

NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

ZIRCON CORPORATION
Plaintiff-Appellant,

v.

**STANLEY BLACK & DECKER, INC. (FORMERLY
THE STANLEY WORKS),**
Defendant-Appellee.

2010-1405

Appeal from the United States District Court for the
Northern District of California in Case No. 09-CV-0042,
Magistrate Judge Elizabeth D. Laporte

Decided: October 5, 2011

CLARK S. STONE, Haynes and Boone, LLP, of San Jose,
California, argued for plaintiff-appellant. With him on
the brief were DEBRA J. MCCOMAS and JOHN R. EMERSON,
of Dallas, Texas.

BRYAN P. COLLINS, Pillsbury Winthrop, Shaw
Pittman, LLP, of McLean, Virginia, argued for defendant-
appellee. With him on the brief were JACK S. BARUFKA

and BENJAMIN L. KIERSZ; and DIANNE L. SWEENEY, of Palo Alto, California.

Before LOURIE, MAYER, and O'MALLEY, *Circuit Judges*.

O'MALLEY, *Circuit Judge*.

Zircon Corporation (“Zircon”) alleges that Stanley Black & Decker, Inc. (formerly The Stanley Works) (“Stanley”) infringes United States Patent No. 7,116,091 (“’091 patent”), which discloses a device for ratiometric stud sensing. Zircon appeals the judgment of the United States District Court for the Northern District of California, granting Stanley’s Motion for Summary Judgment of Non-Infringement. The district court granted summary judgment because it construed the term “ratio” to include only division, and it is undisputed that Stanley’s device does not utilize division. Because we find that the district court correctly construed the term “ratio,” determined that there was no literal infringement, and that the disclosure-dedication rule barred infringement under the doctrine of equivalents, we *affirm* the judgment of the district court.

BACKGROUND

A. Factual Background

This dispute involves the alleged infringement of a patent disclosing a product commonly known as a “stud finder.” As the name suggests, these electronic devices are generally used to locate a stud (i.e., a structural member of a building to which an interior wall surface is affixed) behind the surface of a wall. ’091 patent col.1 ll.5–20. Zircon, the owner of the ’091 patent, alleges that Stanley’s Stud Sensor 200 and FatMax® Stud Sensor 400 infringe both the patented device and method disclosed in

the patent. The key issue on appeal centers on whether the '091 patent claims a method of and an apparatus for sensing studs using subtraction, or only by using division.

1. The '091 Patent

Zircon's '091 patent discloses an “electronic stud-sensor used to detect centerlines and edges of wall studs, floor joists, and the like.”¹ *Id.* at col.1 ll.10–12. To detect studs, the invention employs a radiometric capacitive sensor that uses capacitive measurements from multiple conductive plates to determine the presence of a stud behind the surface of a wall.² *Id.* at col.4 ll.30–35. The presence of a stud behind a wall changes the dielectric constants measured by the conductive plates. *Id.* at col.1 ll.32–33. Measuring these changes enables detection of studs.

All of the claims of the '091 patent disclose either a method or a device using at least two conductive plates to measure fluctuations in dielectric constants. To locate a stud using two conductive plates, “[e]ach conductive plate acts as part of a separate capacitor.” *Id.* at col.4 ll.35–36. Circuitry coupled to each plate measures the effective change in capacity of the separate capacitors, “while the sensor is moved along the wall surface.” *Id.* at col.1 ll.33–34. The capacitance of a wall covering an underlying stud is larger than that of a wall not covering an underlying stud. *Id.* at col. 4 ll.39–42. In light of this fact, as the

¹ While it is clear that the patent discusses detection of objects other than studs, for clarity, this opinion will only refer to studs as the objects being located. This decision should not be read as limiting the patent to detecting only studs, an issue that is not before this court and one on which we express no opinion.

² “Capacitance” is the ability to store electrical charge in a dielectric or insulating material. Joint Appendix (“J.A.”) 599.

sensor is moved along the wall, “[t]he capacitance measurement from one plate may then be compared to a capacitance measurement of another plate to determine boundaries and features of the materials in the vicinity of the plates.” *Id.* at col.4 ll. 42–46.

The patent discloses various methods for comparing the capacitances of the two plates to determine whether the sensor is over a stud’s centerline or edge. For example, describing figure 5A, the specification explains that:

In some embodiments, capacitance measurements are used to calculate a ratio. A first capacitance measurement represents the change in capacitance from a minimum value experienced on a first plate 301. A second capacitance measurement represents the change in capacitance from a minimum value experienced on a second plate 302. A ratio between the first and second capacitance measurements may be computed. If the ratio is approximately equal to a predetermined value, it may be determined that a centerline 304 of the sensor 300 is centered over an edge 102 of a stud 100. If the capacitance measurements are equal or the ratio is approximately equal to unity, both plates may be centered over the stud’s edge 102 and the centerline 304 of the sensor 300 may be centered over the centerline 101 of the stud 100.

Id. col.7 ll.20–34. Furthermore, “in accordance with the present invention[,] [t]his ratio may be computed as the smaller capacitance divided by the larger capacitance, thereby resulting in a ratio that is equal to or less than one.” *Id.* at col.7 ll.50–52.

In contrast to this method employing division, the patent’s specification also discloses a method that utilizes

subtraction to determine whether the sensor is positioned over the centerline of a stud. Describing Figure 12, the specification explains that:

The comparison circuit 414 may determine whether the capacitive measurements are within a predetermined value of each other. . . . For example, [the] comparison circuit 414 may determine that the sensor 300 is centered over a stud 100 by detecting that the capacitance measurements are equal to each other and also above a floor threshold.

Id. at col.14 ll.48–63. With respect to the '091 patent, “[c]apacitance measurements may be considered equal when they are within a predetermined percentage value or *absolute value from each other*.” *Id.* at col.14 ll.64–66 (emphasis added). This reference to “an absolute value from each other” indicates subtraction. These alternate methods of comparing the measured capacitances are crucial to this appeal because every independent claim of the '091 patent claims either “computing” or “generating” a “ratio of the first and second capacitances.” *E.g., id.* at claim 10.

In addition to the specification, the prosecution history of the '091 patent also discusses both the division and subtraction methods of comparing capacitances. The '091 patent issued from U.S. Patent Application No. 10/794,356 (“356 application”). J.A. 493–558. Original independent claim 21 of the '356 application recited “comparing the first and second capacitances.” J.A. 219. The remaining independent claims of the '356 application all recited either computing or generating “a ratio of the first and second capacitances.” *E.g., J.A.* 217, 220, 222. The '356 application, therefore, distinguished between the

general function of “comparing” and the specific “ratio” function.

Similarly, claims 22 and 23 of the '356 application, which were dependent upon claim 21, clarified that “comparing” denoted both the ratio and the subtraction methods. Specifically, claim 22 stated that claim 21’s comparing function was performed by “computing a ratio between the first and second capacitances,” — i.e., by using division. J.A. 219. Conversely, claim 23 performed claim 21’s comparison by “determining whether the first and second capacitances differ by less than a threshold,” — i.e., by using subtraction. J.A. 219–20. Thus, the original claims of the '356 application made clear that the generic term “comparing” denoted both the division method and the subtraction method, while “computing a ratio” only referred to the former.

In Zircon’s August 24, 2005 preliminary amendment, however, claim 21 was altered to be dependent upon claim 1 of the '356 application. J.A. 248–59. Claim 1 requires the computation of a “ratio” on the basis of the first and second capacitances, J.A. 250, while amended claim 21 recites that claim 1’s “computing a ratio” is performed by comparing the first and second capacitances. J.A. 253. While this preliminary amendment was not filed in response to an examiner’s rejection, and it was voluntary, the fact remains that, because of the amendment, none of the independent claims of '356 application continued to recite the general “comparing” limitation.

After the preliminary amendment was filed, the examiner issued an Office Action rejecting a number of claims, including amended claims 1 and 21. J.A. 260–73. The examiner indicated, however, that certain claims, including claim 8, would be allowable if rewritten into independent form. J.A. 271–72. Claim 8 was originally

dependent upon claim 1; thus it recited “computing a ratio.” In response to this Office Action, Zircon filed an amendment on May 5, 2006, altering claim 8 to be independent. In addition, Zircon altered claim 21 so that it depended upon claim 8 instead of claim 1. Eventually the ’356 application’s amended claim 8 was allowed as ’091 patent claim 10. J.A. 67; J.A. 280. This claim recites “computing a ratio of the first and second capacitances.” ’091 patent col.21 l.56. In addition, amended claim 21 issued as claim 19 of the ’091 patent.³ J.A. 67; 280. Significantly, every independent claim of the ’091 patent that issued from the ’356 application includes the ratio limitation and none use the term “comparing.”

2. Stanley’s Products

Zircon alleges that Stanley’s Stud Sensor 200 and FatMax® Stud Sensor 400 infringe the ’091 patent. As explained by Stanley’s expert:

Stanley’s Stud Finders compare the two capacitances (via the voltages V_a and V_b) by subtraction, not division. Stanley’s Stud Finders never generate or compute a ratio of the capacitances through plates A and B or a ratio of the voltages V_a and V_b for determining the presence or detection of a stud or other object behind a wall.

J.A. 315. While Stanley’s stud finders utilize a method that is very similar to that claimed in the ’091 patent, Zircon admits that Stanley’s products utilize the subtraction method of comparing capacitances. Appellant’s Br.

³ Claims 21 and 22 of the ’091 patent issued from amended claims 23 and 24 of the ’356 application, respectively. J.A. 67; J.A. 281. As in the ’091 patent, in the ’356 application, amended claims 23 and 24 were dependent upon amended claim 21, which became claim 19 in the ’091 patent. *Id.*

25 (“The subtraction approach used by the accused products performs substantially the same function in substantially the same way to obtain the same result as the division approach.”).

B. Procedural History

After Zircon commenced this suit, Stanley moved for summary judgment of non-infringement. J.A. 112. Specifically, Stanley argued that, under the proper construction of “ratio,” which it asserted should be interpreted as the quotient of dividing two values, its products do not literally infringe because they employ subtraction, not division, to compare capacitances. J.A. 126–27. Stanley argued, moreover, that its products do not infringe under the doctrine of equivalents because Zircon is barred from claiming that the subtraction method is an equivalent of the division method under either: (1) the disclosure-dedication rule; or (2) prosecution history estoppel. J.A. 127.

In opposition to Stanley’s motion, Zircon did not dispute that Stanley’s devices use subtraction to compare capacitances. Instead, Zircon argued that the term “ratio,” as properly construed, means the “relation in degree or number between two similar things.” J.A. 438. Under this construction, Zircon argued that Stanley’s products literally infringe the ’091 patent. J.A. 444–48. In addition, Zircon argued that, even if the court adopted Stanley’s proposed claim construction, Stanley’s products still infringed under the doctrine of equivalents because the doctrine of prosecution history estoppel did not prevent Zircon from claiming subtraction as an equivalent. J.A. 448–49. Finally, Zircon argued that the disclosure-dedication rule did not apply under the facts of this case because Zircon both “disclosed and claimed the subtraction method for ‘computing a ratio’” J.A. 449.

With respect to summary judgment of literal infringement, the district court noted that the parties were in agreement that resolution of the motion turned on the proper construction of the term “ratio.” *Zircon Corp. v. Stanley Works*, 713 F. Supp. 2d 881, 889 (N.D. Cal. 2010). After reviewing the claims, the specification, the prosecution history, and relevant dictionary definitions, the district court construed the term “ratio” to mean the “result of dividing two values.” *Id.* at 894. In light of this construction, the district court concluded that Stanley’s products did not literally infringe the ’091 patent because there was no dispute that its products used subtraction and not division to compare capacitances. *Id.* at 895.

Turning to infringement under the doctrine of equivalents, the district court found that Zircon could not assert that subtraction was an equivalent of the division method because both the disclosure-dedication rule and prosecution history estoppel barred Zircon from claiming that the two methods were equivalents. *Id.* at 900–01. The district court, therefore, granted Stanley’s Motion for Summary Judgment of Non-Infringement.

Following the district court’s entry of judgment of non-infringement, Zircon timely appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1). As discussed below, because we agree with the district court’s construction of the term “ratio” and find that the disclosure-dedication rule prevents Zircon from claiming subtraction as an equivalent of the division method, we affirm.

DISCUSSION

Claim construction is an issue of law that we review *de novo*. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1456 (Fed. Cir. 1998) (en banc). We review the grant of summary judgment without deference, drawing all rea-

sonable factual inferences in favor of the non-moving party. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986); *Johns Hopkins Univ. v. Cellpro, Inc.*, 152 F.3d 1353 (Fed. Cir. 1998). Summary judgment is appropriate when the moving party demonstrates 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); *Celotex Corp. v. Catrett*, 477 U.S. 317, 322–23 (1986). While we generally review infringement, either literal or by equivalents, as a question of fact, where the parties do not dispute any relevant facts regarding the accused product, the question of literal infringement collapses into claim construction, and thus, becomes a question of law that we review *de novo*.⁴ See *General Mills, Inc. v. Hunt-Wesson, Inc.*, 103 F.3d 978, 983 (Fed. Cir. 1997) (“Where the parties do not dispute any relevant facts regarding the accused product, . . . but disagree over possible claim interpretations, the question of literal infringement collapses into claim construction and is amenable to summary judgment.”).

With respect to infringement under the doctrine of equivalents, prosecution history estoppel, as a limit on this doctrine, presents a question of law that we review *de novo*. *Wang Labs., Inc. v. Mitsubishi Elecs. Am., Inc.*, 103 F.3d 1571, 1578 (Fed. Cir. 1997). Similarly, application of the disclosure-dedication rule is a question of law subject to *de novo* review. *Pfizer, Inc. v. Teva Pharms., USA, Inc.*, 429 F.3d 1364, 1378 (2005).

I.

The focus of the parties’ dispute is the district court’s construction of the term “ratio.” The district court con-

⁴ Here, because the parties concede that there is no genuine issue of material fact, Appellant’s Br. 11, the case presents pure questions of law.

strued the term to mean the result of dividing two values. *Zircon*, 713 F. Supp. 2d at 894. As previously discussed, the crux of this disagreement turns on whether “ratio,” as used in the ’091 patent, encompasses only division, *or*, instead, encompasses either division or subtraction. In challenging the district court’s construction of the term “ratio,” Zircon argues that the term should be construed to mean simply a “relation in degree or number between two similar things,” regardless of how that relationship is calculated. Appellant’s Br. 8–9. Specifically, Zircon asserts that its proposed construction is correct in light of the plain meaning of the term “ratio,” the claim language, the specification, and the prosecution history of the ’091 patent. On the basis of this same evidence, Stanley argues that the district court’s construction of “ratio” is correct.

Generally, claim terms should be given their ordinary and customary meaning to a person having ordinary skill in the art at the time of the effective date of the patent application. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc); *see also Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004) (“A court construing a patent claim seeks to accord a claim the meaning it would have to a person of ordinary skill in the art at the time of the invention.”). To determine the scope and meaning of disputed claim terms, we look to the words of the claims themselves, the written description, the prosecution history, and, finally, any relevant extrinsic evidence. *Phillips*, 415 F.3d at 1312–19.

While a court can examine this evidence in any order,⁵ generally, our examination begins with intrinsic

⁵ Nor is the court . . . required to analyze sources in any specific sequence, as long as those sources are not

evidence, namely the language of the claims. *Vitronics Corp v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). We have noted that “the context in which a term is used in the asserted claim can be highly instructive.” *Phillips*, 415 F.3d at 1314. Next, the court should interpret the claims in light of the specification. *Id.* at 1315. While it is improper to read limitations from the specification into the claims, the claims “must be read in view of specification, of which they are a part.” *Id.* at 1315 (citation omitted); see also *Merck & Co. v. Teva Pharms. USA, Inc.*, 347 F.3d 1367, 1370 (Fed. Cir. 2003) (“[C]laims must be construed so as to be consistent with the specification . . .”). In fact, the specification is the single best guide to the meaning of a claim term; it is, usually, dispositive. *Phillips*, 415 F.3d. at 1318 (“[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive . . .’”) (internal citations omitted).

As the final step in analyzing the intrinsic evidence, the court should “consider the patent’s prosecution history, if it is in evidence.” *Id.* at 1317. The court should be aware, however, that the prosecution history “often lacks the clarity of the specification” and thus, can be of limited use in claim construction. *Id.*

While our case law emphasizes the importance of intrinsic evidence, as noted, extrinsic evidence is also relevant to claim construction. *Phillips*, 415 F.3d at 1317. Such evidence consists of all evidence extrinsic to the patent and its prosecution history, including “expert and inventor testimony, dictionaries, and learned treatises.” *Id.* (internal quotation omitted). While authorizing

used to contradict claim meaning that is unambiguous in light of the intrinsic evidence.” *Phillips*, 415 F.3d 1324. In this regard, it is never error to consider extrinsic evidence, it is only error to give it undue weight.

examination of extrinsic evidence, we have warned that, while it “can shed useful light on the relevant art,” it is “less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Id.* (internal quotation omitted).

With these standards in mind, we turn to the language of the '091 patent's claims. Representative independent method claim 10 recites:

A method of finding a feature behind a surface using a sensor having first and second plates, the method comprising the acts of: moving the sensor and surface adjacent one another; measuring a first capacitance of a first capacitor including the first plate; measuring a second capacitance of a second capacitor including the second plate; *computing a ratio of the first and second capacitances*; determining whether the ratio is within a predetermined range; and wherein the predetermined range has fixed boundaries.

'091 patent col.21 ll.48–60 (emphasis added). Representative apparatus claim 23, similarly, recites the ratio limitation, it claims:

A sensor for finding a feature of a structure, comprising: a first plate having a first capacitance and adapted for forming a first capacitor with the structure; a second plate having a second capacitance and adapted for forming a second capacitor with the structure; a first measurement circuit coupled to the first plate, the first measurement circuit measuring a first capacitance value of the first capacitor; a second measurement circuit coupled to the second plate, the second measurement circuit measuring a second capacitance value of the second capacitor; and a comparison circuit

coupled to the first and second measurement circuits, the comparison circuit *generating a ratio of the first and second capacitance values*; an indicator coupled to the comparison circuit thereby to provide an indication of the ratio of the capacitances; *wherein if the indication is that the ratio is approximately one, thereby locating a centerline of the structure.*

Id. at col.22 ll.49–66 (emphases added). The emphasized language of claim 23 identifies that “ratio,” as used in this claim, denotes division because the patented sensor locates the centerline of a structure when the ratio is approximately one; the quotient of two equal numbers is one, also known as “unity.” *Id.* at col.7 ll.30–33 (“If the capacitance measurements are equal or the ratio is approximately equal to unity, both plates may be centered over the stud’s edge 102 and the centerline 304 of the sensor 300 may be centered over the centerline 101 of the stud 100.”).⁶

While the language of claim 23 itself makes clear that the “ratio” is to be calculated using division, it is unclear from reference only to the language of claim 10 whether the “ratio” referenced there also could be determined by use of subtraction. The claim states that a “ratio” is computed to determine “whether the ratio is within a predetermined range.” *Id.* at col.21 ll.56–58. Because either division or subtraction could produce a result that is “within a predetermined range,” this language is conceivably broad enough to encompass either methodology.

Zircon asserts that any question regarding the scope of claim 10 can be clarified using a number of claim

⁶ When two equal values are divided, the result is one, or “unity.” When two equal values are subtracted, however, the result is zero.

construction tools. First, citing the American Heritage Dictionary, Zircon contends that the plain and ordinary meaning of the term “ratio” is the “relation in degree or number between two similar things.” Appellant’s Br. 19–20 (citing *Am. Heritage Dictionary* 1028 (2d. College Ed. 1991)). This definition lends scant support to Zircon’s proposed construction, however. There is an alternative definition for ratio in that same dictionary that defines it as “the relative size of two quantities expressed as the quotient of one divided by the other” — i.e., the result of division. *Am. Heritage Dictionary* 1028. That definition is classified, moreover, as the mathematical definition of the term which, in the context of this patent, we find to be the more pertinent definition to apply. Thus, to the extent that reference to dictionary definitions of this disputed claim term is helpful, we find such reference supports Stanley’s construction, not Zircon’s.

Zircon next asks us to focus on the language of the representative claims as well as those which depend therefrom. Zircon argues that application of basic principles regarding the primary importance of the claim language, as well as the doctrine of claim differentiation, virtually mandate the broad construction for “computing a ratio” which it urges. J.A. 14–19. Pointedly, Zircon argues that the district court’s construction of “computing a ratio” renders dependent claims 21 and 22 superfluous over claim 10 from which they depend, and renders them illogical. Claim 21 recites that the “computing a ratio” step of claim 10 is performed by “comparing the first and second capacitances” and “determining whether the first and second capacitances differ by less than a threshold.” *Id.* at col.22 ll.35–36. Stanley admits that this language denotes subtraction. J.A. 129–130 (“Clearly, to determine whether measurements ‘differ by less than a threshold,’ are ‘within a predetermined value of each other,’ or ‘are

within a[n] . . . absolute value from each other,’ the values are being subtracted from one another to determine the difference between them.”). On the other hand, claim 22 states that “computing a ratio” between the two capacitances is done by “determining whether the ratio is within a range of inclusively 0.9 to 1.1.” ’091 patent col.22 ll.42–45. If the ratio is within this range, the sensor has detected the centerline of the stud. *Id.* at col.22 ll.45–48. This claim denotes division. On the basis of these dependent claims, Zircon asserts that the term “ratio” as used in claim 10 must encompass values derived by way of either division or subtraction.

Zircon’s argument has some superficial appeal. In *Phillips*, we made clear that the claims of a patent are not to be unduly limited where their plain meaning does not allow for such limitation. 415 F.3d at 1324–27. And, in that case, we repeatedly referenced the doctrine of claim differentiation to avoid importing limitations from dependent claims of the patents in suit into the term “baffle” in the asserted independent claim. *Id.* Indeed, the presumption arising from claim differentiation is a strong one when the very limitation one seeks to import into an independent claim appears in a claim dependent therefrom. *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004).

Despite this facial appeal, Zircon’s argument ultimately fails, however, because the claims are simply not drafted as neatly as Zircon would have this court believe. Indeed, when read in the context of the other claims, the dependent claims are virtually incomprehensible on their face and certainly do not follow the pattern we examined in *Phillips*.⁷

⁷ We note, moreover, that the doctrine of claim differentiation, while a useful construction tool, does not

Zircon focuses on claims 21 and 22 and implies that they depend directly from claim 10. Thus, Zircon argues, claim 10 claims “computing a ratio” via either subtraction or division, while claim 21 claims “computing a ratio” only via subtraction and claim 22 claims doing so only via division. What Zircon first ignores is that claims 21 and 22 do not depend from claim 10; they depend from claim 19 which, in turn, depends from claim 10. Claim 19 reads:

The method of claim 10, wherein the first and a second plates are of approximately equal areas, the computing a ratio comprising: comparing the first and second capacitances; and repeating the acts of measuring and comparing.

'091 patent col.22 ll.22–25.

To be valid under 35 U.S.C. § 112, ¶ 4, claim 19 must be read to claim all of the steps of claim 10 and contain a further limitation thereof. “To establish whether a claim is dependent upon another, this court examines if the new claim both refers to an earlier claim and further limits that referent.” *Monsanto Co. v. Syngenta Seeds, Inc.*, 503 F.3d 1352, 1357 (Fed. Cir. 2007) (citing § 112, ¶ 4) (“[A] claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.”). And, claims 21 and 22 must further limit claim 19.

otherwise trump the clear import of the intrinsic evidence. *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1538 (Fed. Cir. 1991) (quoting *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 404 (Ct. Cl. 1967) (“Claim differentiation is a guide, not a rigid rule. If a claim will bear only one interpretation, similarity will have to be tolerated.”)).

Because claims 21 and 22 purport to describe the manner in which the “comparing” step of claim 19 is undertaken, it is that “comparing” language which must constitute the further limitation from claim 10 under § 112, ¶ 4. Because claim 22 defines “computing a ratio” as a sub-set of “comparing” the capacitances, moreover, claim 19’s “comparing” limitation is both broader than and includes “computing a ratio.” Thus, the “comparing” step of claim 19 cannot be the same as the “computing a ratio” step in claim 10, as Zircon seems to urge. And, if it is indeed an added limitation — presumably requiring a second calculation — it would only be that second calculation to which claims 21 and 22 refer, and impose further limitations.⁸

While Zircon argues that this reading of its claims is illogical, any other reading of the claims would render them invalid under § 112, ¶ 4. *See Michilin Prosperity Co. v. Fellows Mfg. Co.*, 450 F. Supp. 2d 35, 40 (D.D.C. 2006) (holding that, because of § 112, ¶ 4, dependent claim 4 must have three switches because independent claim 1, from which it depends, “recites two switches, and claim 4 recites an additional ‘single switch.’ Claim 4’s single switch, then, must be construed as a switch in addition to the paper touch switch and disc touch switch.”). It appears that claim 19 was meant to be an independent claim from which claims 21 and 22 would flow, allowing Zircon to capture a broad “comparing” methodology, which

⁸ It seems that Zircon believes that a dependent claim can provide a new limitation that acts as a substitute for a limitation contained in the independent claim. The law does not support that position. *See Pfizer, Inc. v. Ranbaxy Labs. Ltd.*, 457 F.3d 1284, 1291 (Fed. Cir. 2006) (holding that dependent claim 6 cannot cover salts of atorvastatin acid because the claim it depends upon only claims atorvastatin acid and not the salts of atorvastatin acid).

could employ alternate methods of calculating the comparisons. Because claim 19 must include all the steps of claim 10, however, the comparing methodology it claims must be in addition to the “computing a ratio” in claim 10. The fact that the claims do not appear in the patent as, perhaps, they were originally intended is not a problem this court has the authority to remedy. *Chef Am. Inc. v. Lamb-Weston Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004) (“This court, however, repeatedly and consistently has recognized that courts may not redraft claims, whether to make them operable or to sustain their validity.”).

As the district court concluded, moreover, adopting Zircon’s construction would introduce even more inconsistency into other claims:

[T]o accept [Zircon’s] argument would be to create much more inconsistency between the claims and to only selectively apply applicable patent law regarding dependent claims. Patent claims 1, 17, 22, 23, 31 and 32 expressly contemplate the invention finding a centerline when it detects a “ratio” of “approximately one” or some derivative thereof (i.e., 0.9-1.1). This claim language only makes sense if the invention is computing a ratio by dividing equal or almost-equal values to get a result of approximately one, and not if the values were instead being subtracted, because in the latter case the result of subtracting two equal values would be zero. If “ratio” were interpreted to include subtraction in each of those claims specifying that the result of the ratio should be close to one (i.e., in the range of 0.9 to 1.1) to determine a center-line, then the device would not function properly to indicate that it was centered over the stud in the very instance where it is most centered.

Zircon, 713 F. Supp. 2d at 892 (internal citations omitted).

For these reasons, the language of the asserted claims, even when considered in light of those that depend therefrom, does not compel the construction *Zircon* urges. We, thus, turn to the specification and prosecution history for guidance.

Zircon asserts that the specification of the '091 patent confirms that its proposed construction of "ratio" is correct. Specifically, *Zircon* highlights the fact that the specification discloses embodiments of the '091 patent that employ either division or subtraction to compare capacitances. Appellant's Br. 21. Stanley disagrees. It argues that, rather than establish that the term "ratio" encompasses both division and subtraction, the specification clearly refers to division when it discusses the term "ratio" and uses *other* nomenclature to refer to subtraction. In other words, Stanley argues that the specification does not interchangeably use the term "ratio" to describe the results of both the division and subtraction operations. Appellee's Br. 23. We agree with Stanley.

The specification repeatedly and consistently uses the word "ratio" to describe division. For example, the brief summary of the invention explains that "a ratio of approximately one may indicate a centerline of a stud or joist or similar member." '091 patent col.2 ll.48–49. Describing figure 5A,

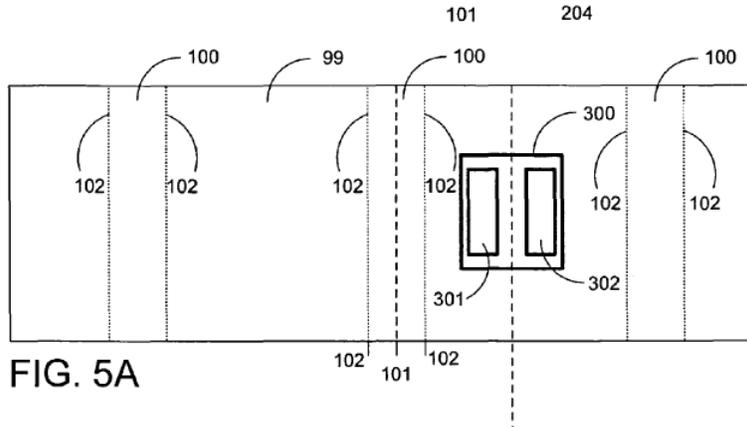


FIG. 5A

'091 patent fig.5A, the specification indicates that, in some embodiments, capacitance measurements are used to calculate a ratio: “If the capacitance measurements are equal or the ratio is approximately equal to unity, both plates may be centered over the stud’s edge 102 and the centerline 304 of the sensor 300 may be centered over the centerline 101 of the stud 100.” *Id.* at col.7 ll.30–33. Significantly, the specification even explains that a ratio is computed by dividing one capacitance measurement by the other. *E.g., id.* at col.12 ll.29–38; col.16 ll.39–42. For example, the ratio “may be computed as the smaller capacitance divided by the larger capacitance, thereby resulting in a ratio that is equal to or less than one.” *Id.* at col.7 ll. 51–53. As these examples illustrate, the specification consistently refers to “ratio” to denote a product arrived at by way of division.

In contrast to the consistent use of the term to describe division, the specification does not use the term “ratio” to describe subtraction. Instead, the specification uses terms such as “are within a predetermined value of each other,” or “absolute value from each other” to denote when subtraction is required. *Id.* col.14 ll.51–52, 65.

Describing the comparison circuit that the '091 patent uses to compare capacitances, the specification states:

[C]omparison circuit 414 may determine that the sensor is centered over a stud 100 by detecting that the capacitance measurements are equal to each other and also above a floor threshold. Capacitance measurements may be considered equal when they are within a predetermined percentage value or absolute value from each other.

Id. at col.14 ll.60–66. This example posits two different methods the comparison circuit can employ to compare the capacitances: (1) calculating a ratio, i.e., division; or (2) determining whether the two values are within a predetermined value of each other, i.e., subtraction. The specification confirms that the comparison circuit operates utilizing two distinct methods, stating, “[f]or example, the comparison circuit may compute a ratio between the capacitive measurements. The comparison circuit may determine whether the capacitive measurements are within a predetermined value of each other.” *Id.* at col.14 ll.48–52. The specification, therefore, consistently uses the term “ratio” to denote division and other terms to refer to subtraction.

Despite the specification’s explicit distinction, Zircon argues that its construction is correct because the specification discloses embodiments that utilize division or subtraction. Zircon’s relies on *Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp.*, 320 F.3d 1339 (Fed. Cir. 2003), in support of this argument. In *Boehringer*, the specification described the term “isolating” as defining a process that occurred in two different stages of growing a virus. *Id.* at 1347. In light of this fact, the court held that isolating could not be construed narrowly to cover “isolating” at only one of these stages. *Id.*

Zircon's argument misses the point. Unlike in *Boehringer*, the '091 patent does not use the term "ratio" to denote subtraction. In this case, the question is: What does "ratio" mean in the context of the '091 patent? The fact that the specification discloses both division and subtraction methodologies does not necessarily mean that "ratio" means either division or subtraction. The key to answering this question is determining how the '091 patent uses the term "ratio." As discussed above, the '091 patent only uses the term "ratio" when it means division. The specification never uses the term "ratio" to describe subtraction. "Ratio" cannot, therefore, be construed to encompass both division and subtraction, regardless of whether both methodologies are otherwise disclosed in the specification.

The prosecution history also supports this conclusion. Prosecution history "cannot be used to limit the scope of a claim unless the applicant took a position before the PTO that would lead a competitor to believe that the applicant had disavowed coverage of the relevant subject matter." *Schwing GmbH v. Putzmeister Aktiengesellschaft*, 305 F.3d 1318, 1324 (Fed. Cir. 2002). As discussed in the background section, during the prosecution of the '091 patent, original claim 32 broadly claimed comparing the capacitances. This claim was amended, however, to depend upon a claim that more narrowly required "calculating a ratio." While Zircon is correct that the record is unclear about why this amendment was made, it is clear that Zircon knew how to broadly claim division or subtraction as computing methods, yet it amended all of its independent claims to require "calculating" or "computing a ratio." One of ordinary skill in the art reading the file wrapper of this patent would believe that Zircon disavowed subtraction from the scope of its claims. This prosecution history, therefore, supports the construction

of “ratio” to encompass only division because it establishes that compare meant either division or subtraction, while “ratio” means only division.

In light of the foregoing, we agree with the district court that the proper construction of “ratio” is the “result of dividing two values.”

II.

We review de novo the district court’s grant of summary judgment of no literal infringement. On appeal, Zircon does not argue that Stanley’s accused devices infringe the ’091 patent under the district court’s construction of “ratio.” It is undisputed, moreover, that “Stanley’s Accused Stud Finders compare capacitances by subtraction.” Appellant’s Br. 25. Because we conclude that the district court correctly construed “ratio” to encompass only division, and it is undisputed that Stanley’s products use subtraction, we affirm the district court’s entry of summary judgment of no literal infringement.

In light of this conclusion, we turn to Zircon’s claim of infringement under the doctrine of equivalents.

III.

The disclosure-dedication rule bars a finding of infringement under the doctrine of equivalents “when a patent drafter discloses but declines to claim subject matter. . . . [T]his action dedicates that unclaimed subject matter to the public.” *Johnson & Johnston Assocs. Inc. v. R.E. Serv. Co.*, 285 F.3d 1046, 1054 (Fed. Cir. 2002). This rule is based upon the principle that “[a]pplication of the doctrine of equivalents to recapture subject matter deliberately left unclaimed would ‘conflict with the primacy of the claims in defining the scope of the patentee’s exclusive right.’” *Id.* Disclosure in the specification is sufficient to invoke this rule:

[I]f one of ordinary skill in the art can understand the unclaimed disclosed teaching upon reading the written description This “disclosure-dedication” rule does not mean that any generic reference in a written specification necessarily dedicates all members of that particular genus to the public. The disclosure must be of such specificity that one of ordinary skill in the art could identify the subject matter that had been disclosed and not claimed.

PSC Computer Prods., Inc. v. Foxconn Int’l, Inc., 355 F.3d 1353, 1360 (Fed. Cir. 2004).

Here, Zircon does not dispute that the specification adequately disclosed the subtraction method. Instead, Zircon argues that the district court’s application of this rule was incorrect because the district court’s construction of “ratio” incorrectly limited the term to only division. Appellant’s Br. 26–27 (“However, as discussed supra, Zircon did in fact claim subtraction. Thus, the claims are consistent with the scope of the invention disclosed in the specifications and disclosure-dedication does not apply.”) As discussed above, however, the district court correctly construed “ratio.” Under this construction, the ’091 patent does not claim a method or device for locating studs by subtracting capacitances. On these facts, it is clear that Zircon disclosed the subtraction method but failed to claim this method or an apparatus using it in its initial calculations in the ’091 patent. Because the district court properly granted summary judgment of non-infringement under the doctrine of equivalents, we affirm.

Because resolution of this issue is an independently sufficient reason upon which to affirm the district court’s entry of summary judgment of no infringement under the

doctrine of equivalents, we will not address Zircon's arguments relating to prosecution history estoppel.

CONCLUSION

Because the district court correctly construed the term "ratio," and properly determined that there was no infringement either literally or under the doctrine of equivalents, we affirm its judgment.

AFFIRMED