

Petitioner's Opposition to Patent Owner's Revised Motion to Amend
IPR2023-01150 (U.S. Patent No. 9,843,853)

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

K/S HIMPP
Petitioner

v.

BRAGI GmbH
Patent Owner

Case IPR2023-01150
U.S. Patent No. 9,843,853

**PETITIONER'S OPPOSITION TO
PATENT OWNER'S REVISED MOTION TO AMEND**

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I. INTRODUCTION

HIMPP ("Petitioner") opposes Patent Owner ("PO") Bragi's Revised Motion to Amend ("RMTA"). PO's sole argument as to why the proposed substitute claims are patentable is that a new limitation—"wireless earpieces [] configured to read user biometrics"—is allegedly missing from the prior art. But this amendment fails to render these claims patentable: 1) the claims continue to be obvious over the prior art, as wireless earpieces that read user biometrics were known, and 2) the new limitation is so broad as to lack enablement. In addition, the substitute claims include amendments that do not respond to patentability grounds, are indefinite, and improperly broaden claim scope. Accordingly, PO's RMTA should be denied.

II. SUBSTITUTE CLAIMS ARE OBVIOUS OVER PRIOR ART

The prior art renders obvious PO's proposed substitute claims 22–42.

PO only argues that none of the prior art references in the Petition Grounds—Brown, Hain, Steinbrecher, and Sorensen—discloses wireless earpiece(s) "configured to read user biometrics."¹ *See* RMTA at 7–10. But U.S. Pat. App. Pub. No. 2016/0094899 ("Aumer") (Exhibit 1022) disclosed this feature before the '853

¹ PO proposed other amendments but does not dispute that they are taught by the prior art as applied in Grounds 1–7 of the Petition. *See* Section IV.

patent's priority date. As Prof. Kiaei explains and as discussed below, a POSITA would have found it obvious and would have been motivated to combine Aumer's teachings with the references in each of the Grounds and would have had a reasonable expectation of success in doing so, thereby rendering PO's substitute claims 22–42 obvious. *See* Ex-1021-Kaiei-Decl., ¶¶7–48. Indeed, PO's expert testified that a POSITA at the time of the patent would have known how to include a sensor in a wireless earpiece to read user biometrics such as temperature and heart beat. *See* Ex-1027-Young-2ndTr., 18:18–22 (“Q And a person of ordinary skill in the art would know how to include a sensor in a wireless earpiece to measure the temperature of a user, correct? A That's correct.”), 22:12–19 (“[A] person of ordinary skill in the art would know how to -- how to do that, and they will know how to build a sensor or use an existing sensor to monitor in an individual's heartbeat and put that -- and put that into the wireless earpiece as a part of the overall device.”).

A. Aumer

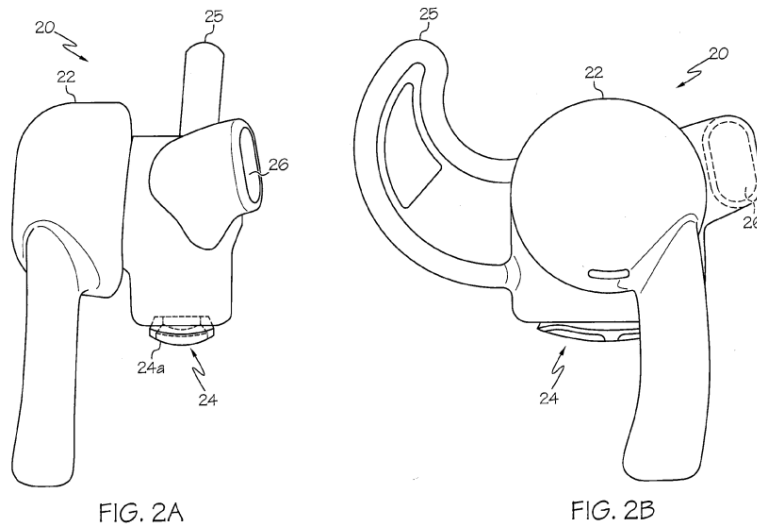
Aumer is prior art to the '853 patent under 35 U.S.C. § 102(a)(2), at a minimum, as of its Aug. 18, 2015 filing date, which predates the '853 patent's earliest possible priority date of Aug. 29, 2015. Aumer claims priority to U.S. Prov. App. Nos. 62/056,510 (Aumer-Prov1; Exhibit 1023) and 62/110,655 (Aumer-Prov2; Exhibit 1024), and is also prior art under §§ 102(a)(2) and 102(d)(2) as of Aumer-Prov1's Sept. 17, 2014 filing date or Aumer-Prov2's Feb. 2, 2015 filing date. Under

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the AIA, for prior-art determinations, “the provisional or other application(s) to which the reference patent document claims a right of priority must describe the subject matter relied upon in the reference patent document as prior art.” *Penumbra, Inc. v. RapidPulse, Inc.*, IPR2021-01466, Paper 34 at 32 (PTAB Mar. 10, 2023) (precedential). Aumer-Prov1 and Aumer-Prov2 both describe the subject matter that Petitioner relies upon in Aumer as prior art herein, as the table below shows.

Aumer	Aumer-Prov1	Aumer-Prov2
¶64	9:21–10:1	11:18–32
¶66	10:19–33	12:16–28
¶69–¶72	11:7–12:7	13:8–14:6
¶74	12:21–30	14:20–29
FIGS. 1, 2A, 2B	FIGS. 1, 2	FIGS. 1, 2A, 2B

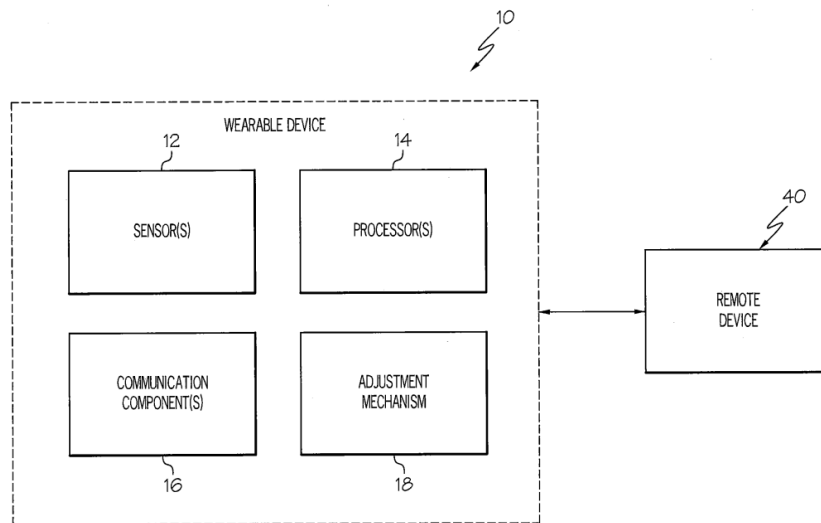
Aumer discloses in Figs. 2A–2B a monitoring earpiece 20, which includes a sensor module 24. Ex-1022-Aumer, ¶¶66. Ex-1021-Kaiei-Decl., ¶¶9.



Ex-1022-Aumer, FIGS. 2A–2B

“The sensor module 24 has a region 24a configured to contact a selected area of the ear.” *Id.*, ¶66. The sensor module 24 is “configured to detect and/or measure physiological information from the subject.” *Id.*, ¶69; *cf.* Ex-1027-Young-2ndTr., 15:2–14 (PO’s expert testifying that a POSITA would understand the term “user biometrics” in the context of the ’853 patent to mean “biological, *physiological* or chemical characteristics with respect to the individual . . . who uses or wears the wireless earpieces.”) (emphasis added). Aumer explains that “[t]he ear is an ideal location for wearable health and environmental monitors” and allows for “measuring core body temperature,” “monitoring blood gas levels,” “measuring cardiopulmonary functioning,” etc. Ex-1022-Aumer, ¶64; *cf.* Ex-1001-USP853, 5:16–17 (“biometric readings, such as heart beat or temperature”), 9:62–64 (“biometric information (e.g., pulse rate, oxygenation, distance travelled, calories burned, etc.)”); Ex-1027-Young-2ndTr., 17:7–11. Ex-1021-Kaiei-Decl., ¶10.

Aumer makes clear that the earpiece 20 may function as the “wearable biometric monitoring device 10” of Figure 1. Ex-1022-Aumer, ¶¶66, 71.



Ex-1022-Aumer, FIG. 1

Aumer discloses that device 10 includes one or more sensors 12 (*e.g.*, sensor module 24) and “at least one processor 14 that is coupled to the sensor(s) 12 and that is configured to receive and analyze signals produced by the sensor(s).” *Id.*, ¶71. According to Aumer, sensors 12 may include various types of sensors including optical sensors, thermal sensors, electrical sensors, etc. *Id.*, ¶70. Device 10 also includes communication component 16 that “allows the processor(s) 14 to communicate with a wearer of the biometric monitoring device 10 via a remote device 40, such as a smart phone, computer, etc.” *Id.*, ¶72. “The remote device 40 may be in wired or wireless communication with the wearable device 10.” *Id.*, ¶74. Ex-1021-Kaiei-Decl., ¶¶11–12.

B. Ground 1: Brown and Aumer renders claims 31, 35 obvious

Brown in combination with Aumer renders obvious “the wireless earpiece is

configured to read user biometrics,” as recited by proposed substitute claim 31. A POSITA would have found it obvious to include in a hearing aid, as taught by Brown, one or more sensors, a processor, and a communication component to read (*e.g.*, detect and/or measure) user biometrics (*e.g.*, body temperature, blood gas levels, and/or cardiopulmonary functioning), as taught by Aumer. *See* Section II.A. Ex-1021-Kaiei-Decl., ¶14.

(a) **Motivation to combine Brown and Aumer**

A POSITA would have been motivated to combine Brown's teachings, *e.g.*, Brown's hearing aid 10, and Aumer's teachings to have a wireless earpiece that includes one or more sensors, a processor, and a communication component to read user biometrics. Ex-1021-Kaiei-Decl., ¶15.

First, Brown and Aumer are from the same field of endeavor. *See, e.g., Medtronic, Inc. v. Cardiac Pacemakers, Inc.*, 721 F.2d 1563, 1574–75 (Fed. Cir. 1983); M.P.E.P. §2141. Both references are directed to a similar wearable electronic device. Brown discloses a hearing aid 10. Ex-1007-Brown, 1:88–89, Figure 1. Similarly, as discussed above, Aumer discloses an earpiece 20. Ex-1022-Aumer, ¶66, Figures 2A–2B. A POSITA would have therefore considered the teachings of Brown and Aumer and would have readily been motivated to combine their teachings. Ex-1021-Kaiei-Decl., ¶16.

Second, implementing a hearing aid, as taught by Brown, to include one or

more sensors, a processor, and a communication component to read user biometrics, as taught by Aumer, would have yielded expected, predictable results. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007); M.P.E.P. §2143(I)(A). Brown discloses hearing aid 10 with an earmould 13 and a cavity 16 that houses multiple electronic components. Ex-1007-Brown, 1:94–2:21, Figure 1. Aumer discloses earpiece 20 that includes one or more sensors (*e.g.*, sensor module 24), a processor, and a communication component to read user biometrics. Ex-1022-Aumer, ¶¶64, 66, 69–72, Figures 1, 2A–2B. A POSITA would have combined the elements taught by Brown and Aumer—namely, hearing aid 10 as taught by Brown, and earpiece 20 with one or more sensors, a processor, and a communication component as taught by Aumer—using known and routine electronic device design and manufacturing techniques to modify Brown's hearing aid 10 to include one or more sensors (*e.g.*, in or around earmould 13) and a processor and a communication component (*e.g.*, in cavity 16) to read user biometrics. This modification would have been readily predictable and recognized by a POSITA and would have been well within the knowledge and skillset of a POSITA. Ex-1021-Kaiei-Decl., ¶17. PO's expert agrees that a POSITA would know how to include a sensor in a wireless earpiece to read user biometrics such as temperature and heart beat. Ex-1027-Young-2ndTr., 18:18–22, 22:12–19.

Third, around the time of Aumer's filings, there were increased consumer

interests in personal health and advances in miniaturizing sensors. *See, e.g.*, Ex-1025, ¶2 (“Recent consumer interest in personal health has led to a variety of personal health monitoring devices being offered on the market.”), ¶3 (“Recent advances in sensor, electronics, and power source miniaturization have allowed the size of personal health monitoring devices, also referred to herein as ‘biometric tracking’ or ‘biometric monitoring’ devices, to be offered in extremely small sizes that were previously impractical.”); Ex-1026, ¶3 (“As medicine advances, and sensors are miniaturized, sensors targeted to consumers are increasingly available.”). Importantly, Aumer explicitly disclosed that “[t]he ear is an ideal location for wearable health and environmental monitors” and allows for measurement and monitoring of a plurality of user biometrics such as “core body temperature,” “blood gas levels,” “cardiopulmonary functioning,” etc. Ex-1022-Aumer, ¶64. In view of the consumer interests, advances in sensors, and Aumer’s teachings, a POSITA would have been motivated to implement Brown’s hearing aid to include one or more sensors, a processor, and a communication component, as taught by Aumer, to read and provide user biometrics to consumers, allowing them to monitor their personal health. Ex-1021-Kaiei-Decl., ¶18.

Fourth, it was well known prior to the ’853 patent’s priority date that a sensor in a wireless earpiece could allow the earpiece to automatically switch on or off depending on user biometrics. For example, as early as 2005, like Aumer, U.S.

Patent No. 7,522,739 disclosed “an in-the-ear hearing aid I” that automatically switches on and off when the temperature sensed by “a temperature sensor TS” in the hearing aid is above or below a threshold, respectively. Ex-1028-Rass, 2:63–3:2, Figure 1; *cf.* Ex-1001-USP853, 5:16–19 (“biometric readings, such as heart beat or temperature may be utilized by the wireless earpieces 142, 144 and smart case 102 to alter the power mode”). A POSITA would have been motivated to include, in Brown's hearing aid, a sensor that reads user biometrics, as taught by Aumer, to automatically switch on and off the hearing aid. Ex-1021-Kaiei-Decl., ¶19.

Fifth, a POSITA would have had a reasonable expectation of success in applying Aumer's teachings to Brown's hearing aid. As explained above, Aumer's implementation of an earpiece that includes one or more sensors, a processor, and a communication component to read user biometrics is directly applicable to Brown's hearing aid and well within the knowledge and skillset of a POSITA. Ex-1021-Kaiei-Decl., ¶20; Ex-1027-Young-2ndTr., 18:18–22, 22:12–19.

For the above reasons, Brown in view of Aumer renders obvious substitute claims 31 and 35. Ex-1021-Kaiei-Decl., ¶21.

C. Ground 2: Hain and Aumer renders claims 22–24, 26 obvious

Hain in combination with Aumer renders obvious “the wireless earpieces are configured to read user biometrics,” as recited by proposed substitute claim 22. A POSITA would have found it obvious to include, in each of Hain's hearing aids, one

or more sensors, a processor, and a communication component to read user biometrics, as taught by Aumer. *See* Section II.A. Ex-1021-Kaiei-Decl., ¶23.

(a) **Motivation to combine Hain and Aumer**

A POSITA would have been motivated to combine Hain's teachings, *e.g.*, Hain's hearing aids 1 and 11, and Aumer's teachings to have wireless earpieces that each includes one or more sensors, a processor, and a communication component to read user biometrics. Ex-1021-Kaiei-Decl., ¶24.

First, Hain and Aumer are from the same field of endeavor. *See, e.g., Medtronic*, 721 F.2d 1574–75; M.P.E.P. §2141. Both references are directed to a similar wearable electronic device. Hain discloses hearing aids 1 and 11. Ex-1004-Hain, ¶18, Figure 1. Similarly, Aumer discloses an earpiece 20. Ex-1022-Aumer, ¶66, Figures 2A–2B. A POSITA would have therefore considered the teachings of Hain and Aumer and would have readily been motivated to combine their teachings. Ex-1021-Kaiei-Decl., ¶25.

Second, implementing hearing aids, as taught by Hain, to each include one or more sensors, a processor, and a communication component to read user biometrics, as taught by Aumer, would have yielded expected, predictable results. *See KSR*, 550 U.S. 416; M.P.E.P. §2143(I)(A). Each of Hain's hearing aids houses multiple electronic components and “can be worn in the ear.” Ex-1004-Hain, ¶¶14, 18, Figure 1. Aumer discloses earpiece 20 that includes one or more sensors (*e.g.*, sensor

module 24), a processor, and a communication component to read user biometrics. Ex-1022-Aumer, ¶¶64, 66, 69–72, Figures 1, 2A–2B. A POSITA would have combined the elements taught by Hain and Aumer using known and routine electronic device design and manufacturing techniques to modify each of Hain's hearing aids to include one or more sensors, a processor, and a communication component as taught by Aumer to read user biometrics. This modification would have been readily predictable and recognized by a POSITA and would have been well within the knowledge and skillset of a POSITA. Ex-1021-Kaiei-Decl., ¶26. PO's expert agrees that a POSITA would know how to include a sensor in a wireless earpiece to read user biometrics such as temperature and heart beat. Ex-1027-Young-2ndTr., 18:18–22, 22:12–19.

Third, around the time of Aumer's filings, there were increased consumer interests in personal health and advances in miniaturizing sensors. *See, e.g.*, Ex-1025, ¶¶2–3; Ex-1026, ¶3. Aumer explicitly disclosed that “[t]he ear is an ideal location for wearable health and environmental monitors” and allows for measurement and monitoring of a plurality of user biometrics. Ex-1022-Aumer, ¶64. Accordingly, a POSITA would have been motivated to implement each of Hain's hearing aids to include one or more sensors, a processor, and a communication component, as taught by Aumer, to read and provide user biometrics to consumers, allowing them to monitor their personal health. Ex-1021-Kaiei-Decl., ¶27.

Fourth, it was well known that a sensor in a wireless earpiece could automatically switch the earpiece on or off depending on user biometrics such as temperature. *See* Ex-1028-Rass, 2:63–3:2, Figure 1; *cf.* Ex-1001-USP853, 5:16–19. A POSITA would have been motivated to include, in each of Hain's hearing aids, a sensor that reads user biometrics, as taught by Aumer, to automatically switch on and off the hearing aids. Ex-1021-Kaiei-Decl., ¶28.

Fifth, a POSITA would have had a reasonable expectation of success in applying Aumer's teachings to Hain's hearing aids. As explained above, Aumer's implementation of an earpiece that includes one or more sensors, a processor, and a communication component to read user biometrics is directly applicable to Hain's hearing aids and well within the knowledge and skillset of a POSITA. Ex-1021-Kaiei-Decl., ¶29; Ex-1027-Young-2ndTr., 18:18–22, 22:12–19.

For the above reasons, Hain in view of Aumer renders obvious substitute claims 22–24 and 26. Ex-1021-Kaiei-Decl., ¶30.

D. Ground 3: Steinbrecher and Aumer renders claims 31, 42 obvious

Steinbrecher in combination with Aumer renders obvious “the wireless earpiece is configured to read user biometrics,” as recited by proposed substitute claims 31 and 42. A POSITA would have found it obvious to include in a hearing aid, as taught by Steinbrecher, one or more sensors, a processor, and a communication component to read user biometrics, as taught by Aumer. *See* Section

II.A. Ex-1021-Kaiei-Decl., ¶32.

(a) **Motivation to combine Steinbrecher and Aumer**

A POSITA would have been motivated to combine Steinbrecher's teachings, *e.g.*, Steinbrecher's hearing aid H, and Aumer's teachings to have a wireless earpiece that includes one or more sensors, a processor, and a communication component to read user biometrics. Ex-1021-Kaiei-Decl., ¶33.

First, Steinbrecher and Aumer are from the same field of endeavor. *See, e.g., Medtronic*, 721 F.2d 1574–75; M.P.E.P. §2141. Both references are directed to a similar wearable electronic device. Steinbrecher discloses a hearing aid H. Ex-1006-Steinbrecher, ¶25, Figure 2. Similarly, Aumer discloses an earpiece 20. Ex-1022-Aumer, ¶66, Figures 2A–2B. A POSITA would have therefore considered the teachings of Steinbrecher and Aumer and would have readily been motivated to combine their teachings. Ex-1021-Kaiei-Decl., ¶34.

Second, implementing a hearing aid, as taught by Steinbrecher, to include one or more sensors, a processor, and a communication component to read user biometrics, as taught by Aumer, would have yielded expected, predictable results. *See KSR*, 550 U.S. 416; M.P.E.P. §2143(I)(A). Steinbrecher discloses hearing aid H that houses multiple electronic components. Ex-1006-Steinbrecher, ¶25, Figure 2. Steinbrecher discloses that hearing aid H can be “a behind-the-ear device” or “an in-the-ear device.” *Id.*, ¶24. Aumer discloses earpiece 20 that includes one or more

sensors (*e.g.*, sensor module 24), a processor, and a communication component to read user biometrics. Ex-1022-Aumer, ¶¶64, 66, 69–72, Figures 1, 2A–2B. A POSITA would have combined the elements taught by Steinbrecher and Aumer using known and routine electronic device design and manufacturing techniques to modify Steinbrecher's hearing aid H to include one or more sensors, a processor, and a communication component as taught by Aumer to read user biometrics. This modification would have been readily predictable and recognized by a POSITA and would have been well within the knowledge and skillset of a POSITA. Ex-1021-Kaiei-Decl., ¶35. PO's expert agrees that a POSITA would know how to include a sensor in a wireless earpiece to read user biometrics such as temperature and heart beat. Ex-1027-Young-2ndTr., 18:18–22, 22:12–19.

Third, around the time of Aumer's filings, there were increased consumer interests in personal health and advances in miniaturizing sensors. *See, e.g.*, Ex-1025, ¶¶2–3; Ex-1026, ¶3. Importantly, Aumer explicitly disclosed that “[t]he ear is an ideal location for wearable health and environmental monitors” and allows for measurement and monitoring of a plurality of user biometrics such as “core body temperature,” “blood gas levels,” “cardiopulmonary functioning,” etc. Ex-1022-Aumer, ¶64. Accordingly, in view of the consumer interests, advances in sensors, and Aumer's teachings, a POSITA would have been motivated to implement Steinbrecher's hearing aid to include one or more sensors, a processor, and a

communication component, as taught by Aumer, to read and provide user biometrics to consumers, allowing them to monitor their personal health. Ex-1021-Kaiei-Decl., ¶36.

Fourth, it was well known that a sensor in a wireless earpiece could automatically switch the wireless earpiece on or off depending on user biometrics such as temperature. *See* Ex-1028-Rass, 2:63–3:2, Figure 1; *cf.* Ex-1001-USP853, 5:16–19. A POSITA would have been motivated to include, in Steinbrecher's hearing aid, a sensor that senses user biometrics, as taught by Aumer, to automatically switch on and off the hearing aid. Ex-1021-Kaiei-Decl., ¶37.

Fifth, a POSITA would have had a reasonable expectation of success in applying Aumer's teachings to Steinbrecher's hearing aid. As explained above, Aumer's implementation of an earpiece that includes one or more sensors, a processor, and a communication component to read user biometrics is directly applicable to Steinbrecher's hearing aid and well within the knowledge and skillset of a POSITA. Ex-1021-Kaiei-Decl., ¶38; Ex-1027-Young-2ndTr., 18:18–22, 22:12–19.

For the above reasons, Steinbrecher in view of Aumer renders obvious substitute claims 31 and 42. Ex-1021-Kaiei-Decl., ¶39.

E. Grounds 4-7: Shaffer in view of Hain, Sorensen, and/or Aumer renders claims 22–30 obvious and Shaffer in view of Steinbrecher, Sorensen, and/or Aumer renders claims 31–42 obvious

Shaffer in combination with Hain, Sorensen, and/or Aumer renders obvious “the wireless earpieces are configured to read user biometrics,” as recited by proposed substitute claim 22. Shaffer in combination with Steinbrecher, Sorensen, and/or Aumer renders obvious “the wireless earpiece is configured to read user biometrics,” as recited by proposed substitute claims 31 and 42. A POSITA would have found it obvious to include, in each of Shaffer's earbuds, one or more sensors, a processor, and a communication component to read user biometrics, as taught by Aumer, before the '853 patent's priority date. *See* Section II.A. Ex-1021-Kaiei-Decl., ¶41.

(a) **Motivation to combine Shaffer and Aumer²**

A POSITA would have been motivated to combine Shaffer's teachings, *e.g.*, Shaffer's earbuds 1010 and 1012, and Aumer's teachings to have wireless earpieces that each includes one or more sensors, a processor, and a communication component to read user biometrics. Ex-1021-Kaiei-Decl., ¶42.

First, Shaffer and Aumer are from the same field of endeavor. *See, e.g.*,

² Petition arguments that a POSITA would have been motivated to combine Shaffer with Hain and/or Sorensen and Shaffer with Steinbrecher and/or Sorensen with a reasonable expectation of success apply equally here. Ex-1021-Kaiei-Decl., n. 1.

Medtronic, 721 F.2d 1574–75; M.P.E.P. §2141. Both references are directed to a similar wearable electronic device. Shaffer discloses earbuds 1010 and 1012. Ex-1003-Shaffer, ¶62, Figure 10. Similarly, Aumer discloses an earpiece 20. Ex-1022-Aumer, ¶66, Figures 2A–2B. A POSITA would have therefore considered the teachings of Shaffer and Aumer and would have readily been motivated to combine their teachings. Ex-1021-Kaiei-Decl., ¶43.

Second, implementing earbuds, as taught by Shaffer, to each include one or more sensors, a processor, and a communication component to read user biometrics, as taught by Aumer, would have yielded expected, predictable results. *See KSR*, 550 U.S. 416; M.P.E.P. §2143(I)(A). Each of Shaffer's earbuds houses multiple electronic components. Ex-1003-Shaffer, ¶¶61–62, Figure 10; *see also id.*, ¶32 (“The term “earbud” refers to a device designed to fit within the ear of a human...”). Aumer discloses earpiece 20 that includes one or more sensors (*e.g.*, sensor module 24), a processor, and a communication component to read user biometrics. Ex-1022-Aumer, ¶¶64, 66, 69–72, Figures 1, 2A–2B. A POSITA would have combined the elements taught by Shaffer and Aumer using known and routine electronic device design and manufacturing techniques to modify each of Shaffer's earbuds to include one or more sensors, a processor, and a communication component as taught by Aumer to read user biometrics. This modification would have been readily predictable and recognized by a POSITA and would have been well within the

knowledge and skillset of a POSITA. Ex-1021-Kaiei-Decl., ¶44. PO's expert agrees that a POSITA would know how to include a sensor in a wireless earpiece to read user biometrics such as temperature and heart beat. Ex-1027-Young-2ndTr., 18:18–22, 22:12–19.

Third, around the time of Aumer's filings, there were increased consumer interests in personal health and advances in miniaturizing sensors. *See, e.g.*, Ex-1025, ¶¶2–3; Ex-1026, ¶3. Aumer explicitly disclosed that “[t]he ear is an ideal location for wearable health and environmental monitors” and allows for measurement and monitoring of a plurality of user biometrics. Ex-1022-Aumer, ¶64. Accordingly, a POSITA would have been motivated to implement each of Shaffer's earbuds to include one or more sensors, a processor, and a communication component, as taught by Aumer, to read and provide user biometrics to consumers, allowing them to monitor their personal health. Ex-1021-Kaiei-Decl., ¶45.

Fourth, it was well known that a sensor in a wireless earpiece could automatically switch the wireless earpiece on or off depending on user biometrics such as temperature. *See* Ex-1028-Rass, 2:63–3:2, Figure 1; *cf.* Ex-1001-USP853, 5:16–19. A POSITA would have been motivated to include, in each of Shaffer's earbuds, a sensor that senses user biometrics, as taught by Aumer, to automatically switch on and off the earbuds. Ex-1021-Kaiei-Decl., ¶46.

Fifth, a POSITA would have had a reasonable expectation of success in

applying Aumer's teachings to Shaffer's earbuds. As explained above, Aumer's implementation of an earpiece that includes one or more sensors, a processor, and a communication component to read user biometrics is directly applicable to Shaffer's earbuds and well within the knowledge and skillset of a POSITA. Ex-1021-Kaiei-Decl., ¶47; Ex-1027-Young-2ndTr., 18:18–22, 22:12–19.

For the above reasons, Shaffer in view of Shaffer, Sorensen, and/or Aumer renders obvious substitute claims 22–30, and Shaffer in view of Steinbrecher, Sorensen, and/or Aumer renders obvious substitute claims 31–42. Ex-1021-Kaiei-Decl., ¶48.

III. SUBSTITUTE CLAIMS ARE NOT ENABLED

The '853 patent specification fails to enable a POSITA to make and use “wireless earpieces [] configured to read user biometrics,” recited in all substitute claims, under 35 U.S.C. § 112(a). “[T]he specification must enable the full scope of the invention as defined by its claims. The more one claims, the more one must enable.” *Amgen Inc. v. Sanofi*, 598 U.S. 594, 610 (2023). In particular, “[i]f a patent claims an entire class of processes, machines, manufactures, or compositions of matter, the patent's specification must enable a person skilled in the art to make and use the entire class.” *Id.* Substitute claims 22–42 simply require wireless earpieces to be “configured to read user biometrics,” with no further limitations restricting how the reading of user biometrics is accomplished, and thus covers the entire class

of all user biometrics. *See* RMTA at Appendix A. Because this limitation is claimed in purely functional terms, the specification must enable its full scope. In other words, for any “biological, physiological or chemical characteristics” of the human body (Ex-1027-Young-2ndTr., 15:2–14), it must enable a POSITA to make and use wireless earpieces configured to read that characteristic. *See* Ex-1021-Kaiei-Decl., ¶¶49–51.

The '853 patent specification fails to enable a POSITA to make and use wireless earpieces configured to read the entire class of user biometrics. The specification discloses a select few human characteristics—heart beat, temperature, pulse rate, oxygenation, distance travelled, and calories burned—as examples of biometric readings or information. Ex-1001-USP853, 5:16–17 (“biometric readings, such as heart beat or temperature”), 9:62–64 (“biometric information (e.g., pulse rate, oxygenation, distance travelled, calories burned, etc.)”); *see also* Ex-2005-Young-2ndDecl. at 16–17 (PO's expert's table showing written description support for “wherein the wireless earpiece(s) . . . is configured to read user biometrics”). At best, the specification enables using “heart rate monitor, pulse oximeter, accelerometers, gyroscopes” to read user biometrics like heart beat (or pulse rate), oxygenation, distance travelled, and calories burned. Ex-1001-USP853, 9:65–67. But the specification fails to enable how to make wireless earpieces configured to read the entire class of user biometrics. For example, it fails to enable wireless

earpieces configured to read DNA sequencing, retinal scans, vein patterns, or facial features. Ex-1021-Kaiei-Decl., ¶51.

As reflected in the *Wands* factors analysis that follows, making wireless earpieces configured to read user biometrics such as DNA sequencing, retinal scans, vein patterns, and facial features would require undue experimentation. *See In re Wands*, 858 F.2d at 737 (Fed. Cir. 1988); M.P.E.P., § 2164.01(a); *see also* Ex-1021-Kaiei-Decl., ¶55.

(1) Breadth of the claims: The claim limitation “wireless earpieces [] configured to read user biometrics” is purely functional. There are no structural requirements recited for how reading of user biometrics is accomplished. The term “user biometrics” is incredibly broad, as any “biological, physiological or chemical characteristics with respect to the individual” are included. Ex-1027-Young-2ndTr., 15:2–14. *See* Ex-1021-Kaiei-Decl., ¶¶50–51.

(2) Nature of the invention: The claim limitation “wireless earpieces [] configured to read user biometrics” is the only limitation that PO argues is missing from the prior art. PO does not dispute that the remaining claim features are present in the prior art. Therefore, this claim limitation is the alleged point of novelty of the invention. *See* Ex-1021-Kaiei-Decl., ¶7.

(3) State of the prior art: Research and development on DNA sequencing, retinal scans, vein pattern recognition, and facial recognition have been ongoing.

Techniques for measuring such user biometrics have not stopped changing and evolving. Ex-1021-Kaiei-Decl., ¶52.

(4) Level of one of ordinary skill: This factor is at best neutral with respect to enablement because although the level of skill is high, human biology, physiology, and chemistry are unpredictable.

(5) Level of predictability in the art: Reading of user biometrics involves the ability to measure a particular human biological, physiological, or chemical characteristic. *See* Ex-1027-Young-2ndTr., 15:2–14. Although some types of user biometrics are straightforward to measure, *e.g.*, heartbeat or temperature, others can be challenging, *e.g.*, DNA sequencing, retinal scans, vein patterns, or facial features, given they involve biology, chemistry, or physiology—areas that can be highly unpredictable. Ex-1021-Kaiei-Decl., ¶53.

(6) Amount of direction provided by the inventor, (7) existence of working examples; and (8) quantity of experimentation needed to make or use the invention based on the content of the disclosure: The '853 patent specification mentions heart rate monitor, pulse oximeter, accelerometers, and gyroscopes, but does not enable full scope of the claim as it does not explain how to measure other user biometrics like DNA sequencing, retinal scans, vein patterns, or facial features. Ex-1021-Kaiei-Decl., ¶54.

For the foregoing reasons, the '853 patent specification fails to enable a

POSITA to make and use wireless earpieces configured to read user biometrics. Ex-1021-Kaiei-Decl., ¶55. Therefore, substitute claims 22–42 lack enablement.

IV. AMENDMENTS DO NOT RESPOND TO GROUNDS

Substitute claims 22–42 directly or indirectly include the amendment “a portion of the wireless earpiece[/earpieces] fits within the ear canal opening,” and claims 27–29 include the amendment “the smart case comprises[/comprising] a rechargeable battery configured to charge the wireless earpieces.” *See* RMTA at Appendix A. These amendments do not respond to any ground of unpatentability involved in this IPR and thus PO's RMTA should be denied. 37 C.F.R. § 42.121(a)(2)(i) (“A motion to amend may be denied where . . . [t]he amendment does not respond to a ground of unpatentability involved in the trial.”). PO does not rely on these amendments to overcome any of the Petition Grounds. In a footnote, PO notes that the claims 27–29 amendment “undermin[es] Petitioner's previous contentions that limitations relating to the earpiece being ‘in-ear’ are indefinite.” RMTA at 7, n. 3. But the term “in-ear” was introduced for the first time in PO's MTA, was not a claim term or otherwise a point of contention in the Petition, and is not here.

V. SUBSTITUTE CLAIMS ARE INDEFINITE

All the proposed substitute claims are indefinite because they lack antecedent bases for several claim terms recited in the proposed claim amendments, and thus

“fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014).

A. Substitute claims 22–42: “the ear canal opening”

All the substitute claims directly or indirectly recite “the ear canal opening,” which lacks antecedent basis. *See* RMTA at Appendix A. It is unclear which “ear canal opening” is being referenced.

B. Substitute claim 32: “the smart case”

Substitute claim 32 recites “the smart case,” which lacks antecedent basis. *See* RMTA at APPX A-3. It is unclear which “smart case” is being referenced.

C. Substitute claim 42: “the wireless earpiece”

Substitute claim 42 recites “the wireless earpiece,” which lacks antecedent basis. *See* RMTA at APPX A-6. Substitute claim 42 recites “a first wireless earpiece” and “a second wireless earpiece.” *See id.* at APPX A-5–APPX A-6. It is unclear which “wireless earpiece” is being referenced by “the wireless earpiece.”

VI. RMTA IMPROPERLY BROADENS CLAIM SCOPE

PO's proposed amendments to original claim 11, now substitute claim 32, improperly broaden the claim scope. *See Intuitive Surgical, Inc. v. Ethicon LLC*, IPR2018-00933, Paper 31 at 6–8 (PTAB Dec. 3, 2019) (“A motion to amend may not present substitute claims that enlarge the scope of the claims of the challenged patent or introduce new subject matter.”). PO asserts that “the proposed substitute

claims *retain all of their original features* and only add narrowing elements.” RMTA at 4 (emphasis added). However, the limitation “the magnetic field is applied by a smart case” has been deleted in substitute claim 32, without being added elsewhere in claim 32 or in independent claim 31, from which claim 32 depends. Instead, this limitation has been replaced with “the smart case is.” RMTA at APPX A-3.³ Because substitute claim 32 no longer requires that the magnetic field be applied by a smart case, either directly or indirectly, the claim scope of original claim 11 has been improperly broadened.

VII. CONCLUSION

PO's RMTA does not present a patentable claim. In addition to not overcoming the prior art, the proposed amendments lack enablement, do not all respond to a ground, render all claims indefinite, and, in some cases, improperly broaden the claim scope. As such, PO's RMTA should be denied.

Respectfully submitted,

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³ Petitioner notes that PO's listing of amendments fails to show that “and wherein the smart case” in original claim 11 has been deleted and replaced with “and.”

Petitioner's Opposition to Patent Owner's Revised Motion to Amend
IPR2023-01150 (U.S. Patent No. 9,843,853)

Updated Table of Exhibits for IPR2023-01150

Exhibit	Description
1001	U.S. Patent No. 9,843,853 ("853 patent")
1002	Declaration of Sayfe Kiaei, Ph.D.
1003	U.S. Patent Application Publication No. 2015/0245126 ("Shaffer")
1004	Certified English translation of DE Patent Application No. 102007039455 ("Hain")
1005	U.S. Patent No. 8,265,315 ("Sorensen")
1006	Certified English translation of EP Patent Application No. 1727395 ("Steinbrecher")
1007	GB Patent Application No. 1254017 ("Brown")
1008	File History for U.S. Patent No. 9,843,853 ("853 FH")
1009	DE Patent Application No. 102007039455 (original German version of Hain)
1010	Affidavit of James Doing (Certificate of Translation for Hain)
1011	EP Patent Application No. 1727395 (original German version of Steinbrecher)
1012	Affidavit of James Doing (Certificate of Translation for Steinbrecher)
1013	U.S. Patent Application Publication No. 2013/0007484
1014	Colburn, "The Resilience of the Reed Relay," IEEE Spectrum (August 28, 2015) [https://spectrum.ieee.org/the-resilience-of-the-reed-relay]
1015	U.S. Patent No. 2,264,746
1016	Hamlin Application Note AN104: Reed Switch and Reed Sensor Activation (2008) [https://www.sparkfun.com/datasheets/Components/Buttons/AN104.pdf]
1017	Second Declaration of Sayfe Kiaei, Ph.D.
1018	U.S. Patent Application Publication No. 2015/0200554 ("Marks")
1019	Transcript of Deposition of Darrin Young (7/15/2024)

Petitioner's Opposition to Patent Owner's Revised Motion to Amend
IPR2023-01150 (U.S. Patent No. 9,843,853)

Exhibit	Description
1020	Exhibit 4 to Deposition of Darrin Young
1021	Third Declaration of Sayfe Kiaei, Ph.D.
1022	U.S. Patent Application Publication No. 2016/0094899 ("Aumer")
1023	U.S. Provisional Application No. 62/056,510 ("Aumer-Provisional1")
1024	U.S. Provisional Application No. 62/110,655 ("Aumer-Provisional2")
1025	U.S. Patent Application Publication No. 2014/0275852
1026	U.S. Patent Application Publication No. 2013/0072765
1027	Transcript of Second Deposition of Darrin Young (9/27/2024)
1028	U.S. Patent No. 7,522,739

CERTIFICATE OF SERVICE

I hereby certify that on September 30, 2024, I caused a true and correct copy
of the foregoing materials:

- Petitioner's Opposition to Patent Owner's Motion to Amend
- Updated Table of Exhibits
- Exhibits 1021–1028

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