent for such process and combination, but would be restricted to such particular combination or process as might be exhibited in a new device or apparatus.'"

The rule suggested by this decision is, that to secure protection for an invention exhibited but not claimed in a patent, the inventor must at the time of the issuance of the patent signify in his disclaimer an intention to reserve it for a future application, or he must evi-

abandon part of his idea, it is assumed that the discrepancy between the claim and the description arose from ignorance or

dence such intention by filing an application claiming such device prior to the issuance of the patent in which it is shown. The decision of Campbell *v.* James is, therefore, perfectly consistent with the decisions of the Supreme Court before mentioned. Indeed, it referred to the several proceedings recounted in Shaw *v.* Cooper, and Suffolk Company *v.* Hayden as disproving constructive abandonment, and determined the case before the court by reference thereto. In Singer *v.* Braunsdorf (7 Blatch. 521); Graham *v.* McCormick (21 O. G. 1533); McMillin *v.* Rees (17 O. G. 1357); Hatch *v.* Moffitt (15 Fed. Rep. 252), and other Circuit Court decisions, views are expressed which are even more liberal than those announced by the Supreme Court; but it is unnecessary to consider them in the present case. It being determined that the inference of abandonment which might result from a description of an invention in a patent without a technical claim thereto would be repelled by an assertion of right by the inventor to said invention, the question remains as to the extent of the effect of such assertion of right. The answer is that abandonment then becomes a question of fact, to be determined by the circumstances of each particular case. A compliance with the requirements suggested in Shaw *v.* Cooper, and other cases cited, makes a *prima facie* case against the plea of abandonment, and this *prima facie* case can only be overcome by proof. Laches tend to establish abandonment, vigilance in the prosecution of the claim being required both by the letter and policy of the law."

1208; Swift *v.* Jenks (1884), 19 Fed. Rep. 641; 27 O. G. 621; McKay *v.* Jackman (1882), 20 Blatch. 466; 12 Fed. Rep. 615; 22 O. G. 85; Hayes *v.* Seton (1882), 20 Blatch. 484; 12 Fed. Rep. 126; Brainard *v.* Cramme (1882), 20 Blatch. 530; 12 Fed. Rep. 621; 22 O. G. 769; Sheriff *v.* A. Fulton's Son (1882), 12 Fed. Rep. 136; 22 O. G. 87; Combined Patents Can Co. *v.* Lloyd (1882), 11 Fed. Rep. 149; 21 O. G. 713; Rowell *v.* Lindsay (1881), 10 Bissell, 217; 6 Fed. Rep. 290; 19 O. G. 1565; Miller *v.* Brass Co. (1881), 104 U S. 350; 21 O. G. 201.

That whether such description and failure to claim is an abandonment or not depends upon the right of the inventor, under all the circumstances, to correct the omission by a reissue, see Battin *v.* Taggert (1854), 17 How. 74.

That to describe and not claim, through inadvertence, is not abandonment, see Railway Register Mfg. Co. *v.* Broadway & Seventh Ave. R. R. Co. (1886), 26 Fed. Rep. 522: 34 O. G. 921.

That if the invention is delineated in the drawing of a patent but not described in the specification or claim, and is thus brought to the knowledge of the public, it will be abandoned, see *Ex parte* Borden (1884), 26 O. G. 439.

That though an invention is exhibited by the drawings of a patent, the inventor does not thereby abandon it until after two years' public use, see Hatch *v.* Moffitt (1883), 15 Fed. Rep. 252.

That the description of a process in an application for a machine patent does not abandon the process to the public if the process patent is applied for within two years, see Eastern Paper Bag Co. *v.* Standard Paper Bag Co. (1887), 30 Fed. Rep. 63; 41 O. G. 231.

That an application which describes but does not claim an invention is not

That a claim clearly described is abandonment, see Hill *v.* Commissioner (1885), 4 Mackay, 266; *Ex parte* Derby (1884), 26 O. G.

inadvertence, and he is permitted to correct it by procuring a reissue of his patent, based on a new and perfect statement of his claims. But, on the other hand, where either by express words in his specification he has dedicated to the public the unclaimed elements of his invention, or by unreasonable delay in seeking a reissue after the defects in his first application have become apparent, or by such conduct, active or passive, upon his part, as would now render the enforcement of his original rights a fraud upon the rights of others, he has since shown that the omission in his claim was originally intended as an abandonment, he cannot be permitted to resume those rights, and by reissuing his patent now appropriate what he has previously given to the world.

§ 353. Abandonment after Application.

An abandonment after application can take place only when the inventor, having filed his application for a patent, voluntarily withdraws it, and permanently relinquishes the purpose

abandonment as against another application by the same inventor for this invention, if the latter application be filed before the first patent issues, see Graham *v.* Geneva L. C. Mfg. Co. (1880), 11 Fed. Rep. 138; 21 O. G. 1536; Graham *v.* McCormick (1880), 11 Fed. Rep. 859; 10 Bissell, 39; 21 O. G. 1533; 5 Bann. & A. 244.

The foregoing cases afford examples of the conflicting statements of the courts concerning the effect of an omission to claim patentable matter described in the application. The subject is more fully discussed in §§ 464–467, 506, 633–635, 687–692, *post*. As a result derived from an examination of all the cases, interpreted and, as far as possible, reconciled by the general principles of Patent Law, the following conclusions are presented: —

I. The mere failure to claim described matter is never, *per se*, an abandonment.

II. The intentional failure to claim described matter is always abandonment, unless there exists also an intention to secure the unclaimed matter by a subsequent patent; which latter intention may be evidenced (1) by filing another application covering such matter before the issue of the first patent; or (2) by reserving in the first patent a right to secure such matter by a future patent; or (3) by applying for a subsequent patent, covering such matter, within a reasonable time after the issue of the first patent, and before other inventors or the public have acted on the apparent abandonment created by the failure to claim in the first patent.

III. The unintentional failure to claim described matter is never abandonment; but that such failure was intentional will be presumed unless the patentee applies for an amendment by reissue, or for a subsequent patent, within reasonable time after he discovers, or is chargeable with knowledge, that his original patent does not protect his entire invention.

of obtaining legal protection for his invention. That an inventor has power thus to abandon his invention is unquestionable, and it may often happen that after endeavoring to procure a patent and encountering unexpected difficulties he will deem it expedient to forego further trouble and expense, and allow his idea to become public property. But the proof of such abandonment as this must be conclusive.[1] No length of time expended in surmounting obstacles arising in the Patent Office, no number of successive applications rendered necessary by the rejection of others previously filed, no interval of unavoidable delay between one application and another, nor any other action or omission of the inventor which is not manifestly inconsistent with the design to further prosecute his claims, can issue in this species of abandonment.[2] While in

§ 353. [1] In United States Rifle & Cartridge Co. *v.* Whitney Arms Co. (1886), 118 U. S. 22, Gray, J.: (24) "There may be an abandonment of an invention to the public, as well after an application has been rejected or withdrawn as before any application is made. Such abandonment may be proved either by express declarations of an intention to abandon, or by conduct inconsistent with any other conclusion. An inventor, whose application for a patent has been rejected, and who, without substantial reason or excuse, omits for many years to take any step to reinstate or renew it, must be held to have acquiesced in its rejection, and to have abandoned any intention of further prosecuting his claim." 35 O. G. 873 (873).

In American Hide and Leather Splitting and Dressing Mach. Co. *v.* The American Tool and Machine Co. (1870), Holmes, 503, Shepley, J.: (513) "The abandonment to the public in the sense in which it is here used need not be two years before the date of the application for the patent; it may be afterward, although the presumption always is against an abandonment to the public by a patentee after he has applied for his patent. But he can do so; he can do so within two years; he can do so at any time. It is a matter that may be proved, but it is never to be presumed." 4 Fisher, 284 (299). See also Weston *v.* White (1876), 13 Blatch. 447; 2 Bann. & A. 364.

That an abandonment after application must be clearly proved, see McMillin *v.* Barclay (1872), 4 Brews. (Pa.) 275; 5 Fisher, 189.

[2] For a general discussion of the cases of abandonment after application, see Colgate *v.* Western Union Telegraph Co. (1878), 15 Blatch. 365; 4 Bann. & A. 36; 14 O. G. 943.

That no delays in the Patent Office without fault of the inventor work an abandonment, see Planing Mach. Co. *v.* Keith (1879), 101 U. S. 479; Henry *v.* Francestown Soapstone Stove Co. (1876), 2 Bann. & A. 221; 9 O. G. 408; Jones *v.* Sewall (1873), 3 Clifford, 563; 3 O. G. 630; 6 Fisher, 343; Dental Vulcanite Co. *v.* Wetherbee (1866), 2 Clifford, 555; 3 Fisher, 87; Sayles *v.* Chicago & Northwestern R. R. Co. (1865), 1 Bissell, 468; 2 Fisher, 523.

That a delay caused by war is not abandonment, see Knox *v.* Loweree

pursuit of his legal rights, according to the measure of his abilities, he cannot be affected by the adverse action either of the government or of the public.[3] Only when he gives up the struggle and finally surrenders his exclusive privilege as no longer worth maintaining, is the public so possessed of his invention that his rights in it become incapable of recognition.

(1874), 1 Bann. & A. 589; 6 O. G. 802.

That the mere abandonment of the application is not abandonment of the invention, see Lindsay *v.* Stein (1882), 20 Blatch. 370; 10 Fed. Rep. 907; 21 O. G. 1613; Clark *v.* Scott (1872), 2 O. G. 4; 9 Blatch. 301; 5 Fisher, 245; Bevin *v.* East Hampton Bell Co. (1871), 9 Blatch. 50; 5 Fisher, 23.

That an abandonment of the application during eighteen years has been held to be an abandonment of the invention, see Marsh *v.* Commissioner of Patents (1872), 3 Bissell, 321.

That fifteen years' inaction after withdrawal is abandonment, see Consolidated Fruit Jar Co. *v.* Bellaire Stamping Co. (1886), 27 Fed. Rep. 377; 35 O. G. 627.

That no abandonment of an application can take place except by conduct inconsistent with due diligence in prosecuting the application, see Ballard *v.* Pittsburgh (1882), 12 Fed. Rep. 783; Singer *v.* Braunsdorf (1870), 7 Blatch. 521; Adams *v.* Edwards (1848), 1 Fisher, 1.

That no number of successive applications indicate an intention to abandon, but that, in reference to the question of abandonment, all such are regarded as one application, see Graham *v.* McCormick (1880), 10 Bissell, 39; 11 Fed. Rep. 859; 21 O. G. 1533; 5 Bann. & A. 244; Graham *v.* Geneva L. C. Co. (1880), 11 Fed. Rep. 138; 21 O. G. 1536; Howes *v.* McNeal (1878), 15 Blatch. 103; 15 O. G. 608; 3 Bann. & A. 376; Howard *v.* Christy (1876), 2 Bann. & A. 457; 10 O. G. 981; Goodyear Dental Vulcanite Co. *v.* Willis (1874), 1 Bann. & A. 568; 7 O. G. 41; 1 Flippin, 388; Howe *v.* Newton (1865), 2 Fisher, 531; Godfrey *v.* Eames (1863), 1 Wall. 317.

That between two successive applications the inventor may abandon his intention to procure a patent, and then resuming his intention, file a new and independent application, see Pelton *v.* Waters (1874), 1 Bann. & A. 599; 7 O. G. 425.

See further as to abandonment of the application and its effect on the invention §§ 574–581 and notes, *post*.

[3] That a public use and sale of the invention, pending an application, however prolonged, is not abandonment, see Goodyear Dental Vulcanite Co. *v.* Smith (1874), 5 O. G. 585; Holmes, 354; 1 Bann. & A. 201; Smith *v.* O'Connor (1873), 4 O. G. 633; 2 Sawyer, 461; 6 Fisher, 469; Dental Vulcanite Co. *v.* Wetherbee (1866), 2 Clifford, 555; 3 Fisher, 87.

That the decision of the Commissioner on a question of abandonment is not conclusive, and the patent may be attacked on that ground, see United States Rifle & Cartridge Co. *v.* Whitney Arms Co. (1886), 118 U. S. 22; 35 O. G. 873.

SECTION II.

OF ABANDONMENT BY PUBLIC USE OR SALE.

§ 354. Abandonment by Public Use: History of the Doctrine.

The public use of an invention, with the consent of the inventor, has always been regarded as furnishing conclusive evidence of his intention to abandon it. In its earlier stages the law both in England and in this country was in this respect especially severe. The statute of James I. allowed the grant of letters-patent only for inventions which others, at the date of such letters-patent, did not use; and under this provision the courts held that a single instance of such use by any person other than the inventor, or even by the inventor in a public manner, was sufficient to debar him from a patent. In the United States, the act of 1793 required that the invention should not have been used before the application, and this our courts construed as prohibiting a public use by the consent of the inventor, and decided that his acquiescence in the enjoyment of his invention by the public, whatever might be its duration or extent, was equivalent to an abandonment. So strict a rule was necessarily disadvantageous to inventors and indirectly prejudicial to the public. In 1835 the evil was diminished in Great Britain by an act of Parliament providing for the confirmation of such patents as would otherwise be void by reason of some prior use by others; and in 1852 the 15 and 16 Vict. c. 83 rendered this use a bar only when it occurred before the application. In this country, by the act of 1836, Congress adopted the construction given by the courts to the language of the act of 1793, and also placed the sale of the invention, as an article of traffic, on the same footing with its public use. In 1839 it further relieved inventors by permitting public use and sale of the invention for two years before the application.[1] This provision still continues in our law.

§ 354. [1] That the date of the application for a patent is the date when such application is filed in the Patent Office, not when the inventor places his case in the hands of his solicitors, see Graham *v.* McCormick (1880), 10 Bissell, 39; 11 Fed. Rep. 859; 21 O. G. 1533; 5 Bann. & A. 244; Henry *v.*

At present, therefore, an abandonment is conclusively presumed against the inventor from the public use or sale of the invention with his consent for more than two years before his application for a patent.[2] As to what constitutes such public use and sale we shall now inquire, and first, in ref-

Francestown Soapstone Stove Co. (1880), 2 Fed. Rep. 78 ; 17 O. G. 569 ; 5 Bann. & A. 108.

That if on the rejection of one application another is filed, both are regarded as the same application, and the date of the former is that of its successors, see Graham *v.* McCormick (1880), 10 Bissell, 39 ; 11 Fed. Rep. 859 ; 21 O. G. 1533 ; 5 Bann. & A. 244 ; Graham *v.* Geneva L. C. Co. (1880), 11 Fed. Rep. 138 ; 21 O. G. 1536 ; Howes *v.* McNeal (1878), 15 Blatch. 103 ; 15 O. G. 608 ; 3 Bann. & A. 376 ; Howard *v.* Christy (1876), 2 Bann. & A. 457 ; 10 O. G. 981 ; Goodyear Dental Vulcanite Co. *v.* Willis (1874), 1 Bann. & A. 568 ; 7 O. G. 41 ; 1 Flippin, 388 ; Godfrey *v.* Eames (1863), 1 Wall. 317.

That under § 4894 Rev. Stat., if a new application is not filed within two years after a former application is rejected, it does not date from the date of the former, in reference to public use and sale, see Lindsay *v.* Stein (1882), 20 Blatch. 370 ; 10 Fed. Rep. 907 ; 21 O. G. 1613.

That a delay in prosecuting the application for over two years may be condoned if it is unavoidable, and on this point the decision of the Commissioner is final, see McMillin *v.* Barclay (1872), 4 Brews. (Pa.) 275 ; 5 Fisher, 189.

That a reissue application is of the same date as its original, as far as the question of public use or sale is concerned, see Shaw *v.* Colwell Lead Co. (1882), 20 Blatch. 417 ; 11 Fed. Rep. 711.

That no public use or sale after the application, for however long a time, raises a conclusive presumption of abandonment, see Goodyear Dental Vulcanite Co. *v.* Smith (1874), 5 O. G. 585 ; Holmes, 354 ; 1 Bann. & A. 201 ; Smith *v.* O'Connor (1873), 4 O. G. 633 ; 2 Sawyer, 461 ; 6 Fisher, 469 ; Dental Vulcanite Co. *v.* Wetherbee (1866), 2 Clifford, 555 ; 3 Fisher, 87.

[2] In Manning *v.* Cape Ann Isinglass & Glue Co. (1879), 4 Bann. & A. 612, Lowell, J.: (613) "It has always been a pre-requisite or condition precedent to the grant of a valid patent that the thing patented shall not have been in use. By the English law, and formerly by ours, a use before the date of the patent, or of the application, destroyed the novelty of the invention. But for the last forty years we have permitted a use not exceeding two years before the application. Obvious reasons of policy and justice require that an inventor should not monopolize what he has neglected to patent for a considerable time, if in the meantime the public have acquired the knowledge of it, whether through him or from an independent source. Before 1870 it was generally understood that two years' use would not destroy the patent unless it was had with the 'consent and allowance' of the inventor. These words are not found in the statute of 1870, nor in the Revised Statutes ; and Judge Blatchford has lately decided that they are no part even of the law of 1839."

That under the act of 1793, use by others than the inventor with his consent was a bar, see Earl *v.* Page (1834), 6 N. H. 477 ; Pennock *v.* Dialogue (1829), 2 Peters, 1 ; 1 Robb, 542 ; Tread-

erence to public use, consider: (1) The nature of the use itself; (2) Its public character; and (3) The consent of the inventor.

§ 355. Experimental Use not Public Use.

That use of an invention from which, if public and consented to by the inventor, abandonment may be presumed, consists in the practical employment of the invention in the ordinary course of trade, as distinguished both from the mere construction of the invention and from its experimental use. To make an instrument is not to use it.[1] A use which is experimental, or is designed to test the capability or merits of an art or instrument, is not a use from which abandonment can be inferred.[2] Such use assumes that the inventor does

well *v.* Bladen (1827), 4 Wash. 703; 1 Robb, 531; Pennock *v.* Dialogue (1825), 4 Wash. 538; 1 Robb, 466.

That two years' use or sale before the application raises a conclusive presumption of abandonment, see Andrews *v.* Hovey (1887), 123 U. S. 267; 41 O. G. 1162; Adams & Westlake Mfg. Co. *v.* Rathbone (1886), 26 Fed. Rep. 262; Hutchinson *v.* Everett (1885), 26 Fed. Rep. 531; 35 O. G. 1110; Bates *v.* Coe (1878), 98 U. S. 31; 15 O. G. 337; Elizabeth *v.* Pavement Co. (1877), 97 U. S. 126; McMillin *v.* Barclay (1872), 4 Brews. (Pa.) 275; 5 Fisher, 189.

That this presumption cannot be rebutted by any evidence of difficulties with which the inventor was obliged to contend, see Sisson *v.* Gilbert (1871), 5 Fisher, 109 9 Blatch. 185.

That this rule applies to all classes of inventions, including designs, see Burton *v.* Town of Greenville (1880), 18 O. G. 411; 5 Bann. & A. 541; 3 Fed. Rep. 642.

That a defective combination on sale for two years cannot be so reconstructed as to be useful and then patented, unless inventive skill is used and the combination is new, see Newark Mach. Co. *v.* Hargett (1886), 28 Fed. Rep. 567; 36 O. G. 692.

That the public use and sale of an impracticable machine bars a patent for its component devices, see Newark Mach. Co. *v.* Hargett (1886), 28 Fed. Rep. 567; 36 O. G. 692.

That an assignment of the patent to the user does not prevent the public use from being an abandonment, see Worley *v.* Tobacco Co. (1882), 104 U. S. 340; 21 O. G. 559.

That two years' public use before the first application is necessary to abandonment where several applications are continuous, see Graham *v.* McCormick (1880), 21 O. G. 1533; 10 Bissell, 39; 11 Fed. Rep. 859; 5 Bann. & A. 244.

§ 355. [1] That the making or construction of an invention, without using or selling it, is not public use, see Comstock *v.* Sandusky Seat Co. (1878), 13 O. G. 230; 8 Bann. & A. 188; Betts *v.* Menzies (1859), 5 Jur. N. S. 1164; Brainah *v.* Hardcastle (1789), Holroyd, 81; 1 Web. 44, n.; 1 Abb. P. C. 51.

[2] In Lyman *v.* Maypole (1884), 19 Fed. Rep. 735, Blodgett, J.: (736) "The law permits an inventor to con-

not yet regard his own idea of means as perfectly developed, or fears that his embodiment of it is not adapted to its full

struct a machine which he is engaged in studying upon and developing, and place it in friendly hands for the purpose of testing it and ascertaining whether it will perform the functions claimed for it; and if these machines are strictly experiments, made solely with a view to perfect the device, the right of the inventor remains unimpaired; but when an inventor puts his incomplete or experimental device upon the market and sells it, as a manufacturer, more than two years before he applies for his patent, he gives to the public the device in the condition or stage of development in which he sells it." 28 O. G. 810 (811).

In Sprague *v.* Smith & Griggs Mfg. Co. (1882), 12 Fed. Rep. 721, Shipman, J.: (724) "It is perfectly true that a patentee cannot be permitted to use for profit a machine which embodies a perfected invention, for a period of two years or more, and then obtain a valid patent for the old machine by means of the addition of some new improvements which, in the language of Judge Lowell, 'were intended to benefit the patent rather than the machine.' The present case is that of a machine which was imperfect, and which demanded and received the continuous experiments of the inventor to remedy the defects in its organization. It is not true that the inventor cannot safely use for profit such a machine in its imperfect state, lest two years should elapse during the experimental period before the invention is completed and the patent is applied for."

See also Emery *v.* Cavanagh (1883), 17 Fed. Rep. 242; Graham *v.* McCormick (1880), 21 O. G. 1533; 10 Bissell, 39; 11 Fed. Rep. 859; 5 Bann. & A. 244; Jennings *v.* Pierce (1878), 15 Blatch. 42; 3 Bann. & A. 361; McMillin *v.* Barclay (1872), 4 Brews. (Pa.) 275; 5 Fisher, 189.

That though the invention upon experiment prove complete, the use may still have been experimental and not public, see Bentley *v.* Fleming (1844), 1 C. & K. 587.

That a continuous use is not experimental use if the subsequent completion of the invention did not add to its patentable character, see International Tooth Crown Co. *v.* Richmond (1887), 39 O. G. 1550; 30 Fed. Rep. 775; 24 Blatch. 223.

That the use of machines, substantially the same, for two years in public, cannot be experimental but is public use, see Sanders *v.* Logan (1861), 2 Fisher, 167.

That a continued use in business without change is not experimental use, see Manning *v.* Cape Ann Isinglass & Glue Co. (1883), 108 U. S. 462; 23 O. G. 2413.

That where an invention is complete and is practically used for a long time in the usual way, it is not experimental use, see Hall *v.* MacNeale (1882), 107 U. S. 90; 23 O. G. 937.

That the effect of public use is not avoided by making non-patentable additions or improvements, see International Tooth Crown Co. *v.* Richmond (1887), 39 O. G. 1550; 30 Fed. Rep. 775; 24 Blatch. 223.

That an experimental use of the apparatus employed in the process more than two years before the application for the process patent is no abandonment of the process, see Eastern Paper Bag Co. *v.* Standard Paper Bag Co. (1887), 30 Fed. Rep. 63; 41 O. G. 231.

That the inaction of the inventor for two years after an experimental use may indicate that he did not regard the in-

expression; and therefore his experimental use of the invention, whether in public or in private, and for however long a time continued, indicates no intention to surrender it to the public, but on the contrary a design to retain entire control over it for the purpose of completely realizing his idea.[3] That from a use is accomplished. And though, during all that period, he may not find that any changes are necessary, yet he may be justly said to be using his machine only by way of experiment; and no one would say that such a use, pursued with a *bona fide* intent of testing the qualities of the machine, would be a public use within the meaning of the statute. So long as he does not voluntarily allow others to make it and use it, and so long as it is not on sale for general use, he keeps the invention under his own control, and does not lose his title to a patent. It would not be necessary, in such a case, that the machine should be put up and used only in the inventor's own shop or premises. He may have it put up and used in the premises of another, and the use may enure to the benefit of the owner of the establishment. Still, if used under the surveillance of the inventor, and for the purpose of enabling him to test the machine, and ascertain whether it will answer the purpose intended, and make such alterations and improvements as experience demonstrates to be necessary, it will still be a mere experimental use and not a public use, within the meaning of the statute. Whilst the supposed machine is in such experimental use, the public may be incidentally deriving a benefit from it. If it be a grist mill, or a carding machine, customers from the surrounding country may enjoy the use of it by having their grain made into flour, or their wool into rolls, and still it will not be in public use within the meaning of the law. But if the inventor allows his machine to be used by other persons generally,

vention as complete, see Beedle *v.* Bennett (1887), 122 U. S. 71; 39 O. G. 1326.

That where an invention is made for sale and is sold it is not an experimental use, see Newark Mach. Co. *v.* Hargett (1886), 28 Fed. Rep. 567; 36 O. G. 692.

[3] In Elizabeth *v.* Pavement Company (1877), 97 U. S. 126, Bradley, J.: (134) "But in this case it becomes important to inquire what is such a public use as will have the effect referred to. That the use of the pavement in question was public, in one sense, cannot be disputed. But can it be said that the invention was in public use? The use of an invention by the inventor himself, or by any other person under his direction, by way of experiment and in order to bring the invention to perfection, has never been regarded as such a use. Curtis, Patents, § 381; Shaw *v.* Cooper, 7 Pet. 292. Now the nature of a street pavement is such that it cannot be experimented upon satisfactorily except on a highway, which is always public. When the subject of invention is a machine, it may be tested and tried in a building, either with or without closed doors. In either case such use is not a public use, within the meaning of the statute, so long as the inventor is engaged, in good faith, in testing its operation. He may see cause to alter it and improve it, or not. His experiments will reveal the fact whether any and what alterations may be necessary. If durability is one of the qualities to be attained, a long period, perhaps years, may be necessary to enable the inventor to discover whether his purpose

like this benefit accrues indirectly to the public, or some ad-

either with or without compensation, or if it is with his consent put on sale for such use, then it will be in public use and on public sale within the meaning of the law. If now we apply the same principles to this case, the analogy will be seen at once. Nicholson wished to experiment on his pavement. He believed it to be a good thing, but he was not sure, and the only mode in which he could test it was to place a specimen of it in a public roadway. He did this at his own expense, and with the consent of the owners of the road. Durability was one of the qualities to be attained. He wanted to know whether his pavement would stand and whether it would resist decay. Its character for durability could not be ascertained without its being subjected to use for a considerable time. He subjected it to such use in good faith, for the simple purpose of ascertaining whether it was what he claimed it to be. Did he do anything more than the inventor of the supposed machine might do in testing his invention? The public had the incidental use of the pavement, it is true; but was the invention in public use within the meaning of the statute? We think not. The proprietors of the road alone used the invention, and used it at Nicholson's request, by way of experiment. The only way in which they could use it was by allowing the public to pass over the pavement. Had the city of Boston, or other parties used the invention by laying down the pavement in other streets and places, with Nicholson's consent and allowance, then, indeed, the invention itself would have been in public use within the meaning of the law; but this was not the case. Nicholson did not sell it, nor allow others to use or sell it. He did not let it go beyond his control. He did nothing that indicated any intent to do so. He kept it under his own eyes, and never for a moment abandoned the intent to obtain a patent for it. In this connection it is proper to make another remark. It is not a public knowledge of his invention that precludes the inventor from obtaining a patent for it, but a public use or sale of it. In England, formerly, as well as under our Patent Act of 1793, if an inventor did not keep his invention secret, if a knowledge of it became public before his application for a patent, he could not obtain one. To be patentable, an invention must not have been known or used before the application; but this has not been the law of this country since the passage of the act of 1836, and it has been very much qualified in England. Lewis *v.* Marling, 10 B. & C. 22. Therefore, if it were true that during the whole period in which the pavement was used, the public knew how it was constructed, it would make no difference in the result. It is sometimes said that an inventor acquires an undue advantage over the public by delaying to take out a patent, inasmuch as he thereby preserves the monopoly to himself for a longer period than is allowed by the policy of the law; but this cannot be said with justice when the delay is occasioned by a *bona fide* effort to bring his invention to perfection, or to ascertain whether it will answer the purpose intended. His monopoly only continues for the allotted period in any event; and it is the interest of the public, as well as himself, that the invention should be perfect and properly tested, before a patent is granted for it. Any attempt to use it for a profit and not by way of experiment, for a longer period than two years before the application, would deprive the inventor of his right to a patent." The substance of the doctrine, as thus stated, is this:

Public use is a question of abandonment. The inventor abandons only

vantage is obtained by the inventor, does not change its char-

when he dedicates his invention to the public. As long as he retains control over it he does not dedicate it. By two years' unrestricted public use, etc., he does dedicate and lose control over it.

In Henry *v.* Francestown Soapstone Stove Co. (1876), 9 O. G. 408, Shepley, J.: (409) "The fact of a public use or sale more than two years prior to the application, when clearly proved, is fatal to the patent. But the objection rests upon the principle of forfeiture, and is not to be so favorably regarded as to dispense with the necessity of strict proof. Public use in good faith for experimental purposes, while the inventor is perfecting his invention, and for a reasonable period even before the beginning of the two years of limitation, cannot affect the rights of the inventor." 2 Bann. & A. 221 (223).

In Whitney *v.* Emmett (1831), Baldwin, 303, Baldwin, J.: (310) "A patentee may take a reasonable time to make his specification, drawings, model, to try experiments on the effect and operation of his machinery in order to know whether the thing patented can be produced in the mode specified; he may disclose his secret to those he may wish to consult, or call to his assistance any persons to aid him in making or using his machine, and preparations for procuring his patent. So if the machine is to operate publicly, as in steamboats, a public experiment may be made. . . . In either of these, and in like cases, a disclosure of the secret would not be such previous knowledge, or the use of the invention be such an use, as would impair the patent, etc." 1 Robb, 567 (577).

In re Adamson's Patent (1856), 6 De G., M., & G. 419, the inventor having used his own invention publicly in the course of business before patent, Cranworth, L. C., said: (421) "I think there has been a clear dedication to the public. Cases may arise in which there may be a doubt as to whether an invention has or has not been made public. In the present instance, however, an invention has been made in the progress of a work, and it has been used publicly by the inventor, not as an invention, but in the carrying on and execution of that work. . . . No doubt an experiment might have been made, and if made *bona fide* only for the purpose of testing the merits of an invention I do not think it would have amounted to a dedication to the public; but where, as in the present case, thousands of persons had the opportunity of seeing the apparatus at work for a period of four months, during the carrying on of the petitioner's contract and in the regular course of the undertaking, it is quite clear that no intention of applying for a patent originally existed; and under such circumstances . . . I must hold that there was a dedication to the public."

That an experimental use may be in public, if necessary, and does not thereby become public use, see Railway Register Mfg. Co. *v.* Broadway & Seventh Ave. R. Co. (1886), 26 Fed. Rep. 522; 34 O. G. 921; Railway Register Mfg. Co. *v.* Broadway & Seventh Ave. R. Co. (1884), 22 Fed. Rep. 655; 30 O. G. 180; Campbell *v.* Mayor of New York (1881), 20 Blatch. 67; 20 O. G. 1817; 9 Fed. Rep. 500; Andrews *v.* Cross (1881), 19 O. G. 1705; 8 Fed. Rep. 269; 19 Blatch. 294; Graham *v.* McCormick (1880), 21 O. G. 1533; 10 Bissell, 39; 11 Fed. Rep. 859; 5 Bann. & A. 244; Sinclair *v.* Backus (1880), 5 Bann. & A. 81; 17 O. G. 1503; 4 Fed. Rep. 539; Campbell *v.* James (1879), 18 O. G. 979; 17 Blatch. 42; 4 Bann. & A. 456; Draper *v.* Wattles (1878), 3 Bann. & A. 618;

actor.[4] A use clearly experimental, in good faith and for a reasonable time, though it may show that the invention is in fact complete, does not affect the exclusive rights of the inventor or constitute a dedication to the public. Such dedication is inferrible only from a use in the same manner and for the same beneficial purposes as would exist if the invention, being finished, patented, and published to the world, had been recognized and adopted by the public as an operative means for the accomplishment of certain ends.

§ 356. Public Use is such Use as Gives the Public a Knowledge and Control of the Invention.

A public use is not necessarily a use *in* public nor a use *by* the public, as these terms are generally understood. Any use is public by which the invention passes beyond the control of the inventor. The practical employment of the art or instrument by a single person other than the inventor, if under no obligations as to secrecy or to limitations in the mode of use, is public use; and this is true whether the use is open or concealed, if it be in accordance with the customary method of employing such inventions.[1] Even a use by the inventor or

16 O. G. 629; U. S. Rifle & Cartridge Co. *v.* Whitney Arms Co. (1877), 14 Blatch. 94; 11 O. G. 373; 2 Bann. & A. 493; Birdsall *v.* McDonald (1874), 1 Bann. & A. 165; 6 O. G. 682; Locomotive Engine Safety Truck Co. *v.* Pennsylvania R. R. Co. (1874), 1 Bann. & A. 470; 6 O. G. 927; 10 Phila. 252; Jones *v.* Sewall (1873), 3 O. G. 630; 3 Clifford, 563; 6 Fisher, 343; American Nicholson Pavement Co. *v.* City of Elizabeth (1873), 6 Fisher, 424; 3 O. G. 522; Sisson *v.* Gilbert (1871), 5 Fisher, 109; 9 Blatch. 185; Winans *v.* N. Y. & Harlem R. R. Co. (1855), 4 Fisher, 1; Pitts *v.* Hall (1851), 2 Blatch. 229; *In re* Newall (1858), 4 C. B. N. S. 269; Honiball *v.* Bloomer (1854), 2 Web. 199; Bentley *v.* Fleming (1844), 1 C. & K. 587.

That the same privilege of experimental use, even in public, was recognized before the act of 1839, see Winans *v.* Schenectady & Troy R. R. Co. (1851), 2 Blatch. 279.

[4] In Smith & Griggs Mfg. Co. *v.* Sprague (1887), 123 U. S. 249, Matthews, J.; (256) "A use by the inventor for the purpose of testing the machine, in order by experiment to devise additional means for perfecting the success of its operation, is admissible; and where, as incident to such use, the product of its operation is disposed of by sale, such profit from its use does not change its character; but where the use is mainly for the purposes of trade and profit, and the experiment is merely incidental to that, the principal and not the incident must give character to the use." 41 O. G. 1037 (1039).

See also cases under note 2, *ante*.

§ 356. [1] In Egbert *v.* Lippman (1881),

his servants or his fellow-workmen, if in the ordinary course of trade and exposed to the inspection of the public, is held to

104 U. S. 333, Woods, J.: (336) "We observe, in the first place, that to constitute the public use of an invention it is not necessary that more than one of the patented articles should be publicly used. The use of a great number may tend to strengthen the proof, but one well-defined case of such use is just as effectual to annul the patent as many. McClurg *v.* Kingsland, 1 How. 202; Consolidated Fruit Jar Co. *v.* Wright, 94 U. S. 92; Pitts *v.* Hall, 2 Blatchf. 229. For instance, if the inventor of a mower, a printing-press, or a railway-car makes and sells only one of the articles invented by him, and allows the vendee to use it for two years without restriction or limitation, the use is just as public as if he had sold and allowed the use of a great number. We remark, secondly, that whether the use of an invention is public or private does not necessarily depend upon the number of persons to whom its use is known. If an inventor, having made his device, gives or sells it to another, to be used by the donee or vendee without limitation or restriction, or injunction of secrecy, and it is so used, such use is public, even though the use and knowledge of the use may be confined to one person. We say, thirdly, that some inventions are by their very character only capable of being used where they cannot be seen or observed by the public eye. An invention may consist of a lever or spring hidden in the running-gear of a watch, or of a ratchet, shaft, or cog-wheel covered from view in the recesses of a machine for spinning or weaving. Nevertheless, if its inventor sells a machine of which his invention forms a part, and allows it to be used without restriction of any kind, the use is a public one. So, on the other hand, a use necessarily open to public view, if made in good faith solely to test the qualities of the invention, and for the purposes of experiment, is not a public use within the meaning of the statute. Elizabeth *v.* Pavement Company, 97 U. S. 126; Shaw *v.* Cooper, 7 Pet. 292." 21 O. G. 75 (76). Dissenting opinion by Miller, J., that unless the use is such that the public may have knowledge, it is not public use; that a secret steel in a corset, for example, used for years by the wearer is not publicly used.

In Perkins *v.* Nashua Card and Glazed Paper Co. (1880), 17 O. G. 1285, Lowell, J.: (1286) "The law desires to encourage inventors to make their discoveries known for the improvement of the art, and to discourage an extension of the monopoly beyond the statutory period. For these reasons, and because of the difficulty of ascertaining the amount of knowledge which may have been derived from the exhibition, publication, or use of the invention, it has always been held that when the public have had means of knowledge they have had knowledge of the invention. Thus if a book has been published describing the invention, it is not important that no one has read it. Stead *v.* Williams, 7 M. & G. 818. If a pier has been placed in the bed of a river, or a pipe underground, it is conclusively presumed to be known to all men. It has been intimated that a use in a workshop, where the workmen are pledged to secrecy, may not be a public use. Kendall *v.* Winsor, 21 How. 322; charge of Curtis, J., p. 326; Bevin *v.* East Hampton Bell Co., 9 Blatch. 50; Heath *v.* Smith, 3 Ellis & B. 255. In the last of these cases it is held that if the invention has been worked in the ordinary way, without an injunction of secrecy, the use is public. In McClurg *v.* Kings-

be a public use, from the facilities which it affords and the inducements which it offers to the public to avail themselves of

land, 1 How. 202, it is said by Mr. Justice Baldwin, *obiter*, that use in a factory is a public use. A use very trifling in amount, or a publication purely technical, or a single sale have often been held to deprive an inventor of his patent, without evidence that any one interested to acquire knowledge of the invention had acquired it. Henry *v.* Providence Tool Co., 14 O. G. 855; Egbert *v.* Lippman, 14 O. G. 822; McMillin *v.* Barclay, 5 Fisher, 189; *Re* Adamson's Patent, 6 De G., M., & G. 420; Patterson *v.* Gas Light Co., 3 App. Cas. 239; Lang *v.* Gisborne, 31 Beav. 133. . . . Taking these decisions together, I understand the law to be that actual knowledge of the invention need not have been derived by any one interested to practise it. It is enough that any one or more persons not under a pledge of secrecy saw the invention practised, or even might have seen it if they had used their opportunities, provided it was in fact practised in the ordinary way after being completed. And it must be held either that the workmen and visitors were a part of the public, or that they were persons from whom the public might have acquired the art without a breach of trust." 2 Fed. Rep. 451 (452); 5 Bann. & A. 395 (396).

In Manning *v.* Cape Ann Isinglass and Glue Co. (1879), 4 Bann. & A. 612, Lowell, J.: (614) "Public use means not only a use by the public but a use in public, that is to say, one which is not secret, and therefore one from which, so far as the inventor is concerned, the public may, by any of the chances of life, acquire the knowledge. A remarkable case is that of the lady who wore an improved pair of corsets, given her by the inventor, wore them two years before he applied for a patent upon the article, which was held a public use. Egbert *v.* Lippman, 14 O. G. 822. In a case like the present, the use of a machine by the inventor himself 'in the ordinary way of the public use of a machine,' which I understand to mean without special secrecy, will be a public use. Pitts *v.* Hall, 2 Blatch. C. C. R. 229, 235; Bovin *v.* East Hampton Bell Co., 9 Blatch. C. C. R. 50; McMillin *v.* Barclay, 5 Fisher, 189; *Re* Adamson's Patent, 6 De G., M., & G. 420; Heath *v.* Smith, 3 Ellis & B. 256. The non-existence of public use being a condition precedent to the validity of the grant, the intent of the inventor not to abandon the invention, or his reasons for not applying for a patent, though of a most potent character, such as illness, are immaterial. See Pennock *v.* Dialogue, 2 Pet. 1, and the remarks of Marshall, C. J., on that case in Grant *v.* Raymond, 6 Pet. 218, 248; McClurg *v.* Kingsland, 1 How. 202, 208, *per* Baldwin, J.; Sisson *v.* Gilbert, 9 Blatch. C. C. R. 185; Egbert *v.* Lippman, 14 O. G. 822. Evidence that any one has copied the invention which is thus brought, presumptively, to the knowledge of mankind, is not necessary to the success of this defence. Such a fact would often be difficult to prove or disprove, and the use itself, in any of the modes above explained, works a forfeiture, without more."

See also Whitney *v.* Emmett (1831), Baldwin, 303; 1 Robb, 567.

That public use is use in public, not in secret, see Henry *v.* Providence Tool Co. (1878), 14 O. G. 855; 3 Bann. & A. 501; Adams *v.* Edwards (1848), 1 Fisher, 1.

That the use may be public though concealed from view (as in a lock, or safe-walls, etc.), see Hall *v.* MacNeale (1882), 107 U. S. 90; 23 O. G. 937.

That a single instance of use in public is sufficient, see Clark Pomace

its advantages.[2] But a mere temporary use permitted to another as an act of kindness, or a use existing under injunctions of secrecy or subject to the will of the inventor, or the private use of the invention by the inventor or his employees

Holder Co. *v.* Ferguson (1883), 21 Blatch. 376; 17 Fed. Rep. 79; 24 O. G. 1090; Egbert *v.* Lippman (1881), 104 U. S. 333; 21 O. G. 75; Worley *v.* Tobacco Co. (1881), 104 U. S. 340; 21 O. G. 559; Henry *v.* Providence Tool Co. (1878), 14 O. G. 855; 3 Bann. & A. 501; Kelleher *v.* Darling (1878), 4 Clifford, 424; 14 O. G. 673; 3 Bann. & A. 438; Boston Elastic Fabrics Co. *v.* East Hampton Rubber Thread Co. (1876), 9 O. G. 745; 2 Bann. & A. 268; Am. H. & L. S. & D. Mach. Co. *v.* Am. & T. Mach. Co. (1870), Holmes, 503; 4 Fisher, 284; McCormick *v.* Seymour (1851), 2 Blatch. 240; Honiball *v.* Bloomer (1854), 2 Web. 199.

[2] In McMillin *v.* Barclay (1871), 5 Fisher, 189, McKennan, J.: (195) "The act of July 4, 1836, forbids the granting of a patent for an invention, which had, at the time of the application therefor, been in public use or on sale, with the consent or allowance of the inventor. This provision is modified by the act of March 3, 1839, so as to allow such use or sale for two years prior to the application. Different opinions have been entertained as to the kind of use which these acts of Congress contemplate. By some judges they have been held to mean a use in public by persons other than the inventor; and again, others have held that a use in public by the inventor himself, which is not merely experimental, will have the effect of invalidating the patent. In Ryan *v.* Goodwin, 3 Sum. 518, Mr. Justice Story says: 'It is clear by our law, whatever it may be by the law of England, that the public use or sale of an invention, in order to deprive the inventor of his right to a patent, must be a public use or sale by others, with his knowledge and consent, before his application therefor.' But he must be understood to have predicated this of the facts in the case before him, in which only a use by persons other than the inventor was alleged. While the object of the law was to protect the public against the exclusive claim of an inventor who had dedicated his invention to their use, by allowing its practical employment in public, it was at the same time designed to require of him reasonable diligence in applying for his patent. As it is the public use of a completed invention against which this provision of the law is directed, it could scarcely have been intended to authorize such use by the inventor himself, which, if employed by another, with his consent, would work a forfeiture of his right to a patent. His own direct act is just as significant of an intended abandonment of his inchoate right as is that of another with his consent. Indeed, it is difficult to comprehend that a use in public by an inventor himself is not as effectually 'a public use with his consent and allowance,' as where his invention is permissively so employed by another." 4 Brews. (Pa.) 275 (279). See also Pitts *v.* Hall (1851), 2 Blatch. 229.

That use in a factory where the inventor is employed, if open and with his consent, is public use, see McClurg *v.* Kingsland (1843), 1 How. 202; 2 Robb, 105.

That use in a factory by the workmen in view of the customers of the business is public use, see Smith & Griggs Mfg. Co. *v.* Sprague (1887), 123 U. S. 249; 41 O. G. 1037.

That a single use openly by the inventor is public use, see Jones *v.* Barker (1882), 11 Fed. Rep. 597; 22 O. G. 771.

though its results are given to the world, is not a public use, since in each case the circumstances of the use denote that the inventor purposes to keep the art or instrument under his own control.[3]

§ 357. Public Use not Abandonment unless Consented to by the Inventor.

Until a recent period it seems to have been the uniform doctrine of our courts that the public use of an invention raised no presumption of its abandonment, and constituted no bar to a patent, unless such use had been enjoyed with the consent or allowance of the inventor.[1] In the act of 1836

[3] In Wyeth *v.* Stone (1840), 1 Story, 273, Story, J.: (280) "In the next place, as to the supposed public use of Wyeth's machine before his application for a patent. To defeat his right to a patent under such circumstances, it is essential that there should have been a public use of his machine, substantially as it was patented, with his consent. If it was merely used occasionally by himself in trying experiments, or if he allowed only a temporary use thereof by a few persons, as an act of personal accommodation or neighborly kindness, for a short and limited period, that would not take away his right to a patent. To produce such an effect, the public use must be either generally allowed or acquiesced in, or at least be unlimited in time, or extent, or object. On the other hand, if the user were without Wyeth's consent, and adverse to his patent, it was a clear violation of his rights, and could not deprive him of his patent." 2 Robb, 23 (30).

That the use of an article in private is not abandonment, see Adams *v.* Edwards (1848), 1 Fisher, 1.

That unrestricted use by allowance of the inventor with no injunction of secrecy is public use, see Manning *v.* Cape Ann Isinglass & Glue Co. (1883), 108 U. S. 462; 23 O. G. 2413.

That a special parol license to build two structures on the inventor's plan, before the patent issues, is not abandonment, see McCay *v.* Burr (1847), 6 Pa. St. 147.

That a license to use before patent is not necessarily an abandonment, see Slemmer's Appeal (1868), 58 Pa. St. 155.

§ 357. [1] Although this doctrine makes its first appearance as a legislative enactment in the act of 1836, it had, from the earliest period, been uniformly recognized as a fundamental principle of our Patent Law. By the act of 1790 patents were permitted only where the invention had not been "before known or used." By the act of 1793 the invention was not patentable if "known or used before the application." In the act of 1800 it was provided that "every patent which shall be obtained pursuant to this act, for any invention, art, or discovery which it shall afterward appear had been known or used previous to such application for a patent, shall be utterly void." The statutes being in this condition, the case of Pennock *v.* Dialogue came before the Supreme Court in 1829 (2 Pet. 1; 1 Robb, 542), where the question of prior public use was raised and discussed, the court holding that such

this provision was clearly expressed, but in the modification introduced into the law in 1839, extending the duration of a

use, even under existing statutes, did not defeat the patent, unless it had taken place with the knowledge and consent of the inventor. The court below had charged the jury that "if an inventor makes his discovery public, looks on and permits others freely to use it, without objection or assertion of claim to the invention, of which the public might take notice, he abandons the inchoate right to the exclusive use of the invention to which a patent would have entitled him had it been applied for before such use." After verdict for defendants, on writ of error, Mr. Webster, for the plaintiffs, claimed, *inter alia*, that "the use of an invention, however public, if it be by the permission and under the continual exclusive claim of the inventor, does not take away his right, except after an unreasonable lapse of time, or gross negligence in applying for a patent." Mr. Sargeant, for the defendant, insisted, *inter alia*, that "the inventor, by abstaining from getting a patent, encouraged the public to use the article freely and thus benefited his own manufactory. And he is not at liberty, when this advantage is exhausted, to turn round and endeavor to reach another and a different kind of advantage, by appropriating the use exclusively to himself." But he conceded that "if the invention should be pirated, the use or knowledge obtained by the piracy, or otherwise obtained without the knowledge or consent and without the fault of the inventor," would not bar him from getting a patent. Justice Story, in delivering the opinion of the court, says: (2 Pet. 16; 1 Robb, 558) "The single question, then, is whether the charge of the court was correct in point of law. It has not been and indeed cannot be denied that an inventor may abandon his invention and surrender or dedicate it to the public. This inchoate right, thus once gone, cannot afterwards be resumed at his pleasure; for where gifts are once made to the public in this way, they become absolute. . . . The question which generally arises at trials is a question of fact rather than of law, — whether the acts or acquiescence of the party furnish in the given case satisfactory proof of an abandonment or dedication of the invention to the public." Then stating that the test of abandonment is given by the statutes in the phrases before cited, he continues: (2 Pet. 18; 1 Robb, 561) "What then is the true meaning of the words '*not known or used before the application*'? . . . The words, to have any rational interpretation, must mean not known or used by others before the application. But how known or used? If it were necessary, as it well might be, to employ others to assist in the original structure or use by the inventor himself; or if before his application for a patent his invention should be pirated by another, or used without his consent; it can scarcely be supposed that the legislature had within its contemplation such knowledge or use." Then reviewing the English cases and statute and remarking that the use referred to in them as defeating a patent "has always been understood to be a public use, and not a private or surreptitious use in fraud of the inventor," he proceeds: (2 Pet. 23; 1 Robb, 567) "It is admitted that the subject is not wholly free from difficulties; but upon most deliberate consideration we are all of opinion that the true construction of the act is that the first inventor cannot acquire a good title to a patent if he suffers the thing invented to go into public use, or to be

permitted public use to two years before the application for a patent, that clause was not repeated, nor has it been incor-

publicly sold for use, before he makes application for a patent. His voluntary act or acquiescence in the public sale and use is an abandonment of his right; or rather creates a disability to comply with the terms and conditions on which alone the Secretary of State is authorized to grant him a patent."

Further, that before the act of 1836 a public use or sale without the knowledge or consent of the inventor could not affect his right to a patent, see Mellus *v.* Silsbee (1825), 4 Mason, 108; 1 Robb, 506; Whitney *v.* Emmett (1831), Baldwin, 303; 1 Robb, 567; Shaw *v.* Cooper (1833), 7 Pet. 292; 1 Robb, 643.

These doctrines were formulated and sanctioned by the act of 1836, which made the allowance and consent of the inventor an essential element in any public use affecting his title to a patent. Under this act, and that of 1839 (on the interpretation of which the modern departure from the ancient rules is based), numerous decisions have been rendered uniformly announcing the same necessity for knowledge and consent. Among these decisions is Ryan *v.* Goodwin (1839), 3 Sumner, 514, in which Story, J., says: (518) "As to the second point, it is clear by our law, whatever it may be by the law of England, that the public use or sale of an invention, in order to deprive the inventor of his right to a patent, must be a public use or sale by others with his knowledge and consent, before his application therefor. If the use or sale is without such knowledge or consent, or if the use be merely experimental to ascertain the value or utility or success of the invention by putting it in practice, that is not such a use as will deprive the inventor of his title. Our law also requires that the use or sale and consent of the inventor, but that it should be before his application for a patent. A sale or use of it with such knowledge or consent, in the intermediate time between the application for a patent and a grant thereof, has no such effect. It furnishes no foundation to presume that the inventor means to abandon his invention to the public; and does not, because it is not within the words of our act, create any statute disability to assert his right to a patent." 1 Robb, 725 (729).

In Jones *v.* Sewall (1873), 3 Clifford, 563, Clifford, J.: (592) "No one but the inventor is competent to abandon his invention to the public. His acts and declarations, if explicit, are sufficient for the purpose, or he may accomplish the same end by continued acquiescence in the acts of others, of which it appears that he had knowledge; but the proof of knowledge and acquiescence must be beyond all reasonable doubt, as every presumption is the other way." 6 Fisher, 343 (367); 3 O. G. 630 (638).

Further, that the consent of the inventor to the public use is necessary, see Davis *v.* Fredericks (1884), 21 Blatch. 556; 19 Fed. Rep. 99; Emery *v.* Cavanagh (1883), 17 Fed. Rep. 242; Campbell *v.* Mayor of New York (1881), 20 O. G. 1817; 20 Blatch. 67; 9 Fed. Rep. 500; Andrews *v.* Cross (1881), 19 O. G. 1705; 8 Fed. Rep. 269; 19 Blatch. 294; Campbell *v.* James (1879), 18 O. G. 979; 17 Blatch. 42; 4 Bann & A. 456; Draper *v.* Wattles (1878), 16 O. G. 629; 3 Bann. & A. 618; Andrews *v.* Carman (1876) 9 O. G. 1011; 13 Blatch. 307; 2 Bann. & A. 277; Locomotive Engine Safety Truck Co. *v.* Penna. R. R. Co. (1874), 10 Phila. 252; 1 Bann. & A. 470; 6 O. G. 927;

porated into any subsequent statute. For this reason our courts have lately seemed inclined to treat the act of 1839 as repealing that provision of the act of 1836, and to consider public use as an abandonment, or a bar to a patent, whether with or without the allowance or consent of the inventor.[2]

Between the passage of the act of 1839 and the year 1883 the Supreme Court had occasion to examine this question in six cases. In two of them, viz., Elizabeth *v.* Pavement Co. (1877), 97 U. S. 126, and Bates *v.* Coe (1878), 98 U. S. 31, it expressly asserted that under the act of 1839 a public use without the consent of the inventor does not affect his rights. In the other four it recognized such consent as necessary to an abandonment by public use; see Kendall *v.* Winsor (1858), 21 How. 322; Consolidated Fruit Jar Co. *v.* Wright (1876), 94 U. S. 92; Worley *v.* Tobacco Co. (1881), 104 U. S. 340; Egbert *v.* Lippman (1881), 104 U. S. 333.

It is in the face of these decisions, which not merely expound the words of a statute, but declare and apply essential principles of the common law, that a doctrine is now introduced into our patent system which, unless so qualified as to practically make it a mere definition of "knowledge and consent," is inconsistent alike with authority and with the fundamental rules whereby the rights of all parties to contracts and all owners of property have been hitherto controlled.

[2] The first case of importance in which this view was formally advocated seems to have been Egbert *v.* Lippman (1878), 15 Blatch. 295, although in earlier cases Clifford, J., notwithstanding his repeated assertions of the usual rule, had said that under the act of 1870 and the Revised Statutes a public use, with or without the consent of the inventor, would defeat his rights if coupled with laches in applying for a patent, — apparently thus confounding the abandonment presumed from public use with that inferrible from actions or omissions of the inventor. In Egbert *v.* Lippman, speaking of the effect of public use as an abandonment under the act of 1839, the court declares: (296) "The seventh section of the act of July 4, 1836 (5 U. S. Stat. at Large, 119), provided that a patent should be issued if it should not appear to the Commissioner of Patents that the invention had been in public use or on sale, with the applicant's consent or allowance, prior to his application for the patent. The fifteenth section of that act provided that, in a suit for infringement the defendant should have judgment if it should be proved that the thing patented had been in public use or on sale, with the consent and allowance of the patentee, before his application for a patent. By the seventh section of the act of March 3, 1839 (5 U. S. Stat. at Large, 354), it was enacted that every person who shall have purchased or constructed any newly invented machine prior to the application by the inventor for a patent, shall be held to possess the right to use, and vend to others to be used, the specific machine so made or purchased, without liability therefor to the inventor, and

This new position harmonizes with the tendency of modern

that 'no patent shall be held to be invalid by reason of such purchase, sale, or use prior to the application for a patent, as aforesaid, except on proof of abandonment of such invention to the public, or that such purchase, sale, or prior use has been for more than two years prior to such application for a patent.' The patent in question was applied for and issued when the act of 1839 was in force. The effect of that act is to require that an inventor shall not permit his invention to be used in public at a period earlier than two years prior to his application for a patent, under the penalty of having his patent rendered void by such use. Consent and allowance by the inventor are not necessary to such invalidity. But, *a fortiori*, consent to a use in public, not followed by an application for a patent within two years afterwards, makes the patent, when granted, invalid. The policy introduced by the act of 1839 is continued in the act of July 8, 1870, and in the Revised Statutes. The 24th section of the act of 1870 (16 U. S. Stat. at Large, 201) provides that a patent may be obtained for an invention if it has not been in public use or on sale for more than two years prior to the application for such patent, unless it is proved to have been abandoned. This provision is embodied in section 4886 of the Revised Statutes. The 61st section of the act of 1870 (id. 208), now section 4920 of the Revised Statutes, provides that it shall be a defence to a suit for the infringement of a patent that the thing patented had been in public use or on sale in the United States for more than two years before the application for a patent, or had been abandoned to the public. The policy introduced by the act of 1839 and thus continued is that the inventor must apply for his patent within two years after his invention is in such condition that he can apply for a patent for it, and that, if he does not apply within such time, but applies after the expiration of such time and obtains a patent, and it appears that his invention was in public use at a time more than two years earlier than the date of his application, his patent will be void, even though such public use was without his knowledge, consent, or allowance, and even though he was in fact the original and first inventor of the thing patented and so in public use. Such public use for such length of time is made equivalent to absolute abandonment." 14 O. G. 822, (822); 3 Bann. & A. 468 (469).

In this opinion occur two sentences which may perhaps be regarded as the fountain out of which the modern doctrine flows, though in endeavoring to sustain it, the courts urge other reasons derived from narrow and technical constructions of the statutes. The learned judge, in speaking of the act of 1839, says: "The effect of that act is to require that an inventor shall not '*permit*' his invention to be used in public at a period earlier than two years prior to his application for a patent, under the penalty of having his patent rendered void by such use. Consent and allowance by the inventor are not necessary to such invalidity." These sentences were *obiter dicta* in the case under consideration, the public use there found having been with the inventor's knowledge and consent, and hence are probably not as carefully framed as otherwise they might have been. But as they stand, they announce the proposition that an inventor, without "consenting to" or "allowing" the use of his invention, may nevertheless "permit" it. To many this would seem a mere play upon words. Webster, Dic. *in loc.* defines "permit" by "allow,"

judicial authority to discourage, as far as possible, any

and discussing the possible shade of difference between the synonymes "to permit, allow, etc.," says: "'To permit' is more positive, denoting a decided assent, either directly or by implication. 'To allow' is more negative, and imports only acquiescence or an abstinence from prevention." See also "allow;" and Worcester, Dic. *in loc.* The learned judge in this case, however, undoubtedly intended to distinguish in some degree between "allowance" and "permission." If he regarded "consent and allowance" as implying some voluntary act or recognition, and "permission" as expressive of failure to prevent or prohibit a known or suspected use of the invention, the distinction, though reversing the exact meaning of the words, may be justified, but was unnecessary, since it has always been held that acquiescence, even though silent, was consent. (See § 358 and notes, *post.*) If by "permission" he intended the failure to prevent unknown, fraudulent, and surreptitious uses, his position was not only a denial of all previous doctrines on the subject, but a declaration that piracy and fraud, though concealed from its victim, and unpreventable by him, may operate to deprive him of his rights and transfer his invention to the public without his knowledge and against his will. If in "permission" he included the absence of interference on the part of the inventor with the unknown use of the invention as the product of a rival's inventive skill, he set aside at once the characteristic principle of our law that the first conceiver of an invention, if guilty of no wilful fault or neglect, is entitled to a patent, whatever success his rivals may have attained either in the creation or the use of the invention, and returned to the English theory, that merit resides alone in publication, at least so far as to regard the prior publication by a rival as a sufficient reason for refusing a patent to the innocent and diligent first inventor. If, as the latter portion of the quoted passage indicates, he endeavored to formulate, and by his construction of the act of 1839 to support, the rule that an inventor must exclude the possibility of a two years' public use of his invention by applying for a patent within that period after he had completed his inventive act, it was the introduction of a doctrine warranted by no former interpretation of the statutes, contradicted by an unbroken current of decisions, and inconsistent with universal principles of reason and justice, unless qualified by excepting from its operation all cases in which the delay arose from circumstances over which the inventor had no control. But whichever of these ideas was present in the mind of the distinguished jurist from whose pen this decision proceeded, the conclusion which he reached, that the patent of the inventor will be invalid if the invention was in public use more than two years before his application, "even though such public use was without his knowledge, consent, or allowance, and even though he was in fact the original and first inventor of the thing patented and so in public use," became the guide to several other courts in subsequent cases, and has at last obtained announcement from the Supreme Court itself.

Thus in Andrews *v.* Hovey (1883), 5 McCrary, 181, Love, J.: (206) "Upon what principle of construction may we attempt to interpolate the significant words 'consent or allowance' into the statute. These words do not appear in the statute. No such condition is expressed as these words imply. The plain, simple, and unqualified provision is that 'no patent

delay of the inventor in applying for a patent after his inven-

shall be held to be invalid by reason of such purchase, sale, or use prior to the application, except on proof of abandonment of such invention to the public, or that such purchase, sale, or prior use has been for more than two years prior to such application for a patent.' Not a word is here used to the effect that such prior use or sale shall be with the 'allowance or consent' of the patentee." 26 O. G. 1011 (1018); 16 Fed. Rep. 387 (405).

In Manning *v.* Cape Ann Isinglass & Glue Co. (1883), 108 U. S. 462, Woods, J.: (465) "It is the policy of the patent laws to forbid the issue of a patent for an invention which has been in public use before the application therefor. The statute of 1836, 5 Stat. 117, section 6, did not allow the issue of a patent when the invention had been in public use or on sale for any period, however short, with the consent and allowance of the inventor; and the statute of 1870, 16 Stat. 201, section 24, Rev. Stat. section 4886, does not allow the issue when the invention had been in public use for more than two years prior to the application, either with or without the consent or allowance of the inventor." 23 O. G. 2413 (2414).

In Andrews *v.* Hovey (1887), 123 U. S. 267, Blatchford, J.: (273) "It is very plain that, under the act of 1836, if the thing patented had been in public use or on sale with the consent or allowance of the applicant for any time, however short, prior to his application, the patent issued to him was invalid. Then came section 7 of the act of 1839, which was intended as an amelioration in favor of the inventor, in this respect, of the strict provisions of the act of 1836. The first clause of that section provides for the protection of a person who, prior to the application for the patent, purchases or constructs a specific machine or article, and declares that he may use and sell such specific machine or article after the patent is issued, without liability to the patentee. The section does not require, in order to this protection, that the purchase or construction shall have been with the consent or allowance of the person who afterwards obtains the patent and seeks to enforce it against such purchaser or constructor. The words 'consent or allowance' are not found in the provision. The only requirement is that the specific machine or article shall have been purchased or constructed at some time prior to the application for a patent. The second clause of the section then passes to consider the effect upon the validity of the patent 'of such purchase, sale, or use prior to the application' for the patent, and declares that 'no patent shall be held to be invalid by reason of such purchase, sale, or use prior to the application for a patent as aforesaid, except on proof of abandonment of such invention to the public, or that such purchase, sale, or prior use has been for more than two years prior to such application for a patent.' The expression 'such purchase' clearly means the purchase from any person, and not merely from the person who becomes the patentee of the machine or article. The expression 'such sale or use' clearly refers to the use or sale by the person who has purchased or constructed the machine or article, the right to use and sell which is given to him by the first part of the section. That right is given to a person who has constructed the machine or article, as well as to one who has purchased it; and the plain declaration of the second part of the section is, that where the purchase or construction of the machine or article took place more than two years prior to the application for the patent, or where the use or sale by

tion is complete, but it is not consistent with the theory of

the person who so purchased or constructed the machine or article took place at a time more than two years prior to the application, the patent becomes invalid. It is not possible in any other way to give full effect to the word 'constructed,' in the first part of the section. The word 'purchased,' and the word 'constructed' are used in the same connection, and in connection with the words 'so made or purchased,' which occur afterwards; and the word 'purchased' cannot be limited to a purchase from the applicant for the patent, nor can the word 'constructed' be limited to a construction with the consent and allowance of such applicant, without interpolating into the statute the words 'consent or allowance.' We can find no warrant for doing this. The evident purpose of the section was to fix a period of limitation which should be certain, and require only a calculation of time, and should not depend upon the uncertain question of whether the applicant had consented to or allowed the sale or use. Its object was to require the inventor to see to it that he filed his application within two years from the completion of his invention, so as to cut off all question of the defeat of his patent by a use or sale of it by others more than two years prior to his application, and thus leave open only the question of priority of invention. The evident intention of Congress was to take away the right (which existed under the act of 1836) to obtain a patent after an invention had for a long period of time been in public use without the consent or allowance of the inventor; it limited that period to two years, whether the inventor had or had not consented to or allowed the public use. The right of an inventor to obtain a patent was in this respect narrowed, and the rights of the public as against him were enlarged, by the act of 1839. The language of section 24 of the act of 1870, now section 4886 of the Revised Statutes, is to the same effect, and carries out the policy inaugurated by the act of 1839. It allows a patent to be granted only for an invention which was not in public use or on sale for more than two years prior to the application for the patent, subject to the defence of abandonment within such two years, which is also the requirement of section 61 of the same act; while section 37 of that act requires that a person, in order to have the right to use and sell, without liability, a specific thing made or purchased prior to the application for the patent, shall have purchased it of the inventor, or constructed it with his knowledge and consent." 41 O. G. 1162 (1164).

The discrepancy between the positions taken in the four cases from which these extracts have been made is somewhat remarkable. In Egbert *v.* Lippman and Andrews *v.* Hovey in the Supreme Court, Judge Blatchford asserts that the object and effect of the act of 1839, and of the corresponding provisions in the act of 1870 and the Revised Statutes, is "to require the inventor to see to it that he filed his application within two years from the completion of his invention so as to cut off all question of the defeat of his patent by a use or sale of it by others more than two years prior to his application." This assumes that the inventor may take two years after his complete reduction to practice to test the availability and commercial value of his invention, and implies that no public use of the invention as the invention of another, though more than two years before his application for a patent, raises a conclusive presumption of abandonment, unless coupled with

dedication to the public, which always involves knowledge and

that period of delay after his own inventive act is finished and he becomes entitled to a patent. But in Andrews *v.* Hovey in the Circuit Court, and in Manning *v.* Isinglass & Glue Co., the judges ignore this element of delay on the part of the inventor, and declare that the acts under consideration do not "allow the issue [of a patent] when the invention had been in public use for more than two years before the application, either with or without the consent or allowance of the inventor," thus making the two years' use a bar, whether it were fraudulent and surreptitious or under a license, and whether it were the use of the invention as the invention of the present inventor or of his rival, and whether it occurred before or after the first and diligent conceiver of the idea had succeeded in reducing it to practice.

See also Andrews *v.* Hovey (1888), 124 U. S. 694; Duffy *v.* Reynolds (1885), 24 Fed. Rep. 855; 33 O. G. 621; Kelleher *v.* Darling (1878), 14 O. G. 673; 4 Clifford, 424; 3 Bann. & A. 438.

That the public use of the patented device, or a device substantially identical therewith, for more than two years before the application for the patent is a complete bar to the patent, see Detroit Lubricator Co. *v.* Lunkenheimer (1886), 30 Fed. Rep. 190. In this case it seems that the device used was not the work of the patentee or copied from his but invented by another and used as such. The case also treats this two years' use as a defence irrespective of the question of priority of invention, and as resting purely on the statute.

The difficulties attendant upon this position are rendered more striking by the opinion in Andrews *v.* Hovey (1888), 124 U. S. 694, in which a rehearing on the former case, in 123 U. S. 267, was denied. In considering the arguments of the petitioners and the authorities cited in support of the ancient doctrine, the Supreme Court apparently concede that a piratical or fraudulent use would not defeat a patent, and by stating that the public use in the case at bar was the use of the invention of the patentee, by persons who derived their knowledge of the invention from him through his carelessness or indifference, at least refrain from establishing the rule that a public use by a later conceiver but earlier reducer could invalidate the patent of the first and diligent conceiver. If this be the scope of the view taken by the court, and is to be accepted as the proper rule, then no public use can be a bar unless it is the use of the patentee's invention as distinguished from that of a rival, and is untainted with piracy or fraud; in other words it must be a use which the patentee "permitted." Thus we return to the verbal controversy raised by Egbert *v.* Lippman (1878), 15 Blatch. 295, and are again confronted with the proposition that public use for more than two years before the application defeats a patent, although the inventor does not know of it, nor consent to it, nor allow it, provided he "permits" it. For the further interpretation of this proposition the efforts of both jurists and philologists would seem to be required.

Although the construction of the act of 1839 may be regarded as settled, at least for a time, by these decisions of the Supreme Court, the opposite view may be here presented, as possibly throwing some light upon questions to which this literal construction of the statute is sure to lead.

Prior to the act of 1836 two great principles had become settled features of our Patent Law: First, that no fraudulent, piratical, or surreptitious

consent, nor with the doctrine of estoppel under which the

use of an invention before the application of the inventor for a patent, for however long a period continued, could in any manner affect his rights; Second, that the first conceiver of an idea of means, if diligent in reducing it to practice, was entitled to a patent notwithstanding that a later conceiver and earlier reducer had already completed the invention and given it to the public, either with or without procuring a patent for it to himself. If these principles are departed from the entire character of our law is changed, and it is inconceivable that by the act of 1839 or any subsequent enactment such a change has taken place without manifesting itself at once and unmistakably in the language of the statutes and the utterances of the courts.

The act of 1836 was evidently intended for the benefit of inventors, and was the offspring of a public sentiment in their favor which increased rather than diminished during the ensuing forty years. In less than three years afterward the act of 1839 was passed, every other provision of which was marked by the same liberal spirit toward inventors, and was manifestly designed for the furtherance of their interests. It is not probable, therefore, at the outset, that Congress, while thus enlarging other privileges of inventors, attempted to withdraw the protection which the courts had always given them against the piratical and surreptitious use of their inventions, or to place them at the mercy of rival inventors of whose achievements and actions they were wholly ignorant. But no such conclusion can properly be drawn from the language of this act. The section reads as follows: —

"*And be it further enacted*, That every person or corporation who has, or shall have, purchased or constructed any newly invented machine, manufacture, or composition of matter, prior to the application of *the inventor or discoverer* for a patent, shall be held to possess the right to use, and vend to others to be used, the specific machine, manufacture, or composition of matter, so made or purchased, without liability therefor to the inventor or any other person interested in such invention; and no patent shall be held to be invalid by reason of *such* purchase, sale, or use prior to the application for a patent *as aforesaid*, except on proof of abandonment of such invention to the public; or that *such* purchase, sale, or prior use has been for more than two years prior to such application for a patent."

If there is any significance to precise and carefully selected language, the meaning of this section cannot be mistaken. It has reference to a definite transaction between *the inventor* and his purchaser or licensee; and determines the effect which such transaction shall have upon their respective rights. The first clause provides that a purchase or licensed construction of the invention before the application for a patent should empower the purchaser or maker to use or sell it after the patent had been granted. The second clause declares that *such* purchase, use, or sale should not impair the right of the inventor to his patent unless coupled with acts of abandonment, or occurring more than two years before the application was made. There is no reference whatever, either express or implied, to any use of any rival invention, or to the surreptitious use of the inventor's invention. It is a clear and specific extension of the provisions of the act of 1836, conferring upon inventors the additional privilege of putting their inventions into market for two years before applying for a patent, on condition that their purchasers and

public use or sale of his invention could destroy the right of

users shall thereby acquire a perpetual implied license to use and sell the articles so made or purchased. It is true that the phrase "consent and allowance of the inventor" does not occur in the section; but the repetition of the phrase "*such* purchase, etc.," shows beyond peradventure that the purchase is the one referred to in the first clause as made from *the inventor;* and the legislative body that enacted the statute was certainly warranted in presuming that the courts which were to interpret and apply it would recognize the fact that a "*purchase,*" *without the knowledge and consent of the vendor,* would be impossible.

That this construction of the statute is the true one is shown by its adoption by all contemporary judges. See McClurg *v.* Kingsland, (1843), 1 How. 208, 209; 2 Robb, 105; Pierson *v.* Eagle Screw Co. (1844), 3 Story, 406, 407; 2 Robb, 268; Hovey *v.* Stevens (1846), 1 W. & M. 301; 2 Robb, 490; Kendall *v.* Winsor (1858), 21 How. 330; and MS. cases cited *in loc.* in Law's Dig. Patent Cases, pp. 604–608.

The position taken by Story, J., in Pierson *v.* Eagle Screw Co. is especially clear and forcible. After declaring that the 7th section of the act of 1839 has the meaning and effect here stated, he closes as follows: "Any other construction of these clauses would lead to this extraordinary conclusion, that the inventor would be deprived of the benefit of his invention and his right to a patent without any laches, or misconduct on his own part, by the mere acts of a wrong-doer without his knowledge or against his will; and the exceptions, in a practical sense, would become nullities. But construed as we construe them, they have a plain, appropriate, and satisfactory meaning. This view of the matter is in entire coincidence with the whole theory and enactments of all the other Patent Acts, and with the judicial interpretations which have been constantly put upon them. It has been the uniform doctrine of the courts of the United States that no fraudulent or wrongful use of an invention, and no public use without the consent or knowledge or sanction of the inventor, would deprive him of his right to a patent."

That this construction is correct is evident also from the language used in section 37 of the act of 1870 and section 4899 of the Revised Statutes, in which the first clause of the act of 1839 is perpetuated, viz., "that every person who may have *purchased of the inventor, or with his knowledge and consent may have constructed,* any newly invented or discovered machine or other patentable article . . . shall have the right to use, etc." Compare this legislative interpretation with that given by the Supreme Court in Andrews *v.* Hovey, *ante,* to the words "purchased" and "constructed."

In this connection it may be suggested that the second clause of the act of 1839 might properly be restricted to the transaction described in the first clause, and applied only to cases where the purchase, use, or sale was under the implied license of the inventor; leaving all questions of unlicensed use, whether wrongful or under some rival inventor, to be determined by the general doctrines of abandonment or estoppel, without regard to any specific period of time.

The act of 1870 and the patent provisions in the Revised Statutes of 1874, are a compilation, condensation, and rearrangement of the various acts relating to letters-patent theretofore subsisting, and like all other revisions are to be interpreted, in case of doubt, by

the inventor to a patent only when accompanied by some fault or bad faith of his own.[3]

referring to the acts from which they were compiled. It is never presumed that such restatements of existing laws are intended to change the rules previously in operation, and unless the language adopted and sanctioned by the legislature positively requires it, no departure from the former doctrine can be permitted. See U. S. *v.* Butterworth (1884), 3 Mackay, 229; 27 O. G. 519. But in the act of 1870 and the Revised Statutes there is no express indication of any variation in the rules which govern the rights of the inventor. In both the 7th section of the act of 1839 is divided, the first clause appearing as § 37 of the act of 1870, and § 4899 of the Revised Statutes, while the second clause, shorn of part of its first member, is inserted in §§ 24 and 61 of the act of 1870, and in §§ 4886 and 4920 of the Revised Statutes. In § 4886, which reproduces § 24 of the act of 1870, it is made a condition precedent to the issue of a patent that the invention of the applicant shall not have been in public use or on sale for more than two years prior to his application. The whole structure of this section shows that the invention used or sold must be the invention of the applicant, not of some other inventor, and though no mention is made of his knowledge or consent as entering into the use or sale, there is certainly nothing to indicate any departure from the ancient doctrine that a surreptitious or piratical use or sale could in no manner prejudice his rights. The provision in § 4920 (or § 61 of 1870), is more destitute of guides to its real meaning, but its language demands no divergence from the interpretation given to it in § 4886, that it refers to the invention as the invention of the patentee, and not as the fruit of the inventive skill of any rival inventor, and to a use or sale which was not piratical or surreptitious, and therefore must have been known to and acquiesced in by the patentee. Taking the act of 1870 and the revision of 1874 for what they truly are, an attempt to codify and clarify the Patent Laws, and not to change either their fundamental principles or their well established rules, and interpreting them by the originals which they represent, the mist which has been thrown around this subject will speedily be dissipated, and the former and just doctrine will be definitely and authoritatively declared.

[3] The evils consequent upon the adoption of this rule, whether they are theoretical or practical, will probably be avoided by the future introduction of such distinctions and qualifications as at the same time preserve the just rights of the inventor and promote the public interest. Sweeping propositions are uniformly dangerous both in reasoning processes and in actual application. Experience usually provides a remedy by curtailing and discriminating until a true and just doctrine is reached, — this mode of development being peculiarly evident in the history of Patent Law. With that future in view, a classification of the cases in which this rule can properly be followed, either wholly or in part, or cannot be observed at all, may serve a useful purpose.

When a defence of public use is urged, the facts will show that the invention used was either (1) the result of the inventive act of the plaintiff's inventor, or (2) had been created by and was employed as the production of some rival inventor. These cases stand on different ground as to this entire question, and must be separately considered.

(1) If the invention used were the

§ 358. Public Use Acquiesced in if Known to the Inventor and not Prohibited.

If the consent of the inventor is essential, neither a fraudulent nor a surreptitious use of the invention raises a presumption of public use arises, the plaintiff's patent being invalid upon other grounds. If the plaintiff's patentee were the first inventor, the public use of the invention must have occurred either before or after he had completed the reduction of his idea to practice. A public use, unknown to the inventor, and before he has perfected his invention, manifestly can have no effect upon his rights. If he were the first conceiver, and were diligent in reduction, no act of his rival could deprive him of a patent in the interest of the rival or of any other individual; and there is no principle of law or ethics which would support the claim that what the rival could not appropriate to himself he could nevertheless dedicate to the public. The fundamental theory of our law that the first conceiver, if a diligent reducer, is to receive a patent, notwithstanding any achievements or successes of a rival, should not be shaken by admitting that a public use by the rival, concealed from the first inventor, can defeat the right of the first inventor to a patent when this effect is not accomplished even by the issue of a previous patent to the rival himself. No other position, in such a case, is tenable but that an unknown public use, which occurred before the plaintiff's patentee had brought the invention to such perfection as would have made it suitable subject-matter for a patent, cannot invalidate or bar the issue of a patent.

But where a public use, though occurring before the plaintiff's patentee completes the invention, is known to him or comes to his knowledge after he has reduced his idea to practice, it may be fairly held that he must act with promptness and make his application for

fruit of the patentee's inventive skill, and by its user were derived from him, this use must have been either with or without the consent of the inventor. If with his consent, or through any neglect on his part which is morally equivalent to consent, there can be no difficulty, since in this case the old and new rules are identical. But if the use were without his knowledge, he employing proper diligence to know, it was a secret fraud upon his rights, a simple piracy of his invention. No such use can justly deprive him of a patent, or invalidate it when granted, however long such use may be continued. This was the position maintained by our courts before the act of 1836 was passed, and while the law permitted no use by others before the application for a patent; nor is it supposable that any legislature or judicial body will ever take the ground that if a person can steal the knowledge of an invention and put it into public use without the cognizance of the inventor, the theft shall, after two years, redound to the public benefit and leave them in permanent possession of the results of the inventor's skill. The law may well require an inventor to apply for a patent within a prescribed period after his invention is completed, but as it has not done so, the same effect ought not to be indirectly sought by making crime and fraud the means of forcing the inventor to a premature disclosure of his secret.

(2) If the invention used had been created by, and was employed as the production of, some rival inventor, either the rival or the plaintiff's patentee was the first and true inventor. If the rival were the first inventor, no

tion of abandonment. Knowledge, or failure to use accessible means of knowledge which in law is knowledge, is necessary

a patent with reasonable diligence. His inventive act being finished, and his invention ready for a patent, justice to the public requires that he should not allow them to remain uninformed as to his rights after he ascertains that they are liable to be misled by such public use unless he makes his own claim known by applying for a patent. No measure of delay in such cases can be fixed by law. If knowledge exists before his invention is completed, a reasonable time should be allowed him, after completion, to make his application. If knowledge is first obtained after his reduction to practice, a reasonable time after the knowledge is acquired is proper; reasonable time, in either instance, being determined by reference to all the circumstances of the case.

If the public use occurs after the completion of the invention by the plaintiff's patentee, a different rule is justified by legal principle and wise regard for public welfare. Where the first and true inventor, having completed his inventive act, unreasonably delays his application for a patent, and pending such delay a subsequent inventor produces the invention and places it before the world by a public use or sale of more than two years' duration, whether with or without the knowledge of the first inventor, the right of the latter to protect it by a patent is forfeited, and the invention remains forever in the possession of the public. This rule rests upon the principle of equitable estoppel. As a prior inventor, unreasonably withholding his application for a patent, may be estopped to claim the invention as against a subsequent inventor who, in ignorance of the concealed invention of the former, has expended time and inventive skill in producing the same art or instrument (see § 340, and notes), so if the subsequent inventor, instead of appropriating his invention to his own use, dedicates it to the public, who in good faith and without knowledge of the first inventor's rights apply it to the satisfaction of their wants for a period sufficient to bar the last inventor's claim to a monopoly, the first inventor may be properly regarded as estopped from insisting on his ownership of the invention as against the public, unless his circumstances warranted his long delay. There is here no question of piratical use, for the invention used is that of the subsequent not the prior inventor. There is no invasion of the recognized privileges of a diligent first inventor, for after the invention is complete and patentable, the inventor voluntarily postpones the endeavor to secure it by a patent. The case is one where both the subsequent inventor and the public are innocently misled by such conduct on the part of the first inventor as, in view of common events, he must have known was likely to have that result, and hence he may well be considered to have contemplated such result and indirectly to have abandoned his invention. A suggestion of this position is found in Pennock *v.* Dialogue (1829), 2 Peters, 1, where Story, J., discussing the early doctrine of public use, says: (22, 23) "In respect to a use by piracy, it is not clear that any such fraudulent use is within the intent of the statute; and upon general principles it might well be excluded. In respect to the case of a second invention, it is questionable at least, whether, if by such second invention a public use was already acquired, it could be deemed a case within the protection of the act. If the public were already in possession and common

to consent, and a use successfully concealed from the inventor, to whomsoever else it may be known, imposes upon him no obligation to interfere in order to protect his rights.[1] But

use of an invention, fairly and without fraud, there might be sound reason for presuming that the legislature did not intend to grant an exclusive right to any one to monopolize that which was already common. There would be no *quid pro quo* — no price for the exclusive right or monopoly conferred upon the inventor for fourteen years." This suggestion does not express the entire law on the subject, since it takes no notice of the diligent inventor's rights as against the subsequent inventor and the public. But, assuming the existence of these rights, it fairly discloses the principle that a public possession, once honestly obtained, cannot be defeated unless by a superior claimant who has not wilfully or negligently contributed to place the public in the position from which he now seeks to exclude them. See also to the same effect Manning *v.* Cape Ann Isinglass & Glue Co. (1879), 4 Bann. & A. 612; United States Rifle & Cartridge Co. *v.* Whitney Arms Co. (1877), 14 Blatch. 94; 11 O. G. 373; 2 Bann. & A. 493.

The doctrine of abandonment can be relieved of much, if not of all, of its ambiguity by preserving the radical distinction between abandonment inferred from conduct and abandonment presumed by law. The former is a question of fact, to be determined from the evidence, unaided by legal presumption. The latter is a conclusion which the law draws from specific circumstances, whenever those circumstances are proved to have existed. The difficulties now attending the doctrine seem to have been created mainly by the struggle of the courts to turn the former method of abandonment into the latter, and to raise a conclusive presumption of law from circumstances which, though they might warrant an inference of abandonment as a matter of fact, were not those specific circumstances which authorize the court to find abandonment as a matter of law. This appears to have been the case in the decisions of Judge Blatchford in Egbert *v.* Lippman and Andrews *v.* Hovey, before cited. The delay of the inventor in applying for a patent for two years after he has completed his invention, and after his invention has gone into public use, either through his own instrumentality or that of other inventors, unless caused by some condition or event over which he had no control and hence without bad faith or laches on his part, may well constitute the basis of an inference that the inventor intended to abandon his invention, although his want of knowledge that the invention was in public use might prevent the court from applying to him the inevitable and unrebuttable presumption of the law. To restore the doctrine to its ancient harmony and intelligibility it is merely necessary to hold, —

I. That the law conclusively presumes abandonment by the inventor only when the invention has been in public use or on sale, as his invention and with his acquiescence, for more than two years before his application for a patent.

II. That abandonment in fact may be inferred from unreasonable delay in patenting the invention, or from any other circumstances which render the inventor chargeable with bad faith toward the public or voluntary negligence in the assertion of his rights.

See §§ 346, 351, and notes, *ante*.

§ 358. [1] That surreptitious use is no evidence of abandonment, see Kendall

from his knowledge or his means of knowledge acquiescence is properly inferred, unless by prohibition or by application for a patent he seasonably endeavors to prevent the public from appropriating the invention;[2] and though strict proof both of his knowledge and his negligence is required,[3] yet, these being once established, his privileges are forfeited if without his interference the term specified elapses after he becomes chargeable with knowledge of the use.[4]

§ 359. Abandonment by Sale.

The same general characteristics must exist in any sale of the invention from which abandonment is to be inferred. The sale must have been in the usual course of business,[1] and

v. Winsor (1858), 21 How. 322; Pennock *v.* Dialogue (1829), 2 Peters, 1; 1 Robb, 542; Mellus *v.* Silsbee (1825), 4 Mason, 108; 1 Robb, 506. See also § 357 and notes, *ante*.

[2] That acquiescence is consent, see Kendall *v.* Winsor (1858), 21 How. 322; Mellus *v.* Silsbee (1825), 4 Mason, 108; 1 Robb, 506.

That silence in view of known use is acquiescence, see Sisson *v.* Gilbert (1871), 9 Blatch. 185; 5 Fisher, 109.

[3] That the presumptions are in favor of the inventor, see Emery *v.* Cavanagh (1883), 17 Fed. Rep. 242; Graham *v.* McCormick (1880), 10 Bissell, 39; 11 Fed. Rep. 859; 21 O. G. 1533; 5 Bann. & A. 244; Jennings *v.* Pierce (1878), 15 Blatch. 42; 3 Bann. & A. 361; Pitts *v.* Hall (1851), 2 Blatch. 229.

[4] That acquiescence in two years' use defeats a patent, see Toppan *v.* National Bank Note Co. (1861), 4 Blatch. 509; 2 Fisher, 195; Bell *v.* Daniels (1858), 1 Bond, 212; 1 Fisher, 372; Ransom *v.* Mayor of New York (1856), 1 Fisher, 252; Allen *v.* Blunt (1846), 2 W. & M. 121; 2 Robb, 530.

§ 359. [1] In Henry *v.* The Francestown Soapstone Stove Co. (1880), 17 O.G. 569, Lowell, J.: (569) "Sales in the usual course of business, whether absolute or conditional, if they are sales of the patented thing, work a forfeiture. A single sale has this effect as well as a hundred sales." 2 Fed. Rep. 78 (80).

In Morgan *v.* Seaward (1837), 1 Web. 187, Parke, B.: (194) "It must be admitted that if the patentee himself had, before his patent, constructed machines for sale as an article of commerce, for gain to himself, and been in the practice of selling them publicly, that is, to any one of the public who would buy, the invention would not be new at the date of the patent." 2 M. & W. 544 (559); 2 Abb. P. C. 419 (428).

In Wood *v.* Zimmer (1815), 1 Holt, N. P. C. 60, the patentee had sold the article in the public market four months before the date of the patent. Such sale was evidence of the invention having been used and exercised for the purposes of commerce, and not simply for the purpose of experiment. The patent was held invalid. See 1 Web. 44, n.; 1 Abb. P. C. 202.

In Morgan *v.* Seaward (1837), 2 M. & W. 559, one article had been made in secret and exported. It was held not to invalidate the patent. See 1 Web. 44, n.; 1 Web. 187; 2 Abb. P. C. 419.

That actual sale is not necessary, —

the invention must have been regarded by the contracting parties as a complete and operative means, ready for immediate practical employment in the arts.[2] When such a sale is unconditional, the art or instrument is placed beyond the control of the inventor and irrevocably dedicated to the public; and the same result follows where title is to pass at the option of the purchaser, since here the inventor has no power to resume, at pleasure, his exclusive right.[3] A single sale of this kind, of a single article and to a single person, is thus consid-

to offer or expose for sale in the ordinary methods is sufficient, — see Plimpton *v.* Winslow (1883), 14 Fed. Rep. 919; 23 O. G. 1731; Burton *v.* Town of Greenville (1880), 5 Bann. & A. 541; 18 O. G. 411; 3 Fed. Rep. 642; Hancock *v.* Somervell (1851), 39 New L. J. 158.

That to offer for sale, though there is no demand for the article, is enough, see Losh *v.* Hague (1838), 1 Web. 202; 2 Abb. P. C. 501.

That to place the article on sale, if it be used, though no sales take place, is abandonment, see Plimpton *v.* Winslow (1883), 23 O. G. 1731; 14 Fed. Rep. 919.

[2] That the invention sold must be complete and operative, see Henry *v.* Francestown Soapstone Stove Co. (1880), 17 O. G. 569; 2 Fed. Rep. 78; Draper *v.* Wattles (1878), 16 O. G. 629; 3 Bann. & A. 618; Am. H. & L. S. & D. Mach. Co. *v.* Am. T. & Mach. Co. (1870), Holmes, 503; 4 Fisher, 284; Winans *v.* N. Y. & Harlem R. R. Co. (1855), 4 Fisher, 1.

That the sale of an experimental machine in the market for over two years is abandonment of the machine in its existing state, see Lyman *v.* Maypole (1884), 19 Fed. Rep. 735; 28 O. G. 810. See notes to this case in 19 Fed. Rep. on Abandonment, Experiments, etc.

[3] In Henry *v.* The Francestown Soapstone Stove Co. (1880), 2 Fed. Rep. 78, Lowell, J.: (80) "In my opinion the evidence tends to show a sale of the invention. True, some sales were conditional; that is to say, the stoves were to be returned if they were not satisfactory to the buyers; but this does not, without further explanation, prove that they were experimental. It may show that the purchaser had doubts about the article, but does not prove any on the part of the seller. . . . It is very unlikely that a buyer would take what he understood to be an experimental thing; but if he did, the evidence should be unequivocal that a test of the invention was one of the purposes of the seller. This article could be tested by the inventor as well in his own house as in any other place; and when he sold it in its completed form, though with warranty or on condition, he sold it." 17 O. G. 569 (569).

Thus that to sell "on trial," to be kept and paid for if satisfactory to the vendee, is a sufficient sale, see Kells *v.* McKenzie (1881), 20 O. G. 1663; 9 Fed. Rep. 284.

That selling "to see if it will sell," is also sufficient, see Consolidated Fruit Jar Co. *v.* Wright (1874), 6 O. G. 327; 12 Blatch. 149; 1 Bann. & A. 320.

That any sale without limitation is enough, see Schneider *v.* Thill (1880), 5 Bann. & A. 565.

That if the invention is sold embraced in another, without notice, it is abandonment, see Egbert *v.* Lippman (1881), 104 U. S. 333; 21 O. G. 75.

ered as an unmistakable indication of his intention to abandon the invention, unless, within the time required by statute, he counter-indicates it by his application for a patent.[4] But when the title of the purchaser is by the terms of the agreement made optional with the inventor, or where from the provisions of the contract it is evident that the inventor still retains control of his invention, and can at will recall the privilege he has bestowed, there is no such presumption, but the intent of the inventor is to be discovered, as a fact, from the whole transaction, as in ordinary cases of abandonment.[5] A sale of the invention by the inventor himself, of course, establishes his knowledge and consent. But where sales have been made by others the rule is the same, both in reason and

[4] In Innis *v.* Oil City Boiler Works (1885), 22 Fed. Rep. 780, Acheson, J.: (780) "Doubtless a single sale by an inventor, in the ordinary course of business, of a machine embodying his completed invention, more than two years before his application for a patent, will defeat his right thereto, and may be shown in bar of a suit for infringement. And it may well be that such consequence will not be averted by the mere condition in the contract of sale that the purchaser shall have the right to return the machine and take back the price should it fail to work satisfactorily. Henry *v.* Francestown Soapstone Stove Co., 17 O. G. 569; 2 Fed. Rep. 78. But the proofs here show that the one sale relied on to support the plea was not only characterized by that condition, but was otherwise exceptional. It was made at an under price and without profit to the seller. Moreover, I am persuaded that the sale was made for the purpose of securing a fair test of the invention. . . . (781) Upon the whole evidence it is plain that the transaction was altogether experimental; therefore the invention was not 'in public use or on sale' within the meaning of the statute. . . . It being once shown that the use was experimental, then, upon the question of its reasonableness in point of duration, every presumption should be made in favor of the inventor." 30 O. G. 998 (998).

That a single complete sale shows abandonment, if more than two years before application, see Henry *v.* Providence Tool Co. (1878), 14 O. G. 855; 3 Bann. & A. 501; Kelleher *v.* Darling (1878), 4 Clifford, 424; 14 O. G. 673; 3 Bann. & A. 438; Am. H. & L. S. & D. Mach. Co. *v.* Am. T. & Mach. Co. (1870), Holmes, 503; 4 Fisher, 234; McCormick *v.* Seymour (1851), 2 Blatch. 240; Honiball *v.* Bloomer (1854), 2 Web. 199; Losh *v.* Hague (1838), 1 Web. 202; 2 Abb. P. C. 501.

[5] That a sale "on trial," may be for the purpose of testing the invention itself, and if so is not abandonment, see Graham *v.* McCormick (1880), 10 Bissell, 39; 11 Fed. Rep. 859; 21 O. G. 1533; 5 Bann. & A. 244; Graham *v.* Geneva L. C. Mfg. Co. (1880), 11 Fed. Rep. 138; 21 O. G. 1536; Draper *v.* Wattles (1878), 3 Bann. & A. 618; 16 O. G. 629.

That a sale on trial though with warranty is not necessarily abandonment, see Graham *v.* McCormick (1880), 21 O. G. 1533; 10 Bissell, 39; 11 Fed. Rep. 859; 5 Bann. & A. 244.

enactment, as in the case of public use. No presumption of law arises that the rights of the inventor are abandoned by such sales, unless after they come within his knowledge he acquiesces in this appropriation of his art or instrument by the public until the time for protecting himself has expired.

§ 360. Public Use or Sale Abandons only the Exact Invention Used or Sold.

The public use or sale of an invention works an abandonment only of the exact invention used or sold.[1] Where the same art or instrument may serve as the embodiment of two distinct ideas of means, it represents two different inventions; and its use or sale as one, the other being yet unrecognized, is no abandonment of it as that other. Thus, for example, an invention patented and used as a design may also serve as the expression of a different idea when employed as a machine or manufacture; and if this idea be of later origin, and have involved the exercise of the inventive faculties, it constitutes a different invention and is entitled to protection, for however long a period the same tangible embodiment has been in public use as a design.[2] But when the two inventions are the

§ 360. [1] That the invention used must be the same means now claimed to have been abandoned, see Graham *v.* McCormick (1880), 11 Fed. Rep. 859; 10 Bissell, 39; 21 O. G. 1533; 5 Bann. & A. 244; Henry *v.* Francestown Soap-Stone Stove Co. (1880), 17 O. G. 569; 2 Fed. Rep. 78; Draper *v.* Wattles (1878), 16 O. G. 629; 3 Bann. & A. 618; Am. H. & L. S. & D. Mach. Co. *v.* Am. T. & Mach. Co. (1870), Holmes, 503; 4 Fisher, 284; Winans *v.* N. Y. & Harlem R. R. Co. (1855), 4 Fisher, 1.

[2] That the same concrete art or instrument may express two entirely distinct ideas of means, and therefore may be two entirely distinct inventions, has been already demonstrated. That if the construction and use of the concrete invention of itself discloses to the world both of these ideas, the fact that it is claimed by its inventor as the expression of but one does not prevent the public from obtaining full possession of both is evident; and its public use or sale for the prescribed time thus necessarily operates as an abandonment of the one not claimed and patented. But where the concrete art or instrument does not confer upon the public, of itself, both these ideas, but having been employed as the embodiment of one, is afterwards adopted as the expression of the other, which has remained hitherto undisclosed, this subsequent adoption and use is a new gift to the public, and the invention thereby reduced to practice must be entirely unaffected by any previous public use or sale of the concrete invention as the expression of the other. Applying this rule to the case supposed in the text: The same material substance, if receiving a given form, may present a new appearance to the eye and

same in their essential character, whether they are employed in the same manner or for the same general purposes, or are known by the same or different names, or purport to have been created by the same or by another inventor, the public use or sale of one with the acquiescence of the inventor whose abandonment is in question, for the period mentioned in the statutes, destroys the patentability of his entire invention.[8]

thus embody the idea of a design, and may also in that same form accomplish some mechanical purpose and thus embody the idea of a machine or manufacture. The latter idea is not necessarily disclosed by the use of the given form as a design, since its mechanical operation may not be discovered until long after it has gone into common use as an ornament; but when discovered and practically applied it has all the characteristics of a new invention, and is and ought to be patentable as such without any reference to its previous use as a design. This is the view taken in Collender *v.* Griffith (1880), 18 Blatch. 110; 18 O. G. 241. The converse does not follow the same rule, however, for if the form be first employed for mechanical purposes, it necessarily produces its effect upon the eye as an appearance as soon as it is brought into use as a device, and operates as a design as effectually and publicly as it can ever do. The only new idea now possible concerning it is that of protecting it as a design, not of using it as the expression of a design. And hence its public use or sale for two years as a device must be an abandonment of it as a design.

That the public use of an article with a design upon it is an abandonment of the design, see Theberath *v.* Rubber & Celluloid Harness Trimming Co. (1883), 23 O. G. 1121; 15 Fed. Rep. 246; Burton *v.* Town of Greenville (1880), 5 Bann. & A. 541; 18 O. G. 411; 3 Fed. Rep. 642.

In McKay *v.* Dibert (1881), 19 O. G. 1351; 5 Fed. Rep. 587, the court expressed a doubt whether where an invention embraces a machine, a product, and a process, and the machine alone is patented, the public use and sale of the machine for two years will defeat a subsequent patent for the product or process. This doubt should be solved by an application of the same principle. If the use of the machine *ipso facto* disclosed the product and the process, and thus rendered them accessible to the public, such use and sale would be abandonment; not otherwise.

[8] That the first inventor cannot obtain a patent when the same art or instrument has been brought into public use for over two years as the invention of a subsequent inventor, see Loom Co. *v.* Higgins (1881), 105 U. S. 580; 21 O. G. 2031; Cleveland *v.* Towle (1869), 3 Fisher, 525.

See, also, §§ 346, 357, and notes, *ante*.

That where the inventor procures a foreign patent before applying in the United States the public use of his invention for more than two years before his application here must, under the act of 1839, have been a general use as distinguished from a use of one or more machines by the inventor, see Am. H. & L. S. & D. Mach. Co. *v.* Am. T. & Mach. Co. (1870), Holmes, 503; 4 Fisher, 284.

That the issue of a prior patent does not show public use, see Weston *v.* White (1876), 13 Blatch. 364; 9 O. G. 1196; 2 Bann. & A. 321.

§ 361. Conclusion: Five Requisites to Patentability.

In concluding this investigation of the requisites to patentability, we may sum up the essential characteristics of a patentable invention in the following propositions:—

I. It must be an idea of means, originating in an exercise of the creative faculties of the human mind, and embodied in some instrument or operation capable of immediate practical employment in the arts.

II. The instrument or operation which results from the embodiment of this idea of means must belong to one of the six species of inventions named in the acts of Congress as entitled to protection by a patent.

III. This instrument or operation must be new to the public at the date of its invention by the patentee.

IV. This instrument or operation must be of such a character that, if communicated to the public, it will confer a practical benefit upon them.

V. This instrument or operation must remain under the control of the inventor at the date of the issue of the patent.

Having these five characteristics an invention becomes patentable. To whom such patent issues will furnish the next subject for discussion.

BOOK II.

OF INVENTORS AND PATENTEES.

BOOK II.

OF INVENTORS AND PATENTEES.

PRELIMINARY ANALYSIS.

§ 362. Patent Privilege Grantable only to Inventors.

THE exclusive public use of an invention can justly be secured by law to no person except its inventor. To his creative faculties alone is due the new idea of means, and to him only can rightfully belong the art or instrument in which that idea is embodied. From him the public have received, or are about to receive, all the benefits conferred upon them by the invention, and solely to him do they therefore owe the recompense which finds expression in the privilege conceded by a patent. This is a fundamental principle, not merely of natural justice, but of positive law. The common law recognized no letters-patent as valid unless the grantee were the inventor of the article or manufacture covered by the grant. The statute of James I., herein declaring and affirming the common law, forbade the issue of such letters to any one except the first and true inventor of the substance or the operation patented; and though the theory prevailing in the English courts as to the nature of the inventive act embraced the enterprise, risks, and expenditures of an importer as well as the originating activities of a creator, the principle was still intact that he who first within the realm possesses the invention and bestows it on the public is alone entitled to be temporarily protected in its ownership, and to enjoy the reward which a service freely rendered to the public properly demands.

§ 363. Patent Privilege Grantable only to Inventors: but to Inventors Irrespective of Age, Sex, or Coverture.

In the United States this principle is expressly formulated both in the Constitution and the acts of Congress. Without a change in the language of the Constitution, no patent could be conferred except upon an inventor, and for his own invention or discovery. The various statutes by which our patent system has been inaugurated and developed have uniformly followed the same rule, and confined their privileges to the true inventor or discoverer of the subject-matter described and claimed in the application for a patent; and our courts, excluding from their theory of the inventive act everything except an exercise of the creative faculties, have constantly refused to recognize in any one but the originator of the idea embodied in the art or manufacture a right either to obtain a patent or to maintain it if obtained. Indeed, so positive and specific is this rule that no agreement of private parties can be effectual against it. No concession, on the part of the real inventor, that some one else is the inventor or the first inventor, can either change the fact or confer upon the latter the right to patent the invention as his own.[1] Even the power of Congress to designate by special act some person as the true inventor, and as such to bestow exclusive privileges upon him, contrary to the fact, has been disputed, and if the question were a new one would now doubtless be emphatically denied.[2] Subject to this rule any person may become a pat-

§ 363. [1] In Hammond *v.* Pratt (1879), 16 O. G. 1235, *Paine, Com.*: (1238) "Parties have no right, by contract, falsely to concede priority of invention. Such a concession confers upon the party in whose favor it is made no right to demand a patent as the first and original inventor, whatever rights it may or may not confer upon him as an equitable assignee. It is still the duty of the Patent Office to grant the patent to the first and original inventor or to his assignee, and not to the party who, in defiance of the facts, is conceded to be the first and original inventor."

See also Allen *v.* Gilman (1872), 2 O. G. 293.

[2] That a patent can be granted only to a real inventor, see Slemmer's Appeal (1868), 58 Pa. St. 155.

That whether an act of Congress can determine that any one is the first inventor, *quære*, see Evans *v.* Eaton (1818), 3 Wheaton, 454, 513; 1 Robb. 243.

That an interference decision in the Patent Office is not binding in the courts, even between the parties, see Gloucester Isinglass & Glue Co. *v.* Brooks (1884), 19 Fed. Rep. 426; Union Paper Bag Mach. Co. *v.* Crane (1874), Holmes,

entee. An alien stands on the same footing with a citizen, and a married woman with a *feme sole*, — the rights of her husband in the invention and the patent being cognizable only by the laws of the State in which they dwell.[3] A single exception exists in the case of an employee of the Patent Office, who is not allowed to apply for or obtain a patent during the term of his employment.[4]

429 ; 6 O. G. 801 ; 1 Bann. & A. 494. See also §§ 613, 1017, 1183, and notes, *post*.

[3] That an alien stands on the same footing with a citizen before the Patent Law, see Thomas *v.* Reese (1880), 17 O. G. 195 ; *Ex parte* Nagel (1880), 17 O. G. 198 ; Lauder *v.* Crowell (1879), 16 O. G. 405 ; Shaw *v.* Cooper (1833), 7 Peters, 292 ; 1 Robb, 643.

That a foreign patentee may take out an American patent at any time, unless his invention has been in public use in this country for two years, see Henry *v.* Providence Tool Co. (1878), 3 Bann. & A. 501 ; 14 O. G. 855.

That a married woman may be the grantee of a patent, the rights of her husband in the patent being regulated by local law, see Fetter *v.* Newhall (1883), 17 Fed. Rep. 841 ; 21 Blatch. 445 ; 25 O. G. 502.

That the power of a married woman over her patent rights, as to assignment, etc., depends on the local law, see Fetter *v.* Newhall (1883), 17 Fed. Rep. 841 ; 21 Blatch. 445 ; 25 O. G. 502.

That an infant or ward may be the owner of a patent, see Fetter *v.* Newhall (1883), 17 Fed. Rep. 841 ; 21 Blatch. 445 ; 25 O. G. 502.

That an invention by a slave can be patented neither by him nor by his master, see Opinion Atty. Gen. (1858), 9 Op. At. Gen. 171.

[4] Rev. Stat. 1874, § 480 ; act of 1836, § 2 ; and see Opinion of Commissioner (1884), 26 O. G. 637.

This disqualification extends, however, only to the period of his employment. Thus in Page *v.* Holmes Burglar Alarm Telegraph Co. (1880), 17 Blatch. 484, Blatchford, J. : (507) "The second section of the act of 1836 does not declare that a person taking employment in the Patent Office shall be held to have forfeited, or dedicated to the public thereby, any invention before made by him. It simply prevents him from acquiring an interest in a patent while he remains such employee. But, as soon as his employment ceases, he is in the same position, so far as any effect of the mere fact of his having been in such employment is concerned, as if he had never been in such employment." 1 Fed. Rep. 304 (325) ; 17 O. G. 737 (742).

That a Patent Office employee cannot be an applicant and cannot file an application, see Com. Dec. (1884), 26 O. G. 637.

That an employee of the Patent Office may obtain patents for his inventions after he leaves the Office, see Foote *v.* Frost (1878), 14 O. G. 860 ; 3 Bann. & A. 607.

That the Commissioner of Patents, after his term expires, may have a patent for an invention made during his term of office, and the patent will date back to the invention, see Foote *v.* Frost (1878), 3 Bann. & A. 607 ; 14 O. G. 860.

That an employee of the Patent Office, after his employment ceases, may have a patent for inventions made by him before his employment commenced, see Page *v.* Holmes Burglar Alarm Telegraph Co. (1880), 1 Fed. Rep. 304 ; 17 Blatch. 484 ; 17 O. G. 737.

§ 364. Patent Privilege Grantable only when the Inventor has Generated an Idea of Means and Reduced it to Practice.

No one can be an inventor until he has performed a complete inventive act, that is, until he has conceived an idea of means and reduced it to practice in some art, machine, manufacture, composition of matter, or design. Of the nature of this act, of the mode of its performance, and of its result, we have already spoken sufficiently in the preceding pages. All that is there described as involved in the essential character of the inventive act, or as requisite to constitute a patentable invention, must be accomplished before any one can claim the privilege of its exclusive public use. And though in the reduction of his idea to practice the inventor may employ the constructive experience and ability of others, the entire idea itself must owe its origin to the exercise of his own inventive skill, and thus becomes at once the subject and the measure of the patent privilege which he receives.

§ 365. Patent Privilege Grantable to Sole Inventor on his Completion of the Inventive Act.

Where this inventive act has been performed by but a single person, no question meriting discussion is likely to arise. If it appears that the invention is complete, that it involves inventive skill, that it is new and useful, and has not been abandoned to the public, the patent is awarded, as a matter of course, to him who alone claims to have been its inventor. But where two or more persons have performed inventive acts of the same character, or have participated in the same inventive act, difficulties almost insurmountable are sometimes encountered in the endeavor to determine to which of these rival or concurrent claimants the merit and the recompense of the inventive act belong. Out of the controversies thus engendered have grown many special doctrines, which it is the province of these next succeeding chapters to consider.

§ 366. Patent Privilege Grantable to Rival, Co-operative, or Joint Inventors.

It is apparent that where two or more persons have exercised their inventive skill in reference to the same invention

they must occupy toward each other one of three relations: Either (1) they are rival inventors, — that is, each has conceived the entire idea of means independently of the others, and but for their antagonistic claims would be entitled to a patent for the whole invention; or (2) they are co-operating inventors, — that is, each has invented a subordinate feature of the complete art or instrument, which being united with the inventions of the others form the actual invention as known and practised in the arts; or (3) they are joint inventors, — that is, all acting together have developed an idea of means which is the fruit of the joint exercise of their inventive faculties, though no specific severable part thereof can be attributed to any individual of the group. In the first case, as the exclusive use of the invention cannot be secured to more than one of these independent inventors, the law is compelled to determine arbitrarily, yet with due regard to reason and justice, which it will recognize as the true inventor and as the grantee of the patent. In the second case, as each of the inventive acts by which the several subordinate features of the art or instrument have been produced are in themselves complete and distinguishable from the others, the result of each is patentable as an entire invention by the individual who has created it; while the act of union by which these different features have been brought together into one single instrument or operation is in its turn, if originating in inventive rather than constructive skill, a separate invention, whose inventors are permitted to protect it by a separate patent. In the third case, as no inventive act has been performed by either of the individuals, neither can claim and patent the invention or any part of it as exclusively his own; but as all, taken together, have conceived and perfected the invention, they have become jointly entitled to the patent. By these provisions, adapted to each class of cases, the law is able to secure to the true inventor in the first class, and to each of the inventors in the second and third classes, the entire result of his inventive acts, and thus completely to apply the principle on which the patent privilege itself is based.

§ 367. Patent Privilege Grantable to Representatives of Deceased Inventor.

The right of an inventor to protect his invention by a patent is distinct from the privilege created by the patent, although it ceases when a lawful and sufficient patent is obtained. This right is property, and on the death of the inventor becomes part of his estate, and is available to his heirs or devisees, as he may have provided. His executor or administrator is, by statute, clothed with the power to apply for and obtain the patent, in trust for those who may be beneficially interested in the invention; and these personal representatives of the inventor thenceforth occupy the same position toward the invention and the public as the inventor would have done if living.

§ 368. Patent Privilege Grantable to Assignees of Inventor.

The right of the inventor to obtain a patent is also assignable, and when assigned in proper form the assignee is substituted for the original inventor as to all the powers and privileges which accrue to him as the result of his inventive act.[1] Although the act of the inventor is still the meritorious cause for which the patent issues, the assignee is made by statute, under the assignment, the recipient of the entire recompense which the public is able to bestow. The patent may be issued directly to him, and for all future purposes of the invention he is regarded as the true inventor.

§ 368. [1] That the right of an inventor to obtain a patent is an inchoate right which may be assigned, see United States Stamping Co. *v.* Jewett (1880), 7 Fed. Rep. 869; 18 Blatch. 469; 18 O. G. 1529; Cammeyer *v.* Newton (1876), 94 U. S. 225; 11 O. G. 287; Hammond *v.* Mason & Hamlin Organ Co. (1875), 92 U. S. 724; Newell *v.* West (1875), 13 Blatch. 114; 9 O. G. 1110; 2 Bann. & A. 113; Troy Iron & Nail Co. *v.* Corning (1852), 14 How. 193; Gayler *v.* Wilder (1850), 10 How. 477; Rathbone *v.* Orr (1850), 5 McLean, 131; Gay *v.* Cornell (1849), 1 Blatch. 506; Nesmith *v.* Calvert (1845), 1 W. & M. 34; 2 Robb, 311.

See also §§ 408–414, 769–772, and notes, *post*.

§ 369. Classes of Inventors and Patentees.

In discussing in detail the various provisions of the law concerning inventors and patentees, we shall thus find our subject naturally falling into five divisions:—

I. Of rival inventors;
II. Of co-operating inventors;
III. Of joint inventors;
IV. Of personal representatives;
V. Of assignees;

under each of which the doctrines of the courts and the enactments of Congress in reference thereto will now be considered.

CHAPTER I.

OF RIVAL INVENTORS.

§ 370. Patent Privilege Grantable to the Earliest of Rival Inventors.

Where two or more persons, independently of each other, have performed the same complete inventive act, each is an original inventor, and but for the others would be entitled to the patent. Two patents cannot however be granted for the same invention, because an exclusive privilege cannot subsist in distinct individuals, and also because the issue of one patent exhausts the power of the government to afford protection to the inventor. Hence the law is forced to choose between the rival original inventors, and confer the exclusive privilege upon the one who in reason seems best to deserve it. This it does by providing that the first, or earliest in time, of these original inventors shall be regarded as the only true inventor;[1] his priority of invention rendering it at least doubtful

§ 370. [1] In Smith *v.* Barter (1875), 7 O. G. 1, Thacher, Com.: (3) "No principle is better established than that the first inventor is he who first reduces the invention to practical form by embodying it in a machine capable of useful operation, modified, it is true, by the proviso that if the first to conceive the invention is second in reduction to practice, his right to the invention shall not be destroyed if he was using due diligence in perfecting it."

In Agawam Co. *v.* Jordan (1868), 7 Wall. 583, Clifford, J.: (602) "The settled rule of law is that whoever first perfects a machine is entitled to the patent, and is the real inventor, although others may have previously had the idea and made some experiments towards putting it in practice. He is the inventor, and is entitled to the patent, who first brought the machine to perfection and made it capable of useful operation."

That the first producer of the completed invention is the first inventor unless another had earlier conceived the idea and was diligent in reducing it to practice, or had suggested to the first producer the entire idea, see Hall *v.* Johnson (1883), 23 O. G. 2411.

That the inventor who first performs a complete inventive act, not only conceiving the idea of means, but reducing it to practice, is the one *prima facie* en-

whether the inventions of the others can be really new, while his merit, if not greater than the others in itself, is not diminished by their subsequent discoveries.

§ 371. Earliest Applicant, under English Law, the Earliest Inventor.

Under the English law this question of priority presented no special difficulties. The date of the patent, or that of the application, has been treated as the date of the invention, and this being a matter of public record was ascertainable by simple inspection. Under this doctrine the first patentee, or applicant for a patent, was held to be the first inventor and alone entitled to the exclusive use of the invention, — a rule entirely consistent with the theory that the chief merit of the inventor consists in giving the invention to the public.

§ 372. Earliest Performer of Inventive Act, under American Law, the Earliest Inventor.

In this country, on the other hand, the courts early adopted the view that the exercise of the inventive faculties is as true a ground for public recompense as the act of making known the invention to the world. While, therefore, the publication of the invention is here recognized as an essential part of the consideration for the patent, the courts unhesitatingly go behind it when necessity requires, in order to ascertain which one of several rival publishers is the first and true inventor.

titled to the patent, see Electric R. R. Signal Co. *v.* Hall Railroad Signal Co. (1881), 6 Fed. Rep. 603; Smith *v.* Barter (1875), 7 O. G. 1; Smith *v.* Prior (1873), 2 Sawyer, 461; 4 O. G. 633; 6 Fisher, 469; Sayles *v.* Hapgood (1869), 2 Bissell, 189; 3 Fisher, 632; Agawam Co. *v.* Jordan (1868), 7 Wall. 583; Whitely *v.* Swayne (1868), 7 Wall. 685; Brodie *v.* Ophir Silver Mining Co. (1867), 5 Sawyer, 608; 4 Fisher, 137; Teese *v.* Phelps (1855), 1 McAllister, 48; Allen *v.* Hunter (1855), 6 McLean, 303; Goodyear *v.* Day (1852), 2 Wall. Jr. 283; Lowell *v.* Lewis (1817), 1 Mason, 182; 1 Robb, 131; Woodcock *v.* Parker (1813), 1 Gallison, 438; 1 Robb, 37.

That where one patent antedates another for the same invention the later patentee must prove that his inventive act took place before the earlier patent, and then the earlier patentee must prove that his inventive act preceded that of the later patentee, the evidence in all cases being clear and beyond reasonable doubt, see Thayer *v.* Hart (1884), 22 Blatch. 229; 20 Fed. Rep. 693; 28 O. G. 542.

See also § 375 and notes, *post*.

The date of the patent or the application still remains the *prima facie* date of the invention; but when dispute arises the date of the inventive act may be investigated, and priority awarded to him by whom this act was first performed.

§ 373. Inventive Act a Continuous Act: Begins with Conception of Idea: Ends with Reduction to Practice.

In this investigation the mental and the physical parts of the inventive act are both regarded. The inventive act begins with the conception of the idea of means; it ends with the embodiment of that idea in a practically operative art or instrument. It is thus in its nature a continuous act; the conception of the idea being sometimes instantaneous, sometimes gradual; the reduction to practice being in one case easy and rapid, in another slow and difficult. Hence it often happens that two independent inventors, performing the same inventive act, move at different rates of progress, owing to differences in their individual circumstances or their constructive skill. Though their conceptions of the idea are simultaneous, one may reduce to practice earlier than the other. Though one precedes the other in conception, the other may yet be the first to produce the complete practical invention. Here new questions present themselves, to be determined, like the former, by the reason and the justice of the law.

§ 374. Earliest Reducer, if Earliest or Contemporaneous Conceiver, the Earliest Inventor.

Where one of two rival inventors has reduced the idea to practice before the other has conceived the idea, the former is unquestionably the first and true inventor. Where their conceptions are simultaneous, and one precedes the other in reduction, his earlier completion of the inventive act makes him the first inventor and the proper patentee. Neither of these cases, therefore, requires special discussion. But where the one who first conceives the idea is anticipated in its reduction to practice by another and subsequent originator of the same idea, further discrimination becomes necessary, and an additional test of priority must be applied.

§ 375. Later Reducer, if Earliest Conceiver and Diligent in Reduction, the Earliest Inventor.

The public interest requires that every valuable invention should be perfected and made available for use at the earliest practicable moment. At the same time it is conceded that the really meritorious part of the inventive act is the conception of the idea, and therefore that the first conceiver, though the last reducer, is the actual first inventor.[1] It is the purpose of the law at once to promote the public interest and to do full justice to the first inventor; and inasmuch as the delay in his reduction must result either from his own negligence for which he ought to suffer, or from circumstances beyond his control which ought not to avail others to his injury, the rule has been established that the first conceiver of the idea of means, if diligent in reducing it to practice, is entitled to the patent, even though a subsequent conceiver should first have rendered the invention available for public use. The test of priority in all such cases is thus the diligence of the first conceiver in reducing his idea to practice. If he has been diligent he receives the patent. If he has been negligent the patent is awarded to the first reducer.[2] In examining the nature of this test, it will be found convenient to consider: —

I. The conception of the idea of means, its date, and evidence; and

II. Diligence in reduction to practice.

§ 375. [1] That the conceiver, not the embodier, is the inventor, see Yoder *v.* Mills (1885), 26 Fed. Rep. 273; 34 O. G. 1048.

That the inventor who first conceives the idea and puts it into practical operation is entitled to the patent, see Worswick Mfg. Co. *v.* City of Buffalo (1884), 20 Fed. Rep. 126; 27 O. G. 1239.

[2] That the negligence of the first conceiver gives to the first reducer a prior right, see Hubel *v.* Dick (1886), 28 Fed. Rep. 132; 36 O. G. 939; Gill *v.* Scott (1883), 23 C. G. 2511.

That a mere conception, not diligently put in practical form, avails nothing against a subsequent conceiver who has perfected the invention and obtained a patent, see Pennsylvania Diamond Drill Co. *v.* Simpson (1886), 29 Fed. Rep. 288.

See also § 370 and notes, *ante*.

SECTION I.

OF THE CONCEPTION OF THE INVENTION.

§ 376. "Conception" Defined.

The conception of the invention consists in the complete performance of the mental part of the inventive act. While this in theory necessarily precedes the physical part or reduction to practice, it in fact also embraces whatever of thought and skill the inventor may have exercised in bringing the invention to that point where reduction to practice can begin. By it inventive genius, so far as it relates to this particular invention, is exhausted; all that remains to be accomplished, in order to perfect the art or instrument, belongs to the department of construction, not creation. It is thus the formation, in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice.

§ 377. Conception must Generate an Idea of Means.

The idea thus conceived is, in the first place, an idea of means; an idea of the application of some force to its appropriate objects in such a manner as to accomplish a desired result.[1] Until an idea of this character is developed there is no conception of an invention. To perceive an existing want; to conceive that in some way it may be supplied; even to discover what attributes an article or operation must possess in order to relieve the want, — neither of these acts results in an idea of means by which the want may be removed. To apprehend the qualities of a given substance, to conclude either from reasoning or observation that it might be usefully applied to a given purpose, falls also short of the conception of an idea of means.[2] The creative process of the inventor must go far

§ 377. [1] In Carver *v.* Hyde (1842), 16 Peters, 513, Taney, C. J.: (519) "Now the end to be accomplished is not the subject of a patent. The invention consists in the new and useful means of obtaining it."

See also §§ 87–90 and notes, *ante*.

[2] That the mere conception that a

beyond these achievements. It must not only discern the want, the possibility of its supply, and the attributes with which the article or operation that supplies it must be endowed, but it must produce the art or instrument itself ready for application to the removal of the want.[3] It must bring into actual contact with its object the force now latent in the given substance, and thus fulfil the purpose whose possibility the inventor as yet only perceives. When the idea has reached this point it is the idea of an invention; before this it is merely an empty speculation, or a fact in nature open to the perception of all mankind.

§ 378. Conception must Generate an Idea of Practically Operative Means.

This idea must, in the second place, include every essential attribute of the complete and practical invention. If anything remains to be created or devised in order to enable the instrument or art to perform its functions in the manner proposed by the inventor, his conception of the invention is not finished, nor has he brought into existence any true idea of means. Where the shape, size, material, or location of its various parts, or the nature or arrangement of its component operations, are necessary to its practical accomplishment of the purposes for which it is designed, each of these must be fully developed in, and apprehended by, the mind of the inventor, in a condition adapted to immediate embodiment in the concrete art or instrument. But matters of mere form, as distinguished from matters of substance, constitute no part of this idea. If the performance of its functions by the concrete invention is not dependent on the shape, the size, the

certain substance might be useful in a certain process, but not followed by acts or words expressing the conception, cannot be regarded as the conception of an invention, see Slade *v.* Blair (1880), 17 O. G. 261.

That the conception that something might be done is not the conception of an invention, see Wicks *v.* Dubois (1877), 11 O. G. 244; Gordon *v.* Withington (1876), 9 O. G. 1009.

[3] That to discern a want, and to experiment, or cause others to experiment, after means to supply it, but without discovering such means, is not a conception of the invention, see Bell *v.* Brooks (1881), 19 O. G. 290; Union Paper Collar Co. *v.* Van Deusen (1872), 10 Blatch. 109; 2 O. G. 361; 5 Fisher, 597.

See also § 88 and notes, *ante*.

capacity, the proportions, or materials of which it is composed, or on the location or arrangement of its elements, the thought of the inventor may or may not have occupied itself with these. The conception is complete without them; and whatever attention they may have received belongs to the physical and not the mental part of the inventive act.[1]

§ 379. Conception must Generate an Idea of Practically Operative Means Ready for Communication to the Public.

This idea must, in the third place, be so definitely and clearly present in the mind of the inventor that he is able to communicate it to the public. A vague and general notion, incapable of exact expression either in acts or words, although it may contain all the essential attributes of an invention, is not such a conception of the invention as confers a benefit upon the world, or adds to the stock even of the inventor's knowledge. It may have originated in his creative faculties, and be in process of development toward a complete conception, but until it has become an object of his contemplation and is understood by him as a separate entity, or a plan of operation capable of being practically carried out, or an image or design able to be reproduced in tangible materials, it cannot be regarded as a mental possession which the inventor can bestow upon mankind.[1] It is not while the cre-

§ 378. [1] See §§ 78–80, 229–244, 318, and notes, *ante*.

§ 379. [1] In Stevens *v.* Putnam (1880), 18 O. G. 520, Marble, Com.: (521) "I concur in the statement . . . that the conception of an invention is that 'state or stage of the invention when it is complete in the inventor's mind, but has not yet been reduced to practice or embodied in material form,' as I also do . . . that a mere conception that a desired result can be accomplished is not such a conception as can give date to an invention. The earliest date at which an invention can be said to exist is that time when there was in the mind of the inventor a well-defined idea of something which might rightfully constitute the subject of a patent. The law is well settled that a mere unembodied principle or discovery is not a subject of a patent, and it must logically follow that the mere mental apprehension of the same is not the conception of an invention. When, however, the principle or discovery is rendered of practical service by its embodiment in material form, there exists something for which a patent can be allowed; and the union in the mind of the inventor of this principle or discovery with the means of its embodiment is conception of the invention. Commissioner Leggett, in the case of Cameron & Everett *v.* J. R. Brick (C. D. 1871, 89), in discussing this subject, used the following language: 'The point

ative energies are at work shaping and sharpening the idea of means that the conception of the invention becomes perfect. It is when these energies have ceased to act, when the idea stands before the mental vision of the inventor as clearly as the concrete invention before the eyes of an observer, that the conception is complete and the work of reduction is ready to begin.

§ 380. Date of Conception is Date of Complete Conception.

The date of the conception of an invention is the date when this idea of means, including all the essential attributes of the invention, becomes so clearly defined in the mind of the inventor as to be capable of exterior expression. The evidence by which this date is determined, in case of controversy, must be of such a nature as to demonstrate that the conception was complete. Obviously, the mere assertion of the inventor that at a given time this idea was fully present

of time at which invention, in such sense as to merit the protection of law, dates is neither when the first thought of it is conceived nor when the practical working machine is completed, but it is when the thought or conception is practically complete; when it has assumed such shape in the mind that it can be described and illustrated; when the inventor is ready to instruct the mechanic in relation to putting it in working form; when the "embryo" has taken some definite form in the mind and seeks deliverance; and when this is evidenced by such description or illustration as to demonstrate its completeness. It may still need much patience and mechanical skill, and perhaps a long series of experiments, to give the conception birth in a useful working form. The true date of invention is at the point where the work of the inventor ceases and the work of the mechanic begins. Up to that point he was *inventing* but had not *invented*, and he must have *invented* before the law will come to his protection.'"

That experiment is not conception, but conception must be matured into readiness for reduction, see Voelker *v.* Gray (1885), 30 O. G. 1091; Washburn *v.* Gould (1844), 3 Story, 122; 2 Robb, 206.

That the conception of an invention does not exist until the idea of means is complete and settled in the mind of the observer and nothing remains to be done but to give it practical embodiment, see Boyd *v.* Cherry (1883), 4 McCrary, 70; Bell *v.* Brooks (1881), 19 O. G. 290; Pelton *v.* Waters (1874), 7 O. G. 425; 1 Bann. & A. 599; Andrews *v.* Carman (1876), 9 O. G. 1011; 13 Blatch. 307; 2 Bann. & A. 277; Ransom *v.* Mayor of New York (1856), 1 Fisher, 252.

That where two persons claim the same invention, each denying it to be joint, and no positive evidence exists in favor of either, the fact that one seems to have understood it better than the other may be taken as proof that he is the real inventor, see Barker *v.* Woodruff (1872), 1 O. G. 258.

See also §§ 79, 80, and notes, *ante*.

to his mental vision, unaccompanied by contemporaneous acts or words indicating its existence, is not such evidence; for though his good faith be unquestioned, it is still doubtful whether his apprehension of the invention was definite enough to have enabled him to reduce it to practice without a further exercise of inventive skill.[1] But any full and accurate description of it either in words or drawings is sufficient, as also is a model if it be an instrument, or even an unsuccessful effort to embody it when the endeavor discloses that the idea was complete although the attempt to represent it may have failed.[2] In the absence of all other proof, the date of the ap-

§ 380. [1] In Farmer *v.* Brush (1880), 17 O. G. 150, Paine, Com.: (150) "A conception which is a mere mental abstraction, not connected with acts or words, is not a conception in the sense of the law."

[2] In Reeves *v.* Keystone Bridge Co. (1872), 5 Fisher, 456, McKennan, J.: (462) "A patentee . . . may show, by sketches and drawings, the date of his inceptive invention, and if he has exercised reasonable diligence in perfecting and adapting it, and in applying for his patent, its protection will be carried back to such date; and in a race of diligence between rival inventors, the one who first perfects an invention, and embodies it in a distinct form, is entitled to priority; but can this be accorded to one who has conceived the idea of an invention, and has sketched it on paper, but has done nothing more in reference to it for a period of five years, as against the patent of an independent though subsequent inventor? . . . (463) It must, therefore, be considered as an established rule that illustrative drawings of conceived ideas do not constitute an invention, and that unless they are followed up by a seasonable observance of the requirements of the patent laws, they can have no effect upon a subsequently granted patent to another." 1 O. G. 466 (468); 9 Phila. 368 (370).

In Philadelphia & Trenton R. R. Co. *v.* Stimpson (1840), 14 Peters, 448, Story, J.: (462) "In many cases of inventions, it is hardly possible in any other manner to ascertain the precise time and exact origin of the particular invention. The invention itself is an intellectual process or operation, and, like all other expressions of thought, can in many cases scarcely be made known, except by speech. The invention may be consummated and perfect, and may be susceptible of complete description in words, a month or even a year before it can be embodied in any visible form, machine, or composition of matter. . . . In short, such conversations and declarations, coupled with a description of the nature and objects of the invention, are to be deemed a part of the *res gestæ*, and legitimate evidence that the invention was then known to and claimed by him; and thus its origin may be fixed at least as early as that period." 2 Robb, 46 (69).

That the complete conception of the idea of an *invention* may be shown by drawings, see Loom Co. *v.* Higgins (1881), 105 U. S. 580; 21 O. G. 2031; Kneeland *v.* Sheriff (1880), 2 Fed. Rep. 901; 18 O. G. 242; 5 Bann. & A. 482; Smith *v.* Edson (1875), 7 O. G. 827; Brookfield *v.* Brooke (1873), 4 O. G. 81; Reeves *v.* Key-

plication for a patent, if containing such description, is taken as the date of the conception.[3]

§ 381. Conception may be Prior to or Contemporaneous with Reduction.

In many inventions the act of conception is clearly distinct, in point of time, from that of reduction; and in these cases the rules given above are easily applied. In many others the work of conception and reduction goes forward almost simultaneously, so nearly so that no date can be fixed as that before which the conception was complete and after which the reduction to practice was begun. This is true in nearly all inventions which are the result of experiment, — where the inventor, instead of evolving the entire art or instrument out of his own thought, conjectures that such an act or substance will subserve a given purpose, and having tried it, finds that it accomplishes the end. The production of a new means by this method is, equally with the former, an inventive act, but

stone Bridge Co. (1872), 5 Fisher, 456; 1 O. G. 466; 9 Phila. 368.

That verbal declarations and descriptions may show the conception of the invention to have been perfect, see Sayles *v.* Hapgood (1869), 2 Bissell, 189; 3 Fisher, 632.

That a model may show the conception to have been complete, see Loom Co. *v.* Higgins (1881), 105 U. S. 580; 21 O. G. 2031.

That an unsuccessful attempt to reduce to practice may show the idea to be complete, see Warner *v.* Anders (1877), 11 O. G. 109.

That where it is doubtful who first conceived the invention, and neither has reduced it to practice, one who made a working model, demonstrating its practicability, is preferred to the other, who before that had made a sketch of the invention, see Clark *v.* Osborn (1874), 5 O. G. 667.

That neglect to apply for a patent, want of scientific knowledge, failure to put into use, etc., indicate that the conception was incomplete, see The Telephone Cases (1887), 126 U. S. 1; 43 O. G. 377; American Bell Telephone Co. *v.* People's Telephone Co. (1884), 22 Blatch. 531; 22 Fed. Rep. 309; 29 O. G. 1029.

That failure to give an invention to the public when advantage from it could be derived in no other way is evidence that the conception is incomplete, see Voelker *v.* Gray (1885), 30 O. G. 1091.

[3] That the date of an application for a patent is, in the absence of other proof, evidence of the date of the conception, see Dane *v.* Chicago Mfg. Co. (1872), 2 O. G. 677; 3 Bissell, 380; 6 Fisher, 130. See also § 132 and notes, *ante*, and § 1024 and notes, *post*.

That where two persons are trying to invent, and it is doubtful which first succeeds, the one who first obtains a patent is regarded as first inventor, see Cox *v.* Griggs (1861), 1 Bissell, 362; 2 Fisher, 174.

at no instant before the experiment succeeds can it be said that the conception of the invention exists in the inventor's mind. Until that instant it is mere speculation, at most a probable deduction from facts already known; and the same act which reduces it to practice gives to the conception its definite and final form. Hence the date of the conception in such cases is the date, not when experiments begin, but when they end; and the first to bring the art or instrument into successful operation is the first conceiver of the entire invention.[1]

§ 382. Conception of Foreign Invention is Contemporaneous with Knowledge or Application in the United States.

The foregoing doctrines relate only to inventions whose original conception has occurred in the United States. Under our law no notice is or can be taken of any inventive act performed abroad until its result is published either in a patent or a printed book. At whatever date, therefore, an unpatented or unpublished foreign invention may have been in fact conceived by its inventor, its conception in the United States takes place only when it becomes an object of intellectual apprehension within the limits of this country.[1] Thus if the inventor, having

§ 381. [1] In Union Paper Bag Mach. Co. *v.* Pultz & Walkley Co. (1878), 15 Blatch. 160, Shipman, J.: (166) "The patentee has the right to take up the improvement at the point where it was left by his predecessor, and if, by the exercise of his own inventive skill, he is successful in first perfecting and reducing to practice the invention which his predecessor undertook to make, he is entitled to the merit of such improvement, as an original inventor." 15 O. G. 423 (425); 3 Bann. & A. 403 (408).

That where an invention is reached by a series of experiments, the one who first succeeds, not the one who first begins, is the first inventor, see Taylor *v.* Archer (1871), 8 Blatch. 315; 4 Fisher, 449; Hoffman *v.* Aronson (1871), 8 Blatch. 324; 4 Fisher, 456; National Filtering Oil Co. *v.* Arctic Oil Co. (1871), 8 Blatch. 416; 4 Fisher, 514.

§ 382. [1] In Thomas *v.* Reese (1880), 17 O. G. 195, Paine, Com.: (196) "The law makes no distinction between citizens and foreigners as applicants in the Patent Office. . . . But . . . the law does make a wide distinction between an invention made in the United States and an invention made in a foreign country, by whomsoever made. An invention made in the United States by a foreigner stands on the same footing in the Patent Office of the United States as an invention made in the United States by a citizen. An invention made in a foreign country by a citizen of the United States stands on the same footing in the Patent Office as an invention made in a foreign country by a foreigner. The distinction recognized by the law between an invention made in a foreign country and one made in the United States is this: The single fact that the

completed the mental part of his inventive act abroad, comes into the United States, not having already given his inven-

invention was previously made in the United States, whether by a citizen or a foreigner, is a bar to the grant to any subsequent inventor, whether such subsequent inventor is a citizen or a foreigner, and whether he made the invention in the United States or in a foreign country; but the single fact that the invention was previously made in a foreign country, whether by a citizen of the United States or by a foreigner, is no bar to the grant of a patent to a subsequent inventor, whether such subsequent inventor is a citizen or a foreigner, and whether he made the invention in a foreign country or in the United States. It is provided in section 4886 of the Revised Statutes that a prior foreign patent shall be a bar to the grant of a patent in the United States for the same invention. This is a broad and general provision, and might be fatal to an application by the foreign patentee for an American patent of his own invention. But the next section obviates this difficulty by the provision that a foreign patent shall not, of itself, bar the grant of an American patent to the inventor who is a foreign patentee. This presents the question whether the effect of the two sections is to enable the foreign patentee, in an interference, to carry the date of his invention back of the date of his American application to that of his foreign patent, and to relieve him from the necessity of proving a reduction to practice in the United States or elsewhere, or whether, on the other hand, its effect is merely to relieve him from the statutory bar to the grant, without exempting him from the necessity of proving the importation of a *completed invention* into the United States prior to the filing of his application, in order to carry the date of his invention back of the date of filing such application. These are, I think, still open questions in the Patent Office. . . .

(198) If an inventor, having conceived his invention in a foreign country, comes to the United States to complete it, and with due diligence reduces it to practice in the United States, he may, in an interference, carry back the date of his invention to the day of his arrival in the United States. If, having conceived it and reduced it to practice abroad, he comes to the United States for the purpose of introducing it to public use, or of obtaining a patent in the United States, he may, in an interference, fix the date of his completed invention on the day of his arrival in the United States. If, having conceived it and reduced it to practice abroad, he communicates it to an agent in a foreign country and sends his agent to the United States to obtain letters-patent or to introduce it to public use, he may, in an interference, fix the date of his invention on the day of his agent's arrival in the United States. If, having conceived it and reduced it to practice in a foreign country, he communicates it to an agent in the United States for the purpose of obtaining letters-patent or of introducing it to public use in the United States, he may, in an interference, carry the date of his invention back to the day in which it was fully disclosed to such agent in the United States."

In Lauder *v.* Crowell (1879), 16 O. G. 405, Paine, Com.: (406) "When an application for letters-patent for an invention made in the United States and an application for letters-patent for an unpatented invention made in a foreign country confront each other in the Patent Office, the American invention, if earlier in date, is a bar to the grant of a patent for the foreign invention; but the foreign invention, although first in date, is not a bar to the grant of a patent for the American invention. When two applications for patents for foreign in-

tion to the world, the date of his arrival on our shores is the date recognized by our law as the date of his conception; or if he entrusts his secret to an agent, whom he sends into this country upon business connected with the invention, the conception dates from the moment when the agent comes within our boundaries. Hence when a question of priority arises between inventions, one of which was conceived in the United States, while the other had its origin in a foreign country, the rules by which the date of each is ascertained are very different. In the American invention the date of the conception is carried back to the instant when the inventor can be shown to have first clearly apprehended his idea of means; in the foreign invention, only to the moment when some person to whom the conception was familiar came within the area of the United States. Where both inventive acts have been performed abroad and neither has been patented, the date of the first application in the United States is held to fix the date of first conception; while if one has been patented, the other not, the former has priority; and if both have been patented the date of the first patent is the date of first conception. In all these cases, however, the definition and requisites of the conception remain the same. It is the completion of the mental part of the inventive act, — the entire development of an idea of means, embracing every essential characteristic of the concrete invention, and capable of being at once expressed in some patentable art or instrument.

ventions, not patented abroad, confront each other in the Patent Office, neither of them is an obstacle to the grant of a patent for the other. . . . The applicant first in point of time in this office is entitled to the patent if he is an original inventor, and if, when he made his application, he believed himself to be the first inventor. When two applicants for patents for the same foreign invention, of whom only one is a foreign patentee, are before the Patent Office of the United States, the foreign patent of one of the applicants is a bar to the issue of an American patent to the other, even though he is in fact the prior inventor. When both of two applicants for American patents for foreign inventions are foreign patentees, the applicant whose invention was first patented abroad, if he is an actual inventor, and, when he filed his application, believed himself to be the first inventor, will be entitled to the American patent."

That the date of a foreign invention cannot be earlier than the knowledge of the invention, by samples or otherwise, in the United States, see Hovey *v.* Hufeland (1872), 2 O. G. 493.

That the date of a foreign patented invention is the date of the patent as against an invention made in the United States, see Chambers *v.* Duncan (1876), 10 O. G. 787.

SECTION II.

OF DILIGENCE IN REDUCING TO PRACTICE.

§ 383. Diligence in Reduction Important only when Later Conceiver is Earliest Reducer.

The person who first conceives the invention, in the manner described in the foregoing section, if diligent in reducing it to practice, is entitled to the patent in preference to any subsequent conceiver, although the latter may have been the first to render the invention available for public use.[1] This ques-

[1] § 383. [1] In White *v.* Allen (1863), 2 Clifford, 224, Clifford, J.: (230) "Whoever first perfects a machine and makes it capable of useful operation, says Judge Story, is entitled to a patent, and he accordingly held, in Reed *v.* Cutter, 1 Story, 599, that an imperfect and incomplete invention, resting in mere theory, or in intellectual notion, or in uncertain experiments, and not actually reduced to practice and embodied in some distinct machinery, apparatus, manufacture, or composition of matter, was not patentable under the patent laws of the United States. Pursuant to that rule, the same learned judge also held that he is the first inventor, in the sense of the Patent Act, and entitled to a patent for his invention, who has first perfected and adapted the same to use; and that until the invention is so perfected and adapted to use, it is not patentable under the patent laws. Washburn *v.* Gould, 3 Story, 122; Woodcock *v.* Parker *et al.*, 1 Gall. 438. Taken as a general rule, no doubt is entertained of the correctness of the proposition as stated, but it must be regarded as subject to the qualification that he who invents first shall have the prior right if, as is prescribed in the fifteenth section of the gence in adapting and perfecting the same within the meaning of that provision. . . . (238) Cases undoubtedly occur . . . where an individual employed in inventing, or in making experiments in that behalf, feeling dissatisfied with the result of his efforts, becomes discouraged in prosecuting the investigation, and finally loses all confidence in the prospect of his ultimate success, and under the influence of such discouragements or from a desire to engage in more profitable business, or to pursue a more pressing or favorite undertaking, decides to break up what he has accomplished, and lays the parts aside, not positively intending to abandon the subject, yet wholly uncertain whether he will ever resume it or make any further use of the parts so laid aside. Such cases are doubtless of frequent occurrence, and while they do not show an unconditional abandonment of the undertaking, they do show an indefinite suspension of the same, and an entire uncertainty, during such suspension, whether the interested party will ever furnish the invention to the public. Where an invention is thus voluntarily broken up and laid aside, without any controlling impediment in

tion of diligence in reduction to practice is never raised except in cases where a later inventor has anticipated the earlier

the way of an application for a patent, and under all the other conditions specified in the preceding proposition, and another, in the meantime, invents the same thing, without any knowledge of that which is so suspended, and reduces the same to practice, applies for and takes out his patent, and introduces the patented invention into public use, I am of the opinion that he must be regarded as the original and first inventor of the improvement." 2 Fisher, 440 (446, 453).

In Reed *v.* Cutter (1841), 1 Story, 590, Story, J.: (596) "Under our patent laws no person who is not at once the first, as well as the original, inventor by whom the invention has been perfected and put into actual use, is entitled to a patent. A subsequent inventor, although an original inventor, is not entitled to any patent. If the invention is perfected, and put into actual use by the first and original inventor, it is of no consequence whether the invention is extensively known or used, or whether the knowledge or use thereof is limited to a few persons, or even to the first inventor himself. It is sufficient that he is the first inventor, to entitle him to a patent; and no subsequent inventor has a right to deprive him of the right to use his own prior invention. . . . (599) In a race of diligence between two independent inventors, he who first reduces his invention to a fixed, positive, and practical form, would seem to be entitled to a priority of right to a patent therefor. The clause of the fifteenth section [act of 1836], now under consideration, seems to qualify that right by providing that in such cases he who invents first shall have the prior right, if he is using reasonable diligence in adapting and perfecting the same, although the second inventor has, in fact, first perfected the same and reduced the same to practice in a positive form. It thus gives full effect to the well-known maxim, that he has the better right who is prior in point of time, namely, in making the discovery or invention." 2 Robb, 81 (87).

That as against a subsequent conceiver who has first reduced the invention to practice, the first conceiver is entitled to a patent provided he can connect his priority of conception with his own reduction to practice by showing reasonable diligence in his efforts so to reduce the invention to practice, see Electric R. R. Signal Co. *v.* Hall R. R. Signal Co. (1881), 6 Fed. Rep. 603; Kneeland *v.* Sheriff (1880), 2 Fed. Rep. 901; 18 O. G. 242; 5 Bann. & A. 482; Gardner *v.* Dudley (1880), 17 O. G. 801; Dickson *v.* Kinsman (1880), 18 O. G. 1225; McKenna *v.* Redden (1879), 16 O. G. 458; Ackerman *v.* Archer (1879), 15 O. G. 562; Burgess *v.* Wetmore (1879), 16 O. G. 765; Sprague *v.* Adriance (1877), 14 O. G. 308; 3 Bann. & A. 124; Towers *v.* Pease (1877), 13 O. G. 176; Warner *v.* Anders (1877), 11 O. G. 109; Gross *v.* Sargent (1877), 11 O. G. 797; Lay *v.* Wiard (1876), 9 O. G. 349; Freeborn *v.* Foye (1876), 9 O. G. 884; Palm *v.* Behel (1876), 10 O. G. 701; Crane *v.* Whitehead (1875), 7 O. G. 219; Baldwin *v.* Bigelow (1875), 7 O. G. 1011; Hammond *v.* Laird (1874), 7 O. G. 170; Smith *v.* Barter (1874), 7 O. G. 1; Rees *v.* Richards (1874), 7 O. G. 37; Bradford *v.* Corbin (1874), 6 O. G. 223; *Ex parte* Carr (1874), 5 O. G. 30; *In re* Edson (1873), 4 O. G. 500; Hyatt *v.* French (1873), 4 O. G. 609; Smith *v.* O'Connor (1873), 4 O. G. 633; 2 Sawyer, 461; 6 Fisher, 460; Rice *v.* Winchester (1873), 3 O. G. 348; American

in the embodiment of the idea of means. A sole inventor may occupy what time he pleases in expressing his conception in tangible materials; still, as from him alone the public must receive the benefit of the invention, to him alone belongs the recompense of the inventor, whatever delays may have occurred in its disclosure. For the same reason, if the first conceiver is also the first reducer, it is from him that the complete invention first proceeds, however slowly it has been developed in his hands; and no subsequent conceiver and reducer of the same invention can claim to have conferred upon the public any new instrument or operation. Thus it is only when the second in conception has preceded an earlier conceiver in the embodiment of the idea and its adaptation to practical use that the diligence of the first conceiver becomes a matter of importance, and by it then his right to a patent for the invention must stand or fall.[2]

§ 384. Diligence in Reduction Required only of Earliest Conceiver, and of him only when he is the Later Reducer: No "Race of Diligence."

This obligation of diligence has no relation to the subsequent conceiver. From some expressions found in the decisions it might be inferred that upon the second conception a race of diligence began between the two inventors, and that the patent ought to be awarded to the one by whom superior diligence was exercised. But this view would be incorrect.[1]

Nicholson Pavement Co. *v.* Elizabeth (1873), 3 O. G. 522; 6 Fisher, 424; Pattee *v.* Russell (1873), 3 O. G. 181; Vinton *v.* Pierce (1873), 3 O. G. 629; Frevert *v.* Gahr (1873), 3 O. G. 660; Allen *v.* Gilman (1872), 2 O. G. 293; Chapman *v.* Candee (1872), 2 O. G. 245; Kirby *v.* Johnston (1872), 1 O. G. 405; Wheeler *v.* Russell (1872), 1 O. G. 183; Morse *v.* Clark (1872), 1 O. G. 275; Munger *v.* Connell (1872), 1 O. G. 491; Reeves *v.* Keystone Bridge Co. (1872), 5 Fisher, 456; 1 O. G. 466; 9 Phila. 368; Cox *v.* Griggs (1861), 1 Bissell, 362; 2 Fisher, 174; Ellithorpe *v.* Robertson (1859), 2 Fisher, 83; 4 Blatch. 307; Phelps *v.* Brown (1859), 4 Blatch. 362; 1 Fisher, 479; Ransom *v.* Mayor of New York (1856), 1 Fisher, 252; Allen *v.* Blunt (1846), 2 W. & M. 121; 2 Robb, 530.

[2] That no question arises as to the diligence of an inventor in reducing his invention to practice unless some subsequent inventor has reduced the invention to practice in advance of the prior inventor, see Bering *v.* Haworth (1878), 14 O. G. 117; Allen *v.* Gilman (1872), 2 O. G. 293.

§ 384. [1] In Millward *v.* Barnes (1877), 11 O. G. 1060, Spear, Com.: (1061) "Respecting the matter of dili-

No matter what degree of diligence he may have manifested, the second conceiver has not even a *prima facie* right to the patent, unless he was the first to reduce to practice; and if he has anticipated the other in reduction it is on this ground, and this only, that his claims are based. The law regards him with no such indulgence as it does the first conceiver. It takes no notice of the difficulties with which he has contended, nor of the efforts which he may have made to confer the benefit of his invention on the public. The fact that he has so conferred it is sufficient in the absence of any prior conception or of reasonable diligence on the part of a prior conceiver; but even this fact avails him nothing if the first conceiver has properly endeavored to complete his own inventive act, and has thus fulfilled the obligation which the law imposes on him. Hence there can be no comparison of diligence as between rival inventors; no "race of diligence" in any sense of a competing effort to attain a prize. While it is true that as soon as the second inventor has developed the idea of means in his own mind it becomes a question of importance whether he will complete its practical embodiment before the first inventor; and while it is also true that the priority of either will depend largely on the respective diligence

gence, as bearing upon the question of priority, I do not regard it as comparative, or, as it is sometimes termed, a 'race of diligence,' where one was first to conceive and the other to reduce to practice. If the second to conceive is the first to reduce to practice, his claim is founded upon that fact, and derives no support whatever from previous efforts; and whether he has been more or less diligent from the time of the conception of his invention to its maturity, he stands in exactly the same position. The fact that, being an original inventor, he did actually first reduce the invention to practice is all that we are to look for, or that he can base his claim to priority upon. Not so, however, with the one first to conceive. He must show affirmatively that he was reasonably diligent from the time of his conception of the invention until its completion. His diligence is not to be compared with that of his competitor, but must stand as an independent fact. It is for him to show that, under the circumstances, he used reasonable diligence, in order that he may connect the two events, conception and completion, and so establish a superior title to the invention. Diligence is thus made one of the elements necessary to his title as prior inventor, and without it his title would be defective and could not prevail as against one claiming under the title of the first to reduce to practice."

See also Electric R. R. Signal Co. *v.* Hall R. R. Signal Co. (1881), 6 Fed. Rep. 603; Brookfield *v.* Brooke (1873), 4 O. G. 81.

of each; yet the superior diligence of the second, if it be such, adds nothing to his merit where he first succeeds in the reduction, nor does it aid him where his tangible embodiment has been anticipated by the first inventor, nor does it qualify in any manner the consideration given by the law to the diligence of the first inventor where the second has first accomplished the reduction. Diligence is predicable only of the first conceiver. It is required of him and of him only; it avails him and him only; and no delay or expedition, on the part of the later conceiver, furnishes any standard by which the diligence of the former can be estimated, unless so far as it may throw light on the nature of the invention and indicate the actual difficulties with which the first conceiver has been forced to contend.

§ 385. Whether Diligence in Reduction is Required of Earliest Conceiver before Later Conception by Earliest Reducer.

From this erroneous tendency to compare the diligence of rival inventors has arisen another question, upon which no final conclusion seems to have yet been reached, namely, whether the diligence required of the first conceiver covers the whole period between his conception and reduction, or commences only at the date of the conception by the second inventor. Thus, as a race assumes the existence of at least two contestants, it has been stated that the race of diligence does not begin until the date of the second conception, and from this it has been concluded that the obligation to diligence does not exist, on the part of the first conceiver, until the date of the later conception.[1] But, upon principle, this is evidently wrong. The two grounds upon which the right of an inventor to a patent rests are the benefit conferred upon the public by the use of his concrete invention, and the stimulus given to inventive genius by rewarding him who first

§ 385. [1] In Packard *v.* Sandford (1879), 16 O. G. 1182, Paine, Com.: (1185) "A race of diligence between two inventors never begins until the date of the later conception. The obligation to diligence on the part of the first to conceive does not exist until the day of the later conception, which cannot give to that obligation a constructive existence relating back to the earlier conception."

To the same effect, see Farmer *v.* Brush (1880), 17 O. G. 150; Lake *v.* Kempster (1879), 16 O. G. 1187.

originates a new and valuable idea of means. The first of these grounds is the most important, and in a certain way the second is included in it. When two inventors stand ready to confer the same benefit for the same consideration, and the law, being obliged to choose between them, decides the controversy upon the personal consideration involved in the second ground, and awards the patent to the first conceiver, it can only do so on the theory that justice as well as the public interest require that the first conceiver be rewarded in preference to him who first is ready to bestow the invention on the public. But neither public interest nor justice are promoted by dispensing honors or rewards to an inventor who, having conceived the idea of means, makes no effort to render it practically available until its later conception by another inventor renders him liable to lose his prize. Here is no stimulus to diligence except the fear that without his knowledge some other inventor may enter the same field and attain the same result. Apart from this fear, the rule now controverted offers a recompense for negligence, and tends not only to encourage laxity upon the part of the first conceiver but to deter inventors by the doubt whether their own exertions may not prove profitless upon the discovery that a prior conception, unembodied and which at present no one is endeavoring to embody, may by and by appear and rob them of the fruits of their inventive skill. Justice requires that the public should reward those only who keep faith with it; who apply their creative energies to the promotion of the public good; and who, having generated ideas, reduce them as speedily as possible to practical and beneficial public use. The public interest demands that the first publisher of an invention should receive the recompense of its exclusive use, unless some more meritorious inventor has been hindered by circumstances beyond his control from conferring the invention on the public; and while the law has no occasion to inquire into the diligence of the first publisher, because priority of publication is itself a sufficient ground of merit, yet where this ground is disputed on behalf of a prior conceiver, who has not yet bestowed the invention on the public, the claim of the latter can only be acknowledged when it appears that to the merit of a first con-

ception he has added that of diligent endeavor to complete the inventive act and give his concrete art or instrument to the service of his fellow-men.

§ 386. Diligence in Reduction Preserves the Continuity of the Inventive Act.

That this view of the period during which diligence is necessary is correct is evident from the relation which this diligence establishes between the beginning and the completion of the inventive act. The inventive act is not usually an instantaneous act. The conception of the idea may be in some cases without perceptible duration, but the reduction to practice generally requires considerable periods of time. When the conception of the idea is complete, the inventive act is begun. When the reduction is finished the inventive act is ended. And whatever the interval between them, the first conceiver is permitted to claim the whole act as bearing the date of the conception, as against the subsequent conceiver, provided he connects his conception with his reduction by proof of reasonable diligence in effecting it, thus giving to the whole inventive act a practically and legally continuous character.[1] But it can hardly be regarded as consistent with this theory that the first conceiver, having completed the development of his idea in his own mind, should be at liberty to suspend his operations until some subsequent conceiver has developed the same idea, and then resuming his endeavors

§ 386. [1] In Farmer *v.* Brush (1880), 17 O. G. 150, Paine, Com.: (150) "The law accords a patent to the first and original inventor. It is the reduction to practice, and not the conception alone, which constitutes completed invention. But suppose that A forms what is known to the law as a conception of the invention, and at a subsequent date reduces it to practice, and that in the meantime B both conceives the invention and reduces it to practice. The question whether A or B is entitled to the patent depends on the further question whether, as between A and B, the invention of A is to take the date of his conception or the date of his reduction to practice. This question is not explicitly answered by the terms of the statute. But the answer furnished by judicial interpretation of the statute is that if A connects his reduction to practice with his conception by showing due diligence in the prosecution of the invention from the date of his conception to the date of his reduction to practice, his invention takes the former date and he is entitled to the patent, but otherwise it is to be granted to B." In a subsequent portion of this decision, the Commissioner seems to endorse

carry them forward to reduction and claim priority for the entire inventive act on account of his priority of conception. Alike, therefore, upon principle and upon the presumption out of which the rule itself arises, it appears that the diligence required of the first conceiver relates to the entire period between his conception and his reduction, and that in default of this the second conceiver, if the first reducer, is entitled to the patent. And this seems to be the doctrine of most of the decisions of the courts upon this question.[2]

§ 387. Reasonable Diligence Alone Required.

No general standard, by which diligence can be estimated, has been established by the law, nor, in the nature of things, is such a standard possible. It must be reasonable, under all the circumstances of the particular case in question.[1] The

the doctrine that the diligence is required only from the date of the second conception. Or, possibly, he may intend to distinguish between the diligence necessary to the first conceiver, and the race of diligence which begins with the later conception. The sentences above quoted are, however, a clear statement of the rule as, upon reason and principle, it should be established.

[2] In White *v.* Allen (1863), 2 Clifford, 224, Clifford, J.: (239) "The Federal courts have everywhere held that an inventor, who has first actually perfected his invention, will not, if he has exercised good faith, be deemed to have surreptitiously or unjustly obtained a patent for that which was in fact first invented by another, unless the latter was at the time using due diligence in adapting and perfecting what he had accomplished; and it was expressly held in Ransom *v.* The Mayor of New York, Law's Dig. App. 72, *per* Hall, J., that if a person does not use due diligence in perfecting his invention after he has conceived the idea, and another conceives the same idea and perfects it, and secures his patent and applies it to use, the latter will be considered as the original and first inventor, and that a patent granted to the former will be void." 2 Fisher, 440 (454).

In Ransom *v.* Mayor of New York (1856), 1 Fisher, 252, Hall, J.: (272) "If the plaintiffs did not use reasonable diligence to perfect the invention patented, after the idea of it was first conceived, and in the meantime other persons not only conceived the idea but perfected the invention, and practically applied it to public use, before the invention of the plaintiffs had been so far perfected that it could be applied to practical use, the plaintiff's patent is void, because they were not the first and original inventors of the thing patented."

§ 387. [1] In Bradford *v.* Corbin (1874), 6 O. G. 223, Leggett, Com.: (224) "Different cases have their peculiar facts and incidents, and hence it is impossible to make decisions or enact rules which will form just precedents or sure guides applicable to every subsequent case. The nature of the invention in controversy has often much to do with the conduct of the parties, and while

character of the invention; the health, the means, the liberty of the inventor; his occupation upon kindred or subordinate inventions, — are proper subjects for consideration.[2] Such reasonable diligence does not involve uninterrupted effort, nor the concentration of his entire energies upon this single enterprise.[3] At the same time, no difficulties in reduction will excuse delay unless they have been practically insurmountable, nor will his voluntary pursuit of independent lines of experiment, nor his unwillingness to risk his time and money in a doubtful venture, nor the apparent want of a market for the invention, justify

laches could be safely presumed against the inventor of a simple device or article by reason of long delay in applying for a patent, the presumption would not exist, to that extent at least, if the invention in dispute consisted in an intricate and complicated machine, wherein the first conception falls far short of a completed invention, but long and costly experiments almost invariably beset the path of the inventor."

In Cox *v.* Griggs (1861), 1 Bissell, 362, Drummond, J.: (364) "It is the right and privilege of a party, when an idea enters his mind in the essential form of an invention, — inasmuch as most inventions are the result of experiment, trial, and effort, and few of them are worked out by mere will, — to perfect by experiment and reasonable diligence his original idea, so as not to be deprived of the fruit of his skill and labor by a prior patent, if he is the first inventor. But there must be what we would consider reasonable diligence, looking at all the facts in the case." 2 Fisher, 174 (176).

That whether a prior inventor has used reasonable diligence in reducing his invention to practice is a question to be determined, not by reference to any fixed standard, but in view of all the circumstances of the case, see Electric R. R. Signal Co. *v.* Hall R. R. Signal Co. (1881), 6 Fed. Rep. 603; McTammany, Jr., *v.* Needham (1880), 18 O. G. 1050; Bering *v.* Haworth (1878), 14 O. G. 117; Brookfield *v.* Brooke (1873), 4 O. G. 81; Lay *v.* Ballard (1873), 3 O. G. 687; Chapman *v.* Candee (1872), 2 O. G. 245; Reisinger *v.* Clark (1872), 2 O. G. 339.

[2] In McTammany, Jr., *v.* Needham (1880), 18 O. G. 1050, Marble, Com.: (1051) "Diligence in perfecting an invention is a relative matter, and the law does not require that an inventor who is engaged in developing a number of improvements at the same time should devote all his time and energy to any one at the expense of the others."

That the inventor is engaged in a series of inventions, of which the one in question is a member, is a good excuse for developing the others to the postponement of this, see *Ex parte* Carr (1874), 5 O. G. 30.

That the inventor is in the employ of others to whom his time and labor belongs is a good reason for delays, see Morse *v.* Clark (1872), 1 O. G. 275.

That poverty will excuse delay, see Cushman *v.* Parham (1876), 9 O. G. 1108; Proctor *v.* Ackroyd (1874), 6 O. G. 603; Webster *v.* New Brunswick Carpet Co. (1874), 5 O. G. 522.

That sickness will excuse delays, see Munger *v.* Connell (1872), 1 O. G. 491.

[3] That reasonable diligence does not necessitate continuity of effort, see Chapman *v.* Candee (1872), 2 O. G. 245.

That it does not require the devotion

the cessation of his endeavors.[4] While the law is indulgent to the inventor, and saves him from the consequences of delays which he could not avoid, it gives him no option as to the diligent pursuit of his reduction according to his actual abilities, but holds him strictly to the rule as justice and the public interest require.[5]

§ 383. Whether Diligence in Applying for a Patent is Required of an Earlier Rival Inventor.

With this subject of diligence in reducing to practice another has been sometimes associated, to the confusion of both. It may occur that an inventor, having conceived the idea of an invention and embodied it in tangible materials, conceals it from the public until a subsequent inventor conceives it, reduces it to practice, and applies for a patent. In this case, as

of all the inventor's energies to the invention, see Munger *v.* Connell (1872), 1 O. G. 491.

[4] In Barnes *v.* Clinton (1876), 9 O. G. 1158, Duell, Com.: (1159) "When a man, after making a model, destroys it, leaves the subject, and proceeds to experiment and perfect other devices for producing the same result, does not again recur to the matter, experiment, or in any manner indicate ownership and a desire to perfect the improvement, until, after a lapse of more than two years, he sees another engaged upon the same invention, demonstrating its practical utility and value, the presumption is very strong that such model was an abandoned experiment, or at least that he was culpably negligent in adapting and perfecting the invention."

That the inventor was partially occupied with other inventions is no reason for neglecting the present one, if it was reasonably possible to go on with it, see Warner *v.* Anders (1877), 11 O. G. 109.

That he was unwilling to risk his money upon it, for fear of loss, is no good reason for delay; nor that his employers would not agree to use it; nor that he was under contract to sell them all his inventions, see Bradford *v.* Corbin (1874), 6 O. G. 223.

[5] In Sayles *v.* Chicago & Northwestern R. R. Co. (1865), 1 Bissell, 468, Drummond, J.. (471) "The Patent Law looks with indulgence upon the delays which arise from the circumstances of parties who may make an invention, and it is only when the invention is intentionally abandoned or neglected, or the parties show by their acts that they have not done all they can do, that the law declares that they shall not be protected in their inventions." 2 Fisher, 523 (526).

That to overthrow the claims of a patentee on the ground that he is a junior inventor, the earlier conceiver must show entire freedom from laches, all doubts being resolved in favor of the patentee, see Voelker *v.* Gray (1885), 30 O. G. 1091.

That difficulties, when surmountable with reasonable effort, do not excuse delays, see Barnes *v.* Clinton (1876), 9 O. G. 1158.

in those already considered, the second inventor is the first to give the invention to the public, and is *prima facie* entitled to the patent. But, as a matter of fact, the same complete inventive act had been performed by the first inventor before the conception of the idea of the invention by the later. Obviously there can be here no question as to the diligence of the first inventor in reducing to practice, for his reduction was complete and his invention ready for publication and for patent before the second inventor had developed the idea of means. Whether the second invention supersedes the first and gives the patent to the second inventor, or whether the first inventor is still the proper patentee notwithstanding his failure to patent the invention and its subsequent conception and reduction by the second inventor, are questions which have received divers answers from the courts, and upon which opinion is still contradictory.

§ 389. Negligence in Applying for a Patent Neither Makes the Invention a Lost Art nor Abandons it to the Public.

It will relieve these questions of some obscurity to distinguish them from two others which in many respects are similar. When an inventor has completed his invention he may either put it aside, without disclosing it to others, and finally forget it; or he may disclose it to others and suffer it to become so known as to be accessible to the public; or he may, without disclosing it, without definite intention to relinquish it, and without forgetting it, simply neglect to patent it. In the first case, his invention becomes a "lost art," and may be re-invented and patented by any subsequent inventor. In the second, the invention, if not patented within two years from its first use in public, is abandoned to the public, and cannot thereafter be patented by any one. In the third case arises the question now under discussion. By some authorities the invention, under such circumstances, is regarded as a lost art, inasmuch as it is known to none but the inventor, who manifests no disposition to communicate it to the public. By others it is held that reduction to practice is not complete until the invention has been used in public, and hence that, in this case, the inventive act was never

finished but was a mere experiment and therefore no bar to a patent to a subsequent inventor.[1] Others regard the invention as complete and as still the property of the inventor, and declare that since he has not abandoned his invention to the public, the sole right to the patent must remain in him, notwithstanding any subsequent conception and reduction by another.

§ 389. [1] In Mallett *v.* Cogger, (1879), 16 O. G. 45, Paine, Com.: (46) "If upon the completion and actual use, either in public or in private, of a machine or article of manufacture, the invention embodied therein becomes a successful experiment so as to entitle the inventor to a patent and to defeat the claim of a subsequent inventor without further action or diligence on the part of the first inventor, still the invention does not pass absolutely from the domain of experiment until it has been actually used *in public*. If forgotten *before* or *after* such public use it may be re-invented and patented by a subsequent inventor. If *abandoned before* such public use it is an abandoned experiment and may be patented by a subsequent inventor. If *abandoned after* such public use it cannot be patented by a subsequent inventor, but becomes the property of the public. The same considerations of public policy which permit a subsequent inventor to take a patent for an invention previously completed by reduction to practice and then forgotten, also permit such subsequent inventor to obtain a patent for an invention previously reduced to practice and then abandoned *without public knowledge or use*. The public has the same interest in securing the benefits of an invention withheld by a prior inventor from public knowledge and use which it has in securing the benefits of a forgotten invention, and therefore, has the same reason for encouraging the discovery of an abandoned invention which it has for encouraging the reclamation of a forgotten invention. The merit of the second inventor of an abandoned invention is equal to that of the second inventor of a forgotten invention, for he rescues the invention from oblivion and confers its benefits upon the public in one case just as truly as in the other. And so far as the rights of the first inventor are concerned, it is clear that he who abandons his completed invention, without bringing it to public knowledge or use, has no stronger claim to consideration than he whose invention has been forgotten. No statutory provisions interdict the grant of a patent to a subsequent inventor for an invention abandoned without public knowledge or use. An invention reduced to practice by actual use in private and then abandoned, cannot be said to have been known and used by others in this country." In this opinion the question of priority of invention as determining the personality of the patentee is to some extent confounded with that of the patentability of the invention itself, as counter-indicated by prior use and knowledge. This is especially apparent in the latter sentence cited.

That where an earlier inventor has reduced to practice and then laid the invention aside and abandoned it, the invention becomes an abandoned experiment, and another may invent it, but the first cannot then revive his claim, see Sheridan *v.* Latus (1883), 25 O. G. 501.

§ 390. Negligence in Applying for a Patent Does not Affect the Rights of the Inventor except by Estoppel.

That an invention cannot be a lost art while it resides definitely and fully in the memory of the inventor and can at will be reproduced by him and put to practical employment; that reduction to practice is complete as soon as the idea of means has been embodied in tangible materials capable of practical use in the arts, whether actually used in public or not; that no invention is abandoned to the public except by two years' public use or sale or by some act, word, or omission on the part of the inventor unequivocally expressing his intention to bestow the invention on the public without demanding the protection of a patent, — these are propositions which numerous decisions of the courts have placed beyond dispute. The real answer to the question under consideration rests upon a different ground, and one not yet formally recognized in those acts of Congress which constitute the basis of our Patent Law. Upon principle, as we have seen already, the first inventor who discloses the invention is entitled to the patent, unless a prior concciver of the same idea, who is on that account more meritorious than the later, is in good faith endeavoring to bestow the same invention on the public. Out of this principle grows the rule that such a first conceiver must use reasonable diligence in reducing his idea to practice, in order to entitle him to a patent as against a subsequent conceiver who has first produced the concrete art or instrument. And the same reason exists for requiring an inventor who has first completed the invention to proceed with reasonable diligence to disclose it by applying for a patent, if he desires to claim it as against a subsequent inventor. The force of this reason has led several tribunals to declare that such a rule exists, and to endeavor to sustain it by embracing this case in the similar but not identical cases which we have distinguished from it;[1]

§ 390. [1] In Hubel *v.* Dick (1886), 28 Fed. Rep. 132, Shipman, J.: (140) "The question, therefore, is should the first inventor, who proceeded with reasonable diligence to perfect an important invention, and who produced a successful machine before the junior inventor's patent was issued, lose his right to the fruit of his invention on account of the delay which he exhibited in applying for his patent? That laches merely in applying for a patent, when there were no laches in otherwise perfecting the invention, may compel an inventor

while other courts, unwilling to advance beyond the letter of the law in excluding the first inventor from his customary

to be deprived of his patent, another inventor having meanwhile given the same invention to the public, is probably true. The remarks of Acting Commissioner Duncan in Monce *v.* Adams, 1 O. G. 2, are important and valuable upon this point." 36 O. G. 939 (942).

In Boyd *v.* Cherry (1883), 4 McCrary, 70, McCrary, J.: (77) "If kept secret by the first inventor until the second has discovered it and given it to the public, the latter will be protected, for it is to him that the public is indebted; it is from him that the public has received value; and as no one can impart that which he does not possess, it must appear that the alleged prior inventor was aware not only of his discovery, but also of its utility."

In Farmer *v.* Brush (1880), 17 O. G. 150, Paine, Com.: (151) "If an inventor abandons or forgets his invention before its public use, it may become the property of a subsequent inventor. Abandonment, in the sense in which the term is here used, is the cessation of all effort to furnish the invention for public use. Such abandonment may be voluntary and absolute, as when the invention is deliberately thrown aside with a purpose never to resume it; but it also may occur when the invention is thrown aside, not with a purpose never to resume it, but without any purpose to resume it. If it is merely laid aside temporarily, with an intention to resume it, there is no abandonment. But the question of abandonment in such case is not one of mere mental operation. A mere mental purpose or intention to give the public at some future time the benefit of a completed invention, unaccompanied by any corresponding acts or words, amounts to nothing; and the presumption raised by acts of the party of a purpose to abandon will not be overcome by his testimony that he mentally intended not to abandon it. Such testimony will be construed in connection with the acts of the party; and although it may throw light upon such acts, and, taken in connection with them, may determine their meaning and effect, yet it will not be always decisive when contradictory, rather than explanatory, of such acts. Now a mere delay of two years in the application for a patent is not evidence of abandonment; but neglect to confer the benefits of the invention upon the public, whether it is or is not accompanied by neglect to apply for a patent, is evidence of abandonment. The inventor may voluntarily keep his invention secret as long as he sees fit to do so, provided he applies for a patent before another invents the device. He may abandon or forget his invention, provided he resumes or recalls it before another makes the invention. But his rights do not, in either case, relate back through the intermediate '*vacuum*' to the original invention, so as to give him the benefit of its date as against a rival inventor."

In Packard *v.* Sandford (1879), 16 O. G. 1182, Paine, Com.: (1185) "As between the public and an inventor who reduces his invention to practice in private, there is no obligation of diligence resting on the inventor. It is only when another inventor appears that any such obligation arises. . . . A race of diligence between two inventors never begins until the date of the later conception. The obligation to diligence on the part of the first to conceive does not exist until the day of the later conception, which cannot give to that obligation a constructive existence relating back to the earlier conception. With the reduction to practice, either in public or in private,

privileges, have held that no laches of the inventor, not amounting to abandonment of the invention to the public, can

by the inventor first to conceive, the race of diligence forever ends. The course which the inventor latest to conceive may take after that date does not concern the inventor first to conceive; and the obligation resting upon the first to conceive after that date is not one of diligence as between himself and his competitor. It takes an entirely different form. It is an obligation to the public not to abandon or forget his invention. If he does not fail in that obligation his competitor *can have no patent*. If he does forget or abandon his invention after reducing it to practice in private and before a public use, his competitor may come in and claim the patent. If he forgets it or abandons it after a public use, his competitor can take no patent, but the forfeiture will enure to the benefit of the public."

In Monce *v.* Adams (1872), 1 O. G. 1, Duncan, Com.: (3) "The section named (section 61, act 1870), saves an existing patent as against a public use limited in point of time as specified; but neither in terms nor inferentially does it extend any guaranty to an inventor against the superior diligence of a competitor entering the field at a later date, unless the first inventor not only reduces his conceptions to practical form but proceeds to put the invention into public use or on sale. If he does this he thereby destroys the right of a subsequent *inventor to protection*, no matter how diligent he may be; since no man is entitled to a patent for that which, prior to his own invention of it, has gone into public use. But if, uninfluenced by controlling circumstances, he fails to do this, he assumes the risk of incurring all the disabilities that attach to the man who comes out second in a race of diligence. What constitutes a 'race of diligence' — whether it is ended when the invention is once reduced to practice — is not clearly indicated in the law. The statute employs the phrase 'reasonable diligence in *adapting and perfecting*' the invention. If this be not mere tautology, it must mean something more than merely reducing to practice; it must intend positive action, looking to the introduction of the invention, or at least to giving the world knowledge of it. But whatever be the significance of these particular words, there can be but little doubt that in fact an inventor is to be held to as strict accountability for the time suffered to elapse between the perfecting of his invention and its revelation to the public through the medium of the Patent Office, as for the time consumed in reducing it to practice after the original conception. This question was discussed at length in Gray *v.* Hale, Commissioner's Decisions, May 27, 1871; and the conclusion reached upon the strength of the authorities then cited, to the effect that a wilful or negligent postponement of one's claims may, under some circumstances, work a forfeiture of his right to a patent, even in the actual absence of any intention to relinquish it, or of any public use of the invention known or assented to, has an important bearing upon the present case. The fact that the delay extends over a less period than two years is, *in itself*, considered an immaterial circumstance. Not even this limited period of exemption is accorded an inventor. The object of the patent law is to multiply inventions with a view, primarily, to the public advantage and to secure their free use at the earliest date; and to this end its policy is to reward that man from whom the public actually derives the benefit received, unless, in fact, another, prior in making

deprive him of the right to a patent against any and all subse-

the invention, is proceeding to give it to the world with no further delay than what is imposed by circumstances beyond his control. If an inventor puts his invention into use or on sale, he causes that the public shall have the free use of it at the end of two years, unless he sooner makes an application for a patent; and in this last event the free use of it devolves upon the public at the end of seventeen years from the date of any patent that may be granted. On the other hand, if an invention, when perfected, may be withheld from use and kept a secret without the risk of forfeiture by reason of its subsequent discovery by another party, such right, for aught of limitation imposed by statute, may continue indefinitely, can be terminated in fact only by the actual introduction of the invention by another for the space of two years. Even the granting of a patent to the subsequent inventor would not defeat it; nothing less than a two years' actual or constructive public use under the patent could avail for this purpose. But such a doctrine would be obnoxious to the whole spirit of the Patent Law, and is contrary to a long line of well-established judicial decisions. It is true, as often announced, that mere delay, no matter how long continued, cannot impair an inventor's right to a patent. It is only when by reason of such delay, another party gains the opportunity to give the invention to the world, and actually becomes the first to do this, that the first inventor's rights pass away."

In Kendall *v.* Winsor (1858), 21 How. 322, Daniel, J.: (327) "It is undeniably true that the limited and temporary monopoly granted to inventors was never designed for their exclusive profit or advantage; the benefit to the public or community at large was another and doubtless the primary object in granting and securing that monopoly. This was at once the equivalent given by the public for benefits bestowed by the genius and meditations and skill of individuals, and the incentive to further efforts for the same important objects. The true policy and ends of the patent laws enacted under this government are disclosed in that article of the Constitution, the source of all these laws, viz.: 'to promote the progress of science and the useful arts,' contemplating and necessarily implying their extension, and increasing adaptation to the uses of society. (*Vide* Constitution of the United States, Art. I. Sec. 8, Clause 9.) By correct induction from these truths it follows that the inventor who, designedly and with the view of applying it indefinitely and exclusively for his own profit, withholds his invention from the public, comes not within the policy or objects of the Constitution or acts of Congress. He does not promote, and, if aided in his design, would impede, the progress of science and the useful arts. And with a very bad grace could he appeal for favor or protection to that society which, if he had not injured, he certainly had neither benefited nor intended to benefit. Hence if, during such a concealment, an invention similar to or identical with his own should be made and patented, or brought into use without a patent, the latter could not be inhibited nor restricted upon proof of its identity with a machine previously invented and withheld and concealed by the inventor from the public."

That where an inventor has completed his invention, and reduced it to practice, if he withholds all knowledge of it from the public, neither applying for a patent, nor putting the invention to practical use, and meanwhile another inventor invents, introduces, and pat-

quent inventors.[2] The former rule may on equitable grounds be regarded as the more correct, since an inventor who, having

onts it, the former shall be regarded as having forfeited his prior rights, and the subsequent inventor is the proper patentee, see *Ex parte* Carr (1874), 5 O. G. 30; Pattee *v.* Russell (1873), 3 O. G. 181; Johnson *v.* Root (1858), 1 Fisher, 351; Ransom *v.* Mayor of New York (1856), 1 Fisher, 252.

[2] In Harmet *v.* Reese (1882), 21 O. G. 1875, Marble, Com.: (1876) "Counsel, however, have advanced the proposition that an inventor who has perfected his invention may by his neglect and laches forfeit his right to obtain a patent therefor in favor of a subsequent and independent inventor. This doctrine is, as I believe, foreign to the Patent Law. When a person has reduced an invention or discovery to a fixed, positive, and practical form, and made a full disclosure of its character to others, his right to a patent is complete (Reed *v.* Cutter, 1 Story, 590), and if he foregoes that right no subsequent inventor can comply with the conditions upon which alone a patent can be granted. (Pickering *v.* McCullough *et al.*, 13 O. G. 818.) If the first and original inventor abandons his invention to the public expressly or tacitly, by neglecting seasonably to assert his exclusive right, he cannot recall that right (Mellus *v.* Silsbee, 4 Mason, 108), and still less can a later inventor appropriate it to himself. (American Hide Company *v.* American Tool Company, 4 Fisher, 284.) Under these circumstances the first invention is not a waif or stray which can be reclaimed at will by its original owner or converted by a subsequent discoverer to his own use. It has passed into the public domain, and the public is already, therefore, in possession of the knowledge of the invention which would form the consideration of the grant of a patent to the second inventor. (Consolidated Fruit Jar Company *v.* Wright, 4 Otto, 92.)"

In Rice *v.* Winchester (1873), 3 O. G. 348, Leggett, Com.: (348) "It has been laid down by the courts in numerous cases . . . that where one has conceived but not perfected an invention, an independent inventor may have a valid patent who has subsequently conceived, perfected, and introduced the invention, unless in the meantime the party first to conceive it was using reasonable diligence in adapting and perfecting it. In this case it is clear that Winchester was first to conceive the invention, but the tribunals named differ as to whether he had completed it or was using reasonable diligence to do so. If Winchester had completed and embodied his invention in practicable form, in which it could unmistakably be communicated to the public, and it was new, then *no obstacle but abandonment in* fact, or its use in public for more than two years, could deprive him of his right to a patent for it under the statute. But if he had not done this, then, unless he used reasonable diligence in adapting and perfecting it, he might be forestalled by a patent to an independent inventor more diligent than himself."

That the delay of an inventor in patenting his invention, or in bringing it to public use or attention, after once reducing it to practice, offers no opportunity to a subsequent inventor to invent, reduce, and patent it, see also Shoup *v.* Henrici (1876), 11 Phila. 514; 2 Bann. & A. 249; 9 O. G. 1162; Allen *v.* Blunt (1846), 2 W. & M. 121; 2 Robb, 530.

That a delay after reduction, for the purpose of reasonably testing the invention, is permissible, see Hubel *v.* Dick (1886), 28 Fed. Rep. 132; 36 O. G. 939.

perfected his invention, voluntarily conceals it and unreasonably delays his application for a patent, thereby wilfully misleads subsequent and innocent inventors into the belief that the field covered by the invention is still open, and he therefore ought to be estopped from patenting the invention and appropriating its exclusive enjoyment to himself after their honest efforts in the same direction have succeeded.[3]

[3] There seems to be no good reason why the doctrine of estoppel should not be applied in its fullest extent to an inventor who, having completed his invention, voluntarily delays his application for a patent. In the present condition of industrial enterprise he may be fairly chargeable with knowledge that other persons skilled in the art to which his invention appertains have perceived the same want, that they are striving to discover means by which this want may be removed, and that their inventive efforts are very likely to result in the same art or instrument which he already has produced. If under these circumstances he wilfully keeps silent concerning his prior discovery and permits these later inventors to expend their money, time, and energy in endeavors which would be at once abandoned were he to disclose the character of his own invention, he is certainly not entitled, on any principle of justice and fair dealing, to urge against them his superior right after they have completed their inventive acts and diligently attempted to secure the benefit of the invention to themselves and to the public by applying for a patent.

This doctrine would probably have long ago met with universal acceptation had it not been unnecessarily confounded with abandonment of the invention to the public, which rests upon the actual or presumed intention of the inventor to relinquish his exclusive right to the invention in favor of the community at large.

Abandonment and estoppel have, it is true, an indirect relation to each other. An invention can be dedicated to the public by no one but the true inventor, and of several rival inventors he only can abandon the invention to whom the law would otherwise secure it by a patent. Hence if the prior conceiver, having been diligent in reduction and not estopped, by negligence in applying for a patent, from claiming the invention as against his rival, chooses to secure it by a patent, no act or omission of the rival can dedicate it to the public. But if the prior conceiver has been negligent in reduction, whereby the later conceiver has become in law the first inventor, or if, although the first reducer as well as first conceiver, he has delayed his application for a patent until he is estopped to assert his rights against a later inventor, then the latter may either patent the invention to himself or may abandon it to the public at his pleasure. In this method estoppel may be one step in a series of events which results in the total surrender of the invention to the public.

But apart from this indirect relation, estoppel and abandonment are totally distinct. The former can be predicated only of the person claiming the monopoly in the invention, and rests on equitable grounds in no respect peculiar to Patent Law. The latter can be predicated only of the invention itself and is an expression of the fundamental principle of Patent Law that no monopoly can be created in rights or property that have already passed into the law-

§ 391. Earliest Conceiver not Entitled to Patent until he has Reduced to Practice.

It must not be assumed from this indulgence manifested by the law to the diligent first conceiver that he can claim a patent before his own reduction to practice is complete. A reduction made by the subsequent inventor avails him nothing.[1] It does not constitute a part of his inventive act nor

ful possession and enjoyment of the public. The doctrine of estoppel, as enforced against a negligent inventor in favor of his rival, is thus neither an extension of nor a departure from the principles of Patent Law, but is a rule of universal application which may as appropriately be resorted to in controversies between the antagonistic claimants of an invention as in those which arise in reference to any other class of property.

See further on this subject §§ 346 and notes, and 357 and note 3, *ante*.

§ 391. [1] In Ackerman *v.* Archer (1879), 15 O. G. 562, Paine, Com.: (562) "The adjudications of the courts and of the Patent Office have established the principle that, as against a patent granted, an applicant claiming to be a prior inventor must either have first so reduced the invention to practice as to demonstrate its capability of use, or have first conceived the invention and with due diligence proceeded to so reduce the same to practice as to demonstrate its capability of use. If the device does not of itself afford evidence of its capability of use, but is of such a nature that proof of actual use, or some other proof *ab extra*, is necessary to demonstrate its capability of use, then the applicant must show that he has put the device to practical use or ascertained its capability of practical use. . . . (563) It is, of course, against the policy of the law to grant a second patent for the same invention, even to a prior inventor, before its capability of practical use has been demonstrated; but it is also against the policy of the law to grant a second patent to an applicant claiming to be the prior inventor, even after a patentee has shown the invention to be capable of use, unless that shall have been ascertained and shown by the applicant himself."

In Burgess *v.* Wetmore (1879), 16 O. G. 765, Paine, Com.: (766) "It is not enough in order to entitle an applicant to a patent that some one else has shown the practicability of the invention by reducing it to practice. . . . The law accords the patent to the later applicant, who connects by due diligence a prior conception, not with a reduction to practice by somebody else, but with a reduction to practice by himself or by his agent."

In Crane *v.* Whitehead (1875), 7 O. G. 219, Thacher, Com.: (219) "Now the law, as construed by the courts, gives the right to an invention to him who first reduces it to practical form by embodying it in a machine in use, or at least ready for use, unless a prior inventor is at the time using due diligence in adapting and perfecting the same invention. But before this prior inventor can have any standing in court, he must be able to show that he has also perfected the invention and made it ready for use; until he has done this he cannot successfully challenge the right of his competitor to the invention which the latter has embodied in operative machinery."

That drawings are not reduction as against subsequent inventors, see Pennsylvania Diamond Drill Co. *v.* Simpson (1886), 29 Fed. Rep. 288; Detroit

can it serve him as a demonstration that his own idea of means is capable of practical application in the arts. He must have finished his inventive work, and have complied with every legal requirement as fully as if no other laborer but himself were in the field, or he cannot yet be regarded as entitled to the recompense of an inventor.

Lubricator Co. *v.* Rouchard (1881), 9 Fed. Rep. 293; Reeves *v.* Keystone Bridge Co. (1872), 5 Fisher, 456; 8 Phila. 368; 1 O. G. 466. See also § 318 and note 2, *ante*.

That the testimony of the prior conceiver does not constitute reduction, see Pennsylvania Diamond Drill Co. *v.* Simpson (1886), 29 Fed. Rep. 288.

CHAPTER II.

OF CO-OPERATING INVENTORS.

§ 392. "Co-operating Inventors" Defined.

An operation or an instrument, as practically known and used in the arts, is often the result of the inventive skill of two or more persons, who have acted together in producing the invention. In such a case, if the idea of means expressed in the concrete invention is single, and has been developed by the united efforts of all the inventors, the invention is a joint invention, and those concerned in it are jointly entitled to the patent. But where the concrete art or instrument embodies more than one idea of means, and each idea is the result of the inventive skill of different persons; or where the principal idea is due to one, while others have supplied such ancillary conceptions as render the invention more available; all the inventors whose creative genius has aided in producing the invention have interests which, as far as practicable, the law will recognize and protect. It is to these we have applied the title of Co-operating Inventors.

§ 393. Suggestions as to Reduction not Co-operative Invention.

The co-operation here described has relation to the mental part of the inventive act alone. In reducing an idea of means to practice, an inventor has a right to avail himself of the constructive skill and ingenuity of others; and the suggestions which he may derive from them, and the improvements which he may adopt in consequence of these suggestions, belong to the embodiment of his invention and not to its essential character. Hence no notice is taken by the law either of these suggestions or their author. They are regarded as part of the service which the inventor bargains for with the con-

structor and for which he pays; and so far as any one can be protected in their exclusive use, they are covered by the patent he obtains.[1]

§ 394. Suggestions as to Inseparable and Dependent Ideas of Means not Co-operative Invention.

But as to those suggestions and improvements which owe their origin to the inventive skill of others than the principal inventor, the rule is different. The theory and spirit of the law secures to every one the fruit of his creative efforts, and permits no one except their author to appropriate them to his exclusive use. Practically, however, a strict adherence to this theory and spirit of the law is not always possible. Not every suggestion which involves an exercise of the inventive faculties is a complete idea of means, or even a complete step forward in the development of an existing idea, capable of substantive embodiment and patentable as a separate invention. While it may render the principal idea more useful to the public and more profitable to the inventor, it may be so dependent upon it and inseparable from it as to be inconceivable without it, even as a patentable improvement. Under such circumstances, its suggester has invented nothing which the law is able to protect, or which he himself is able to enjoy. The alternative is presented either to allow it to go unprotected, and open to the use of any one who has a right to the employment of the principal invention, or to treat it as an incident belonging to and following the principal, and thus the property of the principal inventor and covered by his patent. The latter is the rule adopted by the courts, as at once more just and more encouraging to inventors than the former;[1] se-

§ 393. [1] That suggestions to an inventor do not deprive him of the merit of the invention, unless they impart to him the complete idea of means, see Watson *v.* Belfield (1886), 26 Fed. Rep. 536; 35 O. G. 1112; Hall *v.* Johnson (1883), 23 O. G. 2411; Slemmers' Appeal (1868), 58 Pa. St. 155; Alden *v.* Dewey (1840), 1 Story, 336; 2 Robb, 17. See also § 84 and notes, *ante*.

§ 394. [1] In Collar Co. *v.* Van Deusen (1874), 23 Wall. 530, Clifford, J.: (568) "Where a person has discovered a new and useful principle in a machine, manufacture, or composition of matter, he may employ other persons to assist in carrying out that principle, and if they, in the course of experiments arising from that employment, make discoveries ancillary to the plan and preconceived

curing to the principal inventor all ancillary inventions made by his employees and assistants, whenever these are not sufficiently separable from the principal invention to be patentable by themselves.

design of the employer, such suggested improvements are in general to be regarded as the property of the party who discovered the original principle, and they may be embodied in his patent as part of his invention. Doubt upon that subject cannot be entertained, but persons employed, as much as employers, are entitled to their own independent inventions; and if the suggestions communicated constitute the whole substance of the improvement the rule is otherwise, and the patent, if granted to the employer, is invalid, because the real invention or discovery belongs to the person who made the suggestions." 7 O. G. 919 (923). This case affords a very instructive view of the relations sometimes arising between an inventor and his employees, and of their respective positions before the law. Evans, the assignor of the plaintiffs, was a manufacturer, and claimed to be the inventor, of paper collars. He found great difficulty in making collars of the desired qualities for want of paper possessing certain characteristics, and employed various paper-makers to experiment toward the production of such a paper as he required. As they presented to him, from time to time, the fruits of their experiments, he pointed out to them the particulars in which their papers were still deficient but gave them no information as to the ingredients to be used, or the methods to be employed in arriving at the necessary results. It was held that he was neither the inventor of the paper finally produced, nor of the process by which it was made; that he had merely pointed out an end to be attained, not the means of its attainment, and was not entitled to appropriate the discoveries of the paper-makers as his own invention.

In Agawam Co. *v.* Jordan (1868), 7 Wall. 583, Clifford, J.: (603) "Persons employed, as much as employers, are entitled to their own independent inventions, but where the employer has conceived the plan of an invention and is engaged in experiments to perfect it, no suggestions from an employee, not amounting to a new method or arrangement which in itself is a complete invention, is sufficient to deprive the employer of the exclusive property in the perfected improvement. But where the suggestions go to make up a complete and perfect machine, embracing the substance of all that is embodied in the patent subsequently issued to the party to whom the suggestions were made, the patent is invalid because the real invention or discovery belonged to another."

To the same point see also Harrison *v.* Hogan (1880), 18 O. G. 921; Yost *v.* Powell (1877), 13 O. G. 122; Chase *v.* Witter (1876), 9 O. G. 593; De Sanno *v.* Ritchel (1876), 9 O. G. 792; Cogswell *v.* Burke (1872), 1 O. G. 380; Pennock *v.* Dialogue (1825), 4 Wash. 538; 1 Robb, 466.

But that an improvement made by a user of the invention without the knowledge of the inventor cannot be claimed by the latter, see Berdan Fire Arms Mfg. Co. *v.* Remington (1873), 3 O. G. 688.

That the inventor of a new device, adopting a suggestion as to the mode of making it, and procuring a patent to himself and the suggester as an assignee of a half-interest, is to be regarded as the true inventor of the device, see Fraser *v.* Gates (1885), 118 Ill. 99.

§ 395. Suggestions of Separable but United Ideas of Means are Co-operative Invention.

Suggestions and improvements which are capable of independent contemplation, either as distinct ideas of means or as separate stages in the development of the same idea, belong, however, to their respective inventors.[1] The fact that, as it stands before the world, the invention is a single art or instrument does not show that it has originated in the inventive skill of a single individual, or that the one who first conceived the general idea which it embodies is alone entitled to the patents which protect it. Each part of which it is composed, as well as the method by which its several parts have been united in the complete invention, may be a separate invention, produced by a different inventor, and protected by a different patent. Thus in a combination, every element may have been produced by a distinct inventor, and the co-operative law under which they are now brought together may have been conceived by still another, while the whole is known in

§ 395. [1] In Odiorne *v.* Winkley (1814), 2 Gallison, 51, Story, J.: (53), "The original inventor of a machine is exclusively entitled to a patent for it. If another person invent an improvement on such machine, he can entitle himself to a patent for such improvement only, and does not thereby acquire a right to patent and use the original machine; and if he does procure a patent for the whole of such a machine with the improvement, and not for the improvement only, his patent is too broad and therefore void. . . . To illustrate these positions, suppose a watch was first invented by a person so as to mark the *hours* only, and another person added the work to mark the minutes, and a third the seconds, — each of them using the same combinations and mode of operations to mark the hours as the first. In such a case the inventor of the second-hand could not have entitled himself to a patent embracing the inventions of the other parties. Each inventor would undoubtedly be entitled to his own invention and no more. In the machines before the court there are three great stages in the operation, each producing a given and distinct effect: 1. The cutting of the iron for the nail; 2. The griping of the nail; 3. The heading of the nail. If one person had invented the cutting, a second the griping, and a third the heading, it is clear that neither could entitle himself to a patent for the whole of a machine which embraced the inventions of the other two, and by the same mode of operation produced the same effect; and if he did his patent would be void. Some machines are too simple to be thus separately considered; others again are so complex as to be invented by a succession of improvements, each added to the other." 1 Robb, 52 (55).

See also Tilghman *v.* Proctor (1880), 102 U. S. 707; 12 O. G. 859; Railway Co. *v.* Sayles (1878), 97 U. S. 554; 15 O. G. 243; Chase *v.* Witter (1876), 9 O. G. 593.

practice as but a single manufacture, process, or machine. Or any simple art or instrument may have at first embodied but the generic idea, which has since been developed and enlarged by numerous improvements, until the comparatively perfect invention represents the inventive skill and triumphs of many meritorious inventors. To each of these the law awards his recompense according to his merit, giving to each the exclusive use of the element, the improvement, or the co-operative law he has invented, and protecting, by the letters-patent issued to each, his precise invention and no more.

CHAPTER III.

OF JOINT INVENTORS.

§ 396. "Joint Inventors" Defined.

Where two or more persons, acting jointly, conceive the same idea of means, they are joint inventors and are jointly entitled to the patent. The sphere of their joint labors and success is thus the mental part of the inventive act. That one conceives the idea and another reduces it to practice; that one conceives the principal idea and the other an idea which is ancillary to and inseparable from it; that one conceives one idea and the other a different idea, both of which are united in the concrete invention, — neither of these are joint invention, nor do they give to the inventors the right to become joint patentees. Only where the same single, unitary idea of means is the product of two or more minds, working *pari passu*, and in communication with each other, is the conception truly joint and the result a joint invention.[1]

§ 397. Two Modes of Joint Invention: By Community of Mental Effort; By Community of Experiment.

In examining the methods in which joint inventions are created, it will be necessary to recur to the distinction between those inventive acts which are performed by complete mental development of the idea followed by reduction to practice, and those which, proceeding by successive experiments, at the same moment and by the simultaneous operation of the physical and mental faculties, both conceive and embody the

§ 396. [1] That in a joint invention both must unite in the invention of something essential, see Slemmer's Appeal (1868), 58 Pa. St. 155.

That the assignment of a half-interest does not show that the assignor was not the sole inventor, see Fraser *v.* Gates (1885), 118 Ill. 99.

invention. In the first species of inventive acts the joint inventors meet only upon the plane of mental effort, and are not necessarily associated upon that of the physical embodiment; for the idea of means, being once conceived by their joint endeavors, may be left to either or to some third party to be reduced to practice, without changing its character as a joint invention. But in the second class, as the embodiment and conception advance side by side, and the completeness of the one is known to the inventors only from the successful practical application of the other, the concurrence of the inventors in the physical experiments by which the inventive act proceeds is essential to render the result a joint invention.

§ 398. Joint Invention by Community of Mental Effort.

Where the conception is attained by mental effort only, the joint inventive act may present any one of several different phases. It is not necessary that the same idea should occur simultaneously to each. On the contrary, it is immaterial who first conceives any particular theory or plan of the invention, or in what order the development of its subordinate ideas proceeds.[1] Where two or more inventors have agreed that a

§ 398. [1] In Worden *v.* Fisher (1882), 11 Fed. Rep. 505, Brown, J.: (506) "There can be no doubt that if the circumstances are such as to show that two persons both contributed to an improvement, and such improvement is the result of mutual contributions of the two, they are to be treated as joint inventors, and a joint patent should be taken out. . . . (508) To constitute two persons joint inventors it is not necessary that exactly the same idea should have occurred to each at the same time, and that they should work out together the embodiment of this idea in a perfected machine. Such a coincidence of ideas would scarcely ever occur to two persons at the same time. If an idea is suggested to one, and he even goes so far as to construct a machine embodying this idea, but it is not a completed and working machine, and another person takes hold of it, and by their joint labors, one suggesting one thing and the other another, a perfect machine is made, a joint patent may properly issue to them. If, upon the other hand, one person invents a distinct part of a machine, and another person invents another distinct and independent part of the same machine, then each should obtain a patent for his own invention." 21 O. G. 1957 (1957, 1958).

In Gottfried *v.* Phillip Best Brewing Co. (1879), 17 O. G. 675, Dyer, J.: (676) "Where a device or combination is claimed to have been the joint invention of two or more parties, and the question arises for determination upon evidence, it must appear that it was the product of their mutual suggestions and joint efforts; for joint invention is the result of the mutual contributions of the parties, and if one suggests an idea in a

result, if it could be achieved, would be desirable, neither as yet having attempted to provide a means, and from this point go forward by mutual consultations and suggestions to devise one, the means devised becomes a joint invention. Or where one of the inventors has already in his mind a general indefinite idea of means, still incomplete and needing further exercise of inventive skill to fit it for a practical embodiment, and then the other, perceiving its deficiencies and the method of correcting them, makes his suggestions which the first accepts, from whence the two advance together to the complete development of the idea; this also is a joint invention. In short, wherever, before the entire conception of the invention by one inventor, another meets him and by his con-

general way and the other falls in with it and by his aid develops it and gives it definite practical embodiment, the two may be considered joint inventors." 5 Bann. & A. 4 (9).

In Chase *v.* Chase (1873), 4 O. G. 4, Leggett, Com.: (5) "The testimony . . . goes to show that Chase probably had a general idea of the invention in his mind before he saw White about it, but nothing more. When they consulted together, White's suggestions were such that they came to a definite agreement how the device ought to be made, and he made it accordingly. This is the ordinary process of joint invention. It is the result of the mutual contributions of the parties. If one suggests an idea in a general way and the other falls in with it, and by his aid develops it and gives it definite practical embodiment, the two may be considered joint inventors."

In Barrett *v.* Hall (1818), 1 Mason, 447, Story, J.: (472) "A joint patent may well be granted upon a joint invention. There is no difficulty in supposing, in point of fact, that a complicated invention may be the gradual result of the combined mental operations of two persons acting together, *pari passu*, in the invention. And if this be true, then, as neither of them could justly claim to be the sole inventor in such a case, it must follow that the invention is joint, and that they are jointly entitled to a patent." 1 Robb, 207 (233).

That wherever an invention is the result of the joint efforts of two or more inventors, it is a joint invention, see Thomas *v.* Weeks (1827), 2 Paine, 92.

That where one conceives the invention and the other makes a suggestion essential to its success they are joint inventors, see Consolidated Bunging Apparatus Co. *v.* Woerle (1887), 29 Fed. Rep. 449; 38 O. G. 1015.

That where two or more persons make suggestions and an invention results, it is a joint invention, see Reutgen *v.* Kanowrs (1804), 1 Wash. 168; 1 Robb, 1.

That where two work together for a common end which is finally accomplished by their united efforts the invention is joint, see Sawyer *v.* Edison (1883), 25 O. G. 597.

That where a joint invention is a unit, it is immaterial which of the joint inventors conceived the separate parts of it, or in what order, see Carter *v.* Perry (1875), 8 O. G. 518.

sent unites with him in exercising inventive skill upon the development and perfecting of the conception, the product of their joint endeavor is a joint invention.

§ 399. Joint Invention by Community of Experiment.

The same variety is possible in the exterior relations of the joint inventors, where the inventive act consists in the repeated trial of experiments. The exact part which each performs is of no consequence. Nor does it matter that one has been experimenting long in vain, nor even that he may have made some actual advance toward the discovery to which he aspires. It is enough if the experiment which finally succeeds — the one which demonstrates the practicability of accomplishing the end in view, and indicates the means by which it is attainable — has been conducted under their united supervision, and in accordance with ideas and theories to which both have contributed.

§ 400. Date of Conception of Joint Invention.

The date of the conception of a joint invention cannot be earlier than the date at which the joint inventors first united their inventive skill.[1] As the conception can have no existence until it is complete and capable of practical embodiment, and as no joint inventive act is possible where the conception is perfected in the mind of one inventor before the other is united with him, the meeting of the joint inventors upon the basis of a common effort to produce the joint invention marks the remotest period to which the date of the inventive act can be referred. Of course, it does not follow from this fact that the conception was at that time completed. Upon this question the same rule is applicable as in the case of sole inventions, whether the inventive act proceeded by mental efforts only or by a series of experiments.

§ 400. [1] That a joint invention cannot be regarded as conceived earlier than the first consultation of the joint inventors, as their individual efforts and conceptions constitute no part of the joint inventive act, see Dwyer *v.* Dickey (1876), 10 O. G. 585.

§ 401. Joint and Several Inventions may be Embodied in the Same Art or Instrument.

Any art or instrument which expresses more than one subordinate idea of means, may embody both a joint and several invention. Two or more inventors, each of whom has produced an elemental means, may unite in the creation of the co-operative law under which they become a combination. Several inventors of the parts of a machine or manufacture, or of the steps of a process, may thus be sole inventors as to each portion of the concrete invention, and joint inventors in regard to it when considered as a whole.[1] For every complete inventive act must stand alone, resulting in its own product, meriting its own recompense, and, theoretically at least, protected by its own patent. And although several of these may be combined to constitute an art or instrument essentially distinct from each and all of its component inventions, the rights of those whose genius thus contributes to the ultimate invention are unchanged, and each remains entitled to protection from the law.

§ 402. Joint Patent must Issue for a Joint Invention.

A patent for a joint invention must be applied for and be issued in the names of all the joint inventors.[1] If one of the inventors should obtain the patent to himself alone, the patent would be void unless his act could be regarded as a simple fraud upon the others, and equity could compel him to hold the patent privilege in trust for them.[2] If, on the other hand,

§ 401. [1] That where each of two persons produces independent parts of an entire invention, and they unite and so create the whole, they are joint inventors of the resulting invention, see Chase *v.* Chase (1873), 4 O. G. 4.

§ 402. [1] That a joint patent should always be issued for a joint invention, see Thomas *v.* Weeks (1827), 2 Paine, 92; Barrett *v.* Hall (1818), 1 Mason, 447; 1 Robb, 207.

That a sole patent for a joint invention is void, see Carter *v.* Perry (1875), 8 O. G. 518; Tennant's Case (1802), Dav. P. C. 429; 1 Web. 125; 1 Abb. P. C. 115.

That a patent for a joint invention cannot issue to one of the inventors, though the other has assigned all interests to him, see Opinion Atty. Gen. (1833), 2 Op. At. Gen. 571.

See on the subject of the joint ownership of patents §§ 795–799 and notes, *post*.

[2] That if one joint inventor obtains the patent to himself it is fraudulent, and he will be treated as a trustee for the others, see Reutgen *v.* Kanowrs

a joint patent is granted for a sole invention, the patent is invalid ;[8] for a patent privilege is indivisible, and being granted

(1804), 1 Wash. 168; 1 Robb, 1 ; *contra*, Slemmer's Appeal (1868), 58 Pa. St. 155.

That joint patentees are joint owners, not copartners, see Fraser *v.* Gates (1885), 118 Ill. 99 ; Pitts *v.* Hall (1854), 3 Blatch. 201 ; Parkhurst *v.* Kinsman 1849), 1 Blatch. 488.

[8] That a joint patent for a sole invention is void, see Stewart *v.* Tenk (1887), 41 O. G. 1502 ; Royer *v.* Coupe (1886), 29 Fed. Rep. 358 ; 39 O. G. 239 ; Ransom *v.* Mayor of New York (1866), 1 Fisher, 252.

That joint patents for sole inventions and sole patents for joint inventions are alike void, see Slemmer's Appeal (1868), 58 Pa. St. 155.

That a joint patent for a sole invention is void, and cannot be validated by the parties or the Patent Office, see *Ex parte* Boursaloux, *James & Lyon* (1878), 16 O. G. 233.

That an inventor of an original and an inventor of an improvement may take out a new joint patent for the whole if the inventor of the improvement assigns to the other one half of his invention, see Duke *v.* Graham (1884), 19 Fed. Rep. 647.

That a joint patent is *prima facie* evidence of joint invention and must be answered by proof, see Belle Patent Button Fastener Co. *v.* Lucas (1886), 28 Fed. Rep. 871 ; 37 O. G. 1004.

That neither one of two joint inventors can claim a patent to himself alone, see Runstetler *v.* Atkinson (1883), 23 O. G. 940.

That one joint inventor cannot abandon the invention to the public, see Sawyer *v.* Edison (1883), 25 O. G. 597.

It is a fair question whether the rule which holds that a joint patent for a sole invention and a sole patent for a joint invention are void, is not unnecessarily severe. In the difficulty that attends the discrimination of the mental operations which result in the conception of an idea of means, it may often happen that two or more co-operating inventors will honestly believe that their inventive act was joint, or two or more joint inventors will suppose that their creative processes were several and independent of each other. In the history of our patent system the cases have probably been very few in which, contrary to the known fact, joint or sole patents have been applied for and obtained ; and as wherever a patent issues in either form a patentable invention must have been created and given to the public, and the reward must have been conferred upon at least one person to whose inventive skill the invention was partially or wholly due, justice and public policy would seem to require that the patent should be sustained unless there are controlling reasons to the contrary. In examining this question, as the grant of a joint patent for a sole invention and the grant of a sole patent for a joint invention involve the application of different principles of law, they will be separately considered.

(1.) The issue of a joint patent for a sole invention has been held invalid on the ground that in this case the monopoly is bestowed upon at least one person who is not an inventor and who therefore is not by law entitled to receive it ; and since the patent privilege is indivisible and cannot be regarded as conferred upon the meritorious patentee to the exclusion of the other, it cannot properly subsist in either, and hence the entire patent must be void. To thus deprive the real inventor of his recompense, because he has mistakenly united with him in its ownership a person who did not deserve it, is certainly a harsh proceeding, contrary to the spirit of our

to at least one person who is not an inventor, is contrary to law and therefore void. That the error of the patentee,

Patent Law, and not to be adopted unless essential to the preservation of some public or private right.

The parties affected by the creation or destruction of a monopoly are the public upon one side and the true inventor on the other. Where a patentable invention has been produced, its inventor has an indisputable right to a monopoly therein, unless by his own acts or negligence the right is forfeited, and until such forfeiture occurs, or his granted monopoly expires, the public can properly acquire no interest in the invention. The issue of a joint patent for a sole invention thus in no manner prejudices the public right. It neither takes nor withholds from them anything which they are justly or lawfully entitled to enjoy, and where the mistake is *bona fide* on the part of the meritorious applicant there is no ground of forfeiture on which the denial of his exclusive privilege can be sustained. So far, therefore, as the public are concerned, there is no reason why the patent should be treated as invalid, if on any principle of law or equity the grant, as made, can be upheld.

The actual inventor, on the other hand, is in no position to complain that a joint rather than a sole patent has been issued. His concession that the invention was due to the joint efforts of himself and his co-patentee was voluntary, and as far as the circumstances rendered it possible was made with a full knowledge of the facts, and hence no legal injury can result to him from regarding this admission as conclusive. Certainly his rights as sole inventor are not vindicated by declaring the entire patent void, and depriving him of his reward because he has improperly though honestly allowed another to obtain a share therein. Far better would it serve his interests to sustain the patent and permit him to reap that proportion of his recompense to which he is still entitled, notwithstanding his mistaken relinquishment of the remainder to his co-patentee.

One theory upon which a patent of this character can be supported is that of an assignment of an interest in the invention to the alleged co-inventor before their application for a patent. Such an assignment can be made and an equitable title to the patented invention can be created, either by writing, or by words spoken, or by conduct, where the intention so to do is unequivocally expressed; and the patent, when issued, will vest in the equitable assignee either upon the recording of his written assignment or the decree of a court of equity enforcing the original contract, unless superior rights would be thereby affected. But no more unequivocal manifestation of a design to share the benefits of a patent privilege with another can exist than where the inventor joins the other with him in an application for a patent to both; and though he may so far misconceive the nature of the consideration for the assignment as to suppose it to consist in a more intimate union with himself in the inventive act than the facts will justify, his intention to make the other a joint owner of the patent is as definite and justifiable as in any other case of an assignment. The law which authorizes the issue of a joint patent to an inventor and his assignee where the assignment requests that the patent may be thus granted, and has been recorded before the issue of the patent, is in its spirit and intent, if not in its letter, fully adequate to cover such a transaction as the present and to save the rights of all parties according to the relations they have voluntarily adopted toward each other.

If to this position it is objected that

in this respect, was *bona fide* and without negligence is not regarded as sufficient to protect him from its fatal consequences.

the parties, having described themselves in the application as joint inventors, and having supported this description by the application-oath, cannot be permitted to allege a different relation, the answer is that a *bona fide* mistake in matters of this character ought not to, and generally does not, operate to defeat rights which equitably vest in the parties by whom the mistake is made. Thus where the application-oath is unintentionally omitted, or the applicant, believing that he is the first inventor, so describes himself though the fact be otherwise, or inadvertently misstates the character and scope of his invention, — in these and numerous other instances his honest error works no other harm than to compel him to correct it, where such correction is important to the public. The same indulgence ought not to be denied where the mistake is of such slight consequence to the community, and so easily made, as in the application for a joint patent by parties, the unity or diversity of whose inventive acts can rarely be infallibly determined.

(2.) A sole patent to one of two or more joint inventors is held invalid on the ground that the patentee, having performed merely an indivisible part of the inventive act, is not a true inventor, and therefore not entitled to the patent. But by the grant of such a patent the rights of the public are no otherwise affected than in the case of a joint patent for a sole invention. The only party prejudiced is the co-inventor who has not received that share in the monopoly which is his due. The forfeiture of the invention to the public for a *bona fide* and perhaps unavoidable error in this respect is not consistent with the spirit of the law nor with the position taken by the courts in similar cases. Nor is the wrong actually suffered by the excluded co-inventor in any degree redressed by avoiding the whole patent and bestowing the invention unreservedly upon the public.

A proper mode of preserving the rights of all parties in this case is suggested in Reutgen *v.* Kanowrs (1804), 1 Wash. 168, *viz.* by treating the sole patentee as holding the monopoly in trust for his co-inventors, and compelling him to execute such assignments as will perfect their legal titles. This is the mode resorted to where a patent is obtained by an inventor after he has assigned his interest in the invention, and could with equal propriety be adopted where one co-inventor procures a patent which equitably belongs to others as well as to himself. By this mode the patent will in fact, if not in form, be actually granted to the true inventors, and the rights of all in the monopoly will be equally protected.

See also Commissioner's Report for 1887, *in loc.*, 42 O. G. 612.

That where a joint patent has issued for a sole invention, the sole inventor may file a subsequent application and obtain a patent, see Kohler *v.* Kohler (1888), 43 O. G. 247.

CHAPTER IV.

OF PERSONAL REPRESENTATIVES OF THE INVENTOR.

§ 403. Rights of Deceased Inventor Vest in Heirs or Devisees.

The right of an inventor to a patent vests in him at the moment his invention is completed, and can be divested only through a forfeiture resulting from his negligence or through his voluntary abandonment of the invention to the public. His death does not affect it. If he makes any disposition of it in his will, such provision is as valid as one concerning any other class of property. If he dies intestate, the right descends, by statute, to his heirs at law.[1]

§ 404. Patents Granted to Representatives of Deceased Inventors.

It is obvious that the Patent Office is not a tribunal by which the adverse claims of heirs and devisees may be decided. It is not practicable there to test the validity of wills, to construe testamentary provisions, or to determine who are proper heirs at law. All such questions must necessarily be left to the local courts within whose jurisdiction they arise.[1] In issuing a patent, therefore, the law contents itself with an examination of the claims which the alleged inventor might have

§ 403. [1] That the right of an inventor descends to his heirs, and a patent will issue to his personal representative in trust for them, see Wilson *v.* Rousseau (1846), 4 How. 646.

See also as to the rights and duties of Personal Representatives §§ 367, *ante*, and 800–802, *post*.

§ 404. [1] That the letters of administration issued by a competent court will be presumed to be regular, see Northwestern Fire Extinguisher Co. *v.* Phila. Fire Extinguisher Co. (1874), 10 Phila. 227; 6 O. G. 34; 1 Bann. & A. 177.

That State laws cannot limit the powers of administrators under the Patent Laws of the United States, see Brooks *v.* Jenkins (1844), 3 McLean, 432.

That an administrator's title to a patent is not derived from the State law, and there is no necessity for local State administration, in order to enable him to assert his rights, see Goodyear *v.* Hullihen (1867), 3 Fisher, 251; 2 Hughes, 492.

urged, if living, and finding them well-founded grants the patent to his personal representative, leaving the actual owners of the right to adjust their controversies in the tribunals of the States where they reside.[2]

[2] In Shaw Relief Valve Co. *v.* City of New Bedford (1884), 19 Fed. Rep. 753, Lowell, J.: (754) "A question which cannot be thus disposed of, and which has been argued with earnestness, and is pending in at least one other circuit, is whether the complainant's title to an undivided part of one of the patents is sufficient. It seems that this title comes through an administrator of the patentee; and the defendant contends that the grant of a patent, by Rev. St. § 4884, is to the patentee, 'his heirs and assigns,' and that by force of these words a patent descends directly to the heirs, without the intervention of the administrator. This is a new and somewhat surprising proposition. It has never been doubted before that a patent is personal property, which follows the ordinary course, and goes to the executor or administrator in trust for the next of kin. The cases take this for granted, and when any question has been mooted, it has had reference to the due qualification of the executor or administrator, or something of that sort, as in Rubber Co. *v.* Goodyear, 9 Wall. 788. The text-writers treat of patent rights as personal property which goes to the executor. Norman, Pat. 145; Schouler, Ex'rs, § 200. The defendant argues that the statute of 1870 changed the rule, by omitting the words 'executors and administrators' from what is now section 4884, intending to make a sort of real estate of this incorporeal right. He has not argued that the widow can be endowed of it, but I suppose that will follow. A grant of personal property to a man and his heirs, without further qualification, means to him and his next of kin, according to the statute of distributions. 4 Kent, Comm. (5th ed.) 587, note *d*, and cases; Vaux *v.* Henderson, 1 Jacob & W. 388, n.; Gittings *v.* McDermott, 2 Mylne & K. 69; *Re* Newton's Trusts, L. R. 4 Eq. 171; *Re* Gryll's Trusts, L. R. 6 Eq. 589; *Re* Steeven's Trusts, L. R. 15 Eq. 110; *Re* Thompson's Trusts, 9 Ch. Div. 607; Houghton *v.* Kendall, 7 Allen, 72; Sweet *v.* Dutton, 109 Mass. 589. Such a grant is simply a limitation of an estate of inheritance, having no reference one way or the other to the administrator. He takes in trust for the next of kin, because the estate is more than a life estate." 28 O. G. 283 (283).

See also Bradley *v.* Dull (1884), 19 Fed. Rep. 913; 27 O. G. 625; Hodge *v.* North Missouri R. R. Co. (1870), 1 Dillon, 104; 4 Fisher, 161.

That the "legal representative" is the executor or administrator, see Shaw Relief Valve Co. *v.* New Bedford (1884), 19 Fed. Rep. 753; 28 O. G. 283.

That the term "legal representatives" may sometimes include assignees as well as executors, etc., see Hamilton *v.* Kingsbury (1878), 14 O. G. 448; 15 Blatch. 64.

That at the death of a patentee the patent vests in his personal representative, at the domicil of the deceased patentee, who is then the owner of the patent for the whole United States, see Hodge *v.* North Missouri R. R. Co. (1870), 4 Fisher, 161; 1 Dillon, 104.

That a patent does not vest in the heirs or devisees of the patentee's administrator, see Pelham *v.* Edelmeyer (1883), 25 O. G. 292.

§ 405. Representatives of Deceased Inventors Receive Patents in Trust for Heirs or Devisees.

The executor or administrator who thus receives the patent has no personal interest therein, nor does he hold it as a part of the assets of the estate committed to his charge. He is a mere trustee for the true owners, as determined by descent or by the will, and is accountable to them for all the use he makes of, or authority he exercises over, the invention. No words to this effect are necessary in the patent. The fact that, as the personal representative of the inventor, he obtains the patent is enough to charge him with this trust, and render it enforceable, like any other, in a court of equity.[1]

§ 406. Authority of Representatives of Deceased Inventors over Patents Granted to them in Trust for Heirs or Devisees.

Such personal representative occupies the same position that his decedent would have done, in reference to all matters arising in the Patent Office concerning the invention. Where the law permits of an extension of the patent, it is his place to apply for and secure it.[1] If a reissue becomes necessary,

§ 405. [1] In Stimpson *v.* Rogers, Smith, & Co. (1859), 4 Blatch. 333, Ingersoll, J.: (336) "The law, when the facts appear that a patentable invention has been made, that the person making it died without taking out a patent, that he made a will and appointed an executor, that such executor, as executor, made an application for a patent for the invention of the testator and not for his own invention, and that the patent for the invention of the testator was granted to the executor, as executor, creates the trust that it is for the use and benefit of those to whom the property in the invention was given by the will."

That a patent in the representative's hands is not personalty belonging to the decedent's estate, but is a franchise held in trust for the heirs, see Goodyear *v.* Hullihen (1867), 3 Fisher, 251; 2 Hughes, 492.

That a patent to an administrator is held by him in trust, but the *cestuis que trust* need not be named therein, see Northwestern Fire Extinguisher Co. *v.* Phila. Fire Extinguisher Co. (1874), 10 Phila. 227; 6 O. G. 34; 1 Bann. & A. 177.

That Congress can grant a patent to the heirs of an inventor by allowing the Patent Office to issue it after the application has been forfeited by delay, see Graham *v.* Johnston (1884), 21 Fed. Rep. 40.

§ 406. [1] In Brooks *v.* Jenkins (1844), 3 McLean, 432, *per curiam:* (436) "The question was raised as to the right of the administrator to apply for an extension of the patent in his own name. This point was considered on the motion made for an injunction, and decided in favor of the administrator, in whose name the patent was extended. That decision was not made without hesitancy, and the doubt expressed by Judge Story of its correctness, in the very recent case of Woodward & Brown *v.* Gould, which brought up the same

he must surrender the old patent and obtain the new. By him also disclaimers must be filed, suits for infringement prosecuted, and assignments made;[2] he alone being known in the Patent Office as the owner of the invention and entitled to enforce or to convey the right to its exclusive use.

§ 407. Applications Pending at Death of Inventor to be Prosecuted by his Representatives.

The same duty which devolves upon a personal representative to apply for and obtain a patent for an invention made by his decedent compels him to prosecute an application made by the inventor, and pending in the Office at his death.[1] Here, as before, the patent issues in the name of the executor or administrator, and the same trust attaches to it in favor of the devisees or heirs at law.

question on the same patent, has somewhat shaken my confidence in the view formerly taken. As the point will be taken before the Supreme Court, I deem it unnecessary now to discuss it at large. My opinion, though shaken, is not changed. On a full discussion in the Supreme Court, I may find reasons to lead me to a different result. But it still seems to me that the renewal of the patent in the name of the administrator is so clearly within the spirit and policy of the act of 1836, it should be sustained. There is nothing that the act requires the patentee to do which may not be done by *his administrator*, except the oath of the ascertained value of the invention, and of the receipts and expenditures, etc. But these receipts and expenditures may be ascertained by the books of the patentee, or from other evidence. The avowed object of the law, in granting an extension of the patent, is to give an adequate remuneration to the patentee, for 'his time, ingenuity and expense; he having satisfactorily shown to the board that he had not received such a remuneration.' Now, why should this remuneration be withheld from the heirs of a deceased patentee? If a patentee die after his invention, and before he obtains a patent, his administrator may apply for and obtain it. The same reason and justice require a renewal in behalf of the heirs where the remuneration has been inadequate. It is true the act does not expressly so provide."

See also Wilson *v.* Rousseau (1846), 4 How. 646; Woodworth *v.* Hall (1846), 1 W. & M. 248; 2 Robb, 495.

[2] That an administrator or executor can assign a patent and give a good title thereto, see Donoughe *v.* Hubbard (1886), 27 Fed. Rep. 742; 35 O. G. 1561; Bradley *v.* Dull (1884), 27 O. G. 625; 19 Fed. Rep. 913.

§ 407. [1] That if the inventor dies before applying for a patent, his executor or administrator should apply; and if he die after application, the patent should issue to his executor or administrator, see Rice *v.* Burt (1879), 16 O. G. 1050.

That where an inventor dies pending an application for a patent, his representative may file a new application, if the rights of third persons will not be affected thereby, see Rice *v.* Burt (1879), 16 O. G. 1050.

CHAPTER V.

OF ASSIGNEES OF THE INVENTOR.

§ 408. Right to Apply for and Obtain Patent Assignable.

The right of an inventor to a patent is assignable, not only by himself to his immediate assignees, but by these in their turn unlimitedly to others.[1] Any person may be such assignee, even an infant or a married woman, and will hold the right subject to the provisions of the local law.[2] The capability of this class of property to be assigned, as well as the method and effect of the assignment are, however, under the entire control of the United States and rest upon the language and construction of the acts of Congress.[3]

§ 408. [1] In Selden *v.* Stockwell Self-Lighting Gas Burner Co. (1881), 9 Fed. Rep. 390, Blatchford, J. : (396) "The defendant contends that the word 'assignee,' in the statute, means the immediate assignee, and not the ultimate assignee. . . . This is not the proper construction of the statute. The 'assignee' means the assignee in any degree and however remote. By section 4884 the grant is directed to be made to 'the patentee, his heirs or assigns.' This is not limited to the first assignee. So section 4898, in declaring that 'every patent, or any interest therein, shall be assignable,' and that 'the patentee or his assigns' may convey an exclusive right under the patent for the whole or any specified part of the United States, clearly means that an assignee in any degree is an assignee for all purposes. All parts of the statute are to be construed harmoniously in this respect, as there appears to be no good reason for a contrary construction. It is true that section 4 of the Patent Act of February 21, 1793 (1 St. at Large, 322) used the words 'assignees of assigns to any degree;' but the absence of the words 'to any degree' cannot, in view of all the provisions of the present statute, be regarded as restricting the meaning of the word 'assignee.'" 19 Blatch. 544 (552) ; 20 O. G. 1377 (1378).

See also Consolidated Electric Light Co. *v.* Edison Electric Light Co. (1885), 23 Blatch. 412 ; 25 Fed. Rep. 719 ; 33 O. G. 1597.

That the assignee of two joint inventors becomes thereby the owner of a sole patent afterward issued to one of such joint inventors, see Kohler *v.* Kohler (1888), 43 O. G. 247.

[2] That a married woman, or an infant, or a ward, may be assignee, see Fetter *v.* Newhall (1883), 17 Fed. Rep. 841 ; 21 Blatch. 445 ; 25 O. G. 502.

[3] That all rights of assignees rest on

§ 409. **Right to Patent Assignable at any Stage of Inventive Act.**

This right may be assigned at any stage of the invention. It is not essential that both conception and reduction be complete, and the concrete invention thus be ready for a patent. The idea of means may be developed and its embodiment imperfect or not yet begun; or the idea may still be general and indefinite; or the inventor may have gone no farther than to determine to attempt the creation of a means for the accomplishment of some desirable result; he yet has power to bind the future invention in his hands and make it in advance the property of whomsoever he may choose.[1] And such assignment will be valid, as between the parties to it, though no patent ever issue, whatever rights a subsequent inventor or the public may acquire.[2]

the statute, see Suydam *v.* Day (1846), 2 Blatch. 20.

The property of an inventor in his patented invention is divisible into (1) The invention, or the right to make, use, and sell the new art or instrument; and (2) The monopoly, or the right to exclude others from such making, use, or sale. The former exists from the moment the inventive act is completed, and may be enjoyed or disposed of by him as he pleases. Before his inventive act is finished no property in the invention can exist, but the proposed inventor may make contracts concerning it which will operate upon it when completed, and create rights in it which can be then enforced. The latter property exists only after the patent creating the monopoly is granted and until then cannot be enjoyed by the inventor or, in any proper sense, assigned to others. But as in the case of the invention he may bind it by contracts which become operative when the patent issues, and which derive their force partly from the doctrines of the common law and partly from the provisions of the statutes relating to the ownership of patents. In this chapter contracts which relate to the future ownership of the monopoly are alone considered, and these are called "assignments," in compliance with custom, though strictly they do not differ from any other agreements affecting prospective rights. Contracts concerning the invention only are hereafter discussed (§§ 806–834) under the name of Licenses. Conveyances of the patented invention are treated (§§ 752–805) under their proper title of Assignments. Conveyances of future patents are also referred to in §§ 368, *ante*, and 771, 772, *post*.

§ 409. [1] That an assignment is good although the invention is not yet perfected, see Bunker *v.* Stevens (1885), 26 Fed. Rep. 245; 36 O. G. 345; Continental Windmill Co. *v.* Empire Windmill Co. (1871), 8 Blatch. 295; 4 Fisher, 428; Opinion Atty. Gen. (1859), 9 Op. At. Gen. 403.

That an assignment is good though the invention is not yet patented, see Hammond *v.* Mason & Hamlin Organ Co. (1875), 92 U. S. 724; Rathbone *v.* Orr (1850), 5 McLean, 131.

[2] That an assignment is good between the parties though no patent ever issues, see Hammond *v.* Mason & Hamlin Organ Co. (1875), 92 U. S. 724.

§ 410. Form of Assignment Immaterial.

No special form of such assignment is required by law. It may be oral or in writing; and if in writing it need not be under seal nor be recorded; and though recorded, the record gives it no additional validity.[1] The intention of the assignor to transfer the patent for the specific invention claimed under the assignment must appear; and in ascertaining this intention, the ordinary rules of construction are applied to the language of the instrument where the assignment is in writing, or the general designs, relations, and circumstances of the parties are considered where the conveyance has been oral.[2] Whatever expresses this intention is sufficient to create a title to the patent in the assignee.

§ 411. Assignment of Right to Patent Creates Equitable Title to Patent when Granted.

An assignment of the right to a patent is, in effect, a contract to assign the patent when issued, and as such is enforce-

§ 410. [1] That the assignment of an unpatented invention may be oral as well as written, see Burr *v.* De La Vergne (1886), 102 N. Y. 415.

That the assignment of a future patent need not be recorded, and if recorded derives therefrom no additional validity, see Wright *v.* Randel (1881), 19 Blatch. 495; 21 O. G. 493; 8 Fed. Rep. 591.

That where the assignment requests the Patent Office to issue the patent to the assignee, the assignment must be recorded before the issue of the patent, see § 4895, Rev. Stat.

[2] That a deed conveying all the inventor's "property and estate whatsoever and wheresoever, of every kind and description" carries his inchoate rights in all unpatented inventions, see Railroad Co. *v.* Trimble (1870), 10 Wall. 367.

That an assignment of one patent "with all modifications, improvements, and re-issues" does not cover a later invention attaining the same end by different means, see Stebbins Hydraulic Elevator Mfg. Co. *v.* Stebbins (1880), 17 O. G. 1348; 4 Fed. Rep. 445.

That an assignment of an imperfect invention, with all the improvements upon it that the inventor may make, is equitably a conveyance of the perfected results, and thus whoever receives the patent holds it in trust for the assignee, see Littlefield *v.* Perry (1875), 21 Wall. 205; 7 O. G. 964.

That a conveyance of all the inventions which the assignor may hereafter make will cover future inventions, see Opinion Atty. Gen. (1859), 9 Op. At. Gen. 403.

That an irrevocable power of attorney to control a patent is equivalent to an assignment, see Hartshorn *v.* Day (1856), 19 How. 211.

That an assignment entitling the assignee to have the patent issued to him must be a formal assignment of a completed invention, and not an agreement to assign future inventions, see Runstetler *v.* Atkinson (1883), 23 O. G. 940.

able in equity.[1] Of itself it creates no legal title to the patent, though when the patent issues and the assignment is recorded the legal title passes to the assignee unless superior rights would thereby be invaded.[2] Nor does it empower the assignee to take a patent for the invention in his own name, unless a provision granting that authority, and requesting the Patent Office to recognize it, is incorporated in the assignment.[3] In the absence of this provision, and until perfected

§ 411. [1] That an assignment of the patent privilege before the patent issues is a contract to assign the patent when issued, and creates an equitable title to the patent in the assignee, although the patent issue to the inventor, see Aspinwall Mfg. Co. *v.* Gill (1887), 40 O. G. 1133; United States Stamping Co. *v.* Jewett (1880), 7 Fed. Rep. 869; 18 Blatch. 469; 18 O. G. 1529; Hammond *v.* Pratt (1879), 16 O. G. 1235; Littlefield *v.* Perry (1875), 21 Wall. 205; 7 O. G. 964; Newell *v.* West (1875), 13 Blatch. 114; 9 O. G. 1110; 8 O. G. 598; 2 Bann. & A. 113; Troy Iron & Nail Co. *v.* Corning (1852), 14 How. 193; Gayler *v.* Wilder (1850), 10 How. 477.

That the equitable title in the assignee cannot prevail over the legal title of innocent *bona fide* purchasers from the inventor after the patent issues, unless in the assignment it was provided that the patent issue to the assignee, see Davis Wheel Co. *v.* Davis Wagon Co. (1884), 22 Blatch. 221; 20 Fed. Rep. 699; Wright *v.* Randel (1881), 19 Blatch. 495; 21 O. G. 493; 8 Fed. Rep. 591; Gibson *v.* Cook (1850), 2 Blatch. 144.

That an assignment of the entire right, before patent, entitles the assignee to a patent in his own name; but an assignment of a part interest, however large, does not give the assignee any legal claim to the patent, see Opinion Atty. Gen. (1859), 9 Op. At. Gen. 403.

That formerly patents could not issue to an inventor and an assignee jointly, but only to an inventor or an assignee of the whole interest, see Opinion Atty. Gen. (1845), 4 Op. At. Gen. 399.

[2] That if the assignee of a future patent puts his assignment on record after the patent issues, the legal title will vest in him if there are no superior rights, see U. S. Stamping Co. *v.* King (1880), 7 Fed. Rep. 869; 18 Blatch. 469; 18 O. G. 1529.

That an agreement to assign becomes an assignment in fact as soon as the price is paid; and that the title is good in the assignee before the money has been paid, see Hartshorn *v.* Day (1856), 19 How. 211.

[3] That an assignment of a future patent is a mere contract and that the patent cannot issue to the assignee unless the assignment so order, see Hammond *v.* Pratt (1879), 16 O. G. 1235.

That a parol assignment of a future patent neither gives the assignee a right to take out a patent in his own name, nor entitles him to be a joint patentee, see Hammond *v.* Pratt (1880), 16 O. G. 1235.

That a patent issuing to the assignee gives him the legal title, see Perkins *v.* U. S. Electric Light Co. (1883), 24 O. G. 204; 21 Blatch. 308; 16 Fed. Rep. 513.

That where an inventor assigns to A, A to B, and B to C, and all assignments are on record before the issue of the patent, if the patent issues to A the title vests at once in C, see Consolidated Electric Light Co. *v.* McKeesport Light Co. (1887), 44 O. G. 110; Consolidated Electric Light Co. *v.* Edison

by the vesting of the legal title, the rights of the assignee in the patent are thus merely equitable. He takes them subject to all prior equities, and, in his hands, they yield to any legal title subsequently acquired from the inventor by innocent *bona fide* assignees.[4]

§ 412. Assignment of Right to Patent does not Cover Extension.

Whether such an assignment covers the right to an extension, where the law concedes that privilege to the inventor, depends upon the character of the assignment.[1] Presumptively it relates only to the original patent, and hence the extension does not pass unless the express words or necessary implications of the contract require it.[2] But it is competent

Electric Light Co. (1885), 23 Blatch. 412; 25 Fed. Rep. 719; 33 O. G. 1597.

That oversights in the Patent Office cannot affect the title of the real owner of a patent, see Consolidated Electric Light Co. *v.* Edison Electric Light Co. (1885), 23 Blatch. 412; 25 Fed. Rep. 719; 33 O. G. 1597.

That a court of equity will not aid an inventor to obtain a patent in violation of his own agreements, see Runstetler *v.* Atkinson (1883), 23 O. G. 940.

[4] That an assignee takes subject to all the legal consequences of the previous acts of his assignor, such as implied licenses, disclaimers, etc., see Blades *v.* Rand, McNally, & Co. (1886), 27 Fed. Rep. 93; McClurg *v.* Kingsland (1843), 1 How. 202; 2 Robb, 105. See also § 789 and notes, *post*.

That a contract to assign vests the right to the patent in the promisee, and his property therein cannot be affected by any subsequent licenses granted by the promisor, see Adams *v.* Bridgewater Iron Co. (1886), 26 Fed. Rep. 324.

§ 412. [1] That the right to an extension, where the law allows extensions to be granted, may be assigned, see Prime *v.* Brandon Mfg. Co. (1879), 16 Blatch. 453; 4 Bann. & A. 379; New-ell *v.* West (1875), 13 Blatch. 114; 9 O. G. 1110; 2 Bann. & A. 113; 8 O. G. 598; Gear *v.* Grosvenor (1873), Holmes, 215; 3 O. G. 380; 6 Fisher, 314; Nicholson Pavement Co. *v.* Jenkins (1872), 14 Wall. 452; 5 Fisher, 491; 1 O. G. 465; Clum *v.* Brower (1855), 2 Curtis, 506; Day *v.* Candee (1853), 3 Fisher, 9.

[2] That the extension will not pass under a general assignment of the patent, but must be expressly granted, see Johnson *v.* Wilcox & Gibbs Sewing Mach. Co. (1886), 23 Blatch. 531; 27 Fed. Rep. 689; Waterman *v.* Wallace (1875), 13 Blatch. 128; Holmes *v.* Spaulding (1873), 4 O. G. 581; Gear *v.* Grosvenor (1873), 6 Fisher, 314; Holmes, 215; 3 O. G. 380; Mowry *v.* Grand St. & Newtown R. R. Co. (1872), 10 Blatch. 89; 5 Fisher, 586; Wetherill *v.* Passaic Zinc Co. (1872), 2 O. G. 471; 6 Fisher, 50; 9 Phila. 385; Jenkins *v.* Nicholson Pavement Co. (1870), 4 Fisher, 201; 1 Abbott U. S. 567; Goodyear *v.* Hullihen (1867), 3 Fisher, 251; 2 Hughes, 492; Goodyear *v.* Day (1856), 6 Duer, 154; Gibson *v.* Cook (1850), 2 Blatch. 144; Phelps *v.* Comstock (1848), 4 McLean, 353; Wilson *v.* Rousseau (1846), 4 How. 646; 2 Robb, 372; Brooks *v.* Bicknell (1845), 4 McLean, 64; Wilson *v.* Turner (1845), Taney,

for the inventor, if he wishes, to transfer not only the immediate right, but the remoter incidents; and where the language or the circumstances of his conveyance clearly indicate such an intention it will be effective to vest in the assignees all rights which the inventor might himself secure.[3]

278; Woodworth *v.* Sherman (1844), 3 Story, 171; 2 Robb, 257.

[8] In Hendrie *v.* Sayles (1878), 98 U. S. 546, Clifford, J.: (554) "Apt words are required, where the conveyance is of an existing patent, to show that the conveyance includes more than the term specified in the patent; but where the conveyance is of the invention, whether before or after the patent is obtained, the rule is otherwise, unless there is something in the instrument to indicate a different intention, — the rule being that a conveyance of the described invention carries with it all its incidents; and all the well-considered authorities concur that the inchoate right to obtain a renewal or extension of the patent is as much an incident of the invention as the inchoate right to obtain an original patent; and if so, it follows that both are included in the instrument which conveys the described invention without limitation or qualification. Emmons *v.* Sladden, 9 O. G. 354; Gayler *v.* Wilder, 10 How. 477; Clum *v.* Brewer, 2 Curt. C. C. 520; Cannon *v.* Bowles, 2 Bro. C. C. 84."

That an assignment of the entire invention and of all letters-patent that may be granted therefor, before a patent has issued, will carry the extension as well as the original privilege, see Ruggles *v.* Eddy (1872), 10 Blatch. 52; 5 Fisher, 581; Nicholson Pavement Co. *v.* Jenkins (1872), 14 Wall. 452; 1 O. G. 465; 5 Fisher, 491; Railroad Co. *v.* Trimble (1870), 10 Wall. 367; Clum *v.* Brewer (1855), 2 Curtis, 506.

That an assignment of the "invention," merely, does not carry an extension, see Johnson *v.* Wilcox & Gibbs Sewing Mach. Co. (1886), 27 Fed. Rep. 689; 23 Blatch. 531.

That though an assignment of "said letters-patent" only carries the original privilege, an assignment of all "letters-patent that may be granted," will embrace an extension, see Ruggles *v.* Eddy (1872), 10 Blatch. 52; 5 Fisher, 581.

That an assignment of the "invention" for the "full term for which letters-patent may be granted" carries the extension, see Gear *v.* Holmes (1873), 6 Fisher, 595; Nicholson Pavement Co. *v.* Jenkins (1872), 14 Wall. 452; 1 O. G. 465; 5 Fisher, 491; Ruggles *v.* Eddy (1872), 5 Fisher, 581; Thayer *v.* Wales (1872), 5 Fisher, 448.

That a contract to convey an interest in letters-patent "to the fullest duration he is or may be entitled to" carries extensions, see Chase *v.* Walker (1866), 3 Fisher, 120.

That the conveyance of the patent and "any further patent," etc., carries an extension, see Chase *v.* Walker (1866), 3 Fisher, 120.

That the phrase "said letters-patent" may cover an extension, see Chase *v.* Walker (1866), 3 Fisher, 120.

That the word "renewal" means an extension, see Pitts *v.* Hall (1854), 3 Blatch. 201.

That an assignment of "all rights which may be secured to him from time to time" includes extensions, see Railroad Co. *v.* Trimble (1870), 10 Wall. 367.

That an assignment of "the invention" after patent issued does not carry the extension, see Waterman *v.* Wallace (1875), 13 Blatch. 128.

That an assignment of the entire "interest in letters-patent" for the full

§ 413. Assignment of Right to Patent Binding on Representatives of Deceased Inventor.

The obligations of this contract on the part of the inventor do not cease at his death. The right to the future patent still continues in the assignee, and if the assignment so provides and the invention is completed, the patent will be issued to the assignee upon the application of the personal representatives of the inventor. But where no such authority has been given to the assignee by the assignment, his rights are merely equitable, and can be enforced against the personal representatives of the inventor, by compelling them to procure the patent and perfect the title.[1] Unless the invention is completed before the death of the inventor, there is of course no patentable subject-matter, and the contract fails.

§ 414. Assignment of Right to Patent by Employee to Employer.

An employee may agree to devote his inventive faculties to the service of his employers, and thus confer upon them all the fruits of his inventive skill during the period covered by his contract.[1] But an agreement of this character must be

term for which they may be granted does not carry the extension, see Gear *v.* Grosvenor (1873), Holmes, 215; 6 Fisher, 314; 3 O. G. 380. But see note to this case in Holmes, 215.

That a grant of all the patents the grantor "has or intends to obtain" does not carry extended terms, see Wetherill *v.* Passaic Zinc Co. (1872), 6 Fisher, 50.

That an agreement of an inventor to assign to himself and another does not affect his extension, see Johnson *v.* Wilcox & Gibbs Sewing Mach. Co. (1886), 27 Fed. Rep. 689; 23 Blatch. 531.

For a general discussion of the right to an extension and the respective claims of executors, administrators, and assignees in reference thereto, see Wilson *v.* Rousseau (1845), 1 Blatch. 3; and same case (1846), 4 How. 646; 2 Robb, 372; especially the questions: 1. Whether an executor can have an extension; 2. Whether an extension, on petition of an executor, enures to his benefit or that of assignees of the inventor; 3. Whether after a sale of the patent by his decedent, the executor can have an extension.

That where an assignee owning an extension assigns all his right, title, and interest, it will carry the extension, see *Ex parte* Mason (1872), 1 O. G. 357.

See also as to the assignment of an extension §§ 770, 779, 844, and notes, *post*.

§ 413. [1] That an assignment of a future patent having been made by a deceased inventor, his personal representatives should obtain the patent and complete the legal title in the assignee, see Newell *v.* West (1875), 13 Blatch. 114; 9 O. G. 1110; 8 O. G. 598; 2 Bann. & A. 113.

§ 414. [1] That an employee may assign his inventions to his employer, in advance of making them, and the inventions when made will equitably belong

unequivocal, and cannot be implied from a general bargain for his time and skill and labor, nor is it proved conclusively by the fact that the experiments resulting in the invention were made at the request and the expense of the employers.[2] But to the employer, see Continental Windmill Co. *v.* Empire Windmill Co. (1871), 8 Blatch. 295; 4 Fisher, 428.

That where an invention has been made by a workman at the expense of his employer, who gave him extra wages on account of his skill as an inventor, the employer *prima facie* has a right to use it, see Bensley *v.* Northwestern Horse Nail Co. (1886), 26 Fed. Rep. 250; 36 O. G. 689.

That where an employee using the time and at the expense of the employer makes an invention, the employer may use it, see Jencks *v.* Langdon Mills (1886), 27 Fed. Rep. 622; 36 O. G. 347.

That when a workman is hired to invent, the employer will own the inventions which fall within the scope of the contract while the others will belong to the employee, see Joliet Mfg. Co. *v.* Dice (1883), 105 Ill. 649.

That an employee hired to assist an inventor in making improvements and to use his inventive skill for that purpose cannot claim, hold, or transfer to a person having knowledge of such contract, any invention so made against his employer, but the inventions are the property of the employer, and if patented by the employee a bill to compel their conveyance will lie, see Annin *v.* Wren (1887), 44 Hun, 352.

That an agreement between copartners that the firm is to have a joint right in any inventions made by either, is binding, and will cover inventions jointly made by a copartner and a third party at the firm's expense, see Burr *v.* De La Vergne (1886), 102 N. Y. 415.

[2] In Hapgood *v.* Hewitt (1882), 11 Bissell, 184, Gresham, J.: (186) "Persons are not deprived of their right to their inventions while in the service of others, unless they have been hired and paid to exercise their inventive faculties for their employers. A contract by which one person agrees to pay a sum of money for the time, labor, and skill of another, for a given period, gives the employer no right to an assignment of a patent that is issued to his employee for an invention made during the period of his employment." 11 Fed. Rep. 422 (424); 21 O. G. 1786 (1786).

See also Hapgood *v.* Hewitt (1886), 119 U. S. 226; Hall *v.* Johnson (1883), 23 O. G. 2411; Damon *v.* Eastwick (1882), 14 Fed. Rep. 40; 22 O. G. 1709; 15 Phila. 506; Whiting *v.* Graves (1878), 13 O. G. 455; 3 Bann. & A. 222.

That a workman hired to perfect machinery, and bound to devote his skill and labor to his employer, is not obliged to abstain from taking patents for his inventions in his own name, though they are used by his employer, see Green *v.* Willard Improved Barrel Co. (1876), 1 Mo. App. 202.

That even though an employee is experimenting at the expense and request of his employer, his inventions are still his own, see Dice *v.* Joliet Mfg. Co. (1882), 11 Bradwell (Ill.) 109; Damon *v.* Eastwick (1882), 14 Fed. Rep. 40; 22 O. G. 1709; 15 Phila. 506.

That as between master and servant the inventor is the one who conceives the idea and reduces it to practice, see Dice *v.* Joliet Mfg. Co. (1882), 11 Bradwell (Ill.), 109.

That the making of the models by other servants of the employer does not show that he is the inventor, see Dice *v.* Joliet Mfg. Co. (1882), 11 Bradwell (Ill.), 109.

That a patent granted to one member of a firm is not partnership property,

such an agreement may be evidenced by circumstances; and the conduct of the employee in permitting his employers to claim and treat the invention as their own may operate as an estoppel to prevent him from denying their asserted rights.[3] An agreement of this nature relates only to the period of service, and inventions made prior to that period or after its expiration belong to the employee and are patentable by him alone.[4]

although the firm paid the patent fees and used the invention, see McWilliams Mfg. Co. *v.* Blundell (1882), 22 O. G. 177.

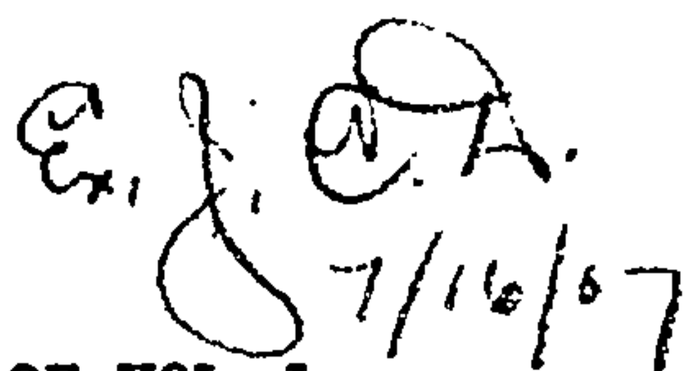
That a partner, merely as such, has no rights in an invention made by his copartner during the existence of the firm, although the invention is an improvement on machinery owned by the firm and is made with the firm means, and in time which by the partnership articles belonged to the firm, see Burr *v.* De LaVergne (1886), 102 N. Y. 415.

[3] That where an inventor has allowed his employer or others to deal with his invention as their own, he may be estopped from claiming it, see National Feather Duster Co. *v.* bbard (1881), 11 Bissell, 76; 9 Fed. Rep. 558; 21 O. G. 635; Dixon *v.* Moyer (1821), 4 Wash. 68; 1 Robb, 324.

[4] That when the term of hiring has expired, inventions thereafter made by the employee belong to himself alone, or to his subsequent assignees, see Appleton *v.* Bacon (1862), 2 Black, 699.

By their contract with a workman his employers may acquire a right either to the ownership or to the use of his inventions. The law does not favor a claim of the employers to the former, and hence requires strict proof that by the agreement the employee intended to convey to them his future patented inventions both as to the invention itself and as to the monopoly created by the patent. On the other hand, a transfer to the employers of the right to use the invention is easily established and will generally be presumed whenever the workman has applied the invention to his employers' business without express contract and without demanding recompense until his term of service has expired. In examining the cases which relate to contracts of this character between masters and servants the distinction here alluded to must be kept in mind.

§ 414



END OF VOL. I.