United States District Court,
N.D. Illinois, Eastern Division.

WMS GAMING INC,
Plaintiff.
v.
INTERNATIONAL GAME TECHNOLOGY,
Defendant.

Sept. 20, 1996.

MEMORANDUM OPINION FINDINGS OF FACT AND CONCLUSIONS OF LAW

HOLDERMAN**, District Judge:**

This memorandum opinion contains the court's findings of fact and conclusions of law pursuant to Rule 52 of the Federal Rules of Civil Procedure regarding the issues tried in this case to the court without a jury. Certain undisputed facts were stipulated by the parties in the final pretrial order the court entered before the trial. The court has accepted and relied on these stipulated facts as true. Some of these stipulated are stated below to provide a full and clear understanding of the court's determinations of the facts in dispute and the legal issues presented by the parties through the testimony of the witnesses and the arguments of counsel.

FINDINGS OF FACT

I. *The Parties and their Pleadings*

Plaintiff, WMS Gaming Inc. ("WMS Gaming") is a corporation organization and existing under the laws of the State of Delaware and maintains its principal place of business within this judicial district at 3401 North California Avenue, Chicago, Illinois. WMS Gaming manufactures and sells devices for the gaming industry, including reel-type slot machines. Defendant, International Game Technology ("IGT"), is a corporation organized and existing under the laws of the State of Nevada, having a principal place of business at 5270 Neil Road, Reno, Nevada. IGT manufactures and sells devices for the gaming industry, including reel-type slot machines and conducts business within the State of Illinois.

In May, 1994, WMS Gaming filed this action under the declaratory judgment laws of the United States, 28 U.S.C. s.s. 2201 and 2202. In its complaint, WMS Gaming sought a declaration that the claims of United States Letters Patent No. 4,448,419 issued by the United States Patent and Trademark Office ("PTO") to Inge S. Telnaes on May 15, 1984 (referred to as "the Telnaes patent" or "the '419 patent"), which is owned by IGT through an assignment from Telnaes are invalid. The complaint of WMS Gaming also sought a declaration that certain reel-type slot machines made, used and sold by it are not within the scope of the claims of the Telnaes '419 patent and thus, that WMS Gaming has not infringed any claim of that patent. IGT counterclaimed that the claims of the Telnaes patent have been and are being infringed by the manufacture, use and sale by WMS Gaming of its reel-type slot machines. IGT in its counterclaim sought

damages from WMS Gaming for its alleged acts of past infringement and an injunction barring further infringement. IGT also alleged that WMS Gaming's infringement of the Telnaes patent has been willful. The court has jurisdiction over this case under 28 U.S.C. s.s. 1338 and 1400(b) and venue under 28 U.S.C. s. 1391(b) and (c).

II. ***Slot Machines Historically***

Slot machines are, essentially, mechanized games of chance, composed of a series of wheels, or reels, which spin about a common axis. Displayed on the periphery or face of the outer rim of each reel are indicia or symbols, such as cherries, bells, 7's, bars, plums and blanks, which coincide with the stopping positions of the reel. Typically, slot machines have three reels with equal numbers of stop positions, usually between 18 and 22 stop positions per reel. In playing a slot machine, the player inserts a coin or token into the device, then pulls an arm or pushes a spin button to begin play of the game. Once play is commenced, the reels of the slot machine rotate about the axis. The reels display the stop positions in rapid sequence to the player, as the reels spin. After a short time, the reels are stopped. The symbols or indicia displayed to the game player on what is known as the "pay line" after the reels stop spinning indicate the results of the game. The machine dispenses the appropriate amount of coins, tokens or credits to the player consistent with the symbols that stopped on the "pay line" in accordance with the "pay table" of the machine.

In early mechanical and electro-mechanical slot machines, the reels were stopped by a suitable stopping means on a random timing basis. The stop positions of the reels determined the game results. Later, in what are referred to as electronic slot machines, the game results and stop positions of the reels were determined by electronic circuits including microprocessors. The number of different combinations of reel stop positions of a slot machine historically has been a function of the number of reels with which the machine is equipped and the number of stop positions of each reel. For example, in a machine having three reels and twenty stop positions per reel, the number of different combinations of stop positions possible is 20 x 20 x 20, or 8,000 possible combinations. In all of the slot machines just described, it is equally likely that the reel will be stopped at any one of the stop positions of the reel. Using the previous example of a reel having twenty stop positions, the probability of one of the reels stopping at any particular position is 1 in 20. If the machine has three reels, the probability of each of the reels being stopped at a given position, and displaying the symbol associated with that stop position on the pay line of the machine, can be expressed as (1/20) x (1/20) x (1/20), or 1 in 8,000.

III. ***Telnaes*** U.S. Patent No. 4,448,419

The Telnaes or '419 patent was granted on May 15, 1984 on an application filed on February 24, 1982. The Telnaes patent permits the probability of selecting a particular reel's stop position of a computer controlled reel-type gaming machine to be altered, which increases or decreases the probabilities of winning by means of the computer's software, not the slot machine itself. This adjustment capability permits larger payouts to be made for a single game while maintaining the profit margin of the machine. The genius of the Telnaes patent is that the probabilities of selecting the machine's reel stop positions are altered by modifying software or data files in the computer's memory. The Telnaes patent was the first invention to permit the win odds in reel-type gaming machines to exceed the mathematical product of one divided by the number of stops on each reel to the power equal to the number of reels. For example, for three reels one divided by the stop number is cubed. It was a pioneering invention because it was the first slot machine gaming device to enable change of win probabilities with the gaming device's software instead of the gaming device's hardware.

In the embodiment disclosed in the Telnaes patent, each of the three reels has 22 stop positions. Around the periphery of each reel, corresponding with the stop positions, are the typical symbols or indicia used in slot machines, such as cherries, bells, 7's, plums, and blanks. The slot machine of the Telnaes patent also includes a computer, or microprocessor, which controls the operation of the game. The reel stop positions are determined by use of a random number generator. In the slot machine of the Telnaes patent, the range of numbers over which the random number generator operates is greater than the number of reel stop positions of each physical reel. In the preferred embodiment described in the Telnaes patent's specification, the random number generator operates over a range of 44 numbers, twice the number of the 22 reel stop positions on each reel. Some, but not all, of the reel stop positions for each reel correspond to more than one of the 44 numbers over which the random number generator operates. By varying the quantity of numbers corresponding to the various reel stop positions, the probability of selecting any given reel stop position can be either increased or decreased. The parties stipulated that claims 1 and 10 of the Telnaes patent are illustrative of the claims which define the subject matter sought to be protected by the '419 patent. Those claims state as follows:

"1. A game apparatus, comprising:

a reel mounted for rotation about an axis through a predetermined number of radial positions;

means to start rotation of said reel about said axis;

indicia fixed to said real to indicate the angular rotational position of said reel;

means for assigning a plurality of numbers representing said angular positions of said reel, said plurality of numbers exceeding said predetermined number of radial positions such that some rotational positions are represented by a plurality of numbers;

means for randomly selecting one of said plurality of assigned numbers; and

means for stopping said reel at the angular position represented by said selected number." ('419 patent, col. 5, ln. 37-53.)

"10. The method of controlling the win odds on a game apparatus wherein a plurality of indicia are displayed and the award is based on which indicia is selected, said method comprising the steps of:

assigning a plurality of numbers to most indicia and assigning at least one number to all indicia;

entering said numbers into a random number generator;

operating said random number generator to select one of said numbers;

displaying the indicia represented by said number; and

selecting the quantity of numbers to be assigned to each indicia responsive to the total quantity of numbers entered in to said random number generator to make the win odds on each indicia a desired value."

('419 patent, col. 6, ln. 41-57.)

IV. ***WMS Gaming Reel-Type Slot Machine***

The operation of WMS Gaming's reel-type slot machines is described in U.S. Patent No. 5,456,465 issued to Timothy Durham (referred to as "the Durham patent" or "the '465 patent") on October 10, 1995 (IGT Trial Ex. 3) and in the prosecution history of that patent. WMS Gaming's design uses what is known as the Durham design, named after Timothy Durham, the person at WMS Gaming responsible for the software design. This game design is marketed as the Model 400 game and is the only slot machine game design commercialized by WMS Gaming as of the date of the trial in this case. WMS Gaming's Model 400 is a game apparatus that includes:

a. a reel mounted for rotation about an axis through a predetermined number of radial positions;

b. a means to start rotation of said reel about said axis;

c. indicia fixed to said reel to indicate the angular rotational position of said reel;

d. a multiplicity of reels mounted for rotation; and

e. a means to start rotation of the reel that is a lever.

In the embodiment described by the Durham patent, the device has three reels, each with 14 rotational positions. The number of combinations of reel rotational positions is 14 cubed or 2,744.

In the WMS Gaming Model 400, two multipliers, designated as X and Y, are selected by using a random number generator. In the embodiment described in the Durham patent, in selecting the X multiplier, the random number generator operates over a range of 632 numbers, each of which is used to select one location on the read only memory ("ROM") of the machine. Each of the 632 memory locations in the ROM is associated with one of four possible X multiplier values as follows:

ROM Location	Value of X
1	10
2-31	2
32-181	1
182-632	0

The Y multiplier is selected in the same way, except that each ROM location is associated with one of five possible multiplier values as illustrated below:

ROM Location	Value of Y
1	100
2-23	10

24-259	5
260-396	1
397-632	0

X and Y are multiplied to determine Z, which is used to determine the payout to the player. These steps are mathematically equivalent to a single random number with a correspondence between the random number and Z, the payout determination number.

Each possible three reel symbol combination is stored in only one location in a ROM look-up table. "Z", in addition to determining the payout, is also used to set the range of a third random number generator. The third random number generator is set to operate over the range of numbers assigned to the memory locations containing the reel symbol combinations corresponding to Z. The third random number generator selects one of those numbers, and the computer causes the reels of the device to stop so that the selected reel symbol combination is displayed to the player on the pay line corresponding to the payout result. This step in combination with the steps described above are mathematically the same as selecting a single random number and providing correspondence between that random number and the reel stop positions of the reels of the gaming device. If Z is a number other than zero, the WMS Gaming Model 400 dispenses the appropriate number of coins to the player.

V. ***Factual Findings Regarding Infringement***

The asserted claims of the Telnaes '419 patent properly interpreted under the law, as discussed more fully later in this opinion, read on the WMS Gaming device as it exists in the marketplace as the Model 400 and as described in the Durham '465 patent. The number of combinations of the first, second, and third random numbers used by WMS Gaming Model 400 exceed the number of rotational positions on any one reel. The first, second, and third random numbers used by WMS Gaming machines are a plurality of numbers that uniquely determine the stopping positions of the reels which through the symbols affixed thereto display the game results. The rotational position of any one reel corresponds to more than one combination of the three random numbers. The number of combinations of the first, second, and third random numbers used by WMS, which is 2,744, exceeds the number of permutations of rotational positions of the reels in the WMS machine. At least one combination of rotational positions of the reels in the WMS Gaming machine is represented by more than one combination of the three random numbers.

More specifically, as to the fact issues regarding infringement, the court finds that WMS' Gaming's accused reel-type slot machine contains the following elements of claim 1 of the Telnaes '419 patent:

a. a reel mounted for rotation about an axis through a predetermined number of radial positions;

b. a means to start rotation of said reel about said axis;

c. indicia fixed to said reel to indicate the angular rotational position of said reel;

d. means for assigning a plurality of numbers representing said angular positions of said reel, the plurality of numbers being the possible outcomes of WMS' three random number sequence that is equivalent to the possible outcomes of a single number disclosed in the preferred embodiment of the Telnaes patent and said means for assigning being the algorithm utilizing the tables of multipliers and symbol combinations which is equivalent to the table disclosed in the preferred embodiment of the Telnaes patent;

e. said plurality of numbers exceeding said number of radial positions such that some rotational positions are represented by a plurality of numbers;

f. means for randomly selecting one of said plurality of assigned numbers, which is the random number generator, used three times to select the three random numbers of the WMS method; and

g. means for stopping said reel at the angular position represented by said selected number.

The elements described in lettered paragraphs (d), (e), and (f) above are also present in WMS' assignment of the outcomes of the third random number to a reel position.

WMS' accused reel-type slot machine contains the following elements of claim 2 of the Telnaes patent:

a. the elements of claim 1 described above; and

b. a multiplicity of reels mounted for rotation.

WMS's accused reel-type slot machine contains the following elements of claim 4 of the Telnaes patent:

a. the elements of claim 1 described above; and

b. a means for random selection that is a random number generator.

WMS' accused reel-type slot machine contains the following elements of claim 5 of the Telnaes patent:

a. the elements of claim 1 described above; and

b. a means to start rotation of the reel that is a lever.

WMS' accused reel-type slot machine contains the following elements of claim 6 of the Telnaes patent:

a. the elements of claim described 1 above; and

b. a plurality of reels that are stopped in a predetermined sequence.

WMS' accused reel-type slot machine contains the following elements of claim 8 of the Telnaes patent:

a. a plurality of reels mounted for rotation about an axis;

b. indicia fixed to said reel peripheries to identify each of a randomly selected predetermined number of rotational positions through which said reels rotate;

c. means to stop said reel at any selected one of said positions;

d. a random number generator for selecting one number from a plurality of numbers each representing one of said different angular positions, said plurality of numbers exceeding the number of rotational positions of

said reel such that the plurality of numbers represents some of the reel positions, the plurality of numbers being the possible outcome of WMS' three random number sequences which are equivalent to possible outcomes of a single number disclosed in the preferred embodiment of the Telnaes patent; and

e. means to set said reels into rotation and to energize said random number generator.

The elements described in paragraphs (d) above are also present in WMS' assignment of the outcome of the third random number to a reel position.

WMS' accused reel-type slot machine contains the following elements of claim 9 of the Telnaes patent:

a. The method of controlling the win odds on a game apparatus having at least one reel rotatable through a plurality of positions and stoppable at any one of said plurality of positions with the positions having different rewards, said method comprising the steps of;

i. assigning to each position at lease one of a plurality of numbers in a random number generator, the plurality of numbers being the possible outcomes of WMS' three random number sequence which is equivalent to a single number disclosed in the preferred embodiment of the Telnaes patent;

ii. entering said plurality of numbers in a random number generator;

iii. starting said random number generator and reel and stopping said reel at the number selected by said random number generator; and

iv. assigning a different quantity of numbers to each position to obtain the win odds desired.

The elements described in paragraph (i) above are also present in WMS' assignment of the outcomes of the third random number to a reel position.

WMS' accused reel-type slot machine contains the following elements of claim 10 of the Telnaes patent:

a. The method of controlling the win odds on a game apparatus wherein a plurality of indicia are displayed and the reward is based on which indicia is selected, said method comprising the steps of:

i. assigning a plurality of numbers to most indicia and assigning at least one number to all indicia, the plurality of numbers being the possible outcomes of WMS' three random number sequences which are equivalent to a single number disclosed in the preferred embodiment of the Telnaes patent;

ii. entering said numbers into a random number generator;

iii. operating said random number generator to select one of said numbers;

iv. displaying the indicia represented by said number; and

v. selecting the quantity of numbers to be assigned to each indicia responsive to the total quantity of numbers entered into said random number generator to make the win odds on each indicia a desired value.

Based upon these specific findings the court finds that WMS Gaming's reel-type gaming machine Model 400 infringe claims 1, 2, 4, 5, 6 and 8 of the Telnaes patent literally. In addition to those claims that are literally infringed, WMS Gaming's device infringes those same claims as well as claims 9 and 10 of the '419 patent under the doctrine of equivalents.

To further explain these findings, the court will analyze WMS Gaming's Model 400 device and method using the examples set out in the Durham '465 patent of which the Model 400 is an embodiment and compare the examples described in the '465 patent to the elements of the '419 patent in dispute. Figures 5, 6, 7 and 8 of the '465 patent illustrate the WMS Gaming's design of its Model 400's operation. Those figures of the '465 patent are reproduced here for reference.

TABULAR OR GRAPHIC MATERIAL SET AT THIS POINT IS NOT DISPLAYABLE PHOTO
Looking at the first example in Figure 7 in the Durham '465 patent, a payoff class of 1000, when the WMS device's first random number (which determines the multiplier "X") is a "1" and the second random number (which determines the multiplier "Y") is also a "1" the payoff class or "Z" value pursuant to Figures 5 and 6 (10 multiplied by 100) will be 1,000. In this example, the only place reel number 1 can stop is position five, per Figures 2, 6 and 7 of the '465 patent. This designation of a rotational position of a reel on the WMS device takes place without a third random number being selected as indicated in steps 58, 62 and 64 in Figure 4 of the '465 patent. Thus, claim 1 of the Telnaes '419 patent reads literally on the first example, payoff class 1,000, of the Durham patent as precisely shown by comparing the Telnaes' claim 1 elements to the accused WMS device.

Telnaes' Claim 1 Disputed Elements	Accused WMS Device
means for assigning a plurality of numbers representing said angular positions of said reel, said plurality of numbers exceeding said predetermined number of radial positions such that some rotational positions are represented by a plurality of numbers;	The tables in Figs. 5-8 of '465 patent show that the computer assigns a "plurality of numbers" that represent angular (or stop) positions of reel 1; the quantity of the combination of random numbers 1 and 2 exceeds the 14 reel stop positions of reel 1, such that some rotational (reel stop) positions are represented by a plurality of numbers
means for randomly selecting one of said plurality of assigned numbers; and	random numbers 1 and 2 yield a single number (1000) that dictates reel stop position 5 for reel 1
means for stopping said reel at the position represented by said selected number	Fig. 3, item 40 is the means for stopping reel 1 at stop position 5 in response to the computer's recognition that 1000 was selected

Claim 1 of the '419 patent reads on the second example in Figure 7, the Durham patent, which is payoff class 200, in the same way as payoff class 1000.

When considering payoff class 100, the third example in Figure 7 of the Durham '465 patent, the WMS device's literal infringement of claim 1 of the '419 patent is likewise proven as follows:

Telnaes' Claim 1	Accused WMS

Disputed Elements	Device
means for assigning a plurality of numbers representing said angular positions of said reel, said plurality of numbers exceeding said predetermined number of radial positions such that some rotational positions are represented by a plurality of numbers;	The tables in Figs. 5-8 show that the computer assigns a "plurality of numbers" that represent angular (or stop) positions of reel 1; the quantity of combination of random nos. 1, 2, and 3 exceed the 14 reel stop positions of reel 1, such that some rotational (reel stop) positions are represented by a plurality of numbers (e.g., Fig. 8 shows reel 1 stop position 1 is represented by four numbers (designated A, B, C, and D) and reel 1 stop position 2 is represented by four numbers (designated E, F, G, and H).
means for randomly selecting one of said plurality of assigned numbers; and	Random nos. 1, 2 and 3 yield a triplet representing the payoff class (100) and the reel 1 stop position. (Position nos. 1 or 2)
means for stopping said reel at the angular position represented by said selected number.	Fig. 3, item 40 is the means for stopping reel 1 at stop position 1 or 2 in response to the computer's recognition of whether A, B, C, D, E, F, G, or H was selected by random no. 3 in light of the value selected for random numbers 1 and 2.

Telnaes claims 2, 4, 5 and 6, which are dependent claims stemming from claim 1 of the '419 patent, are likewise literally infringed by WMS Gaming's device.

Telnaes claim 8 is similar to claim 1 except that claim 8 calls for the random number generator to select "one number from a plurality of numbers each representing one of said different angular rotational positions." ('419 patent, col. 6, ln. 19-21.) WMS Gaming argues that its device selects three numbers at the "one number" claimed in claim 8 of the '419 patent. First, there is no limitation imposed in the '419 patent that requires the "one number" be a single digit as opposed to an equivalent triplet. Second, focusing on payoff class 100 and WMS selection of the third random number, WMS Gaming's device selects one of eight numbers that each represent one of the angular rotational positions of the first reel. WMS Gaming's device literally infringes claim 8 of the '419 patent.

WMS Gaming's argument that its device avoids claim 1 because it does not satisfy the "means of assigning ..." element nor does it satisfy the "means of stopping" clause is unavailing because the court, as fact finder, as described above, finds that those elements exist in the WMS device. Additionally, WMS Gaming's argument that seeks to have the court as fact finder separately judge the individual steps used by the WMS device is inconsistent with a proper analysis of properly interpreted claims. Nothing in the '419 patent limits the claim language "plurality of numbers" to a plurality of single numbers or digits. A plurality of triplets is as much a "plurality of numbers" as is a plurality of single digits.

The court has also considered claims 1, 2, 4, 5, 6 and 8, the doctrine of equivalents, and finds that those claims of the '419 patent are also infringed by the WMS device under that doctrine. WMS Gaming's device's use of multiple random numbers instead of one, in a multi-step process, instead of the more direct, straightforward selection of stopping positions claimed in the '419 patent, is an insubstantial difference to a person skilled in the art.

As to claims 9 and 10 of the '419 patent, which define a method of controlling win odds on a game apparatus, WMS has argued that its device controls the win odds before it selects reel stop positions and uses three numbers not one. Neither of these arguments are factually persuasive when evaluated under the doctrine of equivalents. WMS Gaming uses substantially the same concept (computer control of the slot machine game in computer memory) in substantially the same way (a random number generator within a microprocessor) to achieve substantially the same result (increase payouts by means of decreasing win probabilities independent of the number of stops on the physical reels contained in the machine) as disclosed in the asserted claims of the Telnaes '419 patent.

VI. ***WMS Gaming's Wilfulness***

As to the issue of WMS Gaming's wilfulness in infringing the Telnaes '419 patent, in 1993, WMS Gaming began to design and development of a reel-type gaming machine. Prior to that time, WMS gaming had not manufactured or sold any slot machines. During the development of the WMS Gaming device, WMS Gaming became aware of the existence of the '419 patent. WMS engineers first developed a design that did not use Telnaes' invention, but made up for low top payouts with a higher frequency of payouts. WMS Gaming's engineers concluded that with such a low top award, the hit rate was much too low to keep players interested and, therefore, could not compete with Telnaes' virtual reel machines. WMS Gaming concluded that given a choice, any gaming establishment would choose virtual reel slot machines for the flexibility in game design and the ability to manipulate odds.

WMS Gaming considered acquiring rights under the Telnaes patent either by obtaining a license from IGT or from Summit Systems, Inc., which WMS believed may have had a limited right to grant sublicenses under the Telnaes patent. WMS concluded that it would not obtain sufficient rights with a sublicense from Summit so it considered acquiring Summit. WMS also made a request to IGT about a license. Having failed to design a competitive reel-type gaming machine without the virtual reel of the Telnaes patent or to obtain a license under the Telnaes patent, WMS chose to go forward with its infringing design in wilful disregard of IGT's rights under the Telnaes '419 patent. Even after filing this lawsuit, WMS Gaming's parent company, WMS Industries, Inc., made a failed attempt to acquire Bally Gaming, a licensee under the Telnaes patent whose rights are transferable. All of these factors demonstrate the wilfulness with which WMS Gaming infringed the '419 patent.

VII. ***IGT's Damages***

Regarding the issue of IGT's damages, as of June, 1995, when fact discovery closed in this case, WMS Gaming had sold approximately 300 of the accused machines. Since then, WMS Gaming has made, used, offered for sale or sold additional accused machines, and continues to do so. The reel-type gaming machines sold by IGT and IGT's licensees are covered by the claims of the '419 patent. Based on IGT's share of the U.S. market of reel-type gaming machines, IGT would have made a percentage of WMS's sales and is entitled to its lost profits on each such lost sale. As a result of WMS's infringing sales, IGT has been damaged. Based on the share of the market held by IGT's licensees, IGT was damaged at least to the extent of its loss of a reasonable royalty of not less than $50 per machine sold by WMS Gaming.

Conclusions of Law

Determining infringement requires a two-step analysis. First, the judge must interpret the patent-in-suit's claims to ascertain their meaning and scope. Markman v. Westview Instruments, Inc., 52 F.3d 967, 976

(Fed.Cir.1995) (en banc) *aff'd* 116 S.Ct. 1384 (1996). Second, the fact finder, which in a bench trial is also the judge, must determine whether the claims, as properly construed, "read on" the accused product, either literally or as an equivalent, Southwall Technologies, Inc. v. Cardinal IG Company, 54 F.3d 1570, 1575 (Fed.Cir.1995).

I. ***Claims Interpretation***

In interpreting the claims and determining the scope of the claims, the claims must be construed as they would by a person of ordinary skill in the art. Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 867 (Fed.Cir.1985). The claims must also be construed the same way for the purposes of determining both validity and infringement. W.L. Gore and Associates v. Garlock, Inc., 842 F.2d 1275, 1279 (Fed.Cir.1988). Where the meaning of a claim term is in dispute, the court must consider all relevant evidence, including the claim language in dispute, the specification, the prosecution history, and other claims in the patent. Howes v. Medical Components, Inc., 814 F.2d 638, 643 (Fed.Cir.1987); Moeller v. Ionetics, Inc., 794 F.2d 653, 656 (Fed.Cir.1986); SRI International v. Matsushita Electric Corp., 775 F.2d 1107, 1118 (Fed.Cir.1985) (en banc).

The key dispute between the parties centers around the meaning of the last three elements of claim 1 of the '419 patent which contain the following claim language:

means for assigning a plurality of numbers representing said angular positions of said reel, said plurality of numbers exceeding said predetermined number of radial positions such that some rotational positions are represented by a plurality of numbers; means for randomly selecting one of said plurality of assigned numbers; and means for stopping said reel at the angular position represented by said selected number.

Under settled law, the scope of these "means-plus-function" elements are governed by 35 U.S.C. s. 112:

An element in a claim for a combination may be expressed as a means or step for preforming 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.

A claim element in means-plus-function format is restrictive. As the Federal Circuit stated in Valmont Industries, Inc. v. Reinke Manufacturing Company, Inc., 983 F.2d 1039, 1042 (Fed.Cir.1993):

Section 112 thus permits means-plus-function language in a combination claim, but with a "string attached." The "attached string" limits the applicant to the structure, material, or acts in the specification and their equivalent.

The Federal Circuit in *Valmont Industries, supra* at 1043 went on to state:

For a means-plus-function limitation to read on an accused device, the accused device means identical to or the equivalent of the structures, material or acts described in the patent specification.

This court in construing this "means-plus-function" claim language should consider not only the claim language, but the patent's prosecution history and specification as well as pertinent expert testimony to determine the structure, material or acts disclosed in the '419 patent's specification or their equivalent to

interpret the claim language in dispute. *See* In re Donaldson Company, Inc., 16 F.3d 1189, 1193 (Fed.Cir.1994). Of course, this court's determination is subject to review *de novo*. *See* Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576 (Fed.Cir.1996). The court notes that none of the disputed claim language resulted from a narrowing of the claim's scope during prosecution. Therefore, prosecution history estoppel does not apply because that doctrine applies only where a patentee narrows a claim's scope to gain allowance, *see e.g.,* Mark I. Marketing v. R.R. Donnelly & Sons Co., 66 F.3d 285 (Fed.Cir.1995) which is not the case here.

Had the issue of infringement been tried to a jury in this case, the court, before presenting that issue to the jury, would have considered the legal question of the proper interpretation of the disputed claims at a *Markman* hearing at which experts skilled in the art may have offered testimony helpful to the court's determination. In this bench trial, a part of the trial was devoted to that subject and based upon everything before the court, the court concludes that the claim language "means of assigning" in claim 1 is an algorithm executed by a computer to perform the function of assigning the plurality of numbers to reel stop positions. In the specification of the Telnaes patent, the algorithm uses a table with a correspondence between the set of random numbers which can be selected and the reel stops on the physical reel. It is an insubstantial change to one of ordinary skill in the art to use a different kind of table or tables such as the tables offered in evidence reflecting the Telnaes preferred embodiment and Telnaes alternative embodiments (IGT Trial Exhibits 27 and 28) depending on the constraints of the application.

The court concludes that the claim language is a "plurality of numbers" as used in the claims is embodied in the specification in the form of random numbers capable of being generated by a computer using a random number generator. There is nothing in the claim that limits the generated numbers to be a single number. Even if there were, one skilled in the art would consider it an insubstantial change to substitute combinations of numbers, as demonstrated in IGT Trial Exhibits 27 and 28, where necessary to conform to the algorithm selected or memory constraints. Therefore, at the very least, combinations of numbers or other sets of randomly selected elements would be equivalent to the plurality of numbers selected by the microprocessor.

In the context of the claims and specifications of the '419 patent, the court concludes in interpreting the claim language that the phrase "angular positions," "radial positions", and "rotational positions" each refer to physical reel stop positions.

The court concludes that the claim language "means for randomly selecting" in claim 1 refers to a computer using a random number generator to perform the function of randomly selecting from the plurality of numbers. The '419 patent's specification discloses a random number generator that generates a random number in the range of numbers assigned to reel. Where the plurality of numbers consists of a combination of numbers, one skilled in the art would know how to use the random number generator once to select from among the set of combinations, since there are a predetermined finite number of them, and would know how to use the random number generator several times, generating each of the numbers in the combination. This would be an insubstantial change for one skilled in the art and therefore an equivalent under 35 U.S.C. s. 112.

The court concludes that the phrase "means for stopping" in the claim language of claim 1 is the mechanism that performs the function of stopping the rotation of the reel at a specified point indicated by the computer. The '419 patent specification discloses a brake. An equivalent means would be any means which includes the use of stopping motion controlled by the computer. The parties have stipulated that the WMS machine

has a means for stopping the reel as directed by the computer.

The court concludes that one skilled in the art of designing reel-type gaming machines would have interpreted the claim language "plurality of numbers" in the '419 patent's claims to include any set of numbers generated for the purpose of determining the outcome of the game, and would have interpreted "means for assigning" to include any table, formula, or algorithm for determining a correspondence between the numbers and rotational positions of the reel. The court also concludes that there is no requirement in the '419 specification or prosecution history that the payout be determined after the rotational positions have been determined or that the only assignment means is a simple table.

Terms in a claim are given their ordinary meaning to one of ordinary skill in the art unless it appears from the patent and other evidence that the terms were used differently by the inventor. Intellicall, Inc. v. Phonometrics, Inc., 952 F.2d 1384, 1387 (Fed.Cir.1992). In using the specification to interpret the claim, it is improper to read into the claim a feature found in the specification, but not in the claim. Intervet America, Inc. v. Kee-Vet Laboratories, Inc., 887 F.2d 1050, 1053 (Fed.Cir.1989). Statements by the inventor about his invention must be considered where relevant to interpretation of the claims in suit. Caterpillar Tractor Co. v. Berco, S.p.A., 714 F.2d 1110, 1116 (Fed.Cir.1983). However, erroneous statements by a patent applicant or the applicant's attorney about what the claims cover cannot control over the clear language of the claims themselves. Intervet America, 887 F.2d at 1054. See also Water Technologies Corp. v. Calco, Ltd., 850 F.2d 660, 667 (Fed.Cir.1998), *cert. denied,* 488 U.S. 968 (1988).

II. ***Reading Claims Onto the Accused Device***

After a court determines as a matter of law the scope of a claim through proper interpretation, as stated earlier, the second step in the infringement analysis is for the fact finder to determine whether the accused device comes within or reads on the claim. Charles Greiner & Co., Inc. v. Mari-Med Manufacturing Co., 962 F.2d 1031, 1034 (Fed.Cir.1992). The accused device infringes where it embodies exactly each claim limitation or its equivalent. Where a claim limitation is expressed in "means-plus-function" language, the court must compare the accused structure with the structure disclosed in the specification. Infringement is established where the functions are the same, and the structure performing such function is equivalent to that disclosed in the patent. *Laitram v. Rexnord,* 939 F.2d at 1535; Pennwalt Corp. v. Duran-Wayland, Inc., 833 F.2d 931, 934 (Fed.Cir.1987) (en banc), *cert. denied,* 485 U.S. 961 (1988).

Although the court as the fact finder has found, literal infringement, if the '419 patent were not found to be literally infringed by the WMS Gaming device, the court has found that the WMS device and method infringe the '419 patent under the doctrine of equivalents because any differences between what is claimed in the '419 patent and WMS Gaming's accused device and method are not substantial. Hilton Davis Chemical Co. v. Warner-Jenkinson Co., Inc., 62 F.3d 1512, 1517 (Fed.Cir.1995), *cert. granted,* 116 S.Ct. 1014 (1996). "It is fundamental patent law that infringement is not avoided by substituting for an element in a claimed device another element which is its full equivalent, *i.e.,* does substantially the same thing in substantially the same way to get substantially the same result." Corning Glass Works v. Sumitomo Electric U.S.A., Inc., 868 F.2d 1251, 1260 (Fed.Cir.1989), quoting, Tektronix, Inc. v. United States, 445 F.2d 323, 329 (Ct.Cl.1971). The infringement analysis must consider all the steps, and the fact, as here, that the accused WMS Gaming device, adds steps or complexity does not avoid infringement because infringement exists regardless of the accused product's efficiency or lack thereof. Amstar Corp. v. Environtech Corp., 730 F.2d 1476, 1482 (Fed.Cir.1984), *cert. denied,* 469 U.S. 924 (1984); *see* Atlas Powder Co. v. E.I. du Pont de Nemours & Co., 750 F.2d 1569, 1580 (Fed.Cir.1984) (infringement found even where these features have

been patently improved). FN1

FN1. The court notes in passing and separate from any argument presented by counsel for the parties that it is by the use of mathematics that WMS has attempted to differentiate its device from the '419 patent' s claims. Mathematics being a "law of nature," In re Allappat, 33 F.3d 1526, 1544 (Fed.Cir.1944) is considered "unpatentable," Diamond v. Diehr, 450 U.S. 175 (1981). The court questions whether a differentiation on that basis could ever be recognized in the patent law.

III. ***The Telnaes Patent's Validity and WMS's Gaming's Allegation of Obviousness***

Regarding the issue of validity of the '419 patent, the granting of a patent by the PTO carries with it the statutory presumption that the patent is valid. 35 U.S.C. s. 282 ("A patent shall be presumed valid.") Thus, from the issuance of the patent, it is presumed that its subject matter is new, useful and constitutes an advance which was not obvious to one of ordinary skill in the art. Hybritech, Inv. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1375 (Fed.Cir.1986), *cert. denied,* 480 U.S. 947 (1987). This presumption of validity puts the burden of proving invalidity on WMS by clear and convincing evidence. 35 U.S. s. 282. "[T]he presumption remains intact and on the challenger throughout the litigation, and the clear and convincing standard does not change." Hybritech, 802 F.2d at 1375; Atlas Powder, 750 F.2d at 1573. Clear and convincing evidence is evidence that produces an abiding conviction that the truth of a factual contention is highly probably. Colorado v. New Mexico, 467 U.S. 310, 316 (1984); Buildex, Inc. v. Kason Indus., Inc., 849 F.2d 1461, 1463 (Fed.Cir.1988). Thus, WMS' burden of establishing invalidity is a heavy one. Northern Telecom v. Datapoint Corp., 908 F.2d 931, 935 (Fed.Cir.1990).

In determining the legal question, *see* Panduit Corp v. Dennison Mfg. Co., 810 F.2d 1561, 1568 (Fed.Cir.1987) as to whether or not a patent claim is invalid because it was obvious to a person skilled in the art, it is improper to select isolated elements from prior art references with the benefit of hindsight and use the disclosure of the patented invention as a template to recreate the patented invention. Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143 (Fed.Cir.1985). The '419 patent cannot be used as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit. Monday morning quarterbacking is totally improper when resolving the question of nonobviousness. Orthopedic Equipment Co. v. United States, 702 F.2d 1005, 1012 (Fed.Cir.1983).

The obviousness of a patented invention is determined by applying the law of 35 U.S.C. s. 103 to determinations as to the scope and content of the prior art, the differences between the claimed invention and the prior art, as well as the level of ordinary skill in the art. Graham v. John Deere Co., 383 U.S. 1, 17 (1966); Glaverbel Societe Anonyme v. Northlake Marketting, 45 F.3d 1550, 1555 (Fed.Cir.1995). The parties stipulated that a person of ordinary skill in the slot machine design art at the time Mr. Telnaes conceived of the invention disclosed in the Telnaes patent would have completed at least several college-level courses in computer science or electrical engineering, would been employed for several years in the field of engineering, developing and designing gaming devices, and would have some knowledge of probability theory, random numbers, and computer programming.

Looking as a person of ordinary skill in the art at the scope and content of the prior art in this case, one example of an early electronic slot machine is described in U.S. Patent No. 4,095,795, issued on June 20, 1978 to James C. Saxton and others (the "Saxton patent"). Unlike earlier mechanical and electro-mechanical machines, where the game results were determined from the stop positions of the reels, the game results in

the slot machine described in the Saxton patent are determined by the operation of a microprocessor. The microprocessor of the Saxton slot machine is provided with a computer program referred to as a random number generator. This program is designed to operate over a specified range of numbers and to randomly select one of the range of numbers for each reel of the machine to determine the results of the game. Saxton does not disclose or teach a mapping or table look-up procedure. Rather, Saxton simply generates a number to set the stopping position of the reels. Saxton does not teach how to decrease the probabilities of winning combinations by any means other than adding more reels or replacing the reels with reels that have more stop positions. Under Saxton, the probability that any stopping position would be selected is the same as that of older mechanical devices.

Australian Patent No. 280,649 issued to Cohen et al published in 1967, discloses a slot machine simulation device that is prior in time to the Saxton and Telnaes patent. Cohen describes an electro-mechanical device in which a player inserts a coin and pulls a handle to begin play of the game. The game results are displayed using a series of displays viewed by the player through windows. Lights selectively illuminate one of six displays in each window. The Cohen patent discloses that symbol selection is controlled by uniselectors numbered as element 43 in Fig. 4 of the Cohen patent. When the handle is pulled, timers are set into operation, one for each of the uniselectors. During the timing intervals, each of the uniselectors rotates among 25 electrical contacts. At the end of the time interval, the electrical contacts selected by the uniselectors are energized, causing the lights wired to those contacts to be illuminated. The symbols associated with those lights are displayed showing the results of the game. Cohen replaced the spinning physical reels with "uniselectors" for determining outcome and "wafers" or transparent elements for displaying the outcome. Each uniselector has 25 contact points corresponding to 25 outcomes and one uniselector is assigned to each display. Consequently, the lowest probability for displaying a given symbol is 1 in 25-just like the mechanical systems. Cohen enables some symbols to have a probability of 2 in 25, 3 in 25, etc. by having multiple contacts on the uniselector correspond to the same symbol-just like the older mechanical reels and the later Saxton patent. The only way Cohen teaches to lower the probability of winning was to add another window and corresponding uniselector-just as the only way of reducing the probability in the conventional slot machine before the Telnaes patent was to add reels or increase the number of stopping positions per reel.

U.S. Patent No. 3,918,716 ("the Nonaka patent") is also prior in time to the Saxton and Telnaes patents. The Nonaka patent discloses a game of chance that dispenses chips when an appropriate combination of symbols are displayed following play of the game. The Nonaka device uses illuminated display panels instead of spinning reels to display results of the game. The Nonaka patent operates on the same principle as Cohen, but uses a different technology. The spinning physical reels of a typical slot machine are replaced with "electronic driver circuits" for determining outcome and "wafers" for displaying the outcome. Each driver circuit has 16 possible outcomes. One driver is assigned to each of the three "display" sections". The lowest probability for any given symbol is 1 in 16-just like the mechanical systems. Nonaka enables some symbols to have a higher probability, e.g., of 2 in 16, 3 in 16, etc., by duplicating their occurrence in the display means-just like Saxton, Cohen, and the older mechanical reels. The Nonaka patent is in the same Patent Office class and sub-class as the Saxton and Telnaes patents. The Cohen and Nonaka patents, like Saxton, do not teach how to decrease win probabilities by any method other than replacing physical equipment in the machine.

Looking at the prior art, Saxon, Nonaka and Cohen do not suggest that they can or should be combined. Both Saxton and Nonaka are in the class and sub-class searched by the PTO examiner when he reviewed Telnaes' application. The examiner did not identify Nonaka as a material reference or any basis for

combining Saxton with any other reference. Both Cohen and Nonaka teach away from using mechanical reels, to eliminate tampering and noise. Neither Cohen or Nonaka suggest combining the uniselectors or drive circuits with the Saxton's use of a microprocessor to control the reels to obtain Telnaes' virtual reel. All of these references limit the odds of winning based on the physical limitations of the components used. Even if combined, these references neither contain the elements of the Telnaes virtual reel nor indicate how to accomplish the Telnaes invention.

Mr. Telnaes conceived of removing the determination of outcome from the constraints of the physical devices used in the slot machine and playing the game on a virtual reel entirely within computer memory. Win probabilities then could be easily raised or lowered to any desired value, with winning payout amounts adjusted accordingly. Under the Telnaes patent, the game is played entirely within the computer memory. The random number generator (where each value of the random number has an equal probability) is combined with an assignment means resulting in outcomes with probabilities as varied as desired. The physical reels are used solely for displaying results. Unlike the prior art (which could only change win odds by altering the physical machine components, and even then only to increase the probability of winning), the Telnaes invention utilizes a computer memory and addressed the long-standing need among gaming establishments to allow the probability of winning to be decreased, thereby making larger jackpots more feasible.

Prior to Mr. Telnaes' virtual reel invention, slot machines were a small part of casino revenues. They were an opportunity to wager small stakes, but did not offer the entertainment available from items with higher top payouts. The only way to increase the top payouts on slot machines was to resort to a larger number of reels or larger reels with more stop positions; however, these proved unpopular with most customers. What was needed was a slot machine with high top payouts that still looked like the slot machines with which players were familiar. Telnaes' introduction of the virtual reel concept in slot machines in the mid 1980's filled that need. Since then, the vast majority of slot machines sold throughout the world employ a virtual reel method to obtain a high top payout. Even the Saxton Group, a partnership (including the inventor of the Saxton patent) at one time acknowledged the Telnaes patent's validity by purchasing rights in the Telnaes patent.

Since the mid-1980's, after the introduction of Telnaes' virtual reel, slot machines have become a major part (60% or better) of casino revenues. The increased importance of slot machines is attributable to the higher payouts and pay table permitted by the virtual reel method. Lowering the win probabilities with the virtual reel is what enables the machines to have larger payouts on their pay tables. IGT's rise to become the industry leader in reel-type gaming machines, selling over $100 million annually, has occurred since its introduction of virtual reel machines covered by the Telnaes patent.

Conventional, non-virtual reel slot machines now make up only a small percentage of the slot machine market. In addition to IGT, virtual reel slot machines covered by the Telnaes patent have or are made by Universal, Summit Technology, Sigma Game and Bally Gaming in the United States. Each of these companies purchased rights under the Telnaes patent by means of licenses or at one time were owners. Bally alone has paid IGT over $2 million in royalties. Bally also acceded to a limit on the maximum payout for its machines. These licenses under the Telnaes patent are strong indicia that the patent is not obvious. The Telnaes patent is a highly successful, pioneer patent that enabled reel-type gaming machines to increase payouts by orders of magnitude and become competitive with other large payout opportunities such as lotteries. Because of these slot machines utilizing the Telnaes invention have come to dominate other slot machine designs.

It was not necessary for the Telnaes patent to include a computer code or a flow chart to describe the Telnaes invention because, as WMS' expert, Mr. Vacroux stated, "you can put all of the information which is in a flow chart in words." Engineers and programmers at Summit implemented the Telnaes virtual reel concept into an existing machine based on the disclosures of the Telnaes patent. The Telnaes invention described in the '419 patent was pioneering and not obvious to a person skilled in the art of designing slot machines.

Obviousness can be established by combining features of references only if there is teaching in the prior art references, *see* In Re Donaldson, 16 F.3d 1189, 1193-94 (Fed.Cir.1994), supporting such a combination. In re Fritch, 972 F.2d 1260, 1266 (Fed.Cir.1992); Carella v. Starlight Archery and Pro Line Co., 804 F.2d 135, 140 (Fed.Cir.1986). To be combinable, references must suggest the advantages achieved by the invention, and must lead the person of ordinary skill in the art to expect to obtain those advantages by combining the references. In re Sernaker, 702 F.2d 989, 994 (Fed.Cir.1983). Because modifying machine hardware is the only means shown or suggested for decreasing win probabilities in Saxon, Cohen and Nonaka, it is improper to even suggest that they can be combined to render '419 patent invalid. In re Hummer, 241 F.2d 742, 745 (CCPA 1957) (A reference may be used only for what it clearly discloses or suggests an it is improper to modify a secondary reference before it is employed to modify a primary reference.) It is improper to base a determination of obviousness on "engineering principles," "common experience", or on general knowledge in the art where others with the same general knowledge and experience did not find the invention obvious. Panduit Corp. v. Dennison Manufacturing Co., 810 F.2d 1561, 1574 (Fed.Cir.), *cert. denied,* 481 U.S. 1052 (1987).

The prior art should also be considered in light of evidence and indicia of nonobviousness, referred to as "secondary considerations". *See* Standard Corp. v. Tennessee Valley Authority, 808 F.2d 1490, 1499-1500 (Fed.Cir.1986), *cert. dismissed,* 483 U.S. 1052 (1987). These objective indicia are composed of real world facts and events as they actually happened which bear on the legal issue of whether a patented invention was obvious. Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics, Inc., 976 F.2d 1559, 1575 (Fed.Cir.1992); Panduit Corp., 810 F.2d at 1569; Rosemount, Inc. v. Beckman Instruments, Inc., 727 F.2d 1540, 1546 (Fed.Cir.1984). It is legal error to refuse to consider such evidence, Simmons Fastener Corp. v. Illinois Tool Works, Inc., 739 F.2d 1573, 1574-75 (Fed.Cir.1984), *cert. denied,* 471 U.S. 1065 (1985), for such consideration enables the court to "avert the trap of hindsight". Custom Accessories, Inc. v. Jeffrey-Allan Industries, 807 F.2d 955, 960 (Fed.Cir.1986).

The objective indicia include satisfaction of a long felt need, failure of others in the industry to satisfy the need, efforts by others in other directions than that taken by the patentee, commercial success of the patented invention, and copying of the invention, and must always be considered in a nonobviousness determination. Indeed, such evidence may often be the most cogent evidence in the record. Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1538 (Fed.Cir.1983). "It may often establish that an invention appearing to have been obvious in light of the prior art was not." *Id.* Such objective evidence of nonobviousness must be considered where present, and is not merely icing on the cake in a nonobviousness analysis. Hybritech, 802 F.2d at 1379. The existing of an enduring unmet need is strong evidence that the invention is novel, not obvious, and not anticipated. In re Mahurkar Patent Litigation, 831 F.Supp. 1354, 1377-78 (N.D.Ill.1993), *aff'd,* 71 F.3d 1573 (Fed.Cir.1995). Licenses under the '419 patent are strong indicia that the patent is not obvious. Id. Evidence of WMS' attempts to license are admissible and relevant to obviousness.

It is not necessary to include flow charts or computer listings where "[t]he claimed invention of the [patent-

in-suit] is not in the details of the program writing, but in the apparatus and method whose patentability is based on the claimed combination of components or steps." Northern Telecom v. Datapoint Corp., 908 F.2d 931, 941 (Fed.Cir.1990). The Telnaes patent is not invalid for failing to describe the invention in sufficiently clear, concise, and exact terms to enable one skilled in the art to make and use same.

Additionally, early in the design process, WMS considered using a design developed by Cirsa, because it thought Cirsa had a license under Telnaes or had successfully designed around Telnaes. Once WMS found out Cirsa had no license, it decided not to use Cirsa's design. Until it found no other alternative, WMS initially respected the validity of the Telnaes patent like the rest of the industry. WMS rejected a design shown to it by Cirsa when WMS determined Cirsa was not a license under the patent. It considered noninfringing designs such as short cycle and hidden reel before it determined could not compete with Telnaes. WMS Gaming investigated several ways of acquiring a license under the Telnaes patent. These acts by WMS Gaming are factors the court may consider on the issue of validity.

As part of the normal PTO procedures, the patent examiner, during the prosecution of the '419 patent, listed, as part of the patent examiner's examination, the patent categories and subcategories searched. An actual search of these categories and subcategories would have revealed the Nonaka patent. The court accepts the presumption that the patent categories listed by the examiner are presumed to have been reviewed by the examiner. Fed.R.Evid. 301. In the absence of any contrary evidence which would burst the bubble of the presumption under Federal Rule of Evidence 301, *see* Panduit Corp. v. All States Plastic Mfg., 744 F.2d 1564, 1579 (Fed.Cir.1984), this district court, in giving the presumption its proper effect, finds the patent examiner knew about the Nonaka patent. *See also* Avco Corp v. PPG Industries, Inc., 867 F.Supp. 84, 88 n. 3 (D.Mass.1994). It would be improper for the court to conclude that references not specifically cited by the examiner, but classed in the areas he searched, were not considered by him. *See* Polaroid Corp v. Eastman Kodak Co., 789 F.2d 1556, 1571, 1573 (Fed.Cir.1986) (affirming judgment of infringement and validity where the district court found references "deemed to have been considered by the Examiner."). Based on all the foregoing, this court concludes that WMS Gaming has not established by clear and convincing evidence that the invention disclosed in the '419 patent was obvious to a person skilled in the art. The Telnaes '419 patent is valid.

SUMMARY OF DETERMINATIONS

In sum, IGT has shown by a preponderance of the evidence that WMS Gaming, Inc. has literally infringed claims 1, 2, 4, 5, 6, and 8 of the '419 patent issued to Telnaes and owned by IGT by making, using, and selling a reel-type gaming device, the WMS Gaming Model 400. To the extent that WMS Gaming's apparatus differs from claims 1, 2, 4, 5, 6, 8, 9 and 10 of the '419 patent by WMS Gaming's use of three random numbers and tables to determine reel stop positions, IGT has proven that those differences are insubstantial to one skilled in the art. Therefore, IGT has shown by a preponderance of the evidence that WMS Gaming has infringed, if not literally, then under the doctrine of equivalents, claims 1, 2, 4, 5, 6, 8, 9 and 10 of the '419 patent, by making, using, and selling the reel-type gaming device, WMS Gaming's Model 400, which embodies the design described in the Durham '465 patent.

Additionally, IGT has shown by clear and convincing evidence that WMS Gaming, a competitor of IGT, knew of the '419 patent and failed to satisfy its due of care to avoid infringing the '419 patent, and proceeded to willfully infringe the '419 patent. The '419 patent is presumed valid and WMS Gaming has failed to show by clear and convincing evidence that the '419 patent is invalid.

CONCLUSION

For the above stated reasons, judgment is ordered entered in favor of IGT and against WMS Gaming on WMS's complaint for declaratory judgment and judgment is ordered entered in favor of IGT and against WMS Gaming on IGT's counterclaim. WMS Gaming is permanently enjoined from further infringement of Patent No. 4,448,419, the Telnaes patent owned by IGT. This includes WMS Gaming halting all future manufacture, use and sale of the WMS Gaming Model 400 slot machine. IGT is to be awarded damages its for lost profits as determined by the amount of a reasonable royalty of $50.00 for each Model 400 slot machine sold by WMS Gaming because that machine infringed the '419 patent. As a result of WMS Gaming's wilful infringement, IGT is entitled to treble damages under 35 U.S.C. s. 284, as well as the attorney fees reasonably expended by IGT to enforce the rights IGT asserted in this case against WMS Gaming. The parties in accounting for damages, which as indicated in the final pretrial order, should not be complex, are to confer regarding these amounts. The parties are to file a joint written report, if agreement as to the amounts is reached, and as to their respective positions if no agreement is reached on or before October 3, 1996. The case is set for a report on status and for entry of final judgment on October 17, 1996 at 10:30 a.m.

N.D.Ill.,1996.
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