NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

NUCURRENT, INC.,
Appellant

v.

SAMSUNG ELECTRONICS CO., LTD.,
Appellee

2021-1605, 2021-1606, 2021-1607

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2019-01217, PGR2019-00049, PGR2019-00050.

Decided: July 14, 2022

WILLIAM MILLIKEN, Sterne Kessler Goldstein & Fox, PLLC, Washington, DC, argued for appellant. Also represented by MICHAEL BRADLEY RAY, JONATHAN TUMINARO, JON WRIGHT.

CHETAN BANSAL, Paul Hastings LLP, Washington, DC, argued for appellee. Also represented by STEPHEN BLAKE KINNAIRD, NAVEEN MODI, JEFFREY PADE, JOSEPH PALYS, ALLAN SOOBERT; PAUL ANDERSON, Houston, TX.

Before NEWMAN, STOLL, and STARK, *Circuit Judges*.

STOLL, *Circuit Judge*.

NuCurrent appeals from the Patent Trial and Appeal Board's final written decisions in three post-grant proceedings concluding that the challenged claims of U.S. Patent Nos. 9,941,729 and 10,063,100 are unpatentable as obvious. Because substantial evidence supports the Board's conclusions, we affirm.

BACKGROUND

The patents are directed to a compact antenna capable of operating at multiple frequency bands. '100 patent col. 4 ll. 4–7, col. 4 l. 63–col. 5 l. 19. The written description explains that the antenna includes "a first, outer coil," (e.g., coil portion 144), "a second, interior coil," (e.g., coil portion 146), *id.* at col. 10 ll. 26–30, col. 28 ll. 34–40, and "a plurality of terminal connections that are strategically placed on [] first and second inductor coils," (e.g., electrical connection points 148, 150, 152), *id.* at col. 11 ll. 32–44, col. 28 ll. 13–16.

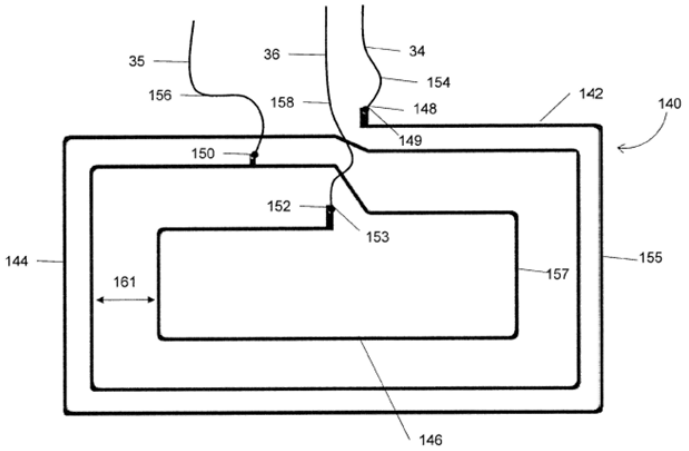

FIG. 9

Id. Fig. 9.

According to the written description, "[c]onnecting the various terminals in different combinations . . . provides the antenna . . . with different adjustable inductances which, in turn, modifies the operating frequency or operating mode of the antenna." *Id.* at col. 13 ll. 32–33. Claim 1 of the '100 patent is representative and recites in relevant part:

> 1. An electrical system, comprising:
>
> a) an antenna, comprising:
>
> i) a first conductive wire forming a first coil . . .
>
> ii) a second conductive wire forming a second coil . . .
>
> iii) a third gap separating an outermost turn of the second coil from the innermost turn of the first coil . . .
>
> iv) *a first terminal* electrically connected to the first end of the first coil, *a second terminal* electrically connected to the second end of the second coil and *a third terminal* electrically connected to either of the first or second coils;
>
> b) a control circuit electrically connected to at least one of the first, second and third antenna terminals, wherein the control circuit is configured to control the operation of the antenna;
>
> c) *wherein a tunable inductance is generatable by electrically connecting two of the first, second, and third terminals* . . . .

Id. at col. 32 l. 40–col. 33 l. 15 (emphasis added to relevant claim elements).[1]

Samsung filed a petition for inter partes review (IPR2019-01217) of various claims of the '729 patent, and two petitions for post-grant review (PGR2019-00049 and PGR2019-00050) of various claims of the '100 patent. J.A. 1–42, J.A. 43–64, J.A. 65–96. In its petitions, Samsung relied on Riehl,[2] the primary prior art reference, to teach an antenna having (1) two coils and (2) first, second, and third terminals connected to the coils that are electrically connectable in various combinations to produce different inductances. J.A. 313–46, J.A. 4812–36.

During the post-grant proceedings, neither Samsung nor the patent owner NuCurrent offered constructions for any terms in the proceedings. J.A. 313, J.A. 461–62, J.A. 4811–12, J.A. 4944. The Board instituted review in each proceeding. J.A. 426, J.A. 2922, J.A. 4905. In its final written decisions, the Board determined that it did not need to explicitly construe any terms in the challenged patents. J.A. 11–12, J.A. 51–52, J.A. 72–73. The Board ultimately concluded that each of the challenged claims were unpatentable as obvious. J.A. 40, J.A. 63, J.A. 95. The Board also determined that the claims were unpatentable for lack of written description. J.A. 63.

NuCurrent appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

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[1] The '729 and '100 patents share a written description and have similar claims. The parties—and our court, in this opinion—thus focus on the '100 patent and PGR2019-00049.

[2] U.S. Patent Pub. No. 2014/0035383.

DISCUSSION

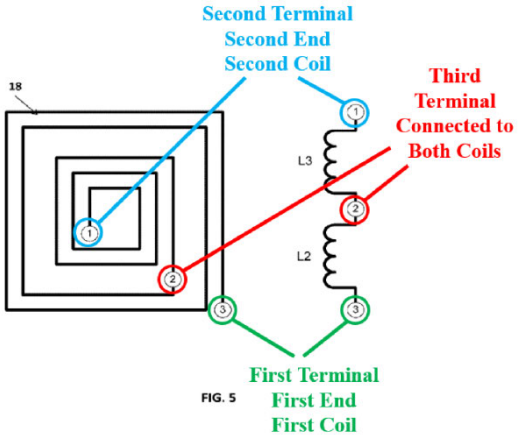
Obviousness is a legal question based on underlying findings of fact. *Fleming v. Cirrus Design Corp.*, 28 F.4th 1214, 1221 (Fed. Cir. 2022). We review the Board's ultimate obviousness determination de novo and underlying factual findings for substantial evidence such that a "reasonable fact finder could have arrived at the agency's decision." *OSI Pharms., LLC v. Apotex Inc.*, 939 F.3d 1375, 1381 (Fed. Cir. 2019) (quoting *In re Gartside*, 203 F.3d 1305, 1312 (Fed. Cir. 2000)). Claim constructions are similarly legal questions that we review de novo. *Dyfan, LLC v. Target Corp*, 28 F.4th 1360, 1364 (Fed. Cir. 2022).

On appeal, NuCurrent argues that the Board's obviousness determination "rests on an incorrect claim construction of the term 'terminal.'" Appellant's Br. 39. According to NuCurrent, "a 'terminal' is a point on a coil that is available for connection to external circuitry." *Id.* at 40. NuCurrent asserts that because the "claimed 'terminals' are terminals for the *antenna*, not for the *coils*," the claimed "terminals" must be available for connection to circuitry external to the antenna. *Id.* at 47. NuCurrent further alleges that the Board "implicitly construed the term more broadly than its ordinary meaning, concluding that an interior connection point of a coil that is not available for circuitry external to the antenna can qualify as a terminal." *Id.* at 39. Under its proffered construction, NuCurrent contends that Riehl "discloses only two terminals, but the challenged claims require three," and thus the Board's obviousness determination "cannot stand." *Id.* In response, Samsung asserts that "the Board never construed the term," Appellee's Br. 41, and that the Board "found the prior art (Riehl) disclosed the claimed terminals even under NuCurrent's interpretation of that term," *id.* at 40.

We affirm the Board's conclusion on obviousness for two reasons. First, setting aside Samsung's waiver argument and concerns over whether the Board construed

"terminal" to include connections for internal (as opposed to external) circuity, we cannot adopt the claim construction that NuCurrent advocates on appeal. We conclude that the proper construction of "terminal" in light of the intrinsic evidence is not limited to connections available to external circuitry. Indeed, we find no support for NuCurrent's construction in the intrinsic record—not one reference to "terminal" within the written description requires the terminal be available for connection to only external circuitry, suggesting that the term "terminal" can encompass connections to internal circuitry as well. Nor does the claim language support NuCurrent's construction—the claims require nothing more than an antenna comprising terminals electrically connected to the coils and connectable to a control circuit. '100 patent col. 32 l. 40–col. 33 l. 15.

Second, even under NuCurrent's proposed construction, substantial evidence supports the Board's finding that Riehl teaches the three terminals as claimed. The Board cited and relied on testimony from Samsung's expert, Dr. Baker, that a person of ordinary skill would have understood that Riehl discloses three terminals. J.A. 29–34 (citing J.A. 678–82), J.A. 85–90 (citing J.A. 5119–23). For example, as illustrated below in Dr. Baker's annotated version of Figure 5, Riehl shows two coils (L2 and L3) and three connection points (connection points 1, 2, and 3):



J.A. 678, 5119. According to Dr. Baker, a person of ordinary skill would have understood that each of Riehl's three connection points is a component of a terminal because "they allow for connections between the coils and, for example, the capacitors C2a, C2b, and C2q." J.A. 679, 5120. Relying on Dr. Baker's unrebutted declaration, the Board found that such a capacitor network was "external circuitry." J.A. 34–35 (citing J.A. 679), J.A. 89–90 (citing J.A. 5120). In his declaration, Dr. Baker explained that a person of ordinary skill would have understood a terminal to comprise not only Riehl's connection points, but also additional conductive material used to connect external circuitry to those connection points on the coil. J.A. 679, 5120. Crediting Dr. Baker's testimony as consistent with Riehl's disclosure and that of the '100 patent, the Board found that Riehl's interconnection points teach the claimed "terminals" even under NuCurrent's construction because they are physically available for connection to external circuitry, such as the matching network capacitors C2a, C2b, and C2q. J.A. 33 (citing J.A. 679), J.A. 86–89 (citing J.A. 5120). Indeed, the '100 patent states that "the first electrical connection point 148 may serve as the first terminal 34, the third electrical connection point 152 may serve as the second terminal 36 and the second electrical connection point 150 may serve as the third terminal 35," '100 patent col. 28

ll. 28–32, and that "terminal leads 154, 156, 158, such as electrically conductive wires, may be attached to these electrical connection points to create antenna terminals," *id.* at col. 28 ll. 25–28.

Because the Board's finding that Riehl teaches three terminals is supported by substantial evidence, we affirm the Board's obviousness determination. We therefore need not reach the Board's finding regarding lack of written description.[3]

CONCLUSION

We have considered NuCurrent's remaining arguments and find them unpersuasive. For the reasons above, we affirm.

AFFIRMED

[3] We are doubtful that the Board got the written description issue right, but we do not reach the issue having affirmed on obviousness.