United States Court of Appeals for the Federal Circuit

REMBRANDT DATA TECHNOLOGIES, LP,
Plaintiff-Appellant,

v.

AOL, LLC, CAVALIER TELEPHONE, LLC, AND DIRECTV, INC.,
Defendants,

and

HEWLETT-PACKARD COMPANY, CANON U.S.A., INC., CANON BUSINESS SOLUTIONS, INC., AND CANON INFORMATION TECHNOLOGY SERVICES, INC.,
Defendants-Appellees.

2010-1002

Appeal from the United States District Court for the Eastern District of Virginia in case no. 08-CV-1009, Judge Gerald Bruce Lee.

Decided: April 18, 2011

GEORGE PAZUNIAK, Womble Carlyle Sandridge & Rice, PLLC, of Wilmington, Delaware, argued for plaintiff-

appellant. Of counsel were VIRGINIA W. HOPTMAN and JAMES MICHAEL LENNON.

MICHAEL J. SONGER, Crowell & Moring, LLP, of Washington, DC, argued for defendants-appellees. With him on the brief was MICHAEL H. JACOBS.

Before GAJARSA, LINN, and DYK *Circuit Judges*.

GAJARSA, *Circuit Judge*.

This is a patent infringement appeal the resolution of which depends on the interpretation of whether a license exists for the technology at issue. Rembrandt Data Technologies, LP ("Rembrandt") appeals the district court's decisions regarding contract interpretation, claim construction, and the invalidity of certain claims of United States Patent Nos. 5,251,236 ("'236 patent") and 5,311,578 ("'578 patent") (collectively, "patents-in-suit"). The district court held that because Conexant Systems, Inc. ("Conexant") can trace its rights to a license originally issued to the Rockwell Corporation, Conexant is licensed. The district court was correct in this determination. Rembrandt's right to enforce the patents-in-suit against Conexant's modem chip customers Canon U.S.A., Inc., Canon Business Solutions, Inc., and Canon Information Technology Services, Inc. (collectively, "Canon") and Hewlett-Packard Company ("HP") was, therefore, extinguished by patent exhaustion. *See, e.g.*, *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S. 617, 638 (2008). The district court also correctly granted summary judgment on the invalidity of claims 3-11 of the '236 patent. The district court erred in granting summary judgment on the invalidity of claims 1 and 2 of the '236 patent because genuine issues of material fact remained. Thus,

we affirm-in-part, reverse-in-part, and remand for further proceedings consistent with this opinion.

BACKGROUND

I.

A.

Rembrandt is the owner by assignment of United States Patent Nos. 5,602,869 ("'869 patent") and 5,844,944 ("'944 patent"). In 2008, Rembrandt filed a complaint in the Eastern District of Virginia alleging that AOL, LLC; Cavalier Telephone, LLC; DIRECTV, Inc.; Canon; and HP infringed the '236, '578, '869, and '944 patents. On April 30, 2009, Rembrandt stipulated to the dismissal with prejudice of the claims regarding the '869 and '944 patents. AOL, LLC; Cavalier Telephone, LLC; and DIRECTV, Inc. have been dismissed from this case and only Canon and HP remain as appellees. The two remaining patents-in-suit claim certain types of computer modems and methods of identifying modems.

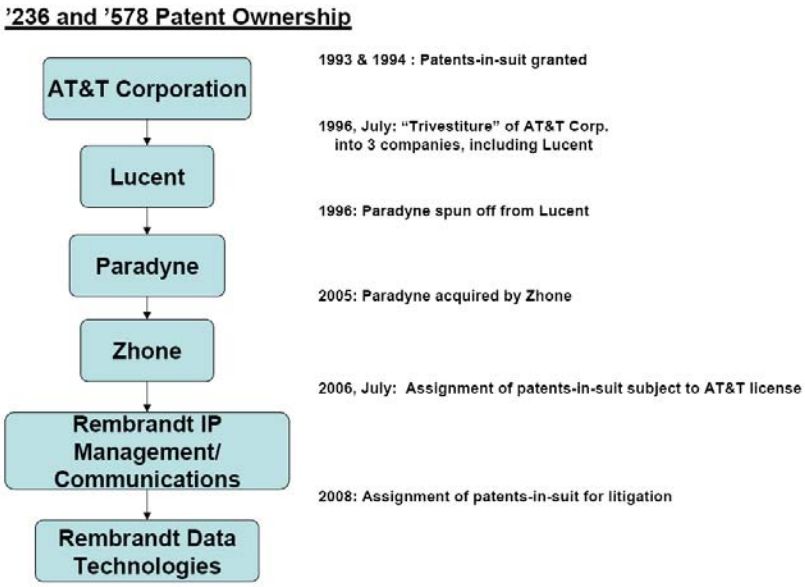
A modem is "a communications device that enables a computer to transmit information over a standard telephone line." J.A. 8832. The '236 patent, entitled "Fractional Rate Modem with Trellis," issued in 1993 and describes a modem utilizing both the "fractional rate encoding" technique for more rapidly transferring data and the "trellis encoding" technique for reducing errors in data transmission. '236 patent col.2 ll.41-44. Rembrandt asserted claims 1-3 and 6-11 of the '236 patent against Canon and HP. The '578 patent, entitled "Technique for Automatic Identification of a Remote Modem," issued in 1994 and describes using "hidden" identification signals to enable an originating modem to efficiently identify and

connect to a remote modem. '578 patent col.2 ll.49-52. The '578 patent has seven claims, each of which was originally asserted against Canon and HP. Claims 1-6 are no longer being asserted against HP.

The '236 and '578 patents were initially acquired by subsidiaries of AT&T Corporation. In 1996, AT&T Corporation underwent a "trivestiture," creating AT&T, NCR Corporation,[1] and Lucent Technologies, Inc. ("Lucent"). The patents-in-suit were transferred to Lucent. In 1996, Lucent spun off Paradyne Corporation ("Paradyne"), which became the assignee of the '236 and '578 patents. In 2005, Paradyne was acquired by Zhone Technologies, Inc. ("Zhone"). In 2006, Zhone assigned the patents-in-suit to Rembrandt IP Management, LLC, which subsequently assigned the patents to Rembrandt Communications, LP ("Rembrandt Communications"). In 2008, less than two weeks before filing suit, Rembrandt Communications assigned the '236 and '578 patents to the plaintiff-appellant.

The ownership genealogy of the '236 and '578 patents is documented in the chart below.

[1] NCR Corporation was initially named the National Manufacturing Company, but NCR is short for the National Cash Register Company, which it was renamed in 1884. NCR Corporation was acquired in 1991 by AT&T Corporation. It was renamed AT&T Global Information Solutions in 1994. In 1996, AT&T changed the name back to NCR Corporation in preparation for a spin-off.



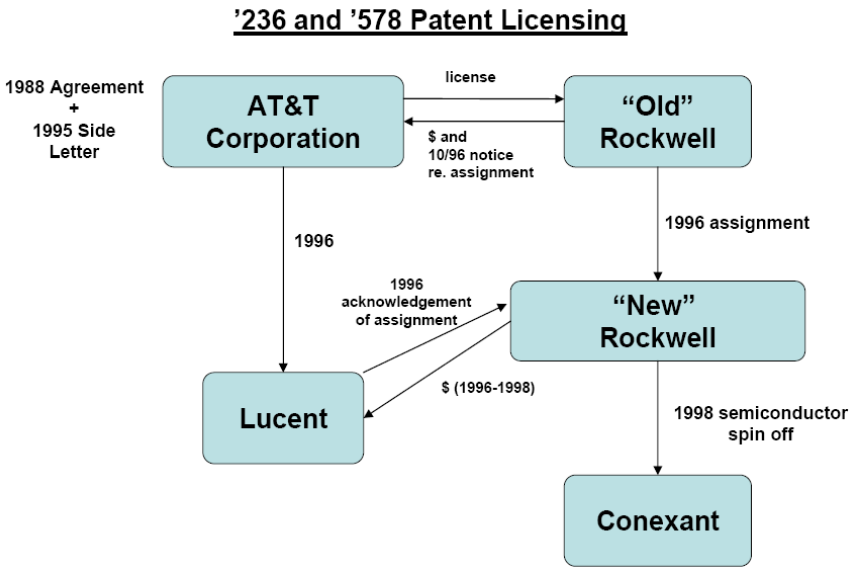
B.

In 1996, Rockwell International Corporation executed an agreement for a third party to acquire some of its aerospace and defense businesses and reorganized its corporate structure. For clarity, we refer to the pre-1996 reorganization "Rockwell International Corporation" as "Old Rockwell" and the post-1996 reorganization "Rockwell International Corporation" as "New Rockwell." Old Rockwell conveyed substantially all of its businesses and assets to New Rockwell in the "Agreement and Plan of Distribution dated as of December 6, 1996." ("Rockwell Distribution Agreement") The Rockwell Distribution Agreement stated that Old Rockwell "contributes, grants, conveys, assigns, transfers and delivers to Newco [(New Rockwell)] all the Company's [(Old Rockwell's)] right, title and interest in and to any and all Assets of the Company

[(Old Rockwell)]," except for its aerospace and defense businesses. J.A. 12986. "Assets" included "agreements, leases, contracts . . . licenses, franchises, permits, authorizations and approvals." J.A. 12979.

Before its reorganization, Old Rockwell entered into a "Patent License Agreement" effective as of October 1, 1988 with AT&T Corporation. ("1988 License Agreement"). In the 1988 License Agreement, AT&T Corporation and Old Rockwell cross-licensed numerous patents, including the patents-in-suit. The 1988 License Agreement was amended by the parties through a 1995 Side Letter Agreement granting Rockwell additional rights, including sublicensing rights.

In a letter dated October 17, 1996, Lucent, the licensor of the patents-in-suit following the AT&T Corporation's trivestiture, acknowledged Rockwell's reorganization and the assignment of Old Rockwell's rights and notification obligations under the 1988 License Agreement to New Rockwell. Subsequent to receiving Lucent's letter, New Rockwell made its royalty payments to Lucent. In 1998, New Rockwell spun off its Semiconductor Systems unit, including its modem business, to Conexant. The licensing of the patents-in-suit is described in the chart below.



II.

The Telecommunication Standardization Sector of the International Telecommunications Union ("ITU") coordinates protocols for telecommunication. As part of this process, it periodically promulgates standards known as "Recommendations." ITU Recommendations regarding modems facilitate fast, reliable communication between modems from different manufacturers and of different types. Manufacturers market their modems as compliant with specific ITU Recommendations, such as the V.8, V.34, V.90, and V.92 protocols. Although Recommendations are not numbered in chronological order by date of adoption, they are designed to be backward compatible, so each successive Recommendation is able to implement preceding Recommendations.

Rembrandt argues that the inventions of the '236 and '578 patents are incorporated into the V.34 protocol. In its complaint, Rembrandt accuses Canon and HP of

infringement of the patents-in-suit because they market office products containing modem chips capable of implementing the V.34 protocol. All of the accused products contain modem chipsets manufactured by Conexant.

III.

On June 17, 2009, the district court issued multiple orders that are challenged in this appeal. First, it entered an order construing some claims of the '236 and '578 patents. The district court also held claims 3-11 of the '236 patent invalid as indefinite for improperly mixing method and apparatus elements. The court denied Canon's motion for summary judgment of non-infringement of the '578 patent because Rembrandt could "conceivably carry its burden at trial based on circumstantial evidence." J.A. 14322. The district court also granted Canon's motion for summary judgment of exhaustion because Conexant, Canon and HP's supplier of modem chips, was properly sublicensed under the 1988 License and 1995 Side Letter Agreements, and therefore, Rembrandt's right to enforce the '236 and '578 patents was extinguished by patent exhaustion. Rembrandt's motion for reconsideration of some of the orders was denied.

The district court subsequently issued an opinion explaining its prior summary judgment orders. *Rembrandt Data Techs., LP v. AOL, LLC*, 673 F. Supp. 2d 420 (E.D. Va. 2009). In a footnote, the court stated that the question of whether the claims of the '236 patent were invalid as indefinite for failing to disclose algorithms corresponding to functions set forth in the claims was moot in light of its indefiniteness ruling with respect to claims 3-11. *Id.* at 428 n.5. Although judgment was entered in Canon's favor on all claims, the court's holding in its Memoran-

dum Order of August 21, 2009 regarding the improper mixing of method and apparatus claims only applied to claims 3-11 of the '236 patent and did not address claims 1 and 2 of the '236 patent. On September 2, 2009, Canon filed a motion pursuant to Federal Rule of Civil Procedure 59(e) to amend the August 21, 2009 order to address claims 1 and 2. The district court granted Canon's motion, replacing the second sentence in footnote 5 of the August 21, 2009 order with the following sentence: "The Court also holds that each of claims 1-11 in the '236 patent is invalid as indefinite for failing to disclose the necessary algorithms for the reasons set forth in its order of June 17, 2009." J.A. 1. Rembrandt timely appealed to this court. We have jurisdiction over Rembrandt's appeal pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

Contract interpretation is a question of law reviewed *de novo*. *Lucent Techs., Inc. v. Gateway, Inc.*, 543 F.3d 710, 717 (Fed. Cir. 2008). The district court's grant of summary judgment is also reviewed *de novo*. *Koninklijke Philips Elecs. N.V. v. Cardiac Sci. Operating Co.*, 590 F.3d 1326, 1332 (Fed. Cir. 2010). Summary judgment is appropriate when, drawing all justifiable inferences in favor of the non-moving party, there exists no genuine issue of material fact and the moving party is entitled to judgment as a matter of law. *See* Fed. R. Civ. P. 56(c); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247 (1986). This court has stated that "[i]n determining whether there is a genuine issue of material fact, the evidence must be viewed in the light most favorable to the party opposing the motion, with doubts resolved in favor of the opponent." *Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, 149 F.3d 1309, 1315 (Fed. Cir. 1998). When a motion for summary judgment is properly supported by documentary

and testimonial evidence, however, the nonmoving party may not rest upon mere allegations or denials of his pleadings, but rather, must present significant probative evidence to establish a genuine issue of material fact. *Celotex Corp. v. Catrett*, 477 U.S. 317, 327 (1986).

I.

Canon and HP contend that Conexant was sublicensed by New Rockwell. If Conexant, Canon and HP's modem supplier, has a valid license to sell the modem chips, Rembrandt's rights to sue Canon and HP for infringement of the patents-in-suit are exhausted by that license. *Quanta Computer*, 553 U.S. at 638 (holding that a licensee's sale of component computer parts that substantially embodied method patents held by the patentee was "authorized" by the patentee and exhausted the patentee's patents). Rembrandt argues that Conexant was not sublicensed for two reasons: (1) because New Rockwell could not sublicense its rights to Conexant; and (2) even if it could, the sublicense does not apply to the modem chipsets at issue. Because Conexant is licensed, Rembrandt's rights are exhausted and it cannot recover from Canon and HP. The district court properly held as a matter of law that New Rockwell could further sublicense the patents-in-suit to Conexant.

Rembrandt first argues that New Rockwell could not sublicense its rights to Conexant because it was not properly assigned licensing rights from Old Rockwell. Under the 1988 License Agreement, Old Rockwell licensed numerous patents, including the patents-in-suit, from their original assignee, AT&T Corporation. Rembrandt also contends that the license was not transferable from New Rockwell to Conexant without AT&T Corporation's written consent.

In the 1995 Side Letter Agreement, AT&T Corporation recognized that Old Rockwell "may at some time in the future wish to divest all or part of its business," and provided that "the licenses and rights granted in the Agreement may be sublicensed to any future divested present business of Rockwell." J.A. 14373-74. In 1996, Old Rockwell reorganized its operations but retained its semiconductor business, which included its modem manufacturing unit. As part of the restructuring, Old Rockwell divested most of its businesses and assets, including its agreements and licenses, to New Rockwell. This included its rights and obligations under the 1988 License and 1995 Side Letter Agreements, including its right to sublicense.

Rembrandt argues that the license was not properly assigned from Old Rockwell to New Rockwell because Old Rockwell never obtained AT&T's written consent for that assignment. Rembrandt argues that without AT&T's consent, New Rockwell "could only have acquired, at most, the sublicense rights" provided by the 1995 Side Letter Agreement. Appellant's Br. 17. However, the 1995 Side Letter Agreement stated that "the licenses and rights granted in the Agreement may be sublicensed to any future divested present business of Rockwell." J.A. 14373-74. Thus, further consent by AT&T was unnecessary. Rembrandt's concern about licenses and rights flowing infinitely to subsequent licensees so long as they share the name "Rockwell" is misplaced. The extension of the license and rights from AT&T or its successors to companies related to Rockwell is expressly limited in the 1995 Side Letter Agreement to divested present businesses of Old Rockwell, which in this case, includes both New Rockwell and Conexant.

In 1998, New Rockwell divested its modem business to Conexant and granted it a "royalty-free, world-wide, irrevocable, non-exclusive license under all intellectual property rights," including patents "under which the Rockwell Group had a right to license" and "which are used in the conduct of the business of [Conexant]" at the time of divestiture. Canon Mem. Supp. Mot. Summ. J., Ex. 6-c, Section 3.11. Rembrandt argues that New Rockwell had no authority to further sublicense Conexant because "the law does not recognize any right of a nonexclusive licensee to assign the license or to further sublicense." Appellant's Br. 20.

Rembrandt is generally correct, unless, as here, a contract provides otherwise. The express language of the 1995 Side Letter Agreement provided that "the licenses and rights granted in the Agreement may be sublicensed to any future divested present business of Rockwell." J.A. 14373-74. Old Rockwell's rights under the 1988 License and 1995 Side Letter Agreements were extended by the terms of the 1995 Side Letter Agreement to New Rockwell, and in turn, Conexant. Such sublicensing is effective so long as the sublicensed "future divested business" continues to "operate[] as a separately identifiable business" selling "products and services sold by the future divested business prior to its divestiture." J.A. 14373-74. New Rockwell and Conexant satisfy the 1995 Side Letter Agreement because New Rockwell sold V.34 protocol-compliant modem chips prior to spinning off Conexant, and Conexant, the "future divested business," continues to manufacture V.34 protocol-compliant modems.

Finally, Rembrandt argues that even if Conexant was properly sublicensed, the sublicense does not apply to the modem chipsets at issue because they are not the "'products and services sold by the future divested business

prior to its divestiture' – i.e., products and services sold by December 1996 when Old Rockwell divested its semiconductor business to New Rockwell." Appellant's Br. 23. Rembrandt maintains that the district court erred by holding that the parties "intended to cover modems generally, not specifically the exact types of modems in production at the time of the sublicense and/or divestiture."

The 1995 Side Letter Agreement states:

> [T]he licenses and rights granted in the Agreement may be sublicensed to any future divested present business of Rockwell . . . only to the extent applicable to products and services sold by the future divested business prior to its divestiture.

J.A. 14374.

Neither the original 1988 License Agreement nor the 1995 Side Letter Agreement refers to specific models of modems. Rather, these agreements specify product types using general, functional terms. Section 1.03 of the 1988 License Agreement provides Rockwell with a license to "make, have made, use, lease, sell, and import Licensed Products." J.A. 14330. The License Agreement defines "Licensed Products" as "any product (including any specified combination of other products) or service listed . . . under Section 1.01." J.A. 14349. Section 1.01 lists general categories, including "data communication station systems" and "digital transmission systems." *Rembrandt*, 673 F. Supp. 2d at 434. Although the 1995 Side Letter Agreement does not explicitly define "products and services," it requires royalty payments for Old Rockwell's "Telecom Sales" and "Reportable Products." J.A. 14374. The 1995 Side Letter Agreement defines "Telecom

Sales" generally as "any sales of a business unit reported in Rockwell International Corporation's annual report (as of 1994) under 'Telecommunication' or its equivalent in future reports regardless of a Telecom name change of the assignment of any reported business unit to another organization within Rockwell." J.A. 14375. According to Old Rockwell's 1994 Annual Report, Old Rockwell's telecommunications business unit sold modems. Prior to New Rockwell's divestiture of its modem business to Conexant, it sold modem chipsets, including V.34 protocol-compliant chipsets. Conexant continues to sell V.34 protocol-compliant chipsets. Thus, the sublicensing conditions in the 1995 Side Letter Agreement are satisfied.

As the district court correctly explained, the term "products" covers "modems generally, not specifically the exact types of modems in production at the time of the sublicense and/or divestiture." *Rembrandt*, 673 F. Supp. 2d at 437. The language of the 1988 License and 1995 Side Letter Agreements favors a broad interpretation of "product," rather than the narrow one Rembrandt suggests. Conexant's sublicense thus precludes Rembrandt's recovery against Canon and HP for infringement of the '236 and '578 patents.

II.

The district court properly held claims 3-11 of the '236 patent invalid for indefiniteness, but incorrectly held claims 1 and 2 of the '236 patent invalid for failure to disclose necessary algorithms because there was a genuine issue of material fact regarding the disclosure of the specification.

A.

Claim 3 of the '236 patent reads:

> 3. A data transmitting device for transmitting signals corresponding to an incoming stream of bits, comprising:
>
> first buffer means for partitioning said stream into frames of unequal number of bits and for separating the bits of each frame into a first group and a second group of bits;
>
> fractional encoding means for receiving the first group of bits of each frame and performing fractional encoding to generate a group of fractionally encoded bits;
>
> second buffer means for combining said second group of bits with said group of fractionally encoded bits to form frames of equal number of bits; trellis encoding means for trellis encoding the frames from said second buffer means; and
>
> transmitting the trellis encoded frames.

'236 patent col.6 ll.1-24.

Claims 4-11 depend on claim 3. The first four elements of claim 3 of the '236 patent recite apparatus elements: buffer means, fractional encoding means, second buffer means, and trellis encoding means. '236 patent col.6 ll.3-23. The final element is a method: "transmitting the trellis encoded frames." *Id.* at col.6 l.24. This court has held that "reciting both an apparatus and a method of using that apparatus renders a claim indefinite under section 112, paragraph 2." *IPXL Holdings, L.L.C.*

v. Amazon.com, Inc., 430 F.3d 1377, 1384 (Fed. Cir. 2005) (citing *Ex parte Lyell*, 17 U.S.P.Q.2d 1548 (B.P.A.I. 1990)). Applying this doctrine, the district court correctly held claim 3 and its dependent claims 4 through 11 invalid for indefiniteness.

Rembrandt argues that the phrase "said transmitter section" in claims 7 and 8 requires that claim 3, on which claims 7 and 8 depend, contain a "transmitter section" limitation. Appellant's Br. 50. Rembrandt requests this court to insert "transmitter section for" into the final element of claim 3, thereby adding an apparatus and rendering the claim valid. Rembrandt contends that the addition merely corrects "an obvious administrative or typographical error not subject to reasonable debate." *Id.*

We have stated that "[t]his court, however, repeatedly and consistently has recognized that courts may not redraft claims, whether to make them operable or to sustain their validity." *Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004). In *Novo Industries, L.P. v. Micro Molds Corp.*, we held that "[a] district court can correct a patent only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." 350 F.3d 1348, 1357 (Fed. Cir. 2003). Rembrandt attempts to apply *Ultimax Cement Manufacturing Corp. v. CTS Cement Manufacturing Corp.* to this case. 587 F.3d 1339 (Fed. Cir. 2009). *Ultimax* added that this determination "must be made from the point of view of one skilled in the art." 587 F.3d at 1353. *Ultimax* is distinguishable because in that case, the court merely added a comma to a chemical formula because the plaintiff demonstrated that the "claimed formula $C_9S_3S_3Ca(f cl)_2$ 'corresponds to no known mineral,' and one of ordi-

nary skill in the art would know that the formula should contain a comma" between the "f" and "cl." *Id.* Rembrandt seeks to have this court substantively re-draft its claims and has not demonstrated that a skilled artisan would have read its proposed language into the claim. As the district court noted, the correction suggested by Rembrandt is "not minor, obvious, free from reasonable debate or evident from the prosecution history." *Rembrandt*, 673 F. Supp. at 428. This court will not redraft Rembrandt's claim. Claims 3-11 of the '236 patent are invalid.

B.

Claims 1 and 2 of the '236 patent read:

> 1. A modem for data transmission at fractional data rates comprising:
>
> transmitter means including:
>
> buffer meas [sic] for receiving a stream of binary data, said buffer means being provided for partitioning said stream into frames of unequal number of bits and separating the bits of each frame into a first group and a second group of bits;
>
> fractional rate encoding means for receiving said first group and performing a fractional encoding thereon to generate a group of fractionally encoded bits; combining means for combining said group of fractionally encoded bits with said second groups into frames of equal number of bits;
>
> trellis encoding means for trellis encoding said frames of equal number of bits; and

> a transmitter section for transmitting the trellis encoded frames.
>
> 2. The mode of claim 1 wherein said trellis encoding means encodes the bits from said group of fractionally encoded bits.

'236 patent col.5 ll.36-56.

The district court construed the limitation "fractional rate encoding means for receiving said first group and performing a fractional encoding thereon to generate a group of fractionally encoded bits" as a means-plus-function element with the following function and structure:

> Function: receiving said first group and performing a fractional encoding thereon to generate a group of fractionally encoded bits.
>
> Structure: The fractional rate converter 18 shown in Figure 1 or in Figure 3, including programming for both calculating an ideal number of points using the algorithm $2^{b/f}$ as disclosed in column 4:14-60 of the '236 patent and converting a number of bits to a different base using the base conversion algorithm as described in the [5,103,227] patent and incorporated by reference into the '236 patent.

J.A. 57.

The district court also construed the limitation "trellis encoding means for trellis encoding said frames of equal number of bits" as a means-plus-function element with the following function and structure:

> Function: Trellis encoding the frames of equal numbers of bits outputted by the combining means
>
> Structure: The trellis encoder 20 shown in Fig. 1.

J.A. 58.

The district court erred in construing "fractional rate encoding means" and "trellis encoding means" as means-plus-function elements governed by 35 U.S.C. § 112, ¶ 6. A claim limitation that "contains the word 'means' and recites a function is presumed to be drafted in means-plus-function format under 35 U.S.C. § 112, ¶ 6." *Net-MoneylN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1366 (Fed. Cir. 2008). This presumption can be rebutted if the claim limitation itself recites sufficient structure to perform the claimed function in its entirety. *TI Grp. Auto. Sys.'s (N. Am.), Inc. v. VDO N. Am., L.L.C.*, 375 F.3d 1126, 1135 (Fed. Cir. 2004) (holding that the term "pumping means" in a patent directed to fuel pump assembly technology was not a means-plus-function limitation as the limitation recited not only a pumping means, but its structure, location, and operation). In *Cole v. Kimberly-Clark Corp.*, we held that "perforation means" "cannot meet the requirements" of paragraph 6 of section 112 because the claim itself defined sufficient structure. 102 F.3d 524, 531 (Fed. Cir. 1996). When determining whether a claim term recites sufficient structure, we examine whether it has an understood meaning in the art. *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880-81 (Fed. Cir. 2000); *see also Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1379 (Fed. Cir. 1999) ("[T]he 'one skilled in the art' analysis should apply in determining whether sufficient structure has been disclosed to support a means-plus-function limitation.").

On appeal, Rembrandt argues that the district court erred by granting summary judgment of invalidity of claims 1 and 2 of the '236 patent for failing to disclose an algorithm able to perform the recited functions. We agree that a genuine dispute of material fact precluded invalidation of claims 1 and 2 of the '236 patent. The district court determined that the "trellis encoding means," and "fractional rate encoding means," recited in claim 1 of the '236 patent, from which claim 2 depends, are means-plus-function elements. J.A. 57-59. Expert testimony supports the conclusion that the limitations themselves convey sufficient structure to one of ordinary skill in the art to overcome the presumption of treatment under § 112, ¶ 6.

Rembrandt's expert testified that the terms "fractional rate encoding means" and "trellis rate encoding" were used in publications and published patents in the early 1990s, and were self-descriptive to one of ordinary skill in the art. J.A. 11875; *see, e.g.*, Lang, G.R., *A Leech Lattice Modem*, IEEE Journal on Selected Areas in Communications, Vol. 7, No. 6 (Aug. 1989); U.S. Patent No. 4,941,154 entitled "Trellis Coding Method and Arrangement for Fractional Bit Rates" issued on July 10, 1990; and U.S. Patent No. 5,113,401 entitled "Block Coding Scheme for Fractional-Bit Transmission" issued on May 12, 1992. The invention claimed by the '236 patent is the novel combination of fractional rate encoding with trellis-coded modulation, two known techniques that were widely thought to be "mutually-exclusive" at the time of invention. '236 patent, col.2 l.26. The '236 patent adopts the common meanings of fractional rate encoding in column 3 lines 18-21 and 40-44 and trellis encoding in column 2 lines 41-49 and does not limit them to any specific encoders. The phrases "fractional rate encoding" and "trellis rate encoding" defined algorithms known to

skilled artisans in the early 1990s. The parties do not dispute this.

The parties do, however, dispute whether the necessary algorithms for "buffer means" and "combining means" were disclosed. Independent claim 1 and dependent claim 2 include a "buffer meas [sic] for receiving a stream of binary data, said buffer means being provided for partitioning said stream into frames of unequal number of bits and separating the bits of each frame into a first group and a second group of bits." '236 patent, col.5 ll.47-50. The district court construed "buffer means" as having three functions: receiving data, partitioning the data "into frames of unequal numbers of bits," and "separating the bits of each frame into a first group and a second group of bits." J.A. 56. The "first buffer means" was construed to perform two material functions: (1) "partition[] said stream [of bits] into frames of unequal number of bits"; and (2) "separat[e] the bits of each frame into a first group and a second group of bits." J.A. 58. The court determined that the structure performing these functions is "buffer 12." *Id.* A buffer is only a physical piece of memory and the actual partitioning and separating is accomplished by buffer 12 by implementing a computer algorithm.

Rembrandt's expert testified that the figures, text, and table in the '236 patent disclose a complete algorithm for "buffer means" to one skilled in the art. Rembrandt argues that Figure 1 of the '236 patent provides a pictorial algorithm for how a buffer partitions an input data stream of seven bits, A_1 to A_7, into two frames, f_1 and f_2, having three and four bits, respectively.

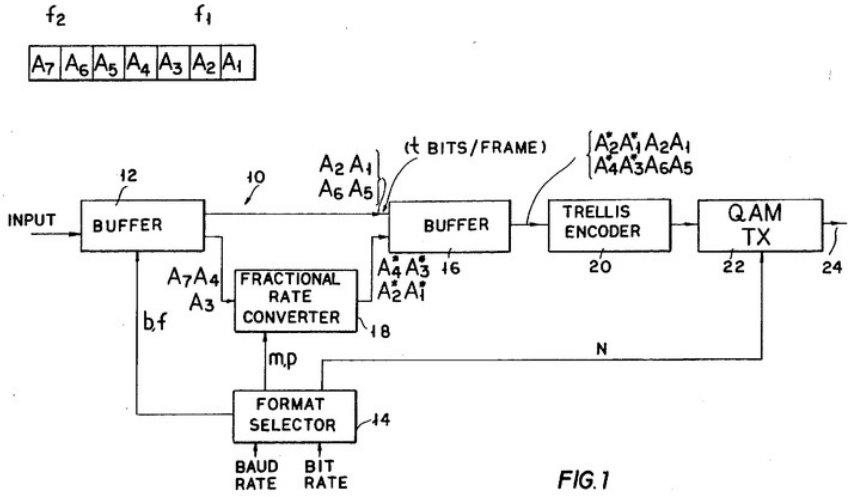


FIG. 1

The number of bits and frames is provided to the buffer (buffer 12 in Figure 1) by the format selector. Rembrandt contends that the accompanying text further explains how the buffer partitions the incoming bit stream into frames containing unequal numbers of bits. '236 patent col.3 ll.4-39. The buffer separates the two least significant bits from each frame, i.e., A_1A_2 and A_5 A_6, and sends them to another buffer, buffer 16. *Id.* at col.3 ll.36-38. Rembrandt also notes that Column 5, Table 1 provides examples of how given a bit rate and baud rate, different ratios of bits and frames are calculated for use by the buffer.

TABLE I

BIT RATE @ 2743 Hz	b/f	$2^{b/f}$ (ROUNDED)	I	Module m	Unconv. t = 2f	p	Convert. s = b − t − p
9600	7/2	12	$12 = 3 \times 2^2$	3	4	0	3
12000	35/8	21	$24 = 3 \times 2^3$	3	16	8	11
14400	21/4	39	$40 = 5 \times 2^3$	5	8	4	9
16800	49/8	70	$72 = 9 \times 2^3$	9	16	8	25

Canon maintains that these elements merely disclose the outputs of the algorithm, rather than the algorithm itself. Canon argues that the categorization into frames is

important and Rembrandt offers no evidence of how buffer 12 would accomplish the specific functions to meet the requirements of the invention or how one of ordinary skill in the art could derive the functions from the figure, text, or table. In holding claims 1 and 2 invalid when it found claims 3 through 11 invalid, the district court did not assess whether the testimony of Rembrandt's expert raised a genuine issue of material fact about whether a skilled artisan would have known the algorithm necessary to accomplish the described outcomes.

The parties make similar arguments about whether an algorithm for "combining means" was disclosed in the '236 patent. Claims 1 and 2 include "combining means for combining said group of fractionally encoded bits with said second groups into frames of equal number of bits." *Id.* at col.5 ll.47-50. In Figure 1, buffer 16 performs the combining operation. As with the "buffer means," Rembrandt contends that Figure 1 and the accompanying text present a pictorial algorithm of the combining means. Appellant's Br. 60. Rembrandt argues that the figure and text explain how to combine the inputs into frames of equal numbers of bits. The inputs are the frames from buffer 12 and the fractional rate encoder as incorporated from the cross-referenced patent application Ser. No. 588,652, which has since issued as U.S. Patent No. 5,103,227.

Rembrandt's expert testified that there was sufficient structure to apprise one of ordinary skill in the art that claims 1 and 2 are capable of performing the recited function. The expert testified how a buffer orders and combines inputs to create an output. For example, if buffer 16 of Figure 1 is combining two four-bit inputs to create an eight-bit output, the algorithm directs how to take a bit, e.g. A_1 and make it the first row, the fourth

column of the output, then take A_2 and make that the first row, third column of the output, and so on. Rembrandt's expert also opined that the actual mechanism of the operation was a simple decision for a skilled artisan. Canon argues that the '236 patent does not disclose how buffer 16 performs the combining function because it does not address how and in what order to combine fractionally encoded bits into particular frames. The parties again dispute whether the algorithm for "combining means" would be clear to a skilled artisan.

Drawing all justifiable inferences in favor of Rembrandt, we cannot agree with the district court that summary judgment of the invalidity of claims 1 and 2 of the '236 patent was warranted. Based on the expert testimony, there are genuine disputes of material fact regarding whether the specification discloses algorithms for "buffer means" and "combining means." The indefiniteness analysis the district court used to invalidate claims 3-11 of the '236 patent does not support the invalidation of claims 1 and 2. The district court's invalidation of claims 1 and 2 in its order on November 2, 2009 without any reasoning supporting its decision was erroneous.

CONCLUSION

We affirm the district court's decision that because Conexant is licensed, Rembrandt's rights are exhausted and it cannot recover from Canon and HP, Conexant's customers. We also affirm the district court's grant of summary judgment on the invalidity of claims 3-11 of the '236 patent for indefiniteness. We reverse the district court's grant of summary judgment on the invalidity of claims 1 and 2 of the '236 patent. We remand the case to the district court for further proceedings consistent with this opinion.

AFFIRMED-IN-PART, REVERSED-IN-PART, AND REMANDED

COSTS

No costs.