NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

INTELLECTUAL VENTURES II LLC,
Appellant

v.

AISIN SEIKI CO., LTD., TOYOTA MOTOR CORPORATION, AMERICAN HONDA MOTOR CO., INC.,
Appellees

2019-1718

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2017-01538, IPR2018-00443.

INTELLECTUAL VENTURES II LLC,
Appellant

v.

TOYOTA MOTOR CORPORATION, AISIN SEIKI CO., LTD.,
Appellees

2019-1719

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2017-01495.

Decided: May 15, 2020

PAUL A. STEWART, Knobbe, Martens, Olson & Bear, LLP, Irvine, CA, argued for appellant. Also represented by EDWARD M. CANNON, DAVID GERARD JANKOWSKI.

JAMES R. BARNEY, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, Washington, DC, argued for all appellees. Appellee Toyota Motor Corporation also represented by JOSHUA GOLDBERG, WILLIAM PRATT, DAVID REESE.

ERIC W. SCHWEIBENZ, Oblon, McClelland, Maier & Neustadt, LLP, Alexandria, VA, for appellee Aisin Seiki Co., Ltd. Also represented by JOHN SHERMAN KERN.

JOHN CARACAPPA, Steptoe & Johnson, LLP, Washington, DC, for appellee American Honda Motor Co., Inc. Also represented by JAMES RICHARD NUTTALL, Chicago, IL.

Before NEWMAN, O'MALLEY, and TARANTO, *Circuit Judges*.

O'MALLEY, *Circuit Judge*.

Patent Owner Intellectual Ventures II LLC ("Intellectual Ventures") appeals from final written decisions of the United States Patent Trial and Appeal Board ("the Board")

in two *inter partes* review proceedings, IPR2017-01495 and IPR2017-01538,[1] challenging claims 24–27 of U.S. Patent No. 7,928,348 ("the '348 patent"). Aisin Seiki Co., Ltd., Toyota Motor Corporation, and American Honda Motor Co., Inc. (collectively, "Aisin") were the petitioners in IPR2017-01538, whereas Aisin Seiki Co., Ltd. and Toyota Motor Corporation initiated IPR2017-01495. The Board found the challenged claims unpatentable as obvious over several combinations of prior art references. For the reasons stated below, we *affirm*.

I. BACKGROUND

Resolution of this appeal does not require a detailed recitation of the various prior art references and grounds of unpatentability addressed in the Board's decisions. Accordingly, only the facts relevant to this appeal are discussed below.

A. The '348 Patent

The '348 patent, titled "Electromagnetic Device with Integrated Fluid Flow Path," issued on April 19, 2011. It discloses fluid-cooled electromagnetic devices that contain parts that are substantially encapsulated in a monolithic body of a phase change polymer and include heat-exchange mechanisms. In particular, the patent relates to motors, generators, and transformers cooled by a fluid coolant. By preventing cooling liquids from contacting portions of the device directly, corrosion of, or damage to, parts of the device is avoided. '348 patent, col. 2 ll. 6–37. The disclosed devices include a magnetically inducible core, at least one electrical conductor, a monolithic body, a fluid pathway at least partially embedded in the monolithic body, and inlets

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[1] This proceeding was consolidated with IPR2018-00443.

and outlets in the fluid pathway. *Id.*, col. 25 ll. 5–14. Claim 24, the only independent claim at issue, recites:

> 24. A fluid conveying mechanism comprising:
>
> a) an electromagnetic field-functioning device having a magnetically inducible core and at least one electrical conductor that creates a magnetic field in the core when electrical current is conducted through the conductor;
>
> b) a monolithic body of injection molded thermoplastic material substantially encapsulating the at least one conductor; and
>
> c) a fluid pathway at least partially embedded in and integral with the monolithic body, with a least one of a fluid inlet into the pathway and a fluid outlet from the pathway being formed in the body of injection molded thermoplastic, and the pathway through the body being confined within the body.

'348 patent, col. 25 l. 3–col. 26 l. 3. Dependent claim 27 recites:

> 27. The fluid conveying mechanism of claim 24 wherein said at least one of a fluid inlet and a fluid outlet is in the form of a plumbing fitting.

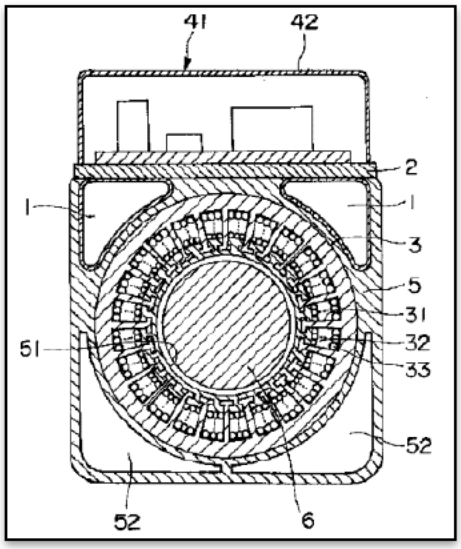
Id., col. 26 ll. 12–14.

The '348 patent teaches that the fluid cooling pathways can be made through injection molding, wherein molten polymer is injected into a mold under high pressure. The polymer then cools and solidifies into a shape that has conformed to the shape of the mold. *Id.*, col. 12 ll. 58–64; col. 16 ll. 27–46. Additionally, the patent teaches that the monolithic body is made from thermoplastic. An advantage of using thermoplastics is that, when the motor

increases in temperature, the thermoplastic expands at a similar rate such that the monolithic body is not stressed by thermal expansion. *Id.*, col. 11 ll. 22–28.

B. Asserted Prior Art Reference

Unexamined Japanese patent application H10-238491 ("Konishi"), published on September 8, 1998, discloses a "canned motor pump" containing a heat transfer pipe next to a heat emitting section of the pump. J.A. 3192. Figure 2 of Konishi, depicting a cross-sectional view of the canned motor pump, is copied below.



Cooling fluids flow through the heat transfer pipes 1. Konishi discloses stainless steel heat transfer pipes 1 sandwiching a stator core 3. J.A. 3193, ¶ 14. Heat transfer pipes 1 and stator core 3 are "molded in place with polydicyclopentadiene, which forms a stator molded portion 5." J.A. 3194, ¶ 16. The stator molded portion 5 is formed as a single unit with stator can 51. *Id.* Heat transfer pipes 1 are connected to working fluid flow paths to transfer heat via fluids in the pipes. *Id.*, ¶ 18. Heat is transferred to the working fluids in the pipes via heat transfer plate 2. *Id.*, ¶ 21. During operation, the pump forces fluids through the

heat transfer pipes, and the fluid removes the heat produced by the stator core 3 and coil 33. *Id.*, ¶¶ 21–22. Konishi also discloses additional synthetic or thermoplastic resins that can be used to seal the stator core, such as polyphenylene sulfide and syndiotactic polystyrene. J.A. 3195, ¶¶ 29–33.

C. The Board's Decisions

On December 12, 2018, the Board issued its final written decisions. In IPR2017-01538, the Board found that Aisin had shown by a preponderance of the evidence that claims 24–27 of the '348 are unpatentable as obvious over Konishi. *Aisin Seiki Co., Ltd. v. Intellectual Ventures II LLC*, No. IPR2017-01538, 2018 WL 6584583, at *14 (P.T.A.B. Dec. 12, 2018).

The Board construed the term "monolithic body" as "a body formed as a single piece." *Id.* at *4. The Board concluded that this does not exclude a body formed by "unitizing multiple pieces." *Id.* The Board construed the term "a fluid pathway at least partially embedded in and integral with the monolithic body" as "a fluid pathway at least partially (i) fixed within and formed by the material of the monolithic body or (ii) formed by a conduit fixed within and integrally surrounded by the material of the monolithic body." *Id.* As to the term "plumbing fitting," the Board found that it "refer[s] to a connector that couples conduits together in a fluid-tight manner." *Id.* at *6.

As relevant to this appeal, the Board found that Konishi discloses, or renders obvious, the independent claim 24 limitation "a monolithic body of injection molded thermoplastic material substantially encapsulating the at least one conductor." *Id.* at *9–12. According to the Board, Konishi discloses that stator molded portion 5 and stator can 51 are formed as a single unit, and accordingly, "the stator molded portion 5/stator can 51 is a monolithic body that entirely surrounds windings 33, as permitted by [its] construction of the phrase." *Id.* at *10. The Board also found

that Konishi teaches the use of injection-molded thermoplastic to make the monolithic body. *Id.* at *11–12. According to the Board, Konishi expressly teaches a molded stator made from polydicyclopentadiene, and expressly states that thermoplastic is suitable for sealing the stator core. *Id.* The Board rejected Intellectual Ventures' argument that a person of skill in the art ("POSA") would not use thermoplastic in Konishi's motor due to the risk of melting in the vicinity of the windings 33. *Id.* at *13. In doing so, the Board noted that Konishi itself discloses the possibility of utilizing thermoplastics and would not have made such a disclosure if it did not account for the heat generated by windings 33. *Id.* As a result, the Board found that Konishi teaches this limitation.

As to the dependent claims, Intellectual Ventures did not dispute that Konishi teaches the additional limitations of dependent claims 25 and 26. *Id.* With respect to claim 27, the Board found the limitation "said at least one of a fluid inlet and a fluid outlet is in the form of a plumbing fitting" obvious in light of Konishi. *Id.* According to the Board, Konishi explains that working fluid is drawn into and flows out of flow paths 52, and fluid is confined in these paths "in a fluid-tight manner to achieve its heat removal function." *Id.* at *14. Accordingly, the Board found that Aisin had shown by a preponderance of the evidence that claims 24–27 would have been obvious over the teachings of Konishi. *Id.*

Intellectual Ventures filed requests for rehearing pursuant to 37 C.F.R. § 42.71(d), which the Board denied on February 4, 2019. J.A. 715–24; J.A. 2951–60. This appeal followed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4) and 35 U.S.C. § 141.

II. DISCUSSION

The scope of our review in an appeal from the Board is limited. We review the Board's factual findings for substantial evidence and the Board's legal conclusions de novo.

Microsoft Corp. v. Proxyconn, Inc., 789 F.3d 1292, 1297 (Fed. Cir. 2015). "Substantial evidence . . . means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938). Obviousness is a question of law based on underlying facts. *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1047 (Fed. Cir. 2016) (en banc). What the prior art teaches, whether a person of ordinary skill in the art would have been motivated to combine references, and whether a reference teaches away from the claimed invention are all questions of fact. *Id.* at 1047–48; *In re Mouttet*, 686 F.3d 1322, 1330 (Fed. Cir. 2012).

On appeal, Intellectual Ventures argues that the challenged claims are not obvious over the various asserted grounds of unpatentability. As to obviousness in light of Konishi, Intellectual Ventures challenges the Board's conclusion on just one theory: it argues that the Board's findings are not supported by substantial evidence because the claims require "injection molded thermoplastic," and it would not have been obvious or feasible to make Konishi's stator can from thermoplastic. Appellant's Br. 61.

As it did before the Board, Intellectual Ventures argues that a POSA would have been dissuaded from using thermoplastic material to form Konishi's monolithic body because of concerns regarding the high temperature environment of Konishi's stator can. *Id.* at 62–66.[2] According to Intellectual Ventures, in the preferred embodiment of Konishi, the monolithic body is made up of specially engineered thermo*set* material polydicyclopentadiene—distinguishable from thermo*plastic* in that it can retain its mechanical strength upon reheating. *Id.* at 13, 61.

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[2] Intellectual Ventures does not dispute that using injection molded thermoplastic to form Konishi's monolithic body would result in a structure that meets all the claim limitations. Appellant's Br. 61–67.

Intellectual Ventures maintains that this distinction is important because exposure to heat causes thermoplastic to soften or melt, and consequently lose its desired shape. *Id.* at 13–14. By contrast, thermoset materials can withstand high temperatures. Intellectual Ventures relies on portions of its expert declaration to argue that it would not have been obvious or even feasible to make the stator can of Konishi from thermoplastic. Appellant's Br. 62–65.

At bottom, Intellectual Ventures' arguments are an attempt to differentiate between the stator *can* 51 and the stator *molded portion* 5. Intellectual Ventures agrees that Konishi teaches (1) that thermoplastics may be used to form the stator molded portion 5; and (2) the stator molded portion 5 and stator can 51 may be formed as a single unit. Appellant's Br. 62; Appellant's Reply Br. 1. But it insists that it does not follow that the stator *can* 51 may be made of thermoplastic.

The government responds that the Board considered this same argument, weighed the testimony of Intellectual Ventures' expert, and rejected it. Appellee's Br. 28. In the government's view, the Board's factual determinations regarding what Konishi would teach a POSA are supported by substantial evidence. The government argues that Intellectual Ventures "turns a blind eye" to Konishi's disclosure that it is possible to seal the stator core using a stator can formed of materials including "synthetic resin," and such resins include thermoplastics. *Id.* at 29 (citing J.A. 3195, ¶ 30). According to the government, this disclosure, combined with Konishi's teaching that "[w]hen sealing as described above, the stator can . . . can also form a single unit with the stator mold," provides substantial evidence support for the Board's decision. *Id.* at 30 (citing J.A. 3195, ¶ 38). We agree with the government.

The Board considered similar arguments regarding Konishi, and—based on the disclosures of Konishi and the testimony of Aisin's expert—found that it would have been

obvious to utilize injection molded thermoplastic to form Konishi's monolithic body (made up of the stator molded portion 5 and the stator can 51). *Aisin Seiki*, 2018 WL 6584583, at *11. Specifically, the Board found that Konishi discloses that the stator molded portion 5 and stator can 51 are formed as a "single unit" (thereby making up the monolithic body) and that injection molding is an exemplary method of sealing the stator core. *Id.* (citing J.A. 3194, ¶ 16; J.A. 3195, ¶¶ 30–31, 37–38). Indeed, Konishi expressly discloses that "thermoplastic resins" are types of synthetic resins that can be used to seal the stator core, and provides a list of various thermoplastic materials suitable for such use. J.A. 3195, ¶¶ 30–31. Konishi also teaches that:

> Examples of methods used in sealing the stator core, etc., include RIM, resin transfer molding, reactive molding, casting molding, injection molding, and so on. Of these methods, reactive injection molding is particularly preferable, since only little force is required to close the mold, and the method is suitable to molding large, complex shapes like the stators of canned motor pumps.

J.A. 3195, ¶ 37. As the Board noted, Aisin's expert Dr. Trumper described Konishi's disclosures as follows:

> [B]ecause thermoplastics were well known to have properties well-suited for use in these environments, such as high heat conductivity allowing heat to be easily transferred away from the motor, a POSITA would have easily chosen a thermoplastic for use in sealing the stator core via injection molding. Alternatively, it would have been obvious to a POSITA to mold the stator mold 5 and stator can 51 as a single piece . . . in view of Konishi's description of integrally forming the stator mold 5 with the stator can 51.

J.A. 3110, ¶¶ 87–88 (citing J.A. 3194–95, ¶¶ 16, 28, 38).

The Board also considered the testimony of Intellectual Ventures' expert Dr. Garris—stating that a POSA would not use thermoplastic because of the expectation that the material would soften or melt because of heat from the windings 33—and found that this testimony was inconsistent with Konishi's express disclosures. *Aisin Seiki*, 2018 WL 6584583, at *11. Specifically, the Board found Dr. Garris's assertions unpersuasive in light of Konishi's teachings that (1) heat produced by windings/coils 33 is "removed to the outside by the working fluid that passes through the inside of heat transfer pipes 1"; and (2) heat produced by the stator core 3 and the stator coil 33 is removed to the outside by the working fluid that passes through the flow paths 52. *Id.* (citing J.A. 3194, ¶¶ 21, 22). We defer to the Board's credibility determinations regarding expert testimony.

We also reject Intellectual Ventures' arguments that the Board's findings are not based on any expert testimony and should be rejected. First, the Board noted that it was "persuaded by Dr. Trumper's testimony that such materials were suitable, as taught by Konishi, and provided well-known benefits, e.g., high heat conductivity." *Id.* (citing J.A. 3110, ¶¶ 86–87). That Intellectual Ventures disagrees with the Board's reading of Dr. Trumper's testimony is of no moment. *See* Appellant's Br. 62 ("This statement [regarding Konishi's teachings] by Petitioners' expert is a *non sequitur* at best."). Second, as the government correctly notes, in appropriate circumstances, the Board can make findings without expert testimony. *See* Appellee's Br. 33–34 (citing *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1079 (Fed. Cir. 2015)). Intellectual Ventures' attempts to distinguish *Belden* are unpersuasive. *See* Appellant's Reply Br. 2–3. *Belden* makes clear that, depending on the complexity of the art, Board members may be able to easily understand and "soundly explain" the prior art without help from experts. *Belden*, 805 F.3d at 1079 (Fed. Cir. 2015); *see also VirnetX Inc. v. Apple Inc.*, 665 F. App'x 880,

884 (Fed. Cir. 2016) (unpublished) ("[T]o the extent that [Patent Owner] contends that the PTAB *must* consider expert testimony, no authority supports that proposition."). Here, the Board considered expert testimony in addition to the disclosures of Konishi itself. It weighed this evidence and chose not to credit the testimony of Intellectual Ventures' expert. Given the art at issue, we do not view the Board's findings as "read[ing] into Konishi that which is not there." Appellant's Reply Br. 3.

Accordingly, we conclude that substantial evidence supports the Board's findings that Konishi discloses the use of injection molded thermoplastic in its motor. The Board's conclusion that claims 24–27 of the '348 patent are unpatentable as obvious is not erroneous.

III. CONCLUSION

Because we conclude that all challenged claims would have been obvious over Konishi, we affirm the Board's decision on that ground and need not address the parties' arguments regarding the other grounds of unpatentability. Accordingly, we affirm the Board's final written decisions.

AFFIRMED