United States Court of Appeals for the Federal Circuit

POWER INTEGRATIONS, INC.,
Plaintiff-Appellant

v.

MICHELLE K. LEE, DIRECTOR, U.S. PATENT AND TRADEMARK OFFICE,
Defendant-Appellee

2014-1123

Appeal from the United States District Court for the District of Columbia in No. 1:11-cv-01254-BJR, Judge Barbara Jacobs Rothstein.

Decided: August 12, 2015

HOWARD G. POLLACK, Fish & Richardson, P.C., Redwood City, CA, argued for plaintiff-appellant. Also represented by MICHAEL R. HEADLEY; CRAIG E. COUNTRYMAN, San Diego, CA; FRANK SCHERKENBACH, Boston, MA.

AMY J. NELSON, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, argued for defendant-appellee. Also represented by NATHAN K. KELLEY, SCOTT WEIDENFELLER.

Before MOORE, MAYER, and LINN, *Circuit Judges.*

MAYER, *Circuit Judge*.

Power Integrations, Inc. ("Power Integrations") challenges a decision of the Board of Patent Appeals and Interferences ("board") affirming the rejection of claims 1, 17, 18, and 19 of U.S. Patent No. 6,249,876 (the "'876 patent") as anticipated under 35 U.S.C. § 102(b). *See Ex parte Power Integrations, Inc.*, No. 2010-011021, 2010 WL 5244756 (B.P.A.I. Dec. 22, 2010) ("*Power Integrations III*"). For the reasons discussed below, we vacate and remand.

BACKGROUND

The '876 patent is entitled "Frequency Jittering Control for Varying the Switching Frequency of a Power Supply." It is directed to a technique for reducing electromagnetic interference by jittering the switching frequency of a switched mode power supply. *See* '876 patent col.1 ll.66–67. Claim 1, as amended, recites:

> A digital frequency jittering circuit for varying the switching frequency of a power supply, comprising:
>
> an oscillator for generating a signal having a switching frequency, the oscillator having a control input for varying the switching frequency;
>
> a digital to analog converter coupled to the control input for varying the switching frequency; and
>
> a counter coupled to the output of the oscillator, the digital to analog converter coupled to the counter, the counter causing the digital to analog converter to adjust the control input and to vary the switching frequency of the power supply.

J.A. 710.

Claims 17, 18, and 19 relate to a method for varying the switching frequency using a varying voltage to control

the oscillator. '876 Patent col.9 ll.37–52. Independent claim 17, as amended, requires "cycling a counter" to generate a secondary voltage that varies over time:

> A method for generating a switching frequency in a power conversion system, comprising:
>
> generating a primary voltage;
>
> cycling a counter coupled to one or more secondary voltage sources to generate a secondary voltage which varies over time; and
>
> combining the secondary voltage with the primary voltage to be received at a control input of a voltage-controlled oscillator for generating the switching frequency of the power conversion system which is varied over time.

J.A. 713.

In 2004, Power Integrations brought suit against Fairchild Semiconductor International, Inc. and related parties (collectively "Fairchild") in the United States District Court for the District of Delaware. It alleged that Fairchild had willfully infringed the '876 patent, as well as United States Patent Nos. 4,811,075, 6,107,851, and 6,229,366. *See Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 422 F. Supp. 2d 446, 448 (D. Del. 2006), *aff'd in part, rev'd in part*, 711 F.3d 1348 (Fed. Cir. 2013) ("*Power Integrations I*"). During claim construction proceedings, Power Integrations argued that the term "coupled" in claim 1 of the '876 patent, when read in light of the specification and surrounding claim language, required that two circuits be connected in a manner "such that voltage, current, or control signals pass from one to another." *Id.* at 455. It further contended that the "recited coupling" between the counter and the digital to analog converter must be "present for the purposes of control." *Id.* (citations and internal quotation marks omitted). Power Integrations made clear, however, that its pro-

posed construction did not require a direct connection between circuit elements. *Id.* The district court adopted Power Integrations' proposed claim construction, concluding that it was "consistent with the claim language and the context of the specification which describes the purpose for which various parts of the claimed invention are coupled." *Id.* at 456. The court emphasized, moreover, that its construction of the term "coupled" did not "require a direct connection or . . . preclude the use of intermediate circuit elements." *Id.* In the wake of the trial court's claim construction, Fairchild withdrew its anticipation defense, instead arguing at trial that U.S. Patent No. 4,638,417 ("Martin") rendered claim 1 obvious.

In 2006, the trial court bifurcated the litigation, separating issues of infringement and damages from issues related to patent validity. A first jury found that Fairchild had willfully infringed claim 1 of the '876 patent, as well as several claims of the other asserted patents. After a trial on validity, a second jury returned a verdict that claim 1 of the '876 patent was not obvious in view of Martin.

On appeal, this court affirmed the jury's finding that claim 1 of the '876 patent was not invalid for obviousness. *See Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348, 1366–69 (Fed. Cir. 2013) ("*Power Integrations II*"). We noted that the "salient difference" between the '876 patent and Martin is Martin's inclusion of an erasable programmable read only memory ("EPROM"). *Id.* at 1366. We explained that Martin always includes an EPROM between the counter and the digital to analog converter and "does not teach removing the EPROM . . . as in the '876 Patent." *Id.* at 1367. We concluded, moreover, that "substantial evidence of objective considerations of non-obviousness [supported] the jury's conclusion that claim 1 of Power Integrations' '876 Patent would not have been obvious to the ordinarily skilled artisan." *Id.* at 1369.

In December 2006, while district court proceedings were pending, the United States Patent and Trademark Office granted Fairchild's request for *ex parte* reexamination of claims 1, 17, 18, and 19 of the '876 patent. J.A. 165–73. The board affirmed the examiner's rejection of claim 1 as anticipated by Martin, as well as by two additional references: (1) Thomas G. Habetler & Deepakraj M. Divan, *Acoustic Noise Reduction in Sinusoidal PWM Drives Using a Randomly Modulated Carrier*, 6 IEEE TRANSACTIONS ON POWER ELECS. 356–63 (1991) ("Habetler"); and (2) Andrew C. Wang & Seth R. Sanders, *Programmed Pulsewidth Modulated Waveforms for Electromagnetic Interference Mitigation in DC-DC Converters*, 8 IEEE TRANSACTIONS ON POWER ELECS. 596–605 (1993) ("Wang"). The board stated that Power Integrations "appear[ed] to argue that one of ordinary skill in the art would understand the term 'coupled to' to restrict device connections to exclude intervening components." *Power Integrations III*, 2010 WL 5244756, at *4. The board concluded, however, that the term meant simply to "join[] devices into a single circuit," and did not preclude the presence of intervening components. *Id.* In addition, the board rejected Power Integrations' argument "that the respective counters in Martin, Wang, and Habetler are not coupled to the respective digital to analog converters because all [Martin, Wang, and Habetler] disclose a [read only memory ("ROM")] separating a counter from a digital to analog converter." *Id.* (citations and internal quotation marks omitted). In the board's view, Martin, Wang, and Habetler disclosed the limitations of claim 1 because they joined a counter and a digital to analog converter in a single circuit, and the counter "produce[d] a signal that causes a digital to analog converter to adjust control input by utilizing a corresponding memory, the counter (with the corresponding memory) being 'coupled to' the digital to analog converter." *Id.*

The board also affirmed the examiner's rejection of claims 17, 18, and 19 as anticipated by Habetler. In light of its construction of the term "coupled to" in claim 1, the board rejected Power Integrations' argument that Habetler did not anticipate claims 17, 18, and 19 because it contains an EPROM between the counter and the digital to analog converter. *Id.* at *5. The board likewise rejected Power Integrations' argument that Habetler fails to disclose primary and secondary voltage sources. *Id.* at *6. According to the board, both the output from the digital to analog converter and the "average slope" of Habetler are voltage signals. *Id.* The board asserted that "Habetler discloses that [pulse width modulator ("PWM")] schemes utilize discrete tones in the *voltage* spectrum and that the output from PWM circuitry are waveforms with voltage amplitudes . . . thus confirming that the PWM circuitry processes voltage waveforms to obtain output voltage waveforms." *Id.* (citations and internal quotation marks omitted).

In February 2011, Power Integrations filed a request for rehearing with the board pursuant to 37 C.F.R. § 41.52. It argued that the board had "misapprehended" its argument regarding the proper construction of the term "coupled to" in claim 1 of the '876 patent, explaining that it had never contended that the term precluded the presence of intermediate circuit elements between the counter and the digital to analog converter. J.A. 935. Power Integrations further asserted that the board erred in finding that claims 17, 18, and 19 were anticipated by Habetler because that reference did not "disclose, teach or fairly suggest that the output of the [digital to analog] converter of FIG. 5 is a voltage, that the 'average slope' signal of FIG. 5 is a voltage, or that the *input* of the Triangle Generator of FIG. 5 is a voltage." J.A. 952. Power Integrations argued, moreover, that the board had improperly shifted the burden of proof by

applying a presumption that Habetler's average slope was a voltage. J.A. 951.

In May 2011, the board denied Power Integrations' request for rehearing. *See Ex parte Power Integrations, Inc.*, No. 2010-011021, 2011 WL 1821718 (B.P.A.I. May 10, 2011) ("*Power Integrations IV*"). It rejected the contention that it had misapprehended Power Integrations' argument about the proper construction of the term "coupled." *Id.* at *1. The board stated that "even assuming that [Power Integrations'] contention that elements are 'coupled' with the presence of 'intervening components' is true, and further assuming that [Power Integrations'] assertion that Habetler discloses an intervening element (i.e., an EPROM) between a counter and a converter is also true, it follows that Habetler would disclose a counter 'coupled to' a converter under [Power Integrations'] proposed analysis." *Id.* As to claims 17, 18, and 19, the board withdrew any statements implying that it had shifted the burden to Power Integrations to prove that Habetler's average slope was not a voltage source. *Id.* at *2. The board reiterated, however, its previous conclusion that Habetler discloses output data that are voltage waveforms with voltage amplitudes. *Id.* at *2–3.

Power Integrations then filed suit in the United States District Court for the District of Columbia challenging the board's decision. *See Power Integrations, Inc. v. Kappos*, 6 F. Supp. 3d 11 (D.D.C. 2013) ("*Power Integrations V*"). After correctly determining that it lacked subject matter jurisdiction, *see In re Teles AG Informationstechnologien*, 747 F.3d 1357, 1364–66 (Fed. Cir. 2014), the district court transferred the case to this court pursuant to 28 U.S.C. § 1631, *see Power Integrations V*, 6 F. Supp. 3d at 24. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

A. Standard of Review

We review the legal conclusions of the board *de novo*. *In re Elsner*, 381 F.3d 1125, 1127 (Fed. Cir. 2004). In an appeal from the board, anticipation is a question of fact which we review for substantial evidence. *In re Antor Media Corp.*, 689 F.3d 1282, 1287 (Fed. Cir. 2012); *In re Gleave*, 560 F.3d 1331, 1334–35 (Fed. Cir. 2009). In assessing whether a claim is anticipated under 35 U.S.C. § 102, "[a] single prior art reference that discloses, either expressly or inherently, each limitation of a claim invalidates that claim by anticipation." *Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1375 (Fed. Cir. 2005).

B. The Board's Anticipation Rejections

Proceedings of the board are governed by the Administrative Procedure Act ("APA"), 5 U.S.C. §§ 702, 704, which "establishes a scheme of reasoned decisionmaking," *Allentown Mack Sales & Serv., Inc. v. NLRB*, 522 U.S. 359, 374 (1998) (citations and internal quotation marks omitted); *see Dickinson v. Zurko*, 527 U.S. 150, 154–65 (1999). Under the APA, the board is obligated not only to come to a sound decision, but to fully and particularly set out the bases upon which it reached that decision. *In re Sang-Su Lee*, 277 F.3d 1338, 1342 (Fed. Cir. 2002); *see Gechter v. Davidson*, 116 F.3d 1454, 1457 (Fed. Cir. 1997). To permit effective appellate review, the board's patentability analyses must be both "clearly disclosed and adequately sustained." *Sec. & Exch. Comm'n v. Chenery Corp.*, 318 U.S. 80, 94 (1943); *see In re Thrift*, 298 F.3d 1357, 1364 (Fed. Cir. 2002) (emphasizing that the board is required to "document its reasoning on the record to allow accountability" and to facilitate "effective judicial review"); *Gechter*, 116 F.3d at 1457 (explaining that the board's reasoning must be set out with sufficient specificity to enable this court, "without resort to speculation," to effectively evaluate an anticipation rejection); *Mullins v.*

Dep't of Energy, 50 F.3d 990, 992 (Fed. Cir. 1995) ("It is well established that agencies have a duty to provide reviewing courts with a sufficient explanation for their decisions so that those decisions may be judged against the relevant statutory standards, and that failure to provide such an explanation is grounds for striking down the action.").

Here, however, the board fundamentally misconstrued Power Integrations' principal claim construction argument and failed to provide a full and reasoned explanation of its decision to reject claim 1 of the '876 patent as anticipated. Before this court, the district court, and the board, Power Integrations has consistently argued that claim 1, when read in light of the specification and surrounding claim language, requires that the counter itself—not a pre-programmed memory—controls the digital to analog converter's output to vary the switching frequency.[1] Br. of Plaintiff-Appellant 9, 18–20; *Power Integrations I*, 422 F. Supp. 2d at 455; J.A. 817–19, 876–77, 896–98. In its view, the "coupled" limitation in claim 1 requires that the counter be connected to the digital to analog converter in a manner that allows it to pass voltage, current, or control signals to instruct the digital to analog converter. *See Power Integrations I*, 422 F. Supp. 2d at 455 ("Power Integrations contends that two circuits are coupled when they are connected such that voltage, current, or control signals pass from one to another," with "the recited coupling . . . present for the purposes of control" (citations and internal quotation marks omitted)); J.A. 896 ("[Power Integrations] respectfully submits that

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[1] In Habetler, Wang, and Martin, the prior art references cited by the board, a memory (either a ROM or an EPROM) separates the digital to analog converter and the counter. *See Power Integrations III*, 2010 WL 5244756, at *3–5.

the proper claim interpretation by one skilled in the art of the term 'coupled to' in the context of the surrounding claim language and the specification would result in two circuits being coupled when they are connected such that voltage, current or control signals pass from one to another for the purposes of control."). Power Integrations has repeatedly made clear, however, that its proposed claim construction does not preclude the presence of intervening components between the counter and the digital to analog converter. *See Power Integrations I*, 422 F. Supp. 2d at 455 (emphasizing that Power Integrations' proposed interpretation of the term "coupled" did not require a "direct connection" between the counter and the digital to analog converter); J.A. 897 ("[Power Integrations] wishes to clarify that [its] construction of the term 'coupled' should not be read to imply or necessitate a direct, physical connection, as . . . the specification [does not] require a direct connection or . . . preclude the use of intermediate circuit elements.").

The district court adopted Power Integrations' proposed construction of the term "coupled," concluding that it was "consistent with the claim language and the context of the specification which describes the purpose for which various parts of the claimed invention are coupled." *Power Integrations I*, 422 F. Supp. 2d at 456. During reexamination, however, the board failed to acknowledge the district court's claim construction or to assess whether its interpretation of the term "coupled" was consistent with the broadest reasonable construction of the term. Instead, the board devoted a substantial portion of its analysis to resolving the question of whether the term "coupled" requires a direct connection between the counter and the digital to analog converter. *Power Integrations III*, 2010 WL 5244756, at *3–5. Relying on a generalist dictionary definition, the board concluded that no such direct connection is required because "the plain

and customary meaning" of the term "couple" is simply to "join[] devices into a single circuit." *Id*. at *4.

As noted above, however, when Power Integrations was before the board it repeatedly acknowledged that the term "coupled" does not preclude the presence of intervening components between the counter and the digital to analog converter. Thus, a significant portion of the board's opinion is devoted to rejecting an argument that Power Integrations not only never made, but instead expressly disavowed. Because so much of the board's analysis is focused on a red herring—the issue of whether there can be intervening components between the counter and the digital to analog converter—it failed to adequately evaluate Power Integrations' primary argument, which is that the "coupled" limitation requires that the counter pass control signals, voltage, or current to the digital to analog converter to control it, and that the presence of a memory programmed with data specifying how to vary the switching frequency "uncouples" the counter and the digital to analog converter and severs the requisite control relationship between them.[2] *See* J.A. 782–83; 814–17,

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[2] When it petitioned the board for rehearing, Power Integrations argued that the board had "misapprehended or overlooked" its principal argument regarding the proper interpretation of the term "coupled." J.A. 935. It pointed out that, contrary to the board's assertions, it had never contended that claim 1 precluded the presence of intervening components between the counter and the digital to analog converter. J.A. 935. The board summarily rejected this argument, however, stating that even accepting Power Integrations' "contention that elements are 'coupled' with the presence of 'intervening components' . . . and further assuming that [Power Integrations'] assertion that Habetler discloses an intervening element (i.e., an EPROM) between a counter and a con-

828, 858. In short, the board failed to straightforwardly and thoroughly assess the critical issue of whether claim 1, when viewed in light of the specification and the surrounding claim language, requires the counter itself—and not the counter and a memory functioning together—to drive the digital to analog converter to adjust the control input and to vary the switching frequency of the power supply.[3] *See* J.A. 817–19, 823; *see also* '876 patent col.1 ll.62–63 (explaining that adding "extra components" to reduce electromagnetic interference is "undesirabl[e]" because it "increase[s] the size and weight of the power supply"). Because the board's opinion provides us with an inadequate predicate upon which to evaluate its decision to reject claim 1 of the '876 patent as anticipated, we vacate and remand. *See Sec. & Exch. Comm'n v. Chenery Corp.*, 332 U.S. 194, 196–97 (1947) ("It will not do for a court to be compelled to guess at the theory underlying the agency's action."); *Thrift*, 298 F.3d at 1366 (vacating a

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verter is also true, it follows that Habetler would disclose a counter 'coupled to' a converter under [Power Integrations'] proposed analysis." *Power Integrations IV*, 2011 WL 1821718, at *2.

[3] Before the board, Power Integrations argued that in the prior art the counter itself does not send any signals to the digital to analog converter. J.A. 818–29. Instead, the counter's signals are sent to the memory. Thus, in Power Integrations' view, in prior art systems the digital to analog converter is "coupled to" receive the output of the memory, not the output of the counter. J.A. 352, 358. The board, however, failed to adequately address whether the counter can be deemed "coupled to" the digital to analog converter to "caus[e]" it to adjust the control input and to vary the switching frequency of the power supply, '876 Patent col.8 ll.51–53, even if the counter does not directly—or even primarily—control the digital to analog converter's output.

board decision because it "failed to provide an adequate ground" for rejecting a claim); *see also Walls v. United States*, 582 F.3d 1358, 1368 (Fed. Cir. 2009) (remanding a personnel decision to the military board and requiring it to act on a completed record).

Relying in part upon its construction of the term "coupled" in claim 1, the board determined that claims 17, 18, and 19 were anticipated by Habetler. *See Power Integrations III*, 2010 WL 5244756, at *5. Because we vacate the board's construction of the "coupled" limitation in claim 1, we likewise vacate and remand its anticipation rejections of claims 17, 18, and 19.

Perhaps recognizing the deficiencies in the board's analysis, the solicitor on appeal advances a number of arguments as to why the disputed claims of the '876 patent should be rejected as anticipated. As a general proposition, however, our review of a patentability determination is confined to "the grounds upon which the Board actually relied." *In re Applied Materials, Inc.*, 692 F.3d 1289, 1294 (Fed. Cir. 2012); *see Camp v. Pitts*, 411 U.S. 138, 142 (1973) (per curiam) (emphasizing that under the APA, "the focal point for judicial review should be the administrative record already in existence, not some new record made initially in the reviewing court"). We have no warrant to "accept appellate counsel's *post hoc* rationalizations for agency action," *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962), or to supply a reasoned justification for an agency decision that the agency itself has not given, *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983); *see In re Gartside*, 203 F.3d 1305, 1314 (Fed. Cir. 2000) (emphasizing that a board decision "must be justified within the four corners of [the] record").

We conclude, moreover, that under the circumstances presented here, the board erred in failing to address the district court's previous interpretation of the term "cou-

pled." There is no dispute that the board is not generally bound by a prior judicial construction of a claim term. *See In re Trans Tex. Holdings Corp.*, 498 F.3d 1290, 1298 (Fed. Cir. 2007). Indeed, in reexamination it applies a different claim construction standard than that applied by a district court, affording claims "their broadest reasonable interpretation consistent with the specification." *In re NTP, Inc.*, 654 F.3d 1279, 1287 (Fed. Cir. 2011) (citations and internal quotation marks omitted); *see also In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1369 (Fed. Cir. 2004). The fact that the board is not generally bound by a previous judicial interpretation of a disputed claim term does not mean, however, that it has no obligation to acknowledge that interpretation or to assess whether it is consistent with the broadest reasonable construction of the term.[4] Before the board, Power Integrations repeatedly argued that the district court's claim construction was the only reasonable interpretation of claim 1's "coupled" limitation when it was viewed in light of the surrounding claim language and the specification. J.A. 817 ("[T]he patent owner respectfully submits that a reasonable person having ordinary skill in the art would understand that when the claim is interpreted [in] the context of the specification and surrounding claim language, as required, two circuits are 'coupled to' each other when there is a connection defined between the two circuits such that a voltage, current or control signal passes from one circuit to the other[,] which is the manner in which

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[4] Fairchild did not appeal the district court's construction of the term "coupled" in claim 1 of the '876 patent. In 2013, after the board had denied Power Integrations' request for rehearing, this court affirmed a jury verdict finding, based on the district court's claim construction, that claim 1 of the '876 patent was not invalid for obviousness. *See Power Integrations II*, 711 F.3d at 1366–68.

the claim terms were construed by the District Court."); *see also* J.A. 720, 722, 808, 818, 821, 832, 876–77. The board, however, declined to address—or even acknowledge—the district court's claim construction. Given that Power Integrations' principal argument to the board about the proper interpretation of the term "coupled" was expressly tied to the district court's claim construction, we think that the board had an obligation, in these circumstances, to evaluate that construction and to determine whether it was consistent with the broadest reasonable construction of the term.

We do not hold that the board must in all cases assess a previous judicial interpretation of a disputed claim term. Nor do we express any view on the merits of Power Integrations' proposed construction of the term "coupled to." We hold only that the board on remand should carefully and fully assess whether the disputed claims of the '876 patent are anticipated by the prior art, setting out its reasoning in sufficient detail to permit meaningful appellate review. *See Lee*, 277 F.3d at 1346 (emphasizing that remand is required where a board decision "is potentially lawful but insufficiently or inappropriately explained" (citations and internal quotation marks omitted)); *see also Nazomi Commc'ns, Inc. v. Arm Holdings, PLC*, 403 F.3d 1364, 1371 (Fed. Cir. 2005) (vacating and remanding a district court's claim construction determination because the court did "not supply the basis for its reasoning sufficient for a meaningful review").

CONCLUSION

Accordingly, the decision of the Board of Patent Appeals and Interferences is vacated and the case is remanded for further proceedings consistent with this opinion.

COSTS

Power Integrations shall have its costs.

VACATED AND REMANDED