

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GN HEARING A/S,
Petitioner,

v.

OTICON A/S,
Patent Owner.

Case IPR2017-01927
Patent 8,494,204 B2

Before NEIL T. POWELL, FRANCES L. IPPOLITO, and
TERRENCE W. McMILLIN, *Administrative Patent Judges*.

McMILLIN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Inter Partes Review
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

GN Hearing A/S (“Petitioner”) filed a Petition (Paper 1, “Pet.”) seeking *inter partes* review of claims 1–8 of U.S. Patent No. 8,494,204 B2 (Ex. 1001, “the ’204 patent”). Patent Owner, Oticon A/S, filed a Preliminary Response to the Petition. Paper 6 (“Prelim. Resp.”). We instituted this review. Paper 7 (“Inst. Dec.”).

Subsequent to institution, Patent Owner filed a Patent Owner Response. Paper 10 (“Resp.”). Petitioner filed a Reply. Paper 14 (“Reply”). Patent Owner filed a Sur-Reply. Paper 21 (“Sur-Reply”). Petitioner filed a Sur-Sur-Reply. Paper 29 (“Sur-Sur-Reply”). An oral argument was held on November 29, 2018, and a transcript was entered. Paper 37 (“Tr.”).

Petitioner has also filed a Motion to Strike Evidence Submitted with Patent Owner’s Sur-Reply (Paper 28, “Motion to Strike”) and Motion to Exclude Evidence under 37 C.F.R. § 42.64 (Paper 32, “Motion to Exclude”). Patent Owner filed oppositions to both motions. Paper 30; Paper 34. Further, Petitioner filed a Reply in support of its Motion to Exclude (Paper 36).

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons that follow, Petitioner has established by a preponderance of the evidence that claims 1–8 of the ’204 patent are unpatentable.

A. *Related Matters*

The parties do not identify, pursuant to 37 C.F.R. § 42.8(b)(2), any judicial or administrative matters that would affect or be affected by a decision in this proceeding. Pet. 2; Paper 3, 2.

We note that the '204 patent issued on an application that was a continuation of an application that issued as U.S. Patent No. 7,894,621 (Ex. 1001, (63)), which is the subject of an *inter partes* review in IPR2017-01926.

B. The '204 Patent

The '204 patent is titled “Audio Device Comprising a Microphone.” Ex. 1001, (54). The Abstract of the '204 patent describes “[a]n audio device [that] includes a microphone, a sound canal allowing sound to pass from the surroundings to the microphone,” and a protection screen. *Id.* at (57). The protection screen “includes a first surface which faces the surroundings and a second surface which faces the sound canal, and defines a slit-formed opening between the first surface and the second surface.” *Id.* “The curvature between the first surface and the slit-formed opening is smooth and gradual, and a sharp edge is located at the transition between the second surface and the slit-formed opening.” *Id.*

The preferred embodiment is a hearing aid. *See id.* at Fig. 5. Figure 5 of the '204 patent is reproduced below.

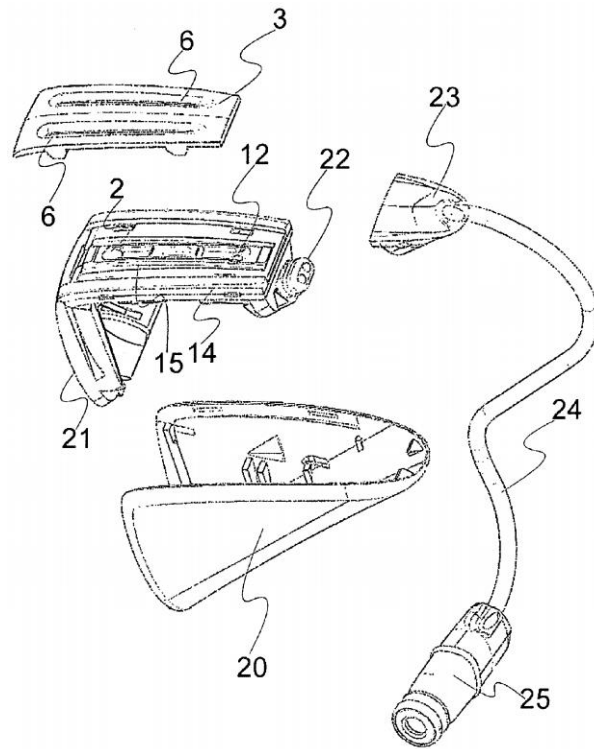


Fig. 5

Figure 5 depicts an audio device, which includes a protective screen 3. *Id.* at 3:45–46. Figure 4 of the '204 patent is reproduced below.

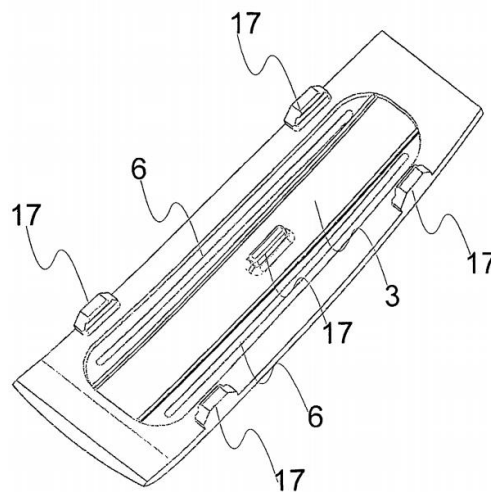


Fig. 4

Figure 4 depicts the protective screen 3 from below. *Id.* at 1:43–44. “The

screen 3 has two slit-formed openings 6 extending along the length of the screen 3.” *Id.* at 4:7–8. Figure 1 of the ’204 patent is reproduced below.

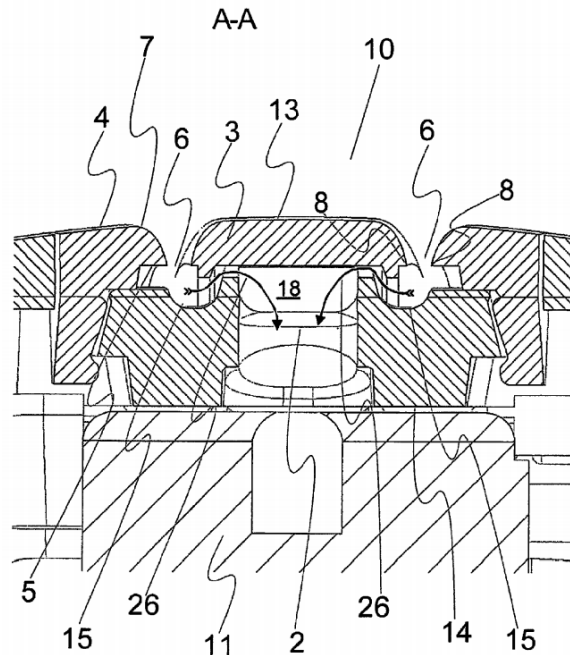


Fig. 1

Figure 1 depicts an audio device with the screen 3 in place. *Id.* at 3:39–40. “As seen in FIG. 1, the transition between the first surface 4 and the opening 6 is made with a smooth and rounded shoulder 7, whereas the transition between the second surface 5 and the opening 6 is made with a sharp edge 8.” *Id.* at 4:41–44.

The combination of the slit opening, smooth curvature of the exterior surface into the slit, and sharp edge at the interior end of the slit are said to provide various advantages. The “Summary of the Invention” in the Specification states:

By way of the slit formed opening and the gradual transition from the first even surface and the opening, it is ensured that air moving about over the protection screen will not find any sharp edges and less turbulence will be generated,

whereby the wind noise will remain at a minimum level. The sharp edges provided between the second surface and the slit formed opening will ensure that water will have a tendency to form droplets on the first even surface, and such droplets may easily be wiped off or simply left to dry. Thus the protection screen will protect the microphone against wind noise and against water. The slit-formed entrance allows a large opening area without allowing large elements of pollution to enter into the delicate microphones, whereby good sound transparency combined with good protection against pollution is ensured. Further, the gradual transition from the first even surface to the slit, will allow the protection screen to be wiped off and cleaned without dirt elements being squeezed into the opening.

Id. at 1:61–2:11.

Petitioner challenges all 8 claims of the '204 patent. Pet. 1.

Independent claim 1 is reproduced below:

1. An audio device comprises:
 - an external casing;
 - a microphone housed within the external casing, acoustically connected through a sound canal to an inlet port of the external casing; and
 - a protective cover attached to the external casing above the inlet port, the protective cover including
 - a first surface facing substantially toward exterior of the audio device, the first surface having a smooth curvature toward an elongated slit opening of the protective cover, and
 - a second surface facing toward interior of the audio device, the second surface meeting the first surface along an edge defining the boundary of the elongated slit opening.

Ex. 1001, 5: 8–22.

Claim 2 depends from claim 1 and recites, “the edge has a cross-sectional angle of less than ninety degrees.” *Id.* at 5:22–25.

Claim 3 is an independent claim directed to a “protection screen for an audio device” comprising first and second surfaces. *Id.* at 5:26–32.

Claim 4 depends from claim 3 and recites, “the audio device includes an exterior casing having at least one microphone inlet, and the elongated slip opening of the protection screen is positioned above the at least one microphone inlet.” *Id.* at 5:33–38.

Claim 5 is an independent claim directed to a “protection screen for an audio device” comprising first and second surfaces. *Id.* at 6:1–7. Claim 5 also recites, “two microphone inlets”; the elongated slit opening extends above the two inlets, and defines an open space “between the protection screen and an upper surface of the casing between the two inlets.” *Id.* at 5:8–11.

Claim 6 depends from claim 3 and recites, “the edge defines the boundary of the elongate slit opening.” *Id.* at 6:12–14.

Claim 7 depends from claim 3 and recites, “the edge has a cross-sectional angle of less than ninety degrees.” *Id.* at 6:15–18.

Claim 8 is an independent claim directed to an “audio device” and recites, “an external casing with two microphone inlets,” “at least one microphone,” and a “protective cover” “defining an open space.” *Id.* at 6:19–24. The protective cover includes an “elongated slit opening” and first and second surfaces. *Id.* at 6:25–37.

C. The Asserted Grounds of Unpatentability

Petitioner contends that claims 1–8 of the challenged patent are unpatentable under 35 U.S.C. § 103¹ based on the following grounds:

References	Claims Challenged
Saltykov ² and Dodge ³	1–8
Sjursen ⁴ and Mundel ⁵	1, 3–6, and 8
Sjursen, Mundel, and Dodge	2 and 7

Pet. 5.

The '204 patent issued on an application filed on January 25, 2011. Ex. 1001, (22). That application claims priority under 35 U.S.C. § 120 as a continuation of an application filed on September 6, 2006, *id.* at (63), 1:4–6, as well as under 35 U.S.C. § 119 to a foreign application filed on September 8, 2005, *id.* at (30), 1:6–8.

Accordingly, the earliest priority date claimed for the '204 patent is September 8, 2005. Ex. 1001, (30), 1:4–8. Saltykov is a U.S. patent for which the application was filed on February 3, 2003 and issued on July 17, 2007. Ex. 1004, (22). Dodge is a U.S. patent which issued on April 3, 1928.

¹ The relevant sections of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (September 16, 2011), took effect on March 16, 2013. Because the application from which the '204 patent issued was filed before that date, our citations to Title 35 are to its pre-AIA version.

² U.S. Patent No. 7,245,733 B2, filed Feb. 3, 2003 (Ex. 1004).

³ U.S. Patent No. 1,664,852, issued Apr. 3, 1928 (Ex. 1005).

⁴ WO 00/41432 A2, published July 13, 2000 (Ex. 1006).

⁵ August B. Mundel & Richard W. Carlisle, *Broadened Criteria of Hearing Aid Performance*, 19 J. OF THE ACOUSTICAL SOC. OF AM. 639 (1947) (Ex. 1007).

Ex. 1005, 1. Sjursen is a Patent Cooperation Treaty (PCT) patent application published on July 13, 2000. Ex. 1006, (43). Mundel is an article from the Journal of the Acoustical Society of America published in July, 1947. Ex. 1007, 2. The asserted references qualify as prior art under 35 U.S.C. §§ 102(b) and 102(e). Patent Owner presents no evidence or argument challenging the prior art status of the asserted references. *See generally* Resp.

II. ANALYSIS

A. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time of the invention to a person having ordinary skill in the art. *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of ordinary skill in the art, and (4) objective evidence of nonobviousness.⁶ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Consideration of the *Graham* factors “helps inform the ultimate obviousness determination.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc).

⁶ Neither party presents any objective evidence of nonobviousness for our consideration. *See generally* Pet.; Resp.

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Thus, to prevail in an *inter partes* review, Petitioner must explain how the proposed combinations of prior art would have rendered the challenged claims unpatentable.

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991).

Petitioner contends, relying on the Declaration of Dr. Wayne J. Staab, Ph.D. (Ex. 1003), that:

A person of ordinary skill in the art (“POSITA”) of the ’204 patent during the relevant timeframe would hold at a minimum, a bachelor’s degree or higher in audiology or hearing science. Other areas of mechanical and human engineering are

acceptable, but only when viewed in light of having been involved with the development of products for the ear or with particular concentrations in course work related to developing audio devices. The POSITA would also have at least three years of experience with developing audio devices. (Ex. 1003, ¶ 25.)

Pet. 6–7. Patent Owner does not contest Petitioner’s proffered level of ordinary skill. Resp. 8 (“[T]he credentials described by Dr. Staab would adequately qualify one as a POSA . . .”). However, Patent Owner argues, “there are also other definitions of a POSA that would also be acceptable as long as the POSA’s credentials reflect a practical understanding of the design considerations and challenges associated with successfully producing the type of audio device at issue in the ’204 patent” and “[s]uch credentials would most likely include at least an engineering degree and three or more years of actual industry experience.” *Id.* (citing Ex. 2001 (DaBell Decl. ¶ 12)).

In the Institution Decision, the level of ordinary skill proposed by Petitioner was adopted as consistent with the challenged patent and the asserted prior art. Inst. Dec. 11. As Patent Owner agrees that Petitioner’s contention “would adequately qualify one as a POSA,” we adopt Petitioner’s proposed level of skill in the art for the purposes of determining whether the challenged claims are unpatentable. At the same time, we also note that Patent Owner’s proposed level of ordinary skill in the art is consistent with Petitioner’s in that Petitioner proposes a POSITA’s bachelor degree could be in mechanical or human engineering and the POSITA would have three or more years of experience.

In support of its challenge, Petitioner relies on the Staab Declaration (Ex. 1003). Dr. Staab’s qualifications exceed the level of ordinary skill in

the art⁷ as he has a Ph.D. in Hearing and Speech Sciences and more than three years of experience developing audio devices, including hearing aids. *Id.* ¶¶ 6–9.

In support of its opposition to Petitioner’s challenge, Patent Owner relies on the Declaration of Jerry L. DaBell (Ex. 2001). Mr. DaBell’s qualifications exceed the level of skill in the art as he has a Master of Engineering, Electrical Engineering, degree and more than three years of experience designing and developing audio devices, including hearing aids.⁸ *Id.* ¶¶ 4–9.

C. Claim Construction

For petitions filed before November 13, 2018, we interpret the claims of an unexpired patent that will not expire before issuance of a final written decision using the broadest reasonable interpretation in light of the specification. *See* 37 C.F.R. § 42.100(b) (2016); *Cuozzo Speed Techs., LLC*

⁷ “A person may not need to be a person of ordinary skill in the art in order to testify as an expert under Rule 702, but rather must be ‘qualified in the pertinent art,’ as explained in the Trial Practice Guide Update (Aug. 2018) at 3 (quoting *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1363–64 (Fed. Cir. 2008), *available at* https://www.uspto.gov/sites/default/files/documents/2018_Revised_Trial_Practice_Guide.pdf.

⁸ Petitioner calls Mr. DaBell “Manager DaBell” in challenging his qualifications and testimony. Reply 29–30; Sur-Sur-Reply 3–4. Patent Owner responds that Mr. DaBell is qualified as an expert and meets the level of skill adopted in this proceeding. Sur-Reply 25–29. We agree with Patent Owner and give Mr. DaBell’s (and Dr. Staab’s) testimony appropriate weight in light of the ’204 patent, the cited art, and the other documentary evidence in this proceeding on which we primarily rely as set forth herein.

v. Lee, 136 S. Ct. 2131, 2144–46 (2016). Consistent with the broadest reasonable construction standard, the challenged claims are presumed to be given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). We shall construe only terms that are in controversy and then only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Petitioner proposes that we construe “slit opening” (claims 1–8), “protection screen/protective cover” (claims 1–8), and “external casing” (claims 1–8). Pet. 10–14.⁹ “Patent Owner disagrees with the proposed claim constructions in the Petition” and “does not contend that any claim terms require express construction in this proceeding.” Resp. 9–10. In our Institution Decision, we determined that no claim terms required an express construction. Inst. Dec. 11–16. “Patent Owner agrees with the Board that the claims do not contain any technical terms or terms with special meanings . . . [b]ecause the claims use common words with well-understood plain and ordinary meanings.” Resp. 9–10. We agree with the Patent Owner and

⁹ Petitioner asserts the claims “[are] rendered indefinite through the use of the term of degree ‘smooth’ without any guidance provided as to its meaning in the specification.” Pet. 20 n.3. It is not within the scope of our statutory authority to cancel claims as indefinite, and we have not considered or decided whether “smooth” or the claims are indefinite. *See Cuozzo*, 136 S. Ct. 2141–42 (cancelling a claim for indefiniteness is outside the statutory authority of the USPTO in *inter partes* review). As we do not believe that this term needs to be construed to make a decision as to unpatentability over the prior art, it should not be implied from our decision in this *inter partes* review that we have considered or decided the issue of indefiniteness.

conclude that no terms require an express construction in order to resolve the controversy between the parties. We discuss below those terms that Petitioner proposes require construction.

slit opening

Petitioner asks us to construe “slit opening” as “an opening forming as a slit.” Pet. 11. The term “slit opening” appears in claims 1, 3–6, and 8. Ex. 1001, 5:7–6:37. Each time “slit opening” is used in the claims, it is used in the phrase “elongated slit opening.” *Id.* We do not believe it is necessary for us to provide a construction of “slit opening” or “elongated slit opening” in order for these terms to be understood or for us to determine whether the challenged claims are unpatentable. Petitioner’s proposed construction does not contribute to a further understanding of the meaning or scope of the term “slit opening.” It is not necessary or appropriate for us to restate this term using words it already contains. This term contains commonly used words with well-understood meanings that are used in the claims in accordance with their plain and ordinary meanings.

protective cover/protection screen

Petitioner contends “protective cover” and “protection screen” should be construed as “a portion of the exterior housing (either separate or integral) including openings that protects the sound entrances to the microphones from the direct impact of wind and other environmental influences.” Pet. 12. The term “protective cover” is used in claims 1 and 8, and the term “protection screen” is used in claims 3–7. Ex. 1001, 5:7–6:37. Claims 1 and 8 are directed towards “audio devices” comprised of three

elements: (1) an external casing, (2) a microphone, and (3) a protective cover comprised of a first surface and a second surface. *Id.* at 5:8–22, 6:19–24. Claims 3–7 are directed to “a protection screen for an audio device” comprised of a first surface and a second surface. *Id.* at 5:26–6:18.

However, the further limitations on the first surface and the second surface are commensurate and use almost identical language in reciting the claim limitations of the “protective cover” and “protection screen.” *Id.* at 5:7–6:37. And, in the Specification, the term “protective screen” is used, but the term “protective cover” does not appear. *See generally* Ex. 1001. Thus, it appears that the terms “protective cover” and “protection screen” are meant to refer to the same structural element of the claimed invention and that this structural element is described and claimed in a consistent and uniform manner in the ’204 patent.

Petitioner proposes that both “protective cover” and “protection screen” should be construed to include “a portion of the exterior housing (either separate or integral).” Pet. 12. However, Petitioner provides no argument or analysis in the Petition to support this construction. *Id.* Petitioner cites column 3, line 65, to column 4, line 11, of the ’204 patent Specification, but this passage says nothing that could reasonably be interpreted to mean “a portion of the exterior housing (either separate or integral).” Petitioner also cites paragraph 29 of the Staab Declaration (Ex. 1003), but this testimony merely repeats Petitioner’s proposed construction verbatim without any supporting analysis. We do not adopt Petitioner’s proposed construction, which is not supported by the plain and ordinary meaning of these claim terms or by any competent evidence.

Further, Petitioner contends the constructions of “protective cover”

and “protection screen” should include “protects the sound entrances to the microphones from the direct impact of wind and other environmental influences.” Pet. 13. Petitioner provides no support for reading this unrecited functional limitation into these apparatus claims. *Id.* The proposed limitation does not set forth any further structure that helps understand the structural elements that the claim expressly recites.

For these reasons, we do not adopt Petitioner’s proposed constructions of “protective cover” and “protection screen.” Further, we do not find it necessary to construe “protective cover” or “protection screen” in order to resolve any issue in this proceeding. These terms contain commonly used words with well-understood meanings that are used in accordance with their plain and ordinary meanings.

external casing

Petitioner asks us to construe “external casing” as “a housing or frame for the microphone(s).” Pet. 13. We do not believe it is necessary for us to provide a construction of “external casing” in order for this term to be understood or for us to determine unpatentability. This term contains commonly used words with well-understood meanings that are used in accordance with their plain and ordinary meanings.

Summary

Therefore, we determine that no term or phrase in the challenged claims requires an express construction. The claims do not contain any technical terms or terms with special meanings in the context of the ’204 patent which require construction. To the contrary, the claims use common

words with well-understood plain and ordinary meanings.

D. Obviousness Challenge Based on Saltykov and Dodge

Petitioner asserts claims 1–8 of the '204 patent would have been obvious based on a combination of the teachings and suggestions of Saltykov and Dodge. Pet. 5, 14–32. In support thereof, Petitioner identifies the disclosures in Saltykov and Dodge alleged to describe the subject matter in claims 1–8 and provides an articulated basis with rational underpinnings for combining the teachings of these references. *Id.*

1. Saltykov

Saltykov is a U.S. patent that “is directed to a hearing instrument for positioning in the ear of a user.” Ex. 1004, (57) (Abstract). The hearing instrument incorporates “a faceplate having first and second spatially separated sound openings for receiving sound to be provided to respective inlets of a microphone” and “at least one screen partially blocking the sound openings.” *Id.* The hearing instrument has “a housing for containing the microphone, the housing having the faceplate mounted thereon.” *Id.*

Figure 1 of Saltykov is reproduced below.

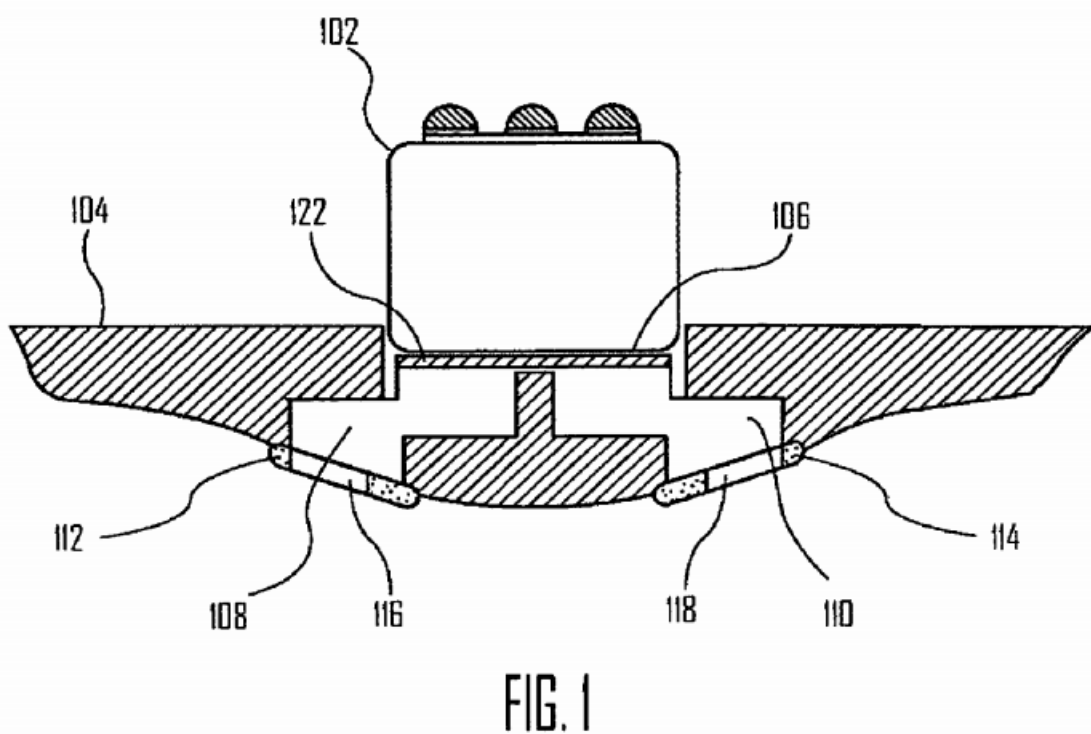


Figure 1 depicts the “microphone section of a hearing instrument.” *Id.* at 2:16–18. In Figure 1, the microphone assembly 102 includes a gasket 122, which is used to seal surface 106 within the hearing instrument to faceplate 104. *Id.* at 3:33–35. “Sound port covers 112 and 114 extend across and partially block sound ports 108 and 110.” *Id.* at 3:1–2. “Optionally, a mesh covering (not shown in the drawings) may be provided over the openings 112 and 114 to prevent unwanted particles from entering the sound ports 108 and 110.” *Id.* at 3:10–13.

Figure 4 of Saltykov is reproduced below.

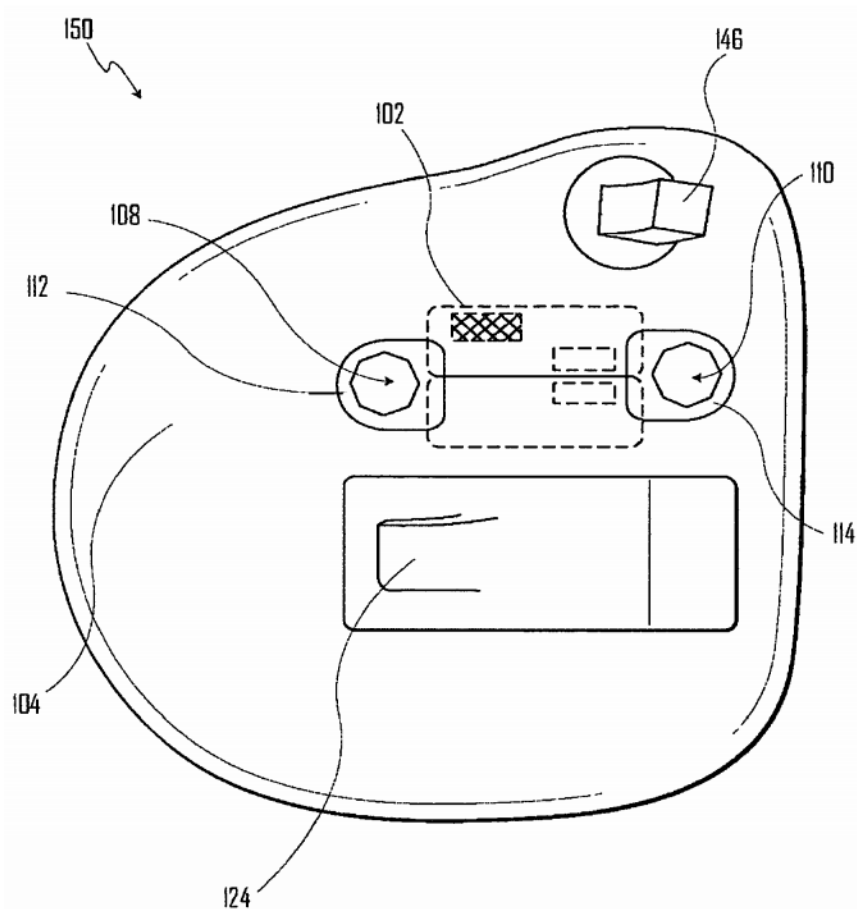


FIG. 4

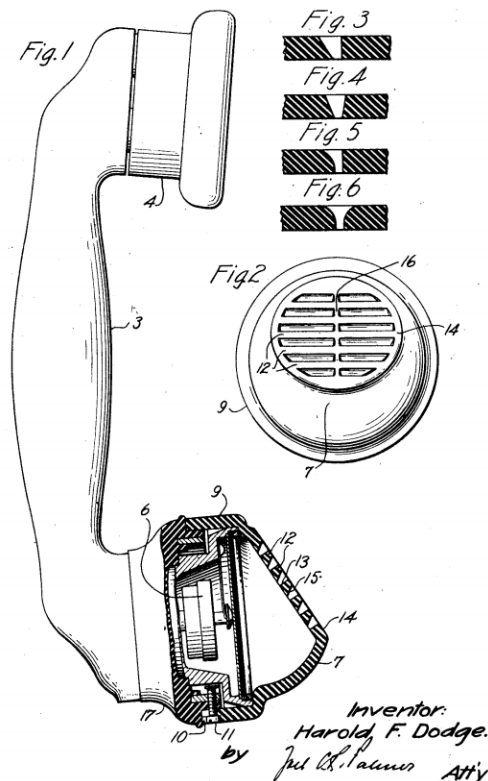
Figure 4 depicts a hearing instrument. Ex. 1004, 4:6–7. “The position of the microphone assembly 102 behind the faceplate 104 is illustrated by dashed lines. The sound ports 108 and 110 are visible through the sound port covers 112 and 114, respectively.” *Id.* at 4:8–12.

2. Dodge

Dodge is a U.S. patent titled “Transmitter Mouthpiece.” Ex. 1005, 1. Dodge states, “[T]here is provided a mouthpiece which . . . will prevent the emphasis of the hissing and the explosive sounds in speech, which involve

windage. . . . [T]he mouthpiece is in the form of a shell having a plane face provided with a plurality of elongated slots or openings tapered inwardly.”
Id. at 1:6–16.

Figures 1–6 of Dodge are reproduced below.



Figures 1–6 depict the mouthpiece. *Id.* at 2:21–29. Claim 5 of Dodge recites “[a] transmitter mouthpiece comprising a grid having long, narrow bars, one side of each bar being substantially perpendicular to the face of said grid and the opposite side oblique thereto, adjacent bars thereby forming long narrow openings having converging walls.” *Id.* at 2:84–90. Figures 3–6 depict shapes of the openings. *Id.* at 2:25–29.

3. *Independent Claims 1 and 8*

Petitioner provides detailed claim charts, arguments, and evidence, including the Staab Declaration, showing that the combination of Saltykov and Dodge teaches or suggests all the limitations recited in claims 1 and 8. Pet. 14–22, 29–32. Petitioner also provides reasons why one of ordinary skill in the art would have been motivated to combine the relevant teachings and suggestions of Saltykov and Dodge. *Id.* at 16–18, 21, 32 (citing Ex. 1003 (Staab Decl.) ¶¶ 50–58).

The preambles of claims 1 and 8¹⁰ recite “[a]n audio device.” Ex. 1001, 5:8, 6:19. The Petition states, “The hearing instrument 150 in Saltykov is an audio device.” Pet. 18, 29 (citing Ex. 1004, Fig. 4). We also note that Dodge discloses an audio device. *See* Ex. 1005, Fig. 1.

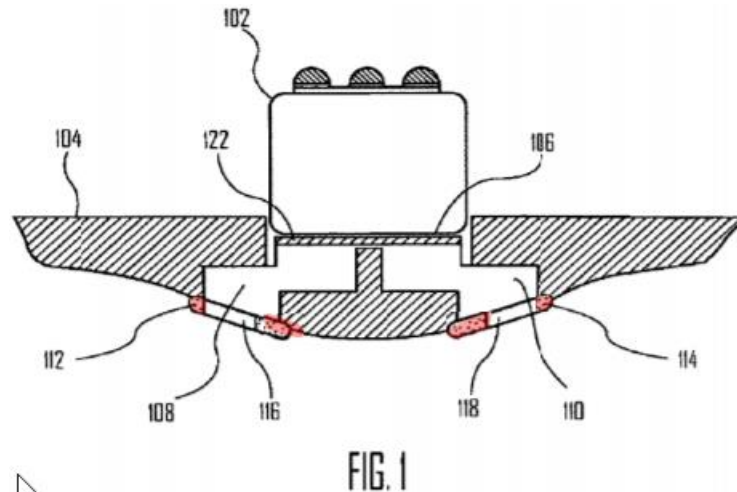
The first element of claim 1 recites “an external casing.” Ex. 1001, 5:9. The first element of claim 8 recites “an external casing including two microphone inlets.” *Id.* at 6:20. The Petition states that in Saltykov, “The microphone assembly 102 includes surface 106 surrounded by housing 144, *i.e.*, an external casing.” Pet. 18, 29 (citing Ex. 1004, Figs. 1, 2, 2:49–54). With regard to the microphone inlets recited in claim 8, the Petition states, “The surface 106 portion of the exterior casing includes microphone inlets 132, 134, 136.” *Id.* at 29 (citing Ex. 1004, Fig. 1, 2:52–54).

¹⁰ “A preamble does not generally limit the claims.” *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002) (citation omitted). We need not decide this issue for purposes of this decision, however, because we are persuaded that Petitioner has shown sufficiently that the cited references teach an audio device, as recited in the preambles of claims 1 and 8.

The second limitation of claim 1 recites “a microphone housed within the external casing, acoustically connected through a sound canal to an inlet port of the external casing.” Ex. 1001, 5:10–12. The second limitation of claim 8 recites “at least one microphone housed within the external casing, acoustically connected through a sound canal to at least one of the two microphone inlets of the external casing.” *Id.* at 6:21–23. The Petition states, “Saltkov’s device includes a microphone assembly 102 including a first microphone cartridge 126 and a second microphone cartridge 128 (*see* Figs. 1 and 2) and a sound canal (sound ports 108 and 110) allowing sound to pass from the surroundings to the microphone through inlets 132, 134, 136.)” Pet. 19, 30 (citing Ex. 1004, Fig. 1, 2:52–54, 2:59–61, 3:16–32). As quoted in the Petition (*id.* at 30), Saltykov states, “A front sound port 108 and a rear sound port 110 may be positioned in the faceplate 104 to allow sound to travel to microphone assembly inlets.” Ex. 1004, 2:59–61.

The third limitation of claim 1 recites “a protective cover attached to the external casing above the inlet port.” Ex. 1001, 5:13–14. The third limitation of claim 8 recites “a protective cover attached to the external casing above the two microphone inlets and defining an open space between itself and the external casing.” *Id.* at 25–27. Petitioner cites column 3, lines 1–2, of Saltykov (Ex. 1004), which state, “Sound port covers 112 and 114 extend across and partially block sound ports 108 and 110.” The Petition states, “Saltykov teaches sound port covers 112 and 114 . . . that form a protective cover attached to the faceplate above the inlet ports, as they extend across and partially block sound ports 108 and 110” and “the microphone assembly may be partially embedded in the faceplate.” Pet. 19, 30 (citing Ex. 1004, Fig. 1, 2:49–50, 3:1–10). With regard to the open space

recited in claim 8, the Petition (*id.* at 31) provides an annotated Figure 1 from Saltykov, reproduced below.



Annotated Figure 1 of Saltykov from the Petition depicts “the sound port covers 112 and 114 define an open space between the red portions and the cross-hatched external casing.” *Id.*

Claims 1 and 8 recite “the protective cover including: a first surface facing substantially toward the exterior of the audio device, the first surface having a smooth curvature toward an elongated slit opening of the protective cover.” Ex. 1001, 5:14–18, 6:27–32. Petitioner relies on a combination of Saltykov and Dodge. Pet. 19–21, 31. The Petition states:

Saltykov’s sound port covers 112, 114 each have a first surface facing substantially toward the exterior of the audio device . . . The openings 116 and 118 between the first surface and the second surface, defined by sound port covers 112 and 114, in Saltykov appear to be in the form of holes, rather than slits. (See Ex. 1004, Fig. 4.) But, as shown in Dodge, contouring openings and providing different opening geometries to decrease wind noise was well-known. (Ex. 1003 [Staab Declaration] ¶ 51.)

In particular, Dodge teaches slit openings in the protection screen of an audio device And, in the slit openings of Dodge, the first surface extends toward the opening along a smooth, gradual

curve and meets the second surface along a sharp edge in the embodiment shown in Fig. 6.

Pet. 19–21, 31 (citing Ex. 1004 (Saltykov), Figs. 1, 4; Ex. 1005 (Dodge) Figs. 2, 6).

Claims 1 and 8 recite “the protective cover including . . . a second surface facing toward interior of the audio device, the second surface meeting the first surface along an edge defining the boundary of the elongated slit opening.” Ex. 1001, 5:14–22, 6:27–36. The Petition states,

Saltykov’s sound port covers 112, 114 each have a second surface facing toward interior of the audio device . . . defining the boundary of the openings 116, 118.

And, in the slit openings of Dodge, the second surface meets the first surface along an edge defining the boundary of the elongated slit opening in the embodiment shown in Fig. 6.

Pet. 21–22, 31 (citation omitted) (citing Ex. 1004 (Saltykov), Fig. 1; Ex. 1005 (Dodge), Fig. 6).

Claim 8¹¹ recites “the protective cover including . . . the elongated slit opening.” Ex. 1001, 6:28–37. The Petition states:

The openings 116 and 118 in Saltykov appear to be in the form of holes, rather than slits. But, as shown in Dodge, contouring openings and providing different opening geometries to decrease wind noise was well-known. In particular, Dodge teaches slit openings in the protection screen of an audio device . . . Accordingly, modifying Saltykov’s hearing aid with Dodge’s slit openings would have resulted in an audio device including an elongated slit opening.

Pet. 31–32 (citing Ex. 1005 (Dodge) Fig. 2).

¹¹ Claim 1 has no corresponding limitation. Ex. 1001, 5:8–22.

4. Independent Claims 3 and 5

Independent claims 3 and 5 are directed to a protection screen for an audio device. Claim 3 recites:

3. A protection screen for an audio device, comprising:
 - a first surface facing substantially toward exterior of the audio device, the first surface having a smooth curvature toward an elongated slit opening; and
 - a second surface facing toward interior of the audio device, the second surface meeting the first surface along an edge.

Ex. 1001, 5:26–32. Petitioner contends the recited limitations in claim 3 are not substantively different in scope than the corresponding “protective cover” limitations in claim 1 and points to its showing with regard to claim 1 for its showing with regard to claim 3. Pet. 23–24.

Claim 5 recites:

5. A protection screen for an audio device, comprising:
 - a first surface facing substantially toward exterior of the audio device, the first surface having a smooth curvature toward an elongated slit opening; and
 - a second surface facing toward interior of the audio device, the second surface meeting the first surface along an edge, wherein

the audio device includes an exterior casing having two microphone inlets, the elongated slit opening extends above the two microphone inlets, defining an open space between the protection screen and an upper surface of the casing between the two inlets.

Ex. 1001, 6:1–12. Although claim 5 is directed towards the protection screen, the “wherein” clause includes limitations relating to the audio device.

Petitioner relies on its showing with regard to claims 1 and 3 for its showing with regard to claim 5. With regard to the “wherein” clause of claim 5, Petitioner provides a showing that is similar to its showing with regard to claim 8 for the corresponding limitations recited using the same or similar language and contends the combination of Saltykov and Dodge teaches the limitations of the “wherein” clause of claim 5. Pet. 26–29.

5. Dependent Claims 2 and 7

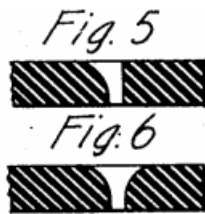
Dependent claims 2 and 7 recite “the edge has a cross-sectional angle of less than ninety degrees.” Ex. 1001, 5:23–25, 6:12–14. With regard to this limitation, the Specification states, “As seen in FIG. 1[,] . . . the transition between the second surface 5 and the opening 6 is made with a sharp edge 8” and “it is important that the angle between the surface 5 and the side-walls of the slits 6 is less than 90 degrees in order that the overall profile of the slit-formed 6 becomes v-shaped.” *Id.* at 4:41–44, 4:58–61. Petitioner contends,

A POSITA implementing the combination of Saltykov and Dodge would have used an edge with a cross-sectional angle of less than ninety degrees because a POSITA would recognize the benefits of this orientation. ([Ex. 1003 (Staab Declaration)], ¶ 62.)

Specifically, providing an edge of the second surface with a cross-sectional angle of less than ninety degrees would provide a more gradual curve, and the more gradual the curve, the greater the reduction in wind turbulence. (*Id.*, ¶ 62.) As was known to those skilled in the art, sharp edges create hissing and whistling

background noise in a windy environment. Thus, a gradual rounding of such surfaces (*i.e.*, less than ninety degrees) would have been obvious in view of Dodge, particularly because this technique has been used since at least the 1920s, as shown by Dodge. (*Id.*)

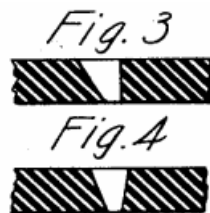
As shown in Figs. 5 and 6 of Dodge (below), edges with various cross-sectional angles were known in the art:



And, to a POSITA, the cross-sectional angle is a result-effective variable that is a factor in determining the amount of background noise able to reach the microphone.

Through routine optimization, a cross-sectional angle of less than ninety degrees would have been an obvious variation for a POSITA to try. (*Id.*, ¶ 64.)

Pet. 22–23. Figures 3 and 4 of Dodge are reproduced below.



Figures 3 and 4 of Dodge depict inner edges of slits, which have less than a ninety degree angle (but do not have an outer surface having a smooth curvature toward the slit).

6. *Dependent Claims 4 and 6*

Dependent claims 4 and 6 depend from claim 3. Claim 4 recites “the audio device includes an exterior casing having at least one microphone

inlet, and the elongated slit opening of the protection screen is positioned above the at least one microphone inlet.” Ex. 1001, 5:33–38. Petitioner’s showing with regard to claim 4, which recites limitations that are the same or very similar to limitations recited in claim 1, provides the same or a very similar showing as to those corresponding limitations. Pet. 24–26.

Claim 6 recites “the edge defines the boundary of the elongated slit opening.” *Id.* at 6:13–15. With regard to claim 6, the Petition states, “In the slit openings of Dodge, the second surface meets the first surface along an edge defining the boundary of the elongated slit opening in the embodiment shown in Fig. 6.” Pet. 29.

7. Motivation to Combine the Teachings of Saltykov and Dodge

With regard to combining the relevant teachings of Saltykov and Dodge, the Petition states:

Taken together, Saltykov and Dodge teach every element of the claims of the ’204 patent. (Ex. 1003 [Staab Declaration] ¶ 45.) A POSITA would have been motivated to modify Saltykov’s faceplate 104 to include one or more slit openings from Dodge to reduce the effects of wind noise. (*Id.*, ¶ 52.) Saltykov explains that wind noise is a particular problem with directional microphones (Ex. 1004, 1:40), and Dodge explicitly teaches that the slit orientation of the openings minimizes background wind noise (Ex. 1005, 1:43–53). A POSITA would recognize that reducing “windage” across the mouthpiece is the same action as reducing wind across a surface. (Ex. 1003, ¶ 53.) As such, a POSITA implementing a hearing aid including a directional cartridge as taught by Saltykov would be motivated to use slit openings instead of Saltykov’s holes to reduce wind noise when the hearing aid is in directional mode. (*Id.*) A POSITA would have known that small openings, either in the form of a slit or a hole, would allow sufficient sound to enter the

microphone port, and would have used rounded leading edges to reduce wind noise. (*Id.*) Small openings in the form of slits for microphones were already in practice to keep debris and moisture from entering the mic ports, because those skilled in the art were always concerned with protecting the microphone. (*Id.*) And, a POSITA would expect that this modification would successfully reduce wind noise in the hearing aid of Saltykov because the slit openings are being used for the same purpose as was taught in Dodge—serving as an interface for sound to reach a microphone. (*Id.*, ¶ 55). As such, this combination does no more than yield predictable results as taught in the references

Both Saltykov and Dodge are from the audio field and both are concerned with apparatuses that allow sound to travel from the surroundings to an internal microphone, allowing a POSITA to easily incorporate the teachings from Dodge into a device such as a hearing aid. (Ex. 1003, ¶ 56.) Based on the above, a POSITA would have been motivated to modify Saltykov to include one or more slit openings to reduce wind noise with a reasonable expectation of success. (*Id.*, ¶ 57.)

Pet. 16–18. Petitioner’s reasons to combine the teachings of Saltykov and Dodge and its showing that the cited art teaches or suggests all the limitations of claims 1–8 of the ’204 patent are reasonable and supported by substantial evidence.

8. Disputed Issues

a. External Casing Including an Inlet Port (Claims 1, 4, 5, 8)

Patent Owner argues, “[T]he Petition fails to identify any disclosure or suggestion of the claim limitations in claims 1, 4, 5, or 8 where an external casing or exterior casing includes an inlet or any inlet port.”

Resp. 24. Specifically, Patent Owner argues that, in the Petition, the housing 144 of Saltykov is alleged to be the external or exterior casing, the inlets

132, 134, and 136 are alleged to be the inlet ports, but inlets 132, 134, and 136 are not located on the housing 144. *Id.* Patent Owner does not argue that Saltykov fails to disclose an external or exterior casing that includes an inlet or inlet port but, instead, attacks Petitioner’s mapping of these claim elements to Saltykov in the Petition. *See* Tr. 35–39. After reviewing the arguments presented by the parties and weighing the evidence as provided in the disclosure of Saltykov, we are persuaded that a preponderance of the evidence establishes the contested limitations are taught by Saltykov.

Saltykov states, “A front sound port 108 and a rear sound port 110 may be positioned in the faceplate 104 to allow sound to travel to the microphone assembly inlets.” Ex. 1004, 2:59–61. Saltykov also states, “A housing 144 preferably surrounds the microphone assembly 102” and “[t]he faceplate 104 may be mounted on the housing 144 to accommodate the microphone assembly 102.” *Id.* at 3:65–4:2. Claim 1 of Saltykov states, “A hearing instrument . . . comprising: a faceplate having first and second spatially separated sound ports connected to respective inlets of a microphone . . . and a housing for the microphone . . . having the faceplate mounted thereon.” *Id.* at 4:33–44. Therefore, Saltykov teaches mounting a faceplate with sound ports on the housing. We find Saltykov clearly teaches an external casing or exterior casing that includes an inlet or inlet port as recited in claims 1, 4, 5, and 8 of the ’204 patent.

Moreover, Petitioner’s showing with regard to the limitation of claim 1 that recites “a microphone housed within the external casing, acoustically connected through a sound canal to an ***inlet port of the external casing***” (Ex. 1001, 5:10–12 (emphasis added)) states, “Saltykov’s device includes a microphone assembly 102 including a first microphone

cartridge 126 and a second microphone cartridge 128 (see Figs. 1 and 2) and a sound canal (**sound ports 108 and 110**) allowing sound to pass from the surroundings to the microphone inlets 132, 134, 136.” Pet. 19 (emphasis added). Petitioner’s showing with regard to the limitation that recites “a protective cover **attached to the external casing above the inlet port**” (Ex. 1001, 5:13–14 (emphasis added)) states, “Saltykov teaches sound port covers 112 and 114 . . . that form a protective cover **attached to the faceplate above the inlet ports, as they extend across and partially block sound ports 108 and 110.**” Pet. 19 (emphasis added). And, it was entirely proper and consistent for Petitioner to identify the housing 144 of Saltykov as an external casing (*id.* at 18) because that clearly is what housing 144 is in Saltykov. See Ex. 1004, Fig. 3. The showing in the Petition pertaining to claims 4, 5, and 8 is substantially similar. See Pet. 24–32. Thus, Patent Owner’s characterization of the Petition with regard to these contested limitations in claims 1, 4, 5, and 8, even if it is accurate, fails to take into account the whole of the showing (or the whole of the cited art).

b. Protective Cover Attached to External Casing Above Inlet Port (Claims 1 and 8)

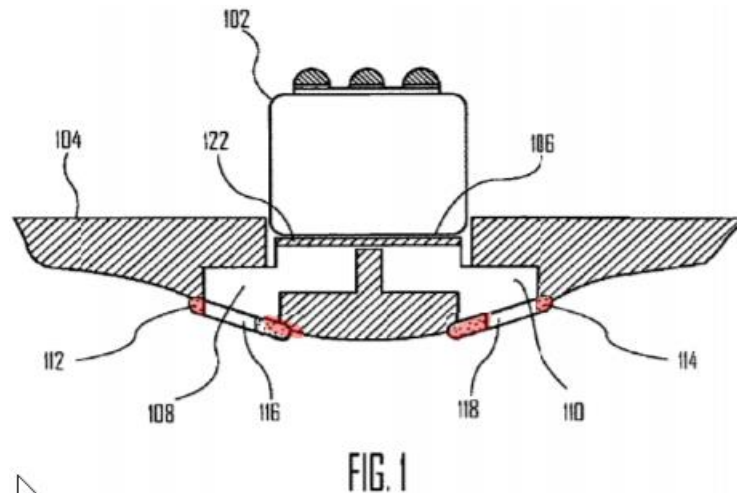
Patent Owner argues, “[t]he Petition fails to identify a disclosure or suggestion for the following claim 1 limitation, ‘a protective cover attached to the external casing above the inlet port, the protective cover including,’ and the claim 8 limitation, ‘a protective cover attached to the external casing above the two microphone inlets and defining an open space between itself and the external casing, the protective cover including.’” Resp. 28–29. With regard to these limitations, Patent Owner goes further than the

argument discussed above and argues, “When the claim language is considered versus the cited Saltykov disclosures, the limitations are not met.” *Id.* at 25. However, like Patent Owner’s argument discussed above, this argument is based on the contention that “[t]he inlets 132, 134, 136 are not on the housing 144, which was identified in the Petition as the ‘external casing’” and also that “the sound ports 108 and 110 are holes in the faceplate 104, which is not located between Saltykov’s microphone and microphone inlets 132, 134, 136.” *Id.* at 25–26. Neither Saltykov nor the Petition supports Patent Owner’s argument.

Saltykov states, “Sound port covers 112 and 114 extend across and partially block sound ports 108 and 110.” Ex. 1004, 3:1–2. Saltykov also states, “[A] mesh covering (not shown in the drawings) may be provided over the openings 112 and 114 to prevent unwanted particles from entering the sound ports 108 and 110.” *Id.* at 3:10–13. As shown above, Saltykov teaches the sound ports 108 and 110 are positioned on the faceplate 104 that is mounted on the housing 144. *See, e.g., id.* at Figs. 1, 3, 4. And, as shown in Figure 1 of Saltykov, the sound ports 108 and 110 comprise open spaces between the sound port covers 112 and 114 and the microphone assembly inlets 132, 134, 136. We find that Saltykov teaches a protective cover attached to the external casing above the two microphone inlets and defining an open space between itself and the external casing.

With regard to the claim 1 limitation “a protective cover attached to the external casing above the inlet port, the protective cover including,” the Petition states, “Saltykov teaches sound port covers 112 and 114 . . . that form a protective cover attached to the faceplate above the inlet ports, as they extend across and partially block sound ports 108 and 110.” Pet. 19.

With regard to the claim 8 limitation “a protective cover attached to the external casing above the two microphone inlets and defining an open space between itself and the external casing, the protective cover including,” the Petition (Pet. 31) includes an annotated Figure 1 of Saltykov, reproduced below.

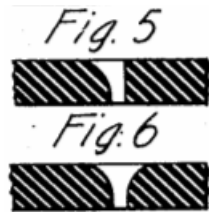


According to Petitioner, the annotated Figure 1 depicts that “the sound port covers 112 and 114 define an open space between the red portions and the cross-hatched external casing.” *Id.* The Petition also states, “Saltykov teaches sound port covers 112 and 114 (annotated in red [above]) that form a protective cover attached to the faceplate above the microphone inlets.” *Id.* at 30. We find that the cited art teaches a protective cover attached to an external casing above an inlet port.

c. Edge Less Than Ninety Degrees (Claims 2 and 7)

Patent Owner argues that Petitioner has failed to show the cited art teaches or suggests “the edge has a cross-sectional angle of less than ninety degrees,” as recited in claims 2 and 7. Pet. 29–34. The “edge” of claims 2 and 7 has an antecedent in claims 1 and 3, which recite “a second surface

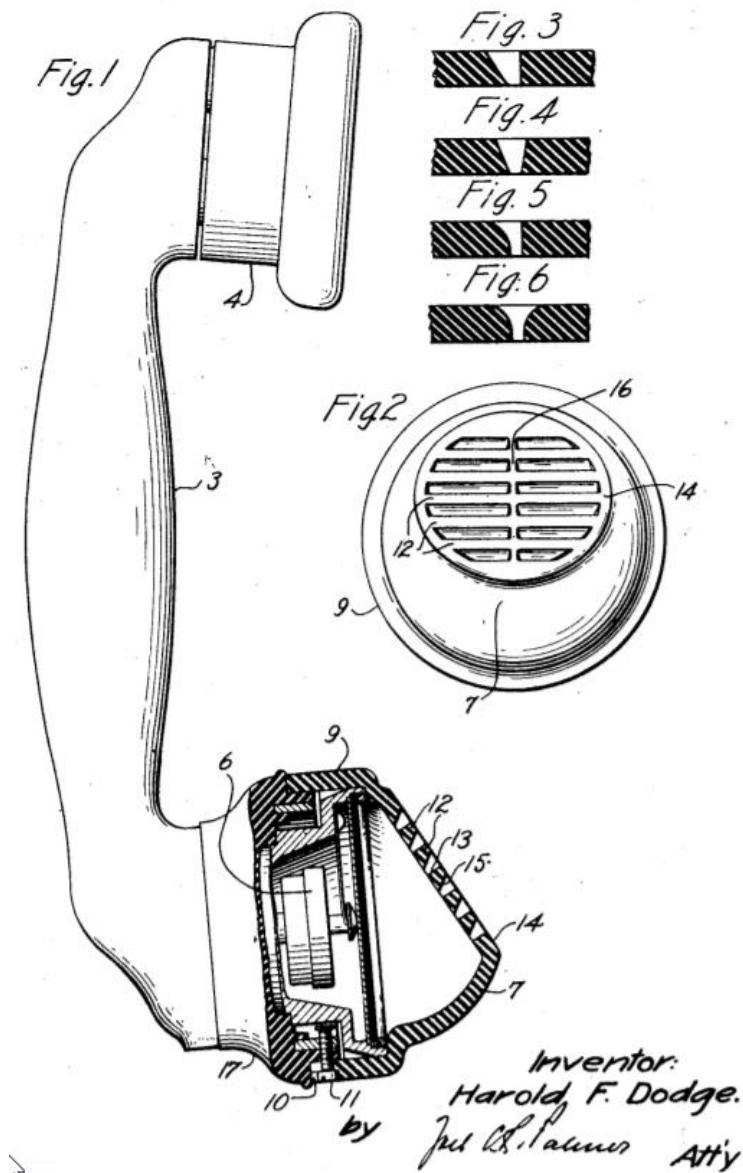
facing toward interior of the audio device, the second surface meeting the first surface along an *edge*.” Ex. 1001, 5:19–22 (claim 1 also recites the “edge defining the boundary of the elongated slit opening”), 5:30–32. As correctly pointed out by Patent Owner, Petitioner cites Figures 5 and 6 of Dodge. Pet. 23, 29. Figures 5 and 6 of Dodge are reproduced below.



Figures 5 and 6 depict shapes of the “elongated slots or openings tapered inwardly” in a transmitter mouthpiece. Ex. 1005, 1:13–19, 1:28–29.

According to Patent Owner, “neither Figure 5 nor Figure 6 suggests an edge (which is the bottom part of the slits) with a cross-sectional angle of less than ninety degrees” and “[i]f anything, the edges’ cross-sectional angles appear to be 90 degrees.” Resp. 31. Patent Owner concludes, “There is no disclosure or suggestion in Dodge of an edge with a cross-sectional angle of less than ninety degrees.” *Id.* (citing Ex. 1005 (Dodge), 1:13–19, Figs. 3–6).

Even if Patent Owner is correct about Figures 5 and 6 of Dodge, it has failed to consider the entire disclosure of Dodge, which directly contradicts its argument. Dodge contains a single, consolidated sheet of all the drawings including Figures 1–6, reproduced below.



Figures 1–6 of Dodge depict various embodiments for the cross-section of the elongated slots or openings of the mouthpiece. In Figure 1, the upper edges of the openings clearly have a cross-sectional angle of less than ninety degrees. In Figures 3 and 4, the left edges clearly have a cross-sectional angle of less than ninety degrees. The description in Dodge provides the “elongated slots or openings” are “tapered inwardly” (*id.* at 1:15–16) and “oblique” (*id.* at 1:46–47). Thus, openings with a cross-sectional angle of

less than ninety degrees are described. Moreover, the shape depicted in Figure 3, in which the left edge clearly has a cross-sectional angle of less than ninety degrees, is described in Dodge as “their preferred form.” *Id.* at 1:25–27.

The claims of Dodge also describe openings having a cross-sectional angle of less than ninety degrees. Dodge’s claim 1 recites “[a] transmitter mouthpiece having a grid formed of a plurality of parallel bars forming openings of greater dimensions at one side than at the other.” *Id.* at 2:62–65. Claim 2 recites “laterally elongated openings, said openings being of larger dimensions at the top than they are at the bottom.” *Id.* at 2:66–71. Claim 3 recites a “grid formed by parallel bars . . . so disposed that their adjacent sides form long, narrow apertures having converging walls.” *Id.* at 2:72–76. Claim 4 recites “the adjacent bars forming long, narrow openings with converging walls.” *Id.* at 2:77–83. Claim 5 recites “a grid with long, narrow bars” with one side oblique to the face “thereby forming long, narrow openings having converging walls.” *Id.* at 2:84–90. Dodge clearly teaches “the edge has a cross-sectional angle of less than ninety degrees,” as recited in claims 2 and 7.

d. Motivation to Combine Saltykov and Dodge

Patent Owner argues there is no valid reason to combine Saltykov and Dodge. Resp. 34–45. A motivation to combine may be found “explicitly or implicitly in market forces; design incentives; the ‘interrelated teachings of multiple patents’; ‘any need or problem known in the field of endeavor at the time of invention and addressed by the patent’; and the background knowledge, creativity, and common sense of the person of ordinary skill.”

ZUP, LLC v. Nash Mfg., Inc., 896 F.3d 1365, 1371 (Fed. Cir. 2018) (quoting *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354 (Fed. Cir. 2013)).

Patent Owner argues, “The Petition does not explain or show how the alleged combination of Saltykov and Dodge would teach or suggest ‘elongated slit openings’ of a protective cover or protective screen for Saltykov’s hearing instrument.”¹² Resp. 37. Although Patent Owner may not agree with the merits of the showing, the Petition does explain how the combination of teachings in Saltykov and Dodge teaches or suggests “elongated slit openings” of a protective cover or protection screen. With regard to independent claim 1, the Petition states:

The openings 116 and 118 between the first surface and the second surface, defined by sound port covers 112 and 114, in Saltykov appear to be in the form of holes, rather than slits. (See Ex. 1004, Fig. 4.) But, as shown in Dodge, contouring openings and providing different opening geometries to decrease wind noise was well-known. (Ex. 1003 [Staab Declaration] ¶ 51.)

In particular, Dodge teaches slit openings in the protection screen of an audio device

Pet. 20; *see also id.* at 31–32 (same showing provided with regard to independent claim 8). With regard to independent claims 3 and 5, the Petition relies on the showing made with respect to claim 1. Pet. 24 (claim 3), 26 (claim 5). As set forth in the Petition, Dodge clearly discloses elongated slit openings in a protective cover for a microphone. Dodge states, “In its preferred form the mouthpiece is in the form of a shell having a plane face provided with a plurality of elongated slots.” Ex. 1005,

¹² The term “protective screen” is not used in the claims. Claims 3–7 recite “protection screen.” Ex. 1001, 5:26–6:18 (emphasis added).

1:13–15; *see also* Ex. 1005, 1:48 (“long, narrow openings”), 2:68–69 (“laterally elongated openings”), 2:75–76 (“long, narrow apertures”), 2:78–79 (“long, narrow openings”), 2:89 (“long, narrow openings”).

With regard to combining the relevant teachings of Saltykov and Dodge, the Petition states:

A POSITA would have been motivated to modify Saltykov’s faceplate 104 to include one or more slit openings from Dodge to reduce the effects of wind noise. (*Id.* [Ex. 1003 (Staab Decl.)], ¶ 52.) Saltykov explains that wind noise is a particular problem with directional microphones (Ex. 1004, 1:40), and Dodge explicitly teaches that the slit orientation of the openings minimizes background wind noise (Ex. 1005, 1:43–53). A POSITA would recognize that reducing ‘windage’ across the mouthpiece is the same action as reducing wind across a surface. (Ex. 1003, ¶ 53.) As such, a POSITA implementing a hearing aid including a directional cartridge as taught by Saltykov would be motivated to use slit openings instead of Saltykov’s holes to reduce wind noise when the hearing aid is in directional mode. (*Id.*)

Pet. 16–17. Contrary to Patent Owner’s argument, the Petition does explain how the alleged combination of Saltykov and Dodge teaches or suggests “elongated slit openings” of a protective cover or protection screen for a hearing instrument.

Patent Owner argues that a modification of Saltykov’s faceplate to include the slit openings of Dodge would negate the benefits of Saltykov’s invention and change the principle of operation of Saltykov. Resp. 39–41. Specifically, Patent Owner argues, “Saltykov teaches that the sound port covers are positioned to increase the effective distance between the sound ports” (*id.* at 39) and:

[t]he Petition alleges that “[a] POSITA would have been motivated to modify Saltykov’s faceplate 104 to include one or

more slit openings from Dodge to reduce the effects of wind noise.” Pet. at 16; *see also* Ex. 1003, ¶¶ 52, 53. However, the proposed modification of Saltykov’s faceplate would negate the increase in the effective distance achieved by Saltykov’s invention. Ex. 2001, ¶ 84. If the slit openings of Dodge were applied to Saltykov’s faceplate and traversed both of Saltykov’s sound ports, the effective distance becomes the original, unmodified physical distance between the sound ports. *Id.* This configuration would negate the improvements of Saltykov’s invention. *Id.*

Resp. 40. “Effective distance” is mentioned once in Saltykov in the following sentence: “The sound port covers 112 and 114 comprise openings 116 and 118, respectively, where the openings 116 and 118 are smaller than the sound ports 108 and 110, and are offset from the respective centers of the sound ports to partially obscure the ports, therefore increasing the **effective distance** between the sound ports 108 and 110.” Ex. 1004, 3:2–8 (emphasis added). From this single mention of “effective distance,” Patent Owner argues, “The proposed modification or combination of the prior art would change the principle of operation of Saltykov and negate the benefits of its invention.” Resp. 41.

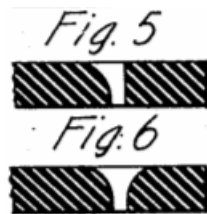
Petitioner responds that “this ‘effective distance’ theory is completely irrelevant, because Petitioner[’s] proposed modif[ication to] the configuration of Saltykov’s faceplate is referring to the screens mounted thereon, and not other aspects of the faceplate.” Reply 12. “Thus, Petitioner does not allege that the external casing, Saltykov’s faceplate 104 itself, is modified to have elongated slit openings but rather the screens thereon (i.e., the configuration).” *Id.* at 13. Petitioner further argues that it does not argue in this proceeding, as contended by Patent Owner, that “the slit formed openings would traverse both sound ports.” *Id.*

Considering these arguments and the related evidence, we do not find compelling Patent Owner's evidence that Saltykov's principle of operation or benefits of the invention are tied to the "effective distance" between the sound ports, as argued by Patent Owner based on the single mention of "effective distance" in the '204 patent. And, we credit Petitioner's argument and evidence that one of ordinary skill in the art would be motivated to modify Saltykov's faceplate 104 to include one or more slit openings from Dodge to reduce the effects of wind noise.

Patent Owner argues that "Dodge's Emphasis on Mitigating the Effects of Speech is Not the Same as Reducing Wind Across a Surface." Resp. 41. Patent Owner states, "Sound propagation is the movement of air molecules from one position to another" (*id.* at 42), and Petitioner states, "Wind noise . . . is nothing more than turbulent air flow around the hearing aid device" (Reply 8). Petitioner argues Patent Owner "fails to adequately explain how the source of the air turbulence (i.e., explosive speech [as described in Dodge]) is meaningfully different from turbulent airflow from a natural wind source across the mic[rophone] enclosure [as described in Saltykov]." *Id.* at 9. Dodge teaches, "In accordance with the general features of this invention there is provided a mouthpiece which will offer a minimum external reflecting surface to impinging sound waves and will prevent the emphasis and the explosive sounds in speech, which involve **windage**, without loss in articulation." Ex. 1005, 1:5–12 (emphasis added). Saltykov recognizes that wind noise is a problem in hearing aids. Ex. 1004, 1:37–43. Based on Dr. Staab's testimony (Ex. 1003 ¶ 53), Petitioner contends, "[A] POSITA would recognize that reducing 'windage' across the mouthpiece is the same action as reducing wind across a surface" and "a

POSITA implementing a hearing aid including a directional microphone as taught by Saltykov would be motivated to use slit openings instead of Saltykov's holes to reduce wind noise when the hearing aid is in directional mode." Pet. 17. Even if the purposes of Saltykov (countering wind noise) and Dodge (countering speech noises) are not exactly the same,¹³ they are closely related and the reasons provided by Petitioner for combining the teachings related to the protective covers of the two disclosed audio devices are reasonable and supported by the cited teachings in the references.

Finally, Patent Owner argues that Dodge states a preference for ninety degree angles for its edges and for the configuration of its openings as shown in Figure 3, rather than the "smooth curvature" as recited in the independent claims. Resp. 44–45. As noted above, Petitioner cites Figures 5 and 6 of Dodge, reproduced below, as teaching the recited "smooth curvature."



Figures 5 and 6 depict shapes of the "elongated slots or openings tapered inwardly" in a transmitter mouthpiece. Ex. 1005, 1:13–19, 1:28–29. Patent Owner argues Petitioner "picks and chooses certain quotes and figures while ignoring the entirety of the Dodge disclosure." Resp. 44. Despite Dodge's

¹³ "In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim." *KSR*, 550 U.S. at 419.

stated preferences, Dodge clearly teaches “a first surface facing substantially toward the exterior of the audio device, the first surface having a ***smooth curvature*** toward an elongated slit opening of the protective cover” as recited in the claims. *See, e.g.*, Ex. 1001, 5:15–18 (claim 1) (emphasis added). Dodge’s stated preferences do not support limiting its disclosure to only those preferences, especially in light of the expressly disclosed alternatives.

9. Conclusion

Petitioner’s showing that Saltykov and Dodge teach or suggest each of the limitations of claims 1–8 is detailed and supported by citations to the record. Petitioner also provides a showing of an articulated basis with rational underpinnings for combining the relevant teachings of the references (*see KSR*, 550 U.S. at 418). Patent Owner’s arguments are not well-supported by the cited references and are not persuasive. Based on our consideration of the arguments and evidence of the parties, we find the combination of Saltykov and Dodge teaches or suggests all the limitations of claims 1–8 and that a motivation to combine the relevant teachings of these references existed. We conclude Petitioner establishes by a preponderance of the evidence that claims 1–8 of the ’204 patent are unpatentable under 35 U.S.C. § 103 in view of Saltykov and Dodge.

E. Obviousness Challenge Based on Sjursen and Mundel

Petitioner asserts claims 1, 3–6, and 8 would have been obvious based on a combination of the teachings and suggestions of Sjursen and Mundel.

Pet. 5, 32–48.

1. *Sjursen*

Sjursen is an international patent application published under the PCT. Ex. 1006, 1. *Sjursen* is titled, “Hearing Aid with Large Diaphragm Microphone Element including a Printed Circuit Board.” *Id.* at (54). *Sjursen*’s Figure 4 is reproduced below.

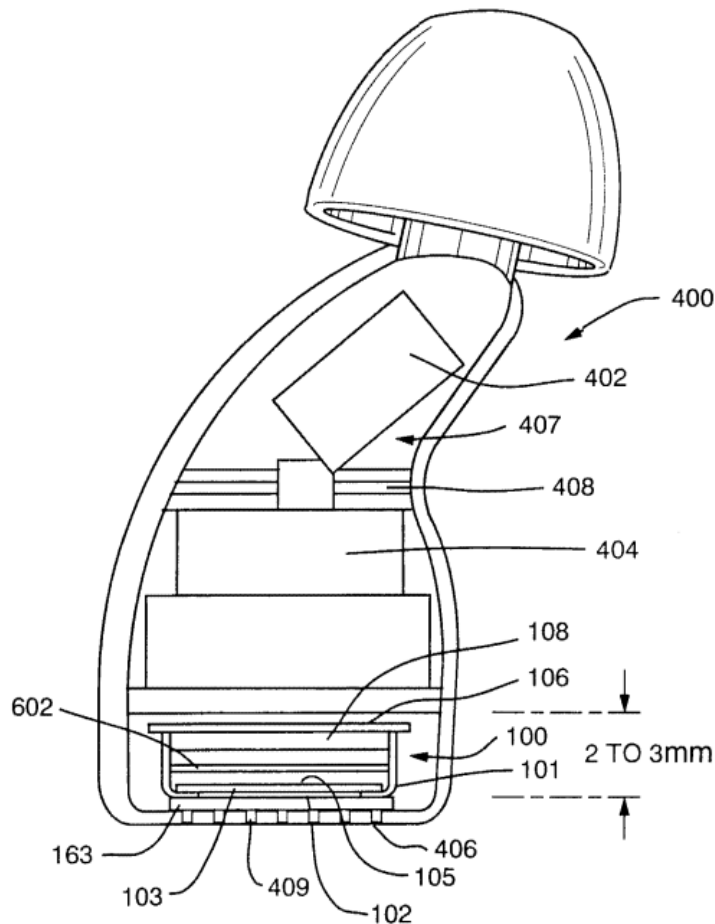


FIG. 4

Figure 4 depicts a “hearing aid microphone assembly 100 . . . disposed at a proximal end of an enclosure 408 for a disposable hearing aid 400.” *Id.* at

9:25–27. The microphone is located in housing 101. *Id.* at 9:27–28.

Sjursen states, “Flaring the outside and/or inside surfaces of the microphone sound inlet holes (see 102A Fig. 16A or openings 409 of Fig. 4) helps to reduce the turbulence produced by wind, and hence, wind-induced noises.”

Ex. 1006, 23:10–12. Sjursen also states, “[T]he felt [163] will protect the microphone diaphragm from foreign objects.” *Id.* at 23:17–18.

2. *Mundel*

Mundel is an article from The Journal of the Acoustical Society of America (July 1947). Ex. 1007, 2. Mundel discloses a hearing aid with a grille with rounded edges over the microphone. *Id.* at 7.

3. *Analysis*

Each of claims 1, 3–6, and 8 are limited to protective covers or protection screens with elongated slit openings. Ex. 1001, 5:8–6:37.

Sjursen states, “The sound inlets 102 in Figs. 1 and 8 or 409 in Fig. 4 may be of any convenient shape and number without limitation.” Ex. 1006, 33:20–

21. The Petition states, “The openings 409 in Sjursen appear to be round, rather than slits.” Pet. 39, 47 (repeated); *see also* Ex. 1003 (Staab Decl.)

¶ 103 (“The openings 409 in Sjursen appear to be round, rather than slits.”).

The openings in Mundel are depicted in Figure 8, reproduced below.

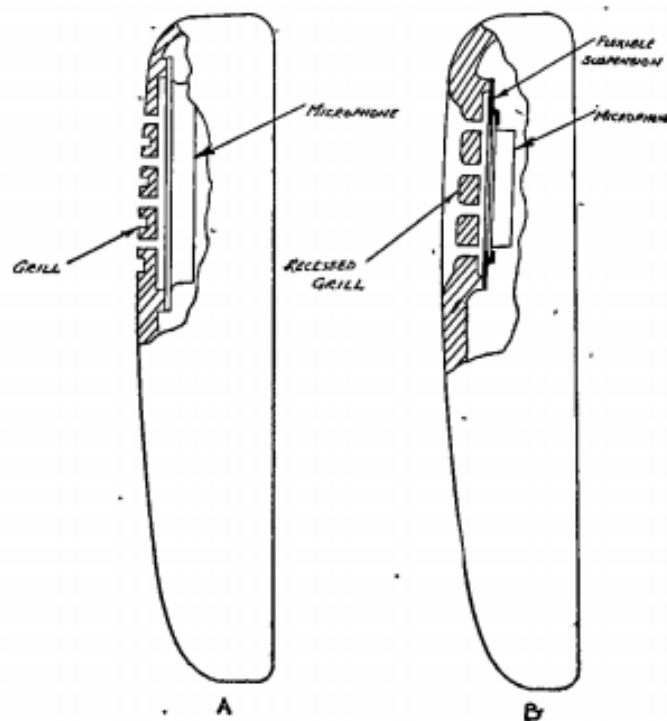


FIG. 8. Cross sections of (A) flush grille and (B) recessed grille.

Figure 8 labels the sound openings as a “grill” and a “grille,” as does the description of Figure 8 (Ex. 1007, 7). There is no further disclosure regarding the sound openings in Mundel. Petitioner contends, “To a POSITA, the ‘grille’ in Mundel would be understood to refer to bars across the inlet face, resulting in slit openings.” Pet. 40, 48 (repeated).

With regard to combining the relevant teachings of Sjursen and Mundel, Petitioner contends one of ordinary skill in the art would have been “motivated to configure Sjursen’s openings as slit openings with rounded outer surfaces, as taught by Mundel, for their noise-reduction properties” and “to provide the added benefit of minimizing background noise.” Pet. 35–36. Petitioner cites to paragraph 107 of the Staab Declaration as support. *Id.* Paragraph 107 of the Staab Declaration states:

In my opinion, a POSITA would have been motivated to

configure Sjursen's openings as slit openings with rounded outer surfaces, as taught by Mundel, for their noise-reduction properties. Both references are directed to reducing the effects of wind noise using flared openings. Sjursen explains that flaring the outside and/or inside surfaces of the microphone sound inlet holes helps to reduce wind noise (Ex. 1006, 23:10–12), and Mundel explicitly teaches that the slit orientation with rounded outer surfaces reduces background noise (Ex. 1007, 642). A POSITA would therefore have been motivated to configure Sjursen's sound inlet holes as slits with rounded outer surfaces to provide the added benefit of minimizing background noise.

Ex. 1003 ¶ 107.

The statement that “[b]oth references are directed to reducing the effects of wind noise using flared openings” is not correct with respect to Mundel. Mundel makes no mention of reducing the effects of wind noise. Mundel is directed to reducing the noise caused by the “clothes-rubbing noise” when a hearing aid is worn under clothing. Ex. 1007, 7 (“The relative motion of the hearing aid and the clothing under which it is worn creates a noise which is exaggerated whenever any sharp or rough edges of the instrument rub against the clothing.”). As a solution, Mundel proposes “a recessed grille in which the edges are rounded to reduce the noise generated.” *Id.* Dr. Staab testified that wind noise is not generally a consideration when the hearing aid is worn under clothing. Ex. 2004, 109:5–8.

Likewise, Dr. Staab's statement in paragraph 107 (citing Ex. 1007, 7) of his Declaration that “Mundel explicitly teaches that the slit orientation reduces background noise” finds no support in Mundel. Again, Mundel addresses “clothes-rubbing noise” when a hearing aid is worn under clothing. Ex. 1007, 7. Mundel makes no mention of reducing background

noise. Dr. Staab's reasoning and opinions in paragraph 107 for combining Sjursen and Mundel of the references are not supported by the cited art.

Patent Owner contends that "[t]he alleged combination of Sjursen and Mundel is not supported by a valid rationale and instead appears, at best, to be based on an incorrect reading of Mundel and impermissible hindsight reconstruction." Resp. 53. Patent Owner argues:

The Petition's alleged rationale as to why a POSA would seek to combine Sjursen and Mundel is based on a misinterpretation of Mundel. Sjursen discloses a single-piece hearing aid for placement into a user's ear and focuses on achieving an improved microphone in a disposable-type hearing aid. Ex. 1006, abstract; *see also* Pet. at 32; Ex. 2001, ¶ 103. Mundel describes issues with body-worn-type hearing aids of the 1940's timeframe, including reduction of the clothes-rubbing noise that results from concealing the hearing aid under clothing. Ex. 1007, p. 7, col. 1; Ex. 2001, ¶¶ 104, 105, 106. Mundel is not directed to and does not address wind noise. *Id.*; *see also* Ex. 2001, ¶ 104; Ex. 2004, 100:19-102:3, 106:11-109:8. The differences between the two references cannot be reconciled and the record is devoid of evidence or a reasonable rationale to combine.

Id. at 51–52. Patent Owner's argument is supported by the DaBell Declaration. Mr. DaBell testifies, "Mundel is not directed to a design for addressing the direct effect of wind and other environmental forces" (Ex. 2001 ¶ 105) and "Mundel's efforts to reduce clothes-rubbing noise for a body-worn device are not relevant to the in-the-ear device of Sjursen. In-the-ear devices would not be affected by clothes-induced noise" (*id.* ¶ 107).

Further, Petitioner argues that it would have been a matter of design choice to change the shape of the inlets in Sjursen. Pet. 36. Petitioner's assertion that the proposed modification is a mere change in "shape" to that

disclosed in Mundel and that this aspect of the product boils down to a simple design choice lacks a reasoned basis with rational underpinnings. *See KSR*, 550 U.S. at 418 (stating that obviousness requires more than “mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness” (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006))). By resorting to the design choice rationale, Petitioner suggests that changing the shape of Sjursen inlet holes to that of Mundel does not impact the functionality of the proposed combination. Yet, Petitioner relies on Mundel for more than its shape; Petitioner relies on Mundel for, among other things, the alleged noise reduction that is achieved by the recessed grill shape. Pet. 35. The ’204 patent also describes the function of this shape. *See Ex. 1001*, 3:24–27. The ’204 patent itself, therefore, suggests that the features Petitioner seeks to take from Mundel and add to Sjursen are more than mere shapes that do not impact the functionality of the proposed combination. Additionally, we note that Dr. Staab’s Declaration goes no further, and repeats the conclusory assertions in the Petition without explaining sufficiently why the decision to use Mundel’s shape amounts to a mere design choice. *See Ex. 1003 ¶¶ 112–113.*

Weighing the arguments and evidence presented by the parties relating to the motivation to combine the relevant teachings of Sjursen and Mundel, we find that a preponderance of the evidence does not support the articulated reasoning provided by Petitioner. We conclude that Petitioner has not shown that claims 1, 3–6, and 8 would have been obvious in view of the combination of Sjursen and Mundel.

F. Obviousness Challenge Based on Sjursen, Mundel, and Dodge

Petitioner asserts dependent claims 2 and 7 would have been obvious based on a combination of the teachings and suggestions of Sjursen, Mundel, and Dodge. Pet. 5, 48–51. Claim 2 depends from claim 1 and claim 7 depends from claim 3. Ex. 1001, 5:23–25, 6:12–14. Thus, claims 2 and 7, by virtue of their dependency, recite protective covers or protection screens with elongated slit openings.

Petitioner’s presentation related to this asserted combination of Sjursen, Mundel, and Dodge addresses only the further limitation set forth in claims 2 and 7 (“the edge has a cross-sectional angle of less than ninety degrees”). See Pet. 48–51. Petitioner provides no further argument or evidence, beyond that provided for the asserted ground challenging claims 1 and 3 based on Sjursen and Mundel, addressed above, relating to protective covers or protection screens with elongated slit openings or to combining the cited art to meet this limitation. *Id.* Accordingly, for the reasons given above, based on this record, we conclude that Petitioner has not established that claims 2 and 7 would have been obvious in view of the combination of Sjursen, Mundel, and Dodge.

III. PENDING MOTIONS

Petitioner filed a Motion to Strike Evidence Submitted with Patent Owner’s Sur-Reply (Paper 28, “Motion to Strike”). Patent Owner filed an Opposition (Paper 30). Petitioner filed a Motion to Exclude Evidence under 37 C.F.R. § 42.64 (Paper 32, “Motion to Exclude”). Patent Owner filed an Opposition (Paper 34). Petitioner filed a Reply in support of its Motion to

Exclude (Paper 36). As movant, Petitioner has the burden to establish that it is entitled to the requested relief. *See* 37 C.F.R. § 42.20(c).

Petitioner moves to strike Exhibits 2006–2011 filed by Patent Owner with its Sur-Reply (Motion to Strike 1) “along with the references to these exhibits in Patent Owner’s Sur-Reply” (*id.* at 6). Petitioner contends Patent Owner knowingly violated the Board’s procedures as “[t]he Board did not authorize the filing of new evidence with the Sur-Reply, and the Trial Practice Guide does not permit any new evidence with sur-replies, other than the deposition transcript of a reply witness.” *Id.* at 1.

Petitioner moves to exclude Exhibits 2007–2011 filed by Patent Owner and “any reference to or reliance on them.” Motion to Exclude 1. “Petitioner moves to exclude these exhibits on the basis that they are inadmissible hearsay.” *Id.*

Exhibit 2006 is the definition of “attach” from the American Heritage Dictionary. Exhibits 2007–2011 are curriculum vitae or biographies of the inventors or authors of the cited art. The Board did not rely on these exhibits in making any factual determination or reaching any conclusion.

Similar to a district court in a bench trial, the Board, sitting as a non-jury tribunal with administrative expertise, is well positioned to determine and assign appropriate weight to evidence presented, including not relying on it or giving it no weight. *See, e.g., Donnelly Garment Co. v. NLRB*, 123 F.2d 215, 224 (8th Cir. 1941) (“One who is capable of ruling accurately upon the admissibility of evidence is equally capable of sifting it accurately after it has been received”). Thus, in this *inter partes* review, the better course is to have a complete record of the evidence to facilitate public access as well as appellate review. Accordingly,

Petitioner's Motions to Strike and Exclude are dismissed as moot because the targeted exhibits were not relied upon.

IV. CONCLUSION

Petitioner has established, by a preponderance of the evidence, that claims 1–8 of the '204 patent are unpatentable under 35 U.S.C. § 103(a) in view of Saltykov and Dodge. Petitioner has not established that claims 1, 3–6, and 8 are unpatentable under 35 U.S.C. § 103(a) in view of Sjursen and Mundel or that claims 2 and 7 are unpatentable under 35 U.S.C. § 103(a) in view of Sjursen, Mundel, and Dodge.

V. ORDER

Accordingly, it is

ORDERED that claims 1–8 of U.S. Patent No. 8,494,204 B2 are *unpatentable*;

FURTHER ORDERED that Petitioner's Motion to Strike (Paper 28) and Petitioner's Motion to Exclude (Paper 32) are *dismissed* as moot; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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PETITIONER:

Scott McKeown
James L. Davis Jr.
ROPE & GRAY LLP
Scott.mckeown@ropesgray.com
James.I.davis@ropesgray.com

PATENT OWNER:

D. Richard Anderson
Eugen Perez
Lynde Herzbach
BIRCH, STEWART, KOLASCH & BIRCH, LLP
dra@bskb.com
etp@bskb.com
lynde.herzbach@bskb.com