United States Court of Appeals for the Federal Circuit

ETHICON ENDO-SURGERY, INC.,
ETHICON ENDO-SURGERY, LLC,
Plaintiffs-Appellants

v.

COVIDIEN, INC., COVIDIEN LP,
Defendants-Appellees

2014-1370

Appeal from the United States District Court for the Southern District of Ohio in No. 1:11-cv-00871-TSB, Judge Timothy S. Black.

Decided: August 7, 2015

WILLIAM F. CAVANAUGH, Jr., Patterson Belknap Webb & Tyler LLP, New York, NY, argued for plaintiffs-appellants. Also represented by CHAD J. PETERMAN, JEREMY A. WEINBERG, R. JAMES MADIGAN III, HELEN P. O'REILLY.

DREW MILLER WINTRINGHAM III, DLA Piper US LLP, New York, NY, argued for defendants-appellees. Also represented by FRANCIS W. RYAN IV, MATTHEW GANAS, MELISSA REINCKENS; STANLEY JOSEPH PANIKOWSKI III, San Diego, CA.

Before LOURIE, BRYSON, and CHEN, *Circuit Judges.*

CHEN, *Circuit Judge.*

Plaintiffs-appellants Ethicon Endo-Surgery, Inc. and Ethicon Endo-Surgery, LLC (collectively, Ethicon) sued defendants-appellees Covidien, Inc. and Covidien LP (collectively, Covidien) in the U.S. District Court for the Southern District of Ohio for alleged infringement of several utility and design patents related to ultrasonic surgical devices. After the close of discovery, the district court granted Covidien's motions for summary judgment, concluding that 1) U.S. Patent No. 8,182,501 (the '501 patent) is invalid as indefinite, 2) U.S. Patent No. 5,989,275 (the '275 patent) is not infringed by Covidien's accused products, and 3) U.S. Patent Nos. D661,801 (the D'801 patent), D661,802 (the D'802 patent), D661,803 (the D'803 patent), and D661,804 (the D'804 patent) (collectively, the Design Patents) are invalid as functional and in the alternative, not infringed. The district court entered final judgment in favor of Covidien, and Ethicon now appeals.

We reverse and vacate in part. As to the '501 patent, we reverse the district court's grant of invalidity for indefiniteness, because the specification provides sufficient guidance to a person of ordinary skill in the art as to the scope of its asserted claims. As to the '275 patent, we vacate the district court's grant of summary judgment of noninfringement because the district court improperly resolved genuine disputes of material fact in favor of Covidien instead of Ethicon, the non-moving party, and questions of fact remain as to whether Covidien's accused ultrasonic devices infringe the asserted claims of the '275 patent.

As for the Design Patents, we reverse the district court's grant of invalidity based on functionality. The

district court evaluated the claimed designs using too high a level of abstraction, focusing on the unclaimed utilitarian aspects of the underlying article instead of the claimed ornamental designs of that underlying article. We affirm, however, the district court's grant of summary judgment of noninfringement of the Design Patents. After the functional aspects of the claimed designs are properly excluded from the infringement analysis, the claimed ornamental designs are plainly dissimilar from the ornamental design of Covidien's accused products. Based on the foregoing, we remand to the district court to resolve Ethicon's allegations that Covidien's accused devices infringe the asserted claims of the '501 and '275 patents.

I. BACKGROUND

The patents-in-suit are directed to surgical instruments that use ultrasonic energy created by blades vibrating at high frequencies to cut tissue and blood vessels. These surgical instruments also use the heat generated from the friction of the blade vibrating against the blood vessel to coagulate and seal those blood vessels in order to prevent bleeding. Ethicon develops, manufactures, and sells such ultrasonic surgical instruments. After Covidien launched a competing line of ultrasonic surgical equipment, Ethicon sued Covidien, alleging infringement of the utility and design patents at issue in this appeal, among others. Both parties waived their rights to a jury trial and agreed to a bench trial on all disputed issues. After *Markman* proceedings and the close of discovery, Covidien successfully moved for summary judgment of invalidity and/or noninfringement of the asserted patent claims. *See Ethicon Endo-Surgery, Inc. v. Covidien, Inc.*, No. 11-cv-871, ECF Nos. 130–32 (S.D. Oh. Jan 22, 2014) (*Ethicon DCt*). The district court entered a stipulated final judgment of noninfringement and/or invalidity of all patents-in-suit in favor of Covidien. Ethicon timely appealed, and

we have jurisdiction over Ethicon's appeal pursuant to 28 U.S.C. § 1295(a)(1).

II. DISCUSSION

We review the grant of summary judgment under the law of the regional circuit. *Lexion Med., LLC v. Northgate Techs., Inc.*, 641 F.3d 1352, 1358 (Fed. Cir. 2011). The Sixth Circuit reviews an order granting summary judgment de novo. *Savage v. Gee*, 665 F.3d 732, 737 (6th Cir. 2012).

A. The '501 patent

The '501 patent is directed to ultrasonic surgical shears for cutting and sealing a blood vessel. '501 patent, 1:20–23. The claimed device includes an ultrasonic surgical blade, a clamping arm, and a tissue pad attached to the clamping arm. *Id.* at 2:7–10. The clamping arm opens and closes towards the ultrasonic blade in a manner similar to the two blades of a pair of scissors. *Id.* at 2:8–9. During use, a blood vessel is positioned between the blade and the tissue pad on the clamping arm. *Id.* at 1:67–2:2. When the blade and clamping arm are in a "closed position," the average clamping pressure on the blood vessel is between 60 and 210 pounds per square inch (psi). *Id.* at 2:2–4. The ultrasonic blade then vibrates at a high frequency. *Id.* at 2:4–5. The combination of this ultrasonically-vibrating blade and clamping pressure on the blood vessel results in the bringing together the walls of the blood vessel (a "coaptation"), the cutting of the coaptated blood vessel (a "transection"), and the sealing of the coaptated cut ends of the blood vessel (a "coagulation"). *Id.* at 1:40–46. According to the '501 patent, the 60 to 210 psi average clamping pressure range provides improved blood vessel sealing with shorter transection times on smaller blood vessels and blood vessel sealing with acceptable transection times on larger blood vessels, a result which was not conventionally

achievable. *Id.* at 2:25–31. Claim 17 is representative, and recites as follows:

> 17. An ultrasonic surgical shears comprising:
>
> a) an ultrasonic surgical blade;
>
> b) a clamping arm operable to open and close toward the blade;
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> c) a tissue pad attached to the clamping arm, wherein the blade and tissue pad define a clamping surface area so that the applied clamp force does not exceed a *clamping pressure of 210 psi at the clamping surface area*; and
>
> d) means for limiting a user applied clamping force on the clamping arm creating *an average predetermined clamping pressure between and including 60 psi and 210 psi* on tissue disposed between the tissue pad and the blade.

Id. at 7:15–27 (emphases added).

Each asserted claim of the '501 patent includes at least one limitation that requires clamping pressure values similar to those recited in claim 17. *Ethicon DCt*, ECF No. 131 at 49. The asserted claims recite either an "average" clamping/coaptation pressure (e.g., claims 1 and 17) or simply a "clamping pressure" (e.g., claims 12, 22, and 23). We understand the '501 patent's specification to use "clamping pressure" interchangeably with "average" clamping/coaptation pressure. For example, in describing the "method of the invention" as illustrated in Figure 1, the specification describes the "exert coaptation pressure" step (element 14) as the exertion of "an average coaptation pressure on the blood vessel between and including 60 psi and 210 psi." *Id.* at 3:27–41. The "Summary of the Invention" also describes the "method of the invention" as the exertion of "an average coaptation pressure on the blood vessel between and including 60 psi and 210 psi."

Id. at 2:1–4, 2:10–13, 2:18–22. The remainder of the specification then refers interchangeably to this key 60 psi to 210 psi range as either the "average coaptation pressure," the clamping/coaptation pressure, or simply "the pressure." *Compare id.* at 3:38–41 ("average coaptation pressure"), *with id.* at 5:4–8 ("clamping pressure"), *id.* at 5:41–52 ("coaptation pressure"), *and id.* at 4:17–27 ("the pressure"). Thus, we understand the '501 patent's claims to reference average clamping/coaptation pressures, regardless of whether or not the word "average" is expressly recited by the claims.

The district court found the asserted claims of the '501 patent to be invalid as indefinite, finding that nothing in the specification or understanding in the art specified "a method of measurement, the location of measurement, and the type and amount of tissue used for the measurement of clamping force[s] and clamping pressure[s]" recited by the claims. *Ethicon DCt*, ECF No. 131 at 56. The district court was troubled by the fact that "measuring at different locations along the clamp arm provide[d] different force and pressure values" and "when the clamp arm [wa]s fully engaged with tissue, the tissue c[ould] be thin or thick, stiff or compressible, and depending on the type of tissue, the measurement of the clamping force and pressure w[ould] differ." *Id.* at 56–57.

Ethicon contends that the district court ignored much of Ethicon's proffered evidence and instead improperly resolved disputed issues of fact in favor of the movant, Covidien. Ethicon argues that a skilled artisan reading the specification would understand that the clamping force measurements recited in the claims must be made when the clamping arm and blade are in a closed position, and in a manner that reflects the average pressure applied by the clamping arm on the clamping surface area,

which can be measured at the midpoint of the recited clamping surface area—the midpoint of the tissue pad.[1]

We review the district court's indefiniteness determination de novo. *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). A claim is invalid for indefiniteness under 35 U.S.C. § 112 ¶ 2[2] if its language, when read in light of the specification and prosecution history, fails to inform skilled artisans about the scope of the invention with reasonable certainty. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014).

Claim 17 of the '501 patent recites that the claimed ultrasonic surgical shears include a tissue pad and blade

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[1] At oral argument, Ethicon explained that unlike figures 2–5 of the '501 patent, the tissue pads of Ethicon's ultrasonic shears and Covidien's accused ultrasonic shears extend along their entire respective clamping arms. In other words, the midpoint of the tissue pad is at substantially the same position as the midpoint of the clamping arm. Oral Argument at 11:10–16:20, *Ethicon Endo-Surgery v. Covidien, Inc.*, No. 2014-1370 (Fed. Cir. Mar. 6, 2015), *available at* http://www.cafc.uscourts.gov/oral-argument-recordings/14-1370/all. Covidien confirmed Ethicon's understanding. *Id.* at 21:00–22:10. Thus, we interpret the parties' references in their briefs to the midpoint of the recited clamping surface area as referring to the midpoint of the clamping arm as it applies to the commercial products at issue and the midpoint of the tissue pad as it applies to the claims of the '501 patent. *See, e.g.*, '501 patent, Fig. 2.

[2] Paragraph 2 of 35 U.S.C. § 112 was replaced with newly designated § 112(b) when § 4(c) of the Leahy-Smith America Invents Act, Pub. L. No. 112-29 (AIA), took effect on September 16, 2012. Because the application resulting in the patent was filed before that date, we will refer to the pre-AIA version of § 112.

that define a clamping surface area. '501 patent, 7:20–21. The specification explains that this "clamping surface area is the area where the blade and the tissue pad are in close proximity because the clamping arm is in a closed position." *Id.* at 4:25–27, 1:36–38. In the primary disclosed embodiment, the clamping surface area is about 0.033 square inches. *Id.* at 4:14–15. The user operates the claimed shears to exert a clamping force of between two and seven pounds in order to close the clamping arm towards the blade. *Id.* at 4:15–17. Thus, the clamping force on the clamping surface area—defined by the tissue pad and the blade—averages between two and seven pounds over 0.033 square inches, or between approximately 60 to 210 pounds per square inch. *See id.* at 5:41–45; *see also id.* at 4:61–65.

The clamping force applied to close the clamping arm towards the blade results in the exertion of a clamping pressure on a blood vessel disposed between the tissue pad attached to the clamping arm and the blade. *Id.* at 4:31–37, 3:38–41. *See also id.* at 4:38–57. The specification makes clear that this clamping or coaptation pressure on the blood vessel is an *average* pressure. *Id.* at Abstract; *id.* at Summary of the Invention, 2:1–4, 2:10–13, 2:18–22. The specification also makes clear that "[t]he pressures discussed [in the '501 patent] are pressures seen by tissue when the entire clamping surface area is in contact with the tissue." *Id.* at 4:23–25. To ensure that no more than 210 psi of pressure is exerted at the clamping surface area, the claimed shears include means for limiting the clamping force applied by the user on the clamping arm. *Id.* at 7:22–27. Thus, the claimed shears limit the average predetermined clamping pressure on tissue between the tissue pad and the blade—the clamping surface area—to between 60 and 210 psi. *Id.* at 5:4–12.

As the claims and specification indicate, the user-applied clamping force on the clamping arm is translated

to pressure applied by the clamping arm and blade to the tissue. *See, e.g.*, *id.* at 7:22–23 ("[T]he applied clamp force does not exceed a clamping pressure of 210 psi at the clamping surface area."); *id.* at 2:10–13 ("[E]xerting a clamping force on the clamping arm creat[es] an average clamping pressure between and including 60 psi and 210 psi on tissue positioned between the tissue pad and the blade."). And the specification is clear that the recited "clamping pressure" is an average pressure that should be measured when the clamping arm and the blade are in a closed position and exerting pressure on a blood vessel disposed between them. *See, e.g.*, *id.* at 2:1–4, 4:23–27.

Ethicon's expert explained that as a matter of physics, pressure measured by pounds per square inch is calculated by taking a force measurement at a point and dividing that force by the area. Joint Appendix (J.A.) 4356 ¶ 102. Translated to the claims of the '501 patent, a skilled artisan would know that the recited average clamping pressures can be determined by measuring the average clamping force on the clamping surface area and dividing that average force by the clamping surface area. *See* J.A. 4427 ¶ 247. And in the case of a simple lever, such as the clamping arm of the claimed ultrasonic shears, measured force has a generally linear mathematical relationship with distance along the lever arm, and the midpoint of the lever arm is representative of the average force along the arm. *Id.*; *see also* J.A. 4366 ("[T]he force varies linearly along the length [of the clamping arm] . . . [and] the midpoint represents the average along the clamping surface."). Thus, Ethicon's expert concluded that a person of ordinary skill in the art would understand that measuring the average clamping pressure as recited by the claims can be accomplished by measuring the clamping force applied by the clamping arm at the midpoint of the clamping surface area when the clamping arm is in a closed position—the midpoint of the tissue pad (and the midpoint of the clamping arm for Ethicon and Covidien's

commercial ultrasonic devices). J.A. 4431 ¶ 261. Ethicon's expert also conducted tests of Covidien's accused device to illustrate his explanation of the link between average pressures and the midpoint of the clamping surface area, which demonstrated, *inter alia*, the general linearity of clamping force along the clamping arm, and how force measurements at the midpoint of the clamping arm approximated the average of two force measurements taken at proximal and distal locations 1/3 and 2/3 of the way along the clamping arm. *Id.* at 4366, 4370.

Covidien offers nothing to contest this explanation of the underlying physics- and mathematics-based link between the average pressure and the midpoint of the clamping arm provided by Ethicon's expert. Thus, unrebutted testimony in the record demonstrates that the focus of the '501 patent's specification and claims on *average* clamping/coaptation pressures is sufficient to signal to a skilled artisan how to arrive at the claimed force and pressure measurements. Relying on basic concepts of physics and mathematics, skilled artisans would understand that the average clamping/coaptation pressures recited in the '501 patent's claims can be determined by measuring clamping force at the midpoint of the clamping surface area—which for the ultrasonic shears at issue here is at the midpoint of both the tissue pad and clamping arm.

The district court appeared to ignore this intrinsic evidence and the testimony in the record. It expressed concern that the claims did not specifically "refer to any particular point" on the clamping surface area at which to take the recited pressure measurements or "identify a location at which [the clamping force] is to be measured." *Ethicon DCt*, ECF No. 131, at 50–51. The district court also expressed concern that there was no industry standard method for measuring clamping forces. *Id.* at 49. Indeed, the district court appears to have believed that in order for the claims of the '501 patent to satisfy the defi-

niteness requirement of 35 U.S.C. § 112 ¶ 2, the intrinsic evidence needed to identify a specific method one of ordinary skill in the art would use to measure the recited clamping/coaptation pressures. *Id.* at 55. *See also id.* at 48, 50 (same).

But in the context of the dispute here, the definiteness requirement of 35 U.S.C. § 112 mandates only that one skilled in the art must be able to understand *which* pressures are relevant to the claims and *how* those pressures can be measured, so to discern the scope of the claimed average pressure range with reasonable certainty. *See Nautilus*, 120 S. Ct. at 2124. If such an understanding of how to measure the claimed average pressures was within the scope of knowledge possessed by one of ordinary skill in the art, there is no requirement for the specification to identify a particular measurement technique. As discussed above, evidence in the record demonstrates that because the specification and claims of the '501 patent focused on *average* clamping and coaptation pressures, a skilled artisan would have possessed such an understanding and such knowledge. *See* J.A. 4427 ¶ 247; 4356 ¶ 102.

Instead of focusing on what a skilled artisan would have understood about the claimed average pressures based on the disclosure in the '501 patent, the district court focused on how Ethicon tested its own commercial embodiment of the claimed ultrasonic shears. In doing so, the district court was troubled that Ethicon used four different methods to measure clamping force, and that each of these methods appeared to yield different force measurements. *Ethicon DCt*, ECF No. 131, at 13. It found this to create ambiguity in the claims because "different methods of measuring clamping force and pressure result[ed] in different numeric values." *Id.* at 49. The district court, however, appears to have based its conclusions on mischaracterized testimony, and as a result, arrived at several clearly erroneous factual conclu-

sions. Although Ethicon's witnesses testified that Ethicon used different techniques to measure clamping force, the district court ignored testimony that each of these methods was designed to provide the same clamping force measurement. J.A. 2685–86 ("[All four methods of measurement are] trying to achieve the same result, which is the force it takes to just bring the clamp arm off the blade"). And while the actual tested clamping force measurements may have varied slightly between these methods, this was simply due to natural variances in real-world testing conditions. Ethicon's witness explained that "[i]f you took [results from] all [four of] the methods again and again and again, the average of all those [measurements] should be quite similar to each other." J.A. 2686.

The district court also found that clamping forces of Ethicon's shears measured at the distal end of its clamping arm were lower, and clamping forces measured near the grip area of the shears were higher, than clamping forces measured at its midpoint. *Ethicon DCt*, ECF No. 131, at 18. The district court believed this also demonstrated the claims were indefinite. *Id.* at 50. The district court, however, ignored testimony providing context for the differing force measurements at the proximal and distal ends of the clamping arm. There is no dispute that force measurements along the clamping arm vary. But as discussed above, when the clamping arm of Ethicon's ultrasonic shears is in the closed position, a skilled artisan would know that the force applied by the clamping arm will be linearly related to the distance along the clamping arm where that force is measured. J.A. 4356 ¶ 102. A skilled artisan would also know that in order to find the average force applied by the clamping arm, he or she could measure the forces at the midpoint of the clamping surface area—which for Ethicon's surgical shears is the midpoint shared by both the tissue pad and clamping arm. *Id.*; *see also* J.A. 2698.

Finally, the district court found that the clamping force measurements at the clamping surface area of Ethicon's shears varied based on differing heights between the tissue pad and the blade, differences which resulted from the type and amount of tissue to be transected and then sealed. *Ethicon DCt*, ECF No. 131 at 20. There is no dispute that pressures measured at the same position along the clamping arm vary when the clamping arm is at different angles with the blade. *See, e.g.*, J.A. 4395 ¶ 147 ("[T]he data upon which [Covidien's expert] relied . . . indicate that the clamp arm force clearly increases with increasing clamp arm angle. This is to be expected . . . ."). But this is immaterial to the scope of the claims, which are concerned with average clamping/coaptation pressures at the clamping surface area, or the "area where the blade and the tissue pad are in close proximity when the clamping arm is in a *closed position*." '501 patent, 4:25–27. *See also id.* at 4:23–25 ("The pressures discussed herein are pressures seen by tissue when the entire *clamping surface area* is in contact with the tissue." (emphasis added)). Thus, while the thickness of tissue disposed between the tissue pad and blade may affect the amount of clamping force required to operate the clamping arm and fully transect that tissue, such variances are irrelevant to the scope of the claims, which are concerned with the predetermined pressures measured when the clamping arm is *already* in a closed position.

Based on its evaluation of the extrinsic evidence, the district court found the claims of the '501 patent to "closely resemble" the claims found to be indefinite in *Honeywell Int'l, Inc. v. Int'l Trade Comm'n*, 341 F.3d 1332, 1338 (Fed. Cir. 2003). The claims in *Honeywell* were directed to a process for manufacturing a particular type of multifilament polyester yarn. *Id.* at 1334. The parties' dispute focused on the measurement of a claimed melting point elevation feature, which required the production of a

sample yarn specimen. *Id.* at 1336. Although the specification did not disclose any sample preparation methods, the parties identified four such methods purportedly known to those in the art. *Id.* Because each sample preparation method produced differing melting point elevation ranges, knowledge of the specific sample preparation method used was critical to discerning whether yarn had been produced using the claimed process. *Id.* We found the claims to be indefinite because nothing in the specification or prosecution history provided guidance as to which of the critical sample preparation methods a skilled artisan would have interpreted the claims to require. *Id.* at 1340.

The district court analogized the four undisclosed sample preparation methods in *Honeywell* to the four methods used by Ethicon to measure average clamping pressures of its commercial product here, concluding that the failure of the '501 patent to identify a specific method for measuring the clamping pressures recited by the claims rendered the claims ambiguous and indefinite. *Ethicon DCt*, ECF No. 131, at 54. The district court, however, did not appreciate several key distinctions between the facts here and the facts in *Honeywell*. First, in *Honeywell*, there was evidence in the record—in the form of prior art references—that skilled artisans knew of three sample preparation techniques to measure the claimed feature. 341 F.3d at 1340. The fourth technique was disclosed only in the patentee's confidential files and the record contained no evidence that this method was known by those in the art. *Id.* at 1336, 1340. Second, it was undisputed that only this unpublished sample preparation technique provided measurements of the claimed feature that fell within the claimed ranges. *Id.* at 1336. Third, the different sample preparation techniques produced measurements of the claimed feature that "var[ied] greatly." *Id.* Moreover, the patentee did not dispute that identifying the selected sample preparation technique was

"critical to discerning whether a particular product [wa]s made by a process that infring[ed] the [patent at issue's] claims." *Id.* at 1339.

Here, the specification clearly discloses that the claimed clamping/coaptation pressures are average pressures on tissue disposed between the tissue pad and blade, and are measured when the clamping arm and blade are in a closed position. This disclosure is sufficient to inform skilled artisans as to where these average pressures should be measured—the midpoint of the tissue pad (also the midpoint of the clamping arm for the ultrasonic shears at issue here). *See, e.g.*, J.A. 4356 ¶ 102. In contrast, the intrinsic evidence in *Honeywell* provided no guidance as to how to measure a critical element recited by the claims (the melting point elevation range), and the only method of measurement that satisfied the claimed process was not only absent from the specification, but also unpublished outside the patentee's confidential files. In addition, the extrinsic evidence in the record here shows that although there are different methods of measuring the claimed average pressures, each of these methods is designed to provide similar measurements, whereas the different methods of measurement in *Honeywell* produced widely varying results. The district court's reliance on *Honeywell* is misplaced; *Honeywell* involved factual circumstances that differ from the circumstances here in several important ways.

In short, the district court erred by finding the claims of the '501 patent indefinite under 35 U.S.C. § 112 ¶ 2. A skilled artisan, in view of the specification, would understand the scope of the claims with reasonable certainty. We therefore reverse the district court's grant of Covidien's motion for summary judgment of invalidity for indefiniteness.

B. The '275 patent

The '275 patent focuses on a different aspect of the ultrasonic surgical shears disclosed in the '501 patent. In particular, the '275 patent claims a particular configuration of an ultrasonic surgical shears device that generates and then propagates ultrasonic energy to the clamping end of the device, while dampening undesired vibrations. '275 patent, 2:3–7. The specification explains that the device includes a generator, a grip, a semi-flexible acoustic transmission rod, and a sheath around that rod. *Id.* at 3:47–51, 7:52–64. An "end effector," such as the clamping arm and blade assembly covered by the '501 patent, is attached to the distal end of the acoustic transmission rod. *See id.* at 3:61–4:19. The generator transmits an electrical signal to a transducer, which converts the electrical energy into vibrational motion at ultrasonic frequencies. *Id.* at 1:12–15, 3:51–57. This vibrational motion results in longitudinal waves of ultrasonic energy that propagate through the acoustic assembly in a standing wave at a selected frequency and amplitude. *Id.* at 3:57–61. The end effector, such as a clamping arm and blade, transfers the received ultrasonic energy to tissue (like blood vessels) disposed between the clamping arm and blade. *Id.* at 3:61–63. In addition to cutting the tissue, heat generated by the friction from the blade vibrating against the tissue causes proteins in the tissue to denature, resulting in the formation of a coagulum, which then helps to seal the cut tissue. *Id.* at 3:66–4:6.

The '275 patent explains that only the transmitted axial (or longitudinal) vibrational motion—vibrations that move directly forward and backward along the transmission rod towards the blade and clamping arm—is desirable. *Id.* at 1:22–23. Transverse—or side-to-side—vibrational motion can lead to sub-optimal performance and even damage the device. *Id.* at 1:25–30. To reduce transverse vibrational motion, the device includes a damping sheath that "loosely surrounds" the transmission

rod. *Id.* at 9:33–39. The specification explains that this sheath is attached to the transmission rod at nodal points, or points at which the ultrasonic standing wave vibrating through the transmission rod is at its minimum amplitude. *Id.* at 9:40–41, 5:57–60.

Ethicon asserted infringement of Claims 1 and 3 of the '275 patent. *Ethicon DCt*, ECF No. 130, at 1. Claim 3 depends from claim 1, which recites:

> 1. An ultrasonic surgical device comprising:
>
> a transducer assembly adapted to vibrate at an ultrasonic frequency in response to electrical energy;
>
> a mounting device having a first end and a second end, the mounting device adapted to receive ultrasonic vibration from the transducer assembly and to transmit the ultrasonic vibration from the first end to the second end of the mounting device, the first end of the mounting device coupled to the transducer assembly;
>
> a transmission rod having a first end and a second end, the transmission rod adapted to receive ultrasonic vibration from the mounting device and to transmit the ultrasonic vibration from the first end to the second end of the transmission rod;
>
> a damping member surrounding at least a portion of the transmission rod, *the damping member configured to loosely contact the transmission rod over a portion of the transmission rod, the damping member adapted to absorb undesired vibrations along the transmission rod* without the use of a fluid; and
>
> an end effector having a first end and a second end, the end effector adapted to receive the ultrasonic vibration from the transmission rod and to

> transmit the ultrasonic vibration from the first end to the second end of the end effector, the second end of the end effector being disposed near an antinode and the first end of the end effector coupled to the second end of the transmission rod.

'275 patent at 16:50–17:10 (emphasis added).

After the close of discovery, Covidien filed a motion for summary judgment of noninfringement, contending that the damping sheath surrounding the transmission rod of its accused ultrasonic shears is not "configured to loosely contact" the transmission rod or "adapted to absorb undesired vibrations." *Ethicon DCt*, ECF No. 130, at 2. The district court granted Covidien's motion, finding no genuine dispute that Covidien's accused ultrasonic shears did not satisfy either of those limitations. *Id.* at 21, 26–27. On appeal, Ethicon challenges the district court's construction of "loosely contact" and contends that the district court improperly resolved disputed issues of fact and conflicting expert testimony in Covidien's favor.

We begin first with Ethicon's challenge to the district court's claim construction. The district court construed "configured to loosely contact" as "structured to have contact other than at fixed support points, but not tightly fitted." *Ethicon DCt*, No. 11–cv–871, 2013 WL 1787153, at *7–8 (S.D. Ohio Apr. 25, 2013). Ethicon contends that the district court imported a limitation into the term inconsistent with its ordinary meaning—that "loose[] contact" is contact "other than at fixed support points." According to Ethicon, nothing in the specification limits where this "loose contact" can occur, and thus that "loose contact" encompasses embodiments in which contact occurs only at fixed support points such as the "nodal ribs" where the damping sheath of Covidien's accused ultrasonic shears is attached to its transmission rod. After review of the disputed term, we arrive at the same construction as did the district court.

We review the district court's claim construction here de novo because it relied only on evidence intrinsic to the '275 patent. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The words of a claim are generally given their ordinary and customary meaning, which is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (internal citations omitted). Claim language must be viewed in light of the specification, which is the "single best guide to the meaning of a disputed term." *Id.* at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Claim 1 recites that the damping sheath surrounding the transmission rod "loosely contact[s] the transmission rod *over a portion* of the transmission rod." '275 patent, 16:66–67 (emphasis added). The recitation of "over a portion" suggests that such "loose contact" is not contact only at discrete fixed points, as Ethicon contends. The specification reinforces this understanding, explaining that a longitudinal slit extends along the damping sheath from one end to the other in order to allow the sheath to fit over the transmission rod. *Id.* at 10:52–54, 10:65–11:7. Without the slit, the damping sheath "may not be able to loosely contact the transmission rod" over its cross-sectional diameter. *Id.* at 10:53–55. *See also id.* at 9:58–60 ("The damping sheath 160 is preferably in *light contact with the transmission rod* 86 to absorb unwanted ultrasonic energy from the transmission rod." (emphasis added)).

Moreover, the specification explains that this damping sheath "is more effective than using silicone rubber rings ['nodal ribs'] located only at nodes of longitudinal vibration." *Id.* at 10:7–9. This is because the damping sheath can "dampen transverse motion occurring near multiple antinodes of the unwanted vibration which are

located randomly along the length of the transmission rod." *Id.* at 10:9–12. Antinodes are points at which the ultrasonic standing wave vibrating through the transmission rod is at its absolute value maximum, or peak, amplitude. *Id.* at 5:60–62. In short, the specification touts the benefits of the sheath for its ability to dampen vibrations along the full length of the transmission rod instead of only at certain fixed points. Thus, the specification strongly suggests that the desirable "loose contact" between the sheath and transmission rod is contact other than at only fixed points. In particular, this "loose contact" occurs at various portions of the sheath in between fixed nodes of the transmission rod, where the amplitude of the ultrasonic standing wave is at its peak. We find nothing in the specification supporting the notion that contact between the damping sheath and the transmission rod only at nodal ribs is "loose contact." We therefore affirm the district court's construction of "configured to loosely contact."

Based on its construction, the district court found that the transmission rod of Covidien's accused ultrasonic shears only contacted its damping sheath at fixed nodal rib supports, and thus did not satisfy the "loosely contact" limitation of the asserted claims. *Ethicon DCt*, ECF No. 130, at 17–18. The district court also found that because there was no evidence the transmission rod of Covidien's accused shears contacted the sheath, there was no evidence that the sleeve "absorb[ed] unwanted vibrations along the transmission rod," as required by the asserted claims. *Id.* at 22. Ethicon contends there are genuine issues of material fact as to 1) whether even under the district court's construction of "loosely contact," the damping sheath of Covidien's accused ultrasonic shears "loosely contacts" its transmission rod, and 2) whether Covidien's accused shears are "adapted to absorb undesirable vibrations." We agree with Ethicon.

We turn first to the district court's determination that there is no genuine dispute of material fact that the damping sheath of Covidien's accused ultrasonic shears does not "loosely contact[]" its transmission rod. Neither party disputes that the sleeve of Covidien's shears is supported by fixed nodal ribs on its transmission rod, and that because these ribs have a greater diameter than the rest of the transmission rod, there is some amount of space along the length of the transmission rod separating the sheath from the transmission rod. *Id.* at 18. The district court found that because the nodal ribs were raised, contact between the sheath and the transmission rod was avoided. *Id.* The district court also determined that even if the accused sheath was capable of contacting the transmission rod, summary judgment would still be appropriate because there was no evidence that the accused sheath was "structured to have contact" at locations other than the fixed nodal ribs. *Id.* at 19.

In particular, the district court relied on testimony from Covidien's engineers that Covidien sought to design the sheath of its accused device so that it would not "loosely contact" the transmission rod. *Id.* at 19–20. This finding, however, did not take into account contrary evidence and testimony from Ethicon's expert, J.A. 3604, showing that the sheath of Covidien's accused shears appeared to contact its transmission rod at points other than the nodal ribs during operation. Specifically, Ethicon's expert examined two sets of high-resolution computer axial tomography (CT) and X-ray scans generated during tests of Covidien's accused shears, testifying that it was his opinion that both sets of scans showed loose contact at points other than the fixed nodal ribs. J.A. 3603, 3617–18.

Covidien's expert disputed the testimony of Ethicon's expert, opining that most of the scans did not show any contact between the sheath and transmission rod. J.A. 2165. However, Covidien's expert conceded that at least

one of the scans did show contact, but argued that such contact was due to a nonconforming "wrinkle" in the sheath. J.A. 2165–66; *see also* Appellee's Br. 39–40 ("[Although the CT scans at issue] may reflect contact of the [sheath] and [transmission rod] between the nodal ribs, any contact was due to a nonconforming 'wrinkle' in the sleeve component of that particular instrument."). There is no evidence in the record, however, to support the expert's assertion that this alleged wrinkle was indeed nonconforming. *See* J.A. 3630 ("Q. Did you [Covidien's expert] ever discuss this wrinkle with any of the engineers at Covidien? A. No."); J.A. 3631 ("Q. Does Covidien do imaging of every [accused] device to determine that it is wrinkle-free before leaving the factory? A. Don't know."). In short, it is clear that genuine disputes remain as to whether the sheath of Covidien's accused ultrasonic shears "loosely contacts" its transmission rod.

We turn next to the district court's determination that there is no genuine dispute of material fact that the damping sheath of Covidien's accused ultrasonic shears is not "adapted to absorb undesired vibrations along the transmission rod." The district court found there was no proof that Covidien's accused shears experienced undesired transverse vibrations and no proof that the accused shears absorbed those vibrations. *Ethicon DCt*, ECF No. 130, at 24. To reach this conclusion, the district court first relied on testimony from a Covidien expert, who performed certain water and glycerin droplet tests which purported to show that the transmission rod of Covidien's ultrasonic shears did not experience any undesired transverse vibrations. *Id.* at 22. Next, as with the "loosely contact" limitation, the district court was persuaded by Covidien testimony that its accused shears were "purposefully designed" to avoid unwanted transverse vibrations. In particular, the district court relied on testimony of Covidien's engineers that the transmission rod of its accused ultrasonic shears was designed to be symmetrical

and to resonate only in the longitudinal—and not transverse—direction, and that contact between the transmission rod and sheath at points other than fixed nodal ribs was identified as a "failure mode" of the sheath. *Id.* at 22, 26. The district court, noting there was no dispute that undesired transverse vibrations were generated by asymmetry of the transmission rod, thus concluded that Covidien's shears were designed to avoid generating transverse vibrations "by mechanical design." *Id.*

The district court, however, improperly discounted clear evidence that the transmission rod of Covidien's accused ultrasonic shears *did* experience transverse vibrations during testing. In particular, Covidien's expert performed a "droplet test," in which he placed droplets of water or glycerin on the transmission rod of Covidien's accused shears. This test was performed on a fully assembled device by having the sleeve removed and windows cut into the sheath. According to Covidien's expert, if the droplets splattered off the transmission rod, there were transverse vibrations, and if not, there were no transverse vibrations. Although Covidien's expert testified that he saw no droplets splatter, Ethicon's expert testified that he repeated the test using glycerine and observed the test fluid flying off tangentially from the transmission rod. J.A. 3688.

In addition, the district court's conclusion that Covidien's accused ultrasonic shears were designed to avoid transverse vibrations is also based on an incomplete view of the record. In particular, the district court's reliance on the symmetry of Covidien's transmission rod as evidence that the accused shears avoided transverse vibrations "by mechanical design" is contradicted by testimony from Covidien's own witnesses, who testified that the transmission rod was actually asymmetrical. J.A. 3604 ("[W]e don't live in a perfect world, so there are straightness, curvatures of parts that are natural within the part . . . ."). In addition, the district court did not

address evidence in the record that Covidien's manufacturing tolerances for the transmission rod allowed for a certain amount of variance that could result in asymmetries of the rod. J.A. 3605. Moreover, self-serving testimony from Covidien's witnesses about the purported goal of its product design does not negate the evidence in the record, as discussed above, supporting the possible conclusion that the transmission rod of the accused shears actually did experience unwanted transverse vibrations.

Taking all inferences in favor of the non-movant Ethicon, disputed issues of material fact remain as to whether Covidien's accused ultrasonic shears infringe or do not infringe the asserted claims of the '275 patent. Rather than properly evaluating the evidence in the light most favorable to the nonmoving party, the district court appears to have impermissibly resolved factual disputes in favor of Covidien in order to reach its conclusions. We therefore vacate the district court's grant of summary judgment of noninfringement of claims 1 and 3 of the '275 patent.[3]

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[3] We note that Ethicon also argues that the district court ignored testimony by Covidien's own witnesses that the sheath of its accused device was "designed to contact" the transmission rod in order to prevent the rod from touching the inner diameter of an inner tube. J.A. 3649. Preventing such contact reduced the probability of an audible "squealing" when the two components touched. *Id.* But Ethicon does not show how the presence of "squealing" signals the presence of *transverse* vibrations, which are the "undesired" vibrations recited by the claims. Nor does Ethicon explain how such "squealing" provides evidence that the *sheath* absorbs transverse vibrations of the transmission rod.

C. The Design Patents

The Design Patents claim particular ornamental designs of an ultrasonic surgical device. The D'801 patent claims a particular ornamental design of an inverted "U"-shaped trigger. The D'802 patent claims the overall appearance of the ornamental design of the "U"-shaped trigger and the particular ornamental design of a rounded and fluted torque knob positioned above and forward from the trigger. The D'803 patent claims the overall appearance of the ornamental design of the "U"-shaped trigger and the particular ornamental design of a rounded activation button positioned directly above the trigger. The D'804 patent claims the overall appearance of the ornamental designs of the "U"-shaped trigger, the fluted torque knob, and the rounded activation button, with the torque knob and the button positioned relative to the trigger as in the D'802 and D'803 patents, respectively. A figure from the D'804 patent, depicting the ornamental designs of the trigger, torque knob, and button claimed in various combinations and relative positions by the Design Patents, is reproduced below:

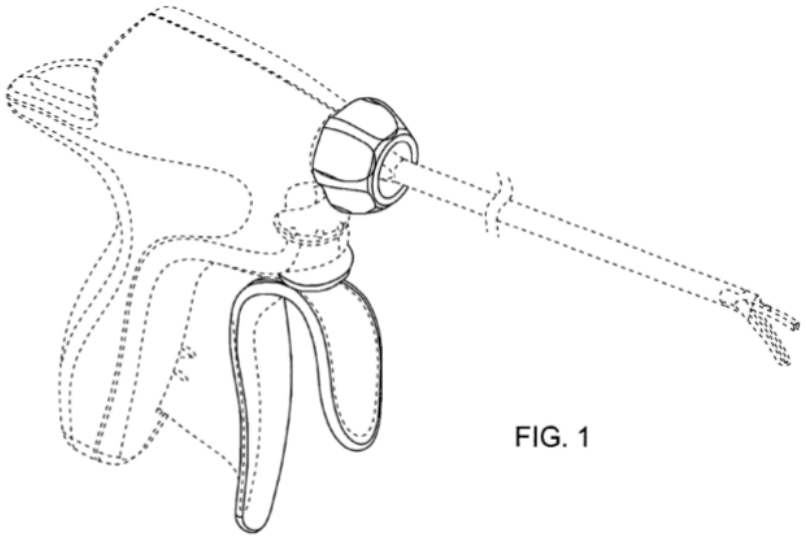


FIG. 1

The district court concluded that the claimed designs in the Design Patents were all dictated by function and were therefore invalid. *Ethicon DCt*, ECF No. 132, at 22. Specifically, the district court determined that under each consideration for assessing functionality identified in *PHG Technologies v. St. John Companies*, 469 F.3d 1361, 1366 (Fed. Cir. 2006), Ethicon's claimed designs were dictated by function. In the alternative, the district court found that because each of the designs of the trigger, torque knob, and button must be "factored out" under *Richardson v. Stanley Works, Inc.*, 597 F.3d 1288 (Fed. Cir. 2010), the Design Patents had no scope, and therefore Covidien's accused design could not infringe the Design Patents. *Ethicon DCt*, ECF No. 132, at 23–24. The district court also found that even if the functional elements were not factored out, there was no infringement under the ordinary observer test laid out in *Egyptian Goddess, Inc. v. Swisa, Inc.*, 543 F.3d 665 (Fed. Cir. 2008) (en banc). Specifically, the district court found that the "highly sophisticated" ordinary observer in the "highly complex medical device purchasing process" would find that the claimed designs and the design of Covidien's accused ultrasonic shears were plainly dissimilar. *Ethicon DCt*, ECF No. 25–26.

1. Invalidity

Design patents enjoy the same presumption of validity as utility patents under 35 U.S.C. § 282. *L.A. Gear, Inc. v. Thom McAn Shoe Co.*, 988 F.2d 1117, 1123 (Fed. Cir. 1993); 35 U.S.C. § 171. Thus, Covidien has the burden to prove invalidity of the Design Patents by clear and convincing evidence. *Microsoft v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2242 (2011); *L.A. Gear*, 988 F.2d at 1124. We have described as "stringent" this standard as it applies to invalidating design patents on grounds of functionality. *Rosco, Inc. v. Mirror Lite Co.*, 304 F.3d 1373, 1378 (Fed. Cir. 2002). We review the district court's finding that the patented designs are dictated by their function for clear

error. *Best Lock Corp. v. Ilco Unican Corp.*, 94 F.3d 1563, 1566 (Fed. Cir. 1996).

Articles of manufacture necessarily serve a utilitarian purpose, but design patents are directed to ornamental designs of such articles. 35 U.S.C. § 171. If a particular design is essential to the use of an article, it cannot be the subject of a design patent. *L.A. Gear*, 988 F.2d at 1123. We have found designs to be essential to the use of an article when the claimed design is "dictated by" the use or purpose of the article. *Id.* (citing *In re Carletti*, 328 F.2d 1020, 1022 (CCPA 1964); *Power Controls Corp. v. Hybrinetics, Inc.*, 806 F.2d 234, 238 (Fed. Cir. 1986)). Design patents on such primarily functional rather than ornamental designs are invalid. *PHG Techs.*, 469 F.3d at 1366; *see also Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 148 (1989).

In determining whether a claimed design is primarily functional, "[t]he function of the article itself must not be confused with 'functionality' of the design of the article." *Hupp v. Siroflex of Am., Inc.*, 122 F.3d 1456, 1462 (Fed. Cir. 1997). In *Hupp*, we separated the function inherent in a concrete mold—producing a simulated stone pathway by molding concrete—from the particular pattern of the stone produced by the mold itself—an aesthetic design choice. *Id.* at 1461. Thus, even though the claimed design pattern was embedded within the functional concrete mold, the proper analysis required a determination of whether the design pattern within the mold—and not the concrete mold itself—was "dictated by" its function. Because there was no utilitarian reason the mold had to impress the particular claimed rock walkway pattern into the concrete, we determined that the claimed design was "primarily ornamental," and not invalid as functional. *Id.* In *High Point Design LLC v. Buyers Direct, Inc.*, we found that the district court had incorrectly relied on the functional aspects of a slipper—a seam connecting two components, a curved front accommodat-

ing the foot, an opening facilitating ingress and egress of the foot, a forward lean of the heel keeping the heel in place, and a fleece interior providing warmth—to find the particular ornamental *design* of that slipper to be impermissibly functional. 730 F.3d 1301, 1316 (Fed. Cir. 2013). We explained that a claimed design was not invalid as functional simply because the "primary features" of the design could perform functions. *Id.* As with its analysis on other validity grounds, the district court used "too a high a level of abstraction" in assessing the scope of the claimed design. *Id*. at 1314.

By contrast, in *Best Lock*, we affirmed a district court's determination that a design patent to the blade of a key was invalid as functional, finding no clear error in the district court's conclusion that the claimed key blade design was dictated by functional concerns. 94 F.3d at 1567. In *Best Lock*, the claimed design was limited to a specific shape of a blank key blade. *Id.* at 1566. The parties did not dispute that the claimed key blade shape was designed specifically to perform its intended function—to fit into a similarly-shaped cylinder lock keyhole. *Id.* Further, the patentee presented no evidence of alternative compatible key blade designs, admitting that no differently-shaped key blade could fit into the keyhole of the corresponding cylinder lock. *Id.* Because no alternative design would allow the underlying article to perform its intended function, we determined the district court did not clearly err by finding that the claimed key blade design was dictated by function, and therefore invalid. *Id.* at 1567.

We have also instructed that the overall appearance of the article—the claimed design viewed in its entirety—is the basis of the relevant inquiry, not the functionality of elements of the claimed design viewed in isolation. For example, we acknowledged in *L.A. Gear* that certain elements comprising the claimed design of an athletic sneaker each had a utilitarian purpose, including a "delta

wing" supporting the foot and reinforcing the shoelace eyelets, side mesh paneling further supporting the foot, a "moustache" at the back of the shoe cushioning the Achilles tendon and reinforcing the rear of the shoe, and the particular positioning of each of these elements within the design of the shoe. 988 F.2d at 1123. Nevertheless, we explained that "the utility of each of the various elements that comprise the design is not the relevant inquiry with respect to a design patent" because whether a design is primarily functional or primarily ornamental requires viewing the claimed design "in its entirety." *Id.* *See also Berry Sterling Corp. v. Pescor Plastics, Inc.*, 122 F.3d 1452, 1455 (Fed. Cir. 1997) ("[T]he determination of whether [a] patented design is dictated by the function of the article of manufacture must ultimately rest on an analysis of its *overall* appearance." (emphasis added)).

We have not mandated applying any particular test for determining whether a claimed design is dictated by its function and therefore impermissibly functional. We have often focused, however, on the availability of alternative designs as an important—if not dispositive—factor in evaluating the legal functionality of a claimed design. For example, the district court in *L.A. Gear* referenced the evidence of many alternative designs that accomplished the same functionality associated with the underlying athletic sneaker. 988 F.2d at 1123. In view of that evidence, we noted that "[w]hen there are several ways to achieve the function of an article of manufacture, the design of the article is more likely to serve a primarily ornamental purpose. *Id.* *See also Rosco*, 304 F.3d at 1378 ("[I]f other designs could produce the same or similar functional capabilities, the design of the article in question is likely ornamental, not functional."); *Best Lock*, 94 F.3d at 1566 (same); *Hupp*, 122 F.3d at 1460 (same).

Here, the district court appeared to discount the existence and availability of alternative designs in determining that the claimed Design Patents were "primarily

functional" based on its evaluation of the five considerations identified in *PHG*, 469 F.3d at 1366 (quoting *Berry Sterling*, 122 F.3d at 1456). In *Berry Sterling*, we vacated and remanded a district court's grant of summary judgment of invalidity where it had failed to "elicit the appropriate factual underpinnings for a determination of invalidity of a design patent due to functionality." 122 F.3d at 1454. In our instructions on remand, we explained that where the existence of alternative designs is not dispositive of the invalidity inquiry, the district court may look to several other factors for its analysis:

> whether the protected design represents the best design; whether alternative designs would adversely affect the utility of the specified article; whether there are any concomitant utility patents; whether the advertising touts particular features of the design as having specific utility; and whether there are any elements in the design or an overall appearance clearly not dictated by function.

Id. at 1456. We explained that evaluating these other considerations "might" be relevant to assessing whether the overall appearance of a claimed design is dictated by functional considerations. *Id.*; *High Point*, 730 F.3d at 1315 ("Assessing [these five] factors *may* help determine whether a claimed design, as a whole, is 'dictated by' functional considerations." (emphasis added)). Thus, while the *Berry Sterling* factors can provide useful guidance, an inquiry into whether a claimed design is primarily functional should begin with an inquiry into the existence of alternative designs.

Ethicon presented evidence of alternative ornamental designs that could provide the same or similar functionality of the underlying ultrasonic shears. For example, Ethicon's expert testified that "there [we]re many different designs that would function just as well" as the de-

signs claimed in the Design Patents. J.A. 4807–18 ¶¶ 48–56. Ethicon's expert also identified multiple alternative designs for hand-held surgical devices in the prior art. *Id.* at 4813–18 ¶¶ 50, 51, 55. Covidien's expert admitted that other trigger designs, for example, would "work well" but "look different." J.A. 5125. Indeed, Covidien does not contend on appeal that there are no alternatives to the claimed designs, but merely argues that such designs cannot be considered true alternatives because, as the district court found, they did not work "equally well" as the claimed designs. Appellee's Br. 52–53.

The foregoing evidence does not support the district court's grant of summary judgment that the claimed designs are primarily functional for two reasons. First, the district court's determination that the designs did not work "equally well" apparently describes the *preferences* of surgeons for certain basic design concepts, not differences in *functionality* of the differently designed ultrasonic shears. For example, in supporting its conclusion that alternative designs "would not have worked as well" as the claimed design, the district court pointed to testimony that surgeons preferred ultrasonic shears with certain basic design features like activation buttons on the front, rather than the rear of the device, "open" triggers, rather than closed or loop-style triggers, and forward positions, as opposed to other positions, for placement of the torque knob. *Ethicon DCt*, ECF No. 132, at 18–19.

Second, to be considered an alternative, the alternative design must simply provide "the same or similar functional capabilities." *Rosco*, 304 F.3d at 1378 (reversing functionality finding because alternative mirror designs could still provide a similar level of performance); *see also Seiko Epson Corp. v. Nu-Kote Intern., Inc.*, 190 F.3d 1360, 1368 (Fed. Cir. 1999) (explaining that to be patentable, there cannot only be one "possible [ornamental] form of the article that could perform its function"). Here, there is no dispute that the underlying ultrasonic

shears could still function in the same manner with a differently-shaped open trigger, activation button, and torque knob, and different relative locations of the trigger, button, and torque knob. *See Ethicon DCt*, ECF No. 132, at 18 (acknowledging that alternative designs exist). Indeed, Covidien identifies no evidence or testimony that the particular appearance and shape of the open trigger, torque knob, or activation button provided utilitarian advantages over other ornamental designs of those elements.

Further, the district court's functionality inquiry used too high of a level of abstraction. Instead of focusing on whether the specific patented designs had a functional purpose—the continuously curved "U" shape of the open trigger having tapered handles with ends flaring outwards, the football-shape of the activation button, and the asymmetrically-fluted torque knob with a flat front face—the district court focused its *PHG* analysis on the functional characteristics that *any* design of an open trigger, button, and torque knob would have for the underlying ultrasonic shears.

For example, the district court supported its conclusion that the claimed designs were "primarily functional" using testimony from Ethicon witnesses that the chosen design was "the best design ergonomically" of those considered for Ethicon's commercial product. *Ethicon DCt*, ECF No. 132, at 18. This ergonomic choice, however, was not a choice between different open trigger designs, but rather between the concept of an open trigger and a thumb-ring or loop-shaped trigger. J.A. 5573 ¶ 19 ("Part of [Ethicon's] decision to use a shepherd's hook trigger [i.e., an open trigger] instead of a thumb-ring or loop-shaped trigger design stemmed from the aesthetic value of the shepherd's hook design."). This same evaluation of an open trigger guided the district court's determination that alternative designs would not have worked as well as an open trigger because surgeons preferred the chosen

design to alternatives. And as discussed above, the surgeon-preferred design was not the specific patented design, but rather the general concept of an "open trigger" versus a "closed trigger" design. J.A. 3058 (Tr. 272:14–22) (Q. "What about changing the [open trigger design] to a closed trigger design, do you think that if you made that one change would that hypothetical device be as attractive to surgeons?" A. "I don't think so. I think the open trigger . . . was [surgeons'] preferred design.").

Similarly, the district court found significant the fact that Ethicon applied for utility patents that included figures similar to those of the claimed designs. *Ethicon DCt*, ECF No. 132, at 20. The district court noted that the utility patents described an "ergonomically formed" trigger with a proximal and distal portion having different lengths, a rounded button, and a fluted rotation knob. *Id.* at 20–21. Again, however, the district court's analysis focuses on the concepts of an open trigger, button, and torque knob, rather than the specifically claimed design conceptions of those elements. Finally, the district court relied on Ethicon's advertisements for its commercial product touting the "intuitive controls" of the rounded button and torque knob that offered the "ergonomic benefit of 'minimal index finger repositioning'" and the "easy access" provided by the open trigger. *Id.* at 21. These advertisements, however, tout the functional benefits of the general design concepts of the underlying elements rather than any functional benefits of the specific claimed designs.

Ethicon's Design Patents cover only the specific ornamental conceptions of the features shown in their figures, and not the general concepts of an open trigger, a rounded button, and a fluted torque knob oriented in some configuration as part of an ultrasonic surgical device. The analysis of whether Ethicon's patented designs are invalid as dictated by function must also be performed at a level of particularity commensurate with

the scope of the claims. For functionality purposes, "it is relevant whether functional considerations demand only this particular design or whether other designs could be used, such that the choice of design is made for primarily aesthetic, non-functional purposes." *Hupp*, 122 F.3d at 1460. The district court performed its functionality analysis at too high a level of abstraction, focusing on the general concepts of an open trigger, torque knob, and activation button rather than the ornamental designs adorning those elements.

Moreover, Covidien has not shown by clear and convincing evidence that no designs other than those claimed in the Design Patents allow the underlying ultrasonic shears to perform their intended function. Indeed, the evidence in the record leads to the opposite conclusion. We therefore conclude the district court clearly erred in finding that Ethicon's patented designs are dictated by functional considerations and are therefore invalid as primarily functional. Because Covidien has not met its burden of showing that the Design Patents are invalid as functional, we reverse the district court's grant of summary judgment of invalidity of the Design Patents for functionality.

2. Claim construction

Because the Design Patents are not invalid, we move to the district court's grant of Covidien's motion for summary judgment of noninfringement. The district court found the claimed trigger, torque knob, and activation button elements of the Design Patents to be "based on functional considerations." *Ethicon DCt*, ECF No. 132, at 23–24. The district court therefore construed each claim of the Design Patents to encompass "nothing," factoring out and removing every element from the scope of the claimed designs. *Id.* at 24.

We review the district court's ultimate construction de novo, and any underlying factual findings supporting the

construction for clear error. *Teva*, 135 S. Ct. at 841. Because a claimed design is better represented by an illustration rather than a description, we have instructed that, unlike utility patents, "the preferable course ordinarily will be for a district court not to attempt to 'construe' a design patent claim by providing a detailed verbal description of the claimed design." *Egyptian Goddess*, 543 F.3d at 679. We have explained, however, that there are a number of claim scope issues which may benefit from verbal or written guidance, among them the distinction between features of the claimed design that are ornamental and those that are purely functional. *Id.* at 680.

For purposes of validity, as discussed above in section II.C.1., a design patent is invalid if its overall appearance is dictated by function, and therefore primarily functional. *L.A. Gear*, 988 F.2d at 1123. If the overall appearance of a claimed design is not primarily functional, the design claim is not invalid, even if certain elements have functional purposes. *Richardson*, 597 F.3d at 1293–94. The scope of that claim, however, must be limited to the ornamental aspects of the design, and does not extend to "the broader general design concept." *OddzOn Prods., Inc. v. Just Toys, Inc.*, 122 F.3d 1396, 1405 (Fed. Cir. 1997).

Richardson involved a claim to the ornamental design of a multi-function carpentry tool that combined a hammer with a stud climbing tool and a crowbar. 597 F.3d at 1290. There was no dispute that several individual elements of the claimed design had functional purposes. In particular, a portion of the hammer head was flat to effectively deliver force to a struck object, the handle of the tool was elongated to provide leverage, the crowbar was at the end of the handle to reach into narrow spaces, and a jaw was located on the opposite end of the hammer head to allow the device to be used as a climbing step. *Id.* at 1294. These elements—which composed the entirety of the multi-function tool—had utility that had been known

and used in the art for more than a century, and were thus outside the scope of the design claim. *Id.* This did not mean, however, that the design claim had no scope. Rather, the claim was limited to the ornamental aspects of these functional elements. In particular, the scope of the claim encompassed, among other ornamental aspects, the shape of the hammer head, the diamond-shaped flare of the crowbar and the top of the jaw, the rounded neck, the undecorated handle, and the orientation of the crowbar relative to the head of the tool (which was not driven by functional considerations, unlike the orientation of the hammer head and crowbar at opposite ends of the handle). *Apple Inc. v. Samsung Elecs. Co.*, 786 F.3d 983, 998 (Fed. Cir. 2015) (discussing *Richardson* and citing *Richardson v. Stanley Works, Inc.*, 610 F. Supp. 2d 1046, 1050 (D. Ariz. 2009)). Thus, the design claim did not broadly protect a multi-function tool with a hammer, crowbar, handle, and claw, but only the specific ornamental aspects of that tool in the depicted configuration.

Similarly, in *OddzOn*, we limited the scope of a design claim to ornamental features of a football-shaped ball with a tail and fin structure, rejecting the patentee's argument that its design claim covered the broad general concept of a ball with a "rocket-like" appearance. 122 F.3d at 1405. We identified the "functional qualities" of the underlying article as its football shape combined with fins on a tail attached at one end of the ball, which added stability to the ball in the same manner as the tail and fins on darts or rockets. *Id.* Although the existence of a functional purpose for the football-shape, tail, and fin elements of the underlying article did not alone invalidate the design patent—as the claimed design also included some purely ornamental features—such functional aspects at least necessitated cabining the scope of the design claim in order to prevent the claim from encompassing the general design concept of a football with tails and fins. *Id.* ("[T]hese functional characteristics do not

invalidate the design patent, but merely limit the scope of the protected subject matter."). Thus, we affirmed the construction of the district court, which removed the generalized football shape, tail, and fins from the scope of the claim, limiting the design claim to its purely ornamental features: a "slender, straight tailshaft" and "three fins symmetrically arranged around the tailshaft," each "gentl[y] curv[ing] up and outward [to] create[] a larger surface area at the end furthest from the ball" and "flar[ing] outwardly along the entire length of the tailshaft" with the "fins seemingly protrud[ing] from the inside of the football." *Id.* at 1400.

Here, the district court found that the "U"-shaped trigger, the torque knob, and the rounded button claimed in various combinations by the Design Patents are dictated by function. For example, the "U"-shaped trigger operates the clamping arm of the ultrasonic shears. *Ethicon DCt*, ECF No. 132, at 20. Its "open" design allows the user to exert higher input forces by employing multiple fingers, thus lessening hand fatigue and strain. *Id.* The torque knob and rounded button provide functional controls for the ultrasonic shears. *Id.* at 21. Their placement relative to the trigger offers ergonomic access, and the fluted shape of the torque knob permits a user to operate the knob with one finger. *Id.* We agree that the trigger, torque knob, and activation button elements of the underlying article have functional aspects. But the district court's construction of the Design Patents to have no scope whatsoever fails to account for the particular ornamentation of the claimed design and departs from our established legal framework for interpreting design patent claims.

As explained in greater detail in section II.C.3., for purposes of claim construction, the district court ignored the facts that the trigger has a particular curved design, the torque knob has a particular flat-front shape, and the activation button has a particular rounded appearance.

Unlike the functionality inherent in the underlying articles themselves, there is no evidence in the record, that any of the ornamental designs adorning those underlying articles are essential to the use of the article. *See* section II.C.1. Thus, although the Design Patents do not protect the general design concept of an open trigger, torque knob, and activation button in a particular configuration, they nevertheless have some scope—the particular ornamental designs of those underlying elements. We therefore vacate the district court's construction that the Design Patents cover "nothing." The scope of the Design Patents, although limited, encompasses the depicted ornamental aspects of certain combinations of the trigger, torque knob, and activation button elements of ultrasonic surgical shears, in specific relative positions and orientations.

3. Noninfringement

Although the district court construed the claims of the Design Patents to have no scope, it performed, in the alternative, an infringement analysis of Covidien's accused ultrasonic shears based on a construction of the claimed designs that retained the ornamental aspects of the underlying trigger, torque knob, and activation button elements. *Ethicon DCt*, ECF No. 132, at 24, 26–34. We can thus evaluate the district court's alternative grant of summary judgment of noninfringement of the Design Patents, because the district court apparently performed this analysis using a correct construction of the claimed designs.

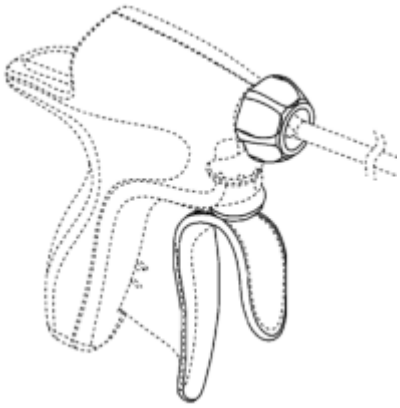
A design patent is infringed "[i]f, in the eye of an ordinary observer, giving such attention as a purchaser usually gives, two designs are substantially the same, if the resemblance is such as to deceive such an observer, inducing him to purchase one supposing it to be the other." *Egyptian Goddess*, 543 F.3d at 670 (quoting *Gorham Co. v. White*, 81 U.S. 511, 528 (1871)). As with

utility patents, the patentee must prove infringement of a design patent by a preponderance of the evidence. *Id.* at 679. Where the claimed and accused designs are "sufficiently distinct" and "plainly dissimilar," the patentee fails to meet its burden of proving infringement as a matter of law. *Id.* at 678. If the claimed and accused designs are not plainly dissimilar, the inquiry may benefit from comparing the claimed and accused designs with prior art to identify differences that are not noticeable in the abstract but would be significant to the hypothetical ordinary observer familiar with the prior art. *Id.*

Differences, however, must be evaluated in the context of the claimed design as a whole, and not in the context of separate elements in isolation. Where, as here, the claimed design includes several elements, the fact finder must apply the ordinary observer test by comparing similarities in overall designs, not similarities of ornamental features in isolation. *Richardson*, 597 F.3d at 1295; *Crocs, Inc. v. Int'l Trade Comm'n*, 598 F.3d 1294, 1303–04 (Fed. Cir. 2010). An element-by-element comparison, untethered from application of the ordinary observer inquiry to the overall design, is procedural error. *Amini Innovation Corp. v. Anthony Cal., Inc.*, 439 F.3d 1365, 1372 (Fed. Cir. 2006).

After performing a side-by-side comparison between the claimed designs and the design of Covidien's accused shears, the district court concluded there could be no genuine dispute that the claimed and accused designs were plainly dissimilar because they "simply d[id] not look alike except for the fact that both are hand-held surgical devices with open trigger handles." *Ethicon DCt*, ECF No. 132, at 26, 28. The district court thus determined that even if the Design Patents had scope, the design of Covidien's accused shears did not infringe any of the claimed designs. *Id.* at 27.

The claimed and accused designs are depicted below:



D'804 patent, Fig. 1

Covidien's accused product

We agree with the district court that there is no genuine dispute the claimed and accused designs of an ultrasonic surgical device are plainly dissimilar. On a general conceptual level, both designs include an open trigger, a small activation button, and a fluted torque knob in relatively similar positions within the underlying ultrasonic device. Similarity at this conceptual level, however, is not sufficient to demonstrate infringement of the claimed designs. As discussed in section II.C.2., because each of these components has a functional aspect, the underlying elements must be excluded from the scope of the design claims at this general conceptual level. And when the remaining ornamental features of those components are compared, as a whole, to the corresponding ornamental features of Covidien's accused ultrasonic surgical shears, the dissimilarities between the designs are plain.

The district court identified the most obvious difference between the claimed and accused designs as "the overall contoured shape" of the claimed design and the "overall linear shape" of the accused design. *Id.* The district court also identified plain dissimilarities between the ornamentation of the trigger, torque knob, and button elements of the claimed and accused designs. For the

trigger, the district court found dissimilarities between the proximal and distal portions of the claimed trigger handle, which curved toward and away from the device, respectively, and the proximal and distal portions of the accused trigger handle, which were parallel. *Id.* at 28. The district court also found differences between the width and length of the proximal and distal handles of the claimed and accused triggers, noting in particular that the proximal handle of claimed design was tapered at its end and at the portion connecting the proximal and distal handles, while the proximal handle of the accused design was a consistent width throughout. *Id.* at 29. For the activation button, the district court found the football-shaped button of the claimed design and the rectangular button of the accused design to be dissimilar. *Id.* at 31. As for the torque knob, the district court found dissimilarities between the unevenly-tapered flutes and flat front face with a large circular recess at its center of the claimed design, and the evenly-tapered flutes and rounded front face with no recess of the accused design. *Id.* at 32–33. We find no error with the district court's determination that the claimed and accused designs are plainly dissimilar.

Ethicon does not challenge any of these specific findings by the district court, but instead asserts that the claimed and accused designs are not plainly dissimilar, and as a result, contends that the district court should have considered the frame of reference provided by the prior art, which Ethicon characterizes as predominantly featuring thumb-ring and loop-shaped triggers. However, comparing the claimed and accused designs with the prior art is beneficial only when the claimed and accused designs are not plainly dissimilar. *Egyptian Goddess*, 543 F.3d at 678. Because the district court found the nonfunctional, ornamental aspects of the claimed and accused designs to be plainly dissimilar, it did not need to compare the claimed and accused designs with the prior art, as

resolution of the infringement inquiry was already clear. *Id.* ("In some instances, the claimed and the accused design will be sufficiently distinct that it will be clear without more that the patentee has not met its burden of proving the two designs would appear 'substantially the same' to the ordinary observer.").

Ethicon also contends that the district court erred in identifying who the ordinary observer would be. The district court found the ordinary observer to be a sophisticated entity who managed the complex medical device purchasing process, because that entity was the ultimate purchaser of the underlying ultrasonic surgical shears. *Ethicon DCt*, ECF No.132, at 25. Ethicon argues that the ordinary observer is the surgeon who would use the shears.

The Supreme Court explained in *Gorham* that the ordinary observer is not an expert in the claimed designs, but one of "ordinary acuteness" who is a "principal purchaser[]" of the underlying articles with the claimed designs. 81 U.S. at 528; *Arminak & Assocs., Inc. v. Saint-Gobain Calmar, Inc.*, 501 F.3d 1314, 1322–23 (Fed. Cir. 2007) (overruled on other grounds by *Egyptian Goddess*). Ethicon does not dispute that it is the hospital or medical device supplier, not the surgeon, who is ultimately responsible for purchasing the underlying articles at issue. Regardless, we see no need to resolve this dispute because Ethicon fails to explain how the infringement analysis would be affected if surgeons—who are more sophisticated than the general public—were considered to be the hypothetical ordinary observer. The claimed and accused designs are plainly dissimilar even to one *less* discerning than the ordinary observer; these distinctions would only be more evident to a sophisticated observer, whether a purchasing entity or a surgeon.

As the district court correctly concluded, the scope of the Design Patents "do[es] not entitle [Ethicon] to pre-

clude others from using all styles or placements of open triggers, fluted rotation knobs, or activation buttons." *Ethicon DCt*, ECF No. 132, at 26. Rather, because these elements have functional purposes, the Design Patents protect only the ornamental designs adorning those elements, and not the general concept of an ultrasonic surgical device having an open trigger, a fluted knob, and a rounded button. Here, there can be no genuine dispute that at the proper level of granularity, the claimed ornamental designs of the Design Patents are, as a whole, plainly dissimilar from the ornamental design of Covidien's accused ultrasonic shears. Therefore, we affirm the district court's grant of summary judgment of noninfringement of the Design Patents.

* * *

We have considered the parties' remaining arguments and find them unpersuasive.

III. CONCLUSION

Because one of ordinary skill in the art, in view of the specification, would understand the scope of the claims of the '501 patent with reasonable certainty, we reverse the district court's grant of summary judgment of invalidity of the '501 patent for indefiniteness. We affirm the district court's claim construction of the term "loosely contact" in claims 1 and 3 of the '275 patent. We find, however, that disputed issues of material fact remain as to whether Covidien's accused ultrasonic shears infringe the "configured to loosely contact" and "adapted to absorb undesired vibrations" limitations of the asserted claims. Thus, we vacate the district court's grant of summary judgment of noninfringement of the asserted claims of the '275 patent. Because Covidien has not met its burden of showing that the ornamental designs claimed by the Design Patents are primarily functional, we reverse the district court's grant of summary judgment of invalidity of the Design Patents. We also vacate the district court's construction

of the Design Patents as having no claim scope whatsoever. The ornamental designs claimed by the Design Patents, however, are plainly dissimilar from the designs of Covidien's accused ultrasonic shears. We thus affirm the district court's alternative grant of summary judgment of noninfringement of the Design Patents. Finally, we remand to the district court for further proceedings relating to the asserted claims of the '501 patent and the '275 patent.

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

COSTS

No costs.