BIRCH BAYH
INDIANA

United States Senate

WASHINGTON, D.C.

August 6, 1979

Dear Friend:

On Friday, August 3, 1979, I introduced S. 1679, the Patent Law Amendments Act of 1979.

This bill is designed to reduce the costs of challenges to the validity of an issued patent by allowing the Patent and Trademark Office to reexamine contested patents rather than going to court in litigation which frequently costs both parties $250,000 or more and can take months of legal manuevering before any decision is reached. The Patent and Trademark Office has the capability of evaluating such patent challenges for a modest fee and has the technical expertise to evaluate the complex materials which are used in these patent cases.

The Patent Law Amendments Act will help to restore confidence in our patent system by eliminating unnecessary legal red tape. This bill will be important to all patent holders, but is especially important to the independent inventor and small businessman who sometimes find themselves being "blackmailed" by larger competitors who realize that these inventors cannot afford to defend their patents in court and can be infringed upon with little danger.

S. 1679 will also help to turn around our declining rates of innovation and productivity by restoring confidence in our patent system which was described by President Lincoln as "adding the fuel of interest to the fires of genius." I hope that you will join me in support of this legislation.

I have enclosed some material about this bill for your information.

Sincerely,

Birch Bayh
United States Senator

Enclosure

United States of America

Congressional Record

PROCEEDINGS AND DEBATES OF THE 96th CONGRESS, FIRST SESSION

Vol. 125 WASHINGTON, FRIDAY, AUGUST 3, 1979 No. 110

Senate

FRIDAY, AUGUST 3, 1979

(Legislative day of Thursday, June 21, 1979)

By Mr. BAYH:

S. 1679. A bill to amend the patent laws, title 35 of the United States Code; to the Committee on the Judiciary.

PATENT LAW AMENDMENTS OF 1979

● Mr. BAYH. Mr. President, today I am introducing a bill entitled the "Patent Law Amendments Act of 1979." This legislation is designed to cut through the delays and legal expenses that many patent holders encounter when someone challenges the validity of a patent in court on the basis that an incomplete search of the patent files was made befor the patent was issued.

The problem is this: Because of underfunding of the Patent and Trademark Office, an estimated 2 percent to 28 percent of the search files are missing in every patent subclass. This means that many times when patent examiners are searching these files seeking prior patents and relevant materials in order to determine whether or not to grant a requested patent, some of the materials that are needed to make this decision might be missing. The result has been that there is a great deal of uncertainty over the validity of issued U.S. patents among many in the business community. Such uncertainty is a direct contributor to our lagging rates of innovation and productivity. Countries such as Japan and West Germany are renowned for the strength of their patent systems, which encourage inventors to pursue new ideas and processes without continuing doubt about the worth of their patents.

It has been estimated by patent experts that it frequently costs both parties in civil patent challenges more than $250,000 apiece to pursue these questions through the court system. The Subcommittee on Patent and Information Policy, which is a part of the President's innovation and productivity study, said that the question of reexamination of issued patents should be handled by the Patent and Trademark Office rather than through the courts. About 50 percent of these challenged patents are now being found to be invalid in court when evidence is presented that not all of the relevant material was considered by the patent examiner before issuance of the patent. Businesses are understandably reluctant to invest millions of dollars in developing and marketing new products when there is a 50-percent chance that their patent might be no good. I am concerned that the threat of long court challenges is especially serious to small businesses, which simply does not have the resources to defend their patents in these cases. This type of threat hangs like a sword over important small business patents and has been used to induce these companies to allow rivals to infringe on important patents rather than undertake the expense and delay of court actions.

The bill that I am introducing today would allow the Patent and Trademark Office to reexamine these challenged patents and to consider the evidence that not all of the relevant materials were considered prior to patent issuance. Because this can be a very technical question and because the patent examiners are the best trained people to decide these questions, both parties would save considerable amounts of money in court costs and would receive a much quicker determination of the patent's validity than is now possible. This bill would also reduce part of the enormous case load from our Federal court system.

Under this legislation, whenever anyone wanted to challenge an issued patent they would file a request with the Patent and Trademark Office along with a modest fee and the evidence that is relevant to the patent challenge. The patent holder would be informed of the challenge and would receive a copy of any cited material being used to question his patent. Within 90 days of receipt of this request, the Commissioner of Patents would issue his decision. If the Commissioner determined that the challenge was invalid, the patent would be upheld and this decision could not be appealed. If the patent was found to be too broad, the patent holder would have the opportunity of narrowing the patent claim. The Commissioner could also invalidate the issued patent. Such an action would be subject to appeal by the patent holder.

The Patent Law Amendments Act would also give the courts the option of sending patent challenges that are already pending back to the Patent Office for reexamination, although it would not require that such action be taken. The courts would still have the option of accepting patent validity cases if they chose to do so, but this bill would give an inexpensive alternative to costly legal actions.

I would like to point out to my colleagues that our patent system which was once the envy of the world is no longer the most efficient patent system. I think that part of the responsibility for this sad situation lies with the Congress which has neglected the patent system for too long. This bill will go a long way toward restoring confidence in our patent system and will also remove the possibility that patent holders will be subjected to long, expensive law suits to determine the validity of issued patents.

This bill would insure that both parties to patent challenges would get speedy justice at a reasonable price. I urge my colleagues to join me in support of this important bill. There has been a great deal of concern in the Congress about the drop in our productivity and innovation rates; this bill is an opportunity for the Congress to directly address a very real part of this problem.

I ask unanimous consent that the text of the bill be printed in the RECORD, along with a copy of the recommendation of the Advisory Subcommittee on Patent and Information Policy of the Advisory Committee on Industrial Innovation.

There being no objection, the bill and report were ordered to be printed in the RECORD, as follows:

S. 1679

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Patent Law Amendments of 1979".

SEC. 2. Title 35 of the United States Code, entitled "Patents", is amended by adding the following chapter: "Chapter 30.—PRIOR ART CITATIONS TO PATENT OFFICE AND REEXAMINATION OF PATENTS

Lawrence Weike, President, International Computer Program.

PROPOSAL II—PROVIDE FOR REEXAMINATION OF PATENTS

One of the fundamental problems of the existing patent system is that pertinent prior art is very often found after the patent has issued and has become commercially important. At this point in time, additional prior art, not considered by the PTO, is often found which creates uncertainty concerning the enforceability of the patent. Such uncertainty often deters the patent owner of licensee from commercializing the invention. Such uncertainty can also deter commercialization by an interested party who cannot quickly and cheaply assess the value of the patent. Litigation is slow and very expensive. Such uncertainty coupled with such expense can be utilized by infringers to avoid respecting the patent property, especially those owned by independent inventors and small businesses, which in turn reduced the value of patents as an incentive to innovate. Therefore, a need exists for a fast, inexpensive method for increasing the certainty as to the enforceability and scope of a patent.

Accordingly, the subcommittee proposes that the PTO initiate a system for the reexamination of U.S. patents by any party requesting such reexamination during the life of the patent. The reexamination system should provide for submission of written arguments by the patentee and other interested persons concerning patentability over prior patents or printed publications. Such reexamination should be handled on an expedited basis by the PTO so that a prompt decision can be rendered. If the claims are held to be patentable over the cited art, the presumption of validity of the patent is enhanced and patentees and interested parties would have a clearer idea about the strength of the patent, without resorting to litigation. In some instances, the reexamination procedure should help avoid litigation costs.

If the patent claims were held to be invalid over the cited art, the patentee would have the right to amend his claims and to define his invention more accurately or assert his position to the Board of Appeals and, on appeal, to the Court of Customs and Patent Appeals or the U.S. District Court for the District of Columbia.

This reexamination system would be available whether or not the patent to be reexamined was already involved in litigation. In such case, however, it would be solely within the court's discretion as to whether the litigation should be stayed pending the reexamination, so as to avoid undue delays in obtaining a final court adjudication.

The importance of having prior art relied upon to invalidate a patent reviewed in the first instance by the PTO, when obtainable without delay of infringement litigation, cannot be too highly emphasized. Indeed, reliable statistics suggest that a significantly higher percentage of litigated patents are held invalid where prior art relied on in court was not previously considered by the PTO than was the case where the prior art had been so considered.[1]

The subcommittee recommends enactment of suitable legislation[2] to fully implement the reexamination system; in the interim, the subcommittee encourages the Commissioner to use his rule-making authority to institute reexamination to the fullest extent possible.

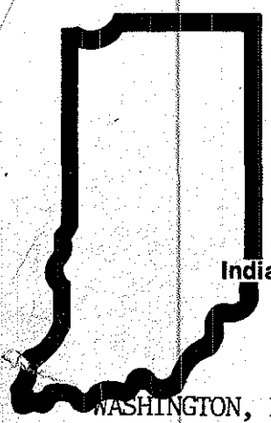
The net effect of this subcommittee's proposal for reexamination would be to provide a simple, inexpensive method of greatly improving the quality and reliability of those U.S. patents which have demonstrated commercial value and to avoid expensive and wasteful procedures with respect to noncommercial developments. It would also provide a system whereby competitors of the patentee can request a more accurate definition of the invention (claims) as guidance in their efforts to legitimately compete with the patentee.[3]

FOOTNOTES

[1] See Koenig, "Patent Invalidity—A Statistical and Substantive Analysis" (Clark Boardman Co., Ltd. 1976).

[2] Such as H.R. 14632, 94th Congress, January 30, 1976, as modified by Resolutions Two and Three of the August, 1977 annual meeting of the Patent, Trademark And Copyright Law Section of the American Bar Association, the effect of which is to (1) give the courts discretion to stay litigation for determination of the issue by the PTO, and (2) provide third parties who have initiated a reexamination proceeding to have an opportunity to submit a written response to the statements filed by the patentee.

[3] See Appendix H.●



News from Birch Bayh

for further information—phone (202) 224-5623
in Indiana phone (317) 269-6240

32-79

FOR RELEASE:

WASHINGTON, D.C., MAY 16 -- Senator Birch Bayh (D.-Ind.) today warned that the United States is rapidly losing its pre-eminent position in the development and production of new technologies, and said the result is needless economic decline and human suffering.

Opening hearings before the Senate Subcommittee on the Constitution on a bill to streamline federal patent licensing procedures, Bayh pointed out that there are more than 20 different statutes and regulations governing ownership of inventions resulting from federal research programs, causing confusion, delay and preventing new products from reaching the public.

"When federal agencies retain the patent rights on new inventions, there is little incentive for any private company to undertake the risk and expense of trying to develop a new product," Bayh remarked. "This problem is especially serious in the field of biomedical research, where delays by the agencies in granting patent waivers for new drugs and processes have condemned many people to needless suffering.

Bayh said the University and Small Business Patent Procedures Act (S.414) will make it more attractive for private enterprise to develop new products that are the result of federally-financed research, while at the same time, protecting the legitimate rights of the funding agency to use the invention on behalf of the government. Moreover, a section of the bill also requires the patent holder to reimburse the government whenever an invention achieves a certain level of success in the marketplace.

"This bill will create for the first time a uniform patent policy for every agency and, thus, end the confusion caused by different and often contradictory policies," Bayh said.

The Hoosier Democrat cited seven examples of the disturbing decline in American innovation

- Importation of foreign manufactured goods are second only to foreign oil as the biggest drain of U.S. dollars. In the first half of 1978, the U.S. suffered a $14.9 billion deficit on importation of foreign-manufactured products.
- The number of patents issued each year has declined steadily since 1971;
- The number of U.S. patents granted to foreigners has risen since 1973, and now accounts for 35 percent of all patents filed in the U.S.;
- Investment in research and development over the past 10 years, in constant dollars has remained constant or declined;
- American productivity is growing at a much slower rate than that of our free world competitors;
- Small businesses, which have compiled a very impressive record in technological innovation, are receiving a distressingly low percentage of federal research and development funds;
- The number of patentable inventions made under federally-supported research has been in a steady decline.

"The Departments of Energy and HEW frequently take months, and in some cases even years, to review petitions for patent rights," Bayh said. "Many inventions could make significant contributions to the health and welfare of our country if they were only developed and utilized. Instead, they collect dust on government shelves."

Of the 30,000 patents the government presently holds, less than four percent are ever successfully licensed, Bayh noted. "This," the Senator said, "has a significant impact on our nation's small businesses who, according to the Office of Management and Budget, are credited with almost half of the industrial innovations made between 1953 and 1973.

"Small businesses have gotten more from each research and development dollar than larger contractors," Bayh concluded.

Joining Bayh in sponsorship of the bill is Senator Robert Dole (R.-Kan.) and 24 other members of the Senate.

- 30 -

The "Innovation Recession"

A new worry about the U.S. economy: the decline in R. and D.

While the devaluation of the dollar may be the most dramatic measure of the U.S.'s reduced clout in world commerce, another event may ultimately have a greater impact on the nation's economic health. It is the shocking decline of good old Yankee ingenuity, otherwise known as research and development.

The U.S. has always prided itself on being the world's undisputed leader in technological innovation. Since World War II foreign demand for aircraft, computers, automated tools and other products of American labs and workshops could be relied on to provide a fat surplus in the nation's balance of trade. No more. Though the U.S. still retains an overall lead in total amounts spent on R. and D. and in numbers of new inventions, its chief economic rivals are expanding their research efforts at much faster rates. One consequence is becoming dramatically clear this year: because the U.S. no longer commands such a high share of the world's high-technology market, it no longer can offset its large imports of low-technology items such as shoes and clothing. As a result, in 1978 the country will import substantially more manufactured goods than it will export. The deficit for the first half of 1978 was $14.9 billion, which will do more damage to the trade balance this year than anything but the $40 billion in oil that the U.S. will import. By contrast, West Germany and Japan are expected to run surpluses in manufactured goods of $49 billion and $63 billion respectively.

According to the National Science Foundation, in the years 1953 through 1955 the U.S. introduced 63 "major" technological innovations. West Germany, Japan, Britain and France had together only 20. But now foreign competitors are bringing out as many new products and processes as the U.S.—or more. In the category of new patents, a key measure of R. and D. vitality, American inventors were granted 45,633 patents by major trading partners in 1966, while the U.S. gave only 9,567 to non-Americans that year. By 1976, however, the so-called patent balance had shifted radically. The number of U.S. inventors granted patents abroad dropped by more than 25%, to 33,181, while the number of foreigners gaining U.S. patents had almost doubled, to 18,744. Says Frank Press, the chief White House science adviser: "It is the trends that are important, and the percentage increases in some countries are growing faster than here."

Why did the trends begin to shift? Arthur M. Bueche, senior vice president for R. and D. at General Electric, which remains the most research-oriented of big U.S. companies (862 patents won last year), is concerned about a change in the American character. Says he: "We've gone from an expansive, gung-ho attitude to a defensive, 'What's in it for me?' attitude." Faced with a challenge, Americans are now more likely to say, "Let's not risk it." Among factors behind the U.S.'s "innovation recession":

THE MONEY DROUGHT. Since the post-Sputnik days of 1964, when public and private spending on R. and D. reached a peak of 3% of the gross national product, such spending has slipped to just 2.3% of G.N.P. That is appreciably lower than West Germany's 3.1%, and uncomfortably close to Japan's 1.8% and even France's 1.5%. Furthermore, while foreign countries spend very little on military research, the U.S. dedicates almost 50% of its R. and D. expenditures to defense-related projects. At the same time, federal spending on basic research has lion in 1967 to $2.6 billion in 1977. Yet industry's R. and D. investment has risen from $8.1 billion in 1967 to $19.4 billion ten years later, although inflation has eroded the impact of that increase.

BURGEONING BUREAUCRACY. Government sponsorship of R. and D. has become increasingly stultifying and counterproductive. Research scientists complain that they spend more time dealing with the red tape that goes with Government support than in the lab. The Department of Energy, to cite just one example, requires seven approvals prior to the start of a research contract. Another fear expressed by many scientists: a growing share of Government-sponsored R. and D. is not true research at all but only the quest for instant remedies to satisfy the rising numbers of regulations on safety, health and environmental protection flowing from Washington.

THE QUICK-RETURN SYNDROME. Partly because more and more stock in companies is held by pension funds and other large institutions that are both conservative and concerned with ever improving bottom-line performance, managers in private industry have become more interested in merely improving existing products than going to the trouble and expense of devising new ones. Vague research projects, whose benefits may be far off, are even less likely to get boardroom backing. But in such situations, asks Lowell W. Steele, GE's manager of R. and D. planning, "how do we compete against a country like Japan, which considers ten or 15 years a perfectly acceptable lead time for development?"

RISK-CAPITAL SHORTAGE. Although many of the most successful companies in computer technology and semiconductors were founded as modest operations only a decade or so ago, the scientist with a brilliant idea is hard put to find financial backing these days in the equity markets. As recently as 1972, 104 small R. and D.-oriented firms were able to raise seed money on the stock exchanges. At last tabulation, only four had done so. One reason for the drying up of venture capital: the maximum tax on capital gains was raised from 25% in 1969 to the present 49% rate. For investors, this had the effect of cutting, say, a 25% gain on a high-risk investment to an effective return of about 12%. Congress will roll the capital-gains rate back to about 35% this year, but the damage may take long to repair. Says Ray Stata, founder of Analog Devices Inc., a successful Massachusetts semiconductor firm: "The single most important factor retarding innovation is Government policy on investment. You can't avoid it."

In addition to throwing the U.S. balance of payments into even deeper deficits, the decline in research and development is bound to have a dampening effect on the domestic economy, especially since small companies based on new ideas tend to grow faster and create more jobs than older firms. A five-year study by the Commerce Department of six "mature" corporations (such as General Motors and Bethlehem Steel), five "innovative" companies (including Polaroid and IBM) and five "young high-technology" firms (among them, Marion Labs and Digital Equipment) turned up some telling figures. The mature firms, which had combined annual sales of $36 billion, added only 25,000 workers during the five years; the innovative companies, with a $21 billion sales total, had a net gain of 106,000 employees; the high technology outfits, with $857 million in sales, created 35,000 new jobs.

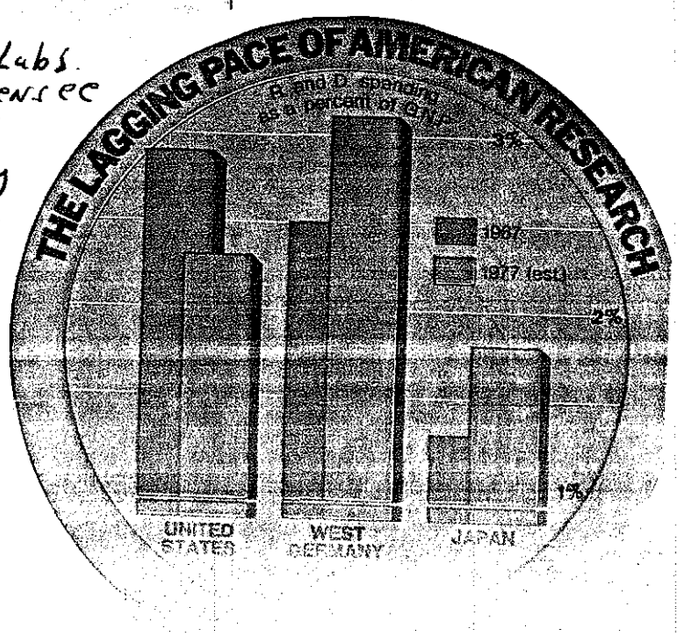
The dividends the U.S. gets from these high-technology firms extend far beyond jobs. As economic engines of astonishing vitality, they are also churning out the export sales and tax revenues that the nation urgently needs. A recent survey of high-technology companies founded in the early 1970s showed that for every $100 originally invested in them, each firm on the average now returns each year $70 in sales abroad, $15 in federal corporate tax, $15 in personal income tax and $5 in state and local revenues.

Concerned about the R. and D. retreat, President Carter has ordered a Cabinet-level task force headed by Commerce Secretary Juanita Kreps to give him some recommendations for turning it around by next June. One of the task force's main goals: to find ways to reduce the discouraging effects of Government regulation on R. and D.

One idea that has already surfaced is to copy the Japanese by establishing research institutes within the various branches of American industry that could supply information on basic research to participating companies. Thinking along that line, the Canadians, who have also been suffering from an R. and D. lag, plan to set up five innovation centers at universities, which will supply help to industry. In the U.S., such research-sharing schemes generally have been discouraged by antitrust law. But the Commerce Department is now consulting with Justice officials about devising programs that would further the cause of American R. and D. without violating the precepts of antitrust legislation. ■

+ Marion Labs is a licensee of Gov't-funded university research

* This is primary purpose of S.3496



Glen Feldman

Quentin Crommelin

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BAYH	Nels Ackerson/Joe Allen	5625					SPONSOR
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BENTSEN	Brent Budowsky	5922					
BIDEN	Ed Williams	5042					
BROOKE	Mike Jones	2742					
BUMPERS	Richard Arnold	4843					
BURDICK	Tom Burgan	2551					
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BYRD (W. VA)	Tom Hart	3954					
CANNON	Bruce Agers	6244					
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CHILES	Ruth Knight	5274					
CHURCH	Barry Berkoff	6142					
CLARK	Vicky Smith	3254					
CRANSTON	Betty Hight	3553					
CULVER	Paul Harstead	3744					
CURTIS	Jerry Vigoda	4224					
DANFORTH	Chris Brewster	6154					
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DOLE	Brenda Levenson	6521					SPONSOR
DOMENICI	George Ramonas	6621					CO-SPONSOR
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EAGLETON	not sure	5721					
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FORD	Dave Leiter	4345					
GARN	Lincoln Oliphant	5444					CO-SPONSOR
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GOLDWATER	Terry Emerson	2235					
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GRIFFIN	Mark Steinberg	6221					
HANSEN	Will Haley	3424					
HART	Bill Shore	5852					

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HELMS	Sam Currin	6342					
HODGES	Linda Laibstian	2353					
HOLLINGS	not sure	6121					
HUDDLESTON	Roger Lamaster	2542					
HUMPHREY	not sure	3244					
INOUYE	not sure	3934					
JACKSON	Joel Merkle	3441					
JAVITS	~~Brian Conboy~~ Carol Corcoran	6542					
JOHNSTON	Cindy Shade	5824					
KENNEDY	Ken Feinberg/Tom Sussman	4543					
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MOYNIHAN	Jim Mors	4451					
MUSKIE	Jim Case	5344					
NELSON	Jerry Sturgis	5323					
NUNN	Gordon Giffin	3521					
PACKWOOD	Ann Reifenberg	5244					
PEARSON	Richard Walker	4744					
PELL	Bradford Penny	4642					
PERCY	~~Ken Ackerman~~ Jerry Black	2152					

RANDOLPH	Morton Schwartz	5	
	Ned Masse	6472	
	not sure		
RIEGLE	Craig Polhemus	2921	
ROTH	Chris Warner	2441	
SARBANES	Stuart Sims	4524	
SASSER	Irwin Hall	5344	
SCHMITT	[redacted] John Ryan	5521	
SCHWEIKER	Doug Ham	4254	
SCOTT	not sure	2023	
SPARKMAN	Eddie Sokol	4124	
STAFFORD	Mike Francis	5141	
STENNIS	Jim Kendall	6253	
STEVENS	Becky Gernhardt	3004	
STEVENSON	John Stewart	2854	
STONE	Tom Moore	3041	
TALMADGE	Randy Knuckles	3643	
THURMOND	~~Eric Hultman~~ Hugh Hadden	5972	CO-SPONSOR
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WALLOP	Pat Hoff	6441	
WEICKER	not sure	4041	
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Science Jan 12, 1979



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Technological Innovation

I was extremely interested in William D. Carey's editorial "Science in the political economy" (17 Nov. 1978, p. 703). I agree with the assessment that the budget restraints we are facing make it critical that the money spent by the federal government for research and development bring the greatest possible return. Not only should we be selective in our research funding, but we must also create the best climate for bringing the fruits of federal research to the people in the form of new products and technology. Unfortunately, the present policy of federal government retention of patent rights on inventions arising out of federally supported research has resulted in many promising inventions being left to gather dust on the shelves of government agencies. Less than 4 percent of the patents held by the government are ever successfully licensed. This is not a very good return for the billions of dollars we spend on R & D.

There is another trend that has been commented upon in the past in *Science* and is succinctly expressed by this headline, which appeared in the Washington *Post* on 24 November 1978: "U.S. Seen Losing Technological Edge in Some Industries." Because the government provides such a large percentage of all the R & D expenditures in the United States, an inefficient policy which stifles inventiveness hurts our companies who need new technological ideas to compete successfully with increasingly tough foreign businesses.

In the last Congress, I joined a bipartisan group of senators in introducing a bill we feel will answer at least part of these problems. This legislation, the University and Small Business Patent Procedures Act, will allow universities, small businesses, and nonprofit institutions in most cases to retain patent rights for those inventions and processes if they are willing to spend the necessary private funds to develop and market a final product. At the same time, the bill will protect the legitimate rights of the government to enjoy the fruits of the research it helped to fund.

There are now 20 statutes and regulations in effect that give contradictory instructions to the agencies about their ability to grant patent petitions. Sometimes, even within the same agency, there can be different policies among various divisions. The result has been that researchers face a costly maze of confusing rules, many of which require the agency that helped fund the research

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entions arising from it.

Early in the next Congress, Senat Robert Dole (R-Kan.) and I again w ead the bipartisan effort to pass this leglation. I realize that getting the most ut of our R & D money and the probem of our slumping rate of technological nnovation are extremely complex areas. his bill would be an important first step n turning this situation around.

BIRCH BAYH

U.S. Senate, Washington, D.C. 20510

Nitrite in Cured Meats

Philip E. Hartman (Letters, 20 Oct. 978, p. 260) responds to the article by . Jeffrey Smith (News and Comment, 8 ept. 1978, p. 887), which says researchrs have estimated that less than 20 perent of the nitrite entering the human tomach is derived from cured meats. Hartman cites a publication by White (*1*) iving a figure of 21.2 percent and coniders this the best currently available inormation. On the basis of White's estiate that cured meats contribute 9.4 perent of ingested nitrate and other evience that some of the dietary nitrate is bsorbed by the body, secreted in the sava, and then reduced to nitrite in the ral cavity, Hartman suggests that the nirate in cured meats may "possibly conribute an additional 6.8 percent of gasric nitrite." Adding this figure to White's value of 21.2 percent, Hartman btains a total of 28 percent.

Hartman's estimate appears to be too igh. The data on which it is based overstimate the current exposure to nitrite nd nitrate in cured meats because they re based on analyses of cured meat amples taken years ago. Nitrite and nirate residues in cured meats are now reuced because of recent changes in manfacturing practices.

S. R. Tannenbaum *et al.* (Reports, 30 une 1978, p. 1487) found that nitrite and itrate are formed in the human inestinal tract. Hence, the human body as whole is exposed to more nitrite- and itrate-nitrogen than enters the stomach om the oral cavity. On the basis of the ata by White and Tannenbaum *et al.*, I stimated (*2*) that as much as 2 percent of e exposure of humans to nitrite in the nited States is a consequence of conumption of meats cured with nitrite. he remaining 98 percent of the exosure is from other sources, which em to be almost exclusively dietary nirogenous substances other than nitrite

