

United States Court of Appeals for the Federal Circuit

03-1472, -1473

UNITHERM FOOD SYSTEMS, INC.
and JENNIE-O FOODS, INC.,

Plaintiffs-Appellees,

v.

SWIFT-ECKRICH, INC.
(doing business as Conagra Refrigerated Foods),

Defendant-Appellant.

Burck Bailey, Fellers, Snider, Blankenship, Bailey & Tippens, of Oklahoma City, Oklahoma, argued for plaintiffs-appellees. With him on the brief were Greg A. Castro and Jay P. Walters. Also on the brief was Dennis D. Brown, of Tulsa, Oklahoma.

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Appealed from: United States District Court for the Western District of Oklahoma

Judge Robin J. Cauthron

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DECIDED: July 12, 2004

Before SCHALL, GAJARSA, and LINN, Circuit Judges.

GAJARSA, Circuit Judge.

Swift-Eckrich, Inc. (d/b/a ConAgra Refrigerated Foods) (“ConAgra”) appeals the judgment of the United States District Court for the Western District of Oklahoma following a jury verdict, granting the claims of Unitherm Food Systems, Inc. (“Unitherm”) and of Jennie-O Foods, Inc. (“Jennie-O”) (collectively, “plaintiffs”) that ConAgra was liable for attempted monopolization and for tortious interference with prospective economic advantage, and that same court’s earlier partial summary judgment finding U.S. Patent No. 5,952,027 (“the ‘027 Patent”) invalid and unenforceable under 35 U.S.C. § 102(b)[\[1\]](#) and dismissing ConAgra’s counterclaim for infringement. Unitherm Food Systems,

Inc. & Jennie-O Foods, Inc., v. Swift-Eckrich, Inc., Case No. CIV-01-347-C (W.D. Okla, March 27, 2003).

The district court construed the disputed claim terms in the '027 Patent correctly, and properly found the '027 Patent invalid and unenforceable for reasons of both prior use and prior sale under 35 U.S.C. § 102(b). The district court was also correct, under Oklahoma law, in allowing the jury to decide the issue of tortious interference and in accepting the jury's findings on both liability and damages. The district court erred, however, in allowing the jury to decide Unitherm's antitrust claims despite the total absence of economic evidence capable of sustaining those claims. We therefore affirm-in-part, vacate-in-part, and remand to the district court for further proceedings consistent with this opinion.

BACKGROUND

A. The '027 Patent

On May 11, 1998, a ConAgra engineer named Prem Singh filed a patent application for "A Method for Browning Precooked Whole Muscle Meat Products" with the United States Patent and Trademark Office ("PTO"). That application became the '027 Patent, which the PTO issued to Singh on September 14, 1999. Singh assigned the patent to ConAgra.

In early 2000, ConAgra wrote to several companies who sell equipment and/or processes for preparing and browning pre-cooked meats. ConAgra attached a copy of the '027 Patent to that letter, which included the explicit warning: "Others in the industry may approach your company regarding this patent, and we would appreciate it if you would inform them that we intend to aggressively protect all of our rights under this patent."

Unitherm, which describes itself as "a manufacturer and supplier of equipment and processes used in the food industry," did not receive one of ConAgra's letters. Unitherm, however, believed—and asserts as the basis of this suit—that its President, David Howard, had conceived the process claimed in the '027 Patent and reduced it to practice as the "Unitherm process" no later than September 1993.

In July 2000, ConAgra sent out another round of letters, this set to its direct competitors in the

pre-cooked meats business. ConAgra attached both a copy of the patent and a blank license to this letter, and announced that it was “making the ‘027 Patent and corresponding patents that may issue available for license at a royalty rate of 10¢ per pound, adjusted for inflation, to all responsible parties who have not infringed these patents.” No one licensed the ‘027 Patent on these or any other terms.

Jennie-O (a division of Hormel), a direct ConAgra competitor in the pre-cooked meats business, received one of these letters. Some time earlier, Jennie-O had installed Unitherm equipment at its plant in Montevideo, MN, where it used the Unitherm process to brown roughly 18,000,000 pounds of meat per year. Upon receiving ConAgra’s letter, Jennie-O undertook an investigation to determine its rights and responsibilities. Jennie-O executives later testified that their investigation led them to conclude that the Unitherm process and the ‘027 Patent process were one and the same, that David Howard had invented that process no later than 1993, and that unless a court invalidated the ‘027 Patent, Jennie-O would be infringing it by using the Unitherm process. According to Jennie-O executive Robert Wood, ConAgra’s letter had “a chilling effect on any further possibility of Unitherm selling its products to Jennie-O.”

On February 23, 2001, Unitherm and Jennie-O together sued ConAgra alleging numerous causes of action. Only three causes of action are relevant to this appeal: (1) a Declaratory Judgment Action for invalidity and unenforceability of the ‘027 Patent; (2) a state law claim for tortious interference with Unitherm’s prospective economic relationships; and (3) Unitherm’s Walker Process claim that ConAgra violated Section 2 of the Sherman Act.^[2] All of the plaintiffs’ other claims were either dismissed or otherwise resolved in ways that the parties do not appeal. In addition, ConAgra counterclaimed that Jennie-O infringed the ‘027 Patent. The district court granted Jennie-O summary judgment of noninfringement. ConAgra does not appeal the summary judgment of noninfringement.

B. Summary Judgment of Invalidity

Both parties moved for dismissal of and/or for summary judgment on various claims. The district court first considered the plaintiffs’ claim that the ‘027 Patent is invalid and unenforceable under § 102(b). The ‘027 Patent includes 36 claims. Claims 1 and 20 are independent. The other 34 claims

are dependent. The independent claims read:

1. A process for browning precooked, whole muscle meat products comprising: coating a browning liquid pyrolysis product onto at least a portion of the surface of a precooked whole muscle meat product; and then exposing the coated surface to an energy source and selectively heating the coated surface of the whole muscle meat product at a temperature and for a time sufficient to develop a golden-brown color on the exposed surface, without substantial shrinking the precooked, whole muscle meat product.

'027 Patent, col. 8, ll. 4-14 (emphasis added).

20. A process for browning a precooked chicken breast or a turkey breast comprising: coating at least a portion of the surface of a precooked chicken breast or a precooked turkey breast with from about 0.05 to about 1.0 wt. %, based on the weight of the breast, of a browning liquid pyrolysis product obtained from hardwoods or sugars; and then selectively heating the coated surface of the breast in an environment having a temperature greater than about 60[deg] C. with energy provided by a circulating air oven, an impinging air oven, a laser light source, a medium wavelength energy infra red radiation source or a source of microwave radiation for a time sufficient to develop a golden- brown color on the coated surface, where the shrinkage of the precooked, whole muscle meat product is less than 4 wt. % based on the initial weight of the meat product.

'027 Patent, col. 9, ll. 17-33 (emphasis added). All of the remaining claims represent minor variations on these themes; they vary heat source temperatures, core meat temperatures, amounts of shrinkage, browning liquids for pyrolysis, amounts of browning product, masking/flavoring agents, and energy sources.

Though ConAgra, in its brief opposing the motion for summary judgment, stressed the importance of having the district court construe all disputed claim limitations, it failed either to identify disputed claim terms or to submit specific interpretations of claim terms. Instead, ConAgra countered the plaintiffs' interpretation of the claim language with little other than a sweeping objection. The sole claim term in the '027 Patent that ConAgra disputed explicitly was "golden brown." Nevertheless, ConAgra argues on appeal that "claim construction could not be properly addressed without a separate hearing, given stringent page limitations. . . ."

The district court provided a formal construction for only the single term that ConAgra had actually disputed: "golden brown." ConAgra contends (and the plaintiffs do not dispute) that "[t]he 'golden-brown' limitation is obviously the heart of the '027 patent." The heart of the dispute over this

term both below and on appeal, in turn, is whether or not the proper construction of “golden brown” flows from the term’s plain meaning. The plaintiffs argued that it does. ConAgra, on the other hand, noted that the patent’s five illustrative examples all included Hunter-Lab Color Meter measurements to describe color, asserted that construction according to plain meaning was therefore misplaced, and proposed a more technical definition gleaned from the examples.

The district court first reviewed the intrinsic evidence to determine that “the ‘027 patentee did not act as his own ‘lexicographer’ and failed to specifically define the term ‘golden brown.’ Thus, the Court views the term ‘golden brown’ with its plain meaning to one of skill in the art.” Having failed to find a precise meaning in the intrinsic evidence, the district court turned to Webster’s Third New International Dictionary 975 (1986) as a source of plain meaning, and formally construed “golden brown” as “a variable color averaging a strong brown that is yellower and slightly darker than gold brown, yellower and paler than average russet, and yellower and less strong than rust.”

Given that claim construction, the district court next considered whether or not the Unitherm process and the patented process were the same process. The district court described the Unitherm process in detail, compared the voluminous documentary evidence describing the Unitherm process to the individual claim limitations claimed in the ‘027 Patent, reviewed what it characterized as undisputed evidence of prior sales and concluded that the ‘027 Patent “describes a process that was both on sale and in public use prior to May 11, 1997. Thus, the Court finds that the 1999 issuance of the ‘027 Patent was in error.” The district court granted the plaintiffs’ motion for summary judgment of invalidity and unenforceability for reasons of both prior use and prior sale under § 102(b), and consequently also granted Jennie-O’s motion for summary judgment of noninfringement on the grounds that the ‘027 Patent is invalid and unenforceable.

C. Antitrust

Both plaintiffs also claimed that ConAgra’s behavior in securing and enforcing the ‘027 Patent violated the antitrust laws. ConAgra moved to have Unitherm’s claim dismissed for lack of antitrust standing, and Jennie-O’s claim dismissed for lack of cognizable antitrust injury. The district court

considered both of these motions at its summary judgment hearing, and determined that the plaintiffs had pled a viable claim, citing the Supreme Court's Walker Process decision:

The enforcement of a patent procured by fraud on the Patent Office may be violative of § 2 of the Sherman Act provided the other elements necessary to a § 2 case are present. In such event the treble damage provisions of § 4 of the Clayton Act would be available to an injured party.

Walker Process Equip., Inc. v. Food Mach. & Chem. Corp., 382 U.S. 172, 174 (1965). The district court then ruled that Unitherm, but not Jennie-O, had antitrust standing because first, as ConAgra's direct competitor for sales of browning/smoking processes, Unitherm was susceptible to the types of injuries that the antitrust laws are supposed to prevent, and second, ConAgra's threats to enforce its patents could cause those injuries. The district court dismissed Jennie-O's antitrust claim, but allowed Unitherm's claim to proceed to trial. Jennie-O has not appealed the dismissal.

At the end of the trial, the judge gave the jury various instructions concerning antitrust law. Of particular relevance to the issues raised on appeal, Jury Instruction number 11 defined the relevant market:

Monopoly power must be found to exist within an economically meaningful market. Plaintiff asserts the relevant market consists of the browning process defined in the 027 patent. It is for you to determine if Plaintiff's definition is proper. . . The product market consists of processes that have reasonable interchangeability for the purposes for which they are developed when price, use, and qualities are considered. . . .

Jury Instruction number 14 defined antitrust injury:

Plaintiff must establish that it was injured as a result of Defendant's alleged attempt to gain a monopoly. . . . To establish injury, Plaintiff must prove that some damage flowed to Unitherm as a result of Defendant's alleged attempt to gain a monopoly. . . . It is enough if Plaintiff proves that the alleged attempt to gain a monopoly was a material cause of its injury.

The verdict form simply asked the jury to find for plaintiff Unitherm or for defendant ConAgra on the claim of attempted monopolization. The jury returned a verdict for Unitherm.

D. Other Claims and Damages

The district court proceedings led to final judgments on all claims. In addition to the antitrust

claims, the court also allowed the plaintiffs to proceed to trial on their claims of tortious interference with prospective economic relationships and of actual or constructive fraud on Unitherm. The jury found that ConAgra was liable for tortious interference with prospective economic relationships, but not for fraud on Unitherm. Unitherm has not appealed the finding of no fraud.

The jury then awarded Unitherm \$18 million in antitrust damages (\$6 million, trebled), \$2 million for ConAgra's tortious interference with their prospective economic advantage, and \$2 million in punitive damages consequent to the tortious interference. Because the parties had stipulated that antitrust damages would subsume any damages assessed for tortious interference, the district court entered judgment for \$18 million plus applicable interest. Because the antitrust laws also provide for reasonable attorneys fees, the court awarded the plaintiffs an additional \$1,022,445. ConAgra timely appealed. We have jurisdiction to hear this appeal under 28 U.S.C. § 1295(a)(1).

DISCUSSION

A. Standard of Review

This appeal requires us to consider a number of different issues, and raises a number of questions concerning choice of law and standard of review. The district court granted the plaintiffs' summary judgment motion to find the '027 Patent invalid and unenforceable under both the prior sale and prior use bars of § 102(b). We review all grants of summary judgment de novo, construing the facts in the light most favorable to the non-movant. Liquid Dynamics Corp. v. Vaughan Co., 355 F.3d 1361, 1367 (Fed. Cir. 2004). Summary judgment is appropriate when there are no issues of material fact and the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56; Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 247-48 (1986).

Prior use under § 102(b) includes any use of the claimed invention by a person other than the inventor who is under no limitation, restriction or obligation of secrecy to the inventor. Netscape Communications Corp. v. Konrad, 295 F.3d 1315, 1320 (Fed. Cir. 2002). Whether a patent is invalid due to a § 102(b) public use is a question of law based on underlying questions of fact. Id.

Our standards for reviewing a district court's finding of § 102(b) prior sale are similar: "In order to invalidate a patent under the on-sale bar of 35 U.S.C. § 102(b), an accused infringer must demonstrate by clear and convincing evidence that there was a definite sale or offer to sell more than one year before the application." 3M v. Chemque, Inc., 303 F.3d 1294, 1301 (Fed. Cir. 2002). "A determination that a product was placed on sale prior to the critical date is a conclusion of law based on underlying findings of fact. We review the ultimate determination de novo, and the underlying factual findings for clear error." Linear Tech. Corp. v. Micrel, Inc., 275 F.3d 1040, 1047 (Fed. Cir. 2001).

Taken together, then, we must review the district court's summary judgment of invalidity and unenforceability by considering whether the facts, viewed in the light most favorable to ConAgra, nevertheless provide clear and convincing evidence of either (or both) prior use or prior sale. See Linear Tech., 275 F.3d at 1047; Liquid Dynamics, 355 F.3d at 1367.

The district court also entered judgment against ConAgra after the jury found antitrust liability on Unitherm's Walker Process claim. We apply Federal Circuit law to all antitrust claims premised on the bringing of a patent infringement suit. Nobelpharma AB v. Implant Innovations, 141 F.3d 1059, 1068 (Fed. Cir. 1998) (en banc in relevant part). Whether a patentee's conduct in procuring or enforcing a patent is sufficient to strip its immunity from the antitrust laws is therefore a legal question that we review de novo under Federal Circuit law. Id. We apply the law of the regional circuit, in this case, the Tenth Circuit, to the elements of antitrust claims that are not unique to patent law. Id. These elements include but are not restricted to considerations of antitrust standing, market definition, antitrust injury, and damages. Id.

The Tenth Circuit recognizes antitrust standing, like all questions of standing to sue, as a question of law subject to de novo review. Ashley Creek Phosphate Co. v. Chevron USA, Inc., 315 F.3d 1245, 1253-1254 (10th Cir. 2003); Motive Parts Warehouse v. Facet Enters., 774 F.2d 380, 389 (10th Cir. 1985). Market definition and antitrust injury, on the other hand, are intensely factual determinations. See e.g., Eastman Kodak Co. v. Image Technical Servs., 504 U.S. 451, 482 (1992) ("The proper market definition in this case can be determined only after a factual inquiry into the

‘commercial realities’ faced by consumers.”); Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574, 585-586 (1986) (“To survive petitioners’ motion for summary judgment, respondents must establish that there is a genuine issue of material fact as to whether petitioners entered into an illegal conspiracy that caused respondents to suffer a cognizable injury.”). We must therefore review the evidence supporting the jury’s necessary findings of a relevant antitrust market and of antitrust injury.

The Tenth Circuit limits the review of a jury verdict challenged on appeal to

determining whether the record—viewed in the light most favorable to the prevailing party—contains substantial evidence to support the jury’s decision. The jury has the exclusive function of appraising credibility, determining the weight to be given to the testimony, drawing inferences from the facts established, resolving conflicts in evidence, and reaching ultimate conclusions of fact.

Garrison v. Baker Hughes Oilfield Operations, Inc., 287 F.3d 955, 959 (10th Cir. 2002). In conducting our review for substantial evidence, we must “disregard all evidence favorable to the moving party that the jury is not required to believe.” Reeves v. Sanderson Plumbing Prods., Inc., 530 U.S. 133, 151 (2000).

This same standard for reviewing a jury verdict applies to the jury’s finding that ConAgra was liable for tortious interference with prospective economic advantage, a state law question. We review state law causes of action under the applicable state law for matters not committed to this court’s exclusive jurisdiction, University of West Virginia v. Van Voorhies, 278 F.3d 1288, 1296 (Fed. Cir. 2002), here the laws of Oklahoma. Oklahoma courts must affirm a jury verdict if there is any competent evidence reasonably tending to support it. Computer Publ’ns., Inc. v. Welton, 49 P.3d 732, 735 (Okla. 2002). This standard is unchanged even if the jury awards damages in amounts inconsistent with its finding of liability for tortious interference. See Pine Island RV Resort, Inc. v. Resort Mgmt., 922 P.2d 609, 615 (Okla. 1996).

B. Claim Construction

Neither ConAgra's generalized request that the district court conduct a Markman hearing nor its insistence on appeal that many complex issues lurk in various unnamed claim terms creates a disputed issue of material fact. As noted, the district court construed the only term that ConAgra disputed explicitly: "golden brown." Presumably, all other claim terms were undisputed because one of ordinary skill in the art would understand their plain meanings. In the context of jury instructions, we have doubted "that Markman requires the trial judge to instruct as to an undisputed 'claim construction' for every term, by simply parroting the words of the claim. . . ." U.S. Surgical Corp. v. Ethicon, Inc., 103 F.3d 1554, 1567 (Fed. Cir. 1997). We doubt even more strongly that a district court is obliged to construe undisputed claim terms prior to issuing a summary judgment of invalidity. See also PSC Computer Prods., Inc. v. Foxconn Int'l, Inc., 355 F.3d 1353, 1357 ("Although an infringement analysis typically begins with claim construction, the district court here did not construe the claims. . . because their meaning is not disputed."). ConAgra's attempt to preserve its right to identify new "disputed" claims on appeal by requesting a generalized Markman hearing must therefore fail. See United States Surgical, 103 F.3d at 1567.

As to the content of the district court's construction, colors can indeed pose challenging construction tasks. At one level, they are commonly used terms with well-accepted plain definitions that rarely need construction. At another, they are precise scientific terms corresponding to very specific portions of the spectrum that require precise definitions and constructions. ConAgra argued below—and argues again on appeal—that the court should extract the range of Hunter-Lab Color Meter measurements from the '027 Patent's examples, and construe the term "golden brown" to include colors falling between "about" the low end and the high end of the illustrated ranges.

This dispute follows a classic pattern. The district court found no specific definition in the intrinsic evidence, and used a dictionary to find the term's plain meaning; ConAgra would have us extract a more technical construction by reading limitations into the claims from the examples. We discussed both the nature and the appropriate resolution of such disputes in Texas Digital Systems v. Telegenix, Inc., 308 F.3d 1193, 1202-04 (Fed. Cir. 2002):

It has been long recognized in our precedent and in the precedent of our predecessor court, the Court of

Customs and Patent Appeals, that dictionaries, encyclopedias and treatises are particularly useful resources to assist the court in determining the ordinary and customary meanings of claim terms. . . .

[But] the intrinsic record also must be examined in every case to determine whether the presumption of ordinary and customary meaning is rebutted. . . . [This] presumption . . . will be overcome where the patentee, acting as his or her own lexicographer, has clearly set forth an explicit definition of the term different from its ordinary meaning. Further, the presumption also will be rebutted if the inventor has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope. . . .

Id. (emphasis added).

The district court here did not consult a dictionary prior to searching the intrinsic evidence for a definition. To the contrary, the district court explicitly concluded that “the ‘027 patentee did not act as his own ‘lexicographer’ and failed to specifically define the term ‘golden brown’” as a precursor to concluding that the proper construction of “golden brown” flowed from its plain meaning. Given that conclusion, the district court then consulted a dictionary to affix a legal definition at least somewhat more precise than an intuitive understanding of a color. The district court’s approach is proper. We have often noted that “[judges may] rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.” Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1584 n.6 (Fed. Cir. 1996). Such is the case here; the dictionary definition that the district court adopted did not contradict any definition that one of ordinary skill in the art could ascertain from the intrinsic evidence in the record.

The district court’s adoption of a plain meaning construction is therefore presumptively correct. To overcome that presumption, ConAgra must demonstrate that the intrinsic evidence provides both a clear and explicit disclaimer of the plain meaning and substitutes a more specific, technical construction of “golden brown.” See Tex. Digital, 308 F.3d at 1203. ConAgra’s suggestion that we glean numeric ranges from examples represents neither clear nor explicit disavowal of the common meaning. In fact, the examples are precisely what they purport to be: examples of Hunter-Lab Color Meter measurements falling within the commonly understood range of “golden brown.” ConAgra does little other than “invite[] a violation of our precedent counseling against importing limitations into the claims.” Id. at 1204.

We recently reversed a district court's claim construction for doing precisely as ConAgra urges—reading a limitation from an example into a claim term:

Because the plain language of the claim was clear and uncontradicted by anything in the written description or the figures, the district court should not have relied upon the written description, the figures, or the prosecution history to add limitations to the claim. Under such circumstances, relying on the written description and prosecution history to reject the ordinary and customary meanings of the words themselves is impermissible.

Liquid Dynamics, 355 F.3d at 1368 (citations omitted). This admonition was hardly new. We have often stated that

[w]hile . . . claims are to be interpreted in light of the specification and with a view to ascertaining the invention, it does not follow that limitations from the specification may be read into the claims. We recognize that there is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification.

Comark Communications v. Harris Corp., 156 F.3d 1182, 1187 (Fed. Cir. 1998) (citations omitted). See also CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed. Cir. 2002) (explaining that a patentee cannot rebut the presumption of ordinary meaning “simply by pointing to the preferred embodiment or other structures or steps disclosed in the specification or prosecution history”).

In short, the district court properly considered all intrinsic evidence before determining that none of it could overcome the presumption favoring plain meaning, and only then turned to a dictionary to affix the plain meaning that one of ordinary skill in the art would assign to the color “golden brown.” The district court therefore correctly construed the only disputed term according to its plain meaning as one of ordinary skill in the art would understand it, and we affirm its claim construction.

C. Invalidity and Unenforceability

ConAgra argues that the district court erred by ignoring numerous disputed facts that should have precluded its entry of summary judgment of invalidity and unenforceability. The district court, however, considered undisputed evidence that Unitherm had entered into the record, and concluded that Unitherm's enumeration of the parallels between the Unitherm process and the '027 Patent's process succinctly demonstrated that the two processes are one and the same. This undisputed evidence

combined contemporaneous correspondence, color photographs, witness testimony, and promotional videos. Together, it established numerous points of identity between the Unitherm process and the patented process.

The evidence showed that in 1993, Unitherm demonstrated and attempted to sell its process to Rocco Foods, Bilmar, Carolina Turkeys, and ConAgra. These demonstrations were performed in Elk Grove, Illinois and included: removing purge from and drying precooked, whole muscle turkey and ham products; the use of Maillose; quickly conveying products dipped in browning liquid pyrolysis products through Unitherm's RapidFlow circulating air oven over a range of temperatures (250-350 °C) to demonstrate any shade of naturally baked, smoked, or roasted golden-brown desired with minimal shrinkage; applying the pyrolysis products at times and concentrations providing 0.05-1.0 wt. % and 0.15-0.3 wt. % pick-up; shrinkage of as little as 1% or less; as little as 1 °C or less increase in core temperature; mixtures of broth and Maillose or liquid smoke in broth concentrations of 5% and higher; and core temperatures remaining below 5 °C (41 °F).

These demonstrations alone proved Unitherm's prior public use of every limitation of independent Claims 1 and 20. The process of Claim 1 browned muscle meats by coating them with a pyrolysis product, and then exposing them to an energy source for a time and at a temperature sufficient for them to become golden brown, without substantial shrinkage. See '027 Patent, col. 8, ll. 4-14. The similar process of Claim 20 browned chicken or turkey breasts, but also specified that the pyrolysis product had to be obtained from hardwoods or sugars, and added specificity to the amount of pyrolysis product and the allowable amounts of shrinkage. Id. at col. 9, ll. 17-33. Maillose is a sugar derivative, and the 1993 demonstrations met both the pyrolysis usage and the allowable shrinkage specified in Claim 20.

Unitherm did not, however, cease demonstrating its process in public in 1993. Between 1994 and the critical date of May 11, 1997, Unitherm's demonstrations to ConAgra, Carolina Turkeys, Hudson Foods (now Willow Brook), Jennie-O, Foster Farms, Perdue, Plainville, and Wilson Foods involved (in various combinations): temperatures of 250° F and higher; dip times of 10-70 seconds in

20-70% Maillose or liquid smoke solutions; measured liquid pickup amounts of 0.05% and higher; the use of infrared energy for purge removal and drying; and the achievement of any shade or darkness of golden-brown desired. One of Unitherm's presentations to Perdue explained that "by altering dwell time or temperature, you dial in the degree of color you require," implying at least much of the variability captured in the various '027 Patent claims.

Unitherm also prepared promotional videos in 1993 and 1996. The 1993 video includes demonstrations of precooked, whole muscle turkey breasts and hams dipped in Maillose or liquid smoke and then conveyed through the RapidFlow oven. To broadly demonstrate the ability to produce any shade desired, the video shows product colors matching light oven-roasted, medium oven-roasted, Black Forest oven-roasted, and smoked ham and smoked, skinless turkey. The video notes that a spray station can be added for smoking, flavoring, or enhancing product browning. Unitherm distributed approximately 500 copies of this video throughout the industry.

The 1996 videos showed whole muscle ham logs in a tub of Maillose, conveyed through the RapidFlow oven for 7.5 minutes to provide an oven-roasted, golden-brown color. The videos also showed one and then six Maillose-dipped, precooked whole muscle turkey breasts being delivered through the oven to produce a golden-brown color. Unitherm distributed approximately 500 copies of these videos in 1996, with no obligation of secrecy. Taken together, Unitherm's overwhelming evidence of prior public use captures every limitation in every one of the '027 Patent's claims.

Unitherm also submitted evidence that, prior to the critical date of May 11, 1997, it had sold both its RapidFlow ovens and the process that it had been demonstrating. In addition to its 1995 sale to Jennie-O, Unitherm proved sales to Thorn Apple in 1995 and to Hudson Foods in 1996. Unitherm further proved that Plantation ordered a Unitherm system on February 7, 1997 and that Foster Farms ordered a system and made its first payment by May 9, 1997. Jennie-O's Robert Wood testified that the process that Jennie-O purchased from Unitherm "was able to prepare the surface, apply liquid smoke and set liquid smoke." The demonstrations to ConAgra alone suggest that ConAgra was aware of the Unitherm process for at least several years prior to the critical date.

ConAgra does not dispute this evidence, but rather insists that material factual disputes about the identity of its patented process and the Unitherm process remain—and that therefore the district court should not have entered summary judgment of either prior use or prior sale. Even on appeal, however, ConAgra appears unable to point to any specific disputed material fact. Broadly speaking, ConAgra’s briefs to this court either mischaracterize Unitherm’s general desire to protect its trade secrets as evidence that the Unitherm process was a trade secret or attempt to demonstrate that not every use of Unitherm’s ovens was consistent with the patented process.

First, ConAgra argues that the district court’s reliance on Unitherm’s promotional videos was misplaced because Unitherm itself admitted that the videos do not meet all of the patent claims. ConAgra cites as support a Unitherm document showing the correspondence between its videos and the ‘027 Patent’s claim terms. In this document, Unitherm asserts that the processes demonstrated in its video meets all limitations of Claims 1-7, 10-12, 15-23, 26, 29-36, and renders Claims 8, 9, 13, 24-27 obvious under § 103(a). This purported “admission” therefore fails to account for only dependent claims 14 and 28. These two claims differ from others only in requiring a slightly more restricted temperature range. This argument does not establish a material factual dispute.

Second, ConAgra asserts that Unitherm gave conflicting testimony concerning whether or not its process remained a trade secret in 1998. In support, ConAgra cites Unitherm’s admission that the Unitherm process was not a secret, while nevertheless maintaining nondisclosure agreements with various customers and competitors and expressing a general desire to keep its trade secrets secret. This argument does not establish a material factual dispute.

Third, ConAgra contrasted the district court’s statement that Unitherm’s President, David Howard, first disclosed the Unitherm process to ConAgra in 1993 with a letter from Howard stating that Unitherm first revealed the process to ConAgra in 1995. While this discrepancy could have been significant if the critical date had been in 1994, apparent confusion between two equally invalidating dates does not qualify as material. This argument does not establish a material factual dispute.

Fourth, ConAgra turns to one of its own witnesses, Dr. Syed Hussain. ConAgra suggests that the

district court placed great weight on a factually sparse data sheet describing Unitherm's 1993 demonstrations to Dr. Hussain. While these data sheets are, in fact, less than clear, so is the district court's reliance on them. ConAgra has not pointed to a specific place in which the district court found these sheets particularly significant. ConAgra also cites to Hussain's testimony that he could not remember whether or not the demonstrated Unitherm process produced a "golden brown" finish. It is unclear why Hussain's inability to recall a color should create a dispute. This argument does not establish a material factual dispute.

Fifth, ConAgra asserts that the district court ignored triable issues of fact by pointing to experiments that do not show that the Unitherm process met the limitations of the '027 Patent. While this argument is true, there is no particular basis for its conclusion that these experiments did not meet the limitations. This argument does not establish a material factual dispute.

Sixth, ConAgra cites from the testimony of a Hudson executive. Unitherm's sale of both product and process to Hudson was among the district court's key undisputed prior sales. ConAgra argues that the witness lacked a personal knowledge of the details of the process. ConAgra also points to some handwritten documents that are difficult to read and whose significance is unclear. ConAgra does not assert that they establish a material dispute, but rather that they fail to provide solid evidence. Again, even if true, this argument does not establish a material factual dispute.

In short, Unitherm's undisputed evidence proved that its own process included each and every limitation of every claim of the '027 Patent. ConAgra's evidence failed to establish even a single material factual dispute. The district court correctly determined that the undisputed facts—Unitherm's various demonstrations to ConAgra and its sales to Hudson, Jennie-O and other suppliers—constituted clear and convincing evidence of both prior use and prior sale. The claim language in the '027 Patent was straightforward, a detailed construction was unnecessary, and the district court correctly granted summary judgment. See 3M, 303 F.3d at 1301. The '027 Patent is invalid and unenforceable by reason of prior use and sale under § 102(b).

D. Antitrust

(i) Elements

It is important to outline the elements of a Walker Process claim before considering ConAgra's appeal of the jury verdict. Unitherm alleged that ConAgra attempted to enforce the '027 Patent, which it obtained by defrauding the PTO. If true, ConAgra would lose its exemption from the antitrust laws. Walker Process, 382 U.S. at 177. On the same basis, ConAgra's good faith attempts to behave in accordance with the patent laws would furnish a complete defense, and ConAgra would retain its antitrust exemption; ConAgra would have done little but attempt to enforce a patent right which it reasonably believed itself to possess. Id.

The elimination of ConAgra's antitrust immunity would mark only the beginning of the antitrust inquiry, not its endpoint.

To establish monopolization or attempt to monopolize a part of trade or commerce under § 2 of the Sherman Act, it would then be necessary to appraise the exclusionary power of the illegal patent claim in terms of the relevant market for the product involved. Without a definition of that market there is no way to measure [the defendant's] ability to lessen or destroy competition.

Id. It may be that the patented process "does not comprise a relevant market. There may be effective substitutes . . . which do not infringe the patent. This is a matter of proof, as is the amount of damages . . ." Id. at 178.

In order to prevail on its Walker Process claim, Unitherm must therefore establish: that ConAgra attempted to enforce the '027 Patent; that the '027 Patent issued because ConAgra defrauded the PTO; that ConAgra's attempted enforcement threatened to lessen competition in a relevant antitrust market; that Unitherm suffered antitrust damages; and that all other elements of attempted monopolization are met. Id. These requirements frame our antitrust inquiry.

(ii) Choice of Law

ConAgra appeals the jury's antitrust verdict, claiming that Unitherm did not produce evidence sufficient to support findings of a relevant antitrust market, a dangerous probability of success, antitrust injury, or standing—all critical elements of a § 2 attempted monopolization claim. See generally

Verizon Communications, Inc. v. Law Offices of Curtis V. Trinko, LLP, ___ U.S. ___, 124 S. Ct. 872 (2004). Unitherm counters that it provided the jury with “substantial evidence,” but does not point to any.

Both parties cite Tenth Circuit law to guide our analysis. This pointer is only partially correct; Federal Circuit law governs all antitrust claims premised on the abuse of a patent right. Nobelpharma, 141 F.3d at 1067-68. We first announced this rule of Federal Circuit antitrust law as a unanimous en banc court in 1998. Id. at 1067 n.5. We explained that in all future antitrust cases, we would apply the same basic choice of law rule that we apply to all other matters—and for precisely the same reason. Id. at 1067-68. Because this court is in the best position to impose uniformity on the patent laws, we now decide issues raised in an antitrust claim that are unique to the patent law under Federal Circuit law, and all other issues under the law of the relevant regional circuit—in this case, the Tenth Circuit. Id. at 1067-68. The parties’ confusion about the choice of law, however, suggests that we need to clarify both the reasons that we introduced Federal Circuit antitrust law and the relationship between our law and that of the regional circuits.[3]

The fundamental question of Federal Circuit antitrust law is whether or when a patentee’s behavior in either procuring or enforcing a patent can give rise to antitrust liability. Id. As a general rule, behavior conforming to the patent laws oriented towards procuring or enforcing a patent enjoys immunity from the antitrust laws. Simpson v. Union Oil Co., 377 U.S. 13, 24 (1964) (“The patent laws which give a . . . monopoly on making, using, or selling the invention are in pari materia with the antitrust laws and modify them pro tanto.”).

But this immunity is hardly absolute. Nearly forty years ago, the Supreme Court recognized that an inventor who obtains a patent by defrauding the patent office deserves no immunity. Walker Process, 382 U.S. at 174. This recognition fell well within a long-established understanding of the limits of patent protection, as reflected in the Supreme Court’s much earlier announcement that patentees who attempt to leverage their appropriately obtained patents beyond the claimed product lose the right to enforce their patents. Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 513

(1917). The Supreme Court subsequently refined this notion of patent misuse and its consequent penalties, so that it “is now, of course, familiar law that the courts will not aid a patent owner who has misused his patents to recover any of their emoluments accruing during the period of misuse or thereafter until the effects of such misuse have been dissipated, or ‘purged’ as the conventional saying goes.” United States Gypsum Co. v. Nat’l Gypsum Co., 352 U.S. 457, 465 (1957). More broadly, “[t]he Court has held many times that power gained through some natural and legal advantage such as a patent, copyright, or business acumen can give rise to liability if a seller exploits his dominant position in one market to expand his empire into the next.” Eastman Kodak, 504 U.S. at 479 n.29.

The Supreme Court itself noted the policy consistency between penalizing patent misuse and stripping antitrust immunity from patentees who defraud the PTO. Walker Process, 382 U.S. at 176. As a well established matter of law, then, patentees acting under the color of their patents may nevertheless be liable if they engage in any one of a number of improper activities. See, e.g., Eastman Kodak, 504 U.S. at 479 n.29; CSU, L.L.C. v. Xerox Corp., 203 F.3d 1322, 1326 (Fed. Cir. 2000) (“The patentee’s right to exclude, however, is not without limit.”); Zenith Elecs. Corp. v. Exzec, Inc., 182 F.3d 1340, 1355 (Fed. Cir. 1999) (holding that a patentee’s bad faith allegations that a competitor is infringing a valid patent may strip the patentee of the liability exemptions that the patent law generally provides patentees). In short, the policy rationale behind stripping selected patentees of their antitrust immunity is straightforward.

The gist of a Walker Process claim

is that since [the patentee] obtained its patent by fraud it cannot enjoy the limited exception to the prohibitions of § 2 of the Sherman Act, but must answer under that section and § 4 of the Clayton Act in treble damages to those injured by any monopolistic action taken under the fraudulent patent claim. Nor can the interest in protecting patentees from “innumerable vexatious suits” be used to frustrate the assertion of rights conferred by the antitrust laws. It must be remembered that we deal only with a special class of patents, i.e., those procured by intentional fraud.

Walker Process, 382 U.S. at 176. Walker Process claims therefore relate to a single type of behavior capable of stripping a patentee’s patent-law immunity and thereby exposing the patentee to liability under other laws. Though we cannot enumerate the full range of activities capable of effecting such a

loss of immunity, the determination of which actions can cause a patentee or a patent applicant to lose the general protection of the patent law and to risk liability for damages is clearly an issue unique to the patent law—and therefore inappropriate for resolution under the potentially varying interpretations of the regional circuits. Noblepharma, 141 F.3d at 1067-68.

As a result, Federal Circuit antitrust law centers on a single critical question: What behavior by the patentee in procuring or in enforcing a patent can strip the patentee of antitrust immunity? When the courts consider a patentee's behavior under Federal Circuit law and determine that it involved nothing more than an appropriate attempt to procure a patent and an appropriate attempt to enforce a legitimately obtained patent, the antitrust inquiry is over with respect to the behavior at issue.^[4] When, on the other hand, the courts consider a patentee's behavior under Federal Circuit law and determine that it involved either an inappropriate attempt to procure a patent or an inappropriate attempt to enforce a patent, the remainder of the antitrust inquiry must proceed under the law of the regional circuit. Id. at 1068.

(iii) Patent Enforcement

The present matter implicates ConAgra's behavior in obtaining the '027 Patent. Unitherm's allegations differ from standard Walker Process claims in that Unitherm raised them as ancillary to its Declaratory Judgment Action, rather than as a counterclaim to an allegation of patent infringement. See id. at 1068 ("An antitrust claim premised on stripping a patentee of its immunity from the antitrust laws is typically raised as a counterclaim by a defendant in a patent infringement suit."). The logic governing Walker Process claims, however, suggests that we should treat claims brought ancillary to Declaratory Judgment Actions precisely as we treat counterclaims, see Walker Process, 382 U.S. at 176-77, though this atypical posture does raise an additional question. Strictly speaking, a Walker Process claim is premised upon "the enforcement of a patent procured by fraud on the Patent Office." Id. at 174. A plaintiff may bring a Declaratory Judgment Action of patent invalidity, however, even in the absence of overt enforcement actions.

When the defendant's conduct, including its statements, falls short of an express charge, one must consider the "totality of the circumstances" in determining whether that conduct meets the first prong of the test [for jurisdiction to hear a Declaratory Judgment Action]. If the circumstances warrant, a reasonable apprehension may be found in the absence of any communication from defendant to

plaintiff. If, on the other hand, defendant has done nothing but obtain a patent, there can be no basis for the required apprehension, a rule that protects quiescent patent owners against unwarranted litigation.

Arrowhead Indus. Water, Inc. v. Ecolochem, Inc., 846 F.2d 731, 736 (Fed. Cir. 1988). We therefore hold that, as a matter of Federal Circuit antitrust law, the standards that we have developed for determining jurisdiction in a Declaratory Judgment Action of patent invalidity also define the minimum level of “enforcement” necessary to expose the patentee to a Walker Process claim for attempted monopolization.

This holding adopts the reasoning that we once applied prior to our announcement of Federal Circuit antitrust law, at a time that we evaluated all antitrust issues under the law of the regional circuits, [5] in affirming a district court’s dismissal of both a Declaratory Judgment Action for invalidity and a Walker Process claim: “It is enough to simply point out that the same facts that compel the conclusion that [the plaintiff] failed to establish declaratory judgment jurisdiction for the district court also compel the conclusion that no reasonable fact finder could find that [the defendant] has acted to enforce [its] patent.” Cygnus Therapeutic Sys. v. ALZA Corp., 92 F.3d 1153, 1162 (Fed. Cir. 1996). In other words, if the patentee has done nothing but obtain a patent in a manner that the plaintiff believes is fraudulent, the courts lack jurisdiction to entertain either a Declaratory Judgment Action or a Walker Process claim. See Gen-Probe Inc. v. Vysis, Inc., 359 F.3d 1376, 1379 (Fed. Cir. 2004).

(iv) Fraud on the PTO

Unitherm’s Walker Process claim alleges that ConAgra attempted to enforce a patent that it obtained only because it defrauded the PTO. We have consistently explained that Walker Process fraud is a variant of common law fraud, see, e.g., In re Spalding Sports Worldwide, Inc., 203 F.3d 800, 807 (Fed. Cir. 2000); C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1364 (Fed. Cir. 1998); Nobelpharma, 141 F.3d at 1369-71, and that the elements of common law fraud include:

(1) a representation of a material fact, (2) the falsity of that representation, (3) the intent to deceive or, at least, a state of mind so reckless as to the consequences that it is held to be the equivalent of intent (scienter), (4) a justifiable reliance upon the misrepresentation by the party deceived which induces him to act thereon, and (5) injury to the party deceived as a result of his reliance on the misrepresentation.

Spalding, 203 F.3d at 807 (citations omitted). Our determination of whether or not to strip ConAgra of

its antitrust immunity therefore requires us to apply the facts of this case to each of these elements:

The first element of the alleged fraud was ConAgra's relevant material representation to the PTO that Prem Singh invented the claimed process, and that he neither used it in public nor offered it for sale prior to May 11, 1997. Though the plaintiffs' have provided no direct evidence proving that either Singh or ConAgra actually made this material representation, we may nevertheless presume that Singh, the named inventor and applicant, must have reviewed the specification and signed the required declaration before the application was filed.^[6] Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1051 (Fed. Cir. 1995). Any other conclusion would

completely ignore[] the requirement that patents are applied for "in the name of the actual inventor or inventors" according to 37 C.F.R. § 1.41(a) (1983). The inventor(s) must submit an oath or declaration attesting that they have "reviewed and understand[] the contents of the specification" and believe "the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought." 37 C.F.R. § 1.63; see also 37 C.F.R. § 1.51(a)(2).

Id. (emphasis in the original). This presumption, of course, would hold only Singh himself liable for the material misrepresentation. It is undisputed, however, that Singh filed the patent application as a ConAgra employee and assigned the patent to ConAgra. Nor is there any dispute that both Singh and numerous ConAgra colleagues and supervisors knew of Howard's demonstrations of the Unitherm process to ConAgra.

According to the Restatement (Second) of Agency § 257, "[a] principal is subject to liability for loss caused to another by the other's reliance upon a tortious representation of a servant or other agent, if the representation is: (a) authorized; (b) apparently authorized; or (c) within the power of the agent to make for the principal." Comment (a) explains that "the principal's liabilities do not depend upon the theory of respondeat superior but upon the reason underlying liability upon authorized or apparently authorized contracts." Id. The undisputed facts surrounding Singh's patent application demonstrate that he filed it as an employee of ConAgra, to whom he assigned it. These same facts therefore establish ConAgra's potential liability for any damages arising from Singh's misstatements.

The second element of the alleged fraud, the falsity of ConAgra's material representation to the

PTO, is evident from the same facts that led the district court to conclude, and this court to affirm, that David Howard invented the process claimed by the '027 Patent no later than 1993, and both used it and sold it numerous times prior to the critical date—thereby rendering the '027 Patent invalid under § 102(b).

The third element of the alleged fraud, ConAgra's intent to deceive, is the most difficult to prove. Nevertheless, clear and convincing circumstantial evidence establishes that, at the very least, ConAgra's behavior exhibited "a state of mind so reckless as to the consequences that it is held to be the equivalent of intent." Spalding, 203 F.3d at 807. Such circumstantial evidence is sufficient to establish the intent element of common-law fraud. Id.

Intent need not be proven by direct evidence; it is most often proven by a showing of acts, the natural consequences of which are presumably intended by the actor. Generally, intent must be inferred from the facts and circumstances surrounding the applicant's conduct. The drawing of inferences, particularly in respect of an intent-implicating question . . . is peculiarly within the province of the fact finder that observed the witnesses. . . . However, given the ease with which a relatively routine act of patent prosecution can be portrayed as intended to mislead or deceive, clear and convincing evidence of conduct sufficient to support an inference of culpable intent is required. . . . While intent to deceive the PTO may be found as a matter of inference from circumstantial evidence, circumstantial evidence cannot indicate merely gross negligence. . . . [C]lear and convincing evidence must prove that an applicant had the specific intent to accomplish an act that the applicant ought not to have performed, viz., misleading or deceiving the PTO.

Molins plc v. Textron, 48 F.3d 1172, 1180-1181 (Fed. Cir. 1995).

Unitherm's burden at trial was therefore to present evidence that a reasonable jury could view as clear and convincing proof that ConAgra intended to defraud the PTO. See id. ConAgra argues on appeal that Unitherm failed to meet that burden. We must therefore review the sufficiency of Unitherm's evidence, while assuming that the jury disbelieved all evidence favorable to ConAgra. See Reeves, 530 U.S. at 151.

Unitherm proffered ample evidence that its personnel performed several browning demonstrations for ConAgra between September 1993 and January 1994. The key ConAgra representative at these demonstrations was Syed Hussein, ConAgra's product development manager and a co-worker of the named inventor, Prem Singh. At trial, on direct examination, Hussein testified that "to the best of his recollection," when he presented the product to a group of his co-workers, Singh was part of the group. Unitherm's David Howard also testified that Singh had attended a marketing seminar

at which Howard personally spoke for about ninety minutes, and other Unitherm personnel provided a video demonstration of the product. This evidence demonstrates that ConAgra knew of prior uses of the process.

Unitherm also proffered ample evidence of a second round of demonstrations for ConAgra between 1995 and 1997. At his deposition, ConAgra's Arnold Mikelberg testified that shortly after becoming president of Armour Swift-Eckrich in mid-1995, he invited David Howard to demonstrate his process, and that this demonstration led to further testing at ConAgra. ConAgra and Unitherm followed these tests with further discussions. On April 25, 1996, for example, Unitherm directed a fax to Singh containing drawings and schematics for a browning line. Unitherm proffered numerous other documents indicating that, at the very least, Unitherm directed detailed plans to Singh. On April 21, 1997, Howard wrote to ConAgra's David Liddle, noting that: "I have sold the process to four competitors. How do I get [you] to move forward?" This letter indicates that ConAgra knew of prior sales, as well as the prior demonstrations.

Unitherm submitted additional documents and testimony to bolster its arguments even further. ConAgra questioned the implications of some of the documents and the accuracy of some of the witnesses' memories. ConAgra also denied that its patented process was the same as the Unitherm process, and insisted that it was impossible to know what "golden brown" meant without formal measurements. Such responses, however, cannot save ConAgra from the limited factual review that we apply to sufficiency of evidence arguments about jury findings. Reeves, 530 U.S. at 151.

The jury was entitled to find all of Unitherm's evidence credible and to disbelieve every assertion that ConAgra made about a disputed fact. Id. Viewed in this light, it is reasonable for the jury to have concluded that Singh was fully aware that his "invention" was precisely the Unitherm process that David Howard had been trying to sell to ConAgra since 1993. The jury could also have concluded reasonably that Singh intended to deceive the PTO by claiming that he was "the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought," 37 C.F.R. § 1.63, when he knew that he was not.

The best evidence of the fourth element of the alleged fraud, the PTO's justifiable reliance on Singh's deception that induced PTO action, is that the PTO issued the patent. The statutory pronouncement that "a patent shall be presumed valid," 35 U.S.C. § 282 implies that patent examiners are presumed to issue only valid patents. Am. Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1359 (Fed. Cir. 1984). Singh's misrepresentation of his own inventorship, and his omission of the evidence that ConAgra possessed about the Unitherm process and about Unitherm's demonstrations and sales of that process, defrauded the PTO. See Nobelpharma, 141 F.3d at 1070. Had the PTO not relied on this fraud, the Examiner would have reached the same conclusion as did the district court and this court—that David Howard had invented the claimed process no later than 1993, and that no valid patent could issue from Singh's application.

The fifth element of the alleged fraud, injury to the PTO and to the public that it serves, arises as a matter of course whenever the other four elements are met, because

[a] patent by its very nature is affected with a public interest. The far reaching social and economic consequences of a patent, therefore, give the public a paramount interest in seeing that patent monopolies spring from backgrounds free from fraud or other inequitable conduct and that such monopolies are kept within their legitimate scope. Where fraud is committed, injury to the public through a weakening of the Patent System is manifest.

Norton v. Curtiss, 57 C.C.P.A. 1384, 1406 (1970) (citations omitted).

Taken together, then, (1) ConAgra is liable for Singh's material representation to the PTO that he invented the claimed process, which had been neither used nor sold more than a year prior to filing his patent application; (2) David Howard invented the claimed process and both used or sold it before the critical date; (3) ConAgra intended to deceive the PTO by filing a patent application misrepresenting the material facts of inventorship; (4) The PTO relied upon ConAgra's misrepresentations to issue the '027 Patent; and (5) ConAgra's fraud injured the public through a weakening of the patent system. Norton, 57 C.C.P.A. at 1406. ConAgra's knowing and willful misrepresentation therefore constituted fraud on the PTO. See Molins, 48 F.3d at 1180-1181; Spalding, 203 F.3d at 807.

Unitherm has thus met the first and most basic requirement for bringing a Walker Process claim.

Unitherm has shown that, as a matter of Federal Circuit antitrust law, ConAgra attempted to enforce a patent that it obtained through fraud on the PTO. ConAgra is therefore stripped of its antitrust immunity and susceptible to antitrust liability—provided that Unitherm can show that ConAgra’s behavior met all other necessary elements of a § 2 claim subject to Tenth Circuit law.

(v) Standing

Federal Circuit antitrust law is directed, almost entirely, to a single question: “[W]hether conduct in procuring or enforcing a patent is sufficient to strip a patentee of its immunity from the antitrust laws.” Nobelpharma, 141 F.3d at 1068. Once we have determined, as we have here, that a patentee deserves no antitrust immunity, our inquiry shifts to apply the substantive antitrust laws of the regional circuit. Id.

ConAgra challenges on appeal, as it did below, Unitherm’s standing to bring its antitrust claim. It is widely recognized that an antitrust plaintiff must allege more than simply that the defendant’s wrongful behavior directly damaged the plaintiff’s business, but also that the accused behavior stifled competition. See, e.g., Ill. Brick Co. v. Illinois, 431 U.S. 720, 724 (1977); E. Food Servs., Inc. v. Pontifical Catholic Univ. Servs. Ass’n, 357 F.3d 1, 4 (1st Cir. 2004); Hayes v. Solomon, 597 F.2d 958, 973 (5th Cir. 1979). The line between antitrust claims and ordinary business tort and contract claims is not always clear. Some behavior, (according to Unitherm, ConAgra’s behavior), can give rise to both sets of claims; the classic example is a near monopolist who burns down the plant of his only competitor. See E. Food, 357 F.3d at 4.

For Unitherm to possess antitrust standing under Tenth Circuit law, it must demonstrate that ConAgra’s behavior caused it to suffer an “antitrust injury.” Ashley Creek Phosphate Co. v. Chevron USA, Inc., 315 F.3d 1245, 1252 (10th Cir. 2003).

An antitrust injury is defined as an injury of the type the antitrust laws were intended to prevent and that flows from that which makes defendants’ acts unlawful. . . . Factors to consider in evaluating antitrust standing include: (1) the causal connection between the alleged antitrust violation and the harm; (2) improper motive or intent of defendants; (3) whether the claimed injury is one sought to be redressed by antitrust damages; (4) the directness between the injury and the market restraint resulting from the alleged violation; (5) the

speculative nature of the damages claimed; and (6) the risk of duplicative recoveries or complex damage apportionment.

Sports Racing Servs. v. Sports Car Club of Am., 131 F.3d 874, 882 (10th Cir. 1997) (internal citations and quotations omitted). See also Indium Corp. of Am. v. Semi-Alloys, Inc., 781 F.2d 879, 882 (Fed. Cir. 1985).

Unitherm's allegations met all six of the Tenth Circuit's enumerated factors: (1) ConAgra's attempts to block the "Unitherm process" by enforcing the '027 Patent caused Unitherm to lose prospective sales; (2) ConAgra's fraud of the PTO demonstrated improper intent; (3) Antitrust laws provide remedies for competition reduced in a relevant antitrust market, which Unitherm pled; (4) Enforcement of a patent right directly reduces competition; (5) A lost-sales analysis could, in theory, measure the harm; and (6) Damage calculations should be neither unusually complex nor duplicative. The district court was therefore correct in ruling that Unitherm had antitrust standing and in allowing its action against ConAgra to proceed.

(vi) Market Definition

Despite possessing antitrust standing, however, Unitherm never presented any evidence that could possibly support critical factual elements of its claim. In particular, Unitherm failed to present any facts that could allow a reasonable jury to accept either its proposed market definition or its demonstration of antitrust injury. "It is well settled that defining the relevant market is an issue of fact" for the jury to determine. Westman Comm'n Co. v. Hobart Int'l, Inc., 796 F.2d 1216, 1220 (10th Cir. 1986). ConAgra challenges the jury's factual findings. We must therefore review Unitherm's proffered evidence, once again disregarding all disputed evidence favorable to ConAgra, Reeves, 530 U.S. at 151, to determine whether a reasonable jury could have accepted Unitherm's definition of the relevant market.

Under Tenth Circuit law, "[c]laims of attempted monopolization under § 2 of the Sherman Act require four elements of proof: (1) a relevant geographic and product market; (2) specific intent to monopolize the market; (3) anticompetitive conduct in furtherance of the attempt; and (4) a dangerous

probability that the firm will succeed in the attempt.” United States v. AMR Corp., 335 F.3d 1109, 1113 (10th Cir. 2003). A relevant product market, in turn, is

composed of products that have reasonable interchangeability for the purposes for which they are produced . . . [B]ecause the ability of consumers to turn to other suppliers restrains a firm from raising prices above the competitive level, the definition of the relevant market rests on a determination of available substitutes. . . . To define a market in product and geographic terms is to say that if prices were appreciably raised or volume appreciably curtailed for the product within a given area, while demand held constant, supply from other sources could not be expected to enter promptly enough and in large enough amounts to restore the old price and volume. . . .

Telecor Communications., Inc. v. Southwestern Bell Tel. Co., 305 F.3d 1124, 1130-1131 (10th Cir. 2002).

Market definition therefore hinges on economic evidence. If Unitherm provided economic evidence sufficient to convince a reasonable jury of its proposed market definition and to demonstrate antitrust injury, ConAgra’s appeal must fail; the district court would have been correct in allowing the jury to consider Unitherm’s antitrust claim—and in accepting their conclusion. But if, on the other hand, Unitherm provided economic evidence insufficient to convince any reasonable jury that ConAgra’s enforcement of the ‘027 Patent harmed a relevant antitrust market, the antitrust claims should never have reached the jury. We therefore review the sufficiency of the economic evidence that Unitherm proffered in support of its antitrust claim.

Unitherm’s brief to this court asserts that its expert, Dr. Mangum, testified at length on the lack of substitutes for the patented process. Mangum’s testimony, or at least the relevant excerpts in the appellate record, cannot sustain Unitherm’s definition of a relevant market. Mangum defined the market as: “the process for browning precooked whole muscle products by coating with a browning agent and applying sufficient heat to brown the product without substantial shrinkage.” He relied on his understanding of the court’s summary judgment ruling to assume that the patented process and the Unitherm process were the same process—and therefore the only one included in his market definition. Consequently, he defined the scope of the ‘027 Patent as coterminous with a relevant antitrust market.

Mangum identified seven technical benefits that the patented process provided, and explained

that no other process could provide all seven of these benefits. This unique combination of benefits led Mangum to conclude that no substitutes exist for the patented process (a.k.a. the Unitherm process), and therefore that it defined a relevant antitrust market. He also, however, concluded that pre-cooked turkeys prepared using the patented process competed with pre-cooked turkeys not prepared by the patented process at the retail level, but somehow not at the wholesale level. He never explained this seeming anomaly.

Mangum did not explain the relationship between technological substitution and economic substitution. Nothing in the record addresses whether potential customers of the patented process faced with a price increase would shift to other processes offering different combinations of benefits. Id. This determination, however, lies at the heart of market definition in antitrust analysis. “For every product, substitutes exist. But a relevant market cannot meaningfully encompass that infinite range. The circle must be drawn narrowly to exclude any other product to which, within reasonable variations in price, only a limited number of buyers will turn; in technical terms, products whose cross-elasticities of demand are small.” Times-Picayune Pub. Co. v. United States, 345 U.S. 594, 613, n.31 (1953). Not only is economic substitutability critical to market definition, but it is improper to interpret “the Sherman Act to require that products be fungible to be considered in the relevant market.” United States v. E. I. Du Pont de Nemours & Co., 351 U.S. 377, 394 (1956). See generally U.S. Department of Justice, Merger Guidelines (1982), ch. 1.1 (describing the agencies’ approach to product market definition in a merger analysis and the critical rule of economic substitutability).

Mangum’s testimony specifically described the market in terms of technological substitutability, not economic substitutability. The scant economic evidence in the record suggests strongly that his market definition is incorrect. ConAgra’s inability to attract any licensees is indicative of a lack of pricing power—the single most important element in defining a relevant antitrust market. “Market power is the power to force a purchaser to do something that he would not do in a competitive market. It has been defined as the ability of a single seller to raise price and restrict output.” Eastman Kodak, 504 U.S. at 464 (citations omitted). Mangum’s reliance upon technological, rather than economic, substitution is therefore a fatal flaw in establishing his proposed market definition; it left him with no

economic content to sustain his relevant market.

Furthermore, on cross-examination, Mangum testified that he was unaware of anyone who had ever sold the process that defined his relevant market—other than tied to the sale of an oven. Mangum explicitly testified that, to the best of his knowledge, there has never been a transaction in his proposed relevant market. He steadfastly refused to clarify the relationship among the market for the specific browning process that he had identified, the market for browning processes generally, and the market for ovens that enabled their owners to use either the specific browning process or browning processes more generally. He testified to a lack of knowledge as to whether or not the bundling of the identified process with an oven bore any relation to the prices charged for enabling ovens. Mangum's testimony cannot sustain the narrow market that he defined and that Unitherm pleads as a relevant antitrust market.

Beyond that initial omission, Mangum's testimony on other points is short on economic content. His assessment of ConAgra's "dangerous probability of success," another critical component of an attempted monopolization claim, Spectrum Sports v. McQuillan, 506 U.S. 447, 459 (1993), essentially rests upon a tautology: Because he defined the relevant market as coterminous with the '027 Patent, any attempt to enforce the patent would qualify as an attempt with a dangerous probability of succeeding. He then pointed to ConAgra's counterclaim against Jennie-O and ConAgra's letters as evidence of attempted patent enforcement.

Finally, when asked about antitrust injury, Mangum pointed to the analysis of Dr. Kinrich, Unitherm's damages expert. According to Mangum, Kinrich's ability to measure damages proves that Unitherm suffered antitrust injury. Kinrich, however, "was asked to assume that the jury finds in favor of Unitherm and finds against Swift-Eckrich and compute what the damages were or would have been to Unitherm if liability is found." Kinrich's testimony gave no indication that he ever tried to differentiate harm attributable to ConAgra's antitrust liability from harm attributable to other allegations for which ConAgra might be liable. Nor, for that matter, did either Mangum or Kinrich try to differentiate between ConAgra's liability and other potential causes of the losses that Kinrich measured. In other words, neither Kinrich's testimony nor Mangum's testimony attempted to show any form of causality, a

critical element needed to establish antitrust injury, Ashley Creek, 315 F.3d at 1252, and a point upon which the judge instructed the jury correctly.

In short, Unitherm failed to present any economic evidence capable of sustaining its asserted relevant antitrust market, and little to support any other aspect of its Section 2 claim. Unitherm has presented conclusory testimony from its expert that defines the market as coterminous with the patent based entirely on issues of technical substitutability, described no market analysis, inferred market power from the possession of a patent, tautologically equated unsuccessful attempts at collecting royalties with a dangerous probability of success, and inferred antitrust injury from economic loss. ConAgra is correct in asserting that Unitherm failed to provide any evidence capable of sustaining the jury's finding of antitrust liability. We therefore vacate the court's judgment of ConAgra's antitrust liability and the award of the consequent damages.[7]

E. Tortious Interference

ConAgra also appeals the jury verdict finding it liable for tortious interference with prospective economic advantage, a state law claim.[8] The Oklahoma Supreme Court has explained its approach to this tort largely by incorporation:

Oklahoma jurisprudence teaches that one has the right to prosecute a lawful business without unlawful molestation or unjustified interference from any person, and any malicious interference with that business is an unlawful act and an actionable wrong. For a discussion of the difference between interference with a prospective economic advantage and with contractual or business relations, see Overbeck v. Quaker Life Ins. Co., 757 P.2d 846, 847-48 (Okla. Civ. App. 1984). See in this connection [e.g.] Lakeshore Community Hosp., Inc. v. Perry, 538 N.W.2d 24, 27 (Mich. App. 1995). . . for the elements of tortious interference with advantageous business relationships or prospective economic relations.

Gaylord Entm't Co. v. Thompson, 958 P.2d 128, 150, n.96 (Okla. 1998). "Interference with a prospective economic advantage usually involves interference with some type of reasonable expectation of profit, whereas interference with a contractual relationship results in loss of a property right."

Overbeck, 757 P.2d at 847-48.

The basic elements of tortious interference with a business relationship are the existence of a valid business relation or expectancy, knowledge of the relationship or expectancy on the part of the interferer, an intentional interference inducing or causing a breach or termination of the relationship or

expectancy, and resultant damage to the party whose relationship has been disrupted.

Lakeshore Cmty., 538 N.W.2d at 27.

Oklahoma law therefore required Unitherm to prove first, that it possessed a reasonable expectation of future profits from future sales of its browning process (likely in conjunction with its ovens), and second, that ConAgra intentionally interfered with that reasonable expectation. See Gaylord, 958 P.2d at 150 n.96. Unitherm's President, David Howard, and one of its salesmen, Ron Snider, both testified that they expected future profitable sales, and offered the names of prospective customers. Unitherm's damages expert, Dr. Kinrich, presented an event study purporting to show that Unitherm's business declined beginning about the time that news of ConAgra's patent application spread throughout the industry. Kinrich also showed that his study measured losses somewhere between \$4.5 million and \$7.5 million.

This proffered evidence could lead a reasonable jury to conclude that Unitherm possessed a valid business expectancy.^[9] ConAgra knew that Unitherm sold browning processes to pre-cooked meat producers, such as Jennie-O. ConAgra's attempts to enforce its fraudulently obtained patent were an intentional interference with the future of Unitherm's business relationship with Jennie-O, and Kinrich's model measured Unitherm's damages. The jury's finding was not inherently unreasonable given this evidence. Oklahoma courts must affirm a jury verdict if there is any competent evidence reasonably tending to support it. Computer Pubs., 49 P.3d at 735. We therefore affirm the jury's finding of liability for intentional interference with prospective advantage, and of the consequent damages.

CONCLUSION

Because the district court construed the only disputed term in the '027 Patent correctly and properly granted summary judgment that the '027 Patent is invalid and unenforceable under 35 U.S.C. § 102(b), we affirm those judgments. Because the district court was also correct, under Oklahoma law, in allowing the jury to decide the issue of tortious interference and to accept the jury's findings on both liability and damages, we affirm those judgments as well. Because the district court erred, however, in allowing the jury to decide Unitherm's antitrust claims despite the total absence of economic evidence

capable of sustaining those claims, we vacate the judgment finding ConAgra liable for violating § 2 of the Sherman Act. We also vacate all damages awarded consequent to antitrust liability. We remand the matter to the district court for further proceedings consistent with this opinion.

AFFIRM-IN-PART, VACATE-IN-PART, AND REMANDED
COSTS

Each party shall bear its own costs.

[1] “A person shall be entitled to a patent unless . . . the invention was . . . in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States. . . .” 35 USCS § 102(b).

[2] Section 2 of the Sherman Act defines the substantive violation of attempted monopolization. It states, in pertinent part: “Every person who shall . . . attempt to monopolize . . . any part of the trade or commerce among the several States . . . shall be deemed guilty of a felony . . .” 15 U.S.C. § 2. Private antitrust suits, including this one, technically proceed under Section 4 of the Clayton Act, which states, again in pertinent part: “[A]ny person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws may sue therefor in . . . district court of the United States . . . and shall recover threefold the damages by him sustained, and the cost of suit, including a reasonable attorney’s fee.” 15 U.S.C. § 15(a).

[3] The Supreme Court has ruled that the regional circuits retain appellate jurisdiction over cases in which the complaint does not allege a claim arising under federal patent law, but the answer does contain a patent-law counterclaim. Holmes Group v. Vornado Air Circulation Sys., 535 U.S. 826, 827 (2002). As a result, antitrust claims met with counterclaims of infringement may not come before this court. If the resolution of the dispute rests, in part, upon a determination of whether or not a patentee’s behavior stripped it of its antitrust exemption, the appellate court hearing the matter will have to decide whether to apply Federal Circuit law or risk disturbing “Congress’s goal of ensuring patent-law uniformity,” id., by applying its own law. The choice of law rule that we announced in Nobelpharma, 141 F.3d at 1067-68, is a sensible approach to preserving the uniformity of the patent law without regard to the appellate forum: Federal Circuit law determines whether or not the patentee enjoys antitrust immunity under the patent laws, while regional circuit law determines the other elements of the antitrust claim.

[4] The patent law's pro tanto modification of the antitrust law, Simpson, 377 U.S. at 24, extends to behavior, not to either patents or patentees. It is entirely possible for a patentee to retain its antitrust exemption with respect to some behavior while being stripped of the exemption with respect to other behavior. "[B]eyond the limited monopoly which is granted, the arrangements by which the patent is utilized are subject to the general law. . . . [T]he possession of a valid patent or patents does not give the patentee any exemption from the provisions of the Sherman Act beyond the limits of the patent monopoly." United States v. Singer Mfg. Co., 374 U.S. 174, 196-197 (1963). The Sherman Act "imposes strict limitations on the concerted activities in which patent owners may lawfully engage." Id.

[5] We decided Cygnus Therapeutic Sys. v. ALZA Corp., 92 F.3d 1153, 1162 (Fed. Cir. 1996) as a matter of Ninth Circuit law.

[6] Under normal circumstances, we would expect the prosecution history to play a critical role in proving that a patentee defrauded the PTO. The prosecution history is, after all, the record of all correspondence between the patentee and the PTO, and therefore provides the best direct evidence of every representation that the patentee made. In the present matter, neither party placed the prosecution history in the record. Because of this omission, the plaintiffs must build an entirely circumstantial case using inferences and presumptions. The presumption of validity implies that the Examiner believed the patent to be valid when it issued. American Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1359 (Fed. Cir. 1984). Regulations required the named inventor, Singh, to sign an oath attesting to his inventorship. 37 C.F.R. § 1.63. We may therefore presume that Singh represented to the PTO that he was the process' original inventor.

[7] ConAgra failed to renew its motion for judgment as a matter of law ("JMOL") after the verdict pursuant to Federal Rules of Civil Procedure 50(b). Unitherm contends that ConAgra therefore waived its right to dispute the sufficiency of the evidence supporting the jury's antitrust verdict. We have ruled as a matter of Federal Circuit law that, for issues unique to our jurisdiction, a 50 (b) motion is necessary to preserve a sufficiency of the evidence argument for appeal. Biodex Corp. v. Loredan Biomedical, Inc., 946 F.2d 850, 859-62 (Fed. Cir. 1991). On most issues related to Rule 50 motions, however, we generally apply regional circuit law unless the precise issue being appealed pertains uniquely to patent law. Duro-Last, Inc. v. Custom Seal, Inc., 321 F.3d 1098, 1106 (Fed. Cir. 2003). Because we decide antitrust issues that do not implicate patent law, including market definition, under the law of the regional circuits, Nobelpharma, 141 F.3d at 1067 n.5, we similarly apply Tenth Circuit law to determine whether or not ConAgra has preserved its right to appeal. In the Tenth Circuit, the failure of a party to move for a JMOL post-verdict does not bar the party from appealing the sufficiency of the evidence, provided, as is the case here, that the party made the appropriate motion prior to the submission of the case to the jury. See Cummings v. Gen. Motors Corp., 365 F.3d 944, 950-51 (10th Cir. 2004). The absence of a Rule 50(b) post-verdict motion for JMOL, however, precludes our entering judgment in favor of ConAgra. "The only remedy available is a new trial." Id. at 951. Thus, we may only vacate the jury's verdict in favor of Unitherm.

[8] "Bad faith is a prerequisite to [a] state-law tortious interference claim; without it, the claim is preempted by patent law." Zenith, 182 F.3d at 1355.

[9] Under Tenth Circuit law, ConAgra preserved its right to appeal the sufficiency of the evidence by moving for a directed verdict at the close of Unitherm's evidence and again at the close of its defense, despite failing to move for a post-verdict JMOL. See Cummings, 365 F.3d at 950-51.