

United States Court of Appeals for the Federal Circuit

98-1533, -1585

ODETICS, INC.,

Plaintiff-Appellant,

v.

STORAGE TECHNOLOGY CORPORATION,

VISA INTERNATIONAL SERVICE ASSOCIATION, INC.,

VISA USA, INC. and CRESTAR BANK, INC.,

Defendants-Cross Appellants.

Vincent J. Belusko, Graham & James LLP, of Los Angeles, California, argued for plaintiff-appellant. With him on the brief was David L. Fehrman.

Herbert F. Schwartz, Fish & Neave, of New York, New York, argued for defendants-cross appellants. With him on the brief were Mark H. Bloomberg and Russell W. Faegenburg.

Appealed from: United States District Court for the Eastern District of Virginia

Judge Thomas Selby Ellis, III

United States Court of Appeals for the Federal Circuit

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ODETICS, INC.,

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STORAGE TECHNOLOGY CORPORATION,

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VISA USA, INC. and CRESTAR BANK, INC.,

Defendants-Cross Appellants.

DECIDED: July 6, 1999

Before LOURIE, CLEVINGER, and SCHALL, Circuit Judges.

Opinion for the court filed by Circuit Judge CLEVINGER. Dissenting opinion filed by Circuit Judge LOURIE.

CLEVINGER, Circuit Judge.

On March 27, 1998, a jury impaneled in the United States District Court for the Eastern District of Virginia concluded that automated storage library systems manufactured and sold by Storage Technology Corporation, and used by Visa International Service Association, Inc., Visa USA, Inc., and Crestar Bank, Inc. (collectively, "STK") literally infringed United States Patent No. 4,779,151 ("the '151 patent") owned by the plaintiff, Odetics, Inc. ("Odetics"). Finding willful infringement, the jury awarded \$70.6 million in damages. After initially denying STK's renewed motion for Judgment as a Matter of Law ("JMOL"), the district court sua sponte reconsidered, granting the JMOL and ordering that judgment be entered in favor of STK. The district court deemed its reconsidered decision to be "mandat[ed]" by "the analytical framework established" by this court's opinion in *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 46 USPQ2d 1752 (Fed. Cir. 1998). See *Odetics, Inc. v. Storage Tech. Corp.*, 14 F. Supp. 2d 807, 809, 47 USPQ2d 1923, 1924 (E.D. Va. July 31, 1998) ("Odetics VII"). Odetics appeals the reconsideration judgment, as well as earlier judgments partially denying its request for a permanent injunction, see *Odetics, Inc. v. Storage Tech. Corp.*, 14 F. Supp. 2d 785, 47 USPQ2d 1573 (E.D. Va. June 5, 1998) ("Odetics V"), excluding certain time periods from the willful infringement verdict, see *Odetics, Inc. v. Storage Tech. Corp.*, No. 95-881-A, slip op. at 2 (E.D. Va. Feb. 12, 1998) ("Odetics IV"), and denying its request for enhanced damages, see *Odetics, Inc. v. Storage Tech. Corp.*, 14 F. Supp. 2d 800 (E.D. Va. July 17, 1998) ("Odetics VI").

STK cross-appeals the district court's holding that its validity defense, based on 35 U.S.C. 102(g), was barred as within the scope of this court's mandate in an earlier appeal of this case, *Odetics, Inc. v. Storage Tech. Corp.*, 116 F.3d 1497, 1997 WL 357598 (Fed. Cir. 1997) (Table) ("Odetics II"). See *Odetics, Inc. v. Storage Tech. Corp.*, No. 95-881-A, slip op. at 1 (E.D. Va. Dec. 3, 1997), as clarified by No. 95-881-A, slip op. at 3-4 (Jan. 8, 1998) ("Odetics III"). STK also appeals the district court's decision to exclude certain evidence from the jury. See *id.*, slip op. at 1.

Because *Chiuminatta* did not mark a change in the proper infringement analysis under 112, 6, and the jury's verdict is supported by substantial evidence, we reverse the grant of JMOL and order the jury's verdict reinstated. We affirm, however, the district court's other judgments on appeal.

I

This patent infringement action, making its second appearance before this court, see *Odetics II*, 116 F.3d 1497, 1997 WL 357598 (vacating judgment of noninfringement), concerns robotic tape storage systems, which are typically used to store, organize, and retrieve videotapes or computer data tapes. The storage

systems generally consist of a large, generally cylindrical housing with a pivoting retrieval mechanism, such as a robotic arm, located in the center of the housing. Acting on commands to retrieve certain tapes, the robotic arm can selectively grip the desired tape, removing it from its storage shelf and placing it on another shelf or in a tape player/recorder. These systems are highly automated and are especially useful in situations where large quantities of data must be easily and quickly retrieved from storage.

A

At issue are claims 9 and 14 of the '151 patent. (Although claim 8 was also asserted, the district court granted summary judgment of noninfringement with respect to that claim--a judgment that, in light of our overall disposition, is now moot.) Claim 9 reads as follows (emphasis supplied to highlight disputed limitation):

9. A tape cassette handling system comprising:

a plurality of tape transports;

a housing including a cassette storage library having a plurality of storage bins and at least one cassette access opening for receiving cassettes to be moved to the storage bins or to the tape transports, or for receiving cassettes to be removed from the library or from the tape transports;

a rotary means rotatably mounted within the library adjacent the access opening for providing access to the storage library, the rotary means having

one or more holding bins each having an opening for receiving a cassette, wherein the rotary means is rotatable from a first position in which the opening of at least one holding bin is accessible from outside of the housing to a second position in which the opening of at least one holding bin is accessible from inside of the housing; and

cassette manipulator means located within the housing for selectively moving cassettes between the rotary means, said storage bins and said tape transports.

Claim 14 is identical in all relevant aspects.

The critical "rotary means" claim element is in means-plus-function form, requiring that it "be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. 112, 6 (1994). In *Odetics II*, this court held that the structure corresponding to the "rotary means" element was "the components that receive the force and rotate as a result of that force (i.e., the rod, gear, and rotary loading and loading mechanisms)." 1997 WL 357598, at *6. This court noted that this structure could be seen in Fig. 3 of the '151 patent, except that the structure did not include the motor (52) or its gear (54).

Fig. 3, U.S. Patent No. 4,779,151

Thus, the structure corresponding to the "rotary means" element, as depicted in Fig. 3 of the '151 patent, is a set of tape holders or bins, a rod providing the axis of rotation, and a gear capable of receiving a force sufficient to cause the structure to accomplish the claimed "rotary" function.

STK manufactures and sells Library Storage Modules ("libraries") to companies, such as Visa and Crestar,

that require large quantities of automated data storage. Library systems sold by STK are scalable: that is, additional libraries may be added to increase the amount of storage space. When libraries are added, STK uses a device known as a "pass-thru port" to link the libraries, allowing data tapes to be passed from library to library. The pass-thru ports bridge the gaps between the libraries using a "bin array"--a box-like set of tape slots or holders--that slides linearly along a short track. As the bin arrays move from library to library, they rotate to allow tapes to be manipulated from within the library housings. This rotation is accomplished by the use of "cam followers," or pins, that are affixed to the bottom of the bin array. As a bin array moves along its track, the pins come into contact with angled structures, or "cams," that exert force against the pins, causing the bin array to rotate about a rod that forms its axis. The "bin array" in the accused devices, then, comprises a set of tape holders or bins, a rod, and pins.

B

In 1995, Odetics sued STK, claiming that three of STK's commercial storage library offerings (known as the ACS 4400, the PowderHorn, and the WolfCreek) infringed claims 8, 9, and 14 of its '151 patent. On cross-motions for summary judgment, the district court found as a matter of law that the claims were not literally infringed, and partially granted STK's motion for summary judgment on the issue of laches. See *Odetics, Inc. v. Storage Tech.*, 919 F. Supp. 911, 38 USPQ2d 1873 (E.D. Va. 1996) ("Odetics I"). After receiving instructions from the district court regarding the meaning of disputed terms, a jury considering the issues of validity and infringement under the doctrine of equivalents found the asserted claims of the '151 patent not invalid and not infringed.

In late 1996, Odetics appealed. We held that the district court's claim construction was erroneous, and therefore vacated the judgment entered by the district court, remanding the case for further proceedings in light of the correct claim interpretation. See *Odetics II*, 1997 WL 357598, at *7. The case returned to the district court, where a second jury trial commenced on March 23, 1998, resulting in a verdict of willful infringement on March 27, and an award of \$70.6 million in damages.

In post-trial motions, the district court, on May 1, 1998, denied STK's motion for JMOL and alternative motion for a new trial. See *Odetics*, No. 95-881-A (E.D. Va. order filed May 1, 1998). Sometime in May or June 1998, the district court, "[a]fter denying the motions [for JMOL and a new trial] . . . learned of the Federal Circuit's decision in *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, [46 USPQ2d 1752] (Fed. Cir. 1998)." *Odetics VII*, 14 F. Supp. 2d at 810, 47 USPQ2d at 1925. The district court, concluding that Chiuminatta "potentially counseled a contrary result in the disposition of [] the JMOL motion" ordered the parties to file supplemental memoranda discussing the impact of the opinion on this case. *Id.* After receiving such briefing and conducting a hearing, the district court reversed its earlier denial of STK's motion for JMOL, holding that Chiuminatta "mandate[s] entry of judgment as a matter of law in favor of the defendants." *Id.* at 807, 47 USPQ2d at 1924. This appeal followed, vesting us with jurisdiction pursuant to 28 U.S.C. 1295(a)(1) (1994).

II

We review a grant of JMOL without deference to the district court. See, e.g., *Texas Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1563, 39 USPQ2d 1492, 1496 (Fed. Cir. 1996); *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 975, 34 USPQ2d 1321, 1326 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Entry of JMOL is inappropriate unless the jury's verdict is unsupported by

substantial evidence or premised on incorrect legal standards. See, e.g., *Applied Medical Resources Corp. v. United States Surgical Corp.*, 147 F.3d 1374, 1376, 47 USPQ2d 1289, 1290 (Fed. Cir. 1998) cert. denied, 119 S.Ct. 870 (1999); *Markman*, 52 F.3d at 975, 34 USPQ2d at 1326.

A

Because the district court explicitly premised its grant of STK's JMOL motion on the "mandate" resulting from its review of the Chiuminatta opinion, we must first decide whether, in the words of the district court, Chiuminatta "announced a significant change in the proper mode of infringement analysis under 112, 6." *Odetics VII*, 14 F. Supp. 2d at 811, 47 USPQ2d at 1926. Indeed, the crux of the district court's reading of Chiuminatta is that statutory equivalence under 112, 6 requires "component by component" equivalence between the relevant structure identified in the patent and the portion of the accused device asserted to be structurally equivalent. *Id.* at 814 n.12, 47 USPQ2d at 1929 n.12 ("[I]t should be noted that the jury's conclusion is perhaps explained by the fact that it was not specifically instructed to compare the two [structures], component by component . . . Thus, the jury may erroneously have thought it was sufficient to compare the two structures in gross, thereby leading to a conclusion contrary to law."). This reading of Chiuminatta misapprehends 112, 6 infringement analysis and is therefore incorrect.

A claim limitation written in means-plus-function form, reciting a function to be performed rather than definite structure, is subject to the requirements of 35 U.S.C. 112, 6 (1994). See *B. Braun Med., Inc. v. Abbott Lab.*, 124 F.3d 1419, 1424, 43 USPQ2d 1896, 1899 (Fed. Cir. 1997). As such, the limitation must be construed "to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." See 35 U.S.C. 112, 6; *B. Braun Med.*, 124 F.3d at 1424, 43 USPQ2d at 1899. Literal infringement of a 112, 6 limitation requires that the relevant structure in the accused device perform the identical function recited in the claim and be identical or equivalent to the corresponding structure in the specification. See, e.g., *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1320, 50 USPQ2d 1161, 1168 (Fed. Cir. 1999); *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 934, 4 USPQ2d 1737, 1739 (Fed. Cir. 1987) (en banc). Functional identity and either structural identity or equivalence are both necessary. See *Pennwalt*, 833 F.3d at 934, 4 USPQ2d at 1739.

Structural equivalence under 112, 6 is, as noted by the Supreme Court, "an application of the doctrine of equivalents . . . in a restrictive role." *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 28, 41 USPQ2d 1865, 1870 (1997). As such, "their tests for equivalence are closely related," Chiuminatta, 145 F.3d at 1310, 46 USPQ2d at 1757, involving "similar analyses of insubstantiality of differences." *Al-Site*, 174 F.3d at 1321, 50 USPQ2d at 1168 (quoting Chiuminatta, 145 F.3d at 1310, 46 USPQ2d at 1758). See also *Valmont Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1043, 25 USPQ2d 1451, 1455 (Fed. Cir. 1993) ("The word 'equivalent' in section 112 invokes the familiar concept of an insubstantial change."). In the doctrine of equivalents context, the following test is often used: if the "function, way, or result" of the assertedly substitute structure is substantially different from that described by the claim limitation, equivalence is not established. See, e.g., *Warner-Jenkinson*, 520 U.S. at 39-40, 41 USPQ2d at 1875. As we have noted, this tripartite test developed for the doctrine of equivalents is not wholly transferable to the 112, 6 statutory equivalence context. See *Alpex Computer Corp. v. Nintendo Co.*, 102 F.3d 1214, 1222, 40 USPQ2d 1667, 1673 (Fed. Cir. 1996); *Valmont*, 983 F.2d at 1043, 25 USPQ2d at 1455; *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1575, 225 USPQ 236, 239 (Fed. Cir. 1985). Instead, the statutory equivalence analysis, while rooted in similar concepts of insubstantial differences as its doctrine of equivalents counterpart, is narrower. See *Al-Site*, 174 F.3d at 1320 n.2, 50 USPQ2d at 1168 n.2. This is because,

under 112, 6 equivalence, functional identity is required; thus the equivalence (indeed, identity) of the "function" of the assertedly substitute structure, material, or acts must be first established in order to reach the statutory equivalence analysis. See 35 U.S.C. 112, 6; *Al-Site*, 174 F.3d at 1320, 50 USPQ2d at 1168; *Chiuminatta*, 145 F.3d at 1308, 46 USPQ2d at 1755; *Alpex*, 102 F.3d at 1222, 40 USPQ2d at 1673; *Pennwalt*, 833 F.2d at 934, 4 USPQ2d at 1739. The content of the test for insubstantial differences under 112, 6 thus reduces to "way" and "result." That is, the statutory equivalence analysis requires a determination of whether the "way" the assertedly substitute structure performs the claimed function, and the "result" of that performance, is substantially different from the "way" the claimed function is performed by the "corresponding structure, acts, or materials described in the specification," or its "result." Structural equivalence under 112, 6 is met only if the differences are insubstantial, see *Chiuminatta*, 145 F.3d at 1308, 46 USPQ2d at 1756; that is, if the assertedly equivalent structure performs the claimed function in substantially the same way to achieve substantially the same result as the corresponding structure described in the specification. See 35 U.S.C. 112, 6 (means-plus function claim literally covers "the corresponding structure, material, or acts described in the specification and equivalents thereof" (emphasis supplied)).

The similar analysis of equivalents under 112, 6 and the doctrine of equivalents does not, however, lead to the conclusion that *Pennwalt* and *Warner-Jenkinson* command a component-by-component analysis of structural equivalence under 112, 6. It is of course axiomatic that "[e]ach element contained in a patent claim is deemed material to determining the scope of the patented invention." *Warner-Jenkinson*, 520 U.S. at 29, 41 USPQ2d at 1871. Thus a claim limitation written in 112, 6 form, like all claim limitations, must be met, literally or equivalently, for infringement to lie. See, e.g., *Pennwalt*, 833 F.2d at 935, 4 USPQ2d at 1739. As we noted above, such a limitation is literally met by structure, materials, or acts in the accused device that perform the claimed function in substantially the same way to achieve substantially the same result. The individual components, if any, of an overall structure that corresponds to the claimed function are not claim limitations. Rather, the claim limitation is the overall structure corresponding to the claimed function. This is why structures with different numbers of parts may still be equivalent under 112, 6, thereby meeting the claim limitation. See, e.g., *Al-Site*, 174 F.3d at 1321-22, 50 USPQ2d at 1169 (upholding jury verdict of 112, 6 equivalence between "a mechanically-fastened loop . . . includ[ing] either the rivet fastener or the button and hole fastener" and "holes in the arms [of an eyeglass hanger tag]"). The appropriate degree of specificity is provided by the statute itself; the relevant structure is that which "corresponds" to the claimed function. See, e.g., *Chiuminatta*, 145 F.3d at 1308-09, 46 USPQ2d at 1756 (structure "unrelated to the recited function" disclosed in the patent is irrelevant to 112, 6); *Valmont*, 983 F.2d at 1044, 25 USPQ2d at 1455 (identifying structure referring to the claimed function). Further deconstruction or parsing is incorrect.

Rather than altering this well-worn path of the law, *Chiuminatta* confirms it. After determining that the structure corresponding to the "means . . . for supporting the surface of the concrete" was a "skid plate" or "generally rectangular strip of metal having rounded ends between which is a flat piece," 145 F.3d at 1307, 46 USPQ2d at 1756, the court proceeded to analyze the differences between the skid plate and the assertedly equivalent structure in the accused device, a set of soft rubber wheels. See *id.* at 1309, 46 USPQ2d at 1757. In finding "not insubstantial" differences between the wheels and skid plate, the court noted that the way the structures performed the claimed function were substantially different: while the wheels roll or rotate across the surface, the skid plate "skid[s] as the saw moves across the concrete and thus ha[s] a different impact on the concrete." *Id.* At no point did the *Chiuminatta* court deconstruct the skid plate structure into component parts in order to analyze equivalence. Cf. *Odetics VII*, 14 F. Supp. 2d at 814, 47 USPQ2d at 1928 ("To prove equivalent structure, Odetics had to prove that the bin array [disclosed in the '151 patent] was equivalent to the bin array [in the accused device]; and this meant, essentially, that Odetics

had to prove that the gear [disclosed in the '151 patent] was equivalent to the cam followers [in the accused device]."). Instead, Chiuminata simply applied the well-established law of insubstantial differences to the particular structures at issue. See 145 F.3d at 1309, 46 USPQ2d at 1756-57. The component-by-component analysis used by the district court finds no support in the law.

B

Although we have determined that the premise of the district court's reconsidered grant of JMOL is incorrect, our inquiry is not at an end. STK argues that the grant of JMOL can be upheld on alternative grounds. We disagree.

First, STK contends that the jury's verdict of infringement was unsupported by substantial evidence. Whether an accused device infringes a 112, 6 claim as an equivalent is a question of fact. See *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1363, 48 USPQ2d 1225, 1241 (Fed. Cir. 1998) ("The determination of infringement under section 112 paragraph 6 is a factual question."), cert. denied, 119 S.Ct. 1804 (1999); *In re Hayes Microcomputer Prods., Inc. Patent Litig.*, 982 F.2d 1527, 1541, 25 USPQ2d 1241, 1251 (Fed. Cir. 1992) ("The determination of literal infringement [of a 112, 6 claim] is a question of fact."); *Intel Corp. v. United States Int'l Trade Comm'n*, 946 F.2d 821, 841, 20 USPQ2d 1161, 1178 (Fed. Cir. 1991) (same); *Hartness Int'l Inc. v. Simplimatic Eng'g Co.*, 819 F.2d 1100, 1110, 2 USPQ2d 1826, 1833 (Fed. Cir. 1987) ("Whether that accused device is a 112 equivalent of the described embodiment is a question of fact." (citation omitted)); *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 862, 226 USPQ 402, 408 (Fed. Cir. 1985) (same); *Palumbo v. Don-Joy Co.*, 762 F.2d 969, 975, 226 USPQ 5, 8 (Fed. Cir. 1985) (same), overruled on other grounds by *Markman*, 52 F.3d at 976-79, 34 USPQ2d at 1327-29 (Fed. Cir. 1995); *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1575, 225 USPQ 236, 239 (Fed. Cir. 1985). See also *Markman*, 52 F.3d at 977 n.8, 34 USPQ2d at 1327 n.8 (overruling of *Palumbo* did not affect that case's 112, 6 holdings).

The grant of a motion for JMOL is permissible only when "there is no legally sufficient basis for a jury to find for [the non-moving] party." Fed. R. Civ. P. 50(a)(1). In order to determine whether a legally sufficient basis in fact exists, "the trial court must consider all the evidence in a light most favorable to the non-mover, must draw reasonable inferences favorable to the non-mover, must not determine the credibility of witnesses, and must not substitute its choice for that of the jury." *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 893, 221 USPQ 669, 672 (Fed. Cir. 1984). See also *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1052 (Fed. Cir. 1987); *Medtronic Inc. v. Intermedics, Inc.*, 799 F.2d 734, 742, 230 USPQ 641, 646 (Fed. Cir. 1986). If, after this analysis, substantial evidence, being that minimum quantum of evidence from which a jury might reasonably afford relief, exists to support the jury's verdict, then the motion for JMOL must be denied. See *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 249-50 (1986) ("merely colorable" or "not significantly probative" evidence insufficient); *Consolidated Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938) ("Substantial evidence is more than a mere scintilla. It means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion."); *Improvement Co. v. Munson*, 81 U.S. 442, 448 (1872) (standard is "not whether there is literally no evidence, but whether there is any upon which a jury could properly proceed to find a verdict for the party producing it, upon whom the onus of proof is imposed").

STK asserts that Odetics did not present substantial evidence that the "bin array" of the accused device is equivalent to the '151 patent's "rotary means" claim element and corresponding structure in the specification.

A review of the record, however, overwhelmingly proves otherwise. As directed by this court in *Odetics II*, the jury was instructed that "'a rotary means rotatably mounted' could be what is depicted in Figure 3 [of the '151 patent], less elements 52 and 54, or the equivalent. In other words, [the rotary means structure is] depicted in Figure 3, less elements 52 and 54, that figure, or the equivalent." As we emphasized in *Odetics II*, the district court noted to the jury that the structure corresponding to the claimed function was "rotatable" as a result of receiving a rotary force. The "bin array" in the accused device contains a rod, bins for holding the cassettes, and pins or "cam followers" protruding from the bottom of the cassette bin. Odetics's theory of equivalence was to point out the parallels between the claimed and accused structures, noting that rotation is accomplished in the '151 patent by exerting force against the teeth of the gear, thereby turning the bin about the rod, and that rotation is accomplished in the accused device by exerting force against the cam followers, also turning the bin about the rod. Thus Odetics argued to the jury that the structures were equivalent "rotary means" within the meaning of 112, 6. To prove its case, Odetics introduced documentary and testimonial evidence of structural equivalence, including diagrams, claim charts, computer animation sequences, and the opinions of its expert, Dr. John M. McCarthy, whom the parties agree is a specialist in robotics. Dr. McCarthy specifically and clearly testified--on at least eight occasions during the trial--that the "rotary means" structure was equivalent to the "bin array" in the accused devices and why this was so. Indeed, he described the "bin array" structure in the accused devices and the rotary means structure in the '151 patent as "nearly identical," possible to "match directly," "completely equivalent," having "almost identical correspondence," "literally equivalent," and that they "correspond so completely, that I could match every element one-for-one." When pressed to describe specifically why the presence of pins or cam followers in the accused devices rather than the gear depicted in the '151 patent did not affect his equivalence analysis, Dr. McCarthy first noted that "you can push on a pin as well as you can push on a gear tooth. . . . For this application, this is completely equivalent, pushing on these pins and pushing on these gear teeth, particularly from [the perspective of] one of ordinary skill in the art." On cross-examination, Dr. McCarthy further explained that one could "[t]ake that gear off, put those pins on [The accused "bin array" structure] is completely equivalent, completely identical."

Given the clear, consistent, and oft-repeated evidence that the "rotary means" structure in the '151 patent and the "bin array" structure in the accused devices were equivalent, the district court, announcing its initial ruling against JMOL, stated: "the jury could find infringement, as it did, based on Dr. McCarthy's testimony of literal infringement. So STK's motion for Judgment as a Matter of Law must be denied." We agree. Odetics introduced substantial evidence that the rotary means and bin array structures were equivalent; a reasonable jury was therefore entitled to find infringement. See, e.g., *Al-Site*, 174 F.3d at 1316, 50 USPQ2d at 1165 (expert testimony that an "equivalent fastening means could be a rivet, glue, or staple . . . ' constitutes sufficient evidence to sustain the jury's verdict").

STK's argument that the testimony of Dr. McCarthy relates only to the functional identity of the two structures--and is thus insufficient to demonstrate structural equivalence--is unavailing. Dr. McCarthy testified repeatedly about the structural similarities, noting that, overall, the two structures "match directly," and that "the entire [bin array] structure surely is equivalent." Dr. McCarthy also stated that the way that the two structures accomplish the claimed "rotary" function, and the result of that function, is substantially equivalent: "[the depiction of the rotary means structure] represents the way this system is actuated. That's the point [at which] the force is applied to rotat[e]. Any equivalent way of rotating, is what's captured in this drawing." Therefore, when the question is whether substantial evidence supports the jury verdict, Dr. McCarthy's testimony answers that question against STK, as the district court correctly noted in the initial denial of the renewed motion for JMOL. See *Perkin-Elmer*, 732 F.2d at 893, 221 USPQ at 673.

Contrary to STK's argument, the "bin array" structure (the rod, bin, and pins) is not precluded from being equivalent, under 112, 6, to the '151 patent's "rotary means" structure (the rod, bin, and gear) by the fact that the "bin array" structure would not be able to perform unrelated functions, such as "meshing with a gear motor." A claim limitation written according to 112, 6 recites a function to be performed. See 35 U.S.C. 112, 6. The scope of that functional limitation is, of course, limited to the "corresponding structure, material, or acts described in the specification and equivalents thereof." *Id.* The "corresponding" structure is the structure disclosed as performing the function. See, e.g., *Chiuminatta*, 145 F.3d at 1308, 46 USPQ2d at 1756; *Pennwalt*, 833 F.2d at 934, 4 USPQ2d at 1739. That two structures may perform unrelated--and, more to the point, unclaimed--functions differently or not at all is simply not pertinent to the measure of 112, 6 equivalents. See *Chiuminatta*, 145 F.3d at 1308, 46 USPQ2d at 1756 (structure that "reduce[s] wobbling" and "support[s] the weight of the cutting blade" is unrelated to the claimed function of "'support[ing] the surface of the concrete' and accordingly are not to be read as limiting the scope of the means clause"). In this case, Dr. McCarthy testified that the structural equivalence between the "rotary means" and the "bin array" derives from the capacity of both structures to perform the identical function in the same way: to receive the force necessary to accomplish the "rotary" function. See *Odetics II*, 1997 WL 357598, at *5.

C

STK's second alternative ground to support the grant of JMOL is that--as a matter of law--the "bin array" of the accused devices are never in the claimed "first position" and thus do not meet the claim. STK contends that claims 9 and 14 of the '151 patent require the "rotary means" structure to be mounted within the library unit, and thus be inside the library unit when it is in the "first position in which the opening of at least one holding bin is accessible from outside the housing." '151 Pat., claims 9, 14. Because it is undisputed that the accused devices are not located in the library unit when in the "first position," STK argues that they escape infringement as a matter of law.

This argument was made to this court, and rejected, in the first appeal. There, STK explicitly argued that "the 'rotary means' or 'loading housing' must be capable of rotating from the first position to the second recited position while rotatably 'mounted' or 'carried' within the library. The accused [devices] are not capable of performing this function." *Odetics II*, Appellee's Br., p. 41 (emphasis in original). In response, this court noted that under the proper claim interpretation,

"[a]ll that is required by the claims is that the means be capable of rotating, that it be mounted within the library, and that it provide access to the library by rotating from a first position to a second position. A device need not be located within the library throughout its operation to meet those requirements."

Odetics II, 1997 WL 357598, at *6. Thus, STK's argument was made, considered, and disposed of by the earlier appeal; STK's attempts to resuscitate this issue must fail. See *Engel Indus., Inc. v. Lockformer Co.*, 166 F.3d 1379, 1383, 49 USPQ2d 1618, 1621 (Fed. Cir. 1999) ("Unless remanded by this court, all issues within the scope of the appealed judgment are deemed incorporated within the mandate and thus are precluded from further adjudication.").

Further, even if STK's "first position" argument somehow survived the disposition in *Odetics II*, it was certainly put to rest by STK's failure to object to the jury instructions in the second trial, which, consistent with this court's mandate, stated that "[a] device need not be located within the library throughout its operation to meet [the claim's] requirements. It's possible for the accused device to meet the requirement of

the claimed rotary means rotatably mounted, even if it moves outside the library during its operation." Given those instructions, the jury was entitled to find, as Dr. McCarthy suggested, that "[t]he fact that the [accused bin array structure] comes out [of the library] while it's moving, at some point in the operation . . . is completely irrelevant." STK's argument, in effect, asserts that the jury was not properly told that the accused bin array structure must be inside the library when in the "first position." But STK cannot now claim error in the jury instructions. See Fed. R. Civ. P. 51 ("No party may assign as error the giving or the failure to give an instruction unless that party objects thereto before the jury retires to consider its verdict."); *Hafner v. Brown*, 983 F.2d 570, 578 (4th Cir. 1992) (party's "unexcused delay in objecting to the instruction precludes our consideration of that asserted error on the merits." (internal quotations and citations omitted)). Nor can it ask this court to overrule a jury verdict based on legal standards STK did not even suggest should be given to the jury. See *Mattison v. Dallas Carrier Corp.*, 947 F.2d 95, 108 (4th Cir. 1991) ("[T]he court cannot, consistent with the Seventh Amendment, evaluate a jury's verdict based on . . . a legal standard not given to the jury."). In short, STK's "first position" argument amounts to too little, and comes too late, to provide any support to the grant of JMOL.

The district court was led astray by its misunderstanding of the *Chiuminatta* decision. Once we peel away the legally-improper premise for the reconsidered grant of JMOL, we discern no basis in law or fact for overturning the jury's conclusion of infringement. The verdict must stand.

III

Odetics next appeals the district court's partial denial of its request for a permanent injunction, arguing that the judgment of laches (which it does not appeal) should not prevent an injunction against the use, service, or repair of machines that STK manufactured and sold during the laches period. Before the district court granted JMOL, thereby mooting Odetics's aspirations for a permanent injunction, the court rejected this argument, holding that the machines sold during the laches period were free from liability from infringement, and thus acquired an implied license allowing their service and repair. See *Odetics V*, 14 F. Supp. 2d 785 (E.D. Va. 1998).

Section 283 of Title 35 authorizes district courts, upon a finding of infringement, to impose a permanent injunction "in accordance with the principles of equity." Thus, while we have stated the general rule that an injunction should follow an infringement verdict, see, e.g., *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1247, 9 USPQ2d 1913, 1929 (Fed. Cir. 1989), we also recognize that district courts, as befits a question of equity, enjoy considerable discretion in determining whether the facts of a situation require it to issue an injunction, see *Roche Prods., Inc. v. Bolar Pharm. Co.*, 733 F.2d 858, 865, 221 USPQ 937, 942 (Fed. Cir. 1984), superseded on other grounds by 35 U.S.C. 271(e)(1) (1994); see also 35 U.S.C. 283 (1994). We review, then, a denial of an injunction for abuse of discretion. See *Johns Hopkins Univ. v. Cellpro, Inc.*, 152 F.3d 1342, 1354, 47 USPQ2d 1705, 1713 (Fed. Cir. 1998); *Ortho Pharm. Corp. v. Smith*, 959 F.2d 936, 945, 22 USPQ2d 1119, 1127 (Fed. Cir. 1992). For the reasons that follow, we agree with the district court.

Prior to the first jury trial, the district court granted summary judgment that Odetics had committed laches in inexcusably failing to assert its rights under the '151 patent prior to filing the complaint in 1995. See *Odetics I*, 919 F. Supp. 911, 927, 38 USPQ2d 1873, 1885 (E.D. Va. 1996). Storage Technology sold co-defendants *CreStar* and *Visa* fourteen infringing devices during the pre-complaint laches period. It is undisputed, of course, that Odetics cannot recover damages for such sales. See *A.C. Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020, 1040-41, 22 USPQ2d 1321, 1335 (Fed. Cir. 1992) (en banc) (holding that

laches bars recovery of damages accrued prior to suit). See also *Lane & Bodley Co. v. Locke*, 150 U.S. 193 (1893) (recognizing defense of laches in the context of patent infringement). But we have also firmly precluded prospective application of the laches defense; that is, "laches bars relief on a patentee's claim only with respect to damages accrued prior to suit." *Aukerman*, 960 F.2d at 1041, 22 USPQ2d at 1335. Odetics, acknowledging that damages are unavailable, instead asks for an injunction against the use and repair of the pre-complaint devices, noting that 35 U.S.C. 271(a) (Supp. IV 1998) defines an infringer as one who "makes, uses, offers to sell, or sells any patented invention." Odetics argues that the continued use of the pre-complaint infringing devices is a current (and, indeed, future) violation of section 271(a)--and that therefore the use of laches to abrogate the right to exclude would work an impermissible prospective use of the laches defense. See *Aukerman*, 960 F.2d at 1040-41, 22 USPQ2d at 1335 (rejecting prospective use of laches).

Odetics's position, however, construes the scope of laches too narrowly. Laches is firmly rooted in the equitable principle that courts "will not assist one who has slept on his rights." *Lane & Bodley*, 150 U.S. at 201. A patentee, of course, may sleep upon the right to exclude others from making, using, offering to sell or selling a patented invention. This right is held by the patentee against the public; by inexcusably failing to exercise timely its right to exclude, the patentee, in effect, authorizes the public to infringe--to "make, use, offer to sell, or sell" a patented invention--during the laches period. And it is well-settled that "an authorized sale of a patented product places that product beyond the reach of the patent." *McCoy v. Mitusuboshi Cutlery, Inc.*, 67 F.3d 917, 921, 36 USPQ2d 1289, 1291 (Fed. Cir. 1995) (quoting *Intel Corp. v. ULSI Sys. Tech., Inc.*, 995 F.2d 1566, 1568, 27 USPQ2d 1136, 1138 (Fed. Cir. 1993)). Likewise, the sale of an infringing product during the laches period is beyond the reach of the patent: the patentee cannot later enjoin the use of a product sold during that time. As the Supreme Court has stated:

Patentees . . . are entitled to but one royalty for a patented machine, and consequently when a patentee has himself constructed the machine and sold it, or authorized another to construct and sell it, or to construct and use and operate it . . . he has then to that extent parted with his monopoly, and ceased to have any interest whatever in the machine

Bloomer v. Millinger, 68 U.S. 340, 350 (1863). We conclude, then, that laches will result in the patentee abrogating his right to exclude any infringing products sold prior to the filing of the complaint.

As the district court noted, allowing a patentee who commits laches to enjoin nonetheless the further use of a pre-complaint product will, in many cases, allow the patentee to recover royalties that laches specifically prevents. See *Odetics V*, 14 F. Supp. 2d at 791, 47 USPQ2d at 1579 (E.D. Va. 1998). Using the leverage of an injunction, patentees could--in theory--extract at minimum a reasonable royalty from current users of the pre-complaint infringing products. See *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1554, 35 USPQ2d 1065, 1076-77 (Fed. Cir. 1995) (en banc) ("The [reasonable] royalty may be based upon an established royalty, if there is one, or if not, upon the supposed result of hypothetical negotiations between the plaintiff and defendant."). Indeed, one expects such a user would pay as much as it would cost to shift to a noninfringing product, an amount, given investment in infringing systems, perhaps far more than a reasonable royalty. See *id.*, 35 USPQ2d at 1076 ("The hypothetical negotiation requires the court to envision the terms of a licensing agreement reached between the patentee and the infringer at the time infringement began" (emphasis added)). These incentives would encourage patentees to adopt a strategy of ambush rather than providing fair notice. For example, in this case, the jury determined that a reasonable royalty was four percent of the total price of the storage library systems. Assuming that a shift to a noninfringing storage library system

would cost significantly more than four percent of the original price, Odetics would stand to benefit from its unexcused delay in bringing suit. Under these circumstances, laches could become a weapon to be wielded rather than a defense to be avoided. In short, if laches is to retain vitality with respect to patented products, it must result, as we noted above, in the abrogation of the right to exclude products sold prior to the filing of the complaint.

The district court correctly denied the injunction against the pre-complaint products.

IV

Upon a finding of willful infringement, a district court may, at its discretion, grant up to treble damages. See 35 U.S.C. 284 (1994); *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 826, 23 USPQ2d 1426, 1434-35 (Fed. Cir. 1992), abrogated on other grounds by *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 975, 34 USPQ2d 1321, 1326 (Fed. Cir. 1995) (en banc). Here, although the jury found that STK infringed willfully, the district court declined to grant enhanced damages. See *Odetics VI*, 14 F. Supp. 2d 800 (E.D. Va. 1998). Odetics appeals this decision.

The law is clear that while willful infringement may allow enhanced damages, such a finding does not compel the district court to grant them. See *Read*, 970 F.2d at 826, 23 USPQ2d at 1435. Instead, the decision to grant or deny enhanced damages remains firmly within the scope of the district court's reasoned discretion, informed by the totality of the circumstances. See *State Indus., Inc. v. Mor-Flo Indus., Inc.*, 948 F.2d 1573, 1576, 20 USPQ2d 1738, 1740 (Fed. Cir. 1991). We review, then, the denial of enhanced damages for abuse of discretion. See *SRI Int'l, Inc. v. Advanced Tech. Lab., Inc.*, 127 F.3d 1462, 1469, 44 USPQ2d 1422, 1427 (Fed. Cir. 1997).

In this case, we discern no abuse of discretion. As required, see *Jurgens v. CBK, Ltd.*, 80 F.3d 1566, 1572, 38 USPQ2d 1397, 1401 (Fed. Cir. 1996), the district court provided detailed reasons for the denial of enhanced damages, closely tracking the nine factors highlighted in *Read*, 970 F.2d at 827-28, 23 USPQ2d at 1435-36. See *Odetics VI*, 14 F. Supp. 2d at 803-04. Odetics, however, addresses only three of the nine factors, arguing: (1) that the district court erred by considering STK's avowed belief that the '151 patent was invalid; (2) that the case was, contrary to the district court's conclusion, not close; and, (3) that the ten-year duration of the infringement should not have been tempered by the recognition of the laches defense. Odetics does not address the remaining four factors that the district court found weighed in favor of STK, namely that: STK had not copied the invention; STK engaged in no misconduct during litigation; STK had evinced no motivation to harm Odetics; and, STK had not attempted to conceal its infringement. Further, Odetics does not address that the district court stated that, given the closeness of the case, it would have denied enhanced damages even if STK had not "mounted a good faith and substantial challenge to the existence of infringement." 14 F. Supp. 2d at 805 n.9. Our review of the district court's reasoning is mindful that, in this context, a "broad range of discretion is reposed in the trial court, founded on [the] need to weigh and balance multiple factors in determining a just remedy." *SRI*, 127 F.3d at 1469, 44 USPQ2d at 1427. We think the district court adequately explained its reasons for failing to award enhanced damages, and find no abuse of discretion in having done so.

For similar reasons, we also conclude that the district court did not abuse its discretion in refusing to award attorney's fees to Odetics.

VII

Prior to the second jury trial, the district court determined that, as a matter of law, the period between the judgment of noninfringement in the first trial and this court's subsequent overturning of that judgment could not be included in the calculation of additional damages flowing from any possible finding of willful infringement on the part of STK. See *Odetics IV*, No. 95-881-A, slip op. at 2 (E.D. Va. Feb. 12, 1998). The jury did find willful infringement, and Odetics now appeals this ruling, arguing that the exclusion of the post-trial but pre-appeal period was in error. However, in light of our determination that the district court did not abuse its discretion in refusing to award enhanced damages, the span of time available for the calculation of such damages--that is, whether the post-trial but pre-appeal period should be included--has become moot. We thus need not, and do not, express any view regarding the correctness of the limitation of the willfulness finding.

VIII

STK cross-appeals the district court's holding, entered on the basis of our mandate in *Odetics II*, 116 F.3d 1497, 1997 WL 357598 (Fed. Cir. 1997) (Table), that STK could not further litigate issues of invalidity, including what it describes as its "102(g) defense." See *Odetics III*, No. 95-881-A, slip op. at 1 (E.D. Va. Dec. 3, 1997), as clarified by No. 95-881-A, slip op. at 3-4 (Jan. 8, 1998) (holding that the district court has "no jurisdiction to entertain the 102(g) defense"). STK argues that the district court improperly interpreted our mandate in *Odetics II*, suggesting that because the jury did not specifically find facts related to the "102(g) defense," the *Odetics II* mandate could not have foreclosed further litigation on this issue. We are unpersuaded.

We review the interpretation of our own mandate de novo. See *Engel Indus., Inc. v. Lockformer Co.*, 166 F.3d 1379, 1382, 49 USPQ2d 1618, 1621 (Fed. Cir. 1999). See also *Laitram Corp. v. NEC Corp.*, 115 F.3d 947, 950, 42 USPQ2d 1897, 1899 (Fed. Cir. 1997). "Unless remanded by this court, all issues within the scope of the appealed judgment are incorporated within the scope of the mandate and are thus precluded from further adjudication." *Engel*, 166 F.3d at 1383, 49 USPQ2d at 1621. In *Odetics II*, we noted that the jury in the first trial had specifically found that the claims of the '151 patent were not invalid, i.e., neither anticipated nor obvious. See 1997 WL 357598, at *6. We therefore declined to consider STK's section 102(g) invalidity arguments, noting that "STK in essence asks us to consider a patentability issue without having cross-appealed the jury's verdicts on patentability." *Id.* We ordered that the case be remanded only as to the issue of "infringement vel non, under a proper claim construction," while leaving open the laches question. *Id.* at *7.

STK petitioned this court to recall the *Odetics II* mandate, suggesting that the court modify the remand order to allow further consideration of the "102(g) defense." After briefing on the issue from Odetics, this court denied the petition. See *Odetics, Inc. v. Storage Tech., Inc.*, Nos. 96-1261, -1301 (Fed. Cir., order filed Feb. 27, 1998).

STK offers no reason why we should now alter our holding--clearly stated in *Odetics II*--that STK's failure to appeal the judgment of no invalidity precluded the continued litigation of that issue. The entry of a distinct judgment of no invalidity after the first jury trial unquestionably put the patentability of the '151 patent in play when the overall judgment of liability was appealed. See *Engel*, 166 F.3d at 1383-84, 49 USPQ2d at 1622 (noting the appeal on liability put issues of both infringement and contractual liability in play); accord *Radio Steele & Mfg. Co. v. MTD Prods., Inc.*, 731 F.2d 840, 844, 221 USPQ at 657, 660 (Fed. Cir. 1984) (a prevailing party seeking to challenge either validity or infringement must, if those judgments are distinct, file a

cross-appeal). The issue of whether the '151 patent was valid was plainly within the scope of the judgment appealed from in the first appeal. STK chose not to cross-appeal that issue, thereby precluding further consideration of the issue. We so held in *Odetics II*. We do so again today.

The district court was correct in refusing to entertain further invalidity arguments.

IX

STK further cross-appeals the district court's exclusion of certain evidence. Specifically, STK argues that the district court acted improperly in excluding evidence of STK's avowed reliance on its "102(g) defense" and its victory in the first trial—both of which, STK suggests, are highly relevant to the issue of willful infringement. STK also argues that the district court erred in excluding evidence of licenses Odetics had granted under the '151 patent, evidence which STK contends is relevant to the determination of a reasonable royalty rate.

Because these evidentiary rulings raise procedural issues not unique to patent law, this court applies the law of the regional circuit where appeals from the district court would normally lie. See, e.g., *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 548, 48 USPQ2d 1321, 1331 (Fed. Cir. 1998) cert. denied, 119 S. Ct. 1577 (1999); *Biodex Corp. v. Loredan Biomedical, Inc.*, 946 F.2d 850, 856, 20 USPQ2d 1252, 1256 (Fed. Cir. 1991). Accordingly, we review the exclusion of evidence for abuse of discretion. See, e.g., *Brown v. McClean*, 159 F.3d 898, 904 (4th Cir. 1998). Even if in error, the exclusion of evidence is not cause for reversal unless the exclusion of the evidence affected the "substantial rights of the parties." See *Mullen v. Princess Anne Volunteer Fire Co.*, 853 F.2d 1130, 1135 (4th Cir. 1988) (citing Fed. R. Civ. P. 61).

A

STK asserts that the exclusion of evidence that it had previously asserted its so-called "102(g) defense" and that it had won the first jury trial was highly prejudicial to its defense against willful infringement. STK argues that the absence of this evidence "effectively foreordained the jury's finding that STK's conduct was willful." This argument, however, is inapt. Both the "102(g) defense" and the result of the first jury trial presented themselves years after the date that STK first learned of the '151 patent. The proper time to assess willfulness is at the time the infringer received notice, see *Johns Hopkins Univ. v. Cellpro, Inc.*, 152 F.3d 1342, 1362, 47 USPQ2d 1705, 1720, making the relevance of later developments, such as the assertion of the "102(g) defense" and the first jury verdict, questionable at best. Further, the introduction of evidence of an earlier trial, as well as evidence of arguments foreclosed by appeal, had "significant potential to confuse the jury." See *id.*, 152 F.3d at 1363, 47 USPQ at 1720. The district court did not abuse its discretion in excluding this evidence.

B

In 1992 and 1993, Odetics granted two licenses, to IBM and Western Automation, respectively, under the '151 patent. The district court ruled that because these license agreements were negotiated four and five years, respectively, after the date of first infringement, they were, under "all the facts and circumstances relating to these . . . irrelevant." The district court reasoned that "four and five years later . . . is much, much, too late, after the financial landscape has changed remarkably in the four to five years." The district court recognized that post-infringement evidence may in some circumstances be relevant, "but not, in the [District] Court's view, in these." STK argues that this decision was in error.

This does not constitute abuse of discretion, however. The district court correctly understood that "[t]he hypothetical negotiation [required in a reasonable royalty analysis] requires the court to envision the terms of a licensing agreement reached between the patentee and the infringer at the time infringement began." *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1554, 35 USPQ2d 1065, 1076-77 (Fed. Cir. 1995) (en banc) (emphasis added). And while *Rite-Hite* does not require the exclusion of post-infringement evidence, it certainly does not require its entry. We discern no prejudicial error in the court's determination that the age of the license agreements, in the context of the changing technology and "financial landscape" at issue, made those agreements irrelevant for the hypothetical negotiation analysis.

CONCLUSION

For the reasons stated above, we reverse the grant of JMOL in favor of STK and order the jury's verdict reinstated. We leave undisturbed, however, the district court's other judgments, rulings, and orders on appeal, thereby affirming the remaining questions raised by Odetics and the cross-appeals presented by STK. The case is returned to the district court for further proceedings not inconsistent with this opinion.

COSTS

No costs.

AFFIRMED-IN-PART AND REVERSED-IN-PART

United States Court of Appeals for the Federal Circuit

98-1533, -1585

ODETICS, INC.,

Plaintiff-Appellant,

v.

STORAGE TECHNOLOGY CORPORATION,

VISA INTERNATIONAL SERVICE ASSOCIATION, INC.,

VISA USA, INC. and CRESTAR BANK, INC.,

Defendants-Cross-Appellants.

LOURIE, Circuit Judge, dissenting.

I respectfully dissent both from the holding that an analysis of equivalent structure under 112, 6, does not permit dissection of the structure corresponding to a recited means and from the conclusion that substantial evidence supports the jury's finding that the accused structure corresponding to the means was equivalent in this case.

If one is to determine whether the disclosed structure of a claimed means is equivalent to the corresponding structure of an accused device, I do not see how it is possible to do so without looking at what components

the structures consist of, i.e., by deconstructing or dissecting the structures. This is the only way to discern whether any significant difference in structural details exists between the claimed and accused structures. For example, in this case, structural equivalence is assessed by comparing the disclosed rotary means (the rod, bin, and the toothed gear) with the accused bin array (the rod, bin, and pins (cam followers)). The only relevant structural difference is between the toothed gear and the pins, and therefore it is the significance of this structural difference that must be assessed in determining whether the claimed means is equivalent to the bin array.

My difference with the majority essentially arises from my belief that it misunderstands the meaning of the word "structure." The structure of a house consists of its components, i.e., its floor, walls, roof, etc. The structure of an automobile consists of its components, i.e., its chassis, motor, wheels, body, seats, etc. The structure of a chemical compound consists of the names of its component constituents or a pictorial representation thereof. The structure of an electronic circuit consist of transistors, resistors, capacitors, etc. Analyzing any of these structures for comparison with other structures requires analysis of their component parts. We need to focus on the real meaning of this statutory term if we are to serve our function of clarifying the law.

I also disagree with the majority's conclusion that substantial evidence supports the jury's finding of equivalence. The majority finds substantial evidence in the testimony of Dr. McCarthy to support the jury verdict of infringement, but I disagree, as did Judge Ellis, that this testimony was relevant to structural equivalency under 112, 6. Instead, McCarthy's testimony served only to prove that the claimed gear and the cam followers performed the same function-viz., to turn the bin array to "provid[e] access to the storage library." The portions of McCarthy's testimony quoted by the majority make this point clear: "you can push on a pin as well as you can push on a gear tooth. . . . For this application, this is completely equivalent, pushing on these pins and pushing on these gear teeth, . . ."; "take the gear off, put those pins on [The accused bin array structure] is completely equivalent . . ."1 These are all assertions of functional equivalence. McCarthy did not, presumably because he could not, testify that the smooth pins were structurally equivalent to the toothed gear of the claimed means. McCarthy's bare assertion that the two structures were structurally equivalent does not make it so without substantial evidence to back up that assertion.

Proving whether a means-plus-function limitation is literally met by a structure in an accused device requires proof of (1) identity of function between the accused structure and the claimed function, and (2) equivalency of the accused and disclosed structures. See *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 the claimed function for that structure.") (emphasis amended). The prongs of this two-part test are distinct, and reliance merely on functional identity to prove literal infringement erroneously expands 112, 6, beyond its intended limits. See *id.*, 4 USPQ2d at 1739 ("section 112, paragraph 6, rules out the possibility that any and every means which performs the function specified in the claim literally satisfies that limitation.") (emphasis deleted). McCarthy's testimony concerning functional identity did not serve the dual role of also proving structural equivalency. See *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1309, 46 USPQ2d 1752, 1757 (Fed. Cir. 1998) (noting that infringement under 112, 6, was not necessarily established merely because the accused device admittedly performed the function of the claim; equivalency of structure must also be shown). Nor was McCarthy's testimony that the toothed gear and the pins were interchangeable sufficient to prove structural equivalency. See *id.*, 46 USPQ2d at 1757.

In any event, this is not the sort of case in which expert testimony on structural equivalency is particularly helpful. The technology involved with respect to the structure of "rotary means" is relatively straightforward. As aptly summarized by Judge Ellis: "In the disclosed structure, the gear is a disc or cylinder with teeth that fit the teeth of another gear, thus enabling the disclosed gear to move in conjunction with the bin array, whereas the cam followers are smooth pins attached to the array by a stem, and turn independently from the array." *Odetics, Inc. v. Storage Tech. Corp.*, Civ. No. 95-881-A, slip op. at 13 (E.D. Va. Jul. 31, 1998). That is a structural analysis. Even at the appellate level, we are easily able to understand the structures that are at issue, and expert testimony is therefore not necessary on this issue. A reasonable jury, properly instructed to consider structural equivalency under 112, 6, without exclusive focus on similarity of function, should have concluded that the disclosed and claimed structures were not structurally equivalent.² I therefore think that judgment as a matter of law was properly granted, despite the jury's verdict of infringement, and therefore respectfully dissent in part.

¹ Even the majority's statement of Odetics's structural equivalence theory makes it clear that Odetics tried the case on the basis that the toothed gear and the cam followers performed the same function:

Odetics's theory of equivalence was to point out the parallels between the claimed and accused structures, noting that rotation is accomplished in the '151 patent by exerting force against the teeth of the gear, thereby turning the bin about the rod, and that rotation is accomplished in the accused device by exerting force against the cam followers, also turning the bin about the rod. Thus Odetics argued to the jury that the structures were equivalent "rotary means" within the meaning of 112, 6.

Maj. slip op. at 14.

² Moreover, because cam followers are not an after-arising technology in relation to the patent, infringement under the doctrine of equivalents is also precluded. See *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1311, 46 USPQ2d 1752, 1758 (Fed. Cir. 1998).