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51 U.S.P.Q.2d 1385
United States Court of Appeals,
Federal Circuit.

WMS GAMING INC., Plaintiff-Appellant,
v.
INTERNATIONAL GAME TECHNOLOGY, Defendant-Appellee.

Nos. 97-1307, 98-1053.

July 20, 1999.
Rehearing Denied; Suggestion for Rehearing In Banc Denied Sept. 17, 1999.

Maker of slot machine brought action seeking declaratory judgment that its machine did not infringe patent held by assignee and that patent was invalid. Assignee counterclaimed for willful infringement. The United States District Court for the Northern District of Illinois, James F. Holderman, Jr., J., ruled in favor of assignee and denied maker's motion for a new trial based on newly discovered evidence. Maker appealed. The Court of Appeals, Schall, Circuit Judge, held that: (1) district court erred in construing patent claim; (2) patent was not literally infringed; (3) patent was infringed under doctrine of equivalents; (4) patent was not invalid as obvious; (5) methodology for computing damages and quantum of damages awarded were proper; and (6) maker was not entitled to new trial.
Affirmed in part, reversed in part, vacated in part, and remanded.

West Headnotes

[1] Patents k226.6
291k226.6

A determination as to patent infringement involves a two-step analysis: first the court must construe the claims at issue, and, next, the court must determine whether the claims, as properly construed, read on the accused device.

[2] Patents k324.5
291k324.5

Patent claim construction is an issue of law which Court of Appeals reviews de novo.

[3] Patents k324.55(2)
291k324.55(2)

The determination as to whether patent claims, as properly construed, read on the accused device presents an issue of fact which, following a bench trial, Court of Appeals reviews for clear error.

[4] Federal Courts k853
170Bk853

A factual finding is clearly erroneous when, although there is evidence to support it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed.

[5] Patents k314(5)
291k314(5)

[5] Patents k324.5
291k324.5

Determining the claimed function and the corresponding structure for a claim limitation written in means-plus-function format are both matters of claim construction and therefore present issues of law that Court of Appeals reviews de novo. 35 U.S.C.A. ¤ 112.

[6] Patents k176
291k176

In patent for slot machine which included limitation of a "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," corresponding structure for that limitation was not microprocessor in general, but microprocessor programmed to perform algorithm disclosed in specification. 35 U.S.C.A. ¤ 112.

[7] Patents k324.1
291k324.1

Where the parties agree to a patent claim construction that is adopted by the district court, and neither party disputes that construction on appeal, Court of Appeals declines to raise an issue sua sponte.

[8] Patents k101(8)
291k101(8)

In a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm. 35 U.S.C.A. ¤ 112.

[9] Patents k176
291k176

In patent for slot machine, limitations relating to means for selecting number assigned to stop position and to means for stopping reel at stop position corresponding to selected number referred to single numbers, not combinations of numbers, absent any indication that references to "number" should be given anything other than their ordinary meaning.

[10] Patents k226.6
291k226.6

To prove literal infringement, the patentee must show that the accused device contains every limitation in the asserted claims; if even one limitation is missing or not met as claimed, there is no literal infringement.

[11] Patents k226.7
291k226.7

In order to establish literal infringement of a means-plus-function claim, the patentee must establish that the accused device employs structure identical or equivalent to the structure disclosed in the patent and that the accused device performs the identical function specified in the claim. 35 U.S.C.A. ¤ 112.

[12] Patents k235(2)
291k235(2)

Patented slot machine was not literally infringed by accused machine, even if accused machine had structure equivalent to patent's limitations of means for assigning a plurality of numbers and means for randomly selecting one of said plurality of assigned numbers, as function of those limitations was assigning and selecting single numbers, while accused machine assigned and selected combinations of single numbers and thus did not perform function identical to that of patent claim.

[13] Patents k226.7
291k226.7

[13] Patents k237
291k237

The proper test for determining whether the structure in an accused device is equivalent to the structure recited in a means-plus-function claim is whether the differences between the structure in the accused device and any disclosed in the specification are insubstantial. 35 U.S.C.A. ¤ 112.

[14] Patents k237
291k237

A claim that does not literally read on an accused device may nevertheless be infringed under the doctrine of equivalents if the differences between the claim and the accused device are insubstantial.

[15] Patents k237
291k237

Patented slot machine was infringed, under doctrine of equivalents, by accused machine because accused machine's method of assigning and selecting combinations of single numbers was only insubstantially different from patented machine's method of assigning and selecting single numbers.

[16] Patents k312(6)
291k312(6)

In order to find willful patent infringement, the district court had to find by clear and convincing evidence in view of the totality of the circumstances that alleged infringer acted in disregard of the patent and lacked a reasonable basis for believing it had a right to do what it did.

[17] Patents k319(3)
291k319(3)

While it is not a rule of law that patent infringement that is not literal can never be sufficiently culpable to warrant enhanced damages, avoidance of literal infringement is a fact to be considered in determining whether there has been willful infringement.

[18] Patents k226
291k226

Patent law encourages competitors to design or invent around existing patents.

[19] Patents k16(1)
291k16(1)

The ultimate determination of whether an invention is or is not obvious is a legal conclusion based on underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness. 35 U.S.C.A. ¤ 103(a).

[20] Patents k324.55(2)
291k324.55(2)

The underlying factual determinations on which the legal conclusion that a patent is obvious is based are reviewed for clear error. 35 U.S.C.A. ¤ 103(a).

[21] Patents k312(1.2)
291k312(1.2)

Because a patent is presumed to be valid, the party asserting invalidity has the burden of showing invalidity by clear and convincing evidence. 35 U.S.C.A. ¤ 282.

[22] Patents k312(6)
291k312(6)

The burden on the party asserting that a patent is obvious is more easily carried when the references on which the assertion is based were not directly considered by the examiner during prosecution. 35 U.S.C.A. ¤ 103(a).

[23] Patents k26(1)
291k26(1)

When an obviousness determination relies on the combination of two or more prior art references, there must be some suggestion or motivation to combine the references, and the suggestion to combine may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved. 35 U.S.C.A. ¤ 103(a).

[24] Patents k16.21
291k16.21

Patent for slot machine was not invalid on grounds of obviousness, although one prior art patent taught every aspect of claimed invention with exception of nonuniform mapping of numbers to stop positions to decrease odds of winning, where other prior art patents taught only nonuniform mapping of numbers to display symbols to simulate physical reels, not nonuniform mapping to lower the odds of winning, and there was no evidence of motivation to combine teachings of former and latter references. 35 U.S.C.A. ¤ 103(a).

[25] Patents k31.1
291k31.1

The consideration of the objective evidence presented by the patentee is a necessary part of the obviousness determination, and the objective evidence of nonobviousness may be used to rebut a prima facie case of obviousness based on prior art references. 35 U.S.C.A. ¤ 103(a).

[26] Patents k36.1(3)
291k36.1(3)

[26] Patents k36.1(5)
291k36.1(5)

[26] Patents k36.2(1)
291k36.2(1)

Objective evidence that a patent is not obvious may include commercial success, long-felt but unsolved need, and licenses showing industry respect. 35 U.S.C.A. ¤ 103(a).

[27] Patents k32
291k32

The patentee bears the burden of showing that a nexus exists between the claimed features of the invention and the objective evidence offered to show nonobviousness. 35 U.S.C.A. ¤ 103(a).

[28] Patents k318(1)
291k318(1)

Award of damages for infringement of patent for slot machine, which included lost profits, was proper, despite infringer's claim that patent assignee was mere holding company that did not manufacture machines; infringer stipulated that assignee did manufacture machines, prior to trial, and infringer was not entitled to withdraw that stipulation as it was not prejudiced, in view of its opportunity to access consolidated records of assignee and its subsidiary that manufactured machines.

[29] Patents k318(3)
291k318(3)

[29] Patents k324.55(2)
291k324.55(2)

The district court's methodology for computing patent infringement damages is discretionary and the quantum of damages awarded is a factual issue reviewed for clear error.

[30] Courts k96(5)
106k96(5)

Because the denial of a motion for a new trial is a procedural issue not unique to patent law, Court of Appeals for the Federal Circuit applies the law of the regional circuit where the appeal from the district court would normally lie.

[31] Patents k323.3
291k323.3

Alleged patent infringer's posttrial discovery of slot machine that predated filing date of patent and allegedly operated in a manner similar to claimed invention did not warrant new trial, absent showing that infringer's employees were diligent in seeking out relevant prior art. Fed.Rules Civ.Proc.Rule 59, 28 U.S.C.A.

[32] Federal Civil Procedure k2313
170Ak2313

[32] Federal Courts k825.1
170Bk825.1

Decisions granting or denying motions for new trials are committed to the sound discretion of the district court and may be upset only if no reasonable person could agree with the district court.

*1342 Raphael V. Lupo, McDermott, Will & Emery, of Washington, DC, argued for plaintiff-appellant. With him on the brief was Paul Devinsky. Of counsel on the brief were Kimball R. Anderson, and Don J. Mizerk, Winston & Strawn, of Chicago, Illinois; and Arthur M. Handler, and Robert S. Goodman, Burns Handler & Burns LLP, of New York, New York. Of counsel were Donna M. Tanguay and Mark G. Davis, of McDermott, Will & Emery.

Robert G. Krupka, Kirkland & Ellis, of Chicago, Illinois, argued for defendant-appellee. With him on the brief was Barry F. Irwin. Also on the brief was Jay I. Alexander, of Washington, DC. Of counsel on the brief were Marc D. Foodman, Associate Corporate Counsel, International Game Technology, of Reno, Nevada; and Michael B. Allen, Laff, Whitesel, Conte & Saret, of Chicago, Illinois.

Before RICH, [FN*] RADER, and SCHALL, Circuit Judges.

FN* Circuit Judge Rich heard oral argument in this case, but died on June 9, 1999. The case was decided by the remaining judges in accordance with Fed. Cir. Rule 47.11.

SCHALL, Circuit Judge.

WMS Gaming Inc. (WMS) appeals the decision of the United States District Court for the Northern District of Illinois that it willfully infringed United States Patent No. 4,448,419 and that the patent is not invalid. See WMS Gaming Inc. v. International Game Tech., No. 94-C-3062 (N.D.Ill. March 7, 1997) (WMS Gaming). WMS also appeals the order of the district court denying its motion for a new trial based on newly discovered evidence. See WMS Gaming Inc. v. International Game Tech., No. 94-C-3062 (N.D.Ill. October 1, 1997). We affirm-in-part, reverse-in-part, vacate-in-part, and remand.

BACKGROUND

I.

United States Patent No. 4,448,419, entitled "Electronic Gaming Device Utilizing a Random Number Generator for Selecting the Reel Stop Positions," was issued to Inge S. Telnaes on May 15, 1984 (the *1343 Telnaes patent) and was assigned to International Game Technology (IGT) in 1988. The Telnaes patent claims a slot machine that decreases the probability of winning while maintaining the external appearance of a standard mechanical slot machine. The decreased probability of winning permits higher payoffs, which attracts players.

In general, standard mechanical slot machines include a plurality of reels with symbols around the perimeters of the reels. The symbols may include, for example, fruits, such as cherries or plums; bars, such as double-bars or triple-bars; the number "7"; and blanks. There are typically fewer unique symbols on a reel than there are reel stop positions, i.e., some symbols appear at multiple positions around the reel. For example, a reel with 20 stop positions may include six cherry symbols, five double-bar symbols, three triple-bar symbols, five blank symbols, and one "7" symbol. The number of stop positions to which a symbol is fixed affects the odds of that symbol being the displayed outcome when the machine is played. In the above example, a cherry symbol is six times more likely to be displayed than a "7" symbol.

The number of reels and the number of stop positions on each reel dictate the lowest probability of winning. For example, in a three reel slot machine with 20 stop positions per reel, the lowest probability of winning is 1 in 8000 (20 x 20 x 20). Prior to the Telnaes invention, the conventional way to decrease the odds of winning was either to increase the number of reels or to increase the number of stop positions per reel. Increasing the number of stop positions per reel typically increases the size of the reels, which, in turn, typically increases the size of the slot machine. Experience has shown that players are less attracted to slot machines that have more than three reels and to larger slot machines.

The Telnaes patent discloses a slot machine that is capable of decreasing the probability of winning while maintaining the external appearance of a standard mechanical slot machine. Telnaes, col. 2, lines 10-27. Generally speaking, Telnaes discloses a slot machine in which the reels are electronically- controlled. Id., col. 4, lines 19-21. Each time the machine is played, the control circuitry randomly determines the stop position of each reel and then stops the reels at the randomly determined positions. Id., col. 3, lines 1-4. The reels only serve the function of displaying the randomly chosen result. Id., col. 3, lines 10-12. To decrease the probability of certain symbols appearing, the control circuitry randomly chooses a number from a range greater than the number of stop positions. Id., col. 4, line 53-- col. 5, line 4. The range of numbers is non-uniformly mapped to the stop positions, e.g., a memory based look-up table, that is programmed by either the manufacturer or the operator, may be used to map the range of numbers to stop positions. [FN1] Thus, in a slot machine with 20 stop positions per reel, the control circuitry may use a random number generator to select a number between 1 and 40. The 40 numbers are non-uniformly assigned to correspond to the 20 stop positions on a reel. For example, only one number may be assigned to the symbol "7," while six numbers may be assigned to the "cherry" symbol. This non-uniform mapping of numbers to stop positions allows the probability of stop position combinations, and thus the probability of winning, to be adjusted without altering the configuration of the reels. Id., col. 3, lines 13-16. The odds-manipulating slot machines with physical reels disclosed in the Telnaes patent are referred to as "virtual reel" slot machines.

FN1. The non-uniform mapping of numbers to stop positions is the allocation of numbers to stop positions such that some stop positions are allocated more numbers than other stop positions.

The virtual reel slot machines claimed in the Telnaes patent have been widely accepted in the marketplace. Several competitors have licensed the patent from IGT *1344 and have paid substantial royalties. Virtual reel slot machines comprise the vast majority of the slot machines sold throughout the world, and the percentage of casino revenues derived from slot machines has increased dramatically since the introduction of virtual reel slot machines.
II.

In 1993, WMS introduced its Model 400 slot machine, the accused device. The WMS 400 slot machine is a reel-type slot machine that manipulates the odds of winning. The WMS 400 slot machine is an embodiment of the slot machine disclosed in United States Patent No. 5,456,465, entitled "Method for Determining Payoffs in Reel-Type Slot Machines," issued to Timothy J. Durham (the Durham patent). Because the parties stipulated that the Durham patent describes the accused device, our discussion of the accused device refers to the Durham patent.

The Durham patent discloses a different approach to calculating payoffs than the Telnaes patent. In the Telnaes patent, the stop positions of the reels are determined first and then the payoff is calculated based on the stop positions. In the Durham patent, the payoff is calculated first and then stop positions that represent that payoff are chosen. Durham, col. 1, lines 40- 54. As disclosed in the Durham patent, a random number generator selects two random numbers and maps those numbers to two payoff multipliers. Id., col. 3, lines 9-19. The payoff amount is determined by multiplying the payoff multipliers together. Id., col. 3, lines 3-37. The stop positions of the reels then are determined by randomly selecting a group of stop positions that corresponds to the payoff amount. Id., col. 4, lines 1-7.

Referring to Figures 5-8 of the Durham patent, which are reproduced below, the random number generator selects a first number (R1) from a known range, and the selected number is mapped to a first payoff multiplier (X). Id., Figure 5. R1 is randomly chosen from the range of 1 to 632. If R1 is one, then payoff multiplier X is 10, if R1 is between 182 and 632, then payoff multiplier X is zero, etc. The random number generator then selects another number (R2) from a second range of numbers, and R2 is mapped to a second payoff multiplier (Y). Id., Figure 6. The actual payoff amount (Z) is determined by multiplying X times Y. Id., col. 3, lines 3-37. For example, if X is 10 and Y is 10, the actual payoff amount is 100. Alternatively, if X is 10 and Y is zero, the actual payoff amount is zero.

Once the actual payoff amount is determined, the WMS 400 slot machine uses the random number generator to select a group of stop positions that match the payoff amount. Id., col. 4, lines 1-7. For example, eight different groups of stop positions may represent a payoff amount of 100. Id., Figure 7. If the payoff amount is 100, then the random number generator selects a third number (R3) between one and eight (because as indicated in Fig. 7, there are eight possible ways of displaying a payoff of 100), and the slot machine displays a group of stop positions that corresponds to the selected number. Id., Figure 8.
*1345
RPT.CC.1999169875.00010 #0895;1;(3.25 X 5.25)
In the WMS 400 slot machine, there are 22 different ways to get a payoff amount of 100 when X is 10 and Y is 10 (R1 must be 1 and R2 must between 2

and 23). Id., Figures 5 and 6. Additionally, as just noted, there are eight groups of stop positions that represent a payoff of 100. Id., Figures 7 and 8. As seen in Figure 7, a payoff amount of 100 equates to three double-bars. At the same time, as seen in Figure 8, each reel includes two stop positions with a double-bar symbol. This is because in Figure 8, a "1" identifies the first double-bar symbol on a reel, while a "2" identifies the second double-bar symbol on a reel. In other words, stop position 1 and stop position 2 on each reel display a double bar symbol. Thus, there are eight combinations of double-bars on the three reels. Accordingly, the third iteration of the random number generator selects a number (R3) between one and eight. For example, if R3 is one, the group of stop positions stored in memory location A may be displayed (1, 1, 1); if R3 is two, the group of stop positions in memory location B may be displayed (1, 1, 2), etc. Id., Figure 8.

III.

On May 5, 1994, IGT sent a cease and desist letter to WMS indicating IGT's belief that the WMS 400 slot machine infringed the Telnaes patent. WMS responded on May 17, 1994, by filing an action in the district court seeking a declaratory judgment that the WMS 400 slot machine does not infringe the Telnaes patent and that the patent is invalid. IGT counterclaimed against WMS for willful infringement.

The district court bifurcated the liability and damages phases of the trial. After a three-day bench trial on liability, the court held that the Telnaes patent was not invalid and that WMS had willfully infringed the patent. Initially, the court awarded damages based on a reasonable royalty of $50 per machine. It later vacated that award, however, and awarded IGT damages based on a combination of lost profits and a reasonable royalty. The court's final damages award, after trebling for willful infringement, exceeded $30 million. In addition, the court permanently enjoined WMS from infringing the Telnaes patent.

At trial, WMS presented three patents to support its position that the Telnaes *1346 patent was invalid for obviousness. After trial, WMS located an unpatented slot machine--the Merit Sweet Shawnee--that was sold several years before the application for the Telnaes patent was filed. WMS claimed that the Merit Sweet Sane operated in a manner similar to that of the claimed invention. On March 14, 1997, WMS moved for a new trial under Fed.R.Civ.P. 59 based on this newly discovered prior art. The district court responded by allowing discovery on the new evidence, and then holding a "hybrid" trial on whether to grant the motion and on the substance of the motion. After a two- day proceeding, the court denied the motion for a new trial. It did so on the grounds that WMS had not been diligent in discovering the Merit Sweet Sane and that the new evidence was not likely to change the outcome of the case.

WMS appeals the judgment of liability, the quantum of damages awarded, and the order denying a new trial. We have jurisdiction pursuant to 28 U.S.C. ¤ 1295(a)(1) (1994).

DISCUSSION

I.

[1][2][3][4] We begin with the issue of infringement. A determination as to infringement involves a two-step analysis. First the court must construe the claims at issue. See Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1581-82, 39 USPQ2d 1573, 1576 (Fed.Cir.1996). Next, the court must determine whether the claims, as properly construed, read on the accused device. See id. Claim construction is an issue of law which we review de novo. See Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1456, 46 USPQ2d

1169, 1174 (Fed.Cir.1998) (en banc); Markman v. Westview Instruments, Inc., 52 F.3d 967, 979, 34 USPQ2d 1321, 1329 (Fed.Cir.1995) (en banc), aff'd 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577, 38 USPQ2d 1461 (1996). The determination as to whether the claims, as properly construed, read on the accused device presents an issue of fact which, following a bench trial, we review for clear error. See Charles Greiner & Co. v. Mari-Med Mfg., Inc., 962 F.2d 1031, 1034, 22 USPQ2d 1526, 1528 (Fed.Cir.1992). " 'A finding is clearly erroneous when, although there is evidence to support it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed.' " In re Graves, 69 F.3d 1147, 1151, 36 USPQ2d 1697, 1700 (Fed.Cir.1995) (quoting United States v. United States Gypsum Co., 333 U.S. 364, 395, 68 S.Ct. 525, 92 L.Ed. 746 (1948)). Ms's first contention on appeal is that the district court erred in its claim construction and that the WMS 400 slot machine does not infringe the properly construed claims.

The Telnaes patent has 10 claims, four of which, numbers 1, 8, 9, and 10, are independent. The district court found that the WMS 400 slot machine infringed claims 1, 2, 4, 5, 6, and 8, both literally and under the doctrine of equivalents, and that it infringed claims 9 and 10 under the doctrine of equivalents only. The parties' arguments on appeal reflect an acknowledgment that determination of the issue of infringement of claim 1 controls the infringement issue as far as the remaining claims are concerned.

Claim 1 reads 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 reel 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
*1347 means for stopping said reel at the angular position represented by said selected number.

Telnaes, col. 5, lines 38-53.

[5] It is undisputed that the first three limitations of claim 1 read on the accused device, the WMS 400 slot machine. The parties' dispute involves the last three limitations, which are written in means-plus-function format, pursuant to 35 U.S.C. ¤ 112, ¦ 6 (1994). Under that provision, "[a]n 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." We have stated that "for a means-plus-function limitation to read [literally] on an accused device, the accused device must employ means identical to or the equivalent of the structures, material, or acts described in the patent specification. The accused device must also perform the identical function as specified in the claims." Valmont Indus., Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1042, 25 USPQ2d 1451, 1454 (Fed.Cir.1993); see also Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934, 4 USPQ2d 1737, 1739 (Fed.Cir.1987) (en banc) ("To determine whether a claim limitation is met literally, where expressed as a means for performing a stated function, the court must compare the accused structure with the disclosed structure, and must find equivalent structure as well as identity of claimed function for that structure.") (emphasis in original).

Determining the claimed function and the corresponding structure for a claim limitation written in means-plus-function format are both matters of claim construction. They therefore present issues of law that we review de novo. See Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc., 145 F.3d 1303, 1308, 46 USPQ2d 1752, 1755-56 (Fed.Cir.1998).

Construing the Disputed Limitations of Claim 1

As far as claim construction is concerned, our task is to identify the claimed function and the corresponding structure of each of the three disputed limitations of claim 1. We begin with the first of the three disputed limitations: "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." This limitation contains the terms "angular positions," "radial positions," and "rotational positions." The district court construed each of these terms to refer to stop positions of the reel. Neither party challenges that construction.

The claimed function of the "means for assigning" limitation is "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." In other words, the claimed function is assigning a plurality of numbers to stop positions, where the plurality of numbers exceeds the number of stop positions and some stop positions are represented by more than one number.

[6][7] In regard to the disclosed corresponding structure of the "means for assigning" limitation, WMS and IGT stipulated--and the district court accepted the stipulation--that the Telnaes patent discloses a microprocessor, or computer, to control the operation of the slot machine, including the operation of the machine in the assignment of numbers to reel stop positions. [FN2] The algorithm that controls the assignment of numbers to stop positions *1348 is disclosed in Figure 6 of the Telnaes patent. Figure 6 illustrates an algorithm in which a plurality of single numbers are assigned to stop positions such that: 1) the range of single numbers exceeds the number of stop positions; 2) each single number is assigned to only one stop position; 3) each stop position is assigned at least one single number; and 4) at least one stop position is assigned more than one single number. The prosecution history reinforces the teachings of Figure 6. The prosecution history indicates that each number must correspond to a stop position, but that several numbers may correspond to the same stop position. In response to an Office Action, Telnaes stated, "the applicant has disclosed a machine which utilizes a standard mechanism but on which the odds can be changed substantially infinitely. The only guidelines are that there must be a symbol for each symbol indicator in virtual memory but there can be many positions in the virtual memory for each symbol on the reel."

FN2. Although we fail to find anything in the Telnaes patent that limits the "means for assigning" limitation to a microprocessor or computer, where, as here, the parties agree to a claim construction that is adopted by the district court, and neither party disputes that construction on appeal, we decline to raise an issue sua sponte that the parties have not presented. See Seal-Flex, Inc. v. Athletic Track & Court Constr., 172 F.3d 836, 842, 50 USPQ2d 1225, 1228 (Fed.Cir.1999).

The district court construed the "means for assigning" limitation of claim 1 to cover "any table, formula, or algorithm for determining correspondence between the [randomly selected] numbers and rotational positions of the

reel." WMS argues that this construction was overly broad. It contends that the "means for assigning" limitation should have been defined by the corresponding structure, material, or acts described in the patent specification, or their equivalents, and should have been further limited by the prosecution history. IGT responds that the court properly construed the claim.

We agree with WMS that the district court's construction of the "means for assigning" limitation was overly broad. The written description of the Telnaes patent is almost completely devoid of any structure to support this limitation of the claim. The district court apparently took this lack of disclosure to indicate that the limitation reads on any means for performing the recited function. However, this construction is at odds with the requirements of 35 U.S.C. ¤ 112. See Valmont Indus., 983 F.2d at 1042, 25 USPQ2d at 1454 (holding that section 112, ¦ 6, permits the use of means-plus-function language in claims, but with the proviso that the claims are limited to the structure, material, or acts disclosed in the specification and their equivalents).

The district court determined that the structure disclosed in the specification to perform the claimed function was "an algorithm executed by a computer." While this finding accurately reflected the parties' stipulation, the court erred by failing to limit the claim to the algorithm disclosed in the specification. The structure of a microprocessor programmed to carry out an algorithm is limited by the disclosed algorithm. A general purpose computer, or microprocessor, programmed to carry out an algorithm creates "a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." In re Alappat, 33 F.3d 1526, 1545, 31 USPQ2d 1545, 1558 (Fed.Cir.1994) (en banc); see In re Bernhart, 57 C.C.P.A. 737, 417 F.2d 1395, 1399-1400, 163 USPQ 611, 615-16 (CCPA 1969) ("[I]f a machine is programmed in a certain new and unobvious way, it is physically different from the machine without that program; its memory elements are differently arranged."). The instructions of the software program that carry out the algorithm electrically change the general purpose computer by creating electrical paths within the device. These electrical paths create a special purpose machine for carrying out the particular algorithm. [FN3]

FN3. A microprocessor contains a myriad of interconnected transistors that operate as electronic switches. See Neil Randall, Dissecting the Heart of Your Computer, PC Magazine, June 9, 1998, at 254-55. The instructions of the software program cause the switches to either open or close. See id. The opening and closing of the interconnected switches creates electrical paths in the microprocessor that cause it to perform the desired function of the instructions that carry out the algorithm. See id.

*1349 [8] In a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm. See Alappat, 33 F.3d at 1545, 31 USPQ2d at 1558. [FN4] Accordingly, the structure disclosed for the "means for assigning" limitation of claim 1 of the Telnaes patent is a microprocessor programmed to perform the algorithm illustrated in Figure 6. In other words, the disclosed structure is a microprocessor programmed to assign a plurality of single numbers to stop positions such that: 1) the number of single numbers exceeds the number of stop positions; 2) each single number is assigned to only one stop position; 3) each stop

position is assigned at least one single number; and 4) at least one stop position is assigned more than one single number.

FN4. In State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 47 USPQ2d 1596 (Fed.Cir.1998), cert. denied, 525 U.S. 1093, 119 S.Ct. 851, 142 L.Ed.2d 704 (1999), the patented invention related generally to a system that allowed an administrator to monitor and record financial information flow and make all calculations necessary for maintaining "a partner fund financial services configuration." 149 F.3d at 1371, 47 USPQ2d at 1598. We pointed out that claim 1 of the patent, which was drafted in section 112, ¦ 6 format claimed "a machine, namely, a data processing system for managing a financial services configuration of a portfolio established as a partnership, which machine is made up of, at the very least, the specific structures disclosed in the written description and corresponding to the means-plus-function elements (a)-(g) recited in the claim." Id. at 1372, 149 F.3d 1368, 47 USPQ2d at 1600. The structures corresponding to the means-plus-function elements recited in claim 1 in State Street were "a personal computer including a CPU" (element (a)), "a data disk" (element (b)), and "arithmetic logic circuit[s]" configured to perform various functions (elements (c)-(g)). Id. at 1371-72, 149 F.3d 1368, 47 USPQ2d at 1599.

We turn next to the second disputed limitation of claim 1: "means for randomly selecting one of said plurality of assigned numbers." As the language of the claim makes clear, the function of this limitation is "randomly selecting one of said plurality of assigned numbers." In other words, the claimed function is randomly selecting one of the numbers that was assigned to reel stop positions by the "means for assigning" limitation just discussed. The district court concluded, and the parties agree, that the corresponding structure disclosed in the specification is a microprocessor programmed to perform random number generation. The random number generator randomly selects a single number from the range of numbers assigned by the "means for assigning" limitation. Telnaes, col. 3, lines 1-9. For the reasons indicated in footnote 2 above, we will not disturb the district court's claim construction.

Finally, we consider the third disputed limitation of claim 1: "means for stopping said reel at the angular position represented by said selected number." [FN5] The claimed function is stopping the reel at the stop position that corresponds to the random number selected by the "means for randomly selecting" limitation. The disclosed structure is a brake. Neither of these points is in dispute.

FN5. The construction of this limitation is actually disputed only in the sense that it turns on the construction of the two claim limitations just discussed.

[9] As just seen, the functions of the three disputed limitations of claim 1 are: 1) assigning a plurality of numbers to stop positions, where the plurality of numbers exceeds the number of stop positions and at least one stop position is represented by more than one number; 2) randomly selecting one of the numbers assigned to stop positions; and 3) stopping the reel at the stop position that corresponds to the selected number. Referring to the means for selecting and means for stopping limitations, WMS argues that selecting "one" *1350 number and stopping the reel at the stop position represented by "said selected number" indicates that claim 1 is limited to assigning and selecting single numbers rather than combinations of numbers. The district court concluded, however, that: "[t]here is nothing in the claim that limits the generated numbers to be a single number." WMS Gaming,

slip op. at 26. We agree with WMS on this point. The plain meaning of "selecting one of said ... numbers" is selecting a single number, not a combination of numbers. See Insituform Techs., Inc. v. Cat Contracting, Inc., 99 F.3d 1098, 1105, 40 USPQ2d 1602, 1607 (Fed.Cir.1996) (determining that the claim term "a cup" suggests the use of only one cup). In addition, the last limitation of the claim refers to "said selected number." This reference to "number" in the singular sense bolsters the interpretation that "selecting one of said ... numbers" is limited to selecting a single number. Nothing in the written description, drawings, or prosecution history indicates that the phrases "one of said ... numbers" or "said selected number" should be given anything other than their ordinary meaning. See York Prods., Inc. v. Central Tractor Farm & Family Ctr., 99 F.3d 1568, 1572, 40 USPQ2d 1619, 1622 (Fed.Cir.1996) ("Without an express intent to impart a novel meaning to claim terms, an inventor's claim terms take on their ordinary meaning."). Therefore, the term "number(s)," as used in claim 1, refers to single numbers, as opposed to combinations of numbers, and the recited function of claim 1 is limited to assigning and selecting single numbers.

Literal Infringement of Claim 1

[10][11] Having considered claim construction, we turn to the issue of infringement of claim 1. We address literal infringement first. "To prove literal infringement, the patentee must show that the accused device contains every limitation in the asserted claims. If even one limitation is missing or not met as claimed, there is no literal infringement." Mas- Hamilton Group v. LaGard, Inc., 156 F.3d 1206, 1211, 48 USPQ2d 1010, 1014-15 (Fed.Cir.1998) (citations omitted). As noted above, in order to establish literal infringement of a means-plus-function claim, the patentee must establish that the accused device employs structure identical or equivalent to the structure disclosed in the patent and that the accused device performs the identical function specified in the claim. See Valmont Indus., 983 F.2d at 1042, 25 USPQ2d at 1454; Pennwalt, 833 F.2d at 934, 4 USPQ2d at 1739. It is undisputed that the first three limitations of claim 1 are met in the accused device, the WMS 400 slot machine. The issue, then, is whether IGT carried its burden of establishing that, as properly construed, the last three limitations of claim 1 read on the WMS 400 slot machine.

[12] As a preliminary matter, the WMS 400 slot machine does not contain structure identical to that disclosed in the Telnaes patent for the last three limitations of claim 1. The two structures are not identical because the microprocessor disclosed in the Telnaes patent is programmed differently from the microprocessor disclosed in the Durham patent. Put another way, the two disclosed machines are different, i.e., not identical. As discussed above, in the Telnaes patent the structure disclosed for the "means for assigning" limitation of claim 1 is a microprocessor programmed to assign a plurality of single numbers to stop positions such that: (1) the range of single numbers exceeds the number of stop positions; (2) each single number is assigned to only one stop position; (3) each stop position is assigned at least one single number; and (4) at least one stop position is assigned more than one single number. The WMS 400 slot machine is not programmed in an identical manner. This is made clear by the descriptions, in Part I of the BACKGROUND section of this opinion, of the slot machine disclosed in the Telnaes patent and the WMS 400 slot machine. Because the structures of the two machines *1351 are not identical, the issue of literal infringement of claim 1, as far as structural limitations are concerned, turns on whether the WMS 400 slot machine has structure equivalent to the "means for assigning a plurality of numbers" and the "means for randomly selecting one of said plurality of assigned numbers" limitations of the claim.

[13] The proper test for determining whether the structure in an accused device is equivalent to the structure recited in a section 112, ¦ 6, claim is whether the differences between the structure in the accused device and any disclosed in the specification are insubstantial. See Chiuminatta, 145 F.3d at 1309, 46 USPQ2d at 1756; Alpex Computer Corp. v. Nintendo Co., 102 F.3d 1214, 1222, 40 USPQ2d 1667, 1673 (Fed.Cir.1996). Because the structure recited in the Telnaes patent is limited by the disclosed algorithm, our analysis of structural equivalence necessarily discusses the disclosed algorithm, which includes functional-type elements.

As discussed above, the WMS 400 slot machine selects two random numbers (R1 and R2) and maps those numbers to two payoff multipliers (X and Y). The payoff amount (Z) is calculated by multiplying X times Y. A third random number (R3) selects a stop position for each reel based on the groups of reel stop positions that correspond to the payoff amount. In other words, the accused device assigns a combination of numbers to each stop position.

Thus, in this case the issue of equivalent structure turns on whether a machine that assigns combinations of numbers to reel stop positions, which is what the WMS 400 slot machine does, is equivalent to the structure disclosed in the Telnaes patent, which teaches a machine that assigns single numbers to reel stop positions.

Addressing the "means for assigning" limitation of claim 1, the district court found that:

one skilled in the art would consider it an insubstantial change to substitute combinations of numbers [for single numbers] ... 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.

WMS Gaming, slip op. at 26. As far as the "means for randomly selecting" limitation was concerned, the court found that using the random number generator algorithm several times to select a combination of numbers, as in the WMS 400 slot machine, was equivalent to selecting a single number, as in the Telnaes patent. Based upon its findings, the district court determined that the structure of the WMS 400 slot machine was equivalent to the structure disclosed for the two penultimate limitations of claim 1 of the Telnaes patent. In reaching this conclusion, the court apparently relied on the testimony of IGT's expert, Jonathan Fry, who testified that randomly assigning and selecting combinations of single numbers is a minor difference from assigning and selecting single numbers.

On appeal, WMS argues that there are no equivalents to the disclosed structure and that the district court applied the wrong standard by focusing on equivalent results rather than equivalent structure. Discerning no clear error in the district court's finding of equivalent structure, we reject these arguments.

In the claimed invention, each stop position on a reel is assigned one or more single numbers. In the accused device, each stop position on a reel is assigned one or more combinations of single numbers. For example, the first reel in the WMS 400 slot machine displays the first double-bar symbol if the payoff amount is 100 and the third iteration of the random number generator selects a number between one and four (memory positions A-D). Durham, Figure 8. Accordingly, the first reel displays the first double-bar symbol if R1 is 1, R2 is between 2 and 23, and R3 is between 1 and 4. Id., Figures 5, 6, and 8. The first double-bar symbol of the first reel therefore is effectively assigned the 88 *1352 combinations of numbers comprising the set [R1, R2, R3] of [1, 2-23, 1-4].

In the WMS 400 slot machine, most combinations of numbers assigned to reel stop positions include three numbers, but some include only two numbers. As

discussed above, the combination of numbers assigned to the first double-bar symbol includes R1, R2 and R3. If there is only one way to display a payoff amount, however, then the selection of R3 is not required and the combination of numbers assigned to the stop position that represents that payoff amount may only include two numbers. For example, there is only one "7" on each reel, and the group of symbols "7 7 7" is the only way to display a payoff amount of 1000. A payoff amount of 1000 corresponds only to R1 equal to one (X = 10) and R2 equal to one (Y = 100). Durham, Figures 5 and 6. Thus, the symbol "7" on each reel is assigned the combination of numbers [1,1]. Finally, the accused device includes a random number generator that randomly selects combinations of two or three numbers, as required by the "means for selecting" limitation, and a brake, as required by the "means for stopping" limitation.

In the case of both the machine disclosed in the Telnaes patent and the WMS 400 slot machine, each reel stop position is assigned a "tag" that uniquely identifies the stop position. In the case of the Telnaes patent, each "tag" is denoted by a single number selected from a plurality of numbers. In the case of the accused device, each "tag" is denoted by a combination of single numbers selected from a plurality of combinations of single numbers. Whether selecting a "tag" denoted by a single number is the structural equivalent of selecting a "tag" denoted by a combination of single numbers is a close question. In view of the fact that there is enough credible evidence in the record, in the form of the Durham patents and the testimony from IGT's expert, Jonathan Fry, that the difference between assigning and selecting single numbers and assigning and selecting combinations of single numbers is insubstantial, we are not prepared to hold that the district court clearly erred in finding equivalent structure.

Turning now to the issue of identity of function, the functional limitations of the three disputed limitations of claim 1 do not literally read on the accused device. The two penultimate limitations of claim 1 are the "means for assigning" and the "means for selecting" limitations. We have held, as a matter of claim construction, that the function of these limitations, taken together, is assigning and selecting single numbers. Because the WMS 400 slot machine assigns and selects combinations of numbers rather than single numbers, it does not perform a function identical to that of claim 1 of the Telnaes patent. Accordingly, although it has equivalent structure, the WMS 400 slot machine does not literally infringe the claim. [FN6] The district court's holding to that effect is therefore reversed.

FN6. IGT asserts that the district court made an alternative finding of literal infringement based solely on the accused device's selection of the third random number (R3). To support its assertion, IGT points to the district court's infringement analysis based on a payoff of 100. We do not interpret this analysis as a determination that the selection of R3 alone infringes claim 1. In the analysis, the court refers specifically to the assignment of random numbers 1, 2, and 3, and the selection of random numbers 1, 2, and 3. Furthermore, the analysis refers to stopping the reel at a stop position identified "by random [number] 3 in light of the value selected for random numbers 1 and 2." WMS Gaming, slip op. at 19. Thus, in the portion of the opinion upon which IGT relies, the district court is analyzing the infringement of the entire algorithm disclosed in the Durham patent (i.e., the selection of R1, R2 and R3), not the selection of R3 alone.

Infringement of Claim 1 Under the Doctrine of Equivalents

[14][15] A claim that does not literally read on an accused device may nevertheless be infringed under the doctrine of equivalents if the differences between the claim and the accused device are insubstantial. See

Hilton Davis Chem. Co. v. Warner-Jenkinson Co., 62 F.3d 1512, 1521-22, 35 USPQ2d 1641, 1648 (Fed.Cir.*1353 1995) (en banc), rev'd on other grounds, Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 117 S.Ct. 1040, 137 L.Ed.2d 146, 41 USPQ2d 1865 (1997). As noted above, the district court found that the WMS 400 slot machine infringed claim 1 of the Telnaes patent under the doctrine of equivalents. [FN7] The court stated: "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 [Telnaes] patent, is an insubstantial difference to a person skilled in the art." WMS Gaming, slip op. at 20.

FN7. Although the district court improperly construed the claims, it still reached the critical issue for determining infringement under the doctrine of equivalents: whether assigning and selecting combinations of single numbers is insubstantially different from assigning and selecting single numbers.

Recently, in Chiuminatta Concrete Concepts, Inc. v. Cardinal Industries, Inc., we stated:

Both ¤ 112, ¦ 6, and the doctrine of equivalents protect the substance of a patentee's right to exclude by preventing mere colorable differences or slight improvements from escaping infringement, the former, by incorporating equivalents of disclosed structures into the literal scope of a functional claim limitation, and the latter, by holding as infringements equivalents that are beyond the literal scope of the claim. They do so by applying similar analyses of insubstantiality of the differences.

145 F.3d at 1310, 46 USPQ2d at 1758. We went on to point out in Chiuminatta that a "lack of equivalent structure under a means-plus-function limitation may preclude a finding of equivalence under the doctrine of equivalents." Id. We stated that such would be the case unless a variant that was accused of infringement--but that did not literally infringe a means- plus-function limitation--was due to technological advances developed after the patent was granted and "constitute[d] so insubstantial a change from what [was] claimed in the patent that it should be held to be an infringement." Id.

As just seen, our holding that the WMS 400 slot machine does not literally infringe claim 1 of the Telnaes patent is not based on a finding that the accused device lacks structure equivalent to that disclosed in the patent. On the contrary, we have sustained the district court's finding that the WMS 400 slot machine has equivalent structure. However, we have reversed the district court's holding of literal infringement based on a lack of identity of function. Consequently, unlike Chiuminatta, the accused device in this case may still infringe under the doctrine of equivalents. See Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1320-21, 50 USPQ2d 1161, 1167-68 (Fed.Cir.1999) (an accused device can infringe under the doctrine of equivalents without infringing literally under 35 U.S.C. ¤ 112, ¦ 6 because the doctrine only requires substantially the same function, not identicality of function as in section 112, ¦ 6).

The question before us, then, is whether the district court clearly erred in finding that the differences between the WMS 400 slot machine and the claimed invention are insubstantial. In challenging the district court's finding, WMS argues that the district court failed to analyze equivalency on a limitation-by-limitation basis. It also contends that the accused device functions in a different way from the claimed invention, in that it does not assign numbers to stop positions to determine a result, but rather, determines a result before stop positions are selected.

We reject WMS's arguments. We discern no clear error in the district court's finding of insubstantial differences between the claimed invention

and the accused device. As far as the first argument is concerned, examination of the district court's opinion makes it clear that, in the course of addressing the issue of literal infringement of claim 1 (which involved a *1354 determination of the substantiality of the differences between the structure of the claimed invention and the accused device and in which equivalent structure was found), the court properly conducted an element-by- element analysis. See WMS Gaming, slip op. at 10-12, 17-19.

WMS's second argument, that the accused device does not assign numbers to stop positions, also fails. While the WMS 400 slot machine performs the step of calculating the payoff amount before selecting the stop positions, this unclaimed extra step does not change the basic character of the device. In the WMS 400 slot machine, each stop position corresponds to at least one combination of numbers and is selected by iteratively choosing a plurality of numbers using a random number generator. Choosing two random numbers, performing mathematical operations to determine the payoff amount, and then choosing a third random number does not change the fact that each stop position is identified by a combination of numbers. The accused device therefore assigns numbers to stop positions as required by claim 1 of the Telnaes patent.

In sum, we reverse the district court's holding of literal infringement of claim 1, but affirm its holding of infringement of that claim under the doctrine of equivalents. We therefore reverse the court's holding of literal infringement of claims 2, 4, 5, 6, and 8, but affirm its holding of infringement of those claims under the doctrine of equivalents. We affirm the court's holding of infringement of claims 9 and 10 under the doctrine of equivalents.

II.

As noted above, the district court determined that WMS had willfully infringed the Telnaes patent, and therefore trebled its award of damages. The court found that WMS knew of the Telnaes patent and failed to satisfy its duty of care to avoid infringing it. See WMS Gaming, slip op. at 43. In arriving at its finding, the court noted that after WMS became aware of the Telnaes patent, its engineers "first developed a design that did not use Telnaes' invention, but made up for low top payouts with a higher frequency of payouts." Id. at 21. The court further noted that WMS concluded that such a design could not compete with the Telnaes machine and unsuccessfully sought to obtain a license under the Telnaes patent. See id. According to the court, "[h]aving 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 willful disregard of IGT's rights under the Telnaes ... patent." Id. at 21-22.

WMS argues that the district court clearly erred in finding willful infringement. It contends that it did not act in disregard of IGT's patent rights, but rather made a good faith effort to design around the Telnaes patent. IGT responds that the district court's finding of willful infringement was not clearly erroneous. Noting that the district court heard the testimony of WMS employees and observed their demeanor, it contends that WMS clearly was aware of the Telnaes patent and its significance and that the court simply disbelieved WMS's explanations of its conduct.

[16][17][18] In order to find willful infringement, the district court "was required to find by clear and convincing evidence in view of the totality of the circumstances that [WMS] acted in disregard of the [Telnaes] patent and lacked a reasonable basis for believing it had a right to do what it did." Amsted Indus., Inc. v. Buckeye Steel Castings Co., 24 F.3d 178, 181, 30 USPQ2d 1462, 1464 (Fed.Cir.1994). Based on the clear error standard of

review, if we were affirming the district court's finding of literal infringement of claim 1, we would not be inclined to disturb the court's finding of willful infringement. However, our holding of no literal infringement changes the picture. While "it is not a rule of law that infringement that is not literal can never be sufficiently culpable to warrant enhanced damages [,] *1355 ... avoidance of literal infringement is a fact to be considered" in determining whether there has been willful infringement. Hoechst Celanese Corp. v. BP Chems. Ltd., 78 F.3d 1575, 1583, 38 USPQ2d 1126, 1133 (Fed.Cir.1996). Accordingly, we remand to the district court to reconsider the issue of willfulness in light of the finding of no literal infringement. When the district court reconsiders its finding of willful infringement, it should bear in mind that the patent law encourages competitors to design or invent around existing patents. See Westvaco Corp. v. International Paper Co., 991 F.2d 735, 745, 26 USPQ2d 1353, 1361 (Fed.Cir.1993); see also State Indus., Inc. v. A.O. Smith Corp., 751 F.2d 1226, 1235-36, 224 USPQ 418, 424 (Fed.Cir.1985) (explaining that designing around existing patents promotes competition to the benefit of consumers). III.

We turn next to the validity issue. In ruling that the Telnaes patent was not invalid, the district court rejected WMS's argument that the claims at issue were obvious in view of certain prior art.

[19][20][21][22] A claimed invention is unpatentable if the differences between it and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. ¤ 103(a) (1994); see Graham v. John Deere Co., 383 U.S. 1, 13-14, 86 S.Ct. 684, 15 L.Ed.2d 545, 148 USPQ 459, 465 (1966). The ultimate determination of whether an invention is or is not obvious is a legal conclusion based on underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness. See Graham, 383 U.S. at 17-18, 86 S.Ct. 684, 15 L.Ed.2d 545, 148 USPQ at 467; Miles Labs., Inc. v. Shandon Inc., 997 F.2d 870, 877, 27 USPQ2d 1123, 1128 (Fed.Cir.1993). The underlying factual determinations on which the legal conclusion of obviousness is based are reviewed for clear error. See Kolmes v. World Fibers Corp., 107 F.3d 1534, 1541, 41 USPQ2d 1829, 1833 (Fed.Cir.1997). Because a patent is presumed to be valid, see 35 U.S.C. ¤ 282 (1994), the party asserting invalidity has the burden of showing invalidity by clear and convincing evidence. See Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH, 139 F.3d 877, 881, 45 USPQ2d 1977, 1981 (Fed.Cir.1998). The burden on the party asserting obviousness is more easily carried when the references on which the assertion is based were not directly considered by the examiner during prosecution. See Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc., 98 F.3d 1563, 1569, 40 USPQ2d 1481, 1485 (Fed.Cir.1996).

[23] When an obviousness determination relies on the combination of two or more references, there must be some suggestion or motivation to combine the references. See In re Rouffet, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed.Cir.1998). The suggestion to combine may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved. See id. at 1357, 149 F.3d 1350, 47 USPQ2d at 1458. "When determining the patentability of a claimed invention which combines two known elements, 'the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.' " In re Beattie, 974 F.2d 1309, 1311-12, 24 USPQ2d 1040, 1042

(Fed.Cir.1992) (quoting Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed.Cir.1984)).

[24] At trial, WMS presented three prior art patents to support its contention of obviousness: United States Patent No. 4,095,795, entitled "Amusement Apparatus and Method," issued to James Saxton et al. on June 20, 1978 (the Saxton patent); *1356 United States Patent No. 3,918,716, entitled "Game Apparatus for Trying Coincidence between Randomly Selected Characters," issued to Hiroshi Nonaka et al. on November 11, 1975 (the Nonaka patent); and Australian Patent No. 280649, entitled "An Improved Electrically Operated Gaming Machine," issued to Albert Cohen et al. on April 6, 1967 (the Cohen patent). The Saxton patent was considered by the examiner during prosecution, but the Nonaka patent and the Cohen patent were not.

On appeal, WMS makes the same arguments that it did in the district court. Thus, it urges that Saxton combined with either Cohen or Nonaka renders the claimed invention obvious. WMS contends that Saxton teaches a reel-type slot machine under microprocessor control that uniformly maps numbers to stop positions. WMS further contends that Cohen and Nonaka teach or suggest the non-uniform mapping of numbers to stop positions (i.e., assigning a plurality of numbers to stop positions where the plurality of numbers exceeds the number of stop positions) to decrease the odds of winning. Based on these references, WMS argues that it would have been obvious to one of ordinary skill in the art to combine the non-uniform mapping of Cohen or Nonaka with the reel- type slot machine of Saxton to arrive at the claimed invention. In addressing WMS's challenge to the district court's validity ruling, we consider the Graham inquiries in turn, beginning with the scope and content of the prior art.

The district court found, and the parties agree, that the Saxton patent teaches a reel-type slot machine controlled by a software program running on a microprocessor. Saxton, col. 3, lines 7-17, col. 5, lines 9-27. The software includes a random number generator algorithm that selects the stop position of each physical reel. Id., col. 3, lines 38-42. In the case of each reel, the range of numbers from which the random number generator selects is equal to the number of stop positions on the reel, and exactly one number is assigned to each stop position. Id. Saxton teaches physical reels, mechanisms to start and stop the reels, and an interface between physical reels and electronic control circuitry. Id., col. 3, line 63--col. 5, line 8. Saxton further teaches that physical reels are interchangeable with electronic displays, such as symbol display devices. Id., col. 3, lines 8-10. Saxton does not teach a range of numbers that exceeds the number of stop positions and fails to teach non-uniformly mapping these numbers to stop positions in order to manipulate the probability of winning. In Saxton, each stop position is allocated exactly one number, and therefore the numbers are uniformly mapped (i.e., on a one-to-one basis) to stop positions.

The Cohen patent recites that existing gaming machines "invariably depend upon mechanical force derived from handle movements for their function," Cohen, p. 3, lines 18-19, and it notes that mechanical machines have been found to be subject to manipulation "to increase the chances of obtaining a paying combination." Id., p. 3, lines 21-22. The patent then states:

It is the object of this invention to provide a gaming machine which does not utilize the mechanical force applied through its operating handle for actuation of its machinery, thereby arriving at its displayed combinations more truly through chance incidence independent of any extraneous influence. It is also an object of the invention to provide a gaming machine which is durable in service and relatively quiet in operation.

Id., p. 3, line 28--p. 4, line 4.

Consistent with its stated objectives, the Cohen patent teaches an electro-mechanical slot machine that does not use physical reels. Rather, it

employs symbol display devices to show the outcome of each actuation of the machine. Id., p. 4, lines 5-30. Each symbol display device uses transparent plastic wafer elements that are illuminated on one of three windows. Id. Six wafer elements are used, representing the playing cards Ace, King, Queen, Jack, Ten, and Nine. Id. Cohen uses three electro-*1357 mechanical random number selectors, one for each window, which are referred to as "uniselectors." Id., p. 8, lines 21-26. Each uniselector includes 25 contacts that are wired to the six playing card symbols. Id., Figure 4. The number of contacts wired to each symbol is non-uniform, i.e., some symbols are wired to more contacts than other symbols. Id. When the handle of the slot machine is pulled, the three uniselectors rotate until randomly set timers stop each one at one of the 25 contacts. Id., p. 5, line 33--p. 6, line 6. The stopping position/contact of each uniselector causes one of the card symbols to be displayed by illuminating the wafer element electrically coupled to that position/contact. Id., Figure 4. A total of three such symbols are displayed in a horizontal line.

The Nonaka patent discloses a digital electronic slot machine, in which the results are displayed using three symbol display devices rather than reels. Id., col. 1, lines 35-39. The abstract states that the claimed invention is "[a] game apparatus having [a] digital circuit arrangement such that some randomly selected characters are sequentially exhibited on a plurality of display sections when the player sets the apparatus in operation, as by the operation of a chip into its slot." The first of the listed objects of the invention is providing a game apparatus which eliminates the intrinsic deficiencies of the prior art mechanical machines, such as noise and wear of moving parts. Nonaka, col. 1, lines 26-32, 35-39.

Each symbol display device in Nonaka uses transparent acrylic or glass display panels that are illuminated behind windows. Id., col. 9, lines 1- 8. Seven display panels are used, representing the symbols "!", " * ", "# ", "x", "y", "z", and "?". Id., Figure 6. Nonaka uses three electronic random number generators, one for each symbol display device. Id., Figure 1. Each random number generator includes 16 counter outputs that are wired to the seven display panels/symbols. Id., Figure 6. The number of outputs wired to each symbol is non-uniform. Id. When the game is activated, each of the three random number generators randomly selects one of the outputs. Id., col. 2, lines 5-11. This, in turn, results in one of the seven display symbols being illuminated by the symbol display device corresponding to the random number generator. Id., col. 3, lines 42-47.

Each random number generator includes an oscillator, a counter, a timer, and a driver circuit. When the game is activated, the oscillator provides a clock signal to the counter, which begins sequentially counting through the sixteen counter outputs (when the counter reaches sixteen, it rolls-over to one and continues counting). An electronic timer disables the clock input to the counter after a set time. The output that the counter has reached when the clock stops is the randomly selected outcome. [FN8] The outputs of the counter are connected to a driver circuit, which drives the display device. Each counter output is associated with an output terminal of the driver circuit. The counter output causes one of the display symbols to be displayed by activating the associated output terminal of the driver circuit, which in turn illuminates the panel associated with that output. A total of three such symbols are displayed on a horizontal line. Id., col. 1, line 61--col. 2, line 11; col. 3, lines 13-59.

FN8. Although it is not explicitly discussed, it appears that the random nature of the circuit is due to the high frequency of the oscillator relative to the tolerance of the timer. In other words, there is a slight difference in the period of the timer from one game to another. If the frequency of

the oscillator is high enough, then the number of clock pulses during the period of the timer will pseudo-randomly change. Because the number of clock pulses determines the output of the counter, the output will randomly change.

Turning to the second Graham inquiry, the parties stipulated to a level of ordinary skill in the art at the time Telnaes conceived of the claimed invention. According to the stipulation, a person possessing the stipulated level of ordinary skill would have completed at least several college-level courses in computer science or electrical *1358 engineering, would have been employed for several years in the field of engineering, developing and designing gaming devices, and would have had some knowledge of probability theory, random numbers, and computer programming.

The third Graham inquiry involves an examination of the differences between the claimed invention and the prior art. There is no dispute that Saxton teaches every aspect of the claimed invention with the exception of the non-uniform mapping of numbers to stop positions to decrease the odds of winning. Thus, the obviousness issue boils down to the question of whether Cohen or Nonaka teach this aspect of the invention, and whether there is motivation to combine Cohen or Nonaka with Saxton.

In regard to what Cohen teaches, the district court found that:

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.

WMS Gaming, slip op. at 35. In short, the district court found that the uniselectors and the display symbols of Cohen merely simulate physical reels.

In regard to the Nonaka patent, the district court found that:

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 [sic.] 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.

WMS Gaming, slip op. at 36. In other words, the district court found that the driver circuits [FN9] and the display symbols of Nonaka also simulate physical reels.

FN9. The district court erroneously referred to the random number generators as driver circuits. The driver circuits are actually one component of the random number generators, as seen from the discussion above concerning the scope and content of the Nonaka patent.

WMS challenges the district court's findings. It argues that, like Telnaes, both Cohen and Nonaka teach the concept of decreasing the odds of winning. WMS states that both Cohen and Nonaka use random number generators and non- uniformly map numbers to display symbols. "[T]he Cohen patent," WMS asserts, "was a 'slot machine simulation device' that had six possible displays. The displays did not have a one in six probability. Instead, one of the six displays had a one in 25 chance of being selected."

Similarly, WMS points to the Nonaka patent as describing "a method of electronically assigning 16 numbers to only 7 gaming symbols. Certain gaming symbols have multiple numbers assigned to them; at least one gaming symbol has only one number assigned to it." Thus, WMS reasons that Nonaka "teaches a means of lowering the probability of winning combinations of gaming symbols by varying the quantity of numbers assigned to particular symbols."

IGT disputes WMS's characterization of Cohen and Nonaka. According to IGT, Cohen has no reels or reel stop positions, and consequently, "it does not teach what is claimed in Telnaes but is missing from Saxton--the assignment of a plurality of numbers to reel stop positions." In a like vein, IGT states that "Nonaka uses driver circuits to light symbol displays, but does *1359 not use numbers or reel stop positions." In short, IGT contends that Cohen and Nonaka teach the mapping of numbers to symbols, which merely simulates the occurrence of multiple symbols on a physical reel.

We do not believe that the district court clearly erred in finding that Cohen and Nonaka do not teach non-uniform mapping to lower the odds of winning, but merely teach the non-uniform mapping of numbers (the outputs of the uniselectors or driver circuits) to display symbols to simulate physical reels. Based upon the record before us, we are not prepared to second-guess the district court's conclusion that Cohen and Nonaka simulate traditional reel-type slot machines. As already seen, each reel of a typical mechanical slot machine has a plurality of stop positions, with a symbol found at each stop position. The number of unique symbols is typically less than the number of stop positions, however. For example, a physical reel with 20 stop positions may include one stop position with a "7" symbol, six stop positions with cherry symbols, five stop positions with double-bar symbols, three stop positions with triple-bar symbols, and five stop positions with blank symbols. Thus, some symbols appear multiple times on the reel. The mapping of multiple outputs to symbols, as in Cohen and Nonaka, simulates the multiple appearances of those symbols on a physical reel. For example, in the first display in Figure 6 of Nonaka, one output is mapped to the "!" symbol, one output is mapped to the " * " symbol, three outputs are mapped to the "# " symbol, seven outputs are mapped to the "x" symbol, one output is mapped to the "y" symbol, two outputs are mapped to the "z" symbol, and one output is mapped to the "?" symbol. It can fairly be said that this mapping simulates a 16 stop position reel with one "!" symbol, one " * " symbol, three "# " symbols, seven "x" symbols, one "y" symbol, two "z" symbols, and one "?" symbol.

Accepting the district court's finding that Cohen and Nonaka merely simulate the physical reels of a standard mechanical slot machine, we do not believe that it was clear error for the court not to read Cohen and Nonaka as teaching decreasing the odds of winning by increasing the range of numbers beyond the number of reel stop positions, as claimed in the Telnaes patent. This conclusion is reinforced by the fact that the stated objectives of Cohen and Nonaka are to overcome the deficiencies of mechanical reels, such as noise and being susceptible to wear and tampering.

Furthermore, even if Nonaka or Cohen did teach decreasing the odds of winning by non-uniformly mapping numbers to stop positions, WMS fails to point to anything in Nonaka or Cohen that indicates a motivation to combine the teachings of those references with Saxton. WMS identifies motivation in Saxton to substitute symbol display devices for physical reels, Saxton, col. 2, lines 41-44, but fails to identify, nor can we find, any motivation to combine the non-uniform mapping of Nonaka or Cohen with Saxton.

[25][26][27] The final underlying factual issue in the obviousness determination is objective evidence of non-obviousness, i.e., secondary considerations. See Graham, 383 U.S. at 17-18, 86 S.Ct. 684, 15 L.Ed.2d

545, 148 USPQ at 467. The consideration of the objective evidence presented by the patentee is a necessary part of the obviousness determination. See Rouffet, 149 F.3d at 1355, 47 USPQ2d at 1456. The objective evidence of non-obviousness may be used to rebut a prima facie case of obviousness based on prior art references. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed.Cir.1992). Objective evidence of nonobviousness may include commercial success, long-felt but unsolved need, and licenses showing industry respect. See Rouffet, 149 F.3d at 1355, 47 USPQ2d at 1456. The patentee bears the burden of showing that a nexus exists between the claimed features of the invention and the objective evidence offered to show non-obviousness. See Cable Elec. Prods., Inc. v. Genmark, Inc., 770 F.2d 1015, 1027, 226 USPQ 881, 888 (Fed.Cir.1985).

*1360 As evidence of commercial success, IGT presented evidence that the vast majority of slot machines sold throughout the world are virtual reel slot machines. To show long-felt need, it proffered evidence that the percentage of casino revenues from slot machines has increased dramatically since the introduction of virtual reel slot machines. Additionally, IGT provided evidence that several competitors have licensed the rights to the Telnaes patent and paid millions of dollars in royalties. Based on the testimony of Mr. Raymond Pike, an officer of IGT, the district court found that:

[V]irtual 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.

WMS Gaming, slip op. at 37-38.

As it did in the district court, to counter the objective evidence of non-obviousness, WMS argues that virtual reel slot machines were illegal in Nevada prior to 1984 and that therefore there was no motivation to develop or market these machines. IGT counters that virtual reel slot machines were not legalized until 1984 because no gambling device is legal until it is approved by the state regulatory authorities and that no gaming license for such a device was requested until 1984. WMS failed to present any evidence that any prior application for a gaming license for virtual reel slot machines had been made. This absence of prior gaming license applications, as IGT argues, appears to be more indicative that others had not conceived of the invention, rather than evidence that the licensing requirements discouraged others from conceiving or marketing virtual reel slot machines. Thus, we see no clear error in the district court's findings with respect to objective indicia of nonobviousness.

Based upon the foregoing, we affirm the district court's conclusion that the claims of the Telnaes patent would not have been obvious in light of the prior art of record. As discussed below, the Merit Sweet Shawnee is not in the record for the purpose of determining obviousness.

IV.

We turn next to the issue of damages. The district court determined that IGT was entitled to damages in the amount of $10,753,550. After trebling for willful infringement and after adding prejudgment interest, the court's final damages award was $32,845,189. As discussed above, on remand, the district court will be reconsidering its finding of willful infringement in view of our holding that the WMS 400 slot machine does not literally infringe the claims at issue. If the court determines that WMS did not willfully infringe, the damages award will be reduced because there will of course be

no trebling. In this section, we address a damages question that is unrelated to the issue of willful infringement.

[28] The district court initially awarded damages based on a reasonable royalty of $50 per machine. The court did so believing that IGT had indicated that it would only seek that amount. The court vacated the damages award, however, because in reality IGT had stipulated that it would seek compensation of at least $50 per machine. The revised damages award was based on lost profits and reasonable royalties. The court found that IGT had at least 75% of the market share for slot machines. The court awarded IGT lost profits of $2413 per machine for the machines IGT would have sold but for the infringement, and a reasonable royalty of $550 per machine for the remaining machines sold by WMS. As noted, the total damages award prior to trebling and prejudgment interest was $10,753,550.

*1361 [29] The district court's methodology for computing damages is discretionary and the quantum of damages awarded is a factual issue reviewed for clear error. See SmithKline Diagnostics, Inc. v. Helena Lab. Corp., 926 F.2d 1161, 1164, 17 USPQ2d 1922, 1925 (Fed.Cir.1991). We find no abuse of discretion in the district court's methodology for computing damages and no clear error in the quantum of damages awarded.

WMS argues that IGT is not entitled to lost profits because IGT is a holding company that does not manufacture or sell slot machines. See Trell v. Marlee Elecs. Corp., 912 F.2d 1443, 1445, 16 USPQ2d 1059, 1061 (Fed.Cir.1990). WMS, however, stipulated in a pretrial order that IGT does manufacture slot machines. The district court denied WMS's motion to withdraw that stipulation because the motion was made late in the damages phase of the trial.

The district court did not abuse its discretion in denying WMS's motion to withdraw its stipulation. IGT owns a subsidiary that manufactures and sells slot machines. IGT and its subsidiary are closely tied and have consolidated records. WMS had access to those consolidated records and therefore WMS cannot assert that it was prejudiced by not being able to access the records of IGT or its subsidiary. Further, if the district court had granted WMS's motion to withdraw its stipulation, it would have been obligated to give IGT the opportunity to join the subsidiary. Cf. Kalman v. Berlyn Corp., 914 F.2d 1473, 1480, 16 USPQ2d 1093, 1098-99 (Fed.Cir.1990) (holding that it was an abuse of discretion not to allow the plaintiff to amend its complaint to add a related defendant when the defendant and the related defendant were treated as one and the defendant was not prejudiced). WMS cannot limit its liability due to a procedural error for which it was partly at fault and was not prejudiced. We have reviewed WMS's other assertions of error in awarding damages and find them unpersuasive.

V.

[30] The final matter that we must address is WMS's appeal of the district court's order denying it a new trial. Because the denial of a motion for a new trial is a procedural issue not unique to patent law, we apply the law of the regional circuit where the appeal from the district court would normally lie. See Amstar Corp. v. Envirotech Corp., 823 F.2d 1538, 1550, 3 USPQ2d 1412, 1421 (Fed.Cir.1987). In this case, that is the Seventh Circuit.

[31][32] Approximately two months after the damages phase of the trial, WMS located a slot machine--the Merit Sweet Shawnee--that predated the filing date of the Telnaes patent and allegedly operated in a manner similar to the claimed invention. Based on this newly discovered prior art, WMS moved for a new trial under Fed.R.Civ.P. 59. [FN10] To justify a new trial, WMS was required to show, by clear and convincing evidence, inter alia, that the evidence at issue could not have been discovered by due diligence and that it was likely to change the result of the trial. See United States v.

McGaughey, 977 F.2d 1067, 1075 (7th Cir.1992). Decisions granting or denying motions for new trials are committed to the sound discretion of the district court and may be upset only if no reasonable person could agree with the district court. See id. The district court denied WMS's motion. We are unable to say that the denial was an abuse of discretion.

FN10. The parties dispute whether this motion was timely filed and thus whether it was properly considered a Rule 59 or Rule 60(b)(2) motion. Under Seventh Circuit law, however, the standard for establishing grounds for relief based on newly discovered evidence is the same under Rule 59 or Rule 60(b)(2). See Peacock v. Board of Sch. Comm'rs of Indianapolis, 721 F.2d 210, 213 (7th Cir.1983); see also 11 Charles Alan Wright et al., Federal Practice and Procedure ¤ 2808 (2d ed.1995).

*1362 WMS presented a plethora of evidence regarding the diligence of its attorneys in discovering prior art. The district court concluded, however, that WMS failed to show the diligence of its own employees. John Nicastro, a senior officer of WMS who located the Merit Sweet Shawnee, did not attempt to locate prior art before or during the trial. Once Mr. Nicastro began looking for prior art, he was able to locate the newly discovered device within a month. It seems to us that an employee of WMS was in a better position than WMS's attorneys to locate the prior art because the prior art was a physical device rather than a patent or other published reference. WMS's employees had more knowledge of the characteristics of non-patented slot machines and the places to locate slot machines that were no longer being sold. Thus, we do not believe that the district court abused its discretion by finding that the due diligence standard extended to both the corporation and its attorneys. Cf. Taylor v. Texgas Corp., 831 F.2d 255, 259 (11th Cir.1987) (holding that evidence was not "newly discovered" when a corporate party had possession of the evidence during trial). WMS's failure to show due diligence is sufficient grounds to affirm the denial of a new trial regardless of the persuasiveness of the new evidence, an issue upon which we express no views.

CONCLUSION

The judgment of the district court is affirmed-in-part, reversed-in-part, vacated-in-part, and remanded. We (1) reverse the holding of literal infringement; (2) affirm the holding of infringement under the doctrine of equivalents; (3) vacate the holding of willful infringement; (4) affirm the holding that the Telnaes patent is not invalid in view of the cited references; and (5) affirm the quantum of actual damages, but vacate the damages award to the extent it is based on trebling for willful infringement. The order denying a new trial is affirmed. The case is remanded to the district court for further proceedings in connection with the issue of willful infringement and for the entry of a final damages award based on the outcome of those proceedings.

AFFIRMED-IN-PART, REVERSED-IN-PART, VACATED-IN-PART, AND REMANDED.

COSTS

Each party shall bear its own costs.

184 F.3d 1339, 51 U.S.P.Q.2d 1385

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