

# United States Court of Appeals for the Federal Circuit

03-1092

RON NYSTROM,

Plaintiff-Appellant,

v.

TREX COMPANY, INC. and TREX COMPANY, LLC,

Defendants-Appellees.

Joseph S. Presta, Nixon & Vanderhye, P.C., of Arlington, Virginia, argued for plaintiff-appellant.

Patrick J. Coyne, Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P, of Washington, DC, argued for defendants-appellees. With him on the brief was Troy E. Grabow.

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

Judge Jerome B. Friedman

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DECIDED: September 14, 2005

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Before MAYER,<sup>1</sup> GAJARSA, and LINN, Circuit Judges.<sup>2</sup>

LINN, Circuit Judge.

Ron Nystrom (“Nystrom”) appeals from the grant of summary judgment of non-infringement of claims 1-15 and 18-20<sup>3</sup> and of invalidity of claims 18-20 of the '831

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<sup>1</sup> Haldane Robert Mayer vacated the position of Chief Judge on December 24, 2004.

<sup>2</sup> The earlier opinion in this case, reported at 374 F.3d 1105 (Fed. Cir. 2004), is withdrawn, and this opinion is substituted therefor. See Order in this case issued this date.

<sup>3</sup> The district court granted TREX’s motion for summary judgment of non-infringement. Although it is not entirely clear from the record, that motion was apparently for all claims of U.S. Patent No. 5,474,831 (“the '831 patent”). The district court also granted TREX’s separate motion for partial summary judgment of non-infringement of claims 16 and 17. Nystrom has raised no argument on appeal that would affect the district court’s grant of summary judgment of non-infringement of claims 16 and 17. Thus, on the issue of infringement, only the district court’s grant of summary judgment of non-infringement of claims 1-15 and 18-20 is before us.

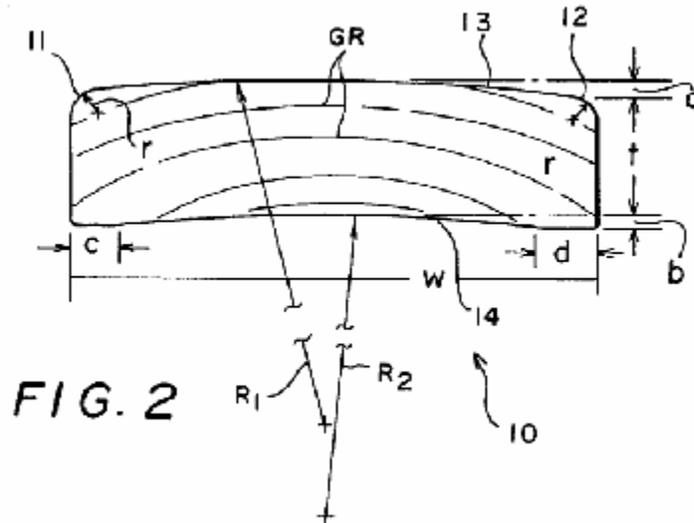
patent and from an order denying sanctions under 28 U.S.C. § 1927, entered by the United States District Court for the Eastern District of Virginia in favor of defendants TREX Company, Inc. and TREX Company, LLC (collectively “TREX”). Nystrom v. TREX Co., Inc., No. 2:01cv905 (E.D. Va. Oct. 25, 2002) (original final judgment); Nystrom v. TREX Co., Inc., No. 2:01cv905 (E.D. Va. Oct. 21, 2003) (amended final judgment). Because the district court correctly construed “board” and “manufactured to have,” we affirm the district court’s grant of summary judgment of non-infringement of claims 1-15 and 18-20. However, we reverse the district court’s construction of “convex top surface” and the district court’s grant of summary judgment of invalidity of claims 18-20 and remand the case to the district court for further proceedings. Further, because the district court did not abuse its discretion in denying Nystrom’s motion for sanctions under 28 U.S.C. § 1927, we affirm the district court’s disposition of that motion.

## I. BACKGROUND

### A. The '831 Patent

The '831 patent is directed to construction material for use in flooring surfaces: specifically, boards for use in constructing an exterior floor, such as a deck. '831 patent, col. 1, ll. 6-8. The invention described and claimed in the patent is an exterior wood flooring board shaped to shed water from its upper surface while at the same time providing a surface on which it is comfortable to walk and stand. Id. at col. 2, ll. 8-11. In the Summary of Invention, the patent describes the invention as “a decking board which is shaped to shed water from its upper surface, and which also yields a superior product when cut from a log, reducing the amount of scrap in the outermost boards cut from a

log.” Id. at col. 2, ll. 20-24. Figure 2, reproduced below, provides a transverse sectional view of the preferred embodiment of the invention:



Id. at col. 2, ll. 49-50. The embodiment depicted in Figure 2 is described in the '831 patent specification as follows:

The board specifically shown and described herein has generally the size and shape of a so-called 5/4 decking board, with rounded top side edges **11** and **12** each having a radius of curvature  $r$  of about one-quarter of an inch. The board **10** differs slightly in width  $w$  and thickness  $t$  from a standard decking board, however, in that it has a width of only about 5 inches and a thickness of about 1-3/8 inches.

More importantly, the board of the invention has a slightly rounded upper surface **13** that slopes gradually off to either side of the center of the board, defining a convex surface that promotes the running off of water. This surface may have a radius of curvature  $R_1$ , for example, of about 24 inches.

Further, in a preferred construction the board also has a complementally shaped concave bottom surface **14** with a radius of curvature  $R_2$  of about 24 inches, placed to leave two relatively flat side panels  $c$  and  $d$  along opposite edges of the board.

The curved top surface has a total fall or drop  $a$  from the center to each side edge of about 1/8 of an inch, and the curved bottom surface similarly has a total recess  $b$  from the plane of the two side panels to the deepest part at the center of the board of about 1/8 of an inch.

Id. at col. 3, ll. 1-24.

Independent claim 1 contains all of the disputed claim terms, and provides (with the disputed terms highlighted):

1. A board for use in constructing a flooring surface for exterior use, said board having a top surface, a bottom surface and opposite side edges, said top surface being manufactured to have a slightly rounded or curved configuration from a longitudinal center line thereof downwardly toward each side edge, thereby defining a convex top surface which sheds water and at the same time is comfortable to walk on, and said bottom surface having a concave configuration for nesting engagement with the top surface of another board so that a plurality of the boards may be stacked one on top of the other with the stability of conventional boards having flat top and bottom surfaces.

Id. at col. 4, ll. 19-30.

Independent claim 18 is representative of the claims for which invalidity is disputed, and provides (with the disputed limitation highlighted):

18. A decking board for use in constructing a flooring surface for exterior use, said board having a convex top surface, a bottom surface and opposite side edges; said convex top surface being manufactured to have a radius of curvature with a slightly rounded or curved configuration extending across the top surface from one side edge to the other, defining a difference in thickness between the longitudinal centerline and the opposite side edges, with the ratio of said difference in thickness to the width of the board being about 1:40; and said convex top surface serving to shed water from said board when exposed to weather, and at the same time, when a plurality of said boards are laid in side-by-side relationship, presenting a surface that is comfortable to stand and walk on.

Id. at col. 6, ll. 16-29.

## B. Proceedings Below

Nystrom is the inventor and sole owner of the '831 patent. He is a working carpenter and the owner of a two-truck, two-employee lumberyard. He has been in the business of building exterior decks for twenty-five years. TREX is a manufacturer of exterior decking planks made from composites of wood fibers and recycled plastic. On

December 5, 2001, Nystrom filed suit in the Eastern District of Virginia, alleging TREX infringed the '831 patent. TREX counterclaimed, seeking a declaratory judgment of non-infringement, invalidity, and unenforceability, and alleging antitrust violations on the part of Nystrom, his company, and his attorneys. Nystrom then filed a motion to dismiss the antitrust counterclaims. In response, TREX voluntarily dismissed the antitrust counterclaims, but then filed an amended antitrust counterclaim alleging many of the same antitrust violations against Nystrom alone. Soon after the amended counterclaim was filed, TREX dismissed its amended antitrust counterclaim, prompting Nystrom to move for sanctions on the ground that TREX's attorneys "multiplie[d] the proceedings . . . unreasonably and vexatiously." 28 U.S.C. § 1927 (2000). The district court denied the motion for sanctions under § 1927. Nystrom v. TREX Co., Inc., No. 2:01cv905 (E.D. Va. July 2, 2002) ("Sanctions Order").

In due course, the district court held a Markman hearing and issued a claim construction ruling concerning three disputed claim terms of the '831 patent. Nystrom v. TREX Co., Inc., No. 2:01cv905 (E.D. Va. Aug. 19, 2002) ("Claim Construction Order"). Based on the district court's claim construction ruling, Nystrom conceded that he could not prove his infringement case against TREX. Therefore, Nystrom asked the district court to enter judgment of non-infringement in favor of TREX and to dismiss TREX's invalidity and unenforceability counterclaims without prejudice. TREX then moved for summary judgment of non-infringement and for summary judgment of invalidity of claims 18-20. The district court entered judgment of non-infringement of all claims and deferred ruling on the outstanding motion regarding claims 18-20. Nystrom v. TREX Co., Inc., No. 2:01cv905 (E.D. Va. Sept. 11, 2002). Subsequently, the district court

granted TREX's motion for summary judgment of invalidity of claims 18-20. Nystrom v. TREX Co., Inc., No. 2:01cv905 (E.D. Va. Oct. 17, 2002) ("Invalidity Order"). On October 25, 2002, the district court entered its initial final judgment. In that judgment, the invalidity and unenforceability counterclaims regarding claims 1-17 were stayed pending appeal.

Nystrom appealed the claim construction rulings, the grant of summary judgment of non-infringement based thereon, the grant of summary judgment of invalidity of claims 18-20, and the district court's denial of sanctions to this court. On August 8, 2003, we dismissed Nystrom's appeal for lack of finality in light of the stayed invalidity and unenforceability counterclaims regarding claims 1-17. Nystrom v. TREX Co., Inc., 339 F.3d 1347 (Fed. Cir. 2003). Following the entry by the district court on October 21, 2003 of an Amended Final Judgment nunc pro tunc October 25, 2002, that repeated the previously entered judgments of non-infringement and of invalidity of claims 18-20 and dismissed without prejudice the remainder of TREX's declaratory judgment counterclaims regarding claims 1-17, we reinstated the appeal. Nystrom v. TREX Co., Inc., 83 Fed. Appx. 321, 322 (Fed. Cir. 2003).

We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1) and address the merits of Nystrom's appeal in this opinion.

## II. DISCUSSION

### A. Standard of Review

"We review the grant of summary judgment de novo, drawing all reasonable inferences in favor of the non-moving party." Teleflex, Inc. v. Ficosa N. Am. Corp., 299 F.3d 1313, 1323 (Fed. Cir. 2002) (citing Anderson v. Liberty Lobby, Inc., 477 U.S. 242,

255 (1986)). Summary judgment is only appropriate if there are no genuine issues of material fact and the movant is entitled to judgment as a matter of law. SRI Int'l v. Matsushita Elec. Corp., 775 F.2d 1107, 1116 (Fed. Cir. 1985) (en banc).

Claim construction is a question of law reviewed de novo. Ferguson Beauregard v. Mega Sys., Inc., 350 F.3d 1327, 1338 (Fed. Cir. 2003). Infringement, whether literal or under the doctrine of equivalents, is a question of fact. Id.

This court reviews a district court's denial of a motion for sanctions under 28 U.S.C. § 1927 pursuant to the law of the regional circuit. See Phonometrics, Inc. v. Westin Hotel Co., 350 F.3d 1242, 1246 (Fed. Cir. 2003). The Fourth Circuit reviews the denial of sanctions pursuant to § 1927 for an abuse of discretion. Chaudhry v. Gallerizzo, 174 F.3d 394, 410 (4th Cir. 1999).

#### B. Claim Construction

Nystrom argues that the district court misconstrued three patent claim limitations: “board,” “manufactured to have,” and “convex top surface.” TREX responds that the district court's claim constructions were correct.

##### 1. “Board”

The district court construed the word “board” in independent claim 1 to mean a “piece of elongated construction material made from wood cut from a log.” Claim Construction Order, slip op. at 9. The district court held that Nystrom had limited the scope of the claim term “board” by statements in the written description that a board is cut or obtained from a log, id. at 7 (citing '831 patent, col. 2, ll. 22-23; id. at col. 2, l. 34), and statements made by Nystrom during prosecution in arguing against an obviousness rejection, id. at 8.

Nystrom argues that “board” in claim 1 is not limited to conventional wood boards that are cut from a log. He argues that the claim language “board” does not contain a description of the material from which the board is composed and that the claim should not be so limited. He contends it was error for the district court to rely on statements in the specification to limit the claim because those statements do not represent a clear disavowal of claim scope. Moreover, Nystrom asserts that there was no disavowal in the prosecution history, because his comment in response to an obviousness rejection was not intended to limit but to establish that the resin tiles disclosed in the Yoshida reference were not properly combined with the wood planks of the Zagelmeyer reference in the examiner’s § 103 obviousness rejection. Thus, Nystrom argues, the comment was not such a clear and unambiguous disclaimer as to justify limiting the claim term.

TREX responds that the ordinary meaning of “board” is a piece of sawn lumber. Because the specification only disclosed a board as made of wood and cut from a log, TREX contends that the claim term “board” must be limited to wood boards cut from a log. TREX further argues that Nystrom disclaimed non-wood boards by the statements he made during prosecution in overcoming an obviousness rejection based on Yoshida and Zagelmeyer.

As this court recently articulated in our en banc decision in Phillips v. AWH Corp., “[i]t is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” 415 F.3d 1303, 1312 (Fed. Cir. 2005) (quoting Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1115 (Fed. Cir. 2004)). Therefore, we begin our claim construction analysis with

the words of the claim. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996). The words of the claim are generally given their ordinary and customary meaning. Id. at 1582. The ordinary and customary meaning of a claim term “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, 415 F.3d at 1313. The person of ordinary skill in the art views the claim term in the light of the entire intrinsic record. See id. Thus, the claims “must be read in view of the specification, of which they are a part.” Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc). “The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” Phillips, 415 F.3d at 1316 (quoting Renishaw PLC v. Marposs Societa’ per Azioni, 158 F.3d 1243, 1250 (Fed. Cir. 1998)). In addition to the written description, “the prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” Id. at 1317. In discerning the meaning of claim terms, resort to dictionaries and treatises also may be helpful. Id. at 1318. However, “undue reliance on extrinsic evidence poses the risk that it will be used to change the meaning of claims in derogation of the ‘indisputable public records consisting of the claims, the specification and the prosecution history,’ thereby undermining the public notice function of patents.” Id. at 1319 (quoting Southwall Techs., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1578 (Fed. Cir. 1995)).

The claims at issue do not include any language describing the “board” as cut from a log or necessarily being made of wood. In fact, claim 16, which is similar to claim 1, covers “[a] wood decking board for use in constructing a flooring surface for exterior use, said decking board having a convex top surface, a bottom surface, opposite side edges, and curved growth rings . . . .” ’831 patent, col. 5, ll. 32-35 (emphases added). By contrast, claim 1 simply claims a “board,” without restricting the term to a particular material or describing characteristics of wooden boards cut from logs. See id. at col. 4, ll. 19-21 (“A board for use in constructing a flooring surface for exterior use, said board having a top surface, a bottom surface and opposite side edges . . . .” (emphases added)). When different words or phrases are used in separate claims, a difference in meaning is presumed. Tandon Corp. v. United States Int’l Trade Comm’n, 831 F.2d 1017, 1023 (Fed. Cir. 1987). This principle of claim construction would suggest that the difference in the use of terms has significance and that “board” should not be limited to wood that is cut from a log. However, simply noting the difference in the use of claim language does not end the matter. Different terms or phrases in separate claims may be construed to cover the same subject matter where the written description and prosecution history indicate that such a reading of the terms or phrases is proper. Id. at 1023-24 (affirming the International Trade Commission’s holding that “the inclusion of the term ‘non-gimballed’ in claim 5 did not require that claims 1 and 12 be read to encompass a gimballed first transducer”).

An examination of the term “board” in the context of the written description and prosecution history of the ’831 patent leads to the conclusion that the term “board” must be limited to wood cut from a log. The written description begins by noting that “[a]

variety of specialized flooring materials have been developed for interior and exterior use.” ’831 patent, col. 1, ll.13-14. The discussion then proceeds to the specific context of wood flooring materials for exterior use. In the context of the discussion of wood flooring materials for exterior use, the patent states, “In all conventional flooring materials known to applicant, the top and bottom horizontal surfaces of these flooring materials are flat and planar. As a result, water tends to stand on the surface of the decking material, causing it to deteriorate more quickly than it otherwise would.” Id. at ll. 57-61. The discussion continues, “Further, the process used to cut such lumber from logs can produce inferior product on the outermost boards, often leading to scrap.” Id. at ll. 65-67. The Background of the Invention, thus, frames the invention in the context of wood decking materials cut from logs, even though it acknowledges that other materials exist.

This context is maintained throughout the written description. For example, the written description states, “With particular reference to FIGS. 1-5, it can be seen that the convex top surface 13 is curved in the same general direction as the curvature of the growth rings GR.” Id. at col. 3, ll. 25-27. The written description goes on to note that the manner of installation of conventional decking boards “leads to accelerated deterioration of the boards when exposed to weather.” Id. at ll. 34-35. Similarly, the written description states, “FIG. 4 shows the relationship of the outermost boards B cut from a log L.” Id. at ll. 65-66. Throughout the written description, Nystrom consistently used the term “board” to describe wood decking material cut from a log. See AquaTex Indus., Inc. v. Techniche Solutions, No. 05-1088, slip op. at 9 (Fed. Cir. Aug. 19, 2005)

("Here, the context of the specification 'makes clear that the patentee did not intend the term [fiberfill] to encompass' natural materials." (citation omitted)).

The prosecution history provides additional context that is consistent with the written description. In a preliminary amendment, Nystrom stated that "the particular configuration and dimensions of the board result in a uniformly superior product and reduction in waste or rejects due to bark or other flaws along the edges of the board when it is cut from near the outer circumference of a log." Prelim. Amendment at 2. In responding to a rejection, Nystrom stated,

The present invention represents a unique and significant advance in the art of exterior wood flooring. Wood floors have been in use for hundreds of years, and except for the development of different installation techniques, i.e., the use of nails, screws, various fastening clips, and/or adhesives, very little has been done to the basic shape of the board itself.

Amendment rec'd Sept. 30, 1993, at 2. Similarly, when arguing against an obviousness rejection, Nystrom stated, "YOSIDA [sic] is clearly not concerned with materials made from wood, and especially an elongate board for exterior use and having a convex top surface when installed that will shed water and at the same time provide a surface that is suitable for supporting furniture and comfortable to walk on." Id. at 4. Although Nystrom argues that the latter statement was limited to explaining why Yoshida could not be combined with the Zagelmeyer reference, which was directed to wood, we are not convinced that the statement is so limited. Nystrom explained in the same response that "the extent of curvature used by ZAGELMEYER in his boards was such that a distinctly uneven surface resulted, giving any surface constructed from them a corduroy-like texture which would have been unsuitable for supporting furniture, and which would have produced a distinct tactile sensation of roughness or uneven surface." Id. at 3. Thus, it is clear that when Nystrom was distinguishing Yoshida from an elongate board

that is suitable for supporting furniture and comfortable to walk on, he was referring to the invention and not Zagelmeyer. We need not decide, however, whether this statement represents a clear disavowal of claim scope because the context reflects Nystrom's consistent use of the term board to refer to wood decking materials cut from a log.

Nystrom contends that although some dictionaries define "board" solely in reference to its material composition, see Webster's Third International Dictionary 243 (2002) (defining "board" as "a piece of sawed lumber of little thickness but considerable surface area usu. being rectangular and of a length generally exceeding its width"), not all dictionaries are so constrained. For example, the American Heritage Dictionary of the English Language 203 (4th ed. 2000) defines "board" as "1. A long flat slab of sawed lumber; a plank. 2. A flat piece of wood or similarly rigid material adapted for a special use." Nystrom argues that the ordinary meaning of the word "board" encompasses both a piece of cut wood or sawn timber and a similarly-shaped item made of a rigid material.

However, as explained in Phillips, Nystrom is not entitled to a claim construction divorced from the context of the written description and prosecution history. The written description and prosecution history consistently use the term "board" to refer to wood decking materials cut from a log. Nystrom argues repeatedly that there is no disavowal of scope in the written description or prosecution history. Nystrom's argument is misplaced. Phillips, 415 F.3d at 1321 ("The problem is that if the district court starts with the broad dictionary definition in every case and fails to fully appreciate how the specification implicitly limits that definition, the error will systematically cause the

construction of the claim to be unduly expansive.”). What Phillips now counsels is that in the absence of something in the written description and/or prosecution history to provide explicit or implicit notice to the public—i.e., those of ordinary skill in the art—that the inventor intended a disputed term to cover more than the ordinary and customary meaning revealed by the context of the intrinsic record, it is improper to read the term to encompass a broader definition simply because it may be found in a dictionary, treatise, or other extrinsic source. Id.; see also Snow v. Lake Shore & Mich. S. Ry. Co., 121 U.S. 617, 629-30 (1887) (“It is not admissible to adopt the argument made on behalf of the appellants, that this language is to be taken as a mere recommendation by the patentee of the manner in which he prefers to arrange these parts of his machine. There is nothing in the context to indicate that the patentee contemplated any alternative for the arrangement of the piston and piston-rod.”).

Our recent decision in AquaTex Industries illustrates this principle. In that case, the patentee consistently used the term “fiberfill” throughout the written description to refer to synthetic materials. Although the written description indicated that the composition of the fiberfill was not known to be critical, we held that “the context of the specification ‘makes clear that the patentee did not intend the term [fiberfill] to encompass’ natural materials.” Id., slip op. at 9 (citation omitted). In particular, we noted that “[n]one of the patents [incorporated by reference] discusses the possibility of using natural fibers as commercial fiberfill batting.” Id., slip op. at 10. Although there was no disavowal of natural materials, we held that the consistent use of the term “fiberfill” to refer to synthetic materials and the extrinsic definitions supporting that interpretation led to the conclusion that a person of ordinary skill in the art would have

understood the term to be limited to synthetic materials. The present case is analogous. Nystrom consistently used the term “board” to refer to wood cut from a log. Although there was no clear disavowal of claim scope, there was nothing in the intrinsic record to support the conclusion that a skilled artisan would have construed the term “board” more broadly than a piece of construction material made from wood cut from a log.

In Phillips, we held that the term “baffle” did not require any specific angle—even in view of the written description’s limited disclosure of baffles oriented at right angles to the walls—because the ordinary meaning of the term “baffle,” as reflected in a dictionary definition to which the parties stipulated and as supported by the overall context of the written description, was simply “objects that check, impede, or obstruct the flow of something.” 415 F.3d at 1324. In this case, both parties acknowledge the ordinary meaning of “board” as “a piece of sawed lumber.” Nystrom, however, seeks to broaden the term “board” to encompass relatively obscure definitions that are not supported by the written description or prosecution history. Broadening of the ordinary meaning of a term in the absence of support in the intrinsic record indicating that such a broad meaning was intended violates the principles articulated in Phillips. Therefore, we affirm the district court’s construction of the term “board.”

## 2. “Manufactured To Have”

The district court construed the expression “manufactured to have” as used in claim 1 of the ’831 patent to be “a manufacturing process utilizing woodworking techniques.” Claim Construction Order, slip op. at 11. The district court relied on statements in the ’831 patent written description that “the advantages of the invention”

were achieved through “cutting or milling and the like.” Id. at 10. The district court found this statement in the written description, combined with its prior construction of the claim term “board” to be “construction material made from wood cut from a log,” to be tantamount to a redefinition of the scope of the claimed manufacturing process. Id. at 11.

Nystrom argues that for many of the same reasons the district court erred in construing the word “board,” the district court’s construction of the phrase “manufactured to have” is also in error. Further, he argues the district court’s reliance on language in the written description mentioning “cutting or milling or the like” impermissibly reads a limitation from a preferred embodiment into the claim. TREX responds that the district court properly relied on the reference to “cutting or milling and the like” in restricting “manufactured to have” in all of the claims to solely woodworking techniques. TREX argues that the district court’s construction makes sense because the ’831 patent covers only wood materials.

In light of our construction of “board” as encompassing only materials made from wood cut from a log, we see no error in the district court’s limitation of the phrase “manufactured to have” in claim 1 to woodworking techniques. The use of the phrase “manufactured to have” in reference to the top surface of the board is necessarily limited to manufacturing techniques related to wood. Thus, we affirm the district court’s construction of “manufactured to have.”

### 3. “Convex Top Surface”

The district court construed “convex top surface” to mean “an upper surface with an outward curve that has a ratio of its radius of curvature to width of the board between

4:1 to 6:1.” Claim Construction Order, slip op. at 13. It noted that “the specification does not contain any indication that the term convex top surface is to be assigned a specific range of curvature.” Id. at 12. The district court relied on statements the applicant made in the prosecution history that “the preferred [radius of curvature] ration [sic, ratio] is about 5:1.” Id. at 13.

Nystrom argues that the district court erred by ignoring the ordinary and customary meaning of this claim term, which is “an upper surface with an outward curve,” and by importing additional limitations into this claim term from the written description. He observes that claim 1 does not provide an explicit radius of curvature ratio, and that such radii measurements are recited only in dependent claims 3, 7, and 13. Nystrom also argues that the district court erred in finding that he restricted the term to a specific radius of curvature to overcome a rejection based on the Zagelmeyer reference. He thus contends it was error for the court to construe “convex top surface” to include a specific radius of curvature ratio. TREX responds that the district court properly held that Nystrom limited his claim to a particular radius of curvature in the range of 4:1 to 6:1 to distinguish the invention over the prior art Zagelmeyer reference.

The dictionary definition of the claim term “convex” is “having a surface or boundary that curves or bulges outward, as the exterior of a sphere.” American Heritage Dictionary of the English Language 402 (4th ed. 2000). This is consistent with the specification of the '831 patent. See, e.g., '831 patent, col. 3, ll. 10-14 (“More importantly, the board of the invention has a slightly rounded upper surface 13 that slopes gradually off to either side of the center of the board, defining a convex surface that promotes the running off of water. This surface may have a radius of curvature  $R_1$ ,

for example, of about 24 inches.”). The district court relied on statements Nystrom made during prosecution to distinguish the Zagelmeyer reference as limiting the expression “convex top surface” to a surface with a radius of curvature in the range of 4:1 to 6:1. Claim Construction Order, slip op. at 12-13. Nystrom stated in a supplemental amendment amending claim 16 of the issued patent (referred to as claim 19 during prosecution):

Applicant then began trying different radiuses of curvature, but some were too shallow and when the board tried it tended not to shed water. Others had too short a radius of curvature and a distinct sensation of an uneven surface. Eventually, by trying a variety of curvatures, applicant discovered that a ratio of radius of curvature to width of the board of about 5:1 produced the desired result, i.e., it shed water and did not produce and uneven sensation to someone standing on it.

\* \* \*

Claim 19 [claim 16 in the issued patent] and the claims dependent therefrom (the remaining claims have been previously allowed), are directed to a decking board that has a particular configuration which produces specific results not achieved with any of the prior art. . . . It should be noted, however, that the ratio of the radius of curvature of a board to its width can vary within certain relatively narrow limits, e.g. from about 4:1 to about 6:1, and still meet the basic objectives of the invention, although the preferred ratio is about 5:1. Anything much outside this range does not provide satisfactory performance and/or is not acceptable to the consumer.

Supplemental Amendment, Sept. 7, 1994, at 2-3 (emphasis added). The district court noted that Nystrom’s statement that “[a]nything much outside this range . . . is not acceptable” implied that his statements regarding the radius of curvature ratio applied to the entire patent, and was not intended to apply solely to issued claim 16.

The district court erred in its analysis of the prosecution history. Nystrom’s statements were expressly directed to issued claim 16. There is no indication that Nystrom intended the term “convex top surface” in all of the pending patent claims to be

limited to a specific radius of curvature ratio. The district court ignored the fact that the language of claim 16 at the time Nystrom made the disputed statements included the following claim language expressly providing for a radius of curvature ratio of approximately 5:1: “said top surface having a radius of curvature that is approximately five times as great as the width of the board,” thereby defining a smoothly shaped and shallow convex top surface that sheds water . . . .” Supplemental Amendment, Sept. 7, 1994, at 1 (emphasis added).

Other statements in the prosecution history support this view. Nystrom points to the examiner’s prior rejection of claims 1, 2, 5, 6, 11 and 12 under 35 U.S.C. § 102(b): “This rejection is being made over the broad claims since they fail to specify any particular degree for the curve of the board.” Examiner’s Action, Mar. 24, 1994, at 2. The examiner eventually allowed claims 1-14 and 18 because the “prior art fail[ed] to teach both sides of the board with a curved configuration,” not because the invented board specified a particular radius of curvature ratio. Examiner’s Action, Dec. 8, 1994, at 4. The prosecution history did not redefine or disclaim “convex top surface” in claim 1 to be limited to a particular radius of curvature ratio. Accordingly, we hold that the correct construction of the expression “convex top surface” as used in claim 1 is the ordinary and customary meaning of an upper surface that curves or bulges outward, as the exterior of a sphere.

### C. Invalidity

The district court granted summary judgment in favor of TREX, holding claims 18-20 of the ’831 patent invalid as anticipated in light of the Zagelmeyer reference. The

parties principally dispute whether Figure 3 of the Zagelmeyer patent anticipates the following limitation of independent claim 18:

said convex top surface being manufactured to have a radius of curvature with a slightly rounded or curved configuration extending across the top surface from one side edge to the other, defining a difference in thickness between the longitudinal centerline and the opposite side edges, with the ratio of said difference in thickness to the width of the board being about 1:40 . . . .

'831 patent, col. 6, ll. 18-25 (emphasis added). The district court held that boards 2, 3, and 5 depicted in Figure 3 of the Zagelmeyer patent anticipate this limitation by illustrating a board with a convex top having a relevant thickness ratio to the width of the board of 1:39, 1:39, and 1:37, respectively. Invalidity Order, slip op. at 6. The district court found that our precedents in Hockerson-Halberstadt, Inc. v. Avia Group International, Inc., 222 F.3d 951 (Fed. Cir. 2000), and In re Wright, 569 F.2d 1124 (CCPA 1977), were not applicable, because it considered the correct inquiry to be whether a person of ordinary skill in the art would use measurements from the Zagelmeyer reference to ascertain the degree of curvature. Invalidity Order, slip op. at 6-7. Finding that a person of skill in the art would take such measurements from the boards depicted in Figure 3 of the Zagelmeyer patent, the district court found claim 18 and the associated dependent claims anticipated. Id. at 7.

Nystrom argues that the district court erred by basing its invalidity determination not on the disclosure of the Zagelmeyer patent itself, but instead from renderings made by a TREX employee of hypothetical boards based on the perspective drawings in the Zagelmeyer patent. He argues this violates our precedent in Hockerson-Halberstadt that “patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the

issue.” Hockerson-Halberstadt, 222 F.3d at 956 (citing In re Wright, 569 F.2d at 1127). Nystrom contends that the district court erred in relying on extrinsic evidence in invalidating the '831 patent. The invalidity data relied on by the district court was generated by a TREX employee who made a software model of the boards depicted in the perspective drawings of Figure 3 of Zagelmeyer patent, then performed computations on the modeled boards to come up with the allegedly invalidating curvature to width ratio.

TREX responds that the district court correctly found that it had presented evidence that persons of ordinary skill in the art would understand Zagelmeyer to disclose the same dimensions as claims 18-20. TREX submitted declarations that it contended detailed the process by which the boards depicted in the Zagelmeyer reference were modeled and from which the invalidating measurements were taken.

“A party seeking to establish that particular claims are invalid must overcome the presumption of validity in 35 U.S.C. § 282 by clear and convincing evidence.” State Contracting & Eng’g Corp. v. Condotte Am., Inc., 346 F.3d 1057, 1067 (Fed. Cir. 2003). A patent is invalid as anticipated if every limitation in a claim is found in a single prior art reference. Teleflex, 299 F.3d at 1335.

The district court erred in not properly applying the principles set forth in our prior precedents that arguments based on drawings not explicitly made to scale in issued patents are unavailing. Hockerson-Halberstadt indicated our disfavor in reading precise proportions into patent drawings which do not expressly provide such proportions:

The '792 patent is devoid of any indication that the proportions of the groove and fins are drawn to scale. [The patent owner’s] argument thus hinges on an inference drawn from certain figures about the quantitative relationship between the respective widths of the groove and fins. Under

our precedent, however, it is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.

Hockerson-Halberstadt, 222 F.3d at 956 (citing In re Wright, 569 F.2d at 1127). In re

Wright similarly noted:

We disagree with the [PTO]'s conclusion, reached by a comparison of the relative dimensions of appellant's and [the] Bauer [references]'s drawing figures, that Bauer "clearly points to the use of a chime length of roughly 1/2 to 1 inch for a whiskey barrel." This ignores the fact that Bauer does not disclose that his drawings are to scale. Absent any written description in the specification of quantitative values, arguments based on measurement of a drawing are of little value.

569 F.2d at 1127.

The district court's acceptance of TREX's invalidity arguments based on models made from drawings contained in the Zagelmeyer patent was incorrect. The basis of the district court's summary judgment of invalidity was a model that TREX developed based on that reference, and not on drawing dimensions or a written disclosure of dimensions contained directly in the patent itself. Under the principles set forth in our prior cases, the speculative modeling premised on unstated assumptions in prior art patent drawings cannot be the basis for challenging the validity of claims reciting specific dimensions not disclosed directly in such prior art. Thus, we conclude that the district court erred in granting summary judgment of invalidity based on TREX's models.

Because the district court erred in determining invalidity based on evidence improperly derived from a patent drawing, we need not address Nystrom's argument based on the district court's rejection of Nystrom's declaration. For the reasons stated, we reverse the district court's summary judgment of invalidity of claims 18-20 of the '831 patent as anticipated by Zagelmeyer.

#### D. Sanctions

Section 1927, in Title 28 of the United States Code, imposes liability on counsel for excessive costs, and provides:

Any attorney or other person admitted to conduct cases in any court of the United States or any Territory thereof who so multiplies the proceedings in any case unreasonably and vexatiously may be required by the court to satisfy personally the excess costs, expenses, and attorneys' fees reasonably incurred because of such conduct.

28 U.S.C. § 1927 (2000). The Supreme Court has explained that § 1927 “is indifferent to the equities of a dispute and to the values advanced by the substantive law. It is concerned only with limiting the abuse of court processes.” Roadway Express, Inc. v. Piper, 447 U.S. 752, 762 (1980).

Under the law of the Fourth Circuit, the district court’s decision denying sanctions pursuant to 28 U.S.C. § 1927 is reviewed for an abuse of discretion. Chaudhry, 174 F.3d at 410. “A district court abuses its discretion if its conclusion is guided by erroneous legal principles, or rests upon a clearly erroneous factual finding.” Westberry v. Gislaved Gummi AB, 178 F.3d 257, 261 (4th Cir. 1999) (internal citation omitted). An appellate court “is obligated to review the record and reasons offered by the district court and to reverse if the court has a definite and firm conviction that the court below committed a clear error of judgment in the conclusion it reached upon a weighing of the relevant factors.” Id. (internal quotation marks omitted). “[S]ection 1927 also requires a finding of counsel’s bad faith as a precondition to the imposition of fees.” Chaudhry, 174 F.3d at 411 n.14 (internal quotation marks omitted). The Fourth Circuit has further held “as a matter of law that the filing of a single complaint cannot be held to have multiplied the proceedings unreasonably and vexatiously and therefore that § 1927

cannot be employed to impose sanctions.” DeBauche v. Trani, 191 F.3d 499, 511-12 (4th Cir. 1999).

TREX’s counsel originally filed four antitrust counterclaims and a supporting brief in response to Nystrom’s infringement complaint (“the original counterclaims”). TREX voluntarily dismissed these original counterclaims and then filed a second, amended antitrust counterclaim (“amended counterclaim”). TREX’s counsel eventually dropped its original and amended counterclaims. Nystrom sought § 1927 sanctions against TREX. In light of DeBauche v. Trani, 191 F.3d at 511-12, which held as a matter of law that the filing of a single complaint cannot multiply the proceedings unreasonably under § 1927, the district court limited its inquiry to whether TREX’s filing of the amended counterclaim was a basis for sanctions in this case.

Nystrom argues that the district court erred in finding that TREX had pled all of the essential elements of an antitrust counterclaim in its amended counterclaim, because TREX failed to establish that Nystrom posed a dangerous probability of success in monopolizing the relevant market for composite decking. Nystrom argues that when TREX’s counsel filed the amended counterclaim, it “knew as a matter of law” that Nystrom lacked market power in the composite decking market because TREX’s counsel knew both that Nystrom was not a participant in that market and that the ’831 patent itself did not create the required market power in that market. Appellant’s Br. at 61-63.

TREX responds that it had ample evidentiary basis for its amended counterclaims, even though it admits its original counterclaims were flawed. TREX asserts that when the flaws in its original counterclaims were pointed out, its counsel

immediately admitted the mistake and amended them. TREX argues that its counsel did not act in bad faith and that the district court did not abuse its discretion in denying § 1927 sanctions.

The district court declined to find that TREX acted in bad faith in alleging that Nystrom posed a dangerous probability of success in monopolizing the relevant market. Sanctions Order, slip op. at 7. Although Nystrom asserted to the district court that he operated solely in the market for milled decking material, TREX asserted that it relied on several statements by Nystrom during the prosecution of the '831 patent that he intended to monopolize both the milled and composite decking material markets. Id. at 6-7. Stating that it lacked sufficient evidence to limit TREX's supporting evidence to products only in the milled decking material market, the district court declined to find bad faith on the part of TREX and award § 1927 sanctions. Id. at 7.

Nystrom fails to establish how the district court's conclusion that it lacked sufficient evidence to find TREX acted in bad faith in filing its amended counterclaim constituted an abuse of discretion. From our review of the statements that TREX relied upon in its amended counterclaim, it is not clear which market Nystrom was referencing when he stated in the prosecution history that "licensing negotiations are presently underway with most major manufacturers and distributors of decking boards," Prelim. Amendment at 3, and the "product . . . has the potential of capturing a significant market share," Amendment rec'd Sept. 30, 1993, at 5. The district court's finding that these statements were not limited just to the milled decking material market was not clearly erroneous. The district court did not err in declining to find TREX acted in bad faith. Because there was no legal error or clearly erroneous factual finding underlying the

district court's conclusion that Nystrom had failed to present sufficient evidence to justify the imposition of sanctions, see Westberry, 178 F.3d at 261, the court did not abuse its discretion in declining to award § 1927 sanctions.

#### CONCLUSION

Because we affirm the district court's constructions of "board" and "manufactured to have," we affirm the district court's grant of summary judgment of non-infringement of claims 1-15 and 18-20. We reverse the district court's construction of "convex top surface." The district court's summary judgment of invalidity of claims 18-20 of the '831 patent as anticipated by the Zagelmeyer reference is also reversed. Because the district court did not abuse its discretion, we affirm the district court's refusal to award sanctions under 28 U.S.C. § 1927 in favor of Nystrom. The case is remanded for further proceedings consistent with this opinion.

#### AFFIRMED-IN-PART, REVERSED-IN-PART, AND REMANDED

#### COSTS

No costs.