United States District Court,
W.D. Texas, San Antonio Division.

SIGNTECH USA, LTD,
Plaintiff.
v.
VUTEK, INC,
Defendant.

Sept. 30, 1997.

David G. Wille, Baker & Botts, L.L.P., William D. Harris, Jr., Schultz & Associates, P.C., Dallas, TX, David Jed Williams, Hornberger, Sheehan, Fuller & Beiter, Inc., San Antonio, TX, for Plaintiff.

Alan D. Rosenthal, Rosenthal & Osha L.L.P., Howard L. Speight, Houston, TX, John M. Skenyon, Jolynn Marie Lussier, Fish & Richardson, P.C., Boston, MA, Luke C. Kellogg, The Law Offices of Luke C. Kellogg, P.C., San Antonio, TX, for Defendant.

MEMORANDUM OPINION AND ORDER

NANCY STEIN NOWAK**, United States Magistrate Judge.**

This matter comes before the Court for entry of findings of fact and conclusions of law after trial, conducted with the consent of the parties to my jurisdiction pursuant to 28 U.S.C. s. 636(c).

Summary

This is a patent infringement case involving ink jet printers used for making large signs. Plaintiff sued defendant alleging Vutek Models 3200 and 3200i infringe plaintiff's U.S. Patent No. 5,376,957 ('957 patent) which claims an ink jet printer that prints large signs with identical images printed in registry on the front and reverse sides. Defendant denies infringement and further contends that the '957 patent is invalid and unenforceable due to plaintiff's inequitable conduct before the Patent and Trademark Office, as well as for lack of enablement, failure to disclose the best mode, and obviousness.

Defendant counterclaimed for infringement of its U.S. Patent 4,914,522 ('522 patent), which covers an ink jet print head for making large signs by using pulse width modulation of the airflow to the ink jets. I have previously found and plaintiff has stipulated that Signtech's DH1600 printer infringes claims 12, 13 and 18 of this patent. In defense of the infringement finding, plaintiff contends that the '522 patent is invalid as obvious or as anticipated. Defendant seeks enhanced damages and attorney's fees alleging that the infringement was willful.

I. ' 957 Patent-***Claims construction and infringement***

Plaintiff has the burden to prove its claims of infringement by a preponderance of the evidence. FN1 There are two separate legal theories of infringement. One is literal infringement. The other is infringement under the doctrine of equivalents. FN2 Literal infringement is only proven if the accused device literally includes every element (or "limitation") of the patent claim. FN3

The analysis of the infringement claim begins with interpreting the claims of the '957 patent, and then comparing those claims with the accused device. FN4 To ascertain the meaning of claims, the Court should consider three sources: the claims, the specification, and the prosecution history.FN5 Claims must be read in view of the specification, of which they are a part; the description contained in the specification "may act as a sort of dictionary, which explains the invention and may define terms used in the claims." FN6 Similarly, the Court has broad power to look to the prosecution history-the public record of proceedings in the Patent and Trademark Office-"to ascertain the true meaning of language used in patent claims." FN7 Expert testimony, including evidence of the state of the prior art and how those skilled in the art would interpret the claims, may also be used to assist the Court in understanding scientific or technical terms.FN8

Claim 1 of the '957 patent reads as follows:

1. An apparatus for reproducing an image on a first side of a substrate and a mirror image on a second side of said substrate, comprising:

a frame;

means for generating control signals representative of said image;

ink delivery means positioned on opposite sides of said substrate, said ink delivery means fluidly communicating with an ink source,

means mounted on said frame for supporting said ink delivery means;

means mounted on said frame for driving said ink delivery means relative to said substrate; and

means responsive to said control signals, for controlling said ink delivery means to produce said image on said first side of said substrate and said minor image on said second side of said substrate.

(Plaintiff's Exhibit No. 1, col. 11, lines 29-45).

The "ink delivery means" of Claim 1 is referred to as a "means plus function" claim element, authorized by 35 U.S.C. s. 112, para. 6, which provides as follows:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without recital of structure, material, or acts to support thereof, *and* such claim *shall* be construed to cover the corresponding structure, material or acts described in the specification and equivalents thereof.

(emphasis added). According to the second clause of para. 6, a "means plus function" claim must be interpreted to cover the structure, material or acts described in the patent specification and its equivalents.FN9 In order for a "means plus function" limitation to read on an accused device, the accused device must employ means *identical* to or the *equivalent* of the specific structures, material, or acts

described in the patent specification itself for those "means". "The accused device must also perform the identical *function* as specified in the claims" (emphasis added).FN10

Turning to the '957 patent itself, the Abstract explains:

The present invention is further provided with *dual air sources to apply the ink*. A first source is pulse width modulated to control the amount of ink sprayed onto the substrate. A second air pressure source is continuously applied to the ink jet spray nozzles to *remove the excess ink that accumulates* about the nozzles during print operations.

(emphasis added). (Plaintiff's Exhibit No. 1).

The Background of the Invention section describes the prior art (specifically the '522 patent and the 4,999,651 patent, both held by Peter Duffield, a principal of Vutek) as "incapable of producing an image in one continuous print" resulting in "incorrect ink densities" because of problems of misting and accumulation of ink on the nozzles; in short, an image that falls short of the quality desired.FN11 The Background of Invention concludes:

Accordingly, the ink jet printer system of the present invention implements a design which overcomes the problem of ink accumulation on the spray head nozzles. The present invention is provided with dual pressure sources, a low volume high pressure constant air source to prevent the accumulation of excess ink on the nozzles, and a high volume low pressure constant air source for drawing the ink from the nozzles for application to the imaging medium.

(Plaintiff's Exhibit 1, col. 2, line 56-64).

The Summary of the Invention section of '957 also describes the problem of ink accumulation and poor print quality, and the solution provided through the ink delivery means of the present invention.

First, *the present invention is capable of producing a sectioned image on the substrate in one continuous print because its sprayhead design prevents ink jet clogging*. The sprayheads of the present invention are connected to *two* separate air pressure sources which operate to apply the ink and prevent the ink jets from becoming clogged. A low pressure, high volume air source is pulse width modulated as described above to apply the ink onto the substrate to the density desired for the reproduced pixel. A second high pressure, low volume, air source continuously communicates with the ink jets to prevent ink build-up. The prevention of ink build-up by the second high pressure air source produces dual results. With no ink build-up, the ink jets first do not clog, and second, *do not produce incorrect colors on the substrate. Color Variations occur because the excess ink about the ink jets changes the effective dimensions of the spray means,* thus changing the air and ink flow rates resulting in either a change in the color itself or a change in the particular shade of the color applied to the substrate. Thus, the utilization of the second air source makes the present invention a significant improvement over conventional ink jet printer systems.

(emphasis added). (Plaintiff's Exhibit 1, col. 3, lines 25-48).

In describing the preferred embodiment shown in figure 5 FN12 in narrative, the specification states:

Referring to FIG. 5, the configuration and operation of the individual ink jets will be described. For the

purpose of disclosure, ink spray head 23A will be described because each of sprayheads 23A-D and 25A-D operate similarly. Ink spray head 23A comprises ink reservoir 31A which fluidly communicates with ink jet 32. Ink reservoir 31A operates under a gravity siphon feed system to supply ink to the tip of ink jet 32 creating a meniscus. Ink sprayhead 23A further communicates with a high pressure compressed air source (not shown) and a low pressure compressed air source (not shown).

The high Pressure compressed air source is continually in communication with ink jet nozzle 32 through passage 33 to supply an air flow around nozzle 32. That continuous air flow operates to prevent ink build-up on nozzle 32 resulting in a color change during continuous operation.

(emphasis added). (Plaintiff's Exhibit 1, col. 7, lines 35-51). As shown, the specification consistently describes the ink delivery means and the production of a good quality print as requiring the second high pressure air source.

Plaintiff argues that the second high pressure air source performs a cleaning function and therefore cannot be part of the ink *delivery* means. However, as a "means plus function" element I am instructed by the applicable law to construe the claim in the context of the structure in which it operates and the function it performs. By consistently describing its invention-in the Abstract, Background of Invention, Summary of Invention, and Detailed Description sections of the specifications-as one that solves the ink accumulation problem inherent in the prior art, the ink delivery means cannot be interpreted apart from the essential cleaning, high-pressure air source.

Plaintiff responds with proof from the prosecution history. Plaintiff's Exhibit 8 at page 58-60 includes a "Species Restriction" wherein the patent examiner found the patent application contained "claims directed to the following patentably distinct species of the claimed invention." In that communication, he directed plaintiff to select one set of claims from a group of three possible inventions described in the original patent application:

(A) A single side ink jet printer with two pressure flows to propel the ink and maintain cleanliness of the nozzles, claims 1-6, 27-32.

(B) A two side ink jet printer, claims 18-30.

(C) A two side ink jet printer with two pressure flows to propel the ink and maintain cleanliness of the nozzles, claims 7-17, 21-26.

(Plaintiff's Exhibit 8 at p. 59). Plaintiff chose Group C, the two side printer with two pressure flows, which became U.S. Patent No. 5,294,946 (the "6 patent). In addition, plaintiff pursued a "continuation application", which eventually became the '957 patent. Plaintiff uses this to suggest that because the examiner found that the claims in Group C were distinct from those in Group B, the patent which grew out of Group B must not include the distinctive features of those Group C claims, i.e. the two air flows.

The problem with this argument and reliance on these two pages of the prosecution history is that the *specifications* found in the '957 patent describe much more than a "two side ink jet printer". Rather, the specifications in '957 describe a two side ink jet printer which fixes a problem inherent in the ink delivery means in the prior art; ink accumulation on the nozzles. I heard no evidence explaining the purpose or significance of a continuation application. The parties provided no authorities to me in their otherwise

thorough post-trial briefs that direct me to authorities which discuss "species restrictions" and "continuation applications". The principal authority cited by defendant, *Laitram Corp. v. Rexnord, Inc.,* discussed the judicially created guide to claim interpretation known as "claim differentiation".FN13 In *Laitram,* plaintiff argued that the interpretation of one claim in a patent dictated the interpretation of another claim; an argument which would have produced a result in conflict with the interpretation required by s. 112(6). In rejecting this analysis, *Laitram* teaches that the statutory "means plus function" claim interpretation required by 35 U.S.C. s. 112(6) is primary. Accordingly, I am bound by the consistent language in the specifications in '957. Because it is undisputed that neither the Vutek Model 3200 nor the 3200i includes a second, high pressure air source, I find that plaintiff has not shown infringement as to that element of Claim 1.

Plaintiff also claims that Vutek's Models 3200 and 3200i infringe the "means for generating control signals" and the "means for controlling the ink delivery means" clauses. Once again, these are "means plus function" clauses which must be interpreted in the context of structure and function.

Figure 6 FN14 in '957 shows the following:

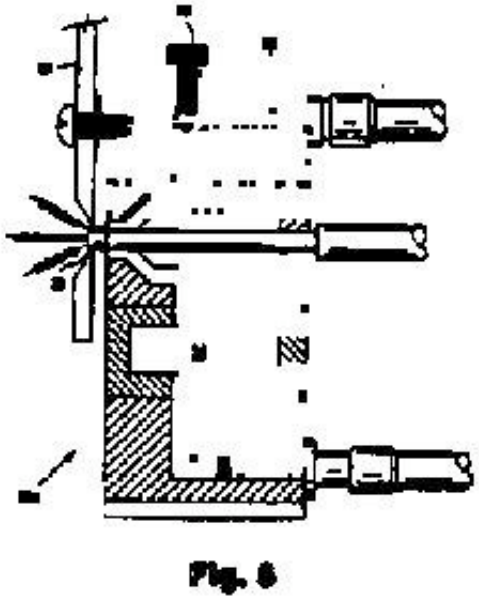


Fig. 6

Note that the scanner (51) sends a single signal to the controller (S3), which sends a single signal to the modulator (57) which simultaneously sends a single signal to the each of the four color jets positioned on each side of the substrate (13); the same signal goes to 59A as to 60A, 59B as to 60B, 59C as to 60C, and 59D as to 60D. An alternate embodiment shown in figure 10 shows the front and rear print heads striking the substrate at different times; however, there is no diagram or narrative in the specifications to show two separate sets of signals coming out of the modulator.FN15 And despite plaintiff's insistence, I refuse to equate the word "image" found in the last clause of Claim 1, to "data signal" so as to infer that there are two sets of signals-one representing the original and one the mirror image-going to the print heads. There is

nothing to support such a reading of the word "image" in the specifications or prosecution history. Rather, the word "image" is used in the specifications consistent with its plain meaning-a visual representation-only. Consistent with the other specification diagrams, I must conclude that in figure 10 a single signal for each color ink jet leaves the modulator, and is merely time delayed to accommodate the distance between the front and rear print head. Aside from one lonely reference in the specification to the possibility that one skilled in the art could print different images on opposite sides of the substrate,FN16 in the absence of any diagrams or other references to such an application of the device, and given the clarity of diagrams 6 and 9 showing a *single* signal to 59A and 60A, another single signal to 59B and 60B, etc., I cannot infer that the device contemplated two entirely different sets of control signals to the opposing print heads.FN17

Furthermore, the prosecution history supports the above interpretation called for by figures 6 and 9. The Koumura patent FN18 covered a double-sided copy machine which scanned an image and then scanned the reverse side of the same image, and sent two electronically different sets of signals to the print heads. In distinguishing its claims from those found in the Koumura patent, plaintiff explained that

[C]laim 33 includes an ink delivery means controller which receives signals representing *a single image* and controls an ink delivery means to reproduce the image on one side of a substrate and a mirror image on the opposite side of the substrate.

In contrast, Koumura merely discloses an ink jet printer that produces an image on both sides of a medium when an original having images on both sides is fed into the apparatus. Koumura includes dual scanners connected separately to dual print heads so that an image from each side of the original may be transferred to the medium. The only way to reproduce the same image on both sides of Koumura is to place an original in the apparatus which already has the same image on both sides. However, the resulting images produced on either side of the medium will not be aligned as an original and its mirror unless the original contains such a configuration. Accordingly, Koumura does not disclose, teach, or suggest an ink delivery means controller which receives signals representing *a single image* and controls an ink delivery means to reproduce the received image on one side of a substrate and a mirror image on the opposite side of the substrate.

(emphasis added). (Defendant's Exhibit 19, p. 75).

Apparently, the patent examiner continued to have problems differentiating the invention from the Koumura claims. In further response plaintiff repeated:

Applicants respectfully submit that the Koumura apparatus is incapable of producing an image on one side of a recording sheet and a mirror of that same image on the other side of the recording sheet from a single sided original.

* * *

The claimed invention scans only a single image on a single side of a document and does not scan double sided documents because the control means of the claimed invention regulates the ink delivery means to reproduce the image and its mirror from the single sided original.

(emphasis added). (Defendant's Exhibit No. 19, pp. 89-90). Given the specifications and the prosecution history. I find that the "means for generating control signals" and "means for controlling the ink delivery

means" clauses, whether found in the preferred embodiment shown in figure 6, or the alternate embodiments shown in figures 9 and 10, refer to a single set of control signals coming from the modulator to the print heads.

Turning to the alleged infringing devices, defendant admits that Vutek Model 3200 used a single set of signals, although the signals going to the rear print head were time-delayed because of the manner in which the print heads were offset on the 3200.FN19 With the introduction of the Model 3200i in January 1996, defendant created two sets of image files or signals, using Adobe Photoshop software to create a separate, mirror image file of the original image, or by scanning an original and separately scanning its mirror image. The modification was intended to mimic the theory of the Koumura patent, as applied to backlit signs. Having construed the "means for generating control signals" and "means for controlling the ink delivery means" clauses as referring to a single set of control signals to the front and back print heads, I must find the Vutek Model 3200i does not literally infringe '957.

Nor does the 3200i infringe under the doctrine of equivalents. Without addressing whether this claim is properly before the Court, for all of the reasons set forth above, I find that plaintiff has not met its burden to show that the accused device "performs substantially the same overall function or work, *in substantially the same way,* to produce substantially the same overall result as the claimed invention" (emphasis added).FN20 It does not use a second high pressure air source to clean the print heads and enhance the image quality, nor does it use a single set of electronic signals to control the front and rear print heads.

Having found that plaintiff has failed to show that either of defendant's devices infringe '957, it is unnecessary to consider the invalidity and unenforceability arguments advanced by defendant.

II. The '522 Patent-***Invalidity and Damages***

I have previously found that plaintiff's Model DH1600 infringed the ' 522 patent, specifically reserving ruling on the defenses based on invalidity for trial. After considering the evidence and arguments of counsel, I find that plaintiff has failed to show by clear and convincing evidence that the '522 patent is invalid as anticipated by or obvious in light of the prior art. 35 USC s. 102(b) and s. 103.

Plaintiff argues that the Jayne patent (U.S. Patent No. 4,839,666) contains all of the elements of the claims found in the '522 patent and that in light of Jayne, defendant's invention would have been obvious to one of ordinary skill in the art at the time it was made (1988). As noted above, plaintiff has the burden to prove invalidity by clear and convincing evidence.FN21 For a patent claim to be anticipated under 35 U.S.C. s. 102(b), all the elements in the claim must be disclosed in a single prior art reference or device, FN22 arranged as in that claim.FN23 The test for obviousness is whether the pulse-width modulation invention found in '522 as a whole was obvious to someone skilled in the art in 1988.FN24 In order to assess the obviousness challenge to '522, I must assess the scope and content of the prior art, the differences between the prior art and the claims at issue, the level of ordinary skill in the art in 1988, and objective evidence of nonobviousness. FN25 Objective evidence of nonobviousness includes commercial success of the invention, failure of others, long-felt need and unexpected results. FN26

The Jayne patent which issued in 1988, disclosed a device with four modulators, one that controlled the *airflow* to the ink jet, two that modulated the *ink supply* to the jet, and one that changed the size of the ink orifice. While Jayne taught that the combination of the modulators could be changed, it did not teach that one could omit all but the modulator which controlled the duration of the airflow. In fact, in one mode of

operation, it suggests elimination of the modulator controlling the flow of gas.FN27 The other modes of operation teach modulation of only the ink orifice, or the gas flow rate (amplitude of the air pressure),FN28 and counsel that both the gas and ink modulators must be used to ensure reliability.FN29

In contrast, the invention disclosed in '522 involves *only* modulation of the *duration* of the constant pressure airflow and will not function if other aspects of the ink delivery means, such as the ink supply, the ink orifice or rate of air pressure, are modulated as Jayne suggests. Further, the objective evidence shows that neither Jayne nor anyone else was successful in building a printer incorporating the invention shown in the Jayne patent, that the Vutek printers incorporating the '522 invention were highly successful commercially, and that even plaintiff, acknowledging the value of the '522 invention, acquired a license to sell the Vutek printers in 1988-1990, and purchased a total of eleven Vutek printers. Accordingly, Jayne supports neither the anticipation nor obviousness defenses put forth by plaintiff.

Damages

The parties stipulated as part of the Pretrial Order that a reasonable royalty of $10,000 for each of plaintiff's fourteen infringing DH1600 printers was appropriate. The basic damage award his therefore $140,000. I also find and so hold that defendant is entitled to prejudgment interest on this award at the three-month Treasury Bill rate.FN30

Defendant further argues that because the Final Pretrial Order lists as a contested fact whether plaintiff ever actually made a change in its printers to omit the pulse-width modulation, and because plaintiff alone was in a position to prove its non-infringement (with evidence more credible than the testimony of plaintiff's principal, James Gandy), I should infer that plaintiff failed to make the critical change in its printers and find that an additional 24 printers infringed '522. I refuse to shift the burden of proof in this manner. In the absence of proof to the contrary, I find that the testimony was credible on this point and find that infringement as to the fourteen printers only has been shown.

In addition to the basic damage award, defendant asks that I find that plaintiff's infringement was willful and that I accordingly award enhanced damages. Defendant shoulders the burden of proof to show willfulness by clear and convincing evidence.FN31 I am instructed to look at the totality of circumstances,FN32 and focus on whether or not plaintiff intentionally copied the invention, as opposed to having accidently adopted it.FN33 A finding of willful infringement is warranted where an infringer deliberately copies the patented product after recognizing the product's commercial success and improvement over the art and failing to develop its own noninfringing version.FN34

I have previously found that plaintiff's DH1600 incorporated pulse width modulation so as to infringe the '522 patent. At trial I heard evidence from which I conclude and specifically find that the DH1600 also incorporated important circuitry from the Vutek 800 which controlled and operated the pulse width modulation.

As noted above, defendant applied for a patent on the pulse width modulation invention in April 1989, the year Vutek Model 800 was first sold. The '522 patent issued in April 1990. In 1988 plaintiff entered into a licensing agreement to sell Vutek printers. In 1989 or 1990, Vutek principals met with James Gandy to discuss adding a second print head to the Model 800 to print on the front and back of a substrate. Later, in August 1990, defendant terminated the licensing agreement after plaintiff failed to pay for five printers shipped to plaintiff in 1989 and 1990. Plaintiff continued to purchase Vutek 800s after the termination.

Plaintiff began production of the DH1600 in 1992 and sold 14 such printers which used the pulse width modulation. Gary Ferran testified that in 1992 when he was hired by plaintiff as Senior Project Manager to work on its ink jet printers, Signtech was about to ship a DH1600 printer, which was very unreliable and in a primitive stage of development. However, he found no schematics outlining the logic or technical documentation for the DH1600, no circuit boards for the DH1600, no software listings for the firmware used on the DH1600 controller boards, no materials lists, no inventor source lists of where parts were purchased, nor chips-nothing which reflected the development of that printer. Instead, he found schematics with defendant's name on them, controller boards that he believed were Vutek's (since he did not believe Signtech had the ability to produce the boards and the logic on the boards matched the Vutek schematics), and defendant's "golden chip" or PROM on which was implanted Vutek's "firmware" which directed the controller board, and in turn controlled the operation of the print head, stepping motor for the vinyl, and air valves for the inkjets. Ferran testified that while he was employed at Signtech from 1992-94, he was directed to copy the Vutek 800 controller board schematics, Vutek firmware, and later Vutek's software program, all of which would improve the functioning and reliability of the Signtech product.

Plaintiff argues that I should discredit Ferran's testimony because of his obvious bias against his former employer. Plaintiff also argues that defendant failed to establish a nexus between the documents Ferran produced for the first time at trial and Signtech, and suggests that it was entirely reasonable for Signtech to have had possession of defendant's schematics and even the "golden chip" because of the prior licensing relationship between the parties and its continuing obligation to repair Vutek machines and sometimes replace parts such as the "golden chip".

While plaintiff's argument is plausible, it does not explain why Ferran's schematics were identical, even to the arbitrary reference numbers for the parts or computer chips, to those of the Vutek 800 ... with the addition in the Ferran schematics of circuitry to control a second print head. Nor does it explain the absence of any documentary or other evidence that would support the independent development of the DH1600. While Ferran could have easily been shown to have been a disgruntled ex-employee and therefore lacking in credibility, plaintiff alone was in a position to produce rebuttal evidence to discredit Ferran with *objective evidence,* rather than *innuendo and insinuation*. I was never shown any of plaintiff's schematics or firmware by plaintiff so as to have distinguished what Ferran produced from what plaintiff actually used on the DH1600. Apparently, none was produced during discovery either, despite timely requests for same. The objective documentary evidence fully supports Ferran's testimony that he was instructed to copy the controller board schematics, that the schematics he brought to trial were the schematics used by plaintiff in its DH1600 printers, and that plaintiff copied the "golden chip" and used those copies in its DH1600.

The objective evidence also supports Ferran's testimony that he was instructed to copy Vutek software program used to generate the control signals to run the pulse width modulation. While in Italy in January 1994, tasked with "acquiring" Vutek's software program used to generate control signals, apparently a last act in the copying venture necessary to improve the reliability of the DH 1600, James Gandy sent Ferran a fax advising Ferran that Signtech had acquired the Vutek software it needed. Ferran produced this document at trial.FN35 This "smoking gun", along with the other compelling evidence noted above, and the evidence that the machines even looked similar (at a time when web printing and horizontal rails for print head were otherwise unusual), leads to no reasonable conclusion other than that plaintiff intentionally copied defendant's machine, including the pulse width modulation protected by '522. The totality of the evidence dictates the conclusion that the infringement of the ' 522 patent was no accident, but deliberate.

In further support of its claim of willful infringement, defendant argues that plaintiff failed to obtain competent legal advice before incorporating the pulse width modulation invention in its DH1600 printer. Plaintiff responds that it had a reasonable, good faith belief that its conduct would not constitute infringement after it sought the advice of counsel in 1991 and was advised that the '522 patent was invalid in light of Jayne.FN36 Based on this advise, plaintiff obtained a license to use the Jayne patent in 1993. Plaintiff supports this version of the facts with the testimony of James Gandy, principal of Signtech, Don Comuzzi, plaintiff's patent attorney, and Christopher Makay, who was then a patent examiner, now an attorney, working with Comuzzi. Through these witnesses, plaintiff attempted to offer into evidence testimony concerning a now-lost opinion letter from Comuzzi to Gandy, the existence of which was not disclosed until just before trial despite timely pretrial discovery requests by defendant. Despite the obvious significance of the letter at the time it was written and later, neither Gandy nor Comuzzi were able to locate during discovery or at trial, a copy of the letter, notes used to prepare the letter, or billing records to substantiate the research for and drafting of the letter. In addition, Gandy testified that the opinion was so important that it was discussed at a meeting of plaintiff's Board of Directors, although no minutes of that meeting were introduced at trial.

The only possible independent support for plaintiff's position is the undisputed evidence offered through James Gandy that plaintiff did obtain a license to use the Jayne patent. Plaintiff listed Jayne as a trial witness to testify on this point, but did not call him. However, this evidence does not necessarily lead to the conclusion that plaintiff reasonably believed, based on the opinion of counsel, that '522 was invalid because of Jayne. In light of the other evidence heard, this evidence doesn't invalidate the inference that there was no opinion or that, if there was an opinion letter, it was contrary to the plaintiff's desire to initiate or continue its use of defendant's invention. FN37 Given these facts, defendant's objection to the oral testimony of Gandy, Comuzzi and Makay concerning the existence of the opinion is sustained and that testimony is stricken from the record. I refuse to find that plaintiff ever obtained an opinion from competent counsel concerning its potential infringement of the ' 522 patent. In addition, any opinion counseling that ' 522 was invalid based on anticipation in light of Jayne, was not reasonable for all the reasons recited above, and any oral opinion given by a patent agent not yet licensed to practice law was incompetent. It is undisputed that plaintiff knew of the ' 522 patent; it was intimately familiar with the invention from its servicing of the Vutek 800 machines; it failed to obtain an opinion from counsel and did not have a reasonable, good faith belief in the invalidity of ' 522. The evidence viewed in its totality is clear and convincing and dictates a finding of willful copying. Further, I find that these facts warrant an award a trebling of the basic damage award of $140,000, and because I find that the case is "exceptional", an attorneys fees award is appropriate.FN38

Finally, defendant seeks a permanent injunction against plaintiff for any further infringement, inducement of infringement or contributory infringement of the '522 patent, which I find warranted and so order.FN39

Conclusion

For all the above reasons, I conclude that plaintiff has failed to show defendant infringed the '957 patent. I further conclude that defendant is entitled to a basic damage award of $140,000 for infringement by plaintiff of the '522 patent, prejudgment interest in the amount of $28,818, plus enhanced damages of $420,000 for plaintiff's willful infringement of the ' 522 patent, a permanent injunction against plaintiff for any further infringement of the '522 patent, and attorney's fees in an amount to be determined upon submission of appropriate affidavits.FN40

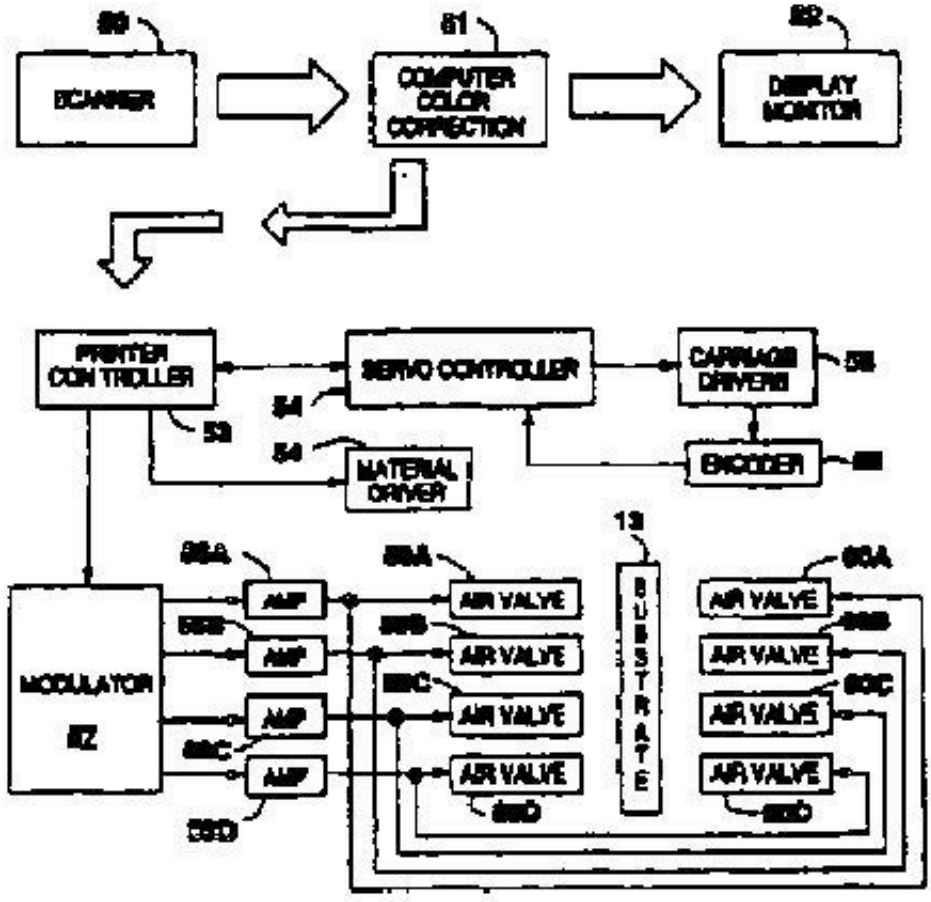

SCANNER
COMPUTER COLOR CORRECTION
DISPLAY MONITOR
PRINTER CONTROLLER
SERVO CONTROLLER
CARRIAGE DRIVER
ENCODER
MATERIAL DRIVER
MODULATOR
AMP
AIR VALVE
SUBSTRATE

Fig. 6

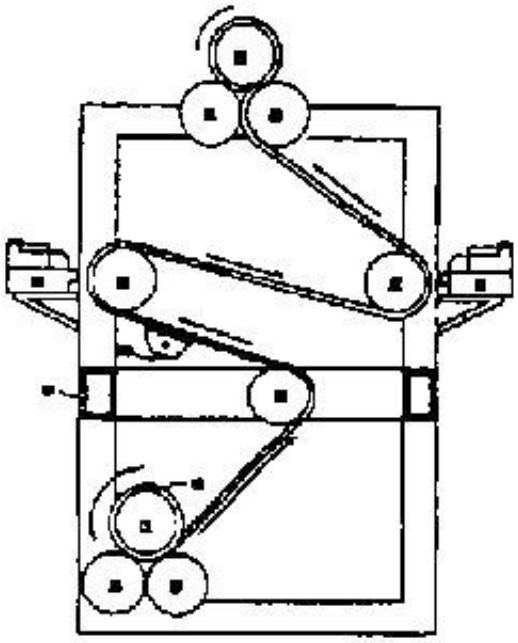


Fig. 10

FN1. Lemelson v. United States, 752 F.2d 1538, 1547 (Fed.Cir.1985).

FN2. Atlas Powder Co. v. E.I. DuPont de Nemours, 750 F.2d 1569, 1579 (Fed.Cir.1984).

FN3. Mannesmann Demag Corp. v. Engineered Metal Prods. Co., Inc., 793 F.2d 1279, 1282 (Fed.Cir.1986); *Carroll Touch Inc. v. Electro Mechanical Systems. Inc.,* 3 F.3d 404, 407 (Fed.Cir.1993).

FN4. Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed.Cir.1995) (*en banc*), *aff'd,* 116 S.Ct. 1384 (1996).

FN5. Id., at 979.

FN6. *Id.*

FN7. *Id.,* at 980.

FN8. *Id.*

FN9. King Instruments Corp. v. Perego, 65 F.3d 941, 945 (Fed.Cir .1995), *cert. denied,* 116 S.Ct. 1675 (1996) Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1536 (Fed.Cir.1991): Valmont Indus ., Inc. v. Reinke Mfg. Co., Inc., 983 F.2d 1039, 1042 (Fed.Cir.1993).

FN10. Valmont Indus., Inc. v. Reinke Mfg. Co., Inc., 983 F.2d 1039, 1042 (Fed.Cir.1993).

FN11. Plaintiff's Exhibit 1, col. 2, lines 52-54.

FN12. Figure 5 of the '957 patent:

FN13. 939 F.2d 1533, 1536 (Fed.Cir.1991).

FN14. Figure 9 contains an alternate embodiment of the invention, the only difference being that ink valves 59A-D and 60A-D are substituted for air valves 59A-D and 60A-D shown in figure 6.

FN15. Figure 10 of the '957 patent:

FN16. Plaintiff's Exhibit No. 1. col. 8, lines 47-55 which reads as follows:
Although print heads 23 and 25 were only described as being synchronously controlled to produce the exact image on both sides of the imaging medium, one of ordinary skill in the art will readily recognize that the print heads could be controlled asynchronously. That is, each print head could be controlled separately to produce either different densities of the same image on opposite sides of the imaging medium or *two different images on opposite sides of the imagine medium*.

(emphasis added).
FN17. In this regard, I have rejected the "functional block diagram", Plaintiff's Exhibit 74, that Ed Fiorito testified from insofar as it shows two separate signals coining out of the "ink delivery controller means". This block diagram was not part of the specifications or prosecution history and is inconsistent with what I find shown in figures 6 and 9, and with plaintiff's prosecution position with the patent examiner.

FN18. U.S. Patent No. 4,475,128.

FN19. Defendant's Exhibit 29.

FN20. Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 608 (1950); *Dolly, Inc. v. Spalding & Evenflo Companies, Inc.,* 16 F.3d at 397 (Fed.Cir.1994).

FN21. SSIH Equipment S.A. v. U.S. Intern. Trade Comm'n, 718 F.2d 365, 375 (Fed.Cir.1983); Trans-World Mfg. Corp. v. Al Nyman & Sons, Inc., 750 F.2d 1552, 1559 (Fed.Cir.1984); Ralston Purina Co. v. Far-Mar-Co., Inc., 772 F.2d 1570, 1574 (Fed.Cir.1985); Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 1459 (Fed.Cir.1984); Jones v. Hardy, 727 F.2d 1524, 1528 (Fed.Cir.1984); Jamesbury Corp., v. Littton Industrial Products, Inc., 756 F.2d 1556, 1559 (Fed.Cir.1985). *cert. denied,* 488 U.S. 828 (1988).

FN22. Motorola, Inc. v. Interdigital Technology Corp., 1997 WL 429908, (Fed.Cir.1997); SSIH Equipment, S.A. v. U.S. International Trade Commission, 718 F.2d 365, 377 (Fed.Cir.1983).

FN23. Carella v. Starlight Archery and Pro Line Co., 804 F.2d 135, 138 (Fed.Cir.1986) (quoting Panduit Corp. v. Dennison Manufacturing Co., 774 F.2d 1082, 1101 (Fed.Cir.1985)).

FN24. Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1383 n. 6 (Fed.Cir.1986), *cert. denied,* 480 U.S. 947 (1987) (obviousness question is whether the claimed invention as a whole would have been obvious to one of ordinary skill in the an *at the time the invention was made,* not at a later time when presumably the prior art and level of ordinary skill in the art are more advanced).

FN25. Specialty Composites v. Cabot Corp., 845 F.2d 981, 989 (Fed.Cir.1988); Environmental Designs, Ltd. v. Union Oil Co. of California, 713 F.2d 693, 695 (Fed.Cir.1983), *cert. denied,* 464 U.S. 1043 (1984).

FN26. Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d at 1380.

FN27. Plaintiff's Exhibit 28. col. 4, line 61-68.

FN28. Plaintiff's Exhibit 28, col. 5. lines 1-21 and col. 5, lines 20-36.

FN29. Plaintiff's Exhibit 28. col. 3, lines 39-44.

FN30. The award of prejudgment interest is authorized by General Motors Corp. v. Devex Corp., 461 U.S. 648, 657 (1983) (prejudgment interest should generally be awarded absent some justification for withholding such an award). The three-month Treasury Bill rate for the interest calculation advocated by defendant's witness, Richard Troxel, was unchallenged by defendant, and I find it to be appropriate. I obtained the three-month rates for the months since September 30, 1996 from the Federal Reserve Board's

World Wide Web site and have applied those rates to the Troxel figures found in Defendant's Exhibit No. 122.

FN31. Shatterproof Glass Corp. v. Libbey-Owens Ford., 758 F.2d 613, 628 (Fed.Cir.1985).

FN32. Shiley, Inc. v. Bentley Laboratories, Inc., 794 F.2d 1561, 1568 (Fed.Cir.1986), *cert. denied,* 479 U.S. 1087 (1987).

FN33. Stryker Corp. v. Intermedics Orthopedics, Inc., 96 F.3d 1409, 1414 (Fed.Cir.1996).

FN34. Spindelfabrik Suessen-Schurr Stahlecker & Grill GmbH v. Schubert & Salzer Maschinenfabrik Aktiengesellschaft, 829 F.2d 1075, 1085 (Fed.Cir.1987), *cert. denied,* 108 S.Ct. 1022 (1988).

FN35. Defendant's Exhibit 120.

FN36. Underwater Devices Inc. v. Morrison-Knudsen Co., Inc., 717 F.2d 1380, 1389-90 (Fed.Cir.1983) (no willful infringement if infringer acted with counsel's advise).

FN37. *Eromson v. Western Litho Plate & Supply Co.,* 853 F.2d 1528, 1572-73 (Fed.Cir.1988).

FN38. 35 U.S.C. s. 285.

FN39. 35 U.S.C. s. 283.

FN40. See Local Rule CV-7(j).

W.D.Tex.,1997.
Signtech USA, Ltd. v. Vutek Inc.

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