

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MEDTRONIC XOMED, INC.,
Petitioner,

v.

NEUROVISION MEDICAL PRODUCTS, INC.,
Patent Owner.

Case IPR2016-01847
Patent 8,467,844 B2

Before MEREDITH C. PETRAVICK, WILLIAM V. SAINDON, and
RICHARD E. RICE, *Administrative Patent Judges*.

PETRAVICK, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

A. Background

Medtronic Xomed, Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–7 of U.S. Patent No. 8,467,844 B2 (Ex. 1001, “the ‘844 patent”) pursuant to 35 U.S.C. §§ 311–319. Paper 1 (“Pet.”).

Neurovision Medical Products, Inc. (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 12 (“Prelim. Resp.”). Under 35 U.S.C. § 314 an *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . 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.” We conclude that the Petition shows that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the challenged claims. For the reasons discussed below, we institute an *inter partes* review as to claims 1–7 of the ’844 patent.

B. Related Proceedings

Both Petitioner and Patent Owner state that the ’844 patent is involved in *Neurovision Med. Prods. v. Medtronic Pub. Ltd. Co.*, Case No. 2:16-cv-00127-JRG-RSP in the Eastern District of Texas. Pet. 1, Paper 6, 2.

U.S. Patent No. 8,634,894 B2 (“the ’894 patent”) claims priority to the ’844 patent (Ex. 2024, [62]) and is the subject of pending *inter partes* reviews, IPR2016-01405, IPR2016-01406, and IPR2017-00456. Pet. 1, Paper 11, 1. Additionally, the ’894 patent was the subject of IPR2015-00502, which terminated due to settlement prior to the Board issuing a final written decision. Paper 11, 1.

C. The ’844 patent

The ’844 patent is titled “Electrode for Prolonged Monitoring of Laryngeal Electromyography” and issued on June 18, 2013, from U.S. Patent Application No. 12/887,427, filed on September 21, 2010. Ex. 1001, [54], [45], [21], [22]. U.S. Patent Application No. 12/887,427 claims

priority to U.S. Provisional Application No. 61/244,402, filed on September 21, 2009. *Id.* at [60], 1:5–6.

The '844 patent discloses a laryngeal electromyography tube having electrodes, electrical traces, and conductive pads directly imprinted on, and thus substantially flush with, the surface of the tube. *See id.* at 5:56–60. The electrodes, electrical traces, and conductive pads are imprinted on the surface of the tube by “painting, screen printing, transfer printing, gravure, flexographic or offset printing, as well as inkjet or electrostatic printing methods.” *Id.* at 6:3–6. The electrodes, electrical traces, and conductive pads are formed with conductive ink or paint that comprises a mixture of conductive materials dissolved or suspended in a liquid carrier. *See id.* at 4:47–5:15.

The '844 patent discloses various embodiments, in which the number and placement of the electrodes vary. *See id.* at Figs. 1, 2, 4, 7. Figure 7 depicts an embodiment in which two electrodes are placed on the tube such that an electrode is in contact with the vocal cords and another is in contact with the tongue when the tube is in use. *Id.* at 4:41–44. Figure 7 is reproduced below.

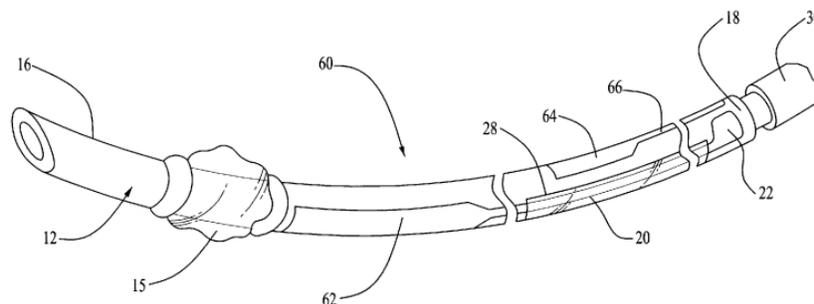


FIG. 7

Figure 7 depicts laryngeal electromyography tube 60 having an endotracheal tube 12 imprinted with two electrode plates 62 and 64. *Id.* at 4:41–44. Electrode plate 62 is positioned to contact the vocal cords, and electrode plate 64 is positioned to contact the tongue. *Id.* Conductive traces 20 connect the electrode plates to conductive pads 22, which attach to lead wires of an external device. *Id.* at 4:4–7, 4:44–46. Tube 60 also has an endotracheal tube balloon 15, which, when inflated, holds tube 60 in a desired position when in use. *See id.* at 3:67–4:1, Fig. 8. Figure 8 depicts tube 60 in use and is reproduced below.

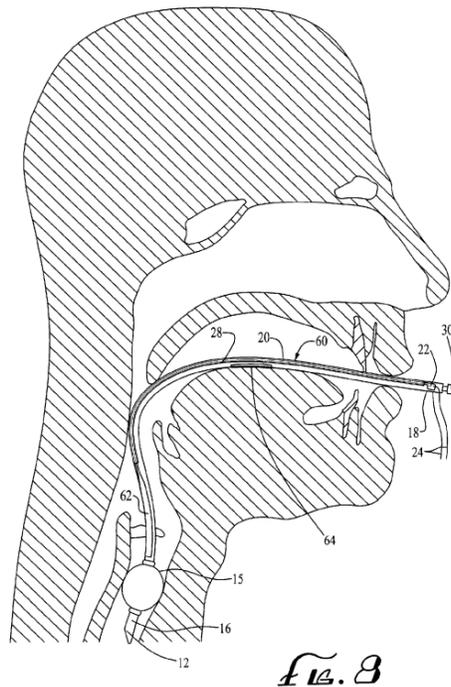


Figure 8 depicts tube 60 placed within the trachea with one electrode plate adjacent the vocal cords and one electrode contacting the tongue. *Id.* at 3:50–52.

D. Illustrative Claim

Claims 1 and 4 are independent. Claims 2 and 3 depend from claim 1. Claims 5–7 depend from claim 4. Claim 1, reproduced below, is illustrative of the claimed subject matter.

1. A device for use in monitoring electrical signals during laryngeal electromyography comprising:

an endotracheal tube having a retention balloon at or adjacent a distal end thereof, said tube having on its outer surface one or more electrically conductive electrode plates applied proximal of the balloon directly to the surface of the tube, without the inclusion of a carrier film between the tube surface and the electrode plates,

said tube having on its surface electrically conductive traces connected to or integral with the electrode plates, the traces applied directly to the tube surface and running along the length of the endotracheal tube to a proximal end thereof,

conductive pads connected to or integral with the conductive traces, the pads applied directly to the tube surface at the proximal end of the endotracheal tube, and

electrical leads connected to the pads, said leads adapted to connect to monitoring equipment,

the electrically conductive traces covered by an insulating material along their length from a point adjacent the electrode plates to a point adjacent the conductive pads[,]

wherein a first of said electrode plates is located proximal of the balloon and positioned to contact the vocal cords when placed within the trachea and a second electrode plate is located further proximal thereof and positioned to contact the tongue when the first electrode plate is positioned to contact the vocal cords.

Ex. 1001, 7:5–31.

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

No.	Ground	Claims	Prior Art
1	§ 103	1–7	Kartush ¹ , Topsakal ² , Cook ³ , and Hon ⁴
2	§ 103	1–7	Goldstone ⁵ , Teves ⁶ , Cook, and Hon

Pet. 2.

To support its Petition, Petitioner proffers a Declaration of Dr. Ralph P. Tufano (Ex. 1009) and a Declaration of Mr. Guy R. Lowery (Ex. 1012).⁷

¹ Kartush, U.S. Patent Application Publication No. 2010/0145178 A1 (published June 10, 2010) (Ex. 1021)

² Cahide Topsakal, Ossama Al-Mefty, Ketan R. Bulsara, and Veronica S. Williford, *Intraoperative Monitoring of Lower Cranial Nerves in Skull Base Surgery: Technical Report and Review of 123 Monitored Cases*, 31 NEUROSURG. REV. 45–53 (2008) (Ex. 1007).

³ Cook et al., U.S. Patent No. 4,890,623 (issued Jan. 2, 1990) (Ex. 1004).

⁴ K.K. B. Hon, L. Li, and I.M. Hutchings, *Direct Writing Technology — Advances and Developments*, 57 CIRP ANNALS–MANUFACTURING TECHNOLOGY 601–620 (2008) (Ex. 1005).

⁵ Goldstone et al., U.S. Patent No. 5,024,228 (issued June 18, 1991) (Ex. 1003).

⁶ Teves, U.S. Patent No. 5,365,940 (issued Nov. 22, 1994) (Ex. 1013).

⁷ Patent Owner argues that we should afford the testimony of Dr. Tufano and Mr. Lowery no weight. Prelim. Resp. 55–61. For example, Patent Owner argues that we should give no weight to Mr. Lowery’s testimony because he does not rely on prior art to form his opinions but instead relies upon his own work. *Id.* at 57. At this point in the proceeding, Patent Owner’s argument is mere attorney argument unsupported by evidence, and we are not persuaded to give no weight to the testimony. We note that Patent Owner will have the opportunity to cross-examine Dr. Tufano and Mr. Lowery during the trial.

II. ANALYSIS

A. 35 U.S.C. § 325(d)

Patent Owner requests that we deny the Petition and terminate the proceeding under 35 U.S.C. § 325(d) because Petitioner has filed multiple petitions challenging the '894 patent, which is related to the '844 patent. Prelim. Resp. 4, n. 1.

Section 325(d) of the Statute states

during the pendency of any post-grant review under this chapter, if another proceeding or matter involving *the patent* is before the Office, the Director may determine the manner in which the post-grant review or other proceeding or matter may proceed, including providing for the . . . termination of any such matter or proceeding.

35 U.S.C. § 325(d) (emphasis added). The '894 patent is not the subject of this proceeding. Patent Owner points to no other proceeding or matter before the Office involving the '844 patent. We are not persuaded to deny the Petition under 35 U.S.C. § 325(d).

B. Claim Construction

In an *inter partes* review, the Board interprets claim terms in an unexpired patent according to the broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation approach). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as they would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Petitioner proposes constructions for the terms “positioned to contact” and “electrode plate.” Pet. 3–4. Patent Owner disputes that Petitioner’s proposed constructions are the broadest reasonable construction and argues that no construction is necessary. Prelim. Resp. 9–11. For the purposes of this Decision, we determine that no explicit claim constructions are needed to resolve the issues before us. *See, e.g., Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy.’”) (citation omitted).

C. Unpatentability Grounds

Section 103(a) forbids issuance of a patent when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.”

KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398, 406 (2007). The ultimate determination of obviousness under § 103 is a question of law based on underlying factual findings. *In re Baxter Int’l, Inc.*, 678 F.3d 1357, 1361 (Fed. Cir. 2012) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)). These underlying factual considerations consist of: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of non-obviousness such as “commercial

success, long-felt but unsolved needs, failure of others, etc.”⁸ *KSR*, 550 U.S. at 406 (quoting *Graham*, 338 U.S. at 17–18).

1. Level of Ordinary Skill in the Art

Patent Owner acknowledges that Petitioner’s declarations set forth the level of ordinary skill in the art, but nonetheless argues that the Petition is fatally flawed as it “lacks any explanation of the appropriate level of skill for a [person of ordinary skill in the art (“POSA”)].” *See* Prelim. Resp. 25–27. In support of this argument, Patent Owner asserts that “[a]nalysis in a declaration that is not included in the relevant portion of a petition need not be considered.” *Id.* (citing *Epsilon Data Management, LLC v. RPost Communications, Ltd.*, CBM2014-00017, slip op. at 9 (PTAB Apr. 22, 2014) (Paper 21)). Patent Owner also argues that it was improper for the Petition to rely on these two declarations. *Id.* at 26–27.

We are not persuaded by Patent Owner’s argument that setting forth the appropriate level of ordinary skill in the art in the declarations, rather than the Petition, is a basis to deny the Petition, or that this somehow renders the declarations “improper.” The cases relied upon by Patent Owner, which do not consider analysis in a declaration that was not included in the relevant portion of the Petition (*see* Prelim. Resp. 26), are based on very different facts and do not support Patent Owner’s arguments here.

Moreover, although the Petition itself does not explicitly set forth the level of ordinary skill in the art, the declarations of Dr. Tufano (Ex. 1009) and Mr. Lowery (Ex. 1012), which were submitted with the Petition, define the level of ordinary skill in the art. Ex. 1009 ¶ 18; Ex. 1012 ¶ 29. In

⁸ The record contains no arguments or evidence concerning secondary considerations.

particular, Dr. Tufano and Mr. Lowery each testify that a POSA would have had “1) a degree in engineering, science or medicine, and 2) at least 3 years of experience in the product development and/or use of ET tubes with electrodes.” Ex. 1009 ¶ 18; *see* Ex. 1012 ¶ 29.

2. Prior Art Status of Kartush and Hon

Patent Owner argues that neither Kartush nor Hon are prior art to claims 1–7 because claims 1–7 were conceived prior to Hon’s October 2008 publication date and Kartush’s June 10, 2010 publication date⁹ and Patent Owner was reasonably diligent in reducing the claims to practice from the time period just before Hon’s publication date. Prelim. Resp. 11–25.

a. Effective Filing Date of the ’844 Patent

Before turning to Patent Owner’s argument, we must first determine the effective filing date of the ’844 patent. The ’844 patent claims priority under 35 U.S.C. § 119(e) to U.S. Provisional Application No. 61/244,402 (“the ’402 provisional application”), filed on September 21, 2009. Ex. 1001, [60], 1:5–6. Petitioner contends that the ’844 patent is not entitled to the claim of priority because the ’402 provisional application does not properly support the claims of the ’844 patent. Pet. 16. Petitioner argues that the ’402 provisional application does not provide the required support for the electrode plates positioned to contact the tongue, recited by independent claims 1 and 4. Petitioner, thus, contends that the effective date of the ’844

⁹ Kartush claims priority to a number of prior applications, including U.S. Provisional Application No. 60/886,119 filed on Jan. 23, 2007. Ex. 1021, [60], [63]. Petitioner, however, does not rely on 35 U.S.C. § 102(e) to argue a prior-art date earlier than June 10, 2010. *See* Pet. 18 (stating that Kartush is prior art under 35 U.S.C. § 102(a)).

patent is September 21, 2010, the filing date of U.S. Patent Application No. 12/887,427, from which the '844 patent matured. *Id.*; *see* Ex. 1001, [21], [22]. Patent Owner does not explicitly address Petitioner's contentions but implies that the effective filing date of the '844 patent is September 21, 2009, the filing date of the '402 provisional application. *See* Prelim. Resp. 8 ("claims priority to U.S. Provisional Application"), 13 ("constructive reduction to practice date based on the filing of Provisional Application No. 61/244,402").

Pursuant to 35 U.S.C. § 119(e), to be entitled to priority to the filing date of a provisional patent application, the provisional patent application must disclose the invention in the matter provided in 35 U.S.C. § 112, first paragraph, which requires a written description of the invention. To satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, they were in possession of the invention, and that the invention, in that context, is whatever is now claimed. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991). The test for sufficiency of support in a provisional patent application is whether the disclosure of the application relied upon "reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter." *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 1575 (Fed. Cir. 1985) (quoting *In re Kaslow*, 707 F.2d 1366, 1375 (Fed. Cir. 1983)).

Petitioner argues that the '402 provisional application does not provide the required written description support for electrode plates positioned to contact the tongue because the '402 provisional application only describes electrodes positioned to contact the vocal cords and does not mention the tongue. Pet. 16 (citing Ex. 1011, 9–10). After review of the

'402 provisional application and on this record, we determine that the '402 provisional application does not provide the required written description support for electrode plates positioned to contact the tongue and, thus, the '844 patent is not entitled to claim priority to the filing date of the '402 provisional application. Thus, on this record and for purposes of this Decision, the effective date of the '844 patent is September 21, 2010.

b. Prior Art Status of Hon

Hon published in October 2008. Ex. 1005, 601; *see also* Pet. iii (Petitioner stating that Hon's publication date is October 2008), Prelim. Resp. 11, 13 (Patent Owner agreeing with Petitioner that Hon's publication date is October 2008). Hon is available as prior art under 35 U.S.C. § 102(b) because Hon was published more than one year prior to the effective filing date of the '844 patent. *See* 35 U.S.C. § 102(b). Section 102(b) is a statutory bar, and a statutory bar cannot be overcome by evidence of prior invention.

c. Prior Art Status of Kartush

Patent Owner asserts that Kartush is not prior art to claims 1–7, that claims 1–7 were conceived prior to Kartush's June 10, 2010 publication date, and that Patent Owner was reasonably diligent in reducing the claims to practice from a time period prior to Kartush's publication. Prelim. Resp. 13. To support this argument, Patent Owner submits U.S. Provisional Application No. 61/126,567, which was filed on May 6, 2008 (Ex. 2012, "the '567 provisional application"), and asserts that the '567 provisional application "discloses every limitation of claims 1–7." *Id.* Patent Owner argues that "conception prior to Kartush . . . is supported by an earlier draft

of the '567 provisional application exchanged between the inventors on April 21, 2008[, and that the] draft is largely identical to the '567 Application in its disclosures as relevant to the challenged claims.” Prelim Resp. 18–19 (citing: Ex. 2001, 135–40; Ex. 2003 ¶ 5; Ex. 2004 ¶ 5).

Patent Owner’s argument is not persuasive, as Patent Owner has failed to establish that the evidence, namely the '567 provisional application, discloses every limitation of any claim, let alone all of claims 1–7. As cited correctly by Patent Owner, to antedate Kartush, Patent Owner must show, by corroborating evidence, possession of every feature recited in the patented claim, and that every limitation of the claim must have been known to the inventor at the time of the alleged conception. *Id.* at 12 (citing *Coleman v. Dines*, 754 F.2d 353, 359 (Fed. Cir. 1985)).

Patent Owner’s evidence, however, fails to establish possession of every feature recited in the patented claims. For example, independent claim 1 recites, *inter alia*, “a second electrode plate is located further proximal [of the balloon] and positioned to contact the tongue when the first electrode plate is positioned to contact the vocal cords.” Ex. 1001, 7:26–30. Independent claim 4 recites a similar limitation. *Id.* at 8:22–26. Patent Owner points to a number of passages of the '567 provisional application as support for these limitations. Prelim Resp. 16 (citing Ex. 2012, 5–7). However, none of the passages discusses electrodes positioned to contact the tongue. *See* Ex. 2012, 5–7. Further, the sketch on page 8 of the '567 provisional application also does not show such. *See id.* at 8.

Patent Owner also argues that claims 1–7 “were actually reduced to practice by at least November 2008.” Prelim Resp., 19. To support its argument, Patent Owner proffers alleged images of embodiments of the invention (Prelim. Resp. 19–20), a set of 158 documents (Ex. 2001), a

Declaration of Stephen W. Blakely (Ex. 2003), a Declaration of James Lee Rea (Ex. 2004), and a Declaration of Ryan M. Rea (Ex. 2005). *See* Prelim. Resp. 19–25. To establish an actual reduction to practice, patentees must prove that they (1) constructed an embodiment or performed a process that meets all the claimed limitations of the invention, and (2) determined that the invention worked for its intended purpose. *Easton v. Evans*, 204 F.3d 1094, 1097 (Fed. Cir. 2000). Patent Owner’s evidence, however, fails to establish that the inventors constructed an embodiment that meets all the claimed limitations of the invention. The testimony of inventors James Rea and Stephen Blakely and the testimony of Ryan Rea do not indicate that the embodiments included electrodes positioned to contact the tongue. *See generally*, Exs. 2003–2005. None of the cited portions of the 158 documents mention an electrode positioned to contact the tongue. *See* Prelim. Resp. 22–24, Ex. 2016. The images of embodiments of the invention do not show an electrode positioned on an endotracheal tube to contact the tongue. *See* Prelim. Resp. 19–20.

Accordingly, Patent Owner’s evidence is insufficient to show an invention date prior to Kartush’s June 10, 2010 publication date. On this record, we determine that Kartush is prior art, at least, under 35 U.S.C. § 102(a).

3. Ground 1 – Based on Kartush

Petitioner contends that claims 1–7 are unpatentable over a combination of Kartush, Topsakal, Cook, and Hon. Pet. 18–39.

a. Overview of Prior Art

i. Kartush

Kartush is a U.S. patent application publication, titled “Nerve Monitoring Device” and published on June 10, 2010. Ex. 1021, [43], [54]. Kartush discloses an embodiment of cannula 12 that is an endotracheal tube having a sensor 14 that contacts vocal cords 119. *Id.* ¶¶ 51, 54–56. Figure 4 of Kartush is reproduced below.

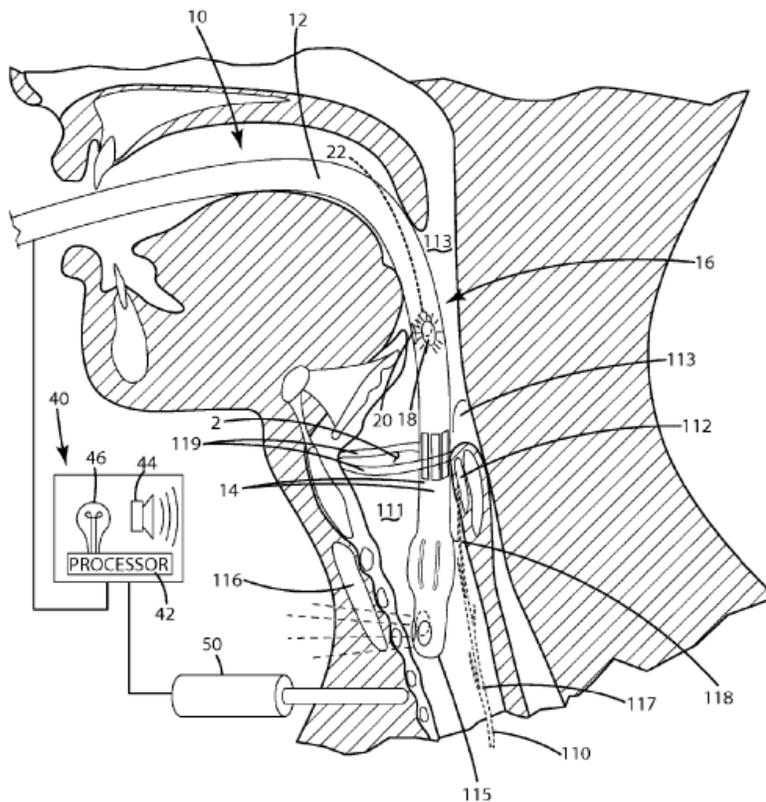


Fig.4

Figure 4 depicts an embodiment of cannula 12 that is an endotracheal tube positioned in a patient. *Id.* ¶ 34. The endotracheal tube has sensors 14 and an inflatable cuff (not shown). *Id.* ¶¶ 51, 58. Sensor 14 may be an electrode that detects electrical signals and is positioned to contact the vocal cords. *Id.* ¶¶ 60, 65. Sensor 14 communicates with output element 40 via direct wire

or wirelessly. *Id.* ¶ 76. Kartush suggest that additional sensors can be placed on the tube. *Id.* ¶¶ 56, 57, 65, 67.

Kartush suggests that sensor 14 can be constructed in a variety of ways, including as exposed wires or plates. *Id.* ¶¶ 68, 71, 72, 75. Kartush states “[t]he sensor[] 14 can be joined directly to the exterior surface 13 of the cannula 12 via an adhesive, or can be embedded or molded within the cannula components, or can be joined to another structural element that is place about the ET tube.” *Id.* ¶ 72.

ii. Topsakal

Topsakal is a paper titled “Intraoperative Monitoring of Lower Cranial Nerves in Skull Base Surgery: Technical Report and Review of 123 Monitored Cases” and published in 2008. Ex. 1007, 45; *see also* Pet. iii (Petitioner stating that Topsakal’s publication date is 2008). Topsakal discloses that during skull base surgery it is desirable to monitor multiple lower cranial nerves, CN9–12, including the hypoglossal nerve, CN12, in the tongue. *Id.* at 47, 50.

iii. Cook

Cook is a U.S. patent, which issued on January 2, 1990, and is titled “Biopotential Sensing Device and Method for Making.” Ex. 1004, [45], [54]. Cook discloses a biopotential sensing device utilizing printed circuit technology (*id.* at 1:6–8), which in one embodiment is a percutaneous catheter 10 (*id.* at 3:55–58). Figure 1 is reproduced below.

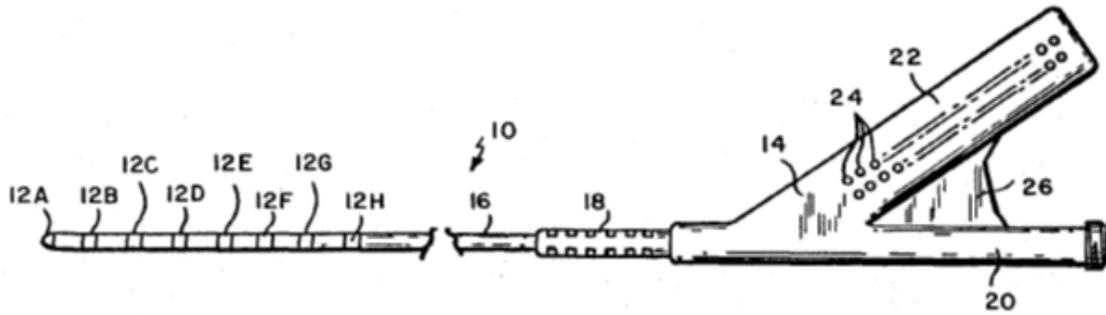


FIG. 1

Figure 1 depicts Cook's percutaneous catheter 10, including a distal end with plurality of ring electrodes 12, and a proximal end with molded bifurcated fitting 14 having connector pins 24. *Id.* at 3:55–68. Flexible member 16 is formed by tube 28 and substrate film 30—which has a printed circuit formed thereon, as shown in Figure 6—and helically wrapped around tube 28. *Id.* at 4:4–15. Figure 6 provides a side view of the proximal portion of catheter 10 and is also reproduced below. *Id.* at 3:35–37.

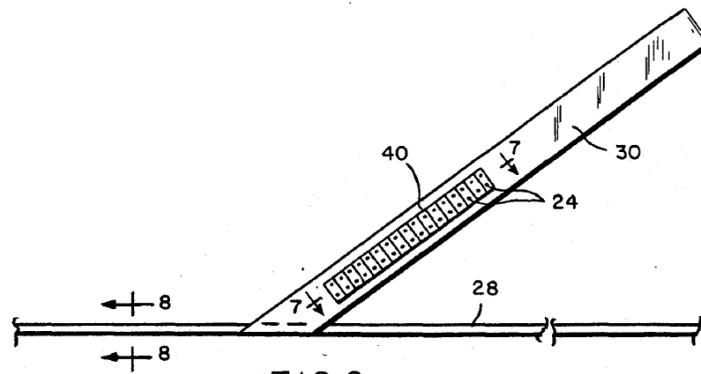


FIG. 6

Figure 6 depicts substrate film 30, with a printed circuit formed thereon, wrapped helically around tube 28. *Id.* at 4:13–15. As explained in Cook, the circuit pattern is printed utilizing known techniques, such as laminating a thin film copper foil onto the plastic film. *Id.* at 4:13–24.

Figure 3 depicts Cook's printed circuit and is reproduced below.

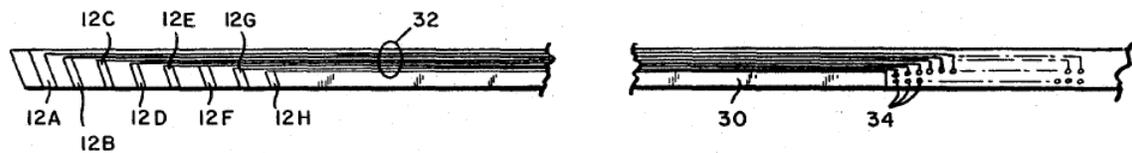


FIG. 3

Figure 3 depicts a top view of a circuit printed on a substrate. *Id.* at 3:28–30. As described in Cook, the circuit includes printed electrode pads 12A–12H, printed circuit wires 32 separately connected to each electrode pad, and terminal pad 34 connected to each wire. *Id.* at 4:25–29.

iv. Hon

Hon is an article titled “Direct Writing Technology — Advances and Developments” and published in October 2008. Ex. 1005, 601; Pet. iii (Petitioner stating that Hon’s publication date is October 2008); Prelim. Resp. 11, 13 (Patent Owner agreeing with Petitioner that Hon’s publication date is October 2008). Hon discloses that direct writing is “a group of processes which are used to precisely deposit functional and/or structural materials on to a substrate in digitally defined locations.” *Id.* The substrate is an integral part of the final product and may be curvilinear, round, or flexible. *Id.* Hon discloses that metallic particles suspended in a suitable fugitive liquid can be printed by inkjet processes, and are used for electrical applications. *Id.* at 613.

b. Analysis

i. Independent Claims 1 and 4

According to Petitioner, Kartush discloses electrodes positioned on an endotracheal tube to contact the vocal cords. Pet. 18 (citing Ex. 1021 ¶¶ 52–

57, ¶ 67, Figs. 4 and 5). Petitioner asserts that Kartush does not explicitly describe an electrode positioned to contact the tongue but does suggest that additional electrodes, which are connected to different channels of a monitoring device, may be provided to contact muscles other than the vocal cords. Pet. 18–19 (citing Ex. 1021 ¶¶ 22, 52, 56, 57, 66, 67, 86, 87).

Petitioner relies upon Topsakal to teach that providing electrodes for contacting both the tongue and the vocal cords is preferred in skull base operations because it protects against injury during surgery. Pet. 19–21 (citing Ex. 1007, 47, 50). Petitioner asserts providing a sensor for monitoring the tongue on Kartush’s endotracheal tube would have been obvious in order to simplify the surgical procedure by avoiding the need for separate devices. Pet. 21–22. According to Petitioner, the combination of Kartush and Topsakal would result in electrodes positioned to contact the vocal cords at a distal end of the endotracheal tube and electrodes positioned to contact the tongue at a proximal end of the endotracheal tube. *Id.* at 22–24.

Further, Petitioner contends that Kartush describes that the sensors can be attached directly to the exterior surface of the tube using various techniques and can be connected to a monitoring device via a wire. *Id.* at 24–25 (citing Ex. 1021 ¶¶ 68, 75, 76, 101). Kartush, however, does not explain in detail the circuitry extending along the tube or the transition to the external leads that connect to the monitoring equipment. Pet. 25.

Petitioner relies upon Cook’s description of printed circuits including electrodes, traces, and connection points. Pet. 25 (citing Ex. 1004, Fig. 3, 4:25–32). The cited portion of Cook discloses a circuit pattern that includes electro pads 12A–12H connected to terminal pads 34 by circuit wires 32. Ex. 1004, Fig. 3, 4:25–32. Petitioner reasons that “the incorporation of

Cook's disclosure of printing electrodes on medical tubes with Kartush's tube [having conductive electrodes] merely combines prior art elements to yield predictable results by using a known technique to improve a similar device." Pet. 26 (quotation omitted). Petitioner further reasons that a POSA would have provided Cook's terminal pads when using a printed circuit pattern to communicate with associated monitoring equipment. Pet. 26. Petitioner cites to Cook's disclosed advantages of printed circuit technology, including by (i) permitting the size, shape, and orientation of each electrode to be individually controlled to provide a sensing device which is optimal for each application, and (ii) allowing for less expensive designs. *See id.* at 26 (citing Ex. 1004, 6:17–65).

In relying on Hon, Petitioner cites to Hon's teaching of "directly applying electrodes (using metal paints/inks) on rounded substrates, without first forming the same on a carrier substrate." Pet. 27 (citing Ex. 1005, 601; Ex. 1009 ¶¶ 69–70). In further combining Hon's teachings with the previously discussed combination of Kartush, Topsakal, and Cook, Petitioner reasons that a POSA would have used "Hon's techniques to apply traces and electrodes directly to the surface" to achieve (1) cost reduction; (2) process chain simplification; (3) greater design freedom; and (4) lower environmental footprint. *Id.* at 27–28 (citing Ex. 1005, 617).

Notwithstanding Patent Owner's arguments, discussed below, we are persuaded at this stage of the proceeding by Petitioner's asserted reasons for combining Kartush, Topsakal, Cook, and Hon, as well as Petitioner's showing that the proposed combination satisfies the limitations of claims 1 and 4.

In contesting the proposed ground, Patent Owner presents numerous arguments. Prelim. Resp. 29–37, 45–49. We have considered all of Patent

Owner's arguments but find them unpersuasive. We address each argument in turn, below.

First, Patent Owner argues that none of Kartush, Topsakal, Cook, or Hon individually disclose electrode plates, traces, and pads applied directly to the surface of the tube, without the inclusion of a carrier film between the tube surface and the electrode plates, traces, and pads. *Id.* at 29–37. For example, Patent Owner argues that Kartush does not teach electrodes, traces, and pads that are applied directly to the surface of the endotracheal tube because Kartush discloses manufacturing its sensors separately and then attaching the sensors to the tube. *Id.* at 29 (citing Ex. 1021 ¶ 75). As another example, Patent Owner argues that Cook also does not teach such because Cook discloses printing the circuit on a substrate film. Prelim. Resp. 30–31. Patent Owner's argument is unpersuasive because it does not address the proposed ground of unpatentability. In particular, Petitioner's proposed ground does not rely on Kartush or Cook alone for teaching or disclosing these claimed features. For example, Petitioner relies upon Hon to teach directly printing on the surface of the tube without a carrier film between the tube surface and electrodes. Pet. 27–28.

Second, Patent Owner argues that Cook's teachings are incompatible with Kartush because a "POSA would not know how to incorporate (and wrap) the relatively complex and unique Cook substrate with the electrode wires and sensors of Kartush, and thus, would not be motivated to combine Cook with Kartush." Prelim. Resp. 31. Patent Owner also argues that Cook's teachings are incompatible with Hon because "[a] POSA would not have been motivated simply to remove Cook's substrate in favor of directly writing on a tube using Hon" because that would result in a change to the technology and operation of Cook. *Id.* at 34–35. Patent Owner's argument

is unpersuasive because it does not address the proposed ground of unpatentability. Petitioner's proposed ground does not suggest bodily incorporating Cook's printed circuit on a substrate film onto Kartush's tube or removing the substrate from the device in Cook. *See* Pet. 25–29. Further, bodily incorporation is not the standard for obviousness. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. ... Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.”).

Third, Patent Owner argues that a person of ordinary skill in the art would not have been motivated to combine Kartush, Topsakal, Cook, and Hon, as set forth in the proposed ground, because Hon *teaches away* from using conductive ink on a tube. Prelim. Resp. 33. In support of this argument, Patent Owner cites to several statements under Hon's section titled “Challenges in Direct Writing.” *See id.* at 33–34 (citing in-part Ex. 1005, 617). In particular, Patent Owner cites to Hon's statements that the following technical challenges with direct ink printing exist: (1) “‘high and stable conductivity [deposits]’ for ‘long lifetimes’ is lacking”; (2) improvements in “adhesion, surface finish and resolution of the deposited materials” would be beneficial; (3) “challenges with the ‘[p]recision on-off control of droplet-base and tip-based DW process[es].’” *Id.* (quoting Ex. 1005, 617).

Patent Owner's argument is not persuasive. Although Hon describes certain *challenges* with direct writing technology (Ex. 1005, 617), these challenges must be weighed against Hon's primary “conclusion” that direct writing technology provides “plentiful benefits,” namely, (1) cost reduction;

(2) process chain simplification; (3) greater design freedom; and (4) a lower environmental footprint. Ex. 1005, 617 (“Conclusions” . . . “The benefits of [direct writing] are plentiful . . .”). Accordingly, and contrary to Patent Owner’s assertion, Hon does not teach away from using direct writing. See *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) (“a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine.”); *Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000) (“The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another.”).

Fourth, Patent Owner argues that Kartush teaches away from using direct writing because Kartush emphasizes the use of movable electrodes. Prelim. Resp. 35 (citing Ex. 1021 ¶ 68, Figs. 6, 9). Patent Owner is correct that Kartush discloses some embodiments in which the sensor is movable or reconfigurable. Ex. 1021, ¶ 68. However, “[t]he prior art’s mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed” *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Kartush also discloses embodiments where “[t]he sensors 14 can be joined directly to the exterior surface 13 of the cannula 12.” Ex. 1021 ¶ 72, 75.

Fifth, Patent Owner argues that the Petition has failed to show a motivation to combine Kartush, Topsakal, Cook, and Hon. Prelim. Resp. 31–33, 35–37. In support of this argument, Patent Owner argues that the

Petitioner’s “generalized ‘motivation’ is not sufficient to overcome the specific teaching away present in Hon and the other references.” *Id.* at 36.

Patent Owner’s argument is unpersuasive. The key to supporting any assertion of obviousness under 35 U.S.C. § 103 is the clear articulation of the reasons why the claimed invention would have been obvious. *KSR Int’l Co.*, 550 U.S. at 418. The Federal Circuit has stated that “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006), cited with approval in *KSR*, 550 U.S. at 418.

In the present case, Petitioner’s reasoning for combining the identified features of Kartush, Topsakal, Cook, and Hon is articulated with some rational underpinnings, as can be seen from our discussion above. Furthermore, on this record, we find that all of the claimed features are satisfied as a result of the asserted combination. We also are unpersuaded by Patent Owner’s teaching away argument, for the same reasons as discussed above.

Sixth, Patent Owner argues that “Topsakal teaches away from modifying its ET tube, such as the one disclosed in Kartush, to include electrodes that contact the vocal cords and the tongue simultaneously” because 1) the electrodes disclosed in Topsakal are simpler than those disclosed in Kartush or Cook; 2) Topsakal discloses that using special endotracheal tube electrodes to monitor the vocal cords is difficult; and 3) Topsakal recommends positioning the electrodes on the sides, and not the top, of the tongue to monitor the hypoglossal nerve. Prelim. Resp. 45–49. A reference teaches away from a claimed invention if it “criticize[s], discredit[s], or otherwise discourage[s]” modifying the reference to arrive at the claimed invention. *In re Fulton*, 391 F.3d at 1201. We will not,

however, “read into a reference a teaching away from a process where no such language exists.” *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1364 (Fed. Cir. 2006). The passages cited by Patent Owner do not teach away from modifying the endotracheal tube of Kartush to include electrodes that contact the tongue. Topsakal does not criticize or discredit the sensors used in Kartush or Cook as more complex or criticize or discredit a sensor that is placed on the top of the tongue. Topsakal does describe that monitoring the vocal cords is more demanding and complex. Ex. 1007, 47. Kartush, moreover, already discloses a sensor on its endotracheal tube for monitoring the vocal cords and suggests providing additional sensors. Ex. 1021 ¶¶ 56, 57, 60, 65, 67.

Finally, Patent Owner argues that “Petitioner’s expert admits that it is irregular to monitor both the laryngeal muscles and the hypoglossal nerves: ‘[W]hen performing hypoglossal nerve monitoring, one would want the electrode(s) to contact the tongue, but not the laryngeal muscles.’” Prelim. Resp. 49 (citing Ex. 1009 ¶ 92). Patent Owner’s argument mischaracterizes Dr. Tufano’s testimony. Dr. Tufano testifies that it would be undesirable to monitor both the laryngeal muscles and the hypoglossal nerves using the *same channel of a monitoring device* and, thus, different channels and insulation would be used to limit the monitoring on a particular channel to a target muscle. Ex. 1009 ¶ 92.

ii. Dependent Claims 2, 5, and 6

Petitioner contends that claims 2, 5, and 6 are unpatentable over Kartush, Topsakal, Cook, and Hon. Claims 2, 5, and 6 depend directly or indirectly from claims 1 or 4. Upon review of Petitioner’s evidence and analysis, we determine that the Petition shows that there is a reasonable

likelihood that claims 2, 5, and 6 are unpatentable over Kartush, Topsakal, Cook, and Hon. Patent Owner makes no arguments directed to the additional limitations recited by these claims.

iii. Dependent Claims 3 and 7

Claim 3 depends from claim 1 and additionally recites “wherein the surface of the conductive electrode plate are substantially flush with the outer surface of the endotracheal tube.” Ex. 1001, 7:36–38. Petitioner contends that the combination of Cook and Hon discloses this limitation because Cook discloses that it is desirable to provide the circuitry without increasing the thickness of the device and Hon teaches that the ink in direct writing applications, such as MicroPen, has a height from 1.3 to 250 microns. Pet. 28, 34 (citing Ex. 1004, 6:17–27, Ex. 1005, 611, Ex. 1009 ¶¶ 46–49, 74–75, Ex. 1012 ¶¶ 82, 19–22). The ’844 patent provides an example of a thickness of about 0.001 inches or 25 microns. Ex. 1001, 5:56–60.

Claim 7 depends indirectly from claim 4 and additionally recites “wherein the conductive particles comprise[] at least about 60% of the ink.” Ex. 1001, 8:35–36. Petitioner contends that Hon discloses this limitation because Hon discloses “a silver ink which contain[s] 57–62 wt.% of Ag [silver] nanoparticles.” Pet. 39 (citing Ex. 1005, 614; Ex. 1009 ¶ 85; Ex. 1012 ¶ 81). Hon discloses using 57–62 wt.% of Ag nanoparticles in aerosol jet direct writing process. Ex. 1005, 614.

Notwithstanding Patent Owner’s argument, discussed below, we are persuaded at this stage of the proceeding by Petitioner’s showing that combining Kartush, Topsakal, Cook, and Hon satisfies the limitations of claims 3 and 7.

Patent Owner contends that the disclosures of Hon relied upon by Petitioner are directed to different, incompatible technology and thus a POSA would not conclude that the materials disclosed in Hon could be used to print metallic electrodes on an ET tube surface. Prelim. Resp. 53–54. For example, Patent Owner argues that Hon does not disclose printing metallic lines, electrodes, or traces using a MicroPen and that the use of the metallic material used in Hon is limited to other methods of direct writing. Prelim. Resp. 53–54.

Patent Owner’s argument is unpersuasive because, on this record, it is mere attorney argument unsupported by evidence. For example, Patent Owner provides no evidence that the use of the metallic material disclosed in Hon cannot be used in the MircoPen direct writing process. *See* Prelim. Resp. 53–54. Mere attorney arguments and conclusory statements that are unsupported by factual evidence have little probative value. *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997); *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984). Further, Hon discloses that “[t]he provision of high quality and consistent materials is a pre-requisite for all [direct writing] processes” and discloses that these materials can be an ink that can be used as a conductor for low temperature deposition. Ex. 1005, 613. Contrary to Patent Owner’s argument, this suggests that materials or inks used for one direct writing process are not incompatible with another direct writing process or limited to the direct writing process for which they are used.

c. Conclusion

The petition shows that there is a reasonable likelihood that Petitioner would prevail with respect to claims 1–7 being unpatentable over Kartush, Topsakal, Cook, and Hon.

4. Ground 2 – Based on Goldstone

a. Overview of Prior Art

i. Goldstone

Goldstone is a U.S. patent, which issued on June 18, 1991, and is titled “Electrode Endotracheal Tube.” Ex. 1003, [45], [54]. Goldstone discloses an endotracheal tube having electrodes for detecting electromyographic signals of the laryngeal muscles. *Id.* at Abstract. Figure 1 of Goldstone is reproduced below.

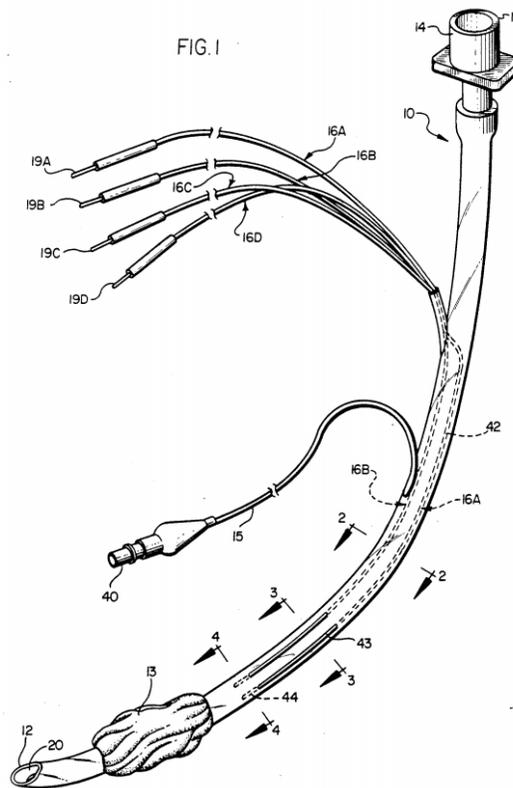


Figure 1 depicts Goldstone’s electrode endotracheal tube 10 having fitting 14 on proximal end 11 and inflatable cuff 13 near distal end 12. *Id.* at 4:64–5:13. Four electrode wires 16A, 16B, 16C, and 16D run between proximal end 11 and distal end 12. *Id.* at 5:14–18. Each electrode has first portion 42 that is insulated against electrical contact, and second portion 43

that is on outer surface 23 of the tube, is uninsulated, and is capable of forming electrical contact. *Id.* at 5:22–36. Electrical connecting plugs 19A, 19B, 19C, and 19D connect respective wires 16A, 16B, 16C, and 16D to an electromyographic processing machine (not shown) and may be “ports, alligator clips or insulated wires with bared ends.” *Id.* at 5:58–63.

Notably, Goldstone discloses that the insulated wires could be “any type of electrically conducting lead suitable for use as an electrode, including metal paint, metallic tape or metal strips.” *Id.* at 5:18–21 (emphasis added).

In use, exposed second wire portion 43 is “positioned on the tube so that the uninsulated portion contacts a set of laryngeal muscles, particularly a vocal cord of that set, when the endotracheal tube is properly positioned.” *Id.* at 3:40–44; 5:65–6:9; Fig. 6. Goldstone explains that “[t]he uninsulated portion must not, however, be so long that it contacts parts of the patient’s anatomy other than the laryngeal muscles.” *Id.* at 3:46–49.

ii. Teves

Teves is a U.S. patent, which issued on November 22, 1994, and is titled “Endotracheal Tube Having Tongue-Contacting Temperature Sensor.” Ex. 1013, [45], [54]. Teves discloses an endotracheal tube having a temperature sensor that overlies the tongue. *Id.* at Abstract. According to Teves, providing a temperature sensor on an endotracheal tube, positioned to contact the tongue is advantageous because it provides more accurate readings than those positioned beyond the larynx. *Id.* at 1:64–2:4.

Figure 2 of Teves is reproduced below.

positioned to contact the tongue. *Id.* at 40–45. Teves describes providing a temperature sensor (i.e., an electrode) on an endotracheal tube

[t]o reduce the number of separate instruments that must be used during a medical procedure, many anesthesiologists would prefer to use an endotracheal tube including a built-in temperature sensor if such were available; thus, insertion of the endotracheal tube . . . would also accomplish insertion of a temperature probe and eliminate the need for a temperature probe in the patient’s ear or other location on the body.

Ex. 1013, 1:23–31. Teves also describes that

a temperature sensor attached to the proximal end of an endotracheal tube at a location where it is in temperature-sensing direct contact with the tongue produces temperature reading that are more accurate than those positioned past the larynx, i.e., on the distal end of the tube.

Id. at 1:64–2:1. Petitioner contends that a POSA would have been led to combine Teves’s temperature sensor with Goldstone’s endotracheal tube to provide a better measurement of body temperatures and to reduce the number of separate instruments used during a medical procedure. Pet. 43–44.

Petitioner further asserts that Goldstone teaches an embodiment where the electrodes and wires are applied to the surface of the tube with metal paint. *See id.* at 45. Goldstone discloses that electrodes 43 and traces 42 are formed from wires 16A–16D. Ex. 1003, 5:14–18. Notably, Goldstone states that “[t]he term ‘wires’ includes any type of electrically conducting lead suitable for use as an electrode, *including metal paint*, metallic tape or metal strips.” *Id.* at 5:18–21 (emphasis added). Petitioner states “[b]ecause Goldstone calls for the application of electrodes on a tube using metal paints . . . a POSA would have looked to suitable techniques to achieve that goal.” Pet. 47.

Petitioner relies upon Cook's description of printed circuits including electrodes, traces, and connection points. Pet. 46–47 (citing Ex. 1004, Fig. 3, 4:25–32). The cited portion of Cook discloses a circuit pattern that includes electro pads 12A–12H connected to terminal pads 34 by circuit wires 32. Ex. 1004, Fig. 3, 4:25–32. Petitioner reasons that “the incorporation of Cook's disclosure of printing electrodes on medical tubes with Goldstone's tube having conductive electrodes merely combines prior art elements to yield predicate results by using a known technique to improve a similar device.” Pet. 47 (quotation omitted). Petitioner further reasons that a POSA would have provided Cook's terminal pads when using a printed circuit pattern to communicate with associated monitoring equipment. Pet. 46–47. Petitioner cites to Cook's disclosed advantages of printed circuit technology, including by (i) permitting the size, shape, and orientation of each electrode to be individually controlled to provide a sensing device which is optimal for each application, and (ii) allowing for less expensive designs. *See id.* (citing Ex. 1004, 6:47–65).

In relying on Hon¹⁰, Petitioner cites to Hon's teaching of “directly applying electrodes (using metal paints/inks) on rounded substrates, without first forming the same on a carrier substrate.” Pet. 27 (citing Ex. 1005, 601; Ex. 1009 ¶¶ 69–70). In further combining Hon's teachings with the previously discussed combination of Goldstone, Teves, and Cook, Petitioner reasons that a POSA would have used “Hon's techniques to apply traces and electrodes directly to the surface” to achieve (1) cost reduction; (2) process

¹⁰ The Petition incorporates arguments concerning Hon made in the Petition in conjunction with the combination Kartush, Topsakal, Cook, and Hon into arguments made in the Petition in conjunction with the combination of Goldstone, Teves, Cook, and Hon on Page 47.

chain simplification; (3) greater design freedom; and (4) lower environmental footprint. *Id.* at 27–28 (citing Ex. 1005, 617).

Notwithstanding Patent Owner’s arguments, discussed below, we are persuaded at this stage of the proceeding by Petitioner’s asserted reasons for combining Goldstone, Teves, Cook, and Hon, as well as Petitioner’s showing that the proposed combination satisfies the limitations of claims 1 and 4.

In contesting the proposed ground, Patent Owner presents numerous arguments. Prelim. Resp. 37–44, 49–51. We have considered all of Patent Owner’s arguments but find them unpersuasive. We address each argument in turn, below.

First, Patent Owner argues that none of Goldstone, Teves, Cook, or Hon individually discloses electrode plates, traces, and pads applied directly to the surface of the tube, without the inclusion of a carrier film between the tube surface and the electrode plates, traces, and pads. Prelim. Resp. 37–40. For example, Patent Owner argues that Goldstone does not disclose electrode plates, traces, and pads applied directly to the surface of the tube as required by claims 1 and 4. Prelim. Resp. 37–39. Patent Owner acknowledges that Goldstone discloses that metal paint could be used in place of Goldstone’s wires 16A–16D. *Id.* at 40. According to Patent Owner, however, Goldstone’s metal paint disclosure is not enabled because Goldstone specifically requires embedding electrode wires in a tube rather than applying them directly to the tube’s surface as metal-paint traces and covering the traces with insulation. Prelim. Resp. 40–41. Patent Owner’s argument is unpersuasive because it does not address the proposed ground of unpatentability. In particular, Petitioner’s proposed ground does not rely on Goldstone and Teves alone for teaching or disclosing these claimed features.

For example, Petitioner relies upon Hon to teach directly printing on the surface of the tube without a carrier film between the tube surface and electrodes. Pet. 47.

Second, Patent Owner argues that the Cook and Hon cannot be combined with Goldstone and Teves for the same reasons discussed with respect to the combination of Kartush, Topsakal, Cook, and Hon. Prelim. Resp. 43. For the same reason discussed above with respect to the combination based on Kartush, Patent Owner's arguments are unpersuasive.

Third, Patent Owner argues that Teves discloses that its temperature sensor is a thermocouple and implies that a POSA would not combine Teves and Hon because, according to Patent Owner, the use of a thermocouple complicates the use of direct writing as disclosed in Hon. *Id.* at 44. Patent Owner's argument is unpersuasive because Teves's temperature sensor is not limited to thermocouples. Teves discloses that its temperature sensor could be any suitable temperature sensing device. Ex. 1013, 3:35–38.

Fourth, Patent Owner contends that Goldstone and Teves teach away from providing a second electrode. Prelim. Resp. 49–51. Patent Owner contends that Goldstone teaches away from providing an electrode that contacts the tongue because it does not allow its electrode wire to contact anything other than the vocal cords. *Id.* at 49–50 (citing Ex. 1003, 3:44–58). Patent Owner further contends that Teves teaches away from an electrode that contacts the vocal cords because it discloses that a temperature sensor on the tongue is more accurate than those positioned past the larynx. Prelim. Resp. 50–51 (citing Ex. 1013, 1:64–2:4).

Patent Owner's argument is unpersuasive. The passage of Goldstone cited by Patent Owner does not address or teach away from providing a second sensor on a different channel of a monitoring device to measure a

different structure, as pointed out by Petitioner. *See* Pet. 44–45. Likewise, the passage of Teves cited by Patent Owner does not address or teach away from providing a second sensor to provide a different measurement other than temperature. *See* Ex. 1013, 1:64–2:4. Contrary to Patent Owner’s argument, Teves expressly suggests providing other sensors on endotracheal tubes to reduce the number of separate instruments that must be used during a medical procedure. *See* Ex. 1013, 1:23–27.

ii. Dependent Claims 2, 5, and 6

Petitioner contends that claims 2, 5, and 6 are unpatentable over Goldstone, Teves, Cook, and Hon. Claims 2, 5, and 6 depend directly or indirectly from claims 1 or 4. Upon review of Petitioner’s evidence and analysis, we determine that the Petition shows that there is a reasonable likelihood that claims 2, 5, and 6 are unpatentable over Goldstone, Teves, Cook, and Hon. Patent Owner makes no arguments directed to the additional limitations recited by these claims.

iii. Dependent Claims 3 and 7

As for the ground based on the combination of Goldstone, Teves, Cook, and Hon, Petitioner also relies upon Cook and Hon to teach the additional limitations recited by claims 3 and 7. *See* Pet. 54, 59. Patent Owner argues that Cook and Hon do not disclose these limitations for the same reasons argued with respect to the combination based on Kartush. *See* Prelim. Resp. 53–54. Accordingly, for the same reason discussed above with respect to the combination based on Kartush, Patent Owner’s arguments are unpersuasive.

c. Conclusion

The Petition shows that there is a reasonable likelihood that Petitioner would prevail with respect to claims 1–7 being unpatentable over Goldstone, Teves, Cook, and Hon.

D. Alternative Grounds

Petitioner “invites consideration of alternative grounds in which Kartush replaces Goldstone and vice versa.” Pet. 59. Petitioner states “[t]o the extent that the Board prefers the use of one of those primary references over the other in either proposed ground, or some other variation, the content of this Petition and supporting declarations provide sufficient basis for the interchange of references.” *Id.* at 59–60.

It is Petitioner’s burden to establish the reasonable likelihood of unpatentability. *See* 37 C.F.R. § 42.108(c). We decline Petitioner’s invitation to consider alternative grounds not set forth specifically in the Petition.

III. CONCLUSION

On this record, we determine that Petitioner demonstrates a reasonable likelihood of prevailing on the grounds of claims 1–7 being unpatentable under 35 U.S.C. § 103 over Kartush, Topsakal, Cook, and Hon and claims 1–7 being unpatentable under 35 U.S.C. § 103 over Goldstone, Teves, Cook, and Hon. The Board has not yet made a final determination as to the patentability the challenged claims.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that pursuant to 35 U.S.C. § 314(a), *inter partes* review of the '844 patent is hereby 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 hereby given of the institution of a trial; and

FURTHER ORDERED that the trial is limited to the grounds of claims 1–7 being unpatentable under 35 U.S.C. § 103 over Kartush, Topsakal, Cook, and Hon and claims 1–7 being unpatentable under 35 U.S.C. § 103 over Goldstone, Teves, Cook, and Hon.

PETITIONER:

Justin J. Oliver

Jason Dorsky

joliver@fchs.com

Medtronic894IPR@fchs.com

PATENT OWNER:

Neil A. Rubin

C. Jay Chung

Kent N. Shum

nrubin@raklaw.com

jchung@raklaw.com

kshum@raklaw.com