United States Court of Appeals for the Federal Circuit

03-1082, -1165

LIEBEL-FLARSHEIM COMPANY
and MALLINCKRODT INC.,

Plaintiffs-Appellants,

v.

MEDRAD, INC.,

Defendant-Cross Appellant.

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Appealed from: United States District Court for the Southern District of Ohio

Judge Sandra S. Beckwith

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DECIDED: February 11, 2004

Before LOURIE, BRYSON, and DYK, Circuit Judges.

BRYSON, Circuit Judge.

Appellants Liebel-Flarsheim Company and Mallinckrodt Inc. (collectively, "Liebel") filed an action against appellee Medrad, Inc., in the United States District Court for the Southern District of Ohio, No. C-1-98-858, charging Medrad with infringement of four of Liebel's patents. The patents claim certain methods and devices for use in connection with powered fluid injectors, which can be used to inject fluids into patients during medical procedures. One of the patents, U.S. Patent No. 5,456,669 ("the '669 patent"), is drawn to methods of loading powered injectors from the front. A related patent,

U.S. Patent No. 5,658,261 ("the '261 patent"), is drawn to front-loadable powered injectors and to disposable front-loadable syringes for use in such injectors. The other two patents, U.S. Patent Nos. 5,662,612 ("the '612 patent") and 5,928,197 ("the '197 patent"), which are also related, are drawn to injectors and syringes for use in powered injectors, and to devices and methods for controlling the plunger drives in such powered injectors.

On motions for summary judgment, the district court ruled that Medrad did not infringe any of the asserted claims of the four Liebel patents. The district court based its summary judgment ruling on its construction of the asserted claims. In the case of the first two patents, the court concluded that the asserted claims required the use of pressure jackets around the syringes used in the powered injectors. In the case of the latter two patents, the court concluded that the asserted claims required that the powered injector directly use an electrical signal generated by a detector to compute values for various physical properties of the syringes used in the injector. Because Medrad's accused injectors did not use pressure jackets and because the electrical signals in Medrad's devices were not directly used to compute any such values, the court granted summary judgment of noninfringement as to all of the claims set forth in Liebel's complaint. The court then dismissed the counterclaims, in which Medrad alleged that the asserted claims of the four patents were invalid. The court held that the counterclaims were moot in light of the court's noninfringement ruling. We reverse the grant of summary judgment and the dismissal of the counterclaims, and we remand for further proceedings.

I

Powered injectors are used in various medical applications, such as injecting contrast agents into the vascular systems of patients who undergo certain diagnostic imaging procedures. A powered injector ordinarily uses a motor drive that is attached to a syringe plunger. The drive pulls the plunger rearward to draw contrast agent into the syringe and then drives the plunger forward to inject contrast agent through a tube and into the patient. The contrast agent is usually injected into the patient under high pressure.

A

Liebel asserted that Medrad's powered injectors infringed seven claims of the '669 patent and twenty claims of the '261 patent. The '669 and '261 patents derive from a 1991 application, Ser. No. 712,110 ("the '110 application"). Prior to the filing of the '110 application, the injectors sold by both Liebel and Medrad required that the syringes be breech loaded, i.e., loaded through the rear of the injectors. Breech loading has disadvantages, including inefficiency in the loading process and the risk of spillage and contamination that can result from disconnecting the syringe from the tube through which contrast agent is delivered to the patient. The '110 application and the patents that eventually issued from it were directed to front loading, rather than breech loading, the powered injectors.

The specifications of the '669 and '261 patents are essentially identical. Each of the embodiments of the injector described in the two patents includes a pressure jacket into which the syringe is inserted. The pressure jacket surrounds the syringe and prevents it from breaking under the internal pressure generated when the contrast agent is injected into the patient. Based largely on the fact that the '669 and '261 patents do not contain any description of an injector that lacks a pressure jacket, the district court construed all of the asserted claims from those two patents to require a pressure jacket, even though none of the asserted claims expressly refers to a pressure jacket. The district court concluded that "the specification makes clear that the injector includes a pressure jacket." Based on that observation, the court ruled that "the asserted claims do not cover a jacketless injector, even though the asserted claims might be considered broad enough to disclose a jacketless injector when read without reference to the specification."

The parties agree that Medrad's accused devices do not use pressure jackets. Because the district court construed the claims to require pressure jackets, the district court granted summary judgment of noninfringement as to the '669 and '261 patents. Liebel appeals the claim construction of the '669 and '261 patents and the summary judgment of noninfringement based on that construction.

B

Liebel also asserts that Medrad has infringed four claims of the '612 patent and eighteen claims of the '197 patent. The '612 and '197 patents, which are related and have a common specification,

address the use of syringes, including prefilled syringes, in powered injectors. Different prefilled syringes contain different amounts of fluid. In order to accommodate syringes containing different amounts of fluid and to ensure that the right amount of fluid is injected into the patient, the powered injectors must have a way of ensuring that the injector can detect critical features of the particular syringe that is being used.

The '612 and '197 patents solve that problem by providing that the syringes have "physical indicia related to" various syringe properties that enable the injector to calibrate the amount of fluid to be injected into the patient. Each of the asserted claims requires that the syringe possess "physical indicia" that can be detected by a detector and can provide information about the syringe properties of interest. Those properties include the capacity of the syringe or the amount of fluid in the syringe ('612 patent, claims 7 and 10; '197 patent, claims 7, 10, and 27); the distance of the plunger from the end of the syringe ('197 patent, claims 1 and 4); the distance to the end of the plunger's travel position ('197 patent, claims 13 and 16); and the range of travel of the ram, which attaches to the syringe plunger and moves the plunger in and out of the syringe ('197 patent, claims 19 and 22).[1] The claims further provide that the injector's control circuitry will control the plunger, based on the particular property detected, so as to inject the correct amount of fluid from the syringe.

The common specification of the '612 and '197 patents describes each syringe as including a plunger, which is grasped by a drive jaw. The drive jaw, which is connected to a motor and control circuitry, pushes the plunger into the syringe to inject the fluid into the patient. The specification teaches that prefilled syringes may include an extender that changes the position of the plunger relative to the drive jaw. If the length of the extender is not accounted for, the drive jaw may not be properly positioned, which would cause the injector to malfunction. The specification provides that a malfunction of that kind "is avoided by storing an offset value representative of the length of the extender . . . and applying this offset value to the computed drive jaw position." '612 patent, col. 3, ll. 59-61; '197 patent, col. 3, ll. 58-60.

Medrad argued in the district court that the term "physical indicia" should be limited to indicia

representing the length of the extender. The specification, Medrad asserted, describes the use of "physical indicia" only to represent the length of the extender so that a proper "offset value" can be computed and the correct position of the drive jaw can be determined. Medrad also argued that the prosecution history supports its construction of the "physical indicia" limitation.

The district court disagreed with Medrad. The court ruled that the claim language was plainly broader than Medrad's proposed construction, as the claims expressly referred to syringe features other than the length of the extender. The court further held that the specification did not clearly disavow the use of physical indicia on the syringe that represented syringe properties other than the extender length. Moreover, the court determined that the prosecution history of the patents at issue supported the broader reading of the "physical indicia" limitation.

While the district court rejected Medrad's proposed claim construction, it did not construe the claim language as broadly as Liebel urged. Instead, the court ruled that the signal generated by the detector must be directly used in the computation of particular syringe properties. The court noted that "the claim language does not describe using the electrical signal generated by the detector to ascertain information from another source and then using this ascertained information to compute syringe properties." Accordingly, the court held that physical indicia are "related to" various syringe properties only "when the information detected from the physical indicia is/are the actual syringe properties or can be directly used in the computation of the various syringe properties without reference to some other source of information."

The evidence showed that the "physical indicia" on the syringes used in the Medrad injectors consisted of a series of indents, or the absence of indents, on the surface of the syringes. Electrical circuitry in the Medrad injectors would generate an electrical signal corresponding to the particular type of syringe being used. Based on a look-up table specifying the properties of the syringe that was detected, the Medrad injectors would determine the properties of the syringe in use.

Because the detection of physical indicia on Medrad's syringes generated electrical signals that indicated the type of syringe in use, rather than directly indicating the properties of the syringe, the

district court concluded that the signal was only indirectly "related to" the syringe properties referred to in the asserted claims. An indirect relationship between the physical indicia and the syringe properties in question was not within the scope of the asserted claims as the district court construed them. Accordingly, the court ruled that Medrad's accused injectors did not infringe any of the claims of the '612 or '197 patents.

II

Liebel's appeal with respect to the asserted claims of the '669 and '261 patents turns on whether the common specification of the two patents limits the scope of the asserted claims to injectors that include pressure jackets. We hold that it does not. The asserted claims do not expressly require pressure jackets, and the common specification does not state that a pressure jacket is a required component of the inventions. Moreover, even if the original disclosure supported Medrad's contention that the invention, as originally conceived, required the use of a pressure jacket, the prosecution history of the '669 and '261 patents makes clear that the patentee drafted the asserted claims specifically to cover injectors lacking pressure jackets. In light of the applicants' clearly stated intention to cover jacketless injectors, any question regarding the support or lack of support for the claims in the original disclosure bears on the issues of priority and validity, not on the issue of claim construction. Accordingly, for the reasons more fully set forth below, we conclude that the district court erred by construing the asserted claims to require pressure jackets.

A

Claim 10 of the '669 patent is representative of the asserted claims of the '669 and '261 patents. It provides as follows:

> A method of loading a tubular replacement syringe into a high pressure power injector for injecting fluid into an animal, the method comprising the steps of:
>
> providing a power injector having:
>
> a syringe receiving opening with a generally circular periphery therein adapted to receive a rearward end of a syringe having a generally circular rim,

a ram and a motor linked to the ram and operable to reciprocate the ram along a segment of a line projecting through the opening; and providing a hollow tubular syringe that includes:

a cylindrical body having an axis, a generally circular rim, a rearward end and a closed forward end with a fluid discharge orifice therein, and
a plunger axially slidable in the body, the syringe body being structurally capable of withstanding, at least from the rim to the orifice, fluid at an operating pressure of at least 100 psi within the interior thereof;

then:

inserting into the opening, by generally rearward axial movement of the syringe, the rearward end of the body;
rotating the syringe in the opening a fraction of a turn to thereby lock the body around the rim to the injector around the periphery of the opening; and

engaging the plunger with the ram;

then:

energizing the motor and thereby driving the ram forward along the line and parallel to the axis to move the plunger axially forward at a programmed speed to inject the fluid at the operating pressure from within the syringe and through the orifice at a programmed rate into the animal.

Neither claim 10 of the '669 patent nor any of the other asserted claims recites a pressure jacket. The district court, however, construed the claims to require pressure jackets by focusing on the "syringe receiving opening" limitation in claim 10 (and similar language used in the other asserted claims). After finding that limitation to be ambiguous with respect to the location of the opening, the court looked to the specification and concluded that, because the syringe-receiving opening in each of the embodiments of the invention was located at the front end of a pressure jacket, the "opening" referred to in each of the asserted claims had to be located at the front end of a pressure jacket. Medrad embraces the district court's claim construction analysis and makes the more general argument that because the "pressure-jacketed injector" is the only subject matter described in the specification, that subject matter constitutes the invention itself, not simply a preferred embodiment of a broader invention.

We have had many occasions to cite one or both of the twin axioms regarding the role of the specification in claim construction: On the one hand, 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), aff'd, 517 U.S. 370 (1996). On the other hand, it is improper to read a limitation from the specification

into the claims. Arlington Indus., Inc. v. Bridgeport Fittings, Inc., 345 F.3d 1318, 1327 (Fed. Cir. 2003); Gart v. Logitech, Inc., 254 F.3d 1334, 1343 (Fed. Cir. 2001). Although parties frequently cite one or the other of these axioms to us as if the axiom were sufficient, standing alone, to resolve the claim construction issues we are called upon to decide, the axioms themselves seldom provide an answer, but instead merely frame the question to be resolved. We have recognized 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, Inc. v. Harris Corp., 156 F.3d 1182, 1186-87 (Fed. Cir. 1998); accord Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc., 340 F.3d 1298, 1307 (Fed. Cir. 2003). As we have explained, "an inherent tension exists as to whether a statement is a clear lexicographic definition or a description of a preferred embodiment. The problem is to interpret claims 'in view of the specification' without unnecessarily importing limitations from the specification into the claims." E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369 (Fed. Cir. 2003); accord Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1204-05 (Fed. Cir. 2002). That problem can present particular difficulties in a case such as this one, in which the written description of the invention is narrow, but the claim language is sufficiently broad that it can be read to encompass features not described in the written description, either by general characterization or by example in any of the illustrative embodiments.

At the outset, we reject the district court's conclusion that the term "opening" should be defined as limited to an opening in a pressure jacket. The specification does not define "opening" restrictively, nor is there anything in the specification that supports the district court's conclusion that the term is ambiguous. The asserted claims refer to the "syringe receiving opening," or simply the "opening," as having various characteristics, but none of the asserted claims state, explicitly or by necessary implication, that the opening must be formed in or in conjunction with a pressure jacket. Claim 10 of the '669 patent, for example, requires "a ram and a motor linked to the ram and operable to reciprocate the ram along a segment of a line projecting through the opening." The claim further provides that the rearward end of the syringe will be inserted into the opening and rotated in the opening to lock it in place. Thus, the "opening" must be located so that the ram reciprocates along a segment of a line

projecting through the opening and so that the rear end of the syringe can be inserted into the opening and affixed to the injector at that point. But the claim language does not suggest that the "opening" must also be located at the front end of a pressure jacket.

Other asserted claims likewise refer to the location of the opening without referring to the location of the opening vis-à-vis a pressure jacket. For example, claim 19 of the '669 patent identifies the location of the opening as being "at the front end of the injector," and claims 1, 8, and 15 of the '261 patent refer, respectively, to the opening as being located "on the front [of the injector]," "at the front of the injector," and "on" the injector. Claim 27 of that patent refers to the injector housing as having "a tubular member extending forwardly from the front thereof and having a cylindrical bore therein forming the syringe receiving opening." In each case, the claim specifies the location and structure of the opening while making no mention of a pressure jacket.

In common usage, an opening is simply an aperture, and nothing in the '669 and '261 patents indicates that the term "opening" should be understood to carry with it the requirement that it must always be located in the front of a pressure jacket. Accordingly, contrary to the district court, we find no ambiguity in the term "opening" and no reason to resolve the purported ambiguity by reading that term restrictively. We therefore turn to Medrad's more general argument that the specification and the prosecution history demonstrate that the invention as a whole was limited to an injector system using a pressure jacket.

B

Medrad argues that because all the embodiments described in the common specification of the '669 and '261 patents feature pressure jackets, the claims of those patents must be construed as limited to devices that use pressure jackets. In Medrad's words, when "the subject matter claimed in the patent-in-suit is the only subject matter described . . . that subject matter is the invention, and not simply a 'preferred embodiment' of a broader invention."

There are several answers to Medrad's argument. The first is that this court has expressly

rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment. See ACTV, Inc. v. Walt Disney Co., 346 F.3d 1082, 1091 (Fed. Cir. 2003); Apex Inc. v. Raritan Computer, Inc., 325 F.3d 1364, 1377 (Fed. Cir. 2003); Altiris, Inc. v. Symantec Corp., 318 F.3d 1363, 1373 (Fed. Cir. 2003); Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1204-05 (Fed. Cir. 2002); Teleflex, Inc. v. Ficosa N. Am. Corp., 299 F.3d 1313, 1327 (Fed. Cir. 2002); SRI Int'l v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1121 n.14 (Fed. Cir. 1985) (en banc). Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using "words or expressions of manifest exclusion or restriction." Teleflex, 299 F.3d at 1327.

For example, in Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc., 334 F.3d 1294, 1301 (Fed. Cir. 2003), the court interpreted the term "remote" broadly to include surgical procedures performed with the surgeon present in the same room as the patient, although the written description only described performing the surgical procedure without the surgeon present in the same room as the patient, because "[n]o statement in the written description [ ] constitute[d] a limitation on the scope of the invention." Likewise, in Altiris, Inc. v. Symantec Corp., 318 F.3d 1363, 1371 (Fed. Cir. 2003), despite the fact that the specification discussed only a single embodiment, we held that it was improper to read a specific order of steps into method claims because the specification "nowhere [included] any disclaimer of any other order of steps, or any prosecution history indicating a surrender of any other order of steps."

In support of its contention that the claims are limited to the embodiments described in the specification, Medrad cites several of this court's cases, including SciMed Life Systems, Inc. v. Advanced Cardiovascular Systems, Inc., 242 F.3d 1337 (Fed. Cir. 2001), and Wang Laboratories, Inc. v. America Online, Inc., 197 F.3d 1377 (Fed. Cir. 1999). None of the cited cases supports Medrad's argument, however.

In SciMed, we stated that when the specification "makes clear that the invention does not include a particular feature, that feature is deemed to be outside the reach of the claims of the patent, even

though the language of the claims, read without reference to the specification, might be considered broad enough to encompass the feature in question." 242 F.3d at 1341. We concluded in SciMed that the claim to a two-part lumen used in balloon dilatation catheters was limited to coaxial lumens and did not include dual, side-by-side lumens. We reached that conclusion based on an explicit disclaimer of the side-by-side structure, not the mere absence of any reference to that structure in the specification. Thus, the specification discussed only the coaxial lumen structure, it characterized the side-by-side structure as inferior, and it concluded that the coaxial lumen structure was used in "all embodiments of the present invention contemplated and disclosed herein." Id. at 1343. Based on the language of the specification, we concluded that the SciMed case presented "a clear case of the disclaimer of subject matter that, absent the disclaimer, could have been considered to fall within the scope of the claim language." Id. at 1344. Unlike in SciMed, the specification in this case contains no disclaimer; all that Medrad can point to in the common specification of the '669 and '261 patents is the absence of any embodiment that lacks a pressure jacket.

In Wang, the claim term at issue was the term "frame" as applied to a computer application. Although the parties agreed that in the abstract that term could refer to both "character based systems" and "bit-mapped display systems," the court noted that in the context of the patent in suit, the term referred only to "character-based systems." 197 F.3d at 1382. After a close examination of the specification, the court concluded that the specification "would not be . . . understood by a person skilled in the field of the invention" to describe bit-mapped display systems as included in the applicant's invention. Id. Moreover, the prosecution history of the patent in suit in Wang showed that the inventors disclaimed a claim construction that would encompass bit-mapped display systems. Id. at 1383-84. Wang therefore does not stand for the proposition that if a patent specification describes only a particular embodiment, the claims must be limited to that subject matter. We have never read Wang Labs to stand for so broad a proposition, see Sunrace Roots Enter. Co. v. SRAM Corp., 336 F.3d 1298, 1305 (Fed. Cir. 2003); Altiris, 318 F.3d at 1373; Teleflex, 299 F.3d at 1327; SciMed, 242 F.3d at 1341, and we decline Medrad's invitation to adopt such a rule today.

In other cases cited by Medrad, we have held that the embodiments of the invention set forth in

the specification constituted the invention itself, in spite of claim language that could, in the abstract, be interpreted more broadly. See Biogen, Inc. v. Berlex Labs., Inc., 318 F.3d 1132, 1139-40 (Fed. Cir. 2003); Watts v. XL Sys., Inc., 232 F.3d 877, 882-83 (Fed. Cir. 2000); Cultor Corp. v. A.E. Staley Mfg. Co., 224 F.3d 1328, 1331 (Fed. Cir. 2000); Toro Co. v. White Consol. Indus., Inc., 199 F.3d 1295, 1301-02 (Fed. Cir. 1999); Gen. Am. Transp. Corp. v. Cryo-Trans, Inc., 93 F.3d 766, 770 (Fed. Cir. 1996); Modine Mfg. Co. v. U. S. Int'l Trade Comm'n, 75 F.3d 1545, 1550-51 (Fed. Cir. 1996). In each of those cases, however, there were specific reasons dictating a narrow claim construction beyond the mere fact that the specification disclosed only a single embodiment or a particular structure. Thus, in Watts, the court held that the applicants specifically "limit[ed] the invention" to particular structures by specifying that the invention uses those structures, and further limited the scope of the invention by distinguishing close prior art in the prosecution history. 232 F.3d at 883. Likewise, in the Cultor and Biogen cases, the court construed the pertinent claim language restrictively based on an express limiting definition of that language in the specification, Biogen, 318 F.3d at 1140, as well as the fact that the inventors had "repeatedly distinguished their invention from the prior art" by characterizing their invention narrowly, Cultor, 224 F.3d at 1330. As the court explained in Cultor, "Whether a claim must, in any particular case, be limited to the specific embodiment presented in the specification, depends in each case on the specificity of the description of the invention and on the prosecution history. . . . Claims are not correctly construed to cover what was expressly disclaimed." Id. at 1331.

The court employed the same approach in the Toro, General American Transportation, and Modine Manufacturing cases. In those cases, this court interpreted the pertinent claim language narrowly, not merely because the specification did not describe a broader embodiment, but because the specification, claim, or prosecution history made clear that the invention was limited to a particular structure. See Toro, 199 F.3d at 1301 (noting that the specification described particular structure as "important to the invention"); Gen. Am. Transp., 93 F.3d at 770 (holding that claim language and specification made clear that openings "adjacent each of said side walls and end walls" of a rail car required the openings to be adjacent to all four walls of the railcar); Modine, 75 F.3d at 1551 (claim limited to a particular numerical range when broader range was surrendered during prosecution by

amendment of the specification).

In this case, the specification does not describe the invention as limited to embodiments having pressure jackets, and none of the other reasons that have been invoked for giving claims a narrow reading are present. Although all the embodiments described in the common specification of the '669 and '261 patents include a pressure jacket, the written description does not contain a clear disavowal of embodiments lacking a pressure jacket. Medrad relies on several passages from the specification in which the applicants described an embodiment that uses a pressure jacket. Those passages, however, do not expressly or by clear implication restrict the scope of the invention to injectors using a pressure jacket. The abstract of the patents states that an "animal fluid injector, replaceable syringe and method of replacement of the syringe in the injector are provided in which the syringe is loadable and unloadable into and from the injector through the open front end of a pressure jacket of the injector." Although that language can reasonably be understood as constituting a general description of the invention, the quoted passage does not suggest that a pressure jacket is an essential component of the invention, nor is there any language in that passage, or elsewhere in the specification, that disclaims the use of the invention in the absence of a pressure jacket.

The other passages from the specification on which Medrad relies provide even less support for Medrad's argument that the claims must be limited to the described embodiments. In the Summary of the Invention, the patent describes one of the objectives of the invention as being "to provide an injector wherein a used syringe can be removed and a new one inserted in the injector without retraction of the drive from the pressure jacket, in most applications," and adds that it is "a further objective of the invention to allow for the removal of the used syringe from the jacket without disconnection of the injector tube from the syringe nozzle." '669 patent, col. 2, ll. 32-39; '261 patent, col. 2, ll. 29-36. Later in the Summary of the Invention, the patents provide: "According to the principles of the present invention, there is provided an angiographic injector having a front end loadable syringe that can be loaded into and removed from the injector pressure jacket through an opening that is provided in the front end of the pressure jacket." '669 patent, col. 2, l. 64, to col. 3, l. 1; '261 patent, col. 2, ll. 61-65. Those passages, although focusing on the use of the invention in conjunction with pressure jackets, do

not disclaim the use of the invention in the absence of a pressure jacket. The fact that a patent asserts that an invention achieves several objectives does not require that each of the claims be construed as limited to structures that are capable of achieving all of the objectives. See Resonate Inc. v. Alteon Websystems, Inc., 338 F.3d 1360, 1367 (Fed. Cir. 2003); Northrop Grumman Corp. v. Intel Corp., 325 F.3d 1346, 1355 (Fed. Cir. 2003); Honeywell Inc. v. Victor Co. of Japan, Ltd., 298 F.3d 1317, 1325-26 (Fed. Cir. 2002). Moreover, the reference to the "principles of the present invention" as providing for "an angiographic injector" with a syringe that can be "loaded into and removed from the injector pressure jacket," does not limit the invention to devices that have pressure jackets any more than it limits the invention to injectors that are used for angiography. This case is therefore governed by the principle that "[a]bsent a clear disclaimer of particular subject matter, the fact that the inventor may have anticipated that the invention would be used in a particular way does not mean that the scope of the invention is limited to that context." Northrop Grumman, 325 F.3d at 1355; accord Brookhill-Wilk, 334 F.3d at 1301; Teleflex, 299 F.3d at 1328.

C

The second reason for rejecting Medrad's argument is that the prosecution history of the '669 and '261 patents is squarely contrary to its contention that all the claims of those two patents require injectors that use pressure jackets. The applications that matured into the '669 and '261 patents derived from the '110 application. In the prosecution of each of those applications, the applicants replaced claims that had included references to a pressure jacket with a new set of claims, many of which did not include the pressure jacket limitation. The omission of reference to a pressure jacket in many of the claims of the applications that matured into the '669 and '261 patents is a strong indication that the applicants intended those claims to reach injectors that did not use pressure jackets. Moreover, in a paper filed during the prosecution of the '261 patent, the applicants clearly stated that "[i]n the claims as amended herein, the locking structure is not necessarily at the front end of the syringe, nor is there necessarily a pressure jacket."

Both Medrad and the district court agree that, during the prosecution of the '669 and '261

patents, the applicants learned about Medrad's jacketless injector and sought to omit reference to the pressure jacket in the asserted claims in order to encompass Medrad's injector.[2] Thus, there is no dispute as to the applicants' intentions with respect to the meaning of the asserted claims—the claims were amended to include methods and devices in which pressure jackets are not used. The only remaining question is whether the applicants failed in their effort and the pressure jacket limitation remained a part of all of the claims, even those from which the reference to the pressure jacket had been removed. We are unpersuaded by that argument, particularly in light of the applicants' express statement in the prosecution history of the '261 patent that there is not "necessarily a pressure jacket" in the claimed devices.

D

Apart from the literal language of the asserted claims and the prosecution history, the doctrine of claim differentiation provides significant added support for Liebel's claim construction. As we noted above, the '669 and '261 patents both contain claims that explicitly recite the requirement of a pressure jacket and that are dependent from asserted independent claims that do not contain such a requirement. In the '669 patent, asserted claim 10 recites a method of loading a tubular replacement syringe into a high pressure power injector without reference to a pressure jacket. Claim 14, which depends from claim 10, adds four limitations that recite the use of a pressure jacket in the process of inserting the syringe. A comparison of claims 10 and 14 makes clear that the only significant distinction between the two is that claim 14 requires the use of a pressure jacket.

Similarly, asserted claims 1 and 18 of the '261 patent claim syringes and front-loadable power injectors without reference to pressure jackets. By contrast, claims 2 and 19, which depend from claims 1 and 18, respectively, expressly recite the use of a pressure jacket. Again, a comparison of the independent and dependent claims shows that the dependent claims differ from the independent claims only with regard to the presence of a pressure jacket in the dependent claims.

The juxtaposition of independent claims lacking any reference to a pressure jacket with dependent claims that add a pressure jacket limitation provides strong support for Liebel's argument that

the independent claims were not intended to require the presence of a pressure jacket. As this court has frequently stated, the presence of a dependent claim that adds a particular limitation raises a presumption that the limitation in question is not found in the independent claim. See Wenger Mfg., Inc. v. Coating Mach. Sys., Inc., 239 F.3d 1225, 1233 (Fed. Cir. 2001); Comark, 156 F.3d at 1187. Although that presumption can be overcome if the circumstances suggest a different explanation, or if the evidence favoring a different claim construction is strong, the presumption is unrebutted in this case, as Medrad has offered no alternative explanation for why the "pressure jacket" limitation is found in the dependent claims but not in the corresponding independent claims. In such a setting, where the limitation that is sought to be "read into" an independent claim already appears in a dependent claim, the doctrine of claim differentiation is at its strongest. See Sunrace Roots Enter. Co. v. SRAM Corp., 336 F.3d 1298, 1302-03 (Fed. Cir. 2003) (the presumption that an independent claim does not have a limitation that is introduced for the first time in a dependent claim "is especially strong when the limitation in dispute is the only meaningful difference between an independent and dependent claim, and one party is urging that the limitation in the dependent claim should be read into the independent claim"); Wenger, 239 F.3d at 1233 ("Claim differentiation . . . is clearly applicable when there is a dispute over whether a limitation found in a dependent claim should be read into an independent claim, and that limitation is the only meaningful difference between the two claims."); D.M.I., Inc. v. Deere & Co., 755 F.2d 1570, 1574 (Fed. Cir. 1985). The doctrine thus substantially undermines Medrad's contention that all of the claims of the '669 and '261 patents require the presence of a pressure jacket, even though the express requirement of a pressure jacket is found only in certain claims and not in any of the claims asserted in this case.

E

In support of its claim construction, the district court stated, without elaboration, that it is "unlikely that the specification, which was drafted for claims that disclosed an injector that included a pressure jacket, would describe an injector that does not require a pressure jacket, much less enable one skilled in the art to make and use such a device." Medrad supplements that observation by arguing, also without elaboration, that if the asserted claims are not construed to require a pressure jacket, those

claims "would be of doubtful validity."

This court has frequently alluded to the "familiar axiom that claims should be so construed, if possible, as to sustain their validity." Rhine v. Casio, Inc., 183 F.3d 1342, 1345 (Fed. Cir. 1999) (internal quotation marks omitted). At the same time, however, the court has "admonished against judicial rewriting of claims to preserve validity." Id. Accordingly, unless the court concludes, after applying all the available tools of claim construction, that the claim is still ambiguous, the axiom regarding the construction to preserve the validity of the claim does not apply. See AK Steel Corp. v. Sollac & Ugine, 344 F.3d 1234, 1243 (Fed. Cir. 2003) ("That axiom is a qualified one, dependent upon the likelihood that a validity-preserving interpretation would be a permissible one."); Generation II Orthotics Inc. v. Med. Tech. Inc., 263 F.3d 1356, 1365 (Fed. Cir. 2001) ("[C]laims can only be construed to preserve their validity where the proposed claim construction is 'practicable,' is based on sound claim construction principles, and does not revise or ignore the explicit language of the claims."); Elekta Instrument S.A. v. O.U.R. Scientific Int'l, Inc., 214 F.3d 1302, 1309 (Fed. Cir. 2000) ("having concluded that the amended claim is susceptible of only one reasonable construction, we cannot construe the claim differently from its plain meaning in order to preserve its validity").

A case that is closely analogous to this one is Texas Instruments Inc. v. United States International Trade Commission, 871 F.2d 1054 (Fed. Cir. 1989). In that case, the applicant amended a claim during prosecution, seeking broader claim coverage that would reach a competitor's product. The International Trade Commission, in order to preserve the validity of the claim, construed the claim as being limited to the meaning it had before it was amended. This court reversed the Commission, holding that the amended claim should have been construed in accordance with the language of the amendment. The court stated: "Ambiguous claims, whenever possible, should be construed so as to preserve their validity. . . . This rule of construction, however, does not justify reading into a claim a limitation that it does not contain and that the patentee deleted from the claim during prosecution." Id. at 1065. The court explained that it was not improper for the applicant to amend the claim in order to cover a competitor's product that the applicant's attorney has learned about during the prosecution of the application; the court then added that it was "not permissible for the [Commission], in order to preserve

the validity of the claims, to rewrite them to add a limitation that the patentee had eliminated during prosecution, and then hold that the challenged devices . . . did not infringe the rewritten claims." Id.

In this case, the applicants in effect drafted particular claims of the applications that matured into the '669 and '261 patents so as to omit the pressure jacket limitation that had been present in all of the claims of the parent '110 application. As in Texas Instruments, it would be improper to disregard the effect of that action on the scope of those claims simply because the claims, if broadly construed, might be vulnerable to a challenge to their priority and validity. Rather, because the proper construction of the claims is clear, the questions of priority and validity are separate issues that must be separately addressed on remand.

In sum, the claims do not expressly require pressure jackets, and Medrad points to no clear disavowal of claim scope in either the written description or the prosecution history. In fact, the prosecution history indicates that the asserted claims were added to cover devices that lacked pressure jackets. For those reasons, we conclude that the district court erred in construing the claims at issue to require pressure jackets. Summary judgment of noninfringement of the '669 and '261 patents was therefore improper.

III

Medrad's appeal with respect to the asserted claims of the '612 and '197 patents turns on the proper construction of the term "physical indicia" and the relationship of the physical indicia to the properties of a syringe. Claim 7 of the '197 patent is representative of the asserted claims of the '612 and '197 patents. It provides as follows:

> An injector and syringe, comprising
>
> a syringe having a plunger, a nozzle located in the front of said syringe, and physical indicia related to the amount of fluid in the syringe,
>
> a motor in the injector which advances and retracts the plunger located within the syringe toward and away from the nozzle of the syringe to inject fluid into or out of an animal subject, and

> a controller in the injector adapted for use with syringe assemblies which have differing capacities, comprising:
>
> a detector located proximate to the syringe when installed on said injector for detecting the physical indicia on said syringe, and generating an electrical signal representative of said physical indicia, and a control circuit which causes said motor to move and tracks the location of said motor while moving said motor, wherein said control circuit computes the amount of fluid in said syringe using said electrical signal and the tracked location of said motor.

A

Each of the asserted claims, except for claim 25 of the '197 patent, requires that the syringe possess "physical indicia related to" a property of the syringe. For example, claim 7 of the '197 patent, quoted above, recites "physical indicia related to the amount of fluid in the syringe," while other claims recite physical indicia related to "the distance of the plunger from an end of said syringe," "the end of travel position of an injector ram," "the range of travel of an injector ram," and "the capacity of the syringe."

Medrad argues that we should construe the term "physical indicia" as limited to features that indicate the length of the extender. To support its position, Medrad asserts that the only reference to the "physical indicia" limitation in the specification describes the "physical indicia" as providing information as to the length of the extender:

> In preferred embodiments, the offset value may be computed by querying the operator as to the capacity of the syringe and determining therefrom the appropriate offset value. The controller may be configurable so that this query is not made (for example, if the injector will not be used with pre-filled syringes, and therefore the offset value will not change). Alternatively, the offset value may be automatically computed by detecting physical indicia on the syringe or extender which indicate the length of the extender.

'612 patent, col. 3, l. 62, to col. 4, l. 3; '197 patent, col. 3, l. 61, to col. 4, l. 2.

The claim language itself does not limit "physical indicia" to indicia related to the length of the extender. Instead, the various claims explicitly state that the physical indicia are related to a variety of properties, such as the amount of fluid in the syringe, the distance of the plunger from the end of the syringe, the distance to the end of the plunger's travel position, and the range of travel of the ram.

Medrad thus must overcome the "'heavy presumption' that [the claims] mean what they say." Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202 (Fed. Cir. 2002); Teleflex, 299 F.3d at 1325 ("We indulge a 'heavy presumption' that a claim term carries its ordinary and customary meaning."). As we explained above, it is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited. See ACTV, 346 F.3d at 1088; Brookhill-Wilk, 334 F.3d at 1301; Altiris, 318 F.3d at 1371, 1373; Teleflex, 299 F.3d at 1327. Although the passage Medrad cites describes an embodiment in which the physical indicia are related to the length of an extender, Medrad does not point to any language in the specification that expresses an intention to limit the scope of the term "physical indicia" to that embodiment.

Nor does the prosecution history support Medrad's narrow reading of the asserted claims. During the prosecution of the application that matured into the '197 patent, the examiner rejected the claims as lacking support for physical indicia related to properties other than the length of the extender. The applicants responded by explaining that various properties, such as the amount of fluid in the syringe, could be calculated from the information as to the length of the extender. The applicants went on to explain, however, that

> although the supporting specific embodiment of the invention found in the specification is disclosed in the context of compensating for the presence of a plunger extender attached to the plunger, the independent claims do not necessarily require a plunger extender, but rather are directed generally to using information from indicia on a syringe, to compensate for syringes having differing initial plunger positions, differing initial amounts of fluid, differing end-of-travel positions or ranges of travel for the ram.

Far from a clear disavowal of claim scope, the quoted passage makes clear that the application contemplated that the claims of the '197 patent would encompass "physical indicia" related to properties other than the length of an extender.

Moreover, Medrad's own version of the prosecution history of the '612 and '197 patents cuts against reading the claims at issue restrictively. The original claims in the applications for the two patents limited the term "physical indicia" to features indicating the "length of the extender" and

excluded features indicating other syringe properties such as "the capacity of the syringe." According to Medrad, when the applicants learned of Medrad's injectors they amended the claims at issue in an effort to encompass Medrad's injectors, as they did with respect to the "pressure jacket" issue. That characterization of the prosecution history, however, is unhelpful to Medrad's claim construction argument: By broadening the claims to cover Medrad's devices, the applicants covered physical indicia other than those indicating the length of an extender. The district court therefore correctly concluded that the term "physical indicia" is not limited to indicia related to the length of an extender.

Medrad further suggests in passing that the broad reading of "physical indicia" given by the district court would render the asserted claims of the '612 and '197 patents invalid for lack of a sufficient written description or enablement. As we discussed above, however, the canon that claims should be construed to preserve their validity, if possible, applies only if the scope of the claims is ambiguous. The asserted claims at issue in this case clearly cover more than the "indicia indicating the length of the extender." We therefore may not interpret the claims narrowly because of concerns about their possible invalidity. Rather, the issue of invalidity must be addressed head-on in the remand proceedings where the questions of priority, and the adequacy of the written description and enablement, will be directly presented.

B

The district court construed the claim term "related to" as requiring "the physical indicia [to be] the actual syringe properties or [indicia that can be] directly used in the computation of the various syringe properties without reference to some other source of information." The court found the grounding for that construction in the language of the claims themselves. For example, the court reasoned that claim 7 of the '197 patent, reproduced above, requires that a detector ascertain the physical indicia and generate an electrical signal representative of those indicia. A control circuit then computes the value of the property in question, here the amount of fluid in the syringe, using that electrical signal. The district court determined that the control circuit must use the signal generated by the detector, rather than a signal generated by the control circuit, to compute the value of the property in question. The

court thus construed the claims as requiring a direct relationship between the physical indicia and the property to which the physical indicia are related. That direct relationship, the district court reasoned, would exclude products, such as the Medrad injectors, that "indirectly" compute the value of the syringe property by using the electrical signal to reference a look-up table.

The language of the claims at issue does not support the interpretation adopted by the district court. The term "related to" by itself does not limit the relationship between the physical indicia and the properties in question to a direct relationship. The issue, then, is whether the claim language setting forth how the control circuit must use the electrical signal confines the relationship between the physical indicia and the syringe properties to a direct relationship. The exemplary claim quoted above requires that the "control circuit compute[ ] the amount of fluid in said syringe using said electrical signal." That language does not specify that the control circuit must use the electrical signal in any particular way. In the ordinary sense of the word "using," the act of employing the electrical signal to obtain a syringe property value from a look-up table constitutes "using" the electrical signal to compute that syringe property value. Therefore, the very language relied on by the district court to restrict the scope of the claims at issue does not exclude an injector in which the control circuit uses the electrical signal to compute the syringe property indirectly, for example by using the electrical signal in conjunction with a look-up table.

Medrad asserts that during prosecution the applicants distinguished the '612 and '197 patent claims from prior art substantially similar to Medrad's accused devices and that the asserted claims therefore must be read restrictively. During prosecution of an application that matured into the '612 patent and that gave rise to a continuation that matured into the '197 patent, the examiner rejected the claims as obvious over two prior art references, McDaniel and Arthur. The McDaniel reference disclosed associating the type of syringe with its corresponding properties using a look-up table, while the Arthur reference disclosed a detector for detecting a bar code on a syringe. The examiner asserted that it would be obvious to combine the detector and bar coding of Arthur with the McDaniel device to arrive at Liebel's claims. The applicants overcame that rejection by arguing that McDaniel and Arthur should not be combined because they addressed different problems. Liebel argued that the bar code

"indicia" in Arthur did not indicate any syringe properties at all, but rather provided information regarding the concentration of the medication in the syringe. McDaniel, according to Liebel, disclosed a mechanical system for determining the syringe type, such as by measuring the angle of the conical forward end of the syringe. Instead of arguing that McDaniel did not teach detecting information "related to" syringe properties, Liebel argued that McDaniel did not teach detecting physical indicia at all. The applicants thus did not disclaim an “indirect” relationship between the physical indicia and the syringe properties.

Because both the plain language of the claims and the prosecution history do not support a claim construction limiting the relationship between the physical indicia and the syringe properties to a direct relationship, the district court erred in so ruling. It was therefore improper for the court to enter summary judgment of noninfringement of the asserted claims of the ’612 and ’197 patents. The district court will have to reconsider the infringement claims in light of the claim construction we have set forth above.

In view of its claim construction ruling, the district court did not need to analyze claim 25 separately from the other asserted claims of the ’612 and ’197 patents, other than to note that the language of claim 25 differs somewhat from that of the other claims. To the extent that Liebel continues to assert claim 25 on remand, the district court will have an opportunity to consider the proper construction of that claim in light of our interpretation of the language of the other asserted claims of the ’612 and ’197 patents.

IV

With respect to disposition, Liebel argues that we should direct the district court to grant summary judgment in its favor. We decline to do so. It is rare for a reviewing court, upon reversing the grant of summary judgment in favor of one party, to direct the entry of summary judgment in favor of the other, and this is not one of those rare instances in which such a course would be appropriate. The district court is far more familiar with the record in this case than we are and is in a much better position to determine whether, based on the claim construction issues addressed above, summary judgment in

Liebel's favor would be appropriate. Moreover, Medrad points out that there are unresolved issues of infringement that would have to be addressed before a final judgment of infringement could properly be entered. We therefore reverse the entry of summary judgment in Medrad's favor, but we do not direct the entry of summary judgment for Liebel.

As to Medrad's cross-appeal, we agree that Medrad's invalidity counterclaims are not moot. Because we have reversed the order granting summary judgment of noninfringement, the legal basis for the district court's mootness ruling is no longer in place. The invalidity counterclaims are therefore again presented for decision, and we assume that the district court will address the counterclaims on remand if Medrad continues to press them.

REVERSED and REMANDED.

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[1] The district court noted that claim 25 of the '197 patent does not refer to the detection of

physical indicia "related to" particular syringe properties, but instead recites that the control circuit "obtain[s] an offset value from physical indicia detected on the syringe." Thus, the court concluded that claim 25 requires that the information detected from the physical indicia actually constitute the offset value.

[2] The district court recognized that it is not improper for an applicant to broaden his claims during prosecution in order to encompass a competitor's products, as long as the disclosure supports the broadened claims. See Kingsdown Med. Consultants, Ltd. v. Hollister, Inc., 863 F.2d 867, 874 (Fed. Cir. 1988) (holding that it is not improper "to amend or insert claims intended to cover a competitor's product the applicant's attorney has learned about during the prosecution of a patent application"). If the disclosure does not support the broadened claims, the applicant will not be accorded priority based on the original disclosure, and the claims may be invalidated. See Reiffin v. Microsoft Corp., 214 F.3d 1342, 1346 (Fed. Cir. 2000); Lockwood v. Am. Airlines, Inc., 107 F.3d 1565, 1571-72 (Fed. Cir. 1997).