# United States Court of Appeals for the Federal Circuit

# TYCO HEALTHCARE GROUP LP AND UNITED STATES SURGICAL CORPORATION,

Plaintiffs-Cross-Appellants,

 $\mathbf{v}.$ 

# ETHICON ENDO-SURGERY, INC.,

Defendant-Appellant.

2013-1324, -1381

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Appeals from the United States District Court for the District of Connecticut in No. 10-CV-0060, Judge Janet Bond Arterton.

Decided: December 4, 2014

DREW M. WINTRINGHAM, DLA Piper LLP (US), of New York, New York, argued for plaintiffs-cross-appellants. With him on the brief were FRANCIS W. RYAN, IV, and

STANLEY J. PANIKOWSKI, III.

WILLIAM F. CAVANAUGH, JR. Patterson Belknap Webb & Tyler LLP, of New York, New York, argued for defendant-appellant. Of counsel on the brief were DIANNE B. ELDERKIN, BARBARA L. MULLIN, and STEVEN D. MASLOWSKI, Akin Gump Strauss Hauer & Feld LLP, of Philadelphia, Pennsylvania.

Before PROST, Chief Judge, REYNA and HUGHES, Circuit Judges.

PROST, Chief Judge.

Ethicon Endo-Surgery, Inc. appeals from a U.S. District Court for the District of Connecticut judgment that certain asserted claims of Tyco Healthcare Group LP's U.S. Patent Nos. 6,682,544 ("544 patent"), 6,063,050 ("050 patent"), and 6,468,286 ("286 patent") would not have been obvious under 35 U.S.C. § 103. Tyco cross-appeals from the district court's conclusion that the other asserted claims are anticipated under 35 U.S.C. § 102(g). Because the court's § 102(g) findings were correct, but its § 103 determination was improper, including its decision to exclude the § 102(g) prior art from the obviousness analysis, we affirm-in-part, reverse-in-part, and vacate-in-part.

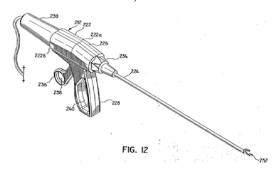
#### BACKGROUND

On January 14, 2010, Tyco initiated an action against Ethicon alleging, inter alia, that Ethicon's ultrasonic cutting and coagulating surgical devices infringe claims 1, 5 and 9–12 of the '050 patent, claims 1 and 6–15 of the '286 patent, and claims 1–3, 6, 8–13, 16, 18, and 23–25 of the '544 patent.

#### I. The Asserted Patents

The asserted patents generally disclose a surgical device, such as the one depicted in Figure 12 of the '050 patent below, that employs ultrasonic energy to cut and coagulate tissue in surgery. See, e.g., '050 patent col. 1 ll. 54–58. The device includes a stationary and movable handle at one end and a shaft with a tube within a tube construction at the other. *Id.* at col. 11 ll. 1–3, col. 12 ll. 9–14. A clamp and a curved blade sit at the distal end of the shaft. *Id.* at col. 5 ll. 39–45. The clamp opens and

shuts like a jaw against the blade via a dual cam mechanism. *Id.* at col. 11 ll. 40–42, col. 12 ll. 44–53.



One embodiment of the '050 patent discloses that, to grasp tissue, a surgeon fits the shaft of the device through a trocar holding open a small incision in a patient and, by engaging the movable handle, the inner tube of the shaft advances toward the blade-end of the device, which results in closing the clamp against the blade through the dual cam mechanism. *Id.* at col. 11 ll. 1–42. Using a generator, transducer, and vibration coupler, the surgical device delivers ultrasonic energy to cut and coagulate tissue through rapid vibrations. *Id.* at col. 11 ll. 42–49.

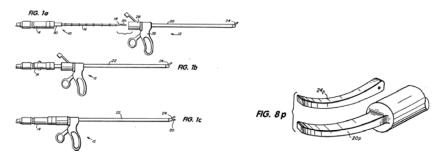
# II. The Prior Art

Relevant to this appeal, Ethicon argued that the asserted claims are invalid as either anticipated or obvious based on the following prior art: (1) a prototype of an ultrasonic surgical device that Ethicon developed ("Ethicon Prototype"); (2) U.S. Patent No. 5,322,055 ("Davison patent"); (3) and European Patent No. 0 503 662 ("662 patent"). Tyco maintains that the earliest date of conception for the claimed invention is January 1997, and that it was reduced to practice in March 1997.

# A. The Davison Patent and the Ethicon Prototype

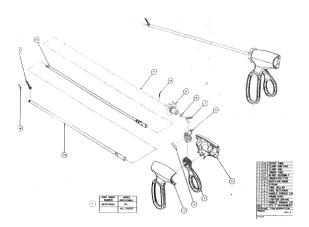
In 1993, Ultracision, Inc. commercialized an ultrasonic surgical device similar to the claimed invention, as shown in Figure 1 below. The device includes a shaft capable of fitting through a trocar with a ten millimeter

In 1994, Ultracision obtained the Davison diameter. patent covering that invention. The Davison patent describes and depicts both straight and curved bladeclamp configurations, such as Figure 8p depicted below. It further discloses that a benefit of using a curved blade is that it "facilitates treatment of tissue at awkward angles of approach." Davison patent col. 13 ll. 23–24.



Ultracision then worked to modify the design of the patented device so that it could fit through a trocar with a five millimeter diameter, as a narrower trocar improves the effectiveness of surgery by minimizing the size of the incision site. By November 1995, Ultracision had built and tested a prototype with this modified design that could cut and coagulate tissue.

After Ethicon acquired Ultracision at the end of 1995, Ethicon worked to perfect the modified design for commercialization. As depicted in the drawing below, Ethicon completed this design (the Ethicon Prototype) by November 1996. The Ethicon Prototype employed a single pin and slot design and could successfully cut and coagulate tissue by December 1996. Ethicon nevertheless sought to increase the size of the blade so that the device could cut and seal larger blood vessels, and modified the clamp to use two pins and two slots to accommodate the larger blade.

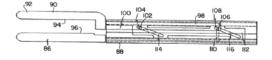


# J.A. 12133.

From August to December 1997, the Ethicon Prototype, with the increased blade size and pair of pins and slots, successfully cut and sealed large vessels. The Food and Drug Administration (FDA) approved it for commercialization in April 1998, and Ethicon launched products based on the prototype in August 1998. Ethicon had also filed patent applications covering the Ethicon Prototype in October 1997. These applications resulted in U.S. Patent Nos. 5,873,873 and 5,980,510, which issued in 1999 ("Ethicon patents").

#### B. The '662 Patent

The '662 patent, filed in 1992, discloses an invention for an "approximating apparatus for jaw structure in surgical instrumentation." In an embodiment, depicted in Figure 4 below, the device employs a pair of camming members and camming slots to open and close the jaw. '662 patent col 2. ll. 43–45, col. 3 ll. 4–7.



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The '662 patent explains that the "[c]amming pins, attached to the movable jaw structure, ride in parallel diagonal slots in the camming plate." *Id.* at col. 3 ll. 4–7. The '662 patent further discloses that the jaw structure can be used for many surgical purposes including "grippers, graspers, dissectors, cutters, measurers, staplers, etc." *Id.* at col. 2 ll. 43–46.

# II. District Court Proceedings

Relevant to this appeal, claim 15 of the '286 patent and claims 6 and 8 of the '544 patent generally recite a device with a curved blade ("Curved Blade Claims"). The court construed the Curved Blade Claims to similarly require that the blade's length deviates from a straight line. Claims 11 and 12 of the '050 patent and claim 8 of the '286 patent generally recite that the clamp closes against the blade via a dual cam mechanism that consists of "cam members" or "camming members," as well as cam "slots" ("Dual Cam Claims"). The court construed "cam members" and "camming members" as "the follower parts of the cam mechanism that are imparted motion by the cam slots and whose motion is guided by the cam slots." and cam "slots" as "openings or grooves that impart motion to and guide the motion of the camming members." J.A. 6521–22. The parties do not contest any of the district court's constructions here.

The district court held on summary judgment that Ethicon's accused devices infringed certain asserted claims, including claim 15 of the '286 patent, one of the Curved Blade Claims. The court did not enter final judgment at that time, though, reasoning that if Ethicon succeeded on its invalidity defense at trial, the court's infringement findings would be moot.

After a bench trial, the court concluded that Ethicon infringed each asserted claim. The court held, however, that the Ethicon Prototype anticipates twenty-six of the asserted claims under § 102(g). The court found that

Ethicon conceived of the prototype before Tyco's January 1997 conception date, worked diligently to constructively reduce it to practice when it filed the patent applications covering it in October 1997, and did not abandon, suppress, or conceal it thereafter. Having concluded that the Ethicon Prototype constitutes prior art under § 102(g), the court nonetheless held that the prototype could not serve as prior art under § 103 because Ethicon did not establish reduction to practice before Tyco reduced its invention to practice, and because the prototype was not known in the art at the time of Tyco's invention.

The court then determined that the remaining claims, the Curved Blade Claims and Dual Cam Claims, would not have been obvious in view of the Davison patent and the '662 patent. As to the Curved Blade Claims, the court only considered the Davison patent as prior art. The court distinguished the Davison patent as teaching away from using a curved blade because its preferred embodiment discloses a straight blade. The court further noted that the Davison patent refers to the benefit of a curved blade as facilitating "treatment at awkward angles of approach," whereas the asserted patents disclose the benefit of "additional blade force" from a curved blade. In addition, the court found that the Davison patent provides "no guidance for how one would affix such a curved blade to the clamp arm." J.A. 60.

As to the Dual Cam Claims, the court held that the Davison patent does not disclose use of a camming mechanism, and that the switch from a single cam to dual cam mechanism was "far from insignificant." J.A. 63. The court additionally distinguished the '662 patent as not disclosing a device that employs ultrasonic energy.

Because the district court found that neither the Curved Blade Claims nor the Dual Cam Claims are invalid, it awarded Tyco damages for Ethicon's infringement of those claims in the amount of \$176 million.

Ethicon appeals the district court's decision, and Tyco cross-appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

### DISCUSSION

A party challenging the validity of a patent must establish invalidity by clear and convincing evidence. See Microsoft Corp. v. i4i Ltd. P'ship, 131 S. Ct. 2238, 2242 (2011). Anticipation is a question of fact reviewed for clear error after a bench trial. Forest Labs., Inc. v. Ivax Pharms., Inc., 501 F.3d 1263, 1268 (Fed. Cir. 2007). Following a bench trial on the issue of obviousness, we review the court's ultimate legal conclusions de novo and the underlying factual findings for clear error. Novo Nordisk A/S v. Caraco Pharm. Labs., Ltd., 719 F.3d 1346, 1354 (Fed. Cir. 2013).

The parties raise several issues on appeal. We turn first to Tyco's cross-appeal challenging the district court's determination that the Ethicon Prototype anticipates twenty-six of the asserted claims under § 102(g). Thereafter, we address Ethicon's appeal of the court's decision to exclude the Ethicon Prototype as prior art under § 103, even though the court previously held that it constituted prior art under § 102(g). Finally, we review the court's finding that the Curved Blade Claims and Dual Cam Claims would not have been obvious under § 103.

### I. Anticipation

The district court properly held that the Ethicon Prototype anticipates twenty-six of the asserted claims because Ethicon conceived of the prototype before Tyco's January 1997 conception date and diligently reduced it to practice without abandoning, suppressing, or concealing it thereafter.

Under § 102(g), Ethicon can establish that its Prototype was prior art by proving "either that it reduced its invention to practice first or that it conceived of the invention first and was diligent in reducing it to practice." *Fox Grp., Inc. v. Cree, Inc.*, 700 F.3d 1300, 1304 (Fed. Cir. 2012).

"[T]he test for conception is whether the inventor had an idea that was definite and permanent enough that one skilled in the art could understand the invention." *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994). Though the inventor should have "a specific, settled idea," the inventor "need not know that his invention will work for conception to be complete. He need only show that he had the idea . . . ." *Id.* (citation omitted).

To establish diligence in reduction to practice, the "basic inquiry is whether . . . there was reasonably continuing activity to reduce the invention to practice." Brown v. Barbacid, 436 F.3d 1376, 1380 (Fed. Cir. 2006). And, the inventor must not abandon, suppress, or conceal the invention after he or she reduces it to practice. Dow Chem. Co. v. Astro-Valcour, Inc., 267 F.3d 1334, 1342 (Fed. Cir. 2001). The filing of a patent application is constructive reduction to practice of the invention disclosed therein, and failing to file such an application within a reasonable time after first making the invention may constitute such abandonment, suppression, or concealment. Id. at 1337, 1342.

Tyco argues on cross-appeal that because Ethicon made changes to design features of the prototype, such as replacing the single cam with a dual cam mechanism, Ethicon did not establish prior conception. Tyco further asserts that Ethicon failed to show diligence through the date of constructive reduction to practice in October 1997, arguing that there was a gap in weekly records from September 1996 to February 1997.

As the district court properly found, however, the Ethicon Prototype, originated by Ultracision and perfected by Ethicon, existed in the form of detailed drawings and physical embodiments in 1996, before Tyco's conception date of January 1997. Based on this evidence and corroborating testimony, there was a "definite and permanent idea" of an ultrasonic surgical device that could cut and coagulate and fit down a five millimeter trocar. This idea persisted despite Ethicon's limited design changes to only the cam mechanism and blade size, which is not a feature that the twenty-six anticipated claims recite. Ethicon's design changes therefore do not preclude the district court's finding of prior conception.

The district court also correctly determined that the record established Ethicon's "reasonable continuing activity" to reduce the invention to practice from April 1996 to the filing of the application in October 1997. Contrary to Tyco's assertion, there was no gap in this activity between September 1996 and February 1997, as the record contains lab results, reports showing due dates and milestones, and similar types of evidence demonstrating diligent reduction to practice within the relevant time period. Tyco does not dispute the district court's correct determination that the record is "devoid of any evidence that Ethicon 'unreasonably delayed' the public disclosure of its invention," and that Ethicon therefore did not abandon, suppress, or conceal it "once it had reduced it to practice." J.A. 48.

Finally, we decline to address Tyco's further argument on cross-appeal that the applications for the Ethicon patents, which cover the Ethicon Prototype, do not satisfy the written description and enablement requirements under 35 U.S.C. § 112. First, we find this inquiry to be irrelevant to the determination of whether the Ethicon Prototype itself qualifies as prior art under § 102(g). Second, the parties' experts agreed that the Ethicon Prototype discloses all features recited in the twenty-six claims at issue. Having established prior conception and diligent reduction to practice, the district court correctly found that the Ethicon Prototype anticipates those twen-

ty-six claims under § 102(g).

# II. Obviousness

The district court improperly held that the Ethicon Prototype could not be considered prior art under § 103, and erred in finding that the Curved Blade Claims and Dual Claims would not have been obvious.

# A. Section 102(g) Prior Art as Section 103 Prior Art

The obviousness determination requires an objective analysis, which focuses on what a person of ordinary skill would have known at the time of invention. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007).

Relying on *Kimberly-Clark Corp. v. Johnson & Johnson*, 745 F.2d 1437 (Fed. Cir. 1984), Tyco asserts that the Ethicon Prototype cannot serve as prior art under § 102(g) because there was no reduction to practice before Tyco's priority date. Tyco contends that the absence of prior reduction to practice is dispositive of the issue, but also argues that based on *In re Clemens*, 622 F.2d 1029, 1039-40 (CCPA 1980), § 102(g) prior art cannot be prior art under § 103 if it was "unknown to both the applicant and the art at the time the applicant makes his invention," because doing so would "establish a standard for patentability in which an applicant's contribution would be measured against secret prior art."

The district court erred when it inconsistently applied § 102(g) to the Ethicon Prototype by not requiring prior reduction to practice for anticipation purposes but requiring it for the obviousness analysis. The clear language of § 102(g) does not require prior reduction to practice so long as the inventor can prove that he or she conceived of the invention first and was diligent in later reducing it to practice. *Fox*, 700 F.2d at 1304. Here, the district court already determined that the Ethicon Prototype satisfied this statutory provision when it held that the prototype anticipates the other twenty-six asserted claims. In

Kimberly-Clark, we held that § 102(g) prior art established by prior reduction to practice could constitute prior art under § 103. 745 F.2d at 1444–45. That holding, however, does not preclude an invention from satisfying § 102(g) through prior conception and later diligent reduction to practice. That was simply not at issue in Kimberly-Clark. We therefore hold that neither § 102(g) nor § 103 make prior reduction to practice the only avenue through which § 102(g) prior art can constitute prior art under § 103. And Tyco's reliance on Kimberly-Clark as requiring otherwise is misplaced.

Furthermore, the clear language of § 102(g) and § 103 contains no requirement that a prior invention under § 102(g) be "known to the art" or the patentee at the time of invention to constitute prior art under § 103. To the extent that our predecessor court inserted such a requirement into § 102(g) in In re Clemens, we discontinued that requirement as dictum in E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co., 849 F.2d 1430, 1437 (Fed. Cir. 1988) ("the alternative *Clemens* requirement that the prior work be 'known to the art' is . . . implicitly dismissed as dictum"). We are cognizant of the concern in In re Clemens that an applicant's contribution should not be measured against "secret" prior art, as this could be detrimental to the "innovative spirit the patent laws are intended to kindle." 622 F.2d at 1040. As we recognized in du Pont, however, the requirement in § 102(g) that the prior invention not be abandoned, suppressed, or concealed after reduction to practice "does mollify somewhat the 'secret' nature of § 102(g) prior art." 849 F.2d at 1437.

This specific requirement in § 102(g) sufficiently encourages public disclosure and aligns with the intent of our patent laws. In addition, the provisions of § 103 themselves provide further support for this conclusion. For instance, § 103(c) creates an exception (though inapplicable here) for when § 102(g) prior art may not qualify as prior art for obviousness purposes. The presence of

this exception strongly indicates that the statute itself contemplates that § 102(g) prior art may constitute prior art under § 103. Thus, absent the application of a statutory exception, § 102(g) prior art may serve as prior art under § 103. The district court should have therefore considered the Ethicon Prototype as prior art for obviousness purposes, having already determined that the prototype is prior art under § 102(g).

## B. Curved Blade Claims

Claims would have been obvious if they are nothing more than a combination of familiar elements that yield predictable results. *KSR*, 550 U.S. at 417. The district court should have concluded that the Curved Blade Claims would have been obvious in view of the Ethicon Prototype and the Davison patent.

In finding that the Curved Blade Claims would not have been obvious, the district court not only ignored the Ethicon Prototype as prior art, but also improperly distinguished the Davison patent. For example, the court noted that the Davison patent discloses benefits of a curved blade different from the asserted patents' disclosed benefit of "additional blade force." When a claimed invention involves a combination of elements, however, any need or problem known in the relevant field of endeavor at the time of invention can provide a reason to combine. See KSR, 550 U.S. at 420–21. Moreover, the prior art need not address the exact problem that the patentee sought to resolve. *Id.* The Davison patent's disclosure of the benefit of a curved blade as facilitating "treatment at awkward angles of approach" would have provided a person of ordinary skill in the art with sufficient motivation to use a curved blade.

The court also determined that the Davison patent's preferred embodiment teaches a straight blade, and that "only two of the fifteen blade designs show curved blades." Yet simply because the curved blade configurations are

not preferred embodiments does not result in the Davison patent teaching away from use of a curved blade, "absent clear discouragement of that combination." *Santarus, Inc. v. Par Pharm., Inc.*, 694 F.3d 1344, 1356 (Fed. Cir. 2012) (citations omitted). The Davison patent contains no such discouragement.

The court further erred in distinguishing the Davison patent on the basis that it does not disclose how to affix a curved blade to the clamp arm. The Curved Blade Claims do not require that the blade be affixed to the clamp arm. For instance, claim 15 of the '286 patent, which depends from claim 7, only requires that the clamp arm be "supported adjacent to" the blade. And, even so, the Ethicon Prototype, which the district court did not consider in its analysis, includes such an affixed blade and clamp arm. We therefore conclude that a person of ordinary skill would have been able to combine these known prior art elements to achieve a curved blade affixed to a clamp arm. *KSR*, 550 U.S. at 420–21 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton.").

Tyco argues that one of the Davison patent's embodiments, Figure 8q, discourages combining the curved blade with the clamp because the clamp would only contact the blade at its tip and "wouldn't be a particularly useful clamp." Appellee's Br. 42. Not only does Tyco's argument regarding Figure 8q ignore the presumption of enablement, but it also ignores that, as already explained, one of ordinary skill is also one of "ordinary creativity" that knows how to combine familiar prior art elements to achieve the same functions. See KSR, 550 U.S. at 420–21; Amgen Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1355 (Fed. Cir. 2003). Tyco's assertion that such a clamp would not be "particularly useful" does not preclude our finding that a person of ordinary skill would have combined the curved blade depicted in Figure 8g, or the curved blade shown in Figure 8p that Tyco does not

address, with the clamp in a way that would be useful.

The parties do not dispute that both the Davison patent and the Ethicon Prototype disclose ultrasonic surgical devices, a fact which situates them clearly within a common field of endeavor. Wyers v. Master Lock Co., 616 F.3d 1231, 1237 (Fed. Cir. 2010) (holding one prior art reference to be "clearly within the same field of endeavor" as another). While the Ethicon Prototype employs a straight blade instead of the claimed curved blade, the Davison patent discloses a "curved" blade-clamp configuration. A person of ordinary skill would have been readily motivated to employ the disclosed benefits of Davison's curved blade in the Ethicon Prototype, which includes treating tissue at "awkward angles of approach."

Thus, the Curved Claims are invalid under § 103 because, in view of the Davison patent, it would have been obvious to one of ordinary skill to replace the straight blade of the Ethicon Prototype with a curved blade.

# C. Dual Cam Claims

The Dual Cam Claims would have been obvious in view of the Ethicon Prototype and the '662 patent.

Tyco argues that switching from a single cam to a dual cam mechanism in an ultrasonic device would not have been an obvious design decision. Tyco asserts that, because Ethicon purportedly reviewed forty re-design ideas before making that change, the district court correctly concluded that the difference between a single cam and dual cams is far from trivial. Tyco further contends that the district court properly distinguished the '662 patent as not disclosing an ultrasonic device.

Ethicon responds that it would have been obvious to modify the single cam design of the Ethicon Prototype to a dual cam design, as it successfully did in 1997. Ethicon additionally argues that this switch to a dual cam mechanism to accommodate a larger blade was not as significant as Tyco suggests, referring to Tyco's expert's testimony that the "obvious way to turn [a single cam] into two cams is just to split this cam right down the middle." J.A. 3839. Though the expert suggested that the method was "not going to be a good way to give . . . a working dual cam mechanism," he later acknowledged that the dual cam in the accused devices, which the FDA approved and Ethicon produced commercially, resulted from that very method. J.A. 3839, 3917. Tyco's expert also agreed that the single and dual cam mechanism operate in the same way, which suggests that the switch from a single cam to a dual cam was more trivial than Tyco alleges.

And, even if the Ethicon Prototype alone may not be dispositive of the issue, the Dual Cam Claims are certainly obvious in view of the Ethicon Prototype and the '662 patent combined. While the '662 patent does not disclose an ultrasonic surgical device, and therefore does not share the same field of endeavor, the '662 patent is nevertheless analogous art because it is "reasonably pertinent to the particular problem with which the inventor is involved." Comaper Corp. v. Antec, Inc., 596 F.3d 1343, 1351 (Fed. Cir. 2010); see also Wyers, 616 F.3d at 1238 (explaining that KSR directs us to construe the scope of analogous art broadly). Here, the '662 patent is reasonably pertinent because it clearly discloses a movable "jaw structure for surgical instrumentation," employing a pair of pins and slots for gripping and grasping, which is similar to the claimed invention's movable jaw to grasp tissue via a dual cam mechanism. The '662 patent explicitly discloses that a wide variety of surgical devices can use the jaw structure for not only gripping and grasping, but also for cutting and dissecting. That the '662 patent does not involve the use of ultrasonic energy is thus irrelevant. As Ethicon's expert testified, the issue of "mechanical opening and shutting of jaws . . . is a common design issue" that is "not unique to ultrasonic instruments." J.A. 3039. Furthermore, there is no evidence demonstrating any

meaningful relation between cam mechanisms and the type of energy a surgical device employs.

Thus, the Dual Cam Claims are invalid under § 103 because it would have been obvious for a person of ordinary skill to modify the single cam of the Ethicon Prototype with the dual cam mechanism of the '662 patent.

We have considered Tyco's remaining arguments concerning invalidity and find them unpersuasive.

# CONCLUSION

We affirm the district court's determination that twenty-six of the asserted claims are invalid under § 102(g). Because we reverse the court's decision regarding § 103 prior art and finding that the remaining Curved Blade Claims and Dual Cam Claims would not have been obvious, we vacate Tyco's damages award. Based thereon, we decline to reach the remaining issues on appeal and cross-appeal.

AFFIRMED-IN-PART, REVERSED-IN-PART, VACATED-IN-PART