United States District Court,
S.D. New York.

CONSTRUCTION TECHNOLOGY, INC,
Plaintiff.
v.
CYBERMATION, INC., et al,
Defendants.

No. 91 Civ. 7474 (JGK)

April 14, 1997.

Patentee brought action against competitor alleging infringement of its patents relating to methods and machinery used to manufacture fittings for rectangular ducts for the heating, ventilating and air conditioning industry. The District Court, Koeltl, J., held that: (1) patents were infringed; (2) competitor was liable as contributory infringer when it retrofitted or repaired infringing systems' software components after patents issued; (3) infringement was willful; (4) patents were not invalid as anticipated by prior art; (5) patents were not obvious in light of prior art; (6) patents were not invalid under statutory on-sale bar; (7) action was not barred by laches; (8) damage award would be doubled because of competitor's willful infringement and violation of preliminary injunction; and (9) competitor and its principals would be held in contempt for violating preliminary injunction.

Judgment accordingly.

4,911,761. Cited.

Edward A. Meilman, Louis C. Dujmich, Marc A. Lieberstein, Ostrolenk, Faber, Gerb & Soffen, L.L.P., New York City, for Plaintiff.

Edward T. Dangel, III, Michael K. Mattchen, Dangel, Donlan and Fine, Boston, MA, for Defendants.

KOELTL**, District Judge:**

The plaintiff, Construction Technology Inc., ("CTI") has brought this patent infringement suit alleging that the defendant, Cybermation, Inc. ("Cybermation") infringed on two CTI patents relating to methods and machinery used to manufacture fittings for rectangular ducts for the Heating, Ventilating and Air Conditioning ("HVAC") industry.

On March 19, 1993, Judge Martin of this Court issued a preliminary injunction against Cybermation. Judge Martin found that CTI was likely to succeed on its claims against Cybermation and required Cybermation to deposit $15,000 into an escrow account any time it delivered one of its allegedly infringing products to a

customer. There is no question that Cybermation has continued to sell its allegedly infringing products and has failed to make the required escrow payments.

Cybermation and its officers moved to modify the preliminary injunction in an apparent attempt to avoid being found in contempt. CTI then moved for contempt against Cybermation and its officers. This Court joined the hearing on the contempt issues with the trial on the merits of CTI's patent claims, and held a non-jury trial. Pursuant to Federal Rule of Civil Procedure 52, this Court, having reviewed the voluminous record in this case and having assessed the credibility of the witnesses, now makes the following Findings of Fact and reaches the following Conclusions of Law.

FINDINGS OF FACT

1. CTI is the owner of two patents relevant to this suit:

a. United States Patent ("USP") 4,554,635, entitled "Method and Apparatus for Marking or Cutting Laminar Patterns or Forms," (the '635 patent); (Plaintiff's Exhibit "PX" 25).

b. USP 4,551,810 entitled "Method and Apparatus for Designing Duct Work and For Producing Patterns for Conduit Sections in the Designed Duct Work" (the '810 patent). (PX 26).

2. Both patents name CTI's founder and principal owner, Richard W. Levine, as the sole inventor. (Tr. at 155-56 [Levine]). The '635 patent covers CTI's Auto-Plot and Auto-Cutter automatic plotting and cutting computer aided manufacturing ("CAM") systems. The '810 patent covers CTI's Auto-Plan computer aided design ("CAD") system when operated in conjunction with CTI's Auto-Plot or Auto-Cutter CAM Systems. The '810 patent also has claims to the Auto-Plot and Auto Cutter Systems themselves. (PX 25-26).

3. The original application for the '635 patent was filed on July 28, 1982. (PX 34). That application was abandoned in favor of a continuation in part ("CIP") application filed on July 13, 1983. (Id.) As a result of the CIP application, the '635 patent was issued on November 19, 1985. (PX 25, 35). The application for the '810 patent was filed on September 28, 1983 as a second CIP of the original application for the '635 patent. (PX 26, 36). The '810 patent issued on November 5, 1985. Levine made valid assignments of the '635 and '810 patents to CTI. (UF at 4). After re-examinations, both patents were found valid without any changes in the original claim language. (PX 40-41).

DEVELOPMENT AND TESTING OF CTI'S PRODUCTS

4. Before the invention of the systems at issue in this case, the drafting of designs for duct work for HVAC systems required numerous labor intensive steps. Much of the work had to be performed manually, including mathematical calculations, drawing plans, and scratching the outline of each piece to be produced on a rectangular piece of sheet metal or "blank." (Trial Transcript "Tr." at 40-43, 52-61, 63-73 [Levine]).

5. Levine was a union sheet metal worker who became skilled at many of the steps required to produce duct work for HVAC systems. (Tr. at 35-39 [Levine]). He was also interested in computers and became a self-taught computer programmer. From his knowledge of sheet metal layout techniques, Levine became convinced that it would be possible to computerize some of the time-consuming steps. In his spare time, he began work on a computerized system. In addition to labor savings, the computerized system provided other advantages over the traditional manual methods, including reducing the amount of raw materials required. This work eventually led to the development of the CTI "Compuduct" blanking system in 1970. The

Compuduct program would determine the number of two-dimensional blank pieces required to make the specific HVAC fitting and calculate the minimum dimensions of the rectangular blank required for each pattern piece. The layout of the actual patterns of the fitting was thereafter done manually on the rectangular blanks. (Tr. at 75-76, 82-83 [Levine]).

6. In 1970, Levine founded CTI with two partners. Those two partners, who worked as salesmen for a computer company, marketed the Compuduct System in their spare time. In 1972, Levine left his job and began to work full time marketing the Compuduct system. The system was marketed by demonstrating its capabilities at trade shows, such as the annual American Society of Heating, Ventilating and Air Conditioning Engineers ("ASHRAE") show and by placing advertisements in sheet metal trade magazines, notably SNIPS Magazine. After 1972, sales of the Compuduct system improved and CTI began to earn a profit. (Tr. at 77-78, 81-82 [Levine]).

7. After developing the Compuduct system, Levine began work on a new computer program that would use the information generated by Compuduct and then plot the required patterns for each fitting to scale on sheet metal. Such a development could potentially be extremely valuable because it would entirely eliminate the need for manual layout. Levine decided to attempt the project and to call the new system "Auto-Plot." (Tr. at 86-88, 149 [Levine]).

8. Levine contacted a plotting table manufacturer, Gerber Scientific, Inc. ("Gerber") to seek its assistance in modifying a plotting table. Gerber advised that it could not help unless CTI would purchase two tables in advance and commit to the purchase of at least 10 tables thereafter. Although the commitment demanded about $1.2 million, Levine concluded that he should take the risk. (Tr. at 88-93 [Levine]; PX 14-15).

9. In 1980, CTI entered into a contract with Gerber under which Gerber agreed to provide plotting equipment and aid in the development of the Auto-Plot. Gerber also agreed to maintain all CTI proprietary information in confidence. (PX 14-15).

10. To raise funds to finance development, CTI prepared a simulation to demonstrate the potential capabilities of the new plotting invention. The simulation was shown at the ASHRAE show in Chicago in January 1981. CTI offered to accept early orders, at a substantial discount, from customers willing to test the first units. (Tr. at 111-115, 117-122 [Levine]).

11. The simulation at the ASHRAE show employed a Compuduct computer and keyboard with an added keypunch, and a Gerber plotting table modified with a metal top taped to the regular top in order to hold sheet metal instead of paper. A paper tape with a fixed sample plot which had previously been prepared was fed to the table's controllerso that observers could see the plotting table in operation plotting HVAC patterns. The simulation plotted the exact same three patterns over and over from the paper tape. (Tr. at 115 [Levine]). The Compuduct computer was operated to show information being inputted but it was not connected to the plotting table and it had no capability of generating the information for plotting duct work patterns. The software for generating the information for plotting ductwork patterns from the input of only a basic fitting type, size of the openings, and spatial relationship of the openings had not been developed. (Tr. at 103-111, 115 [Levine]).

12. The Auto-Plot simulation at the January 1981 ASHRAE show was successful. CTI was able to sign up early test orders to gain needed funds for development. (Tr. at 111 [Levine]). Levine advised potential customers that he was developing the program, that he expected to have it operational in six or seven

months, and that he might deliver it in June. (Tr. at 111-15 [Levine]).

13. Al Chilenski of the Grunau Company heard about Levine's machine from people who had attended the January, 1981, ASHRAE show. He agreed to pay a deposit and accept the first machine for a substantial discount. Chilenski stated that his company had served as a "guinea pig" for the machine, and had received a substantial discount for doing so. (Tr. at 113-14 [Levine]; PX 32 at 504-06).

14. After the January 1981 ASHRAE show, CTI began intensive work with Gerber to develop the invention. Levine wrote various portions of the program and prepared paper tapes in CTI's offices. The tapes were sent to Gerber for tests on the plotting table, and were returned with test results, to enable Levine to take corrective measures and to proceed with each successive step in software development. This process of sending tapes and plots back and forth between CTI and Gerber continued for many months. (Tr. at 97-98, 122-126 [Levine]).

15. During this time, CTI was developing a computer program to accept fitting type dimensional data, develop the patterns for the fittings, nest the patterns on the blanks, and produce an output for the Gerber table to accept. This was a time consuming and laborious process scheduled to continue for many months. At the same time, Gerber was modifying its table, and the computer controller for its table, to allow it to accept output. The fact that the Gerber system could accept output from the CTI program has no bearing on the state of development of the CTI program. The two developments were essentially independent, although CTI needed to use the Gerber table to test its ongoing work. (Tr. at 123-126 [Levine]; PX 168 at 45-46, 50-51, 55-56, 62, 67, 73; PX 169 at 11-12, 24).

16. In late July, 1981 Gerber indicated that its table modifications and the changes to its controller to enable it to communicate with CTI's program were complete. This only reflected on the state of completion of the Gerber table. It did not reflect on the state of development of the separate program that CTI was developing relative to the inputting of fitting data, generation of patterns and nesting for the patterns. Similarly, Gerber's preparation of an instruction manual for its table did not reflect on the state of development of the separate program that CTI was developing. (PX 168 at 67, 73; PX 169 at 11-12, 24; Tr. at 127, 132-133 [Levine]).

17. In July 1981, the first test units of the Auto-Plot were sent to Grunau for assembly and on-site testing (PX 32, 32A-C). The components were assembled at Grunau and prepared for testing shortly after July 28, 1981. CTI ultimately filed its first patent application on July 28, 1982. (PX 34).

18. The first test was a failure. The machine drew miniature shapes in one corner of the metal instead of the patterns intended. (Tr. at 137-140 [Levine]; PX 32 at 500-01).

19. CTI continued to work on the development of the software. The Auto-Plot, however, continued to make unpredictable and inexplicable errors in many fittings, sometimes overlapping plots, sometimes running off the metal, and sometimes unexpectedly freezing the machine to a stop. In each case, test samples were returned to CTI and program revisions and changes were prepared. (Tr. at 138-143 [Levine]).

20. The Auto-Plot system could not be used for its intended purpose until November 1981. Prior to that time, it was essentially useless because it could not generate patterns for substantially all fittings and customers could not predict which fittings it would plot correctly. Until November, there was no assurance that Levine could ever solve the problems. (Tr. at 140-143 [Levine]).

21. After November 1981, the Auto-Plot became sufficiently dependable to be used. Corrections and revisions were still required, but they occurred less frequently and no longer prevented the machine from being used for its intended purpose. (Tr. at 143 [Levine]).

22. After the Auto-Plot was operational, CTI began work on a cutting addition that would plot patterns by cutting them automatically. This was done by replacing the plotting pen with a cutter. (Tr. at 149-150 [Levine]).

23. The Auto-Cutter was announced in the trade literature in May 1982. It was first demonstrated in September 1982. By July 28, 1982, CTI had filed its first patent application on the invention, which eventually matured into the '635 patent. (Tr. at 150-51 [Levine]; PX 34).

24. After completing the Auto-Cutter system, Levine began work on a CAD system called "Auto-Plan" to design HVAC duct networks on a computer screen, to produce drawings and to download the information required for fittings used in the design directly to the Auto-Plot or Auto-Cutter CAM systems. (Tr. at 154-55 [Levine]).

25. The main features of the Auto-Plan program were complete in the Fall of 1983, and the first system was introduced to the trade and demonstrated at an October 1983 trade show in Washington D.C. The demonstration at the Washington show was successful and CTI soon received its first orders. CTI filed its patent application, which matured into the '810 patent, and which covered the Auto-Plan System, on September 28, 1983. (Tr. at 155-56 [Levine]).

26. The CTI patents have revolutionized the HVAC duct work industry, changing the way duct work fittings have been made from a manual to an automatic process.

PRIOR ART

27. The claimed inventions differ from each of the prior art activities. It appears that Cybermation only claims that two instances of alleged prior art invalidate the claimed inventions: a COMPASS article and the Union Carbide/McCarter System. (See May 17, 1996 letter of Edward T. Dangel III to this Court). In any event, each of these instances and the other alleged instances of prior art did not invalidate the claimed invention. In particular:

a. The Hargreaves Compass System did not generate patterns to be plotted or cut on sheet metal for substantially all customized HVAC fittings, as required by the claims of the patents in this case. The output of the Hargreaves Compass System consisted only of blanking data like the Compuduct System and the system was limited to standardized fittings in the Hargreaves catalog. (PX 186, para.para. 52-67, 107; PX 39.211; Defendants' Exhibit ("DX") 171 at 7).

b. The Union Carbide ADAPT system (even if combined with the PINS system) and the McCarter System did not generate patterns to be plotted or cut for substantially all customized HVAC fittings like the claimed inventions. It was only a parts program for developing standard shapes to be cut on Union Carbide's or McCarter's flame cutting equipment. Even for the few round fitting shapes included in the parts list, it did not calculate two-dimensional patterns for the sides of three-dimensional fittings based on basic type and dimensional data for the three dimensional fitting as required by the claims of the patents in suit. (PX 186, para.para. 79-90).

28. All of the alleged prior art was before the Patent Office during the two re-examinations of each CTI patent or cumulative to the art before the Patent Office. Each patent was reexamined by the Patent Office twice. After such re-examinations the CTI patents were certified valid without any changes to the original claim language of either patent. (PX 40-41).

29. Moreover, the '635 and '810 patents were previously adjudicated valid and infringedby this Court in an action entitled *Construction Technoloqy, Inc. v. The Lockformer Co., et al.,* 86 Civ. 0457 and 88 Civ. 0742 (JSM), and later adjudicated valid and infringed by this Court in *Construction Technology, Inc. v. Vicon, Inc., James A. Conley, and Joan D. Conley and Avalon Machinery, Inc. v. Construction Technology, Inc.,* 92 Civ. 2060 (JSM). (UF at 4-5).

LEVEL OF SKILL AND NON-OBVIOUSNESS

30. When the differences between the claimed inventions and the prior art are weighed in light of the level of skill in the art, it is apparent that the claimed inventions would not have been obvious to a person of ordinary skill in the art at the time the inventions were made. (PX 186, para. 51).

31. Prior to the inventions claimed in the two patents in this case, the need for manual layout to produce customized duct work caused an expensive bottleneck in the HVAC Industry. Layout people were highly paid and in short supply. This problem continued to remain unsolved until the inventions of the plaintiff's patents. The failure of others to solve the problem sooner tends to support the conclusion that the claimed inventions were not obvious at the time. (PX 186 para. 109).

32. The reaction of the HVAC industry to the introduction of the CTI Auto-Plot was widespread and immediate. CTI's simulated demonstration at the ASHRAE show in January 1981 was jammed. A number of companies took the risk of placing early orders even though the invention was not complete. Trade publications immediately praised the savings of time and money that the inventions would accomplish once completed. This type of immediate industry response also tends to support the conclusion that the claimed inventions were not obvious. (PX 186, para.para. 108, 110-113).

33. The claimed inventions enjoyed tremendous commercial success. CTI's own products, the Auto-Plot, Auto-Cutter and Auto-Plan, were, despite high prices, all successful. It was only after Cybermation and others introduced cheaper imitation products that CTI's sales and profits began to fall. Cybermation and others sold hundreds of computerized automatic layout and cutting machines and dozens of the newer CAD systems. Almost all other competitors to CTI, other than Cybermation, have taken licenses under the patents. This widespread commercial success also tends to support the conclusion that the claimed inventions were non-obvious. (Tr. at 204-205 [Levine]; PX 186, para. 108).

LITIGATION OVER CTI'S PATENTS

34. Both before and immediately after the CTI patents issued, CTI approached sellers of infringing products in hopes of obtaining license arrangements. In particular, Levine had discussions with both Cybermation and Lockformer, but CTI was unsuccessful in licensing either company. (Tr. at 164-166, 187-88 [Levine]).

35. Due to the cost of development of both the Auto-Plot and Auto-Plan systems and reduced sales due to infringing competition, CTI was without the financial means to file suit against all of the infringers simultaneously. CTI first filed a patent infringement action in January 1986 in this court, 86 Civ. 0457,

against one of the largest infringers, Lockformer. (Tr. at 192 [Levine]).

36. CTI filed a second action in 1988 in this court, 88 Civ. 0742, against Lockformer and other companies which supplied components for the Lockformer HVAC CAM system, known as the Vulcan, and Lockformer's CAD System, known as the Vantage. (Tr. at 192 [Levine]). The two suits involving Lockformer were later tried together in February and March of 1991, with the jury rendering a verdict in favor of CTI. The judgment of the Court finding the CTI patents valid and infringed was issued in October 1991. (UF at 4).

37. After the judgment of the Court in the Lockformer Litigation, Lockformer settled with CTI. Lockformer took a non-exclusive license for the future to continue selling its Vulcan HVAC CAM systems. (PX 138). CTI promptly brought the present litigation in 1991 after the Lockformer Litigation judgment.

38. CTI also brought another infringement action in January 1992 in this court against Koike Aronson, Inc. (Aronson) and Advance Machinery, Inc. (Advance), suppliers of another HVAC CAM system. Aronson began to sell an HVAC CAM system, with Advance as its distributor, sometime in the late 1980's. This action was promptly settled. Aronson and Advance are now CTI licensees under the '635 and '810 patents and Advance is an Authorized Distributor under the Aronson agreement. (PX 39.138, 39.139, 140, 141).

39. Avalon Machinery, Inc. (Avalon) brought a declaratory judgment action in this district against CTI asserting that the patents were not infringed. A case brought by CTI against Vicon, whose principals also started Avalon, was transferred to this district, and consolidated with the declaratory judgment action. (PX 39.140, 39.141). After a three day bench trial, the court found that the patents were infringed. A judgment declared the patents valid and infringed. (PX 39.143).

INFRINGEMENT

[1] 40. Cybermation's manufacture and sale of the Cybermation CAM system infringes the '635 and '810 patents, particularly claims 32, 36, 37, 41, 42, 46, 47, and 51 of the '635 patent, and claims 11 and 22 of the '810 patent. (PX 186, para.para. 9-40, 44).

41. Claim 32 is an independent method claim which provides:

A method for producing the customized patterns of the closed sides of a three dimensional product which can be fabricated from sheet material, such as a ventilating duct fitting, comprising the steps of:

storing in memory means, information representative of the configurations of a group of basic types of the three dimensional product and two dimensional pattern types required for the construction of the closed sides of the product, each such pattern type having a specified geometry and at least one mathematical relationship relating selected basic dimensions of the product to the specified geometry,substantially all variations of the product being developable from said basic pattern types, said basic dimensions comprising the size of the open sides of the product and at least one dimension determining the spatial relationship of the open sides;

entering input data including the type of the three dimensional product and said basic dimensions;

generating, without operator interaction and decision-making, from said basic dimensional data and three

dimensional product type data, the pattern of each of the closed sides of the product, each of said patterns developed from selected ones of said basic pattern types in response to said input dimensional and product type data;

positioning each developed pattern in related positions with other developed patterns to generate a series of positionings without operator interaction and decision-making;

determining which of said positionings yields a minimum surface area so as to provide for optimum material usage without operator interaction and decision-making and generating digital data representing said optimum positioning;

supplying the digital data representing said optimum positioning to an X-Y plotting table, said data including digital data representing the starting point for each pattern in X-Y format and sequential digital data in X-Y format representing the contour of each pattern; and

plotting said patterns in accordance with said digital data on a sheet of material on said plotting table. (PX 25).

42. A comparison of the elements of Claim 32 with the operation of the Cybermation system shows that the Cybermation system literally infringes. (PX 28, PX 152A-152W, PX 186, para.para. 9-40, 44; Tr. at 551-587, 592-613 [Lyons]).

Specifically:

a. The Cybermation cutting system implements a method for producing patterns of the closed sides of ventilating duct fittings (three dimensional products which can be fabricated from sheet material) as shown by the Cybermation manuals, the Cybermation software and operation of the system.

b. The element of "storing" information representative of basic fitting and pattern types is apparent from Cybermation's manuals,the software and operation of the system. The Cybermation systems have information stored in a memory as shown in Cybermation's brochures and the Cybermation Manuals. The information includes information representative of the configurations of a group of basic types of fittings and two dimensional pattern types required for the construction of the closed sides of the product and which define the patterns of the sides of the fittings. The Cybermation manuals and software show basic fitting types, e.g., elbows, transitions, offsets, bevels and the two dimensional pattern types required for construction of the closed sides of the fittings. The software shows that the Cybermation system produces the necessary patterns from pattern types, i.e. software code defining patterns associated with the fitting types. Although the Cybermation library is not identical to CTI's, the claims are not limited to use of the same fitting types and pattern types as CTI's preferred mode.

c. Each pattern type in the Cybermation software (corresponding to fitting type sides) has a specified geometry and at least one mathematical relationship relating selected basic dimensions of the product (e.g., opening width and depth, exiting width and depth) to the specified geometry. The specified geometry is defined by the type of fitting, e.g., elbow, bevel, offset, transition. By definition, each pattern type has to have a specified geometry and such a mathematical relationship. This is shown in the Cybermation manuals and software.

d. Cybermation offers a wide variety of standard and specialty fittings to meet virtually all production requirements. Thus, substantially all variations of rectangular duct fittings can be developed from the library based on the stored pattern types.

e. The basic dimensions of any duct fitting includes the size of the open sides (depth and width) and at least one dimension determining the spatial relationship of the open sides (e.g., length, offset, radius, throat distance). The Cybermation manuals and system operating screen identify the basic dimensions for each fitting. In each case, a width and depth defining open sides and a dimension defining spatial relationship are provided.

f. In the Cybermation system, operators answer English language questions to input data needed to set up fittings which are three-dimensional products. After dimensions are entered, they appear on the screen in position for verification. The operator selects the type of fitting from the fitting types programmed into the system and answers English language questions as to basic dimensions, i.e., width, depth, offset, etc. To enter the fitting shapes for takeoff, the system operator simply types the name of each fitting. The computer responds by prompting for basic dimensions.

g. In the Cybermation system, operators enter the dimensions of the fitting based on shop standards. The pattern for the sides of fittings are automatically produced with the correct material and construction detail without operator intervention. Once the dimensional data and product or fitting type data is entered, each of the patterns of the selected fitting is automatically developed. The fitting pattern development is based on the basic pattern types associated with the various fitting types stored in the memory.

h. The Cybermation CAM systems use various nesting programs, including simple rectangular nesting to more complex "Ultranest," to position each pattern in related positions with other developed patterns to generate a series of positionings automatically. The nesting programs automatically nest parts and arrange the actual shapes of the parts.

i. The nesting programs position the patterns in related position with other developed patterns to generate a series of positionings without operator interaction and decision making. The nesting programs determine which of the positionings yields a minimum surface area, which is not required by the CTI patents to be the absolute minimum, so as to provide for optimum material usage without operator interaction and decision making. Some Cybermation Systems use a simple rectangular nesting routine, also described in the CTI patents, to accomplish this. Some systems use more complicated routines, such as Ultranest. The Cybermationsystems determine positioning of the patterns which yields a minimum surface area to provide for optimum material usage. This is done automatically. Although an "Interactive Graphic Nesting" capability is optional, and the Cybermation system allows for editing and deleting patterns after they have been created and nested, the basic system provides for automatic nesting without operator interaction and decision-making.

j. Cybermation's controller enables the job to be downloaded to the plotting or cutting table for cutting and to move the cutting machine in X and Y directions. The data for each pattern necessarily has to include a starting point and sequential contour data to define each pattern. When Cybermation's system cuts the patterns, it necessarily plots the patterns, i.e., cutting is plotting.

k. The patterns in the Cybermation system are plotted by being cut out, as nested, on the cutting table.

43. Claim 36 recites:

The method recited in claim 32 wherein said step of plotting further comprises cutting said patterns from said sheet of material on said plotting table. (PX 25).

44. A comparison of the elements of Claim 36 with the operation of the Cybermation system shows that the Cybermation system literally infringes. (PX 152A-152W, PX 186, para.para. 21-23; Tr. at 551-587, 592-613 [Lyons]).

Specifically:

a. The Cybermation table uses a plasma-arc cutting head on an X-Y table to cut the fitting patterns.

45. Claim 37 states:

Apparatus for producing the customized patterns of the closed sides of a three dimensional product which can be fabricated from sheet material, such as a ventilating duct fitting, comprising:

memory means for storing information representative of the configurations of a group of basic types of the three dimensional product and two dimensional pattern types required for the construction of the closed sides of the product,

each such pattern type having a specified geometry and at least one mathematical relationship relating selected basic dimensions of the product to the specified geometry,

substantially all variations of the product being developable from said basic pattern types,

said basic dimensions comprising the size of the open sides of the product and at least one dimension determining the spatial relationship of the open sides;

means for entering input data including the type of the three dimensional product and basic dimensions;

means for generating, without operator interaction and decision-making, from said basic dimensional data and three dimensional product type data, the pattern of each of the closed sides of the product, each of said patterns developed from selected ones of said basic pattern types in response to said input dimensional and product type data;

means for positioning each developed pattern in related positions with other developed patterns to generate a series of positionings without operator interaction and decision-making;

means for determining which of said positionings yields a minimum surface area so as to provide for optimum material usage without operator interaction and decision-making and means for generating digital data representing said optimum positioning;

means for supplying the digital data representing said optimum positioning to an X-Y plotting table, said data including digital data representing the starting point for each pattern in X-Y format representing the contour of each pattern; and

means for plotting said patterns in accordance with said digital data on a sheet of material on said plotting table. (PX 25).

46. A comparison of the elements of Claim 37 with the operation of the Cybermation system, as explained above, shows that the Cybermation system literally infringes. (PX 152A-152W, PX 186, para.para. 24-27; Tr. at 551-587, 592-613, 616-619 [Lyons]).

47. Claim 41 recites:

The apparatus recited in claim 37 wherein said means for plotting further comprises means for cutting said pattern from said sheet of material on said plotting table. (PX 25).

48. A comparison of the elements of Claim 41 with the operation of the Cybermation system, as explained above, shows that the Cybermation system literally infringes. (PX 152A-152W, PX 186, para.para. 28-31; Tr. at 551-587, 592-613 [Lyons]).

49. Claim 42 recites:

A method for producing the closed sides of a three-dimensional product which can be fabricated from sheet material, such as a ventilating duct fitting, comprising the steps of:

storing information representative of the configurations of a group of basic types of the three dimensional product and two dimensional pattern types required for the construction of the closed sides of the product,

each such pattern type having a specified geometry and at least one mathematical relationship relating selected basic dimensions of the product to the specified geometry,

substantially all variations of the product being developable from said basic pattern types,

said basic dimensions comprising the size of the open sides of the product and at least one dimension determining the spatial relationship of the open sides;

entering input data including said basic dimensions and data associated with a selection of a two-dimensional pattern type associated with the product;

generating, without operator interaction and decision-making, from said basic dimensions and data associated with the two-dimensional pattern type, the pattern of each of the closed sides of the product, each of said patterns developed from selected ones of said basic pattern types in response to said basic

dimensions and data associated with the pattern type;

positioning each developed pattern in related positions with other developed patterns to generate a series of positionings without operator interaction and decision-making;

determining which of said positionings yields a minimum surface area so as to provide for optimum material usage without operator interaction and decision-making and generating digital data representing said optimum positioning;

supplying the digital data representing said optimum positioning to a plotting table; and

plotting said patterns in accordance with said digital data on a sheet of material on said plotting table. (PX 25).

50. A comparison of the elements of Claim 42 with the operation of the Cybermation system, as explained above, shows that the Cybermation system literally infringes. (PX 152A-152W, PX 186, para. 32; Tr. at 551-587, 606-613 [Lyons]).

51. Claim 46 recites:

The method recited in claim 42, wherein said step of plotting further comprises cutting said pattern from said sheet of material on said plotting table. (PX 25).

52. A comparison of the elements of Claim 46 with the operation of the Cybermation system, as explained above, shows that the Cybermation system literally infringes. (PX 152A-152W, PX 186, para. 33; Tr. at 551-587, 606-613 [Lyons]).

53. Claim 47 recites:

Apparatus for producing the customized patterns of the closed sides of a three dimensional product which can be fabricated from sheet material, such as a ventilating duct fitting, comprising:

memory means for storing information representative of the configurations of a group of basic types of the three dimensional product and two dimensional pattern types required for the construction of the closed sides of the product,

each such pattern type having a specified geometry and at least one mathematical relationship relating selected basic dimensionsof the product to the specified geometry,

substantially all variations of the product being developable from said basic pattern types,

said basic dimensions comprising the size of the open sides of the product and at least one dimension determining the spatial relationship of the open sides;

means for entering input data including said basic dimensions and data associated with a selection of a two-dimensional pattern type associated with the product;

means for generating, without operator interaction and decision-making, from said basic dimensions and data associated with the two-dimensional pattern type, the pattern of each of the closed sides of the product, each of said patterns developed from selected ones of said basic pattern types in response to said basic dimensions and data associated with the pattern type;

means for positioning each developed pattern in related positions with other developed patterns to generate a series of positionings without operator interaction and decision-making;

means for determining which of said positionings yields a minimum surface area so as to provide for optimum material usage without operator interaction and decision-making and means for generating digital data representing said optimum positioning;

means for supplying the digital data representing said optimum positioning to a plotting table; and

means for plotting said patterns in accordance with said digital data on a sheet of material on said plotting table. (PX 25).

54. A comparison of the elements of Claim 47 with the operation of the Cybermation system, as explained above, shows that the Cybermation system literally infringes. (PX 152A-152W, PX 186, para. 34; Tr. at 551-587, 606-613 [Lyons]).

55. Claim 51 recites:

The apparatus recited in claim 47, wherein said means for plotting further comprises means for cutting said patterns from said sheet of material on said plotting table. (PX 25).

56. The Cybermation system infringes claim 51 because the Cybermation table uses a plasma-arc cutting head on a plotting table to cut the fitting patterns. (PX 152A-152W, PX 186, para. 35; Tr. at 551-587, 606-613 [Lyons]).

57. CTI also contends that Cybermation's HVAC system infringes Claims 11 and 22 of the '810 Patent.

58. Claim 11 of the '810 patent recites:

In a method for automatically producing patterns for the sides of a three dimensional product which can be fabricated from sheet material, such as a ventilating duct fitting, said patterns being produced in response to the inputting of actual dimensional and pattern type data relating to said product, the improvement comprising the steps of:

storing, in digital form in memory means, configurations and dimensional requirements of basic product types from which all possible variations of the three-dimensional product may be produced;

entering input data into a computer operatively connected to said memory means, said input data including product type and dimensions of said product, the entered dimensions corresponding to dimensional requirements, stored in said memory means, of the product type entered;

electronically deriving in said computer actual dimensional and pattern type data for each side of said

product from the entered product type and dimensions of said product;

storing in said memory means said actual dimensional and pattern type data; and

producing patterns for the sides of said product in response to said actual dimensional and pattern type data stored in said memory means. (PX 26).

59. A comparison of the elements of Claim 11 of the '810 patent with the operation of the Cybermation system shows that the Cybermation system literally infringes. (PX 152A-152W, PX 186, para. 38; Tr. at 551-587, 592-613, 619-624 [Lyons]).

Specifically:

a. The Cybermation cutting system implements a method for producing patterns of the closed sides of ventilating duct fittings (three dimensional products which can be fabricated from sheet material). The Cybermation systems are metal cutting systems and fitting cutting systems and have a memory. The patterns for the fittings are produced in response to the inputting of dimensions and fitting type data (the latter corresponding to a pattern type).

b. The Cybermation systems have information stored in a memory. The information includes information representative of the configurations and dimensional requirements of basic product types and all possible variations of the three dimensional product (fitting) can be produced from the library fittings based on the basic product types associated with the fittings or products. Cybermation offers a wide variety of standard and specialty fittings to meet virtually all production requirements. The system can produce substantially all variations of elbows, bevels, offsets and transitions.

c. In the Cybermation system, operators answer English language questions (from a computer console) to input data needed to set up fittings [products]. After dimensions are entered, they appear on the screen in position for visual verification. The operator selects the type of fitting from the library of fitting types programmed into the system and answers English language questions as to width, depth, offset, etc. To enter the fitting shapes for takeoff, the system operator simply types the name of each fitting. The computer responds by prompting for the dimensions.

d. In the Cybermation system, operators enter the dimensions of the fitting based on shop standards. The patterns of the side pieces of fittings will automatically be produced with the correct material and construction detail without operator intervention. Once the dimensional data and product or fitting type data is entered, each of the patterns of the selected fitting is automatically developed. The actual dimensional and fitting pattern development is based on the entered product type and dimensions.

e. The actual dimensional and pattern type data (the outline of the patterns of the side pieces) are electronically derived and stored in a computer memory for transfer to the Cybermation cutting table.

f. The patterns are produced by being cut out on the Cybermation cutting table.

60. Claim 22 of the '810 patent recites:

In an apparatus for automatically producing patterns for the sides of a three-dimensional product which can

be fabricated from sheet material, such as a ventilating duct fitting, said patterns being produced in response to the inputting of actual dimensional and pattern type data relating to said product, the improvement comprising

memory means for storing in digital form configurations and dimensional requirements of basic product types from which all possible variations of the three-dimensional product may be produced;

a computer operatively linked to said memory means;

means for entering into said computer input data including product type and dimensions of said product, the entered dimensions corresponding to dimensional requirements, stored in said memory means, of the product type entered;

means including said computer for electronically deriving actual dimensional and pattern type data for each side of said product from the entered product type and dimensions of said product;

storage means for at least temporarily memorizing said actual dimensional and pattern type data; and

means for producing patterns for the sides of said product in response to said actual dimensional and pattern type data stored in said memory means. (PX 26).

61. A comparison of the elements of Claim 22 with the operation of the Cybermation system shows that the Cybermation system literally infringes. (PX 152A-152W, PX 186, para.para. 39-40; Tr. at 551-587, 592-613, 624-627 [Lyons]).

Specifically:

a. The Cybermation cutting system implements a method for producing patterns of the closed sides of ventilating duct fittings (three dimensional products which can be fabricated from sheet material). The Cybermation systems are metal cutting systems and fitting cutting systems. The patterns for the fittings are produced in response to the inputting of dimensions and fitting type data (the latter corresponding to a pattern type).

b. The Cybermation system has information stored in a memory. The information includes information representative of the configurations and dimensional requirements of basic product types and all possible variations of the three dimensional product (fitting) can be produced from the library fittings based on the basic product types associated with the fittings or products. Cybermation offers a wide variety of standard and specialty fittings to meet virtually all production requirements. The system can produce substantially all variations of elbows, bevels, offsets and transitions.

c. The Cybermation systems have a computer linked to a memory in which the information is stored.

d. In the Cybermation system, operators answer English language questions to input data needed to set up fittings [products]. After dimensions are entered, they appear on the screen in position for visual verification. The operator selects the type of fitting from the library of fitting types programmed into the system and answers English language questions as to width, depth, offset, etc. To enter the fitting shapes for takeoff, the system operator simply types the name of each fitting. The computer responds by prompting for the

dimensions.

e. In the Cybermation system, operators enter the dimensions of the fitting based on shop standards. The patterns for the side pieces of the fittings will automatically be produced with the correct material and construction detail without operator intervention. Once the dimensional data and product or fitting type data is entered, each of the patterns of the selected fitting is automatically developed. The actual dimensional and fitting pattern development is based on the entered product type and dimensions.

f. The actual dimensional and pattern type data (the outline of the patterns of the side pieces) are electronically derived and stored in a computer memory for transfer to the Cybermation cutting table.

g. The patterns are produced by being cut out on the Cybermation cutting table.

62. Even if it does not infringe literally, the differences between the Cybermation CAM system and each element of the CTI system's claims are insubstantial, and therefore, infringement under the doctrine of equivalents is established. (PX 186, para.para. 12, 15, 19, 20, 23, 27, 31, 38, 40).

63. In addition to its own sales, Cybermation "retrofitted" machines it had sold before CTI's patents issued by upgrading these machines by installing enhanced software, whether or not coupled with hardware enhancements. (PX 186 para. 42). Cybermation also repaired systems for customers who purchased these systems before CTI's patents issued. (PX 186 para. 43).

64. Defendant AMX Contracting Corp. ("AMX") used at least one Cybermation HVAC CAM system after the CTI patents were issued (UF at 5).

65. Any Conclusion of Law presented below which constitutes a Finding of Fact is hereby adopted as such.

CONCLUSIONS OF LAW

1. To determine infringement, the court must first interpret the meaning of the language used in the patent claims as a matter of law. *See* Markman v. Westview Instruments, Inc., 517 U.S. 370, ---- - ----, 116 S.Ct. 1384, 1395-96, 134 L.Ed.2d 577 (1996). The court should look primarily to the claims, the patent specification, and the prosecution history. *See* Unique Concepts, Inc. v. Brown, 939 F.2d 1558, 1561 (Fed.Cir.1991).

2. In order to find literal infringement, each element of the claim must be found in the accused device or process. *See* United States v. Telectronics, Inc., 857 F.2d 778, 784 (Fed.Cir.1988), *cert. denied,* 490 U.S. 1046, 109 S.Ct. 1954, 104 L.Ed.2d 423 (1989); Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1054 (Fed.Cir.) *cert. denied,* 488 U.S. 825, 109 S.Ct. 75, 102 L.Ed.2d 51 (1988).

3. A party can also infringe another party's patents under the Doctrine of Equivalents. The Doctrine of Equivalents applies when two devices, "work in substantially the same way, and accomplish substantially the same result, ... even though they differ in name, form, or shape." Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co., --- U.S. ----, ----, 117 S.Ct. 1040, 1052, 137 L.Ed.2d 146 (1997) (quoting Union Paper-Bag Machine Co. v. Murphy, 97 U.S. 120, 24 L.Ed. 935 (1877)). The determination of equivalence should be applied as "an objective inquiry on an element-by-element basis." Id. at ----, 117 S.Ct. at 1054.

MEANS PLUS FUNCTION CLAIMS

[2] 4. CTI's patented invention is defined by the claims and not the preferred embodiment described in the specification. The purpose of a preferred embodiment is to provide a disclosure to the public of CTI's best mode of carrying out the invention when the applications were filed. See 35 U.S.C. s. 112; *see also* Dana Corp. v. IPC Ltd. Partnership, 860 F.2d 415, 418 (Fed.Cir.1988), *cert. denied,* 490 U.S. 1067, 109 S.Ct. 2068, 104 L.Ed.2d 633 (1989). Such a disclosure is included for the benefit of the public, rather than to limit the scope of CTI's invention, because "[i]nfringement, either literal or by equivalence, is determined by comparing the accused device with the claims in suit, not with a preferred or commercial embodiment of patentee's claimed invention." Martin v. Barber, 755 F.2d 1564, 1567 (Fed.Cir.1985).

5. Some of the claims in the '635 and '810 patents use "means plus function" language. Pursuant to 35 U.S.C. s. 112 "an element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof."

[3] 6. To satisfy a means plus function element literally, an accused device must 1) perform the identical function claimed for the means element, and 2) perform that function using the structure disclosed in the specification or its equivalent. *See* Carroll Touch, Inc. v. Electro Mechanical Systems, Inc., 15 F.3d 1573, 1578 (Fed.Cir.1993); Intel Corp. v. United States International Trade Comm'n, 946 F.2d 821, 841 (Fed.Cir.1991). The patentee is not required to list all possible methods of carrying out each step of the combination in the specification. *See* Texas Instruments, Inc. v. United States International Trade Commission, 805 F.2d 1558, 1562 (Fed.Cir.1986).

INTERPRETATION AND INFRINGEMENT OF THE '635 PATENT

CLAIM 32

[4] 7. Claim 32 of the '635 Patent is directed to a method for producing the customized patterns of the closed sides of a three dimensional product which can be fabricated from sheet material, such as a ventilating duct fitting. The Cybermation CAM system implements such a method by producing patterns for duct fittings, which duct fittings when assembled from the pattern pieces are three dimensional products fabricated from sheet material.

8. Claim 32 recites a method comprising a number of steps. The first step is "storing in memory means, information representative of the configurations of a group [i.e., two or more] of basic types of the three dimensional product [duct fitting] and two dimensional pattern types [for the closed sides of the duct fitting] required for the construction of the closed sides of the product." Based upon the claim language, the patent specification and the prosecution history, this step of the claim is interpreted to cover a system that can produce desired patterns using the information (algorithms including mathematical formulas and procedures) representative of the pattern types associated with the fitting types that are stored. The information representative of pattern types stored need not be a physical drawing of the pattern types stored. Rather, this information can be algorithms in the form of computer instructions which define the pattern shapes.

9. Although the Cybermation CAM system's library is not identical to the fittings described in the preferred embodiment and the stored pattern types are not identical to the pattern types shown in Fig. 4A to 4D of the '635 patent, claim 32 is not limited to the fitting types or pattern types shown in the patent's preferred

embodiment. Instead, the preferred embodiment is merely illustrative of the invention, and information representative of other pattern types could be used to generate fittings. Also, there is no limitation in the claims that there can only be four basic pattern types, so a system that uses more than four basic pattern types would also meet the claim limitations. Adding features to an accused device will not avoid a finding of infringement if all the claim elements, or equivalents thereof, are present in the accused device. *See* Amstar v. Envirotech Corp., 730 F.2d 1476, 1482 (Fed.Cir.) *cert. denied,* 469 U.S. 924, 105 S.Ct. 306, 83 L.Ed.2d 240 (1984). Thus, even if the claim required the four pattern types shown in the preferred embodiment, the Cybermation system would still infringe because it uses the four basic pattern types in addition to others. (PX 186 para.para. 14-15).

[5] 10. The second part of the first step of claim 32 also includes "each such pattern type having a specified geometry and at least one mathematical relationship relating selected basic dimensions of the product to the specified geometry, substantially all variations of the product being developable from said basic pattern types, said basic dimensions comprising the size of the open sides of the product and at least one dimension determining the spatial relationship of the open sides...." Based upon the claim language, the patent specification and the prosecution history, this part of the first step of claim 32 is interpreted to mean that in the computerized system, each of the stored pattern types has a specified geometry and at least one mathematical relationship relating selected basic dimensions of the product to the specified geometry of the pattern. This part of the claim requires that the system be able to produce substantially all variations of the product from the basic pattern types, and the basic dimensions comprising the size of the open sides of the product and at least one dimension determining the spatial relationship of the open sides.

11. The first step is not limited to the manner in which the information is stored in the preferred embodiment described in the CTI patents. Accordingly, the claim covers any system which functions to produce patterns for fittings (storing information relating basic dimensions of a fitting to a perimeter of each of the patterns forming the fitting), in the same way (by storing equations and procedures of basic pattern types), to achieve the same result.

12. The second step of claim 32 is the step of "entering input data including the type of the three dimensional product and said basic dimensions...." Based upon the claim language, the patent specification and the prosecution history, the second step is interpreted to cover a system wherein the operator selects and enters a fitting type and the basic dimensions of the fitting. The basic dimensions can also include information concerning the seams and connectors for the fitting being produced.

13. The next step of claim 32 of the '635 patent is the step of "generating, without operator interaction and decision making, from said basic dimensional data and three dimensional product type data, the pattern of each of the closed sides of the product, each of said patterns developed from selected ones of said basic pattern types in response to said input dimensional and product type data...." Based upon the claim language, the patent specification and the prosecution history, this step of the claim is interpreted to cover a system whereby after the operator has entered the input data including the type of three-dimensional product and the basic dimensions, the system then automatically generates, without operator interaction and decision making in the process of generating the patterns, the pattern of each of the closed sides of the product. The entry by the operator of the identification of seams and connector types, which is not required by the Cybermation system, is not "operator interaction and decision making" inconsistent with this step because when the basic dimensions (which may include the seams and connectors)are entered the Cybermation system automatically generates the patterns in accordance with this claim step. Also, the mere fact that an operator must press a button or a key to start the generating process is not "operator interaction and decision

making" proscribed by the claim.

14. Claim 32 of the '635 patent further requires the step of "positioning each developed pattern in related positions with other developed patterns to generate a series of positionings without operator interaction and decision making...." Based upon the claim language, the patent specification and the prosecution history, this step of the claim is interpreted to cover a system wherein each developed pattern is positioned in related positions with other developed patterns to generate a series of positionings without operator interaction and decision-making. This claimed step is not limited to the preferred embodiment described in the patent and does not require that all possible variations of positionings be a part of the "series." As long as the system positions each developed pattern in related positions with other developed patterns, it meets the claim language. The Cybermation system performs such positioning.

15. The next step of claim 32 of the '635 patent is "determining which of said positionings yields a minimum surface area so as to provide for optimum material usage without operator interaction and decision-making and generating digital data representing said optimum positioning." Based upon the claim language, the patent specification and the prosecution history, this step of the claim is interpreted to cover any system which can, as described above, determine which of a number of positionings actually generated minimizes material usage without operator interaction or decision making.

16. Nothing in this claimed step of "determining which of said positionings yields a minimum surface area so as to provide for optimum material usage" requires that the arrangement of the patterns on the sheet be the arrangement which provides the absolute least amount of sheet metal usage. The claim requires only that the system provide for "an optimum" material usage under the conditions used rather than the optimum based on all possible arrangements.

17. The claims of the '635 patent do not require implementation of the preferred mode of optimization described in the '635 patent specification. The '635 patent itself indicates that other less efficient optimizing techniques, such as the outside rectangular technique-which is the technique used by Cybermation, referred to as pilenesting-can also be used. Also, there is no reference in the claim to a laser, so that even if a laser could be used to achieve a somewhat more compact nesting than a plasma cutter, this consideration is irrelevant.

18. The next step of claim 32 of the '635 patent is the step of "supplying the digital data representing said optimum positioning to an X-Y plotting table, said data including digital data representing the starting point for each pattern in X-Y format and sequential digital data in X-Y format representing the contour of each pattern...." Based upon the claim language, the patent specification and the prosecution history, this language is interpreted to cover a system wherein once the positioning of pieces is completed and results in an optimum positioning (or "plot"), the plot is provided to a plotting device. The plotting table accepts digital data, and the data for each pattern necessarily has to include a starting point and sequential contour data to define each pattern. The Cybermation system follows this procedure.

19. The last element of claim 32 of the '635 patent is the step of "plotting said patterns in accordance with said digital data on a sheet of material on the plotting table." Based upon the claim language, the patent specification and the prosecution history, this step of the claim is interpreted to include a system wherein a cutting device, e.g., plasma torch or laser, circumscribes the perimeter of each pattern on the plotting table. The term "plotting," as it is used in the claim, refers to the movement of the plotting head moving about on the plotting table so as to define the patterns. The step of plotting includes plotting with a pen or a cutting

tool. This is apparent from the '635 patent specification which states that the patterns are created "by a mechanically driven *plotting* apparatus which marks-out *or* carries along the *cutting tools* for severance of the patterns on a sheet of material positioned on the plotting bed of the plotting apparatus." [Emphasis added]. The Cybermation system contains this plotting function.

20. Furthermore, dependent claim 36 (discussed below) is specifically limited to cutting the patterns from a sheet of material. The scope of a dependent claim is narrower than that of the claim from which it depends. In this case, dependent claim 36 is limited to having plotters that cut, whereas independent claim 32 is not so limited. Accordingly, a system which "cuts," also "plots," as that term is used in claim 32 of the patent.

21. Based upon this interpretation of claim 32, and the Findings of Fact describing the operation of the Cybermation CAM system, every step of claim 32 of the '635 patent is carried out when the Cybermation CAM system is operated to manufacture HVAC ductwork, and therefore, claim 32 is infringed.

22. Furthermore, even the differences between the invention claimed in claim 32 and the Cybermation CAM system are insubstantial. Accordingly, even if there is no literal infringement, the Cybermation CAM system performs the same function of each element of claim 32 in the same way, to accomplish the same result, and therefore would infringe under the doctrine of equivalents.

CLAIM 36

[6] 23. Claim 36 of the '635 patent depends from, and therefore further limits claim 32 by requiring that the "step of plotting further comprises cutting said patterns from said sheet of material on said plotting table." This does not mean that the step of "cutting" is in addition to "plotting," but instead, that "plotting" comprises or includes "cutting."

24. Based upon the claim language, the patent specification and the prosecution history, a system will meet this limitation by cutting the patterns with a plasma cutter.

25. The difference between using a laser to sever patterns and using, for example, a plasma cutter to sever patterns is insubstantial as it relates to a method for producing the customized patterns of the closed sides of a three dimensional product which can be fabricated from sheet material. The patent describes "its most preferred form providing a laser means for severance of the patterns ..." but the *claim* is not so limited. (PX 25, lines 19-21). Accordingly, based upon the Findings of Fact concerning the operation of the Cybermation CAM system, claim 36 is also infringed.

CLAIM 37

[7] 26. Claim 37 is an independent apparatus claim which corresponds to method claim 32 and is infringed for the same reasons; that is, claim 37 recites "means" for performing each step recited in claim 32. Based upon the Findings of Fact concerning the structure of the Cybermation CAM system and that of claim 37, the Cybermation CAM system contains a corresponding structure for carrying out each function claimed.

27. With respect to the means for entering, this is interpreted to cover a keyboard as a means for entering input data.

28. The means for generating recited in claim 37 is interpreted to cover a system wherein a computer is programmed to automatically generate the perimeter of patterns from input dimensions.

29. With respect to the claim 37 means for positioning and determining, these means are interpreted to cover a system with a means to perform both outside rectangle nesting and the patentee's preferred nesting algorithm.

30. The means for positioning is also equivalent to any system which can perform the same function of positioning patterns in related positions with other developed patterns and determining which positioning yields a minimum surface area, in substantially the same way by iteratively laying the patterns out on a "sheet" in memory and selecting an optimum layout for the nesting utilized, in order to achieve the same result of optimizing material usage.

31. The structures that correspond to a means for supplying and means for plotting disclosed in the patent are a computer and an x-y cutting table.

32. The CTI patent is not limited to the preferred embodiment disclosing the use of an x-y table with a laser as the structure that corresponds to the means for plotting. A system using an x-y table with any cutting or plotting tool would encompass the claimed structure for plotting. These two different tools perform the same function (plotting patterns on a sheet of material), in the same way (by moving a cutting tool on an x-y table to form the patterns), to achieve the same result, and thus, are equivalent. Furthermore, a person of ordinary skill in the art would know that either of these two tools could be used. Therefore tools of this type are considered interchangeable.

33. Based upon the Findings of Fact relating to the means employed in the Cybermation CAM system, the Cybermation system performs each of the claimed functions using the same structure or an equivalent of the structures disclosed in the '635 patent specification to carry out that function. Thus the Cybermation CAM system comprises the same or an equivalent means to perform each function of claim 37. Accordingly, the Cybermation system literally infringes claim 37. Even if literal infringement is not found, the differences between the Cybermation system and the claim are insubstantial, so there is infringement under the Doctrine of Equivalents.

CLAIM 41

[8] 34. Claim 41 is an apparatus claim depending from claim 37. Claim 41 corresponds to method claim 36, with an additional limitation that the means for plotting further comprises a means for cutting.

35. To interpret this additional limitation, the '635 patent specification states:

The present invention thus describes a method and apparatus for automatically producing the data required for laminar patterns and the production of the patterns by a mechanically driven plotting apparatus which marks-out or carries along the cutting tools for severance of the patterns on a sheet of material positioned on the plotting bed of the plotting apparatus. (PX 25, lines 57-63).

The structure disclosed in the specification as a cutting means is a cutting tool. Both a laser and a plasma torch are cutting tools. Therefore, this claim limitation covers a plasma cutter. Indeed, plasma cutters and laser cutters perform the same function (severing patterns from the sheet metal), in substantially the same way (by directing focused energy on a point to be cut), and achieve the same result, and therefore are equivalent. The use of one type of cutter instead of the other results in no substantial difference.

Interchangeability between differing cutters is well known in the art. (PX 186, para.para. 23, 26).

36. For the reason stated above, in regard to the claim 36 analysis, the Cybermation CAM system infringes claim 41.

CLAIM 42

37. Claim 42 is another independent method claim which is similar to method claim 32, although of somewhat different scope. Claim 42 differs from claim 32 by reciting that instead of entering input data including the type of the three dimensional product and the basic dimensions, the claim involves entering "input data including ... basic dimensions and data associated with a selection of a two dimensional pattern type associated with the product ..." is entered. This language is met by the Cybermation System because when a product type (fitting) is entered, necessarily the computer programs (relating to the pattern types) are selected. For the reasons set forth in the claim 32 analysis, the Cybermation CAM system infringes claim 42.

CLAIM 46

38. Method claim 46 is a dependent method claim which depends from independent claim 42 and adds the requirement that the plotting step includes cutting. This claim is infringed for the same reasons stated above for method claim 36.

CLAIM 47

39. Claim 47 is another independent apparatus claim which corresponds to method claim 42 and substantially to claims 37 and 32 and is infringed for the same reasons.

CLAIM 51

40. Claim 51 is a dependent apparatus claim which corresponds to dependent method claim 46 (and claims 41 and 36) and is infringed for the same reasons.

INFRINGEMENT AND ANALYSIS OF THE '810 PATENT

41. The '810 patent describes and separately claims an additional invention and an improvement to the system of the '635 patent. The additional invention and improvement is a computer aided design (CAD) system to be used with the CAM system. The '810 patent also has claims directed only to the CAM System, in particular, asserted claims 11 and 22. Only the CAM claims are involved in the present action.

CLAIM 11

[9] 42. Claim 11 of the '810 patent is an independent method claim which recites "a method for automatically producing patterns for the sides of a three dimensional product which can be fabricated from sheet material, such as a ventilating duct fitting, said patterns being produced in response to the inputting of actual dimensional and pattern type data relating to said product...."

43. Based upon the claim language, the patent specification and the prosecution history, this claim is interpreted to cover a system which can implement a method for automatically producing patterns of the

closed sides of ventilating duct fittings, which are three dimensional products which can be fabricated from sheet material, in response to the entry of dimensional and pattern type data relating to the product, i.e., dimensions and the type of fitting.

44. The first step of claim 11 of the '810 pattern is "storing, in digital form in memory means, configurations and dimensional requirements of basic product types from which all possible variations of the three dimensional product may be produced." Based upon the claim language, the patent specification and the prosecution history, this step is interpreted to cover a system which can store in digital form in memory means configurations and dimensional requirements of basic product types (like basic pattern types of claim 32 of the '635 patent) from which all possible variations of the three dimensional product (fitting types) may be produced. A system with rectangular fittings stored in a memory contains information including configurations (pattern defining programs) and dimensional requirements (the necessary dimensional inputs) of basic types of fittings and all possible variations of these fitting types can be produced from the fittings, and therefore, would meet this step of claim 11.

45. The next step of claim 11 of the '810 patent is the step of "entering input data into a computer operatively connected to said memory means, said input data including product type and dimensions of said product, the entered dimensions corresponding to dimensional requirements, stored in said memory means, of the product type entered."

46. Based upon the claim language, the patent specification and the prosecution history, this step is interpreted to cover a system wherein input data can be entered into a computer through a keyboard. The input data includes product type (fitting type) and dimensions of the product. The entered dimensions correspond to dimensional requirements stored in the memory means of the particular product type entered.

47. The next step of claim 11 of the '810 patent is the step of "electronically deriving in said computer actual dimensional and pattern type data for each side of said product from the entered product type and dimensions of said product."

48. Based upon the claim language, the patent specification and the prosecution history, this claim is interpreted to cover a system that is capable of electronically deriving the actual dimensional and pattern type data (the perimeter of the pattern) for each side of the fitting from the entered product type and dimensions of the product.

49. The next step of claim 11 of the '810 patent is the step of "storing in said memory means said actual dimensional and pattern type data." Based upon the claim language, the patent specification and the prosecution history, this claim is interpreted to cover a system wherein the derived actual dimensional and pattern type data (which together define the actual patterns of the sides of the fitting) are stored in a computer memory for transfer to the cutting table. Once the fitting patterns have been created by the system, they are stored in memory prior to transfer to the cutting table for plotting, as described above.

50. The last step of claim 11 of the '810 patent is "producing patterns for the sides of said product in response to said actual dimensional and pattern type data stored in said memory means." Based upon the claim language, the patent specification and the prosecution history, this claim is interpreted to cover a system which can produce patterns for the sides of duct fittings in response to the actual dimensional and pattern type data stored in a memory means and generated by the computer. The data stored in the memory means concerning the patterns to be produced is sent to the cutting table where the patterns are cut out.

51. Based on the Findings of Fact concerning the operation of Cybermation's CAM system, each element of claim 11 is present in the Cybermation CAM system. Accordingly, claim 11 of the '810 patent is literally infringed by the Cybermation CAM system. If not literally infringed, the differences between the Cybermation CAM System and the claim are insubstantial, so the claim would be infringed under the doctrine of equivalents.

CLAIM 22

52. Claim 22 of the '810 patent is an independent apparatus claim that corresponds to method claim 11 and is infringed for the same reasons. The structures in the specification that carry out each of the claimed functions are the same as, or equivalent to the structures in the Cybermation CAM system that perform the identical function. Accordingly, each element of claim 22 is present in the Cybermation CAM system, and therefore, claim 22 is literally infringed. If not literally infringed, claim 22 is infringed under the doctrine of equivalents because the differences between the claimed invention and the Cybermation System are insubstantial.

REPAIR AND RETROFIT

[10] 53. "Whoever sells a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer." 35 U.S.C. s. 271(c). Cybermation cannot be held liable for the infringing systems it sold before CTI's patents issued. However, Cybermation retrofitted or repaired some of these systems' software components after CTI's patents issued. These software components are not staple articles of commerce capable of substantial non-infringing uses. Moreover, Cybermation sold its software components knowing that they would be used with its infringing Cybermation CAM system. Thus, Cybermation's repair and retrofit of these systems renders it liable as a contributory infringer. *See* Aro Manufacturing Co. v. Convertible Top Replacement Co., 377 U.S. 476, 479-80, 84 S.Ct. 1526, 1528-29, 12 L.Ed.2d 457 (1964); *see also* Dawson Chemical Co. v. Rohm and Haas Co., 448 U.S. 176, 217-18, 100 S.Ct. 2601, 2623-24, 65 L.Ed.2d 696 (1980). Indeed, Cybermation has not argued that it is not liable for contributory infringement.

WILLFUL INFRINGEMENT

[11] [12] 54. In order to determine whether infringement is willful, the court examines the totality of the circumstances. Amstar Corp. v. Envirotech Corp., 823 F.2d 1538, 1547 (Fed.Cir.1987). "Where ... a potential infringer has actual notice of another's patent rights, he has an affirmative duty to exercise due care to determine whether or not he is infringing.... [which] includes, inter alia, the duty to seek and obtain competent legal advice from counsel before the initiation of any possible infringing activity." Underwater Devices Inc. v. Morrison-Knudsen Co., Inc. 717 F.2d 1380, 1389-90 (Fed.Cir.1983). This duty of care includes an obligation to obtain a further competent opinion of counsel after an adjudication of validity.Lightwave Technologies Inc. v. Corning Glass Works, 19 U.S.P.Q.2d 1838, 1848 (S.D.N.Y.1991).

55. Cybermation continued to sell its systems despite the existence of other litigations brought by CTI alleging infringement of its patents. Cybermation continued those sales after CTI's patents were continually upheld in these litigations. CTI knew about these prior litigations and indeed cooperated with Lockformer in its defense against CTI. (Tr. at 1077-84, 1134-35, 1138-39 [Belanger]).

56. Cybermation also obtained a written legal opinion in March, 1987 that CTI's patents were not valid or were not infringed by Cybermation's systems. (DX 137). But, Cybermation had every reason to question that opinion in view of the litigations that were initiated and which ultimately found CTI's patents to be valid and infringed by the other systems. Yet, Cybermation never obtained another written legal opinion. (Tr. at 1125 [Belanger]). While Joseph Belanger, the Chief Executive Officer of Cybermation, testified that he received oral opinions of counsel relating to infringement, this testimony was not credible. (Tr. at 1158-61 [Belanger]). In any event, these conclusory, undocumented oral opinions would not discharge Cybermation's duty of care. *See* Lightwave, 19 U.S.P.Q.2d at 1838.

CYBERMATION'S DEFENSE OF INVALIDITY

[13] 57. Cybermation asserts that CTI's patents are invalid based on the doctrines of anticipation and obviousness. However, CTI's patents are presumed to be valid. See 35 U.S.C. s. 282. This presumption can only be overcome if Cybermation can prove, by clear and convincing evidence, that the patent is invalid. Buildex Inc. v. Kason Industries, Inc., 849 F.2d 1461, 1463 (Fed.Cir.1988). Here, CTI's patents enjoy an even stronger presumption of validity because each of CTI's patents has been twice reexamined and recertified by the Patent Office as valid. *See* Transmatic v. Gulton Industries, Inc., 53 F.3d 1270, 1275 (Fed.Cir.1995). Moreover, each of these patents has been found valid during prior litigations.

ANTICIPATION

[14] 58. Based upon the successful reconfirmation of CTI's '635 and '810 patents during re-examination and an independent review of the prior art which Cybermation now relies upon (which was already before the patent examiner during re-examination), it is apparent that the prior art does not anticipate the claimed invention.

59. None of the prior art references or devices anticipate the claimed invention because no single prior art reference disclosed each and every element of the claimed inventions. The absence of a single element negates anticipation of that reference. Electro Medical Systems, S.A. v. Cooper Life Sciences, Inc., 34 F.3d 1048, 1052 (Fed.Cir.1994); Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 1571 (Fed.Cir.1986), *cert. denied,* 479 U.S. 1034, 107 S.Ct. 882, 93 L.Ed.2d 836 (1987). Thus, Cybermation has failed to meet its heavy burden to prove anticipation.

OBVIOUSNESS

[15] 60. In order to be patentable, a claimed invention must not be obvious to a person of ordinary skill in the art at the time the alleged invention was made. 35 U.S.C. s. 103.

61. To determine whether Cybermation can establish the obviousness of CTI's claimed invention, this Court compares the scope and content of the prior art relied upon by Cybermation against each asserted claim of the patent; identifies the difference or differences, if any, between each claim of the patent and the prior art; and determines the level of ordinary skill in the pertinent art at the time the invention of the patent in suit was made. Environmental Designs, Ltd. v. Union Oil Co. of California, 713 F.2d 693, 695 (Fed.Cir.1983), *cert. denied,* 464 U.S. 1043, 104 S.Ct. 709, 79 L.Ed.2d 173 (1984).

62. CTI's patented system revolutionized the HVAC industry. None of the prior art introduced by Cybermation renders the claimed invention obvious. Indeed, all of the prior art was considered by the

examiner during re-examination and found not to render the CTI patents obvious. Moreover, the evidence presented shows, and indeed the Patent Examiner found on re-examination of CTI's patents, that none of the prior art which Cybermation presented at trial suggested the desirability of, and the motivation for, making CTI's claimed combination. Therefore, CTI's patented systems cannot be considered obvious.

PROSECUTION HISTORY ESTOPPEL

[16] 63. Prosecution history estoppel bars a patentee from asserting that its patent covers matter excluded from the patent claims by the patentee during prosecution of the patent application where the amendment occurred for certain reasons such as to avoid the prior art. *See* Warner-Jenkinson Co., --- U.S. at ---- - ----, 117 S.Ct. at 1049-50; Bayer Aktiengesellschaft v. Duphar Intern. Research, 738 F.2d 1237, 1242 (Fed.Cir.1984). However, no amendments were made to the original claims during the re-examination proceedings. Therefore, this is not a case where an amendment was made in the course of the prosecution history and the amendment apparently excluded the allegedly infringing system.

64. Cybermation asserts that remarks made during re-examination alter the scope of CTI's patent claims. Based on these remarks, it attempts to limit the claims to the use of four basic pattern types, although the claims are devoid of such a limitation. However, if there is a disparity between the claims and the remarks of an attorney during the prosecution of a patent, it is the language of the claims that controls. *See* Intervet America, Inc. v. Kee-Vet Laboratories, Inc., 887 F.2d 1050, 1054 (Fed.Cir.1989).

[17] 65. Moreover, the doctrine of prosecution history estoppel can only apply to avoid infringement of CTI's patents under the doctrine of equivalents. It cannot be used to avoid Cybermation's literal infringement of CTI's patents. Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 870 (Fed.Cir.1985).

ON SALE BAR

[18] 66. Pursuant to 35 U.S.C. s. 102(b) an inventor loses his right to a patent if he has placed his invention "in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States." "A determination that an invention was on sale within the meaning of section 102(b) requires that 'the claimed invention asserted to be on sale was operable, the complete invention claimed was embodied in or obvious in view of the device offered for sale, and the sale or offer was primarily for profit rather than for experimental purposes.' " Micro Chemical, Inc. v. Great Plains Chemical Co., Inc., 103 F.3d 1538, 1544 (Fed.Cir.1997) (citing KeyStone Retaining Wall Systems, Inc. v. Westrock, Inc., 997 F.2d 1444, 1451 (Fed.Cir.1993)). A reduction to practice of the claimed invention is not a prerequisite for triggering the on-sale bar. UMC Electronics Co. v. United States, 816 F.2d 647, 656 (Fed.Cir.1987), *cert. denied,* 484 U.S. 1025, 108 S.Ct. 748, 98 L.Ed.2d 761 (1988). "Rather, '[a]ll of the circumstances surrounding the sale or offer to sell, including the stage of development of the invention and the nature of the invention, must be considered and weighed against the policies underlying Section 102(b).' " Micro Chemical, 103 F.3d at 1544 (citing UMC, 816 F.2d at 656).

67. Here, the evidence has shown that the invention was not operable one year before the actual patent filing date on July 28, 1982. Indeed, there was no invention at that time because development work had yet to be done. CTI represented to its customers, like Chilenski, at the time of the alleged "on sale" activity, that the invention had not been made, but rather that it needed to develop the invention. What CTI offered was its concept of an experimental system which was not then operable. Experimental sales are permitted, and act to delay the start of the one year time period to file a patent application. Even when the system was installed for Chilenski, it did not work and required further development. CTI's experimental systems were not

operable until November 1981, which was substantially less than one year before July 28, 1992.

68. Further, the fact that CTI's test system did not work as called for by the patent is evidence that such a system did not anticipate the patent claims. Even if the system installed in late July 1981 (after the critical date) was capable of producing one fitting, such a system did not anticipate the system claimed in CTI's patents which must be capable of producing substantially all variations of fittings. The system's production of one or a few fittings would not anticipate or render obvious the claimed invention, because the invention requires that the system be able to produce substantially all variations of ductwork fittings and the ability to produce one fitting or even a few fittings does not establish that the claimed invention was in existence or was obvious.

IMPLIED LICENSE

[19] 69. In order to imply that a license was given to Cybermation, Cybermation must prove that the allegedly licensed patent was necessary for Cybermation to make use of an explicitly granted right. Lever Brothers Co. v. Procter & Gamble Distributing Co., 668 F.Supp. 924, 939 (D.N.J.1987). "[T]he burden of proving the establishment of an implied license falls on the defendant." Bandag, Inc. v. Al Bolser's Tire Stores, Inc., 750 F.2d 903, 924 (Fed.Cir.1984); *see also* Carborundum v. Molten Metal Equipment Innovations Inc., 72 F.3d 872, 878 (Fed.Cir.1995).

70. Cybermation relies on a license agreement entered into by CTI and Cybermation in 1984 to assert that it had an implied license to make, use, and/or sell CTI's patented inventions. This license, however, only concerned HVAC *CAD* systems, and not the HVAC *CAM* systems which are the subject of the patents in suit. Neither the correspondence nor the conduct between the parties would imply a license to Cybermation under CTI's patent claims for Cybermation's HVAC CAM systems. Thus, Cybermation cannot imply a license. (Tr. at 156-157, 190-191 [Levine]; PX 27).

[20] 71. Cybermation also argues that the release it received from CTI in 1984 bars the present claims. This argument is totally without merit. The release settled certain false advertising claims. It was granted before the '635 and '810 patents were issued and only covered claims up to the date of the release. There is no credible evidence that the release was intended to covers claims for infringement of patents that had not even issued. (DX 121).

LACHES

[21] 72. For laches to apply, Cybermation has the burden to prove: 1) that CTI delayed filing suit for an unreasonable and inexcusable length of time from the time CTI knew, or reasonably should have known, of its claim against Cybermation; and 2) that the delay operated to the prejudice or injury of Cybermation. Hemstreet v. Computer Entry Systems Corp., 972 F.2d 1290, 1293 (Fed.Cir.1992).

73. In view of CTI's prosecution of a first litigation against Lockformer from a time just after the patents issued in 1985 until judgment was issued in 1991, the filing of this lawsuit against Cybermation in 1991 does not amount to an unreasonable delay. Cybermation knew that CTI intended to sue it as soon as the prior suit against Lockformer was resolved. (Tr. at 165 [Levine]). Belanger's testimony that he only became aware that CTI would sue Cybermation only months before the lawsuit was not credible. (Tr. at 1147 [Belanger]). Cybermation was well aware of the Lockformer litigation and contributed to Lockformer's defense effort in that case. (Tr. at 193-94 [Levine]; Tr. at 1083-85 [Belanger]). This evidence negates any finding of laches.

74. Further, Cybermation has suffered no injury because it has been selling its machines unencumbered by CTI since before and after the Court's March 19, 1993 Order. Indeed, Cybermation has benefitted from additional sales it made even after violating that Order.

ESTOPPEL

[22] 75. Cybermation's estoppel defense is equally without merit. Estoppel requires 1) misleading communication by the patentee 2) reliance upon such conduct by the infringer to 3) the infringer's detriment. *See* A.C. Aukerman Co. v. R.L. Chaides Construction Co., 960 F.2d 1020, 1041 (Fed.Cir.1992). Cybermation has not shown any misleading communication by CTI, or that it relied on such conduct. Moreover, as explained above, Cybermation has not shown that it was injuredby CTI's conduct. Therefore, Cybermation has not demonstrated that estoppel applies.

AMX INFRINGEMENT

[23] 76. AMX used a Cybermation system after CTI had received a patent for its system. A use of an infringing machine is itself an infringement. 35 U.S.C. s. 271(a). Thus, because the Cybermation system infringes, AMX is liable as an infringer.

DAMAGES

[24] 77. The court finds that through February 1996 Cybermation sold 1,132 HVAC CAM cutting systems after the patent issued. (PX 182, 185). Cybermation also retrofited 177 systems and serviced 95 additional systems. (Id.). The parties stipulated to a damage award of $10,000 per infringement based on the "making, using or selling of HVAC CAM Systems by Cybermation." (February 20, 1996 Stipulation). Thus, CTI is entitled to an award of $11,320,000 based on Cybermation's infringing sales.

78. This stipulation of damages for the "making, using or selling" of CTI's systems does not cover the infringements Cybermation committed through its repair and retrofit of 272 additional systems. CTI has failed to demonstrate the proper measure of damages for these additional infringements. Therefore, no award of damages for these infringements can be made at this time. In this case, further proceedings are required for a determination of damages for infringements after February, 1996. Therefore, in connection with those proceedings, CTI may submit a separate application for damages based on repairs and retrofits.

79. CTI is also entitled to an accounting for all machines sold by Cybermation since February 1996, because any such machines were not included in the sales figures presented at trial. CTI is also entitled to receive the stipulated damages amount for each of these infringements.

80. Pursuant to 35 U.S.C. s. 284, these actual damages can be increased up to three times the amount assessed. "The paramount determination in deciding to grant enhancement and the amount thereof is the egregiousness of the defendant's conduct based on all the facts and circumstances." Read Corp. v. Portec, Inc., 970 F.2d 816, 826 (Fed.Cir.1992) (citing Rite-Hite Corp. v. Kelley Co., 819 F.2d 1120, 1125 (Fed.Cir.1987)). The relevant factors are 1) whether there was deliberate infringement, 2) whether the infringer, when on notice of the patent, took reasonable steps to investigate the scope of the patent, 3) the infringer's behavior while a party to the litigation, 4) the defendant's financial condition, 5) the closeness of the case, and 6) the duration of the defendant's misconduct. Read, 970 F.2d at 827.

81. Consideration of these factors suggest that the actual damage award against Cybermation should be doubled. The willfulness of Cybermation's infringement argues for some enhancement. Cybermation's acts were deliberate and continued even after it had knowledge of the validity of CTI's patents. Moreover, the conduct of Cybermation's principals in this case has been egregious. The testimony of Belanger has not been credible on important matters such as his awareness that Cybermation would be sued by CTI, his assistance to Lockformer in the prior litigation, and his communication with lawyers about the validity of CTI's patents. As will be described below, both Belanger and Cybermation President Joseph D'Amelio also intentionally and willfully violated the preliminary injunction in this case. However, the defendant's strained financial condition is a mitigating factor than argues against a full award of treble damages. Therefore, double damages are appropriate in this case.

[25] 82. CTI is also entitled to an award of prejudgment interest, under 35 U.S.C. s. 284. Prejudgment interest is the rule in patent cases and should only be withheld in exceptional circumstances. *See* Sensonics, Inc. v. Aerosonic Corp., 81 F.3d 1566, (Fed.Cir.1996) (citing General Motors Corp. v. Devex Corp., 461 U.S. 648, 103 S.Ct. 2058, 76 L.Ed.2d 211 (1983)). Thus, prejudgment interest will be awarded at the Internal Revenue Service adjusted prime rate for tax overpayments, the award to be compounded daily. *See* Lam, Inc. v. Johns-Manville, 718 F.2d 1056, 1066 (Fed.Cir.1983); *see also* Trans-World Manufacturing Corp. v. Al Nyman & Sons, Inc. 633 F.Supp. 1047, 1057 (D.Del.1986).

CONTEMPT

[26] 83. Cybermation offers no excuse for its knowing, willful, blatant and intentional contempt of this Court's Order by failing to pay the required $15,000.00 into escrow for each HVAC CAM machine sold on the day of delivery. (Tr. at 1101 [Belanger]). The undisputed evidence indicates that Cybermation failed to deposit in excess of $500,000 that was required by the preliminary injunction. (February 26, 1996 Affidavit of Kenneth Cunha). Cybermation does not dispute this fact. Its only explanation is that it was financially incapable of escrowing $15,000.00 per machine. (Tr. at 1101 [Belanger]). Cybermation fails to explain, however, why it did not come to the Court earlier to present its predicament, why it did not raise its price for its machine, and why it collected the $15,000.00 escrow from its customers, but arbitrarily decided not to make the escrow deposits. Cybermation simply decided to use the money in ways other than as required by the Court's preliminary injunction.

84. The Court has inherent power to hold a party in civil contempt when 1) the order violated is clear and unambiguous; 2) the proof of non-compliance is clear and convincing; and 3) the party has not diligently attempted in a reasonable manner to comply. New York State National Organization for Women v. Terry, 886 F.2d 1339, 1351 (2d Cir.1989), *cert. denied,* 495 U.S. 947, 110 S.Ct. 2206, 109 L.Ed.2d 532 (1990). None of these requirements is seriously disputed in this case and each has been satisfied.

85. Belanger and D'Amelio received a copy of the Order within a few days of its issuance. They read and understood it. It was not ambiguous. They were present at weekly meetings during which the shortage in the escrow was noted, yet a conscious decision was made by Belanger and D'Amelio to use any available funds for other business purposes and to hide the contempt from the Court, CTI, CTI's counsel and Cybermation's own customers. (PX 155 at 9-20; PX 156 at 23-32). There is clear and convincing evidence that Cybermation, Belanger, and D'Amelio are each liable for civil contempt of the preliminary injunction.

86. Cybermation's motion to modify the preliminary injunction in order to avoid contempt sanctions is denied. Cybermation argues, among other things, that in view of the issues it raised on the merits on its

patent infringement claims, the preliminary injunction should be modified. But whatever defenses Cybermation had to the merits, it should not have violated the preliminary injunction. Moreover, there is no reasonable argument that the amount of the escrow should have been reduced from $15,000. In view of the enhancement in this case, $15,000 per machine was not even sufficient. In any event, Cybermation should have sought to modify the injunction rather than violating it. The preliminary injunction will now be moot with the entry of a permanent injunction. However, Cybermation, Belanger and D'Amelio have presented no justification for their willful violation of the preliminary injunction.

87. The appropriate sanctions for this contempt are as follows:

a. Cybermation, Belanger and D'Amelio are ordered to provide an accounting within 20 days of the date of judgment in this case, for all amounts that should have been placed in escrow.

b. Cybermation, Belanger and D'Amelio are ordered jointing and severally to pay into the escrow account, the difference between the proper escrow amount for the number of systems actually sold and the current balance in the escrow account, plus interest, within thirty days of the date of judgment in this case;

c. CTI is granted permission to use Cybermation's customer list (covered under the terms of the Protective Order in this litigation), in order to recover its damages from Cybermation's customers as a means of assuring reasonable compensation for the failure to comply with the Preliminary Injunction.

ATTORNEYS' FEES

[27] 88. Under 35 U.S.C. s. 285, the court, in exceptional cases, may award reasonable attorneys fees to the prevailing party. Cybermation's intentional infringement and blatant violation of this court's March 19, 1993 Injunction Order makes the award of attorneys' fees appropriate in this case.

89. Any Finding of Fact presented above which constitute a Conclusion of Law is hereby adopted as such.

CONCLUSION

Cybermation has intentionally and willfully infringed on the two CTI patents at issue in this case. AMX has also infringed on those patents. CTI is entitled to an injunction, damages and ancillary relief. Cybermation, Belanger and D'Amelio are liable for civil contempt of this Courts March 19, 1993 Preliminary Injunction. The cross-motion to modify that injunction is denied.

CTI should submit a proposed judgment with notice to all parties within ten days of the date of this Opinion. Any party may submit objections to the proposed judgment and counter-proposals five days thereafter. The plaintiff may submit a separate application for attorneys' fees pursuant to Federal Rule of Civil Procedure 54(d).

SO ORDERED.

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