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Paper 13
Date: September 15, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

REVVO TECHNOLOGIES, INC.,
Petitioner,

v.

CEREBRUM SENSOR TECHNOLOGIES, INC.,
Patent Owner.

IPR2025-00632
Patent 11,835,421 B2

Before MITCHELL G. WEATHERLY, KEVIN W. CHERRY, and BRIAN D. RANGE, *Administrative Patent Judges*.

WEATHERLY, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background

Revvo Technologies, Inc. ("Petitioner") filed a petition (Paper 1, "Pet.") to institute an *inter partes* review of claims 1, 2, 5, 7–12, 20–24, 28, 31–34, 41, 43, 44, 48, and 50–53 (the "challenged claims") of U.S. Patent No. 11,835,421 B2 (Ex. 1001, "the '421 patent"). 35 U.S.C. § 311.

Cerebrum Sensor Technologies, Inc. ("Patent Owner") timely filed a Preliminary Response. Paper 9 ("Prelim. Resp.").[1] Institution of an *inter partes* review is authorized by statute when "the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). Based on our review of the record, we conclude that Petitioner is reasonably likely to prevail with respect to at least one of the challenged claims.

Petitioner challenges the patentability of claims as follows:

Claims challenged	35 U.S.C. §[2]	Reference(s)
1, 2, 7–9, 11, 12, 20–24	103	Yamaguchi-727[3]
5, 28, 31–33, 41, 43, 44, 48, 50–52	103	Yamaguchi-727, Yamaguchi-566[4]
34, 53	103	Yamaguchi-727, Yamaguchi-566, Dodani[5]
10	103	Yamaguchi-727, McDonald[6]

[1] Paper 9 is a corrected Patent Owner Preliminary Response.

[2] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. §§ 102 and 103 that became effective March 16, 2013. The application for the '421 patent was filed on October 20, 2020, and claims priority as a continuation-in-part of an application filed October 31, 2019. Therefore, we apply the post-AIA versions of 35 U.S.C. §§ 102 and 103.

[3] U.S. Pat. App. Pub. No. 2021/0370727 Al (Ex. 1006, "Yamaguchi-727").

[4] U.S. Pat. App. Pub. No. 2021/0394566 Al (Ex. 1007, "Yamaguchi-566").

[5] WIPO Pub. No. WO 2020/036859 A1 (Ex. 1009, "Dodani").

[6] U.S. Patent No. 6,769,319 B2 (Ex. 1008, "McDonald").

B. Related Proceedings

Petitioner identified as a related proceeding the co-pending district court proceeding of *Cerebrum Sensors Technologies Inc. v. Revvo Technologies, Inc.*, Case No. 1:24-cv-00245-JLH (D. Del. Feb. 23, 2024). Pet. 1; Paper 4, 1.

C. The '421 Patent

The '421 patent relates to "sensor assemblies and systems for monitoring dynamic objects" like vehicle tires. Ex. 1001, 8:28–30, 8:56–57. The '421 patent explains that: "Sensor assembly housings 12 as disclosed herein are constructed to provide the inside or internal cavity 38 configured in a manner to fixedly retain and house the electrical sensor device 40 therein without the need for filling agents or materials." *Id*. at 12:41–45. The '421 patent also states that "A feature of sensor assemblies as disclosed herein is that they do not use or require the use of any such coating or filling agents or materials for any fixturing of the electrical sensor device 40 within the internal cavity 38." *Id*. at 13:60–64.

Figure 6, reproduced at right, illustrates an embodiment of sensor assembly 80. Sensor assembly 80 includes a housing 12, electrical sensor 40, and retainer 14. The housing 12 "comprises a wall structure 34 and bottom section 48 that is provided in an assembled state" and a "top cover 22 that is configured to attach over an opening 82 of [a] housing inside cavity 38 . . . ." *Id*. at 12:7–9, 12:22–24. The '421 patent explains that inside cavity 38 "is configured having one or more surface features . . . that engage an underside of the electrical sensor device 40 peripheral edge 46 to fix axial displacement of electrical sensor device 40 within the inside cavity 38[,]" such as "one or more ribs or tabs that project outwardly a distance from the wall structure inside surface 42." *Id*. at 12:15–22. In an example, sensor assembly 80 "is assembled by inserting the electrical sensor device 40 into the housing inside cavity 38 until the surface features engage the electrical sensor device 40 to fixedly limit its axial displacement therein." *Id*. at 12:25–29.

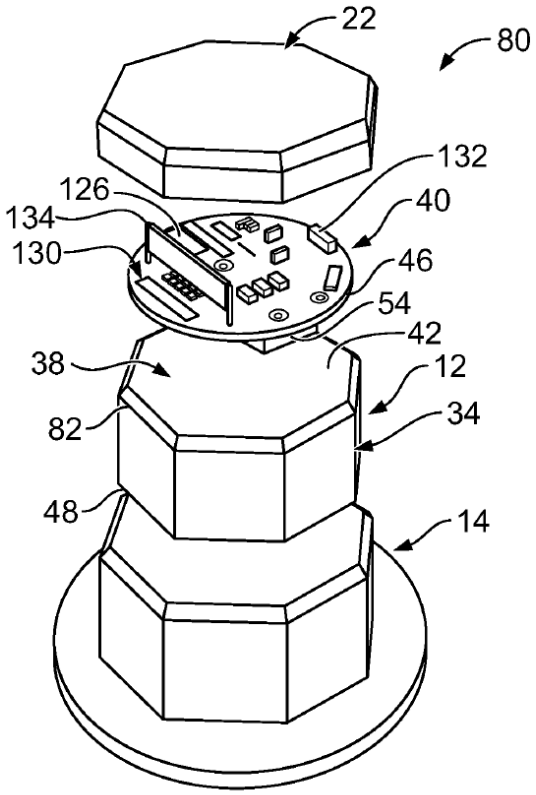


FIG. 6

Claims 1, 28, and 41 are the independent claims among the challenged claims. Claim 1, which is illustrative, recites:

> 1[pre]. A sensor assembly configured for attachment with an object that is rotated in use, the sensor assembly comprising:
>
> [a] a housing comprising an outer surface and an internal cavity that is enclosed within the housing;

> [b] an electrical sensor device that is disposed within the internal cavity and attached therein to prevent movement of the device within the internal cavity,
>
> [c] wherein the internal cavity comprises an unfilled open space above or below the electrical sensor device in the housing,
>
> [d] wherein the electrical sensor device is configured to sense, transmit and/or receive information regarding surrounding conditions, orientation and/or location when the sensor assembly is attached with the object and the object is rotated in use; and
>
> [e] a retaining member that is configured to accommodate attachment of the housing therewith, wherein the retaining member has an outside surface configured for attachment to rotate with the object when the object is rotated in use.

Id. at 30:21–39 (with certain line breaks and bracketed labels added by Petitioner to ease discussion).

II. ANALYSIS

A. Claim Interpretation

We interpret claims in the same manner used "in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. § 42.100(b). When applying that standard, we interpret the claim language as it would have been understood by one of ordinary skill in the art in light of the specification. *Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1279–80 (Fed. Cir. 2017). Thus, we give claim terms their ordinary and customary meaning as understood by an ordinarily skilled artisan. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). Only terms that are in controversy need to be construed,

and then only to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Petitioner "accepts Patent Owner's proposed constructions from the underlying district court litigation for the purposes" of its Petition as set forth in the table below. Pet. 9–10.

Disputed Term	Patent Owner's Proposed Construction
"(a) housing"	a protective cover
"internal cavity"	an open space inside of the housing
"enclosed" / "enclosed within the housing"	surrounded within the housing
"unfilled open space" / "open space"	space without filing agents or materials
"surface feature[s]"	structure[s] on or of a surface
"fixed" / "having a fixed placement"	not displaceable in at least one direction
"the housing includes an outer structure that defines the internal cavity"	the space inside the housing structure is the internal cavity

Id.

Patent Owner does not dispute any of the proposed interpretations set forth in the table but contends that Petitioner provides different interpretations in the district court. Prelim. Resp. 13–14. Patent Owner argues that such differences in proposed interpretations constitute "gamesmanship" that warrants denying institution for a failure to interpret claims as required in 37 C.F.R. § 42.104(b)(3). *Id*. at 15 (citing

Orthopediatrics Corp. v. K2M, Inc., IPR2018-01546, Paper 10 at 11 (PTAB Feb. 14, 2019); *10x Genomics, Inc. v. President and Fellows of Harvard College*, IPR2023-01299, Paper 15 at 13 (PTAB Mar. 14, 2024).)

> Rule 104(b)(3) sets forth requirements for a petition that include:
>
> (b) Identification of challenge. Provide a statement of the precise relief requested for each claim challenged. The statement must identify the following:
>
> * * *
>
> (3) How the challenged claim is to be construed. Where the claim to be construed contains a means-plus-function or step-plus-function limitation as permitted under 35 U.S.C. 112(f), the construction of the claim must identify the specific portions of the specification that describe the structure, material, or acts corresponding to each claimed function.

37 C.F.R. § 42.104(b)(3).

Petitioner complies with the requirement of identifying "[h]ow the claim language is to be construed" by setting forth proposed interpretations of various claim terms in the table above.[7] Both cases cited by Patent Owner relate to an issue presented by a petitioner's alleged inconsistent handling of whether a claim term is subject to interpretation as a means-plus-function element under 35 U.S.C. § 112(f). *Orthopediatrics Corp. v. K2M, Inc.*, IPR2018-01546, Paper 10 at 11 (PTAB Feb. 14, 2019); *10x Genomics, Inc. v. President and Fellows of Harvard College*, IPR2023-

[7] Neither party has identified any claim language that might invoke interpretation as a means-plus-function limitation, and we discern no such claim language. Additionally, we do not imply that a petitioner must always propose express interpretations for specific claim language to comply with Rule 42.104(b)(3). Rather, we only note that Petitioner has, by any measure, complied by expressly proposing interpretations for identified claim language.

01299, Paper 15 at 13 (PTAB Mar. 14, 2024). No such issue is presented in this case.

Patent Owner does not currently dispute Petitioner's proposed interpretations of claim terms. Prelim. Resp. 13–15. Accordingly, we discern no dispute over the meaning of the terms set forth in the table above, and we apply them in our analysis below of whether to institute trial. Nevertheless, both parties are free to address claim interpretation in more detail at trial as they see fit. If the parties wish to propose an express interpretation for any particular claim language, they should follow the guidance set forth in *Phillips*, 415 F.3d 1303, and focus primarily upon probative intrinsic evidence.

B. Legal Standards

The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), reaffirmed the framework for determining obviousness as set forth in *Graham v. John Deere Co*., 383 U.S. 1 (1966). The *KSR* Court summarized the four factual inquiries set forth in *Graham* that we apply in determining whether a claim is reasonably likely to be unpatentable as obvious under 35 U.S.C. § 103(a) as follows: (1) determining the scope and content of the prior art, (2) ascertaining the differences between the prior art and the claims at issue, (3) resolving the level of ordinary skill in the pertinent art, and (4) considering objective evidence indicating obviousness or nonobviousness. *KSR*, 550 U.S. at 406. With this standard in mind, we address each challenge below.

C. Claims 1, 2, 7–9, 11, 12, and 20–24:
Obviousness in view of Yamaguchi-727

Petitioner argues that Yamaguchi-727 renders claims 1, 2, 7–9, 11, 12, and 20–24 obvious. Pet. 16–40. For the reasons expressed below, we find

that Petitioner has established a reasonable likelihood of proving that Yamaguchi-727 renders these claims unpatentable as obvious.

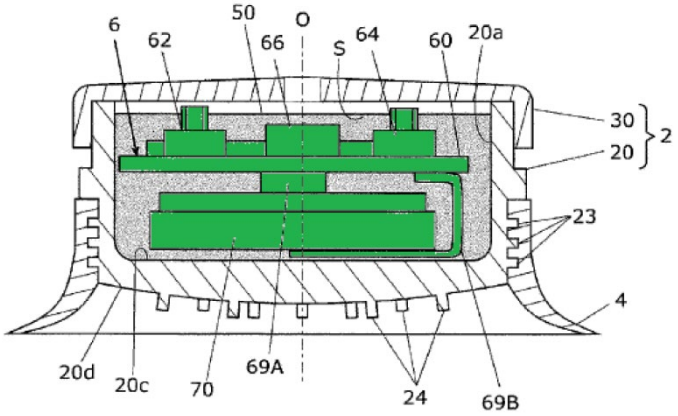
1. Independent Claim 1

Petitioner contends that Yamaguchi-727 describes or suggests all limitations of claim 1. Pet. 17–32. Patent Owner does not contest Petitioner's showing for limitations 1pre, 1a, and 1c–1e. *See* Prelim. Resp. 17–25 (addressing only the insufficiency of Petitioner's showing for limitation 1b). Based on Petitioner's argument and the evidence cited in support of that argument, we find that Petitioner has sufficiently demonstrated that Yamaguchi-727 teaches these claim limitations for the purposes of deciding whether to institute trial.

Patent Owner argues that Yamaguchi-727 fails to describe limitation 1b, *id*. at18–21,[8] which recites: "an electrical sensor device that is disposed within the internal cavity and attached therein to prevent movement of the device within the internal cavity," Ex. 1001, 30:25–27. For the reasons expressed below, we find that Petitioner has demonstrated a reasonable likelihood of proving that Yamaguchi-727 describes limitation 1b.

[8] Patent Owner also purports to argue that an ordinarily skilled artisan would have modified Yamaguchi-727 to arrive at the invention of claim 1. Prelim. Resp. 44–45. However, we discern no distinction between Patent Owner's argument that Yamaguchi-727 fails to describe limitation 1b and its argument advanced in this portion of the Preliminary Response.

Petitioner contends that Yamaguchi-727 describes placing a sensor device in the internal cavity of an assembly in such a way to prevent movement of the device within the cavity. Pet. 22–25. Petitioner relies on the annotated version of Yamaguchi-727's Figure 5, the pertinent portion of which is reproduced at right. Petitioner identifies Yamaguchi-727's module 6 including circuit board 60 bearing sensors 62, 64, 66 (green) as the claimed sensor device. *Id*. at 22 (citing Ex. 1006 ¶ 40, Fig. 5).



Yamaguchi-727 states that its circuit board 60 and housing case 20 are provided with a "positioning means, which is not shown in the figure, that are mutually fitted with each other." Ex. 1006 ¶ 42. Petitioner argues that this "'positioning means' ensures that the accelerometer on circuit board 60 is properly oriented within the housing and prevents at least radial movement about axis O within housing space S." Pet. 23–24 (citing Ex. 1006 ¶ 42; Ex. 1003 ¶ 83). Petitioner further contends that Yamaguchi-727's potting material 50 (grey) prevents movement of module 6 within the internal cavity of housing case 20. *Id*. at 24 (citing Ex. 1006 ¶ 42; Ex. 1003 ¶ 84).

Patent Owner argues that Petitioner ignores portions of Yamaguchi-727 that teach away from limitation 1b. Prelim. Resp. 18–21. Patent Owner relies on the following passage from Yamaguchi-727:

> The module 6 configured as mentioned above is housed in the housing case 20 in the state that the battery 70 is connected to the circuit board 60, and positioned so that the battery 70 faces

> the inner bottom surface 20c of the housing space S, and the measurement direction of the acceleration sensor 66 mounted on the circuit board 60 faces the predetermined direction relative to the housing case 20.

Id. at 19 (quoting Ex. 1006 ¶ 47). Patent Owner argues that this passage indicates that Yamaguchi-727 "merely describes that the sensor is 'positioned' to face the 'predetermined direction relative to the housing case 20,'" but does not indicate that the module 6 is positioned to prevent movement. *Id*. at 19–20.

We disagree. Positioning module 6 to face a "predetermined direction" is a form of preventing movement that falls within the scope of limitation 1b. Moreover, Yamaguchi-727 uses a method for preventing movement of its module 6 in its housing 20, silicone potting material, that is expressly recognized by the Specification of the '421 patent when it states: "A common technique used to assist in fixturing the electrical sensor device 40 known within the automotive industry is to fill the internal cavity with a coating material such as a neutral silicone or the like for purposes of retaining placement position." Ex. 1001, 13:56–60. Although the Specification also asserts that the sensor assemblies disclosed in the 421 patent "do not use or require the use of any such coating or filing agents or materials for any fixturing of the electrical sensor device 40," *id*. at 13:61–64, limitation 1b merely requires that the "sensor device . . . is disposed within the internal cavity and attached therein to prevent movement of the device within the internal cavity," *id*. at 30:25–27. Absent a persuasive argument to the contrary, we preliminarily conclude that Yamaguchi-727's use of potting material to hold its module 6 in place within its housing 20 meets the requirements of limitation 1b. Both parties

are encouraged to adduce intrinsic evidence relating to the meaning of limitation 1b at trial.

For all the reasons set forth above, we find that Petitioner has established a reasonable likelihood of proving the Yamaguchi-727 renders claim 1 unpatentable as obvious.

2. Dependent Claims 2, 7–9, 11, 12, and 20–24

Petitioner identifies the portions of Yamaguchi-727 that teach the limitations introduced in dependent claims 2, 7–9, 11, 12, and 20–24, all of which ultimately depend from claim 1. Pet. 32–40. Patent Owner relies upon its argument that Petitioner's showing for claim 1 is deficient as the reason why Petitioner's challenge to dependent claims 2, 7–9, 11, 12, and 20–24 fails. We reject this argument for the reasons stated in Part II.C.1 above. Based on our review of Petitioner's otherwise uncontested argument and evidence cited in support, we find that Petitioner also establishes a reasonable likelihood of proving that Yamaguchi-727 renders dependent claims 2, 7–9, 11, 12, and 20–24 unpatentable as obvious.

D. Remaining Challenges

We do not fully reach Petitioner's challenges to remaining claims 5, 10–12, 28, 31–34, 41, 43, 44, 48, and 50–53 because the challenge to claims 1, 2, 7–9, 11, 12, and 20–24 addressed immediately above justifies a trial. However, we encourage the parties to more explicitly address differences in the scope of at least limitations 28b and 41a as compared to limitation 1b. Limitations 28b and 41a are the basis for Patent Owner's current argument that the challenges to other claims fail. Prelim. Resp. 7, 26–46.

For example, Patent Owner argues that Petitioner's challenge to independent claims 28 and 41 as obvious over the combined teachings of

Yamaguchi-727 and Yamaguchi- 566 fails. Prelim. Resp. 26–35 (claim 28), 39–42 (claim 41). Patent Owner's argument largely follows its logic relating to limitation 1b by contending that the prior art fails to describe limitations 28b and 41a, both of which relate to positioning a sensor device within a housing. *Id*.

Claim 28 is directed to a "sensor assembly" that includes limitation 28b, which recites: "an electrical sensor device disposed within the internal cavity and having a fixed placement therein by one or more surface features of the housing configured to contact the electrical sensor device." Ex. 1001, 32:29–32. Patent Owner argues that the combined teachings of Yamaguchi-727 and Yamaguchi- 566 fail to describe or suggest limitation 28b. Prelim. Resp. 26–34. However, Petitioner sufficiently demonstrates at least a reasonable likelihood that Yamaguchi- 566 describes ribs 20B and a groove 20A on the interior surface of its housing 20 as "surface features" that result in its module 6 "having a fixed placement" as required by limitation 28b in the sense that Yamaguchi- 566's surface features constrain movement of module 6 at least in some direction within housing 20. Pet. 50–52.

Claim 41 is directed to a "method for using a sensor device" that includes limitation 41a, which recites, in part, a step of: "installing an electrical sensor device within an internal cavity of a housing." *Id*. at 34:7–8. Patent Owner contends that the combined teachings of Yamaguchi-727 and Yamaguchi- 566 fail to describe or suggest limitation 41a. Prelim. Resp. 39–41. However, Petitioner sufficiently demonstrates at least a reasonable likelihood that each of Yamaguchi-727 and

Yamaguchi- 566 describe simply installing a sensor in a housing as required by limitation 41a. Pet. 55–57.

III. CONCLUSION

For the reasons expressed above, we determine that Petitioner has demonstrated a reasonable likelihood of showing that claims 1, 2, 7–9, 11, 12, and 20–24 of the '421 patent are unpatentable as obvious. In accordance with the Court's decision in *SAS Institute, Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018) and 37 C.F.R. § 42.108(a), we institute an *inter partes* review of all challenged claims of the '421 patent on all grounds alleged by Petitioner.

This Decision does not reflect a final determination on the patentability of any claim. We further note that the burden remains on Petitioner to prove unpatentability of each challenged claim. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

IV. ORDER

For the reasons given, it is:

ORDERED that *inter partes* review of claims 1, 2, 5, 7–12, 20–24, 28, 31–34, 41, 43, 44, 48, and 50–53 of U.S. Patent No. 11,835,421 B2 is *instituted* with respect to all grounds of unpatentability set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(a), *inter partes* review of U.S. Patent No. 11,835,421 B2 is instituted commencing on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is given of the institution of a trial.

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