

United States Court of Appeals for the Federal Circuit

02-1056

PIN/NIP, INC.,

Plaintiff-Appellant,

v.

PLATTE CHEMICAL COMPANY,

Defendant-Appellee.

Edgar R. Cataxinos, Traskbritt, P.C., of Salt Lake City, Utah, argued for plaintiff-appellant. With him on the brief were William S. Britt, H. Dickson Burton, and Devin R. Jensen.

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Appealed from: United States District Court for the District of Idaho

Chief Judge B. Lynn Winmill

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PIN/NIP, INC.,

Plaintiff-Appellant,

v.

PLATTE CHEMICAL COMPANY,

Defendant/Appellee.

DECIDED: September 4, 2002

Before MAYER, Chief Judge, LOURIE and LINN, Circuit Judges.

LOURIE, Circuit Judge.

PIN/NIP, Inc. appeals from the decision of the United States District Court for the District of Idaho granting summary judgment to Platte Chemical Company that claim 1 of Platte's U.S. Patent 5,622,912 is not invalid under 35 U.S.C. § 102, PIN/NIP, Inc. v. Platte Chem. Co., No. 97-0307, slip op. at 7 (D. Idaho Feb. 3, 1999) ("Summary Judgment"). PIN/NIP also appeals from the court's denial of its motion for judgment as a matter of law, seeking to overturn a jury verdict that claim 1 is not invalid under 35 U.S.C. § 103, that PIN/NIP had infringed claims 1 and 33 of the '912 patent, and that claim 33 satisfied the written description requirement of 35 U.S.C. § 112, ¶ 1, PIN/NIP, Inc. v. Platte Chem. Co., No. 97-0307, slip op. at 1 (D. Idaho Mar. 31, 2000) ("Judgment"), as modified by PIN/NIP,

Inc. v. Platte Chem. Co., No. 97-0307, slip op. at 1 (D. Idaho Mar. 5, 2001) (“Amended Judgment”). For the reasons set forth below, we affirm-in-part, reverse-in-part, and vacate-in-part.

BACKGROUND

Platte is the assignee of the '912 patent, which is directed to a composition and methods for inhibiting sprout growth on tubers, such as potatoes. Sprouting can cause tubers to exhibit undesirable texture and sugar levels, resulting in a less desirable food product. '912 patent, col. 1, ll. 20-22, 30-33. One prior art substance that inhibits tuber sprout development is the synthetic chemical chlorpropham, also referred to as CIPC. Id. at ll. 35-52. The background section of the '912 patent specification acknowledges that CIPC can be applied to tubers in storage using a known thermal fogging technique, whereby CIPC is heated or mixed with hot steam to create an aerosol, which is then circulated about the tubers. Id. Because the toxicity of CIPC is a matter of concern, people have sought natural substances for use as a tuber sprout suppressant. Id. at ll. 53-65. Known natural substances with sprout suppressing properties include dimethylnaphthalene (“DMN”) and diisopropylnaphthalene (“DIPN”). Id. at col. 2, ll. 4-12. These substances, however, do not exhibit a desirable level of long-term effectiveness. Id.

The invention of the '912 patent served to inhibit sprout development on tubers by utilizing a combination of CIPC and a substituted naphthalene. In this way, the inventors hoped to be able to utilize lower levels of CIPC, and thus minimize toxicity concerns, while achieving a long-term effectiveness that had not been possible with a substituted naphthalene alone. Id. at ll. 16-31. The patent specification describes experiments in which reduced amounts of CIPC along with either DMN or DIPN were applied via thermal fogging to stored potatoes, and their sprouts were then measured over time. Id. at col. 3, ll. 14-60. The experiments revealed that a combination of CIPC and either DMN or DIPN

was significantly more effective in inhibiting sprout growth than one would have expected based on applications of the chemicals separately. Id. at ll. 9-10 (“[T]he effectiveness of the combination was quite unexpected.”); see also id. at col. 5, ll. 5-42 (analyzing the quantitative data from the experiments).

The application which issued as the '912 patent was filed with three independent claims, including composition claim 1 and method claim 19, reading as follows:

1. A composition adapted for inhibiting sprout formation in tubers during storage, comprising:

CIPC (chlorpropham); and
a substituted naphthalene.

19. A method of inhibiting sprout formation in tubers during storage, comprising the steps of:

providing a composition comprising CIPC and a substituted naphthalene to form a sprout inhibiting composition;

applying an effective amount of the sprout inhibiting composition to the outer surface of the tubers to form treated potatoes [sic]; and

storing the treated tubers.

Id. at col. 6, ll. 5-8, 55-64 (emphases added). In a preliminary amendment, the applicants added another independent claim, claim 33, also directed to a method, which reads as follows:

33. A method of inhibiting sprout formation on tubers during storage, comprising the steps of:

applying CIPC to the tubers in an amount effective to form a residue thereon and inhibit sprout formation therefrom;

applying a substituted naphthalene to the tubers in an amount effective to form a residue thereon and to inhibit sprout formation therefrom;
and

storing the tubers for a period of time, wherein the CIPC and substituted naphthalene residues are both present for at least a portion of the period of time the tubers are stored.

Id. at col. 8, ll. 1-14. Claim 33 was added after the inventors learned that subsequent to their filing date PIN/NIP had publicly disclosed a method for treatment of potatoes for the purpose of sprout suppression, by which both CIPC and DMN were applied separately in spaced, sequential applications days to months apart. It is that activity for which Platte later accused PIN/NIP of infringing the '912 patent.

The United States Patent and Trademark Office ("PTO") allowed all claims in the application in the first Office Action. The examiner assigned to the application reasoned that it would have been prima facie obvious to one skilled in the art to have combined two known substances — CIPC and substituted naphthalene — each of which was taught by the prior art to suppress tuber sprout growth; however, the examiner concluded that the applicants had overcome the prima facie case by demonstrating unexpected results of the combination "greater than would be expected from the inhibition of each active agent alone." Summary Judgment at 8 (quoting the patent examiner's reasons for allowance).

PIN/NIP brought suit against Platte seeking a declaratory judgment of invalidity and noninfringement of the '912 patent, as well as asserting claims of violations of the antitrust and unfair competition laws. Platte counterclaimed for patent infringement. After

conducting a Markman hearing, the court construed the term “composition” to mean “two chemicals . . . arranged . . . even though the chemicals are never physically mixed,” including the situation “created by the spaced, sequential application of two chemicals applied days or months apart.” PIN/NIP, Inc. v. Platte Chem. Co., No. 97-0307, slip op. at 10 (D. Idaho Jan. 21, 1999) (“Markman Order”). Accordingly, the court understood claim 1 to cover “a spaced, sequential application of CIPC and a substituted naphthalene when these two chemicals work together to inhibit sprouting.” Id. In doing so, the court purported to rely upon what it held to be the full breadth of the ordinary meaning of the term, such as when an artist arranges or “composes” a still life, id. at 9, and found nothing in the ’912 patent to narrow that definition, id. at 12. The court construed claim 19, however, to require pre-mixing of CIPC and substituted naphthalene. Id. at 11-12. The court interpreted claim 19 to include a temporal limitation because that claim first recites that the composition is “provid[ed]” and then recites that the composition is applied to tubers. Finally, the court construed claim 33, which does not contain the word “composition,” to place “no limitation on the amount of time between applications” of CIPC and a substituted naphthalene. Id. at 12.

After the court’s Markman rulings, both parties filed summary judgment motions. PIN/NIP sought summary judgment that it had not infringed the ’912 patent and that the patent was invalid on a variety of grounds. Summary Judgment at 1. Platte sought a summary judgment of infringement. Id. The court partially granted PIN/NIP’s motion concerning infringement, concluding that PIN/NIP had not infringed claim 19 as a matter of law, but that genuine issues of material fact existed as to the infringement of claims 1 and 33. As for validity, the court denied all of PIN/NIP’s motions and furthermore sua sponte granted Platte summary judgment that the ’912 patent was not anticipated by a 1979 Ph.D. thesis of James Beveridge, in which potatoes accidentally treated with CIPC were

subsequently treated with DMN to measure the effect of DMN on sprout growth. Id. at 3-4. The court determined that genuine issues of material fact existed as to PIN/NIP's other asserted grounds of invalidity, including its argument that claim 33 failed to satisfy the written description requirement. Id. at 10-11.

The district court then bifurcated the case into two trials: the first to decide liability, and the second to determine damages. PIN/NIP, Inc. v. Platte Chem. Co., No. 97-0307, slip op. at 1 (D. Idaho Feb. 3, 1999) (Bifurcation Order). The parties agreed to that plan, with the first trial to be by a jury and the second by the judge. See id. In the first trial, Platte introduced evidence that three of PIN/NIP's "applicators" (PIN/NIP's customers who purchased CIPC and DMN from PIN/NIP and applied them to stored potatoes pursuant to PIN/NIP's instructions) had infringed claims 1 and 33. The jury returned a verdict that an unspecified "one of PIN/NIP's applicators" had infringed claims 1 and 33 and that PIN/NIP had willfully induced that infringement. PIN/NIP, Inc. v. Platte Chem. Co., No. 97-0307, slip op. at 1-3 (D. Idaho June 22, 1999) ("Special Verdict Form"). The jury also made factual findings favorable to Platte on all of PIN/NIP's validity challenges, including whether "the disclosure as originally filed . . . reasonably convey[s] to a person of ordinary skill in the art that [the inventors] had possession of the subject matter of Claim 33." Id. at 3-8. PIN/NIP filed a motion for judgment as a matter of law (JMOL) seeking to overturn the jury's verdict, but the district court denied the motion, entered judgment in favor of Platte, and certified the judgment pursuant to Fed. R. Civ. P. 54(b) and 28 U.S.C. § 1292(b). Judgment at 1. However, we denied PIN/NIP's petition for permission to appeal. PIN/NIP, Inc. v. Platte Chem. Co., 250 F.3d 754 (Fed. Cir. May 19, 2000) (unpublished order). Thereafter, the district court dismissed PIN/NIP's antitrust and unfair competition claims, issued a permanent injunction, and modified its judgment to be final except for an accounting

pursuant to 28 U.S.C. § 1292(c)(2). Amended Judgment at 1-2. This appeal is from the district court's modified judgment.

Meanwhile, as this appeal was pending, the district court proceeded with the second trial. Although the parties and the court apparently had originally envisioned the second trial to be limited to a determination of damages for the infringement that had been determined in the first trial, that is not how events unfolded. Platte sought to include in the accounting what it alleged to be infringing applications by fourteen different applicators on several hundred occasions. PIN/NIP complained that

[u]nlike the sale of a product, no two applications of CIPC and DMN will be identical. Rather, a myriad of factors such as the amount of each chemical applied, the manner of applying each chemical, the amount of air circulating in a storage shed, the amount of residue of a first chemical on the potatoes when a second chemical is applied, and the amount of time between each application of a chemical, were all considered by the jury when determining whether any one of the three trial examples of chemical applications infringed the claims. Similarly, the jury presumably considered a number of factors when deciding whether PIN/NIP induced infringement of the claims. . . . Unlike a case where every sale of a patented product is identical, Platte is not entitled to presume that every application of CIPC and DMN, under any conceivable condition, is an infringing application.

Reply Memorandum In Support of PIN/NIP's Position Relative to Limitation of Damages Evidence in Bifurcated Damages Trial at 5, 6, PIN/NIP, Inc. v. Platte Chem. Co., No. 97-0307 (D. Idaho Aug. 14, 2001). PIN/NIP sought to prevent Platte from introducing additional evidence of liability and from recovering damages for any acts of infringement

other than those that were established in the first trial. Id. at 7. However, the district court allowed Platte to introduce evidence of the new applications, PIN/NIP, Inc. v. Platte Chem. Co., No. 97-0307 (D. Idaho Oct. 10, 2001) (Memorandum Decision and Order), provided that PIN/NIP be allowed to have a jury decide the new infringement questions, PIN/NIP, Inc. v. Platte Chem. Co., No. 97-0307 (D. Idaho Jan. 17, 2002) (Memorandum Decision and Order). PIN/NIP petitioned this court for a writ of mandamus seeking to strictly limit the second trial to an accounting on the grounds that the second trial would violate the court's bifurcation order as well as the Seventh Amendment. This court denied PIN/NIP's petition, In re PIN/NIP, Inc., Misc. No. 694 (Fed. Cir. Mar. 14, 2002) (unpublished), and the second jury trial began on April 15, 2002, lasting ten days. At that trial, the judge instructed the jury as to the meaning of the patent claims, infringement, inducement, and willfulness. PIN/NIP, Inc. v. Platte Chem. Co., No. 97-0307 (D. Idaho Apr. 25, 2002) (Jury Instructions 10-15). The jury returned a special verdict that PIN/NIP had induced infringement of either claim 1 or 33 on one hundred occasions. PIN/NIP, Inc. v. Platte Chem. Co., No. 97-0307 (D. Idaho Apr. 26, 2002) (Special Interrogatories). Thereafter, the court conducted a bench trial solely on the issue of damages, a decision on which is presently pending.

PIN/NIP appeals from the March 31, 2000 modified judgment of the district court. Jurisdiction of this appeal depends upon compliance with 28 U.S.C. § 1292(c)(2).

DISCUSSION

A. Jurisdiction

The first question we must consider is whether we have jurisdiction to hear this appeal. Jurisdiction is a threshold issue, Johannsen v. Pay Less Drug Stores N.W., Inc., 918 F.2d 160, 161, 16 USPQ2d 1697, 1698 (Fed. Cir. 1990), and a court must satisfy itself that it has jurisdiction to hear and decide a case before proceeding to the merits, View Eng'g, Inc. v. Robotic Vision Sys., Inc., 115 F.3d 962, 963, 42 USPQ2d 1956, 1957

(Fed. Cir. 1997). Jurisdiction of this appeal purports to arise from compliance with 28 U.S.C. § 1292(c)(2), which grants us jurisdiction over certain interlocutory patent appeals in which the district court's judgment is nonfinal only in that an "accounting" remains:

(c) The United States Court of Appeals for the Federal Circuit shall have exclusive jurisdiction –

...

(2) of an appeal from a judgment in a civil action for patent infringement which would otherwise be appealable to the United States Court of Appeals for the Federal Circuit and is final except for an accounting.

28 U.S.C. § 1292(c)(2) (2000).¹ The jurisdictional issue argued before us is whether, after a verdict of patent infringement in one instance in a first trial, determinations of additional instances of infringement of the same patent claims by the same infringer by the use of different arrangements of the same materials, as well as a determination of the total damages for all instances of infringement, are merely an "accounting."

Platte argues that it is now clear that more than a mere "accounting" had yet to be decided by the district court when PIN/NIP filed this appeal. More specifically, Platte asserts that the second trial in the district court has been determining not only damages for the established infringement, but liability for additional instances of infringement as well. PIN/NIP responds that the second trial is merely determining damages, although it admits that that determination includes designating a number of other instances of infringement beyond those established in the first trial.

¹ 28 U.S.C. § 1292(c)(2) was enacted in the Federal Courts Improvement Act of 1982 to replace what had been 28 U.S.C. § 1292(a)(4). The accounting exception was first enacted in 1927, Act of Feb. 28, 1927, 44 Stat. 1261, c. 228.

We agree with PIN/NIP that we have jurisdiction over this appeal. However, whether or not jurisdiction can be premised on the accounting exception codified in § 1292(c)(2) we do not decide, because jurisdiction exists under 28 U.S.C. § 1292(a)(1). That provision, in combination with 28 U.S.C. § 1292(c)(1), grants us “jurisdiction of appeals from interlocutory orders of the district courts . . . granting, continuing, modifying, refusing or dissolving injunctions.” 28 U.S.C. § 1292(a)(1) (2000). See also 28 U.S.C. § 1292(c)(1) (granting us specifically jurisdiction pursuant to section (a) when the subject matter of the case falls within one of the categories enumerated in 28 U.S.C. § 1295). The district court’s grant of a permanent injunction against PIN/NIP’s use of the composition defined by claim 1 and the method defined by claim 33 brings this appeal squarely within the confines of § 1292(a)(1). See King Instruments Corp. v. Otari Corp., 814 F.2d 1560, 1562, 2 USPQ2d 1201, 1202 (Fed. Cir. 1987) (exercising jurisdiction over an appeal pursuant to § 1292(a)(1) where the district court entered a permanent injunction and reserved for a later date a determination of damages). Cf. Woodard v. Sage Prods., Inc., 818 F.2d 841, 842, 2 USPQ2d 1649, 1649 (Fed. Cir. 1987) (in banc) (holding that an interlocutory order effectively denying permanent injunctive relief is appealable under § 1292(a)(1) only if the denial causes “serious, if not irreparable, consequence and can be effectually challenged only by immediate appeal”). We therefore conclude that we do have jurisdiction to hear this appeal, the merits of which we turn to next.

B. Merits

We review a district court’s grant of summary judgment de novo, reapplying the same standard used by the district court. Ethicon Endo-Surgery, Inc. v. United States Surgical Corp., 149 F.3d 1309, 1315, 47 USPQ2d 1272, 1275 (Fed. Cir. 1998). Summary judgment is appropriate “if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is

no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law.” Fed. R. Civ. P. 56(c). “The evidence of the nonmovant is to be believed, and all justifiable inferences are to be drawn in his favor.” Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 255 (1986).

We also review a court’s denial of JMOL de novo, reapplying the same standard used by the district court, viz., to determine whether there was substantial evidence to support the jury’s findings and whether those findings were sufficient to support the legal conclusions drawn from the jury’s verdict. Dana Corp. v. IPC Ltd., 860 F.2d 415, 418, 8 USPQ2d 1692, 1694 (Fed. Cir. 1988).

A determination that a patent is invalid as being anticipated under 35 U.S.C. § 102 requires a finding that “each and every limitation is found either expressly or inherently in a single prior art reference.” Celeritas Techs. Inc. v. Rockwell Int’l Corp., 150 F.3d 1354, 1360, 47 USPQ2d 1516, 1522 (Fed. Cir. 1998). Because a patent issued by the PTO is presumed to be valid, 35 U.S.C. § 282 (2000), the evidentiary burden to show facts supporting a conclusion of invalidity is clear and convincing evidence, WMS Gaming, Inc. v. Int’l Game Techs., 184 F.3d 1339, 1355, 51 USPQ2d 1385, 1396-97 (Fed. Cir. 1999).

A determination that a patent is invalid for failure to meet the written description requirement of 35 U.S.C. § 112, ¶ 1 is a question of fact, Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1563, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991), and we review a jury’s determinations of facts relating to compliance with the written description requirement for substantial evidence.

A determination of infringement requires a two-step analysis. “First, the court determines the scope and meaning of the patent claims asserted. [Second,] the properly construed claims are compared to the allegedly infringing device.” Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454, 46 USPQ2d 1169, 1172 (Fed. Cir. 1998) (en banc)

(citations omitted). Step one, claim construction, is an issue of law, Markman v. Westview Instruments, Inc., 52 F.3d 967, 970-71, 34 USPQ2d 1321, 1322 (Fed. Cir. 1995) (en banc), aff'd, 517 U.S. 370 (1996), that we review de novo, Cybor, 138 F.3d at 1456, 46 USPQ2d at 1172. Step two, comparison of the claim to the accused device, requires a determination that every claim limitation or its equivalent be found in the accused device. Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 29 (1997). Those determinations are questions of fact, Bai v. L & L Wings, Inc., 160 F.3d 1350, 1353, 48 USPQ2d 1674, 1676 (Fed. Cir. 1998), which, when made by a jury, we review for substantial evidence.

1. Construction of Claim 1

The district court construed claim 1 to include “compositions” formed by the spaced, sequential application of the two ingredients to a tuber in storage, even though the two ingredients are not physically combined, as long as they work together to inhibit sprouting on the tuber. Markman Order at 10. The interpretation of that term forms the heart of the parties’ claim construction dispute on appeal.

PIN/NIP argues that the term “composition,” as a term of art in both the fields of patent law and chemistry, requires a physical mixture of the constituents. PIN/NIP also argues that the '912 patent uses the terms “composition” and “mixture” synonymously, and that the only embodiment described in the specification involves a pre-mixture of CIPC with either DMN or DIPN. Platte responds that the court properly gave the term the full breadth of its ordinary meaning, so as to include the ordering or arranging of materials that do not physically come into contact with each other. Platte also has a different reading of the specification from PIN/NIP, asserting that one skilled in the art would not conclude that the specification discloses only a pre-mixture of the constituents.

We agree with PIN/NIP concerning the interpretation of the disputed claim language. The term “composition” in chemistry is well-established. It generally refers to mixtures of substances.² It cannot be construed by analogy to a painting. We have previously construed the term “composition” in the context of a particular patent claim. In Exxon Chemical Patents, Inc. v. Lubrizol Corp., we equated a “composition” with a “mixture,” stating:

[A] chemical composition exists at the moment the ingredients are mixed together. Before creation of the mixture, the ingredients exist independently. . . . Consequently, as properly interpreted, Exxon’s claims are to a composition that contains the specified ingredients at any time from the moment at which the ingredients are mixed together. This interpretation of Exxon’s claims preserves their identity as product claims, and recognizes as a matter of chemistry that the composition exists from the moment created.

64 F.3d 1553, 1558, 35 USPQ2d 1801, 1804 (Fed. Cir. 1995) (emphases added). Although the construction of a term in a patent claim is a highly contextual exercise that is dependent upon the content of the particular patent in which the term appears, and one cannot always apply the construction of a claim term from one patent to an unrelated patent in an unrelated lawsuit, the basic definition of the term “composition” is well-established, was well-expressed in Exxon, and is applicable to this case. The principle that a composition is indeed a mixture in which the components are present together at some point in time is even more true in this case, in which the specification of the '912 patent

² The term “composition of matter” is within the definitions of patentable inventions in 35 U.S.C. § 101. It is the principal rubric under which chemical compounds are patentable (arguably, they can also be “manufactures”).

teaches only the mixture of the two ingredients. In fact, that is the invention; use of the materials separately was in the prior art. Although the specification uses various terms to describe the invention — “composition,” see, e.g., ’912 patent, Title; “mixture,” id. at Abstract; “combination,” id. at col. 3, l. 9; and “conjunction,” id. at col. 5, ll. 43-49 — they all mean essentially the same thing. The described invention is clear; it is a mixture of the two chemicals together. The written description of the invention is typified by the following sentence from the specification: “However, what was unexpected, and is summarized above in Table II, the application of a mixture of CIPC and DIPN to the tubers to obtain [results], which were substantially greater than the sum of [the results] of each treatment separately.” Id. at col. 5, ll. 4-11 (emphasis added). One skilled in the art of tuber sprout suppression would read this sentence, and the specification as a whole, to mean that CIPC and DIPN were mixed together, and that the resulting mixture was applied to the tubers, as opposed to separate applications with each chemical alone. Moreover, as indicated, separate use of the component chemicals was known before the invention, as the ’912 patent acknowledges that prior art practitioners applied CIPC, DMN, and DIPN separately for the same purpose as the invention — sprout suppression. In fact, allowance of the ’912 patent was based upon the unexpected results of the combination of CIPC and DMN or DIPN.

The district court interpreted claim 19 differently from claim 1 based upon the presence of the term “providing,” but we do not see a sufficient distinction. Claim 19 recites two steps: “providing a composition comprising CIPC and a substituted naphthalene to form a sprout inhibiting composition” and “applying [the] composition to the outer surface of the tubers.” The court reasoned that the first step results in a unitary, pre-mixture of the two chemicals. We do not disagree. Instead, we conclude that the nearly

identical words of claim 1 also refer to a unitary mixture of the two chemicals. The absence of the step of “providing” a composition does not lead us to distort the meaning of the term “composition” in claim 1 as not requiring a mixture of CIPC and a substituted naphthalene.

We therefore construe the term “composition” in claim 1 to mean a physical mixture of CIPC and a substituted naphthalene existing together at approximately the same time. The mixture may be a pre-mixture, *i.e.*, a mixture that comes into being well before being used for sprout suppression, or a mixture that is formed at any time during use, such as through simultaneous application of the constituent chemicals, as long as a mixture is indeed formed.

2. Validity of Claim 1

Having determined the meaning of claim 1, we next turn to the issues of anticipation and infringement of claim 1. PIN/NIP asserts that the court erred when it granted summary judgment that the Beveridge thesis does not anticipate claim 1 and when the court declined to grant it a JMOL that the claim would have been obvious over Beveridge and other prior art. Platte responds that the Beveridge thesis fails to constitute clear and convincing evidence of anticipation, and that substantial evidence supports the jury’s findings of facts supporting a conclusion that the claim would not have been obvious.

We agree with the district court and Platte that anticipation has not been shown. The Beveridge thesis documents the doctoral research of Dr. James Beveridge. The object of the research was “to find and develop new potato sprout suppressant chemicals.” Summary Judgment at 3 (quoting the thesis). Twenty “naturally-produced” chemicals were evaluated, including several isomers of DMN, which was found to be “a suitable sprout suppressant.” *Id.* In one experiment, DMN-treated potatoes were inadvertently exposed to CIPC as well. The results of that experiment were tabulated in Table 3.18 of the thesis, which lists the mean sprout lengths and other data from use of different levels of DMN. A

footnote to this portion of the table explains, “All samples accidentally treated with chlorpropham (10 – 20 mg kg⁻¹).” The main text of the thesis notes, “Accidental treatment of untreated controls with chlorpropham serves to show the level of sprout control which is necessary for tubers under long-term storage.” Id. at 4. No other mention of the combined use of DMN and CIPC in the thesis has been brought to our attention.

We conclude that the thesis’s passing reference to potatoes exposed to both CIPC and DMN fails to constitute clear and convincing evidence that supports a finding of anticipation because the thesis does not disclose that a “composition” of CIPC and DMN was ever formed, as we have construed that phrase. Indeed, the thesis is silent regarding the relative timing of the applications of the two chemicals and, hence, whether a combination or mixture of them was ever formed. Moreover, PIN/NIP produced testimony from Beveridge’s faculty advisor, who stated that DMN and CIPC were separately applied to the potatoes in the experiment in a spaced, sequential manner. Id. That testimony highlights the deficiency in the document’s disclosure as an anticipation of the claimed invention. Accordingly, the district court’s decision that no reasonable jury could have found that the Beveridge thesis constitutes clear and convincing evidence of anticipation of claim 1 is affirmed.

PIN/NIP further argues that claim 1 fails to satisfy 35 U.S.C. § 103, asserting that the subject matter of that claim would have been obvious to one skilled in the art at the time of the invention in light of the teachings of the Beveridge thesis alone or in combination with Canadian Patent 1,203,394. Platte responds that substantial evidence supports the jury’s findings that the Beveridge thesis teaches away from the invention, Special Verdict Form at 4; that five objective factors of nonobviousness are present, id. at 4-5; and the overall conclusion that claim 1 would not have been obvious over the cited prior art, id. at 5. We agree that substantial evidence exists supporting the jury’s conclusion of nonobviousness.

Platte presented evidence of secondary indicia of nonobviousness, which PIN/NIP did not refute. In fact, PIN/NIP has not even articulated to this court a prima facie case of obviousness. Accordingly, the district court did not err when it denied PIN/NIP's motion for JMOL on the issue of obviousness, and we affirm that decision as well.

3. Infringement of Claim 1

We finally turn to the issue of infringement of claim 1. The first jury determined that one of PIN/NIP's applicators directly infringed claim 1, based upon the district court's jury instructions on claim construction. PIN/NIP argues that the jury's verdict should be overturned because PIN/NIP does not provide or induce its applicators to form a "composition" comprising CIPC and DMN. PIN/NIP argues that its expert, Dr. Henry John Duncan, established that "when the DMN is applied first, it will be taken into the potato so that by the time the CIPC is applied days or months later, the CIPC is the lone chemical on the potato's surface." Markman Order at 8. Finally, PIN/NIP contends that for the same reasons it was granted summary judgment of noninfringement of claim 19, it did not infringe claim 1, as properly interpreted. Platte defends the infringement verdict principally on the basis of the district court's construction of the term "composition" by emphasizing testimony of its expert, Dr. Gale Kleinkopf, who testified that CIPC and DMN work together to inhibit sprouting when applied in a spaced, sequential manner.

In light of our modification of the district court's claim construction, it is not clear to us that substantial evidence supports a finding that PIN/NIP's applicators formed a "composition" comprising CIPC and DMN under the proper claim construction. We therefore vacate the court's denial of JMOL on this issue. Platte should have an opportunity to prove its infringement case under that claim construction. Kleinkopf's testimony regarding the "working together" of the chemicals is no longer relevant under that claim construction, but Platte should be permitted to present any relevant evidence of the

existence of a chemical mixture, or “composition,” to prove infringement. Whether Duncan’s testimony, while apparently indicating that the CIPC and DMN components were not part of a composition, may be relevant we leave to the district court judge. We therefore remand for the district court to consider any relevant evidence regarding infringement of claim 1 under the proper interpretation of that claim. The district court should determine in the first instance whether PIN/NIP’s applicators formed a physical mixture, and therefore a “composition,” of DMN and CIPC prior to application (i.e., pre-mixing), during thermal fogging, on the surfaces of the treated potatoes, or otherwise. We note, however, that the court’s determination that claim 19 was not infringed (a determination that Platte has not cross-appealed) would seem to militate against a finding of pre-mixing.

Although the decision being appealed does not include infringement determinations made in the second trial, our claim construction and reversal of the JMOL decision regarding the infringement determinations in the first trial clearly will affect the infringement determinations made or to be made in the second trial. The district court should consider our disposition and analysis of this appeal before rendering judgment in the second case.

In summary, regarding claim 1, we modify its construction, affirm that it has not been shown to be invalid, vacate the verdict of infringement, and remand for further proceedings on the infringement issue.

4. Validity of Claim 33

The district court construed claim 33 as having no limitation concerning the amount of time between the applications of CIPC and a substituted naphthalene. Thus, the claim at least covers the spaced, sequential application of the two separate chemicals. The parties do not contest that construction, and we therefore will not consider it. Instead, PIN/NIP argues that claim 33 is invalid for lack of a written description under 35 U.S.C. § 112, ¶ 1,

because claim 33, in defining a spaced, sequential application of the chemicals, extends beyond the invention as described in the originally filed application, viz., a unitary mixture of CIPC and a substituted naphthalene. Platte responds by arguing that its originally filed disclosure does describe or at least enable one skilled in the art to make spaced, sequential applications of the chemicals separately. Platte further argues that the subject matter of claim 33 is actually disclosed in the patent specification. Finally, Platte argues that this situation is distinguishable from other cases in which we have held later-added claims to be invalid for violation of the written description requirement.

We agree with PIN/NIP that claim 33 is invalid. As we have already explained, nothing in the specification indicates that the invention is anything other than a mixture of two chemicals. Platte added claim 33 to its pending patent application to encompass separate applications of the ingredients to tubers. Platte even admits that “claim 33, as written, is arguably broader than the examples disclosed in the '912 patent.” While it is legitimate to amend claims or add claims to a patent application purposefully to encompass devices or processes of others, there must be support for such amendments or additions in the originally filed application. See Kingsdown Med. Consultants, Ltd. v. Hollister Inc., 863 F.2d 867, 874, 9 USPQ2d 1384, 1390 (Fed. Cir. 1988) (“[N]or is it in any manner 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. Any such amendment or insertion must comply with all statutes and regulations, of course, but, if it does, its genesis in the marketplace is simply irrelevant.”). In this case, the originally filed application, which is devoid of any mention or even implication that the two chemicals can be applied in a spaced, sequential manner, does not support the later-added claim 33.

In Gentry Gallery, Inc. v. Berkline Corp., the patentee had amended its claims to a sectional sofa so as to remove a limitation that controls for a pair of parallel recliners be

located on a console between the recliners. 134 F.3d 1475, 1478, 45 USPQ2d 1499, 1503 (Fed. Cir. 1998). We held that the broadened claims failed to satisfy the written description requirement because the written description clearly described the central console as the only location for the controls. Id. at 1479, 45 USPQ2d at 1502. “In Gentry, we applied and merely expounded upon the unremarkable proposition that a broad claim is invalid when the entirety of the specification clearly indicates that the invention is of a much narrower scope.” Cooper Cameron Corp. v. Kvaerner Oilfield Prods., Inc., 291 F.3d 1317, 1323, 62 USPQ2d 1846, 1851 (Fed. Cir. 2002).

Likewise, in this case, the '912 patent specification indicates that the invention involves a “composition,” as we have construed the term, and methods for its application, while claim 33 is different, being directed to sequential application in multiple “steps.” '912 patent, col. 8, l. 2. In fact, as indicated earlier, it was the combination of two old chemicals that was patentable. Thus, use of multiple steps involving separate components is quite distinct from use of a composition containing those components. PIN/NIP's argument that the subject matter of claim 33 is disclosed in the specification must also fail. The specification describes only three methods of treating tubers: application of a substituted naphthalene alone (prior art), application of CIPC alone (prior art), and application of a mixture of both chemicals. None of these methods is the same as the spaced, sequential application of the two chemicals, which is the subject matter of claim 33. New claim 33 is directed to new subject matter, and we hold that no reasonable juror could conclude otherwise. We therefore reverse the judgment that claim 33 satisfies the written description requirement and vacate the judgment that PIN/NIP infringed claim 33. Claim 33 is invalid. Accordingly, we need not reach PIN/NIP's arguments that claim 33 is invalid on other grounds.

CONCLUSION

The district court erred in interpreting claim 1 of the '912 patent, and we have modified its claim construction. Nonetheless, we affirm the court's grant of summary judgment that claim 1 is not anticipated by the Beveridge thesis. We also affirm the court's denial of JMOL regarding the jury's verdict that claim 1 has not been shown to be obvious over the prior art put forward by PIN/NIP. However, under the correct interpretation of claim 1, the verdict that it was infringed is vacated. The case is remanded for consideration of infringement of claim 1 under the proper construction. The district court also erred when it declined to grant PIN/NIP a JMOL that claim 33 fails to satisfy the written description requirement of 35 U.S.C. § 112, ¶ 1. We reverse that decision as well, and vacate the judgment that PIN/NIP infringed claim 33. Accordingly, we

AFFIRM-IN-PART, VACATE-IN-PART, and REVERSE-IN-PART.

COSTS

Costs to PIN/NIP.