United States Court of Appeals for the Federal Circuit

03-1146, -1147, -1208

LIQUID DYNAMICS CORPORATION,

Plaintiff-Appellant,

v.

VAUGHAN COMPANY, INC.,

Defendant-Cross Appellant.

Mark W. Hetzler, Fitch, Even, Tabin & Flannery, of Chicago, Illinois, argued for plaintiff-appellant. With him on the brief were Jon A. Birmingham and Steven C. Schroer, of Fitch, Even, Etc., of Boulder, Colorado.

Robert J. Carlson, Christensen O'Connor Johnson Kindness PLLC, of Seattle, Washington, argued for defendant-cross appellant. With him on the brief were Ward Brown and Mark P. Walters.

Appealed from: United States District Court for the Northern District of Illinois

Judge Suzanne B. Conlon

United States Court of Appeals for the Federal Circuit

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Plaintiff-Appellant,

v.

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Defendant-Cross Appellant.

DECIDED: January 23, 2004

Before LOURIE, GAJARSA, and DYK, Circuit Judges.

Opinion for the court filed by Circuit Judge GAJARSA. Dissenting opinion filed by Circuit Judge LOURIE.

Liquid Dynamics Corporation ("Liquid Dynamics"), the owner by assignment of United States Patent No. 5,458,414 ("the '414 patent"), appeals from the final judgment of the United States District Court for the Northern District of Illinois, granting summary judgment of non-infringement in favor of defendant the Vaughan Company ("Vaughan"), with respect to the '414 patent. Vaughan cross-appeals the district court's dismissal as moot of its counterclaims of invalidity and inequitable conduct. Liquid Dynamics Corp. v. Vaughan Co., Inc., No. 01-C6934, 2002 U.S. Dist. LEXIS 14102 (N.D. Ill. July 31, 2002) ("Liquid Dynamics"). Because the district court erred in construing the claim term "a substantial helical flow path" and in requiring a flow that emanates from the tank center and returns to the center

after one rotation, we vacate and remand.

BACKGROUND

Liquid Dynamics brought the action against Vaughan for infringement of the '414 patent under 35 U.S.C. § 271 et seq. in the United States District Court for the Northern District of Illinois. Vaughan counterclaimed for invalidity and inequitable conduct. The district court, after construing the claims of the '414 patent and comparing the claims to the allegedly infringing products, granted Vaughan summary judgment of non-infringement and mooted Vaughan's counterclaims.

A. The Claimed Invention

This case involves the structure of slurry tanks. Slurry tanks are used to store and process chemicals and organic waste products (e.g., manure) that retain value as useful inputs (e.g., fertilizer) into other processes. Large storage tanks house these waste compounds in liquid or semisolid form between their production and their subsequent use. The liquid and solid components of these waste compounds tend to separate when stored, with solid particles either forming a crust on the top of the tank and/or falling to the bottom of the tank. Productive use of the stored compound requires remixing both to suspend the heavy solid particles within the liquid and to ensure that the resulting suspension is uniform. One standard approach has been to stir the mix continuously to avoid settling. Because continuous mixing can be expensive, however, tank designers sought ways to store the mixtures in a still tank, to allow the settling to occur, and to remix only when necessary for use. The '414 patent addressed these concerns.

The '414 patent has a total of 11 claims. Claims 1 and 8 are independent; the remaining nine claims are dependent. The invention is a method and apparatus for handling wastewater slurries: a storage tank equipped with submerged agitators capable of generating a flow of liquid throughout the tank. The disagreement between the parties turns on the interpretation of four phrases contained in Claim 1, and identical phrases in independent Claim 8. Claim 1 claims:

> Apparatus for storing a slurry having solid and liquid components, comprising:
> a storage tank defining a volume for holding a body of liquid and solid slurry components, including a floor of generally circular configuration and having a center, said storage tank further including an outer

surrounding wall positioned generally at a radial distance from the center;

at least two flow generating means positioned to be submerged within the liquid and solid slurry components for generating flow of at least one of the slurry components along a rotational direction, each of said flow generating means being disposed at distances from the center ranging between approximately 30 percent and 70 percent of said radial distance;

each of said first and second flow generating devices pointed in the direction for generating flows of the liquid and solid components from the respective flow generating means directed in the same rotational sense,

[1] said first and second flow generating means being directed at an angle to the radius to generate flows with tangential components of flow to impart a rotational movement of the entire body of liquid and solid components;
each of said first and second flow generating means being pointed toward the outer surrounding wall for generating

[2] a substantial helical flow path of the liquid and solid components therein

[3] with the liquid and solid components traveling outwardly, across the tank floor from the center portion of the tank toward the tank wall and then upwardly along the tank outer surrounding wall to a first point and then inwardly along an upper portion of the body toward the center of the tank and then downwardly toward the tank floor, and then outwardly to a second point spaced circumferentially in the direction of rotation of the entire body of liquid, the liquid and solid components continuing to travel in the helical path as the entire body of liquid and solid components continues to rotate;

a pressure source coupled to the first and second flow generating means to generate directed streams from the flow generating means to rotate the body of liquid and solid components and to cause the flow in the helical path; and

[4] said flow generating means creating a substantially volume filling flow of at least one of the slurry components within said storage tank which mixes the liquid and solid slurry components to form a substantially homogeneous slurry suitable for unloading from said storage tank using liquid handling devices.

’414 patent, cols. 8-9 (emphases added).[1]

B. The Prosecution History

Original Claim 1, filed with the application that matured into the ‘414 patent with the United States Patent and Trademark Office (“PTO”), contained phrase 4 but did not contain phrases 1, 2, or 3. Specifically, original Claim 1 read:

Apparatus for storing a slurry having solid and liquid components, comprising:

a storage tank defining a volume for holding the liquid and solid slurry components, including a floor of generally circular configuration and having a center portion, said storage tank further including an outer

surrounding wall positioned generally at a preselected radial distance from the center portion; and

at least two flow generating means positioned to be submerged within the liquid and solid slurry components for generating flow of at least one of the slurry components along a preselected direction, said flow generating means being disposed only at distances from the center ranging between approximately 30 percent and 70 percent of said preselected radial distance;

[4] said flow generating means creating a substantially volume filling flow of at least one of the slurry components within said storage tank which mixes the liquid and solid slurry components to form a substantially homogeneous slurry suitable for unloading from said storage tank using liquid handling devices.[2]

The patent examiner rejected the original Claim 1 as obvious in light of the prior art. The examiner also indicated that the original Claim 1 was "generic" and required the applicant to "elect a single disclosed species for prosecution" under 35 U.S.C. § 121. Amended Claim 1 added phrases 1, 2, and 3, and introduced other minor changes not at issue here.

Amended Claim 1 introduced new limitations on the claimed flow. Whereas original Claim 1 referred only to a "flow," amended Claim 1 required "a substantial helical flow path" (phrase 2) traveling "outwardly, across the tank floor from the center portion of the tank toward the tank wall and then upwardly along the tank outer surrounding wall to a first point and then inwardly along an upper portion of the body toward the center of the tank and then downwardly toward the tank floor, and then outwardly to a second point spaced circumferentially in the direction of rotation of the entire body of liquid" (phrase 3). The PTO accepted Claim 1 as amended and issued the patent. Amended Claim 1 issued as Claim 1 of the '414 patent.

C. Pre-Filing Conduct

The '414 patent was assigned to Liquid Dynamics' predecessor, Great Lakes Aqua Sales and Service, Inc. ("Great Lakes"). To support its counterclaims of invalidity and inequitable conduct, Vaughan alleged that Great Lakes made, used, and sold three mixing systems having the characteristics originally claimed in the '414 patent more than a year before filing the original application—and submitted documentary evidence to support these allegations.

D. The District Court Decision

Liquid Dynamics claimed that 47 of Vaughan's customized slurry tank systems infringe the '414 patent. Vaughan denied the allegations and counterclaimed for invalidity, inequitable conduct, and attorneys fees. Vaughan subsequently moved for summary judgment on grounds of non-infringement, invalidity, and inequitable conduct. The district court disposed of all issues in a single ruling. See generally, Liquid Dynamics.

On the matter of claim construction, the trial judge noted that "phrases 1 and 4 are unambiguous and claim construction is unnecessary," Liquid Dynamics at *20, but that phrases 2 and 3 required, "[p]roper claim interpretation [by] examination of the claim language, the patent specification, and the prosecution history." Id. at *10.

Both parties suggested interpretations that treated phrases 2 and 3 as a single limitation. Vaughan suggested that phrases 2 and 3 require:

> a helical flow path consist[ing] of the bottom segment of the path extending essentially radially from the center of the tank to the peripheral wall, with the bottom segment being immediately adjacent to the floor of the tank; an outer segment extending essentially vertically upward along the outer wall; an upper segment extending essentially radially along the upper portion of the body of slurry in the tank from the outer wall to the center of the tank; and an inner segment extending essentially vertically downward at the center; all segments no more than a negligible radial distance from the center.

Id.

Liquid Dynamics, on the other hand,

> advanced a broader definition of substantial helical flow: a largely or generally spiral-like flow path; a perfect helical path is not required; components of the slurry follow a path generally looping away from the center portion of the tank toward the tank's wall, upwardly toward the upper portion of the tank, then toward the center portion, and then downwardly.

Id.

The district court accepted Vaughan's proffered claim construction primarily because "the claim's plain language describes a flow path that emanates from the tank center and returns to the center after one rotation," id. at *10, and because two of the patent's figures, Figures 5 and 6, illustrate a perfectly helical flow. Id. at *12-*14. The district court further noted that the narrowing amendments

introduced to Claim 1 during prosecution to limit what had been a generalized flow pattern to the substantially helical one following the specific directional outlines of phrase 3 not only supported Vaughan's interpretation of the claim language, id. at *15, but also narrowed the range of infringing equivalents that Liquid Dynamics could assert. Id. at *28 (citing Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 29-30 (1997); Athletic Alternatives, Inc. v. Price Mfg., Inc., 73 F.3d 1573 (Fed. Cir. 1996)).

Having thus construed the claims, the district court compared the claims to Vaughan's allegedly infringing products, following Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), aff'd 517 U.S. 370 (1996). Liquid Dynamics submitted evidence of infringement primarily through the testimony of its expert, Dr. Richard Lueptow. Dr. Lueptow had simulated a series of computational flow dynamics to illustrate both the path of a single particle (the "particle plots") and the velocity of that particle (the "vector plots") in each of Vaughan's tanks. Liquid Dynamics at *23. The district court noted that all of Dr. Lueptow's exhibits, as well as his testimony, had been based on Liquid Dynamics' construction of the claim, which the court had rejected. The district court ruled that no reasonable person considering the particle plots could conclude that Vaughan's tanks infringed the '414 patent given the district court's construction of the claim.

The district court did not comment on Dr. Lueptow's submitted vector plots. Dr. Lueptow had explained that:

> In velocity vector plots, the many vectors in a specified plane (or slice) of the flow indicate the direction of flow (orientation of the vector) and the magnitude of the velocity in the plane of the slice (length of the vector).
>
> The vector plots in vertical planes through the axis of the tank that I analyzed showed circulation of the fluid outward in the lower portion of the tank, upward in the outer portion, inward in the top portion of the tank, and downward near the center portion of the tank for each of the categories of Vaughan tanks.

Decl. of Dr. Richard M. Lueptow, ¶¶ 27-28. The court did not discuss the relationship between the flow pattern that Dr. Lueptow attributed to his vector plots and the flow pattern required under the court's claim construction.

The district court granted summary judgment in favor of Vaughan and mooted Vaughan's counterclaims for invalidity and inequitable conduct. Both parties timely appealed. We have jurisdiction of this appeal pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

A. Standard of Review

This court reviews the grant of summary judgment de novo. Genzyme Corp. v. Transkaryotic Therapies, Inc., 346 F.3d 1094, 1096 (Fed. Cir. 2003); Pickholtz v. Rainbow Techs., Inc., 284 F.3d 1365, 1371 (Fed. Cir. 2002); Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp., 149 F.3d 1309, 1315 (Fed. Cir. 1998). Summary judgment is appropriate when there are no issues of material fact and the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56; Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 247-48 (1986).

A determination of patent infringement requires a two-step analysis. The court must first interpret the claim and determine the scope and the meaning of the asserted patent claims, and then compare the properly construed claims to the allegedly infringing device. Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454 (Fed. Cir. 1998). The first step, claim construction, is a matter of law that we review de novo. Id. at 1451. The second step is a factual question that we review following a trial for clear error. Bai v. L & L Wings, Inc., 160 F.3d 1350, 1353 (Fed. Cir. 1998). When conducting a de novo review of a district court's grant of summary judgment, however, we construe the facts in the light most favorable to the non-movant. Mazzari v. Rogan, 323 F.3d 1000, 1005 (Fed. Cir. 2003). To prove infringement, the patentee must show that the accused device meets each claim limitation, either literally or under the doctrine of equivalents. Deering Precision Instruments, L.L.C. v. Vector Distrib. Sys., Inc., 347 F.3d 1314, 1324 (Fed. Cir. 2003).

We review the district court's decision to moot Vaughan's counterclaims for abuse of discretion. Phonometrics, Inc. v. N. Telecom, Inc., 133 F.3d 1459, 1468 (Fed. Cir. 1998).

B. Claim Construction

Courts construe claims by considering the evidence necessary to resolve disputes about claim terms and to assign a fixed, unambiguous, legally operative meaning to the claim. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996).

It is well-settled that, in interpreting an asserted claim, the court should look first to the intrinsic evidence of record, i.e., the patent itself, including the claims, the specification and, if in evidence, the prosecution history. Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language.

Id.

We examine this intrinsic evidence seriatim. "We look first to the claim language itself, to define the scope of the patented invention. As a starting point, we give claim terms their ordinary and accustomed meaning as understood by one of ordinary skill in the art." Dow Chem. Co. v. Sumitomo Chem. Co., 257 F.3d 1364, 1372 (Fed. Cir. 2001). We look to the written description for guidance "when the claim language itself lacks sufficient clarity to ascertain the scope of the claims." Deering, 347 F.3d at 1322. We also look at the written description "to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning. The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication." Vitronics, 90 F.3d at 1582. "The specification contains a written description of the invention which must be clear and complete enough to enable those of ordinary skill in the art to make and use it. Thus, the specification is always highly relevant to the claim construction analysis." Id.

We look next to the prosecution history. When we use the prosecution history as source material, the prior art cited and the applicant's acquiescence with regard to that prior art indicate the scope of the claims, or in other words, what the claims do not cover. Autogiro Co. of Am. v. United States, 181 Ct. Cl. 55, 65 (1967). Furthermore, "where the patentee has unequivocally disavowed a certain meaning to obtain his patent, the doctrine of prosecution disclaimer attaches and narrows the ordinary meaning of the claim congruent with the scope of the surrender." Omega Eng'g, Inc. v. Raytek Corp., 334 F.3d 1314, 1324 (Fed. Cir. 2003).

The district court identified the four disputed phrases in Claim 1 and determined that the claim

language of phrases 1 and 4 was clear and needed no interpretation. The district court, however, was unable to interpret the helical flow pattern described in phrases 2 and 3 by reference to the claim language alone and considered the written description, the figures of the patent, and the prosecution history. The district court noted that two of the patent's figures, Figures 5 and 6, illustrate a perfect helical flow. In the prosecution history, the district court noted that Claim 1 as originally filed did not include language related to a helix—or to any other particular flow pattern—and that the amendments submitted to distinguish the claim from the prior art first introduced the "substantial helical" limitation. Based on these findings, the district court adopted Vaughan's suggested construction.

The district court's analysis was erroneous because Claim 1 was not ambiguous, and its plain meaning was not contradicted by the written description. The plain language of phrase 2 requires a "substantial helical flow." The term "substantial" is a meaningful modifier implying "approximate," rather than "perfect." In Cordis Corp. v. Medtronic AVE, Inc., 339 F.3d 1352, 1361 (Fed. Cir. 2003), the district court imposed a precise numeric constraint on the term "substantially uniform thickness." We noted that the proper interpretation of this term was "of largely or approximately uniform thickness" unless something in the prosecution history imposed the "clear and unmistakable disclaimer" needed for narrowing beyond this simple-language interpretation. Id. In Anchor Wall Systems v. Rockwood Retaining Walls, Inc., 340 F.3d 1298, 1311 (Fed. Cir. 2003), we noted that: "nothing in the prosecution history. . . clearly limits the scope of 'generally parallel' such that the adverb 'generally' does not broaden the meaning of parallel. Accordingly, we hold that the phrase 'generally parallel' envisions some amount of deviation from exactly parallel," and that "words of approximation, such as 'generally' and 'substantially,' are descriptive terms 'commonly used in patent claims 'to avoid a strict numerical boundary to the specified parameter.'" Id. at 1311.

Similarly, the plain language of Claim 1 requires neither a perfectly helical flow nor a flow that returns precisely to the center after one rotation (a limitation that arises only as a logical consequence of requiring a perfectly helical flow). Because the plain language of the claim was clear and uncontradicted by anything in the written description or the figures, the district court should not have relied upon the written description, the figures, or the prosecution history to add limitations to the

claim. Under such circumstances, relying on the written description and prosecution history to reject the ordinary and customary meanings of the words themselves is impermissible. Tex. Digital Sys. v. Telegenix, Inc., 308 F.3d 1193, 1204 (Fed. Cir. 2002). Courts construing claims must also remember that:

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

Comark Communications v. Harris Corp., 156 F.3d 1182, 1187 (Fed. Cir. 1998) (citations omitted).

The district court relied on the written description of Figures 5 and 6 to import the limitation of a perfectly helical flow. There is no language in the claim requiring such a perfectly helical flow. We have consistently warned against this approach to claim construction. See Amgen, Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1325 (Fed. Cir. 2003) ("Because the claims are best understood in light of the specification of which they are a part . . . courts must take extreme care when ascertaining the proper scope of the claims, lest they simultaneously import into the claims limitations that were unintended by the patentee."); CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed. Cir. 2002) (explaining that the presumption of ordinary meaning cannot be rebutted "simply by pointing to the preferred embodiment or other structures or steps disclosed in the specification or prosecution history"). Claim 1, properly construed, does not require a perfectly helical flow.

The district court here failed to differentiate between "helical" and "substantial helical." Claim 1, as properly construed, claims all flow patterns that are generally, though not necessarily perfectly, spiral, and that fill much, though not necessarily all, of the tank's volume. This construction of the claim follows from the words "substantial helical flow" in phrase 2, the directional outline of phrase 3, and the words "substantially volume filling" in phrase 4.

C. Infringement

The second step of an infringement analysis is the court's comparison of the allegedly infringing device with the claim. Bai, 160 F.3d at 1353. This analysis requires a determination that every claim

limitation or its equivalent is found in the accused device. Deering, 347 F.3d at 1324. Because the district court resolved a material factual dispute by comparing the accused product to an improperly construed claim, we reverse the summary judgment. Pickholz, 284 F.3d at 1374.

The district court disposed of Liquid Dynamics' literal infringement analysis by dismissing Dr. Lueptow's particle flow analyses as premised upon an improper claim construction. At oral argument, however, both parties agreed that Dr. Lueptow's vector plots illustrate paths that are nearer to helical than those shown in the particle plots, though Liquid Dynamics asserted that both sets of diagrams provide useful evidence of infringement, while Vaughan asserted that neither set is reliable.

Liquid Dynamics has thus submitted evidence that might convince a reasonable jury that Vaughan's systems generate flows that are generally, though not necessarily perfectly, spiral, and that fill much, though not necessarily all, of the tank's volume. In other words, Liquid Dynamics might be able to convince a reasonable jury that at least some of Vaughan's 47 systems literally infringe the '414 patent as correctly construed.

The narrowing amendments introduced during prosecution to overcome the application's obviousness in light of the prior art, however, may prevent Liquid Dynamics from using the doctrine of equivalents to claim any flows that are not substantially helical. Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 344 F.3d 1366 (Fed. Cir. 2003) ("[A] narrowing amendment made to comply with any provision of the Patent Act…may invoke an estoppel."). As the district court recognized:

> the '414 patent's helical flow path is central to the operation of the invention, not an insubstantial part of its overall structure. . . . The patent prosecution history establishes that the scope of the '414 patent was narrowed to encompass a specific type of flow pattern. The '414 patent's plain language provides for a specific flow pattern that is central to the invention.

Liquid Dynamics at *27-*28. That "specific flow pattern" refers to the "substantial helical flow" of Claim 1. The district court's characterization of the prosecution history creates a presumption that Liquid Dynamics surrendered its rights to all flows that are not substantially helical, even if they perform the same function as a substantially helical flow. Festo, 344 F.3d at 1366. Liquid Dynamics may establish literal infringement of the '414 patent by showing a substantially helical flow, but it will

have to overcome the presumption of surrender to claim that any flow other than a substantially helical one infringes under the doctrine of equivalents. See Festo at 1369-70.

D. Mootness

The district court mooted Vaughan's counterclaims of invalidity and unenforceability, citing Spectronics Corp. v. H.B. Fuller Co., Inc., 940 F.2d 631, 637-38 (Fed. Cir. 1991). Because we reversed the summary judgment of non-infringement, these counterclaims are no longer moot and must be reinstated.

We decided Spectronics, however, under a strict per se policy of mooting claims of invalidity following rulings of non-infringement. The Supreme Court rejected that policy in Cardinal Chemical Co. v. Morton International, 508 U.S. 83, 95 (1993), explaining that:

> In the trial court, of course, a party seeking a declaratory judgment has the burden of establishing the existence of an actual case or controversy. . . . In patent litigation, a party may satisfy that burden, and seek a declaratory judgment, even if the patentee has not filed an infringement action. Judge Markey has described "the sad and saddening scenario that led to enactment of the Declaratory Judgment Act (Act), 28 U.S.C. § 2201. In the patent version of that scenario, a patent owner engages in a danse macabre, brandishing a Damoclean threat with a sheathed sword. . . . Before the Act, competitors victimized by that tactic were rendered helpless and immobile so long as the patent owner refused to grasp the nettle and sue. After the Act, those competitors were no longer restricted to an in terrorem choice between the incurrence of a growing potential liability for patent infringement and abandonment of their enterprises; they could clear the air by suing for a judgment that would settle the conflict of interests. The sole requirement for jurisdiction under the Act is that the conflict be real and immediate, i.e., that there be a true, actual 'controversy' required by the Act.". . . Merely the desire to avoid the threat of a "scarecrow" patent, in Learned Hand's phrase, may therefore be sufficient to establish jurisdiction under the Declaratory Judgment Act. If, in addition to that desire, a party has actually been charged with infringement of the patent, there is, necessarily, a case or controversy adequate to support jurisdiction of a complaint, or a counterclaim, under the Act.

Id. at 95-96 (citations and footnotes omitted).

We have noted that "[t]he Supreme Court's decision in Cardinal Chemical does not preclude this discretionary action by the district court. Cardinal Chemical simply prohibits us, as an intermediate appellate court, from vacating a judgment of invalidity when we conclude that a patent has not been infringed, and therefore has no bearing on the district court's actions in this case." Phonometrics, 133 F.3d at 1468. A district court judge faced with an invalidity counterclaim challenging a patent that it

concludes was not infringed may either hear the claim or dismiss it without prejudice, subject to review only for abuse of discretion. Nystrom v. TREX Co., 339 F.3d 1347, 1351 (Fed. Cir. 2003).

CONCLUSION

Because the district court erred in construing "substantial helical flow path" and in requiring a flow that emanates from the tank center and returns to the center after one rotation, and because there is a material factual dispute, we vacate the district court's grant of summary judgment of non-infringement and remand for further proceedings consistent with this opinion.

VACATED AND REMANDED

COSTS

Each party shall bear its own costs.

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Defendant-Cross Appellant.

LOURIE, Circuit Judge, dissenting.

I respectfully dissent from the majority's conclusion. I would affirm the district court's claim construction. It is fully supported by both the language of the claim and the specification. The claim requires the liquid and solid components to "travel[] outwardly, across the tank floor from the center portion of the tank toward the tank wall and then upwardly along the tank outer surrounding wall to a first point and then inwardly along an upper portion of the body toward the center of the tank." Clearly, the flow returns to the center. Moreover, I disagree with the majority's conclusion that "[c]laim 1 requires neither a perfectly helical flow nor a flow that returns precisely to the center after one rotation." Clearly, the meaning of the claim is that the tank components return to the center after one rotation of helical flow. While the word "one" is not used, that is the plain meaning of the claim. The flow returns to the center after one rotation. Although the district court's language may have been a bit different from that used by the majority, it is not sufficiently different, in my view, to justify reversal. The district court expressly stated that "a perfect helix is not required." In addition, the district court did not err in interpreting the claim in light of the patent specification, including Figures 5 and 6.

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[1] The patent claim language does not contain the phrase numbering. The district court introduced the enumeration of phrases 1 through 4 in Claim 1 for reference purposes.

[2] We maintained the labeling of phrase 4 in original Claim 1 to parallel the district court's labeling in Claim 1 of the '414 patent.