

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

LG ELECTRONICS U.S.A., INC., and
LG ELECTRONICS, INC.,

Plaintiffs,

v.

WHIRLPOOL CORPORATION,

Defendant.

C.A. No. 08-234-GMS

WHIRLPOOL CORPORATION,
WHIRLPOOL PATENTS COMPANY,
WHIRLPOOL MANUFACTURING
CORPORATION, and MAYTAG
CORPORATION,

Counterclaim Plaintiffs,

v.

LG ELECTRONICS U.S.A., INC.,
LG ELECTRONICS, INC., and LG
ELECTRONICS MONTERREY MEXICO,
S.A., DE, CV,

Counterclaim Defendants.

MEMORANDUM

I. INTRODUCTION

On April 24, 2008, LG Electronics U.S.A., Inc. and LG Electronics, Inc. (collectively, “LG”) filed this patent infringement action against Whirlpool Corporation and Maytag Corporation (collectively, “Whirlpool”). (D.I. 1.) LG filed its second amended complaint on

May 26, 2009, alleging, among other things, that Whirlpool manufactured and sold refrigerators which infringed U.S. Patent No. 7,316,121 (“the ‘121 patent”) and seeking declaratory judgments of invalidity, non-infringement and unenforceability of Whirlpool’s U.S. Patent Nos. 6,082,130 (“the ‘130 patent”) and 5,269,601 (“the ‘601 patent”). (D.I. 72.) In its answer, Whirlpool sought declaratory judgments of non-infringement, invalidity and unenforceability with respect to the ‘121 patent, and counterclaimed that LG manufactured and sold refrigerators which infringed the ‘130 and ‘601 patents. (D.I. 140.)

The court held a nine-day jury trial from March 1 to March 11, 2010. (D.I. 399-407.) At trial, the parties moved for judgment as a matter of law (“JMOL”) on a number of grounds pursuant to Rule 50(a) of the Federal Rules of Civil Procedure (D.I. 389; D.I. 392),¹ which the court denied (D.I. 405 at 1460:21 - 1461:1). On March 11, 2010, the jury returned a unanimous verdict, finding that LG’s ‘121 patent was valid and not infringed. (D.I. 397.) The jury also found that LG’s side-by-side refrigerators literally infringed claims 1, 2, 6 and 9, but not claim 8, of Whirlpool’s ‘130 patent, LG’s French door refrigerators did not infringe the ‘130 patent, and the ‘130 patent was valid and was not willfully infringed by LG. (Id.) With respect to Whirlpool’s ‘601 patent, the jury found that LG literally infringed claims 1, 4 and 15 and that those claims were invalid as anticipated. (Id.) The jury awarded \$1,786,925 in favor of Whirlpool for LG’s infringement, and the court entered judgment on the verdict on April 9, 2010.

¹Specifically, LG moved for JMOL with respect to: (1) infringement of the ‘121 patent; (2) failure to establish the prior invention of the ‘121 patent; (3) non-infringement of the ‘601 patent; (4) non-infringement of the ‘130 patent; and (5) no willful infringement of the ‘130 patent. (D.I. 389.) Whirlpool moved for JMOL with respect to: (1) infringement of the ‘130 patent; (2) willful infringement of the ‘130 patent; (3) validity of the ‘130 patent; (4) infringement of the ‘601 patent; (5) validity of the ‘601 patent; (6) non-infringement of the ‘121 patent; and (7) invalidity of the ‘121 patent. (D.I. 392.)

(Id.; D.I. 417.)

Presently before the court are the parties' post-trial motions.² Having considered the substantial evidence in the record, the parties' post-trial submissions, and the applicable law, the court will deny the parties' post-trial motions with the exception of Whirlpool's motion for judgment as a matter of law ("JMOL") regarding anticipation of claim 15 of the '601 patent, Whirlpool's motion for JMOL with respect to infringement of the '130 patent by LG's French door refrigerators, Whirlpool's request for a new trial on damages for infringement of the '130 patent and claim 15 of the '601 patent, LG's request for a new trial regarding the sufficiency of the written description of the '130 patent, LG's request for a new trial regarding the obviousness of claim 15 of the '601 patent, Whirlpool's request for an accounting, and Whirlpool's motion for prejudgment and postjudgment interest. The court's reasoning follows.

II. BACKGROUND OF THE TECHNOLOGY

The patents-in-suit relate to refrigerator technology. Specifically, Whirlpool's '601 patent relates to plaques in the liner of the refrigerator to reduce thermally-induced bowing of the refrigerator walls. ('601 patent, col. 2:19-23.) The claimed liner structure comprises: "bonded-together layers of an exterior metal shell, an intermediate rigid foam insulating layer, and an interior planar plastic layer, wherein said bowing reduction means comprises at least one plaque formed on said interior plastic layer . . ." (Id. at col. 7:42-46.) Relevant to the pending motions,

²The parties' post-trial motions include: (1) LG's renewed motion for JMOL or for a new trial (D.I. 412); (2) Whirlpool's renewed motion for JMOL or for a new trial (D.I. 413); (3) Whirlpool's motion for a permanent injunction (D.I. 408); (4) Whirlpool's motion for an award of prejudgment and postjudgment interest (D.I. 444); (5) Whirlpool's motion to deny and dismiss LG's alleged bench trial issues (D.I. 419), and (6) Whirlpool's motion for relief from judgment under Rule 60(b) (D.I. 461).

the asserted claims require the plaques in the inner plastic liner to function as expansion joints and beam elements to prevent bowing of the inner plastic layer. Whirlpool's '130 patent discloses a refrigerator design in which the ice storage bin is moved from its conventional location in the back of a freezer compartment to the compartment door. The '130 patent discloses: "[a] refrigerator including a freezer compartment having an access opening and a closure member for closing the access opening, the refrigerator comprising . . . an ice storage bin mounted to the closure member [and] . . . a motor mounted on the closure member . . ." ('130 patent, col. 12:50-58.) LG's '121 patent relates to a mechanism for dispensing ice and water from the outer surface of a refrigerator door. The '121 patent discloses a combination of a retractable or extendable tray, a rotatable or retractable spigot, and a mechanical drive mechanism which includes a spring. ('121 patent, col. 9:65 - 10:54.)

III. DISCUSSION

A. Judgment as a Matter of Law

To prevail on a renewed motion for judgment as a matter of law following a jury trial and verdict, the moving party "must show that the jury's findings, presumed or express, are not supported by substantial evidence or, if they were, that the legal conclusion(s) implied [by] the jury's verdict cannot in law be supported by those findings." *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1348 (Fed. Cir. 1998) (internal quotations omitted). "Substantial evidence" is defined as "such relevant evidence from the record taken as a whole as might be accepted by a reasonable mind as adequate to support the finding under review." *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 893 (Fed. Cir. 1984).

The court should only grant the motion "if, viewing the evidence in the light most

favorable to the nonmovant and giving it the advantage of every fair and reasonable inference, there is insufficient evidence from which a jury reasonably could find liability.” *Lightning Lube, Inc. v. Witco Corp.*, 4 F.3d 1153, 1166 (3d Cir. 1993) (citing *Wittekamp v. Gulf Western Inc.*, 991 F.2d 1137, 1141 (3d Cir. 1993)). “In determining whether the evidence is sufficient to sustain liability, the court may not weigh the evidence, determine the credibility of witnesses, or substitute its version of the facts for the jury’s version.” *Lightning Lube*, 4 F.3d at 1166 (citing *Fineman v. Armstrong World Indus., Inc.*, 980 F.2d 171, 190 (3d Cir. 1992)). Rather, the court must resolve all conflicts of evidence in favor of the non-movant. *Williamson v. Consol. Rail Corp.*, 926 F.2d 1344, 1348 (3d Cir. 1991); *Perkin-Elmer Corp.*, 732 F.2d at 893.

1. Invalidity

a. Obviousness

Section 103 provides, in pertinent part, that a patent may not be obtained “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious . . . to a person having ordinary skill in the art.” 35 U.S.C. § 103. Obviousness is a question of law that is predicated upon several factual inquiries. *Richardson-Vicks Inc. v. Upjohn Co.*, 122 F.3d 1476, 1479 (Fed. Cir. 1997).

Specifically, the trier of fact must consider: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary considerations of non-obviousness such as commercial success, unexpected results and long-felt need. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 86 S. Ct. 684, 15 L. Ed. 2d 545 (1966) (listing the “Graham factors”). The Supreme Court, in *KSR Int’l Co. v. Teleflex Inc.*, reaffirmed that the *Graham* factors “continue to define the inquiry that

controls.” 550 U.S. 398, 406-07, 127 S. Ct. 1727, 167 L. Ed. 2d 705 (2007). Rejecting the rigid application of the “teaching, suggestion, or motivation” (“TSM”) test in favor of a more expansive and flexible approach in the determination of obviousness, the Federal Circuit explained that it is permissible for a court to look to “the effects of demands known to the design community or present in the marketplace; and to the background knowledge possessed by a person having ordinary skill in the art . . .” *Id.* at 418.

In assessing obviousness, “the invention must be considered as a whole without the benefit of hindsight, and the claims must be considered in their entirety.” *Rockwell Int’l Corp. v. United States*, 147 F.3d 1358, 1364 (Fed. Cir. 1998) (citing *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 1551 (Fed. Cir. 1983); *Medtronic, Inc. v. Cardiac Pacemakers, Inc.*, 721 F.2d 1563, 1567 (Fed. Cir. 1983)). Indeed, the Supreme Court in *KSR* recognized that a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was independently known in the prior art. *KSR*, 550 U.S. at 418. It is important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. *Id.* Additionally, although a “combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results,” a combination of elements is not obvious if the combined elements work together “in an unexpected and fruitful manner.” *Id.* at 416. When challenging the validity of a patent for obviousness based on a combination of prior art references, the challenger bears the burden of proving, by clear and convincing evidence, that one of ordinary skill in the art would have had reason to attempt to make the combination and would have had a reasonable expectation of success in doing so. *PharmaStem Therapeutics, Inc. v.*

ViaCell, Inc., 491 F.3d 1342, 1360 (Fed. Cir. 2007).

(1) The ‘121 patent

In support of its renewed motion for JMOL, Whirlpool contends that its Advanced Dispenser possessed the tray and spigot of the ‘121 patent prior to LG’s earliest date of invention because Whirlpool reduced the Advanced Dispenser to practice in prototypes built in 2001, 2002 and 2003. (D.I. 414 at 3-4.) Applying *KSR*, Whirlpool contends that the “mechanical drive mechanism” of the ‘121 patent, which is not present in Whirlpool’s Advanced Dispenser, is merely an old structure performing its accustomed function and was well-known to one of ordinary skill in the art. (Id. at 6.) Whirlpool also contends that the ‘121 patent is obvious in light of the prior art Kim reference, which discloses a mechanical drive mechanism having racks, pinions and springs for extending or retracting a water spigot in a manner similar to the ‘121 patent. (Id.; D.I. 416 at DX569.)

In response, LG contends that substantial evidence supports the jury’s non-obviousness verdict regarding claims 20, 21 and 36 of the ‘121 patent because Whirlpool’s Advanced Dispenser does not include a mechanical drive mechanism, and Whirlpool failed to prove that it would have been obvious to combine its incomplete Advanced Dispenser with the prior art Kim reference. (D.I. 438 at 1.) Moreover, LG contends that Whirlpool suppressed and concealed its Advanced Dispenser by not disclosing the invention to the public until it filed the patent application in June 2004 and commercialized it in January 2005. (Id. at 2.)

The court concludes that substantial evidence supports the jury’s verdict of non-obviousness with respect to claims 20, 21 and 36 of the ‘121 patent. The parties do not contest the fact that Whirlpool’s Advanced Dispenser contains a rotatable spigot and extendable tray, but

is missing the mechanical drive mechanism claimed in the ‘121 patent. (D.I. 402 at 732:2-733:9; 742:14-23.) Although the parties agree that springs were well-known, (D.I. 402 at 815:21-25), the jury was entitled to credit the testimony of Whirlpool’s expert, Dr. Myung Ryul Lee, who explained that using springs in dispensers with a mechanical drive would not be an obvious solution due to the difficulty of implementing them in an ice dispenser, (D.I. 400 at 265:13-23). The jury was also entitled to reject the testimony of Whirlpool’s expert, Dr. Albert Karvelis, who testified that one of ordinary skill in the art would combine Whirlpool’s Advanced Dispenser with the Kim reference, (D.I. 402 at 815:14 - 821:4), in favor of Dr. Warren Bessler’s testimony on behalf of LG, which indicated that the Kim reference is vastly different from the ‘121 patent, (D.I. 404 at 1185:5 - 1187:15). Specifically, Dr. Bessler testified that the spigot in the ‘121 patent is biased to open out automatically, whereas the spigot in the Kim reference is biased to stay inside the refrigerator door, thereby preventing it from being used to fill large containers hands-free. (Id.) For these reasons, the court will uphold the jury’s verdict of non-obviousness.

(2) The ‘130 and ‘601 patents

By way of its renewed motion for JMOL, LG contends that the ‘130 and ‘601 patents are invalid as obvious. (D.I. 412.) Rule 50(a) requires that a motion for JMOL must be made before the case is submitted to the jury to “specify the judgment sought and the law and facts that entitle the movant to the judgment.” Fed. R. Civ. P. 50(a)(2). This specificity requirement affords the opposing party “an opportunity to cure the defects in proof that might otherwise preclude the party from taking the case to the jury.” *Duro-Last, Inc. v. Custom Seal, Inc.*, 321 F.3d 1098, 1105 (Fed. Cir. 2003). Rule 50(b) permits a party to renew the motion for JMOL after the verdict. A party dissatisfied with a jury verdict may not prevail on a post-verdict motion for

JMOL based on grounds not raised in a pre-verdict motion for JMOL. *Id.* at 1107; *Greenleaf v. Garlock*, 174 F.3d 352, 364 (3d Cir. 1999). Here, LG failed to file a Rule 50(a) motion regarding the obviousness of the ‘130 and ‘601 patents before the court submitted the case to the jury.³ This omission is fatal to the post-verdict relief LG now seeks. (D.I. 389) Given the foregoing, the court will deny LG’s motion for JMOL of obviousness of the ‘130 and ‘601 patents.⁴

b. Anticipation

Section 102(a) provides that “[a] person shall be entitled to a patent unless . . . the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for [a] patent.” 35 U.S.C. § 102(a). To prove that a patent is invalid based on anticipation “requires that the four corners of a single, prior art document describe every element of the claimed invention, either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation.” *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000) (citations omitted). Because a patent as a whole is entitled to the presumption of validity, an accused infringer seeking to prove that a patent is anticipated by the prior art, and therefore invalid, must do so by clear and convincing evidence. *State Contracting & Eng’g Corp. v. Condotte Am., Inc.*, 346 F.3d 1057, 1067 (Fed. Cir. 2003).

³See footnote 1, *supra*.

⁴The same analysis and result apply to LG’s renewed motion for JMOL regarding the lack of written description of the ‘130 patent because LG failed to preserve this issue by way of its Rule 50(a) motion. The court will therefore review only LG’s motion for a new trial with respect to these issues.

In support of its renewed motion for JMOL that the '601 patent is valid as not anticipated, Whirlpool contends that neither the Goldstar catalog nor the Japanese Utility Model Application 1983-37484 ("the Matsushita patent") discloses every element of Whirlpool's claimed invention with sufficient clarity to prove its existence. (D.I. 414 at 7-9.) Specifically, Whirlpool contends that neither of these prior art references discloses an expansion joint or beam element to prevent thermally-induced bowing as required by the '601 patent. (Id. at 7-12.) Moreover, Whirlpool contends that neither reference discloses the side-by-side limitation of claim 15 of the '601 patent. (Id. at 12.) In response, LG contends that the jury's verdict regarding the invalidity of claims 1, 4 and 15 of the '601 patent as anticipated should be upheld because the prior art references disclose the expansion joints and beam elements, the "closely embracing" limitation, and the side-by-side limitation of the '601 patent. (D.I. 438 at 4.)

The court concludes that substantial evidence supports the jury's verdict that claims 1 and 4 of the '601 patent are invalid as anticipated. The jury could reasonably conclude that the uneven area in the thermoplastic resin insulating box of the Matsushita patent is equivalent to the plaques of the '601 patent, as the evidence indicates that both are intended to reduce thermally-induced bowing. (D.I. 416 at PTX404; '601 patent at col. 3:1-8.) Specifically, the Matsushita patent discloses that the uneven areas in the inner plastic box are intended to prevent the plastic from losing its rigidity and becoming deformed as a result of the liquefaction of Freon gas, which produces a vacuum. (D.I. 416 at PTX404.) The differences in the depths of the uneven area have a reinforcement effect that negates deformations in the inner box, and the uneven area is able to accommodate the gas build-up. (Id.) The jury was entitled to credit the testimony of LG's experts, Dr. Ching Ho Lee and Dr. Gary Mellinger, who testified that reducing bowing is an

inherent characteristic of plaques. (D.I. 404 at 1268:20-25; D.I. 405 at 1356:9-14.) Whirlpool's expert, Dr. Robert Caligiuri, also testified that the plaques increase the stiffness and the stretchiness of the liner when compared with unplaqued liners. (D.I. 401 at 639:9-14; 642:6-10.) This testimony, combined with a review of the '601 patent and the Matsushita patent, provide substantial evidence to support the jury's verdict of anticipation with respect to claims 1 and 4 of the '601 patent.

The court concludes that substantial evidence does not, however, support the jury's verdict of anticipation with respect to claim 15 of the '601 patent. Specifically, neither the Matsushita patent nor the Goldstar catalog contains a limitation requiring the refrigerator to be a side-by-side model. Although the prior art references must be read from the perspective of a person of ordinary skill in the art, this "does not grant a license to read into the prior art reference teachings that are not there." *Motorola Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1473 (Fed. Cir. 1997). Because neither of the prior art references introduced into evidence discloses the side-by-side limitation of claim 15, the jury's verdict of anticipation cannot stand.

LG's contention that claim 15 is not materially different from claim 1 has no bearing on the anticipation analysis, which does not include a materiality requirement. Regardless of the materiality of the side-by-side limitation, which is present in claim 15 of the '601 patent but not in claim 1, the law is clear that all claim limitations must be disclosed within the four corners of the reference to establish anticipation. *See Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268-69 (Fed. Cir. 1991) (holding that an inherent limitation must be "necessarily present" and cannot be established by "probabilities or possibilities").

2. Infringement

A patent infringement analysis entails two steps: “(1) claim construction to determine the scope of the claims, followed by (2) determination of whether the properly construed claim encompasses the accused structure.” *Bai v. L & L Wings, Inc.*, 160 F.3d 1350, 1353 (Fed. Cir. 1998) (citations omitted). The first step, claim construction, is a matter of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372, 116 S. Ct. 1384, 1387, 134 L. Ed. 2d 577 (1996). The second step, determination of infringement, is a question of fact. *Bai*, 160 F.3d at 1353. A patentee must establish literal infringement by a preponderance of the evidence. *See, e.g., Braun Inc. v. Dynamics Corp. of Am.*, 975 F.2d 815, 819 (Fed. Cir. 1992). “To establish literal infringement, every limitation set forth in a claim must be found in [the] accused product, exactly.” *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed. Cir. 1995).

Infringement may also be established under the doctrine of equivalents because “[t]he scope of a patent is not limited to its literal terms but instead embraces all equivalents to the claims described.” *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 732, 122 S. Ct. 1831, 152 L. Ed. 2d 944 (2002). Thus, “a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is ‘equivalence’ between the elements of the accused product or process and the claimed elements of the patented invention.” *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 21 (1997). “[T]he doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole.” *Id.* at 29.

Courts apply two tests in determining whether the accused product infringes under the

doctrine of equivalents. Under the insubstantial differences test, “[a]n element in the accused device is equivalent to a claim limitation if the only differences between the two are insubstantial.” *Voda v. Cordis Corp.*, 536 F.3d 1311, 1326 (Fed. Cir. 2008) (quoting *Honeywell Int’l Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1139 (Fed. Cir. 2004)). Under the function-way-result test, the insubstantiality of an alleged equivalent is determined by asking whether an element in the accused device “performs substantially the same function in substantially the same way to obtain the same result” as the claim limitation. *Siemens Med. Solutions USA, Inc. v. Saint-Gobain Ceramics & Plastics, Inc.*, 637 F.3d 1269, 1279 (Fed. Cir. 2011). Regardless of which test is used, a patentee must provide “particularized testimony and linking argument” for each limitation invoking the doctrine of equivalents. *Texas Instruments v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1567 (Fed. Cir. 1996).

a. The ‘121 patent

In support of its renewed motion for JMOL regarding the literal infringement of the ‘121 patent, LG contends that the jury impermissibly ignored the language of claims 20, 21 and 36 by limiting the term “outer surface” to mean the outermost surface of the dispenser assembly. (D.I. 415 at 2-3.) According to LG, the claim language “an outer surface” does not require that the outlet extend outside every, or the outermost, surface of the door, and Whirlpool waived any right to argue otherwise by seeking the court’s construction of the term. (Id. at 3.) In response, Whirlpool contends that the court rejected LG’s proposed construction of the term “outer surface” in favor of the plain and ordinary meaning of the term, and as such, the jury was free to disagree with LG’s expert testimony as to the meaning of the term. (D.I. 433 at 9.) According to Whirlpool, the jurors could have reasonably based their conclusion on their inspection of an

accused Whirlpool refrigerator, Dr. Karvelis' testimony and the cross-examination of Dr. Bessler. (Id.)

The court concludes that substantial evidence supports the jury's verdict. The court previously determined as a matter of law that the term "outer surface" should be given its plain and ordinary meaning, thereby rejecting LG's proffered construction to define the term as "the plane of the door." (D.I. 204 at 2 n.2; D.I. 49 at 53.) The court instructed the jury that, "[f]or those words in the claim for which I have not provided you with a definition, you should apply their plain English meaning." (D.I. 387 at 9.) Therefore, the jury was free to determine the application of the plain and ordinary meaning of the term "outer surface" to the present invention based on the evidence presented at trial. The jury was entitled to reject the direct testimony of Dr. Bessler, who testified that each claimed element was present in the accused product, but indicated on cross-examination that the outlet of the water dispensing assembly did not extend beyond the "outer surface" of the door in the accused product. (D.I. 400 at 275:10 - 284:5; 310:10 - 312:4.) Similarly, the jury inspected the accused product and was entitled to credit the testimony of Whirlpool's expert, Dr. Karvelis, who testified that a layperson could determine that the outlet of the water dispensing assembly did not extend beyond an "outer surface" of the door in the accused product. (D.I. 402 at 826:8-16.) The court therefore concludes that the jury's verdict of non-infringement of the '121 patent is supported by substantial evidence.

b. The '130 patent

In support of its renewed motion for JMOL, Whirlpool contends that the jury's verdict of non-infringement regarding claims 1, 2, 6 and 9 of the '130 patent is not based on substantial evidence. (D.I. 414 at 13.) Whirlpool contends that its expert, Dr. Caligiuri, provided detailed

testimony applying each limitation of the claims to LG's French door refrigerators to establish literal infringement. (Id. at 13-14.) Moreover, Whirlpool contends that the claimed closure member of the '130 patent is present under the doctrine of equivalents. (Id. at 14.) Specifically, Whirlpool contends that the court's construction of the term "freezer compartment" meets the "ice-making room" limitation found in LG's French door refrigerator, and Dr. Caligiuri's uncontested testimony shows that the French door closure member is equivalent to the closure member claimed in the '130 patent. (Id. at 14-16.) According to Whirlpool, the jury could not reasonably credit Dr. Bessler's testimony in response because Dr. Bessler did not address the function of the closure member, the way the function is performed, or any ensuing results. (Id. at 16.)

In response, LG contends that the jury verdict of non-infringement should be upheld because the claims of the '130 patent recite a closure member which is not equivalent to the closure members on LG's French door refrigerator. (D.I. 438 at 7.) Specifically, LG contends that closing a fresh food door is not equivalent to closing a freezer door because the steps to maintain the ice box below freezing in the French door refrigerator are substantially different from those of the freezer compartment in the '130 patent. (Id. at 7-8.) According to LG, Dr. Caligiuri's testimony indicates that neither the ice storage bin nor the motor in LG's French door refrigerators are mounted on the upper inner door to the ice making room as required by the '130 patent. (Id. at 8.)

The court concludes that the jury's verdict of non-infringement under the doctrine of equivalents is not supported by substantial evidence with respect to claims 1, 2, 6 and 9 of the '130 patent. Claim 1 of the '130 patent and its dependent claims require "[a] refrigerator

including a freezer compartment having an access opening and a closure member for closing the access opening,” as well as an ice storage bin and a motor mounted on the closure member. (‘130 patent, col. 12:50-58.) The court construed this claim language to mean “a refrigerator including a section of a refrigerator cabinet kept at below-freezing temperature, having an opening that provides access to the interior and a closure member that allows access to the access opening.” (D.I. 204 at 2.) LG’s attempt to distinguish the freezer compartment of the ‘130 patent from the ice-making room of the French door refrigerators fails because the evidence establishes that both are sections of the refrigerator cabinet kept at below-freezing temperatures in accordance with the court’s construction of “freezer compartment.” (D.I. 404 at 1246:17-23.) Dr. Bessler’s testimony, which demonstrates the differences in the way the freezer compartment and the ice-making room are kept below freezing, is irrelevant because the disputed claims do not contain limitations restricting how the freezer compartment is to be kept below freezing.

LG’s attempt to distinguish its French door refrigerators as having two closure members, as opposed to the single closure member of the ‘130 patent, also fails as a matter of law. Federal Circuit precedent makes clear that “two physical components of an accused device may be viewed in combination to serve as an equivalent of one element of a claimed invention, as long as no claim limitation is thereby wholly vitiated.” *See Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, 149 F.3d 1309, 1320 (Fed. Cir. 1998). The testimony presented at trial indicates that when each of the two closure members of the French door refrigerators is closed, the access opening to the ice-making room is thereby closed. (D.I. 401 at 615:1-22.) Thus, adding a second closure member to the French door refrigerators does not preclude it from infringing the ‘130 patent under the doctrine of equivalents.

The court further concludes that LG's French door refrigerators have an ice storage bin and a motor mounted to a closure member as required by the claims of the '130 patent. Although LG presented evidence showing that the inner door to the ice-making room of the French door refrigerator does not contain an ice storage bin or a motor mounted onto the closure member, the parties agree that an ice storage bin and motor are mounted to the larger, outer fresh food door. (D.I. 402 at 694:7-20.) The fresh food door, in combination with the inner door to the ice-making room, performs substantially the same function in substantially the same way to achieve the same result as the single closure member of the '130 patent. Because the two-door distinction is insubstantial, the court concludes that the French door refrigerators infringe the '130 patent under the doctrine of equivalents. The court shall therefore grant Whirlpool's renewed motion for JMOL with respect to infringement of the '130 patent by the accused LG French door refrigerators.⁵

c. The '601 patent

LG contends that, if the court reverses the jury's verdict and concludes that the asserted claims of the '601 patent are not anticipated, then the court should also reverse the jury's verdict of infringement of the '601 patent because the claims cannot be applied in a manner to be both valid and infringed. (D.I. 415 at 20.) According to LG, if the court finds that the limitation "preventing bowing" in the '601 patent means an elimination of all bowing, in contrast to the reduced bowing of the prior art, then the court must conclude that LG's accused refrigerators do

⁵Whirlpool also claims that its renewed motion for JMOL regarding the infringement of the '130 patent should be granted based on the prosecution history estoppel and disclaimer arguments set forth in its bench briefs. The court rejects these contentions for the reasons discussed *infra* at Section III.E.

not infringe because the uncontested evidence establishes that LG's accused refrigerators bow. (Id.) In response, Whirlpool contends that substantial evidence supports the jury's verdict of infringement regarding the '601 patent, and LG's arguments confuse the infringement and validity analyses. (D.I. 433 at 8.) Whirlpool contends that LG waived the right to challenge anything other than the plain and ordinary meaning of the term "prevent" when it expressly approved of the jury's use of a dictionary to define the term. (Id. at 8-9.) According to Whirlpool, the jury could fairly rely on the dictionary definition to conclude that the plaques in the accused LG refrigerators prevent bowing. (Id.)

The court concludes that substantial evidence supports the jury's verdict finding infringement of the '601 patent. Specifically, the jury reviewed a dictionary defining the term "prevent" as "hinder the progress, appearance, or fulfillment of," which is consistent with the jury's conclusion that the plaques in the accused LG refrigerators "prevent" bowing even if they do not completely eliminate it. (D.I. 433, Ex. A.) Both parties agreed to the admission of this dictionary definition, and the jury was entitled to credit this and other evidence presented by Whirlpool over the testimony of LG's expert, Dr. Mellinger, who suggested that "preventing bowing" would require an elimination of all bowing. (D.I. 406 at 1602:10-11; 1605:16-1606:5.) Therefore, the court will uphold the jury's verdict of infringement regarding the '601 patent.

3. Willfulness

Whirlpool contends that the evidence presented at trial was not sufficient to support the jury's finding of non-willfulness with respect to the '130 patent. Under the rubric established by *In re Seagate Tech., LLC*, willful infringement first requires that the patentee show that the infringer acted despite an objectively high likelihood that its actions constituted infringement.

497 F.3d 1360, 1371 (Fed. Cir. 2007). The existence of this risk is “determined by the record developed in the infringement proceeding.” *Id.* If the objective risk prong is satisfied, the patentee must then show that the infringer either knew or should have known of this objective risk. *Id.* By its nature, the issue of willfulness in patent infringement hinges both on the fact finder’s assessments of the credibility of witnesses and on the fact finder drawing inferences from the evidence presented to it. “The drawing of inferences, particularly in respect of an intent-implicating question such as willfulness, is peculiarly within the province of the fact finder that observed the witnesses.” *Liquid Dynamics Corp. v. Vaughan Co.*, 449 F.3d 1209, 1225 (Fed. Cir. 2006). Because this case was tried before a jury, the court will not lightly disturb the jury’s finding of non-willfulness.

In support of its renewed motion for JMOL, Whirlpool contends that the jury’s verdict of non-willfulness with respect to the ‘130 patent is not supported by substantial evidence because the evidence presented at trial demonstrates that LG knew about the ‘130 patent by May of 2001 and initially made efforts to design around the ‘130 patent. (D.I. 414 at 18.) According to Whirlpool, LG’s engineers wrote a report in December 2003 acknowledging that a dispute over the technology was expected, LG produced no advice of counsel regarding the patent’s validity, and Dr. Myung Ryul Lee’s testimony that the accused LG refrigerators avoid the ‘130 patent was not based upon the legal knowledge necessary to conduct an infringement analysis. (*Id.* at 18-19.) In response, LG contends that it attempted to design around the ‘130 patent and believed it had succeeded, efforts which support the jury’s finding of a lack of willfulness. (D.I. 438 at 9.) According to LG, Dr. Myung Ryul Lee anticipated a dispute with Whirlpool only because Whirlpool was known to be an aggressive company. (*Id.*) Moreover, LG contends that

Whirlpool's attempts to draw adverse inferences of willfulness from LG's assertion of attorney-client privilege are improper. (Id. at 9-10.)

The court concludes that substantial evidence supports the jury's verdict of non-willfulness with respect to the '130 patent. Specifically, LG presented undisputed evidence in the form of internal company documents and trial testimony demonstrating that LG made concerted efforts to purposefully avoid infringing Whirlpool's '130 patent and believed it had succeeded. (D.I. 401 at 653:23-658:14; D.I. 416 at DX175, DX185, DX188 and DX335.) Based on this evidence, the jury could reasonably conclude that Whirlpool failed to demonstrate LG's objective recklessness by clear and convincing evidence. *See SRI Int'l, Inc. v. Advanced Tech. Labs., Inc.*, 127 F.3d 1462, 1465 (Fed. Cir. 1997) (concluding that even unsuccessful attempts to design around a patent support a lack of willfulness).

B. New Trial

Pursuant to Federal Rule of Civil Procedure 59, a court may grant a new trial "for any reason for which a new trial has heretofore been granted in an action at law in federal court." Fed. R. Civ. P. 59(a)(1)(A). The decision to grant or deny a new trial is within the sound discretion of the trial court. *See Allied Chem. Corp. v. Daiiflon, Inc.*, 449 U.S. 33, 36, 101 S. Ct. 188, 66 L. Ed. 2d 193 (1980). In making this determination, the trial judge should consider the overall setting of the trial, the character of the evidence, and the complexity or simplicity of the legal principles which the jury had to apply to the facts. *Lind v. Schenley Indus., Inc.*, 278 F.2d 79, 89 (3d Cir. 1960). Unlike the standard for determining judgment as a matter of law, the court need not view the evidence in the light most favorable to the verdict winner. *Allied Chem. Corp.*, 449 U.S. at 36. A court should grant a new trial in a jury case, however, only if "the verdict was

against the weight of the evidence . . . [and] a miscarriage of justice would result if the verdict were to stand.” *Williamson*, 926 F.2d at 1352.

1. Whirlpool’s motions for a new trial

Whirlpool contends that, if the court grants its renewed motion for JMOL with respect to the validity of the ‘601 patent and infringement of the ‘130 patent by LG’s French door refrigerators, then the court must grant a new trial limited to the issue of damages for the infringement of the ‘601 and ‘130 patents. (D.I. 414 at 12-13, 17-18.) The court previously overturned the jury’s verdict by concluding that claim 15 of the ‘601 patent is not anticipated and LG’s French door refrigerators infringe the ‘130 patent. *See supra* Sections III.A.1.b and III.A.2.b. Because the jury did not calculate damages for infringement of the ‘130 patent by LG’s French door refrigerators and claim 15 of the ‘601 patent, the court concludes that a new trial on damages is appropriate with respect to these issues.⁶

2. LG’s motions for a new trial

a. Literal infringement of the ‘121 patent

LG contends that a new trial is warranted because the jury’s verdict finding non-infringement of the ‘121 patent is against the weight of the evidence. (D.I. 415 at 2-3.) According to LG, Dr. Bessler compared the claims of the ‘121 patent as construed with the accused products and established literal infringement of the “outer surface” limitation, whereas

⁶The court notes that the new trial on damages regarding infringement of the ‘130 patent by LG’s French door refrigerators may be impacted by the outcome of the new trial regarding the sufficiency of the ‘130 patent’s written description, discussed *infra* at Section III.B.2.b. The same is true with respect to the damages trial for claim 15 of the ‘601 patent, which may be influenced by the outcome of the new trial regarding the obviousness of that claim, discussed *infra* at Section III.B.2.d.

Whirlpool's expert, Dr. Karvelis, presented no opinion on non-infringement. (Id. at 3.) In response, Whirlpool contends that the jury was free to apply the plain and ordinary meaning of the term "outer surface" pursuant to the court's claim construction order, and the evidence presented at trial supports the jury's verdict. (D.I. 433 at 9.) The court concludes that the jury's verdict is not against the weight of the evidence presented at trial for the reasons previously discussed in the court's ruling on JMOL regarding the same issue. *See supra* Section III.A.2.a. Therefore, a new trial with respect to literal infringement of the '121 patent is not warranted.

b. Written description of the '130 patent

LG contends that a new trial is warranted because the jury's verdict finding sufficient written description of the '130 patent is contrary to the law and against the weight of the evidence presented at trial. To meet the written description requirement, the applicant must "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention." *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991). To show that one is "in possession," the applicant must clearly describe the invention in the four corners of the specification, but "does not have to describe exactly the subject matter claimed." *Id.* at 1563; *see also Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010). One skilled in the art, reading the disclosure, "must immediately discern the limitation at issue in the claims." *Purdue Pharma L.P. v. Faulding Inc.*, 230 F.3d 1320, 1323 (Fed. Cir. 2000). Thus, "while the description requirement does not demand any particular form of disclosure, or that the specification recite the claimed invention *in haec verba*, a description that merely renders the invention obvious does not satisfy the requirement." *Ariad Pharms.*, 598 F.3d at 1352 (internal citations omitted). Whether the written description

requirement is met is a question of fact. *Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1369-70 (Fed. Cir. 2009) (citation omitted). The party challenging the sufficiency of a written description must establish by clear and convincing evidence that the claim is invalid or not entitled to an asserted filing date. *See Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1329-30 (Fed. Cir. 2008).

LG contends that the testimony of Dr. Myung Ryul Lee, Mr. Verne Myers and Dr. Bessler, in conjunction with evidence of Whirlpool's U.S. Patent No. 6,148,624 ("the '624 patent"),⁷ outweighs the conclusory statement by Dr. Caligiuri that the '130 patent has a written description depicted in Figure 2 of the '130 patent. (D.I. 415 at 9.) According to LG, the '130 patent specification fails to disclose mounting the ice maker on the freezer door. (Id.) In response, Whirlpool contends that LG misconstrues the Federal Circuit's decision in *Ariad Pharms., Inc.*, and argues that a person of ordinary skill in the art could recognize an ice maker mounted on the door as a possible arrangement of the claimed invention based on Figure 2 of the '130 patent.⁸ (D.I. 433 at 4-5.)

The court concludes that the jury's verdict regarding the sufficiency of the written description of the '130 patent goes against the weight of the evidence, and therefore, a new trial

⁷Whirlpool's '624 patent, which was filed on the same day as Whirlpool's '130 patent, specifically discloses the placement of an ice maker on the freezer door. (D.I. 416 at PTX379.)

⁸Whirlpool further contends that LG's request for a new trial must be denied because any alleged prejudice in finding its JMOL waived is of LG's own making. (D.I. 433 at n.5.) However, a Rule 50(a) motion is not required before a party can move for a new trial on grounds that the verdict is against the weight of the evidence. *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 308 F.3d 1167, 1184 n.7 (Fed. Cir. 2002) (citing *Greenleaf*, 174 F.3d at 365).

is warranted.⁹ Whirlpool cites Figure 2 in the ‘130 patent, as well as testimony regarding Figure 2, in support of its contention that Whirlpool possessed an ice maker disposed within the freezer door. However, Figure 2 depicts an ice maker attached to a wall of the freezer compartment as opposed to the door, and the specification otherwise fails to explain how an ice maker on the door would be implemented. (‘130 patent, Fig. 2.) LG presented evidence indicating that mounting the ice maker in the door of the freezer compartment entails additional complications that would prevent one of ordinary skill in the art from readily visualizing such an arrangement based on the description of the ice maker mounted to the wall of the freezer compartment. (D.I. 401 at 504:8-14, 529:1-24; D.I. 404 at 1138:17 - 1141:5, 1190:3 - 1191:3.) These complications are particularly apparent when the ‘130 patent is compared with Whirlpool’s ‘624 patent, which describes an ice maker on the door of the refrigerator in great detail in the specification. (‘624 patent, Figs. 1-4.) The evidence cited by Whirlpool fails to refute the evidence cited by LG because it does not indicate how one of ordinary skill in the art would recognize an ice maker mounted on the door based on his or her reading of the specification. As such, the court concludes that a new trial is warranted because the jury’s verdict regarding the sufficiency of the written description of the ‘130 patent goes against the weight of the evidence.

⁹The court grants LG’s motion for a new trial with respect to the written description of the ‘130 patent only because of LG’s failure to timely file a Rule 50(a) motion to properly preserve the issue for renewed JMOL. Filing a Rule 50(a) motion at the proper time would have allowed the court to more efficiently resolve the issue.

c. Obviousness of the '130 patent

Next, LG contends that a new trial is warranted because the jury's verdict of non-obviousness regarding the '130 patent goes against the weight of the evidence. Specifically, LG contends that it would be obvious for one of ordinary skill in the art to combine automatic ice makers and ice storage bins, which were well-known in the prior art, with Japanese Utility Model Application S51-21165 ("the Hitachi reference"), which discloses an in-door ice system with a motorized auger and storage bin mounted on the freezer door. (D.I. 415 at 16.) In response, Whirlpool contends that it presented substantial evidence that a person of ordinary skill in the art would not have found it obvious to modify the Hitachi reference to include an automatic ice maker or a removable ice bin. (D.I. 433 at 6.) Whirlpool contends that Dr. Caligiuri's testimony showed the lack of space for an automatic ice maker in a top-mount refrigerator like the Hitachi reference and the difficulty of making the ice bin, auger and motor structures removable in the Hitachi reference. (Id.)

The court concludes that a new trial is not warranted regarding the obviousness of the '130 patent because the jury's verdict of non-obviousness is not against the weight of the evidence. Although LG's expert presented testimony in support of its contention that combining the Hitachi reference with the prior art would have been obvious, (D.I. 404 at 1219:18 - 1220:16), Whirlpool's expert presented compelling testimony in support of the opposite position, emphasizing the difficulties that combining the Hitachi reference with the prior art would pose, (D.I. 405 at 1419:4 - 1428:11). After reviewing the competing testimony of the two experts, the court concludes that this dispute does not present a situation in which the jury's verdict goes against the weight of the evidence. As such, the court will uphold the jury's verdict and deny

LG's motion for a new trial with respect to the obviousness of the '130 patent.

d. Obviousness of the '601 patent

In support of its motion for a new trial with respect to the obviousness and non-infringement of Whirlpool's '601 patent, LG contends that, while the Matsushita and Gold Star references only illustrate plaques in top-mount refrigerators, they disclose the widespread use of plaques in all types of refrigerators, and it would be obvious to a person of ordinary skill in the art to use plaques to prevent bowing in a refrigerator with a side-by-side design. (D.I. 415 at 19.) In response, Whirlpool contends that LG fails to establish that each limitation of the disputed claims would have been obvious to one of ordinary skill in the art. (D.I. 433 at 8.)

The court concludes that the jury's verdict of non-obviousness regarding claim 15 of the '601 patent¹⁰ goes against the weight of the evidence.¹¹ Specifically, Whirlpool attacks the evidence offered by LG, but offers no argument and cites no evidence regarding the characteristics of claim 15 that would cause it to be non-obvious to one of ordinary skill in the art. In contrast, LG presented evidence indicating that all plaqued liners reduce bowing to some degree, and incorporating plaques into known refrigerators, including side-by-side models, would have been an obvious solution to reduce bowing. (D.I. 404 at 1286:24 - 1287:20, 1301:22 - 1302:12; D.I. 405 at 1373:1-11.) The court concludes that the jury's verdict of non-obviousness

¹⁰Because the court upheld the jury's verdict of anticipation regarding claims 1 and 4 of the '601 patent on JMOL, *see supra* Section III.A.1.b, the court concludes that a new trial on the obviousness of claims 1 and 4 of the '601 patent is not warranted.

¹¹The court grants LG's motion for a new trial with respect to the obviousness of claim 15 of the '601 patent only because of LG's failure to timely file a Rule 50(a) motion to properly preserve the issue for renewed JMOL. Filing a Rule 50(a) motion at the proper time would have allowed the court to more efficiently resolve the issue.

with respect to claim 15 of the '601 patent is against the weight of the evidence, and a new trial is warranted on the issue.

C. Prejudgment and Postjudgment Interest

The court shall grant Whirlpool's motion for an award of prejudgment and postjudgment interest. (D.I. 444.) "The Federal Circuit has given district courts great discretion when determining the applicable interest rate for an award of prejudgment interest." *IPPV Enters., LLC v. EchoStar Commc'n Corp.*, C.A. No. 99-577-KAJ, 2003 WL 723260, at *3 (D. Del. Feb. 27, 2003) (quotations omitted). "Courts have recognized that the prime rate best compensate[s] a patentee for lost revenues during the period of infringement because the prime rate represents the cost of borrowing money, which is 'a better measure of the harm suffered as a result of the loss of the use of money over time.'" *IMX, Inc. v. LendingTree, LLC*, 469 F. Supp. 2d 203, 227 (D. Del. 2007) (citing *Mars, Inc. v. Conlux USA Corp.*, 818 F. Supp. 707, 720-21 (D. Del. 1993), *affd*, 16 F.3d 421 (Fed. Cir. 1993)). Moreover, 28 U.S.C. § 1961(a) provides that post-judgment interest "shall be calculated from the date of the entry of the judgment, at a rate equal to the weekly average 1-year constant maturity Treasury yield, as published by the Board of Governors of the Federal Reserve System, for the calendar week preceding." LG's arguments in favor of simple interest notwithstanding, the court concludes that the prime rate, compounded quarterly, is a reasonable approximation of Whirlpool's cost of borrowing money during the relevant period. Accordingly, the court will order LG to pay Whirlpool prejudgment interest at the prime rate, compounded quarterly, and postjudgment interest at the applicable statutory rate.

D. Permanent Injunction and Accounting

A district court “may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable.” 35 U.S.C. § 283. “According to well-established principles of equity, a plaintiff seeking a permanent injunction must satisfy a four-factor test before a court may grant such relief.” *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391, 126 S. Ct. 1837, 164 L. Ed. 2d 641 (2006). “A plaintiff must demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.” *Id.* “Courts awarding permanent injunctions typically do so under circumstances where [the] plaintiff practices its invention and is a direct market competitor.” *Advanced Cardiovascular Sys. v. Medtronic Vascular, Inc.*, 579 F. Supp. 2d 554, 558 (D. Del. 2008). Moreover, permanent injunctions are typically awarded where the effect of the defendant’s infringement is “direct and readily apparent from available market data, where a plaintiff’s patented technology is at the core of its business, and/or where the market for the patented technology is still developing.” *Cordance Corp. v. Amazon.com, Inc.*, 730 F. Supp. 2d 333, 338 (D. Del. 2010).

In support of its motion for a permanent injunction and for an accounting, Whirlpool contends that LG should be enjoined from making, using, selling, offering to sell, or importing its infringing side-by-side refrigerators because Whirlpool and LG are direct competitors in the refrigerator market. (D.I. 409 at 11-12.) According to Whirlpool, LG’s infringement resulted in

a decrease in Whirlpool's sale volume, market share, brand awareness and consumer perception. (Id. at 12.) Moreover, Whirlpool contends that LG presented itself to trade partners and consumers as the innovator of the technology, resulting in lost goodwill and brand recognition for Whirlpool. (Id.) With respect to its request for an accounting, Whirlpool contends that LG's sales of infringing refrigerators should be calculated from March 1, 2010 to the date of the issuance of the injunction, and damages should be assessed at \$45 per unit. (Id. at 18-19.) Moreover, Whirlpool contends that the \$45 rate should be further enhanced to \$90 per unit because LG's post-verdict infringement is willful. (Id. at 19.)

In response, LG contends that Whirlpool's motion for a permanent injunction is premature and should be denied until after the resolution of the parties' post-trial motions and an evidentiary hearing. (D.I. 439 at 2-3.) Moreover, LG contends that Whirlpool has not suffered irreparable harm attributable to LG's infringement because the parties compete in a multi-competitor market, and public interest considerations are neutral because the technology at issue is not essential to the public health and welfare. (Id. at 9-10; 14-15.) According to LG, Whirlpool previously attempted to license the '130 patent to LG in exchange for a royalty, and LG planned to stop importing the infringing product to the United States. (Id. at 12-14.) LG also challenges the validity of the '130 patent and contends that the scope of injunctive relief requested by Whirlpool is unduly broad. (Id. at 14-15.) With respect to the accounting, LG contends that Whirlpool's request for \$45 per unit, plus further enhancement for willfulness, is inconsistent with the jury's verdict. (Id. at 18.)

Based on the facts of this case, the court concludes that Whirlpool has failed to meet its burden of showing that a permanent injunction is warranted. While the *eBay* standard establishes

that past harm is relevant to the irreparable harm analysis, an injunction is by definition a prospective remedy. *See, e.g., i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 861-62 (Fed. Cir. 2010). In this case, the irreparable harm factor weighs against granting a permanent injunction because the “irreparable” component of the injury that Whirlpool alleges stems from LG’s past conduct, which allegedly “shaped the market” and resulted in long-term customer loss. (D.I. 409 at 10.) This harm would continue even if a permanent injunction were issued, and Whirlpool makes no allegations of prospective lost customers or harms that are truly irreparable unless the court issues a permanent injunction. On the contrary, the court concludes that Whirlpool would not benefit substantially from an injunction being issued at this stage, several years after LG’s accused product entered the market.

Moreover, there is a lack of specific evidence tying Whirlpool’s lost sales to LG’s infringement in the multi-competitor refrigerator market. *See Advanced Cardiovascular Sys., Inc.*, 579 F. Supp. 2d at 559-60. A portion of Whirlpool’s lost sales may be due to customers’ desire for other features, or sales lost to competitors other than LG.¹² *See, e.g., IGT v. Bally Gaming Int’l Inc.*, 675 F. Supp. 2d 487, 489-90 (D. Del. 2009) (denying permanent injunction where parties participated in multi-competitor market and evidence failed to demonstrate their relative market percentages). Whirlpool has not identified specific customers it has lost, or stands to lose, directly as a result of LG’s continued sales of the infringing refrigerators. Although Whirlpool indicates that LG introduced its infringing products to Home Depot as the innovator, Whirlpool does not contend that Home Depot refuses to carry Whirlpool’s models.

¹²The evidence indicates that other competitors in the refrigerator market include Maytag, GE, Electrolux, Samsung and Matsushita. (D.I. 439, Ex. E at P, Q.)

(D.I. 409 at 12.) The court further notes that Whirlpool's core business centers on a variety of home appliances and is not limited to refrigerators.¹³

As to the second *eBay* factor, the court concludes that any harm Whirlpool suffers as a result of LG's continued infringement can be redressed by a legal remedy.¹⁴ Whirlpool presents the same evidence cited in support of its irreparable harm argument, which was rejected by the court. To the extent that the threat of continued infringement remains, the court concludes that Whirlpool can bring suit against LG for monetary damages to remedy the continued infringement.

The remaining two *eBay* factors do not alter the court's analysis. The court concludes that Whirlpool's market position and the parties' ability to sell their products would remain substantially the same regardless of whether an injunction issues. The court fails to see what hardship Whirlpool would suffer that could not be compensated through remedies at law if LG continues to infringe the '130 patent, particularly because Whirlpool's sales represent a small portion of its yearly earnings, and Whirlpool's market share is over five times the size of LG's

¹³See *TruePosition Inc. v. Andrew Corp.*, 568 F. Supp. 2d 500, 531 (D. Del. 2008) (noting that permanent injunctions are generally warranted when the "patented technology is at the core of [the plaintiff's] business, and/or where the market for the patented technology is volatile or still developing").

¹⁴The court rejects LG's contention that evidence of Whirlpool's prospective licensing activity supports the conclusion that monetary damages would be adequate. Although licensing activity may indicate that monetary damages would be adequate to compensate for any future infringement, licensing activity alone is not determinative of the adequacy of monetary damages. See *eBay*, 547 U.S. at 393. The evidence presented in this case demonstrates that Whirlpool explored the possibility of licensing the technology to its competitors, but there is no indication that Whirlpool ultimately decided to accept monetary compensation in exchange for the rights to its technology by entering into a licensing agreement. (D.I. 439, Ex. C at 134-40; Ex. E at P, Q.)

market share.¹⁵ (D.I. 439, Ex. E at ¶¶ 20, 21.) Moreover, the public interest would not be substantially advanced or harmed by the issuance of an injunction. Although the public has an interest in the enforcement of patent rights, there is no strong public interest in maintaining diversity in the side-by-side refrigerator market. *Cf. Advanced Cardiovascular Sys.*, 579 F. Supp. 2d at 561 (acknowledging a strong public interest in maintaining diversity in the coronary stent market). Consequently, the court will deny Whirlpool's motion for a permanent injunction.

The court shall grant Whirlpool's request for an accounting of the number of LG's side-by-side refrigerators made, used, sold, offered for sale, imported or supplied in or from the United States and corresponding revenue from March 1, 2010 through the date of the order accompanying this memorandum. However, the court denies Whirlpool's request for damages in excess of the \$25 per unit royalty reached by the jury. Moreover, the court declines to grant Whirlpool's motion for enhanced damages based on willfulness, concluding that Whirlpool failed to establish the willfulness of LG's infringement.

E. Bench Trial Issues

At trial, the court concluded that certain issues were properly before the court, but were not appropriate for submission to the jury. The court concluded that these issues, namely, prosecution history estoppel regarding the '130 patent and disclaimer regarding the '130 and '601 patents, were to be decided based upon the court's review of the parties' post-verdict bench briefs. (D.I. 418.) Currently before the court are the parties' submissions regarding those issues. (D.I. 422.)

¹⁵*See i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 862-63 (Fed. Cir. 2010) (factors considered in the "balance of hardships" analysis include the parties' sizes, products, and revenue sources).

As a preliminary matter, the court shall address Whirlpool's motion to deny and dismiss LG's bench trial issues. This motion alleges that LG failed to preserve its disclaimer contentions for the bench trial in the pretrial order, that LG's bench trial brief is an improper motion for reconsideration, and that LG has waived any new disclaimer arguments by failing to raise them during claim construction. (D.I. 420.) The court concludes that the prosecution history estoppel and disclaimer issues were identified in the pre-trial order, (D.I. 318 at ¶¶ 70, 122, 152, 155; D.I. 320, Ex. J1 at ¶ 115), and the court agreed to address these issues as bench trial issues on the briefing, (D.I. 405 at 1576:8-1577-21). Moreover, the court concludes that its *Markman* ruling does not preclude prosecution history estoppel or disclaimer, as these issues can be addressed without modifying the court's claim construction order. See *Old Town Canoe Co. v. Confluence Holdings Corp.*, 448 F.3d 1309, 1314-15 (Fed. Cir. 2006); *Schoenhaus v. Genesco, Inc.*, 440 F.3d 1354, 1358-60 (Fed. Cir. 2006). Therefore, the court shall deny Whirlpool's motion to deny and dismiss LG's bench trial issues.

1. Legal standards

a. Prosecution history estoppel¹⁶

The doctrine of prosecution history estoppel may bar a patentee from asserting as an equivalent subject matter that was surrendered during prosecution of the patent. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 729, 122 S. Ct. 1831, 152 L. Ed. 2d 944 (2002). "There are two distinct theories that fall under the penumbra of prosecution history

¹⁶The Federal Circuit recognizes the close relationship between prosecution history estoppel, which relates to infringement under the doctrine of equivalents, and prosecution disclaimer, which relates to literal infringement. See *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1326 n.1 (Fed. Cir. 2003).

estoppel - amendment-based estoppel and argument-based estoppel . . . In general, prosecution history estoppel, under either theory, requires that patent claims be interpreted in light of the proceedings before the PTO.” *Deering Precision Instruments, L.L.C. v. Vector Distrib. Sys., Inc.*, 347 F.3d 1314, 1324-25 (Fed. Cir. 2003).

In the present matter, LG invokes the theory of argument-based estoppel. To disavow claim scope by invoking argument-based estoppel, “the prosecution history must evince a clear and unmistakable surrender of subject matter” through arguments made to distinguish prior art references. *Deering*, 347 F.3d at 1326 (internal quotations omitted). The scope of the disavowal depends on the nature of the patentee’s argument, and “even in the case of an unequivocal disavowal of claim scope, the court must construe the claim ‘congruent with the scope of the surrender.’” *Cordis Corp. v. Medtronic Ave, Inc.*, 511 F.3d 1157, 1177 (Fed. Cir. 2008) (quoting *Omega*, 334 F.3d at 1324). To constitute a binding surrender of claim scope, the disavowal must cause a competitor to “reasonably believe that the applicant had surrendered the relevant subject matter.” *Id.* (quoting *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1457 (Fed. Cir. 1998) (en banc)).

b. Disclaimer

Both disclaimer and argument-based estoppel require actions or statements that clearly and unmistakably disavow claim scope. *Cordis Corp.*, 511 F.3d at 1177. However, while prosecution history estoppel applies to the doctrine of equivalents, *Warner-Jenkinson*, 520 U.S. at 30, prosecution disclaimer applies to literal infringement, *AccuScan, Inc. v. Xerox Corp.*, 76 Fed. Appx. 290, 292 (Fed. Cir. 2003) (citations omitted). “As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic

evidence and protects the public's reliance on definitive statements made during prosecution.” *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003). Nevertheless, there is “a ‘heavy presumption’ that claim terms carry their full ordinary and customary meaning.” *Id.* at 1323. To overcome this presumption, “the patentee [must] unequivocally impart[] a novel meaning to those terms or expressly relinquished claim scope during prosecution.” *Id.* at 1323. “Consequently, for prosecution disclaimer to attach, [Federal Circuit] precedent requires that the alleged disavowing actions or statements made during prosecution be both clear and unmistakable.” *Id.* at 1325-26.

2. Discussion

a. The ‘130 patent

LG contends that statements made during the prosecution of the ‘130 patent estop Whirlpool from asserting infringement of the ‘130 patent under the doctrine of equivalents. (D.I. 422.) Specifically, LG contends that Whirlpool overcame a rejection based on U.S. Patent No. 3,146,601 to Gould (“the Gould reference”) by informing the examiner in an interview that the Gould reference “does not have a freezer compartment and a freezer door on which the ice bin is mounted.” (D.I. 422 at 6.) According to LG, this statement represents Whirlpool’s disavowal of mounting the ice maker on a fresh food door, as opposed to a freezer door, to distinguish the ‘130 patent from the Gould reference. (*Id.* at 7.) LG contends that its French door refrigerators are similar to the Gould reference because they do not have a freezer compartment and a freezer door on which the ice bin is mounted. (*Id.* at 8.) Due to these similarities and the unambiguous statements in the prosecution history, LG contends that argument-based estoppel limits the scope of equivalents available to Whirlpool. (*Id.*) Applying the same facts, LG further contends that

Whirlpool disclaimed the claim scope necessary to cover LG's French door refrigerators. (D.I. 422 at 12.)

In response, Whirlpool contends that LG's reliance on the statement from the interview summary is misplaced because the statement is a single, ambiguous sentence written by the examiner. (D.I. 435 at 5.) Whirlpool contends that the statement may have been a part of the examiner's explanation of its § 103 rejection, as opposed to a "clear and unmistakable disavowal." (Id. at 6-7.) Moreover, Whirlpool contends that LG inappropriately invokes prosecution history estoppel to argue a literal infringement position and compares the Gould reference to the French door refrigerator without addressing the claims themselves or the court's claim constructions. (Id.) According to Whirlpool, LG ignores key differences between the Gould reference and the French door refrigerator, such as the lack of a freezer compartment in Gould. (Id. at 7-8.) With respect to LG's disclaimer argument, Whirlpool contends that LG fails to identify specific claim limitations or constructions that are impacted by the alleged disclaimer. (Id. at 8-9.)

The court concludes that the prosecution history of the '130 patent does not demonstrate Whirlpool's clear and unmistakable disavowal of mounting an ice maker onto a fresh food door. LG's contention centers on a statement in the interview summary specifying that the Gould reference "does not have a freezer compartment and a freezer door on which the ice bin is mounted," but the evidence fails to demonstrate that the Gould reference is equivalent to LG's accused French door refrigerators with respect to these characteristics. (D.I. 421 at DX3.) Specifically, the evidence indicates that ice in the cooling space of the Gould reference is made by a thermoelectric unit, which is distinguishable from the French door refrigerators and the '130

patent in that it may be kept at above-freezing temperatures, thus not meeting the court's construction of a "freezer compartment." (Tr. 670-71.) In contrast, the evidence indicates that the ice-making room in LG's French door refrigerators meets the court's definition of "freezer compartment." (D.I. 404 at 1246:17-23.) The court concludes that this distinction between the Gould reference and the French door refrigerators precludes a finding of either prosecution history estoppel or disclaimer with respect to the '130 patent.

b. The '601 patent

LG contends that Whirlpool's actions, arguments and statements to the PTO during the prosecution of the '601 patent result in a disclaimer that precludes Whirlpool from asserting that the accused LG refrigerators infringe the asserted claims of the '601 patent. (D.I. 422 at 13.) According to LG, the examiner rejected Whirlpool's original claims using the language "bowing reduction," after which Whirlpool amended its claims to overcome the rejection by adding the "preventing bowing" limitation. (Id. at 13-14.) LG contends that Whirlpool distinguished the '601 patent from the prior art by arguing that the prior art does not provide for any expansion joints or beam elements for preventing bowing. (Id. at 14-15.) LG contends that Whirlpool cannot now assert that the '601 claims only "reduce" bowing after limiting its claims to "preventing bowing" to secure the patent's allowance. (Id. at 16.)

In response, Whirlpool contends that the terms "prevent" and "reduce" can be used interchangeably in the context of the '601 patent, and Whirlpool never drew a distinction between "prevent" and "reduce" during the prosecution of its patent application. (D.I. 435 at 2.) Whirlpool asserts that it responded to the first office action by showing that the prior art "does not teach or suggest a plaque structure for overcoming thermal bowing. [The prior art], rather,

simply teaches the use of inwardly projecting portions for receiving shelf retainers.” (Id.)

Whirlpool contends that it did not single out a particular meaning of “preventing bowing” as a reason for allowance, “preventing bowing” is not a critical limitation, and nothing changed as a result of the amendment to add “preventing.” (Id. at 3.) Moreover, Whirlpool contends that LG’s construction of “preventing bowing” would exclude the preferred embodiment of the ‘601 patent. (Id. at 4.)

The court concludes that the prosecution history of the ‘601 patent does not demonstrate Whirlpool’s clear and unmistakable disavowal of a reduction, as opposed to a complete elimination, of bowing. To find such a disavowal would be inconsistent with the claim language, which calls for a “bowing reduction means” in the preamble, and the specification, which contains a preferred embodiment in which the plaques reduce bowing by a certain percentage without completely eliminating it. (‘601 patent at col. 6:11-44, 7:40.) Whirlpool’s explanation of the amendment does not distinguish the prior art based on an assertion that the ‘601 patent completely eliminates bowing, but rather distinguishes the prior art based on the fact that the indentations in the liner of the prior art reference are intended to hold or support shelves, not to reduce bowing. (D.I. 421 at DX3.) This is insufficient evidence to find a clear and unmistakable disavowal of a mere reduction of bowing in favor of a complete elimination of bowing. Therefore, the court concludes that LG failed to establish either prosecution history estoppel or disclaimer with respect to the ‘130 and ‘601 patents.

F. Relief from Judgment

Whirlpool seeks relief from judgment pursuant to Federal Rule of Civil Procedure 60(b)(2) and 60(b)(3). Rule 60(b) motions are viewed as requests for “extraordinary relief which should be granted only where extraordinary justifying circumstances are present.” *Bohus v. Beloff*, 950 F.2d 919, 930 (3d Cir. 1991) (internal quotations omitted). A movant under Rule 60(b) “bears a heavy burden,” which requires “more than a showing of the potential significance of the new evidence.” *Id.* (internal quotations omitted). Rule 60(b)(2) provides that the court may grant such relief based on “newly discovered evidence” of facts in existence at the time of trial that “could not have been discovered in time to move for a new trial under Rule 59(b).” Fed. R. Civ. P. 60(b)(2). A party is entitled to new trial if the evidence: “(1) [is] material and not merely cumulative, (2) could not have been discovered prior to trial through the exercise of reasonable diligence, and (3) would probably have changed the outcome of the trial.” *Bohus*, 950 F.2d at 930. However, if the evidence probably would not have changed the outcome of the trial, then the other factors do not need to be addressed. *Id.* at 931 n.14.

Rule 60(b)(3) provides for relief from judgment by reason of “fraud (whether previously called intrinsic or extrinsic), misrepresentation, or other misconduct by an opposing party.” Fed. R. Civ. P. 60(b)(3). “To prevail, the movant must establish that the adverse party engaged in fraud or other misconduct, and that this conduct prevented the moving party from fully and fairly presenting his case. . . . Failure to disclose or produce evidence requested in discovery can constitute Rule 60(b)(3) misconduct.” *Stridiron v. Stridiron*, 698 F.2d 204, 207 (3d Cir. 1983). To meet the requirements of Rule 60(b)(3), the evidence must be clear and convincing. *Brown v. Pa. R.R. Co.*, 282 F.2d 522, 527 (3d Cir. 1960) (citations omitted).

In support of its motion for relief from judgment, Whirlpool contends that LG obtained the judgment of non-obviousness of the '121 patent by withholding critical evidence showing that an inventor of the '121 patent did not begin work on the project until four months after LG claimed the '121 patent was invented. (D.I. 462 at 7.) According to Whirlpool, LG would have been unlikely to prevail at trial on the validity of the '121 patent if it had not established a priority date in January 2003. (Id. at 9.) In the alternative, Whirlpool contends that it is entitled to relief from judgment on the basis of LG's misrepresentations and misconduct with respect to inventor Sung Hoon Chung's start date and his contribution to the conception of the '121 patent. (Id. at 10.) In response, LG contends that the judgment of non-obviousness hinges not on LG's conception of the invention, but rather on the substantial and uncontroverted evidence establishing that Whirlpool did not make the same invention. (D.I. 467 at 8-9.) As a result, LG contends that Mr. Chung's employment dates are immaterial to the judgment. (Id. at 10.) LG also contends that Whirlpool failed to take discovery from Mr. Chung, even though it had the opportunity to do so. (Id. at 12-15.)

The court concludes that evidence of Mr. Chung's employment dates with LG does not create "extraordinary justifying circumstances" which would warrant relief from judgment under Rule 60(b)(2). First, Whirlpool failed to demonstrate that the evidence could not have been discovered prior to trial, acknowledging that it could have taken a third-party deposition of Mr. Chung, but chose not to do so because it believed the non-party witness testimony would be cumulative and difficult to obtain. The court rejects Whirlpool's contentions that it exercised reasonable diligence in light of LG's discovery responses. Specifically, Whirlpool had access to the priority document for the '121 patent, which did not list Mr. Chung as a named inventor, and

yet Whirlpool did not inquire about Mr. Chung's employment dates and contributions to the invention from any of the other five co-inventors Whirlpool deposed. (D.I. 416 at PTX96.) Second, Whirlpool failed to establish that the outcome of the trial would have been different because the evidence presented at trial indicates that the jury verdict was likely based on the presence of only two of the three claimed elements, as opposed to the date of conception. Whirlpool thus failed to meet the requirement of "more than a showing of the potential significance of the new evidence."

With respect to Whirlpool's allegations of fraud, misrepresentation and misconduct under Rule 60(b)(3), the court concludes that these allegations are unfounded. As a preliminary matter, courts have recognized that not "every failure to produce discovery qualifies as Rule 60(b)(3) misconduct." *Floorgraphics Inc. v. News Am. Marketing In-Store Servs., Inc.*, 2011 WL 1486558, at *2 (3d Cir. Apr. 20, 2011). In fact, the Third Circuit has observed that:

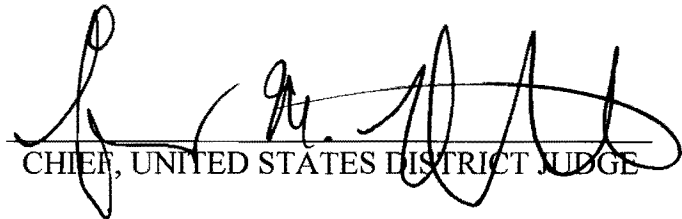
Whether there has been discovery misconduct warranting relief under Rule 60(b)(3) requires not only consideration of the request propounded, but also the response by one's adversary, and whether the moving party resorted to a motion to compel or a request for sanctions as permitted by the federal rules.

Id. Here, Whirlpool never challenged LG's broad response to discovery requests regarding the date of conception and inventorship of the '121 patent by filing a motion to compel or a motion for sanctions. Whirlpool's failure to pursue a more specific response to its discovery request precludes a finding of discovery misconduct by clear and convincing evidence sufficient to warrant relief under Rule 60(b)(3). *See id.* at *3. Even if LG's actions constitute misconduct, the evidence of record fails to support Whirlpool's contention that it was precluded from fully and fairly presenting its case for the reasons cited by LG.

V. CONCLUSION

For the reasons stated above, the court will deny the parties' post-trial motions with the exception of Whirlpool's motion for JMOL regarding anticipation of claim 15 of the '601 patent, Whirlpool's motion for JMOL with respect to infringement of the '130 patent by LG's French door refrigerators, Whirlpool's request for a new trial on damages for infringement of the '130 patent and claim 15 of the '601 patent, LG's request for a new trial regarding the sufficiency of the written description of the '130 patent, LG's request for a new trial regarding the obviousness of claim 15 of the '601 patent, Whirlpool's request for an accounting, and Whirlpool's motion for prejudgment and postjudgment interest. An appropriate order shall issue.

Dated: July 1, 2011



CHIEF, UNITED STATES DISTRICT JUDGE

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

LG ELECTRONICS U.S.A., INC., and
LG ELECTRONICS, INC.,

Plaintiffs,

v.

WHIRLPOOL CORPORATION,

Defendant.

C.A. No. 08-234-GMS

WHIRLPOOL CORPORATION,
WHIRLPOOL PATENTS COMPANY,
WHIRLPOOL MANUFACTURING
CORPORATION, and MAYTAG
CORPORATION,

Counterclaim Plaintiffs,

v.

LG ELECTRONICS U.S.A., INC.,
LG ELECTRONICS, INC., and LG
ELECTRONICS MONTERREY MEXICO,
S.A., DE, CV,

Counterclaim Defendants.

ORDER

For the reasons stated in the court's Memorandum of this same date, IT IS HEREBY
ORDERED that:

1. LG's renewed motion for judgment as a matter of law or for a new trial (D.I. 412) is
GRANTED IN PART AND DENIED IN PART. Specifically, the court denies LG's renewed

motion for JMOL in all respects, but grants its motion for a new trial regarding the sufficiency of the written description of the '130 patent and the obviousness of claim 15 of the '601 patent.

2. Whirlpool's renewed motion for judgment as a matter of law or for a new trial (D.I. 413) is GRANTED IN PART AND DENIED IN PART. Specifically, the court denies Whirlpool's renewed motion for JMOL with respect to the obviousness of the '121 patent, anticipation of claims 1 and 4 of the '601 patent, and willfulness of LG's infringement of the '130 patent. However, the court grants Whirlpool's renewed motion for JMOL of no anticipation with respect to claim 15 of the '601 patent and infringement of the '130 patent by LG's French door refrigerators. The court grants Whirlpool's motion for a new trial on the limited issue of damages for infringement of the '130 patent and claim 15 of the '601 patent.

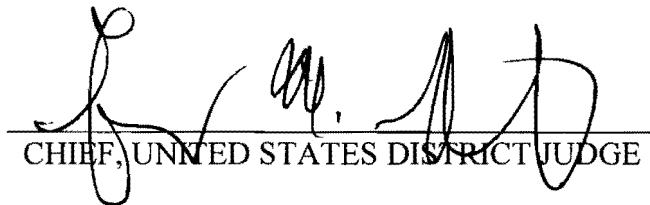
3. Whirlpool's motion for a permanent injunction and for an accounting (D.I. 408) is GRANTED IN PART AND DENIED IN PART. Specifically, the court denies Whirlpool's request for a permanent injunction, but grants its request for an accounting.

4. Whirlpool's motion for an award of prejudgment and postjudgment interest (D.I. 444) is GRANTED.

5. Whirlpool's motion to deny and dismiss LG's alleged bench trial issues (D.I. 419) is DENIED.

6. Whirlpool's motion for relief from judgment under Rule 60(b) (D.I. 461) is DENIED.

Dated: July 1, 2011


CHIEF, UNITED STATES DISTRICT JUDGE