UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

K/S HIMPP
Petitioner

v.

BRAGI GmbH
Patent Owner

Case IPR2023-01205
U.S. Patent No. 10,397,688

PETITIONER'S DEMONSTRATIVE EXHIBITS

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

K/S HIMPP

v.

BRAGI GmbH

IPR2023-01204

U.S. Patent No. 10,117,014

IPR2023-01205

U.S. Patent No. 10,397,688

Petitioner's Demonstrative Exhibits

January 24, 2025

Proposed Agenda

HIMPP

- The '014 and '688 Patents
- Petitions Grounds & Prior Art
  - Brown
  - Hain
  - Steinbrecher
  - Shaffer
  - Sorensen
- Patent Owner's Revised Motions to Amend
- Disputed Issues

The ’014 and ’688 Patents

Alleged Invention

HIMPP

US010397688B2

US 10,397,688 B2

nt: *Aug. 27, 2019

US010117014B2

(12) **United States Patent**
Hirsch et al.

(10) **Patent No.: US 10,117,014 B2**
(45) **Date of Patent: *Oct. 30, 2018**

(54) **POWER CONTROL FOR BATTERY POWERED PERSONAL AREA NETWORK DEVICE SYSTEM AND METHOD**

(71) Applicant: **BRAGI GmbH**, München (DE)

(72) Inventors: **Eric Christian Hirsch**, München (DE); **Peter Vincent Boesen**, München (DE)

(73) Assignee: **BRAGI GmbH**, München (DE)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/837,386**

(22) Filed: **Dec. 11, 2017**

(65) **Prior Publication Data**

US 2018/0109867 A1 Apr. 19, 2018

Related U.S. Application Data

(63) Continuation of application No. 15/245,031, filed on Aug. 23, 2016, now Pat. No. 9,843,853.
(Continued)

(51) **Int. Cl.**
H04R 1/10 (2006.01)
H02J 7/00 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***H04R 1/1041*** (2013.01); ***H02J 7/007*** (2013.01); ***H02J 7/0044*** (2013.01); ***H02J 7/025*** (2013.01); ***H02J 50/10*** (2016.02); ***H04R 1/028*** (2013.01); ***H04R 1/1025*** (2013.01); ***H04W 52/0225*** (2013.01); ***H04W 52/0229*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC H04R 1/1041; H04R 1/1025; H04R 1/028; H04R 2420/07; H04W 52/0225; H02J 7/025; H02J 7/007; H02J 50/10; H04M 1/6066
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,934,100 A 1/1976 Harada
4,150,262 A 4/1979 Ono
(Continued)

FOREIGN PATENT DOCUMEN

EP 1017252 A3 5/2006
GB 2074817 4/1981
(Continued)

OTHER PUBLICATIONS

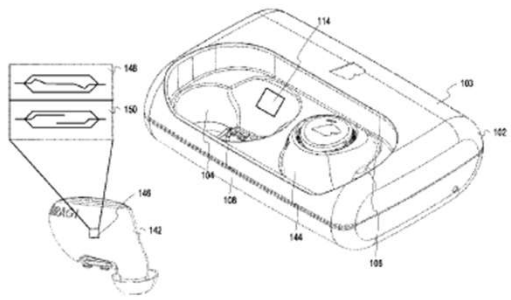
Announcing the $3,333,333 Stretch Goal (Feb. 24
(Continued)

Primary Examiner — Brenda C Bernardi
(74) *Attorney, Agent, or Firm* — Goodhue, C Owens, P.C.

(57) **ABSTRACT**

A system and method for managing wireless earpieces. Circuitry of the wireless earpieces are powered utilizing a high power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces. The power sent to the circuitry of the wireless earpieces is altered to a low power mode in response to detecting the magnetic field is applied to one or more of the wireless earpieces.

13 Claims, 5 Drawing Sheets



HIMPP 1001

ion Search
041; H04R 1/1025; H04R 1/028;
H04R 2420/07; H04W 52/0225;
ontinued)

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NT DOCUMENTS

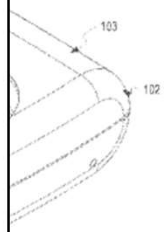
43 Carlisle et al.
47 Kelsey
ontinued)

TENT DOCUMENTS

4/2015
6/2015

of the wireless earpieces is altered
esponse to detecting the magnetic
more of the wireless earpieces.

5 Drawing Sheets



HIMPP 1001

I. Field of the Disclosure

The present invention relates to wireless electronics and battery systems. More specifically, but not exclusively, the present invention relates to wireless earpieces that manage and extend battery life.

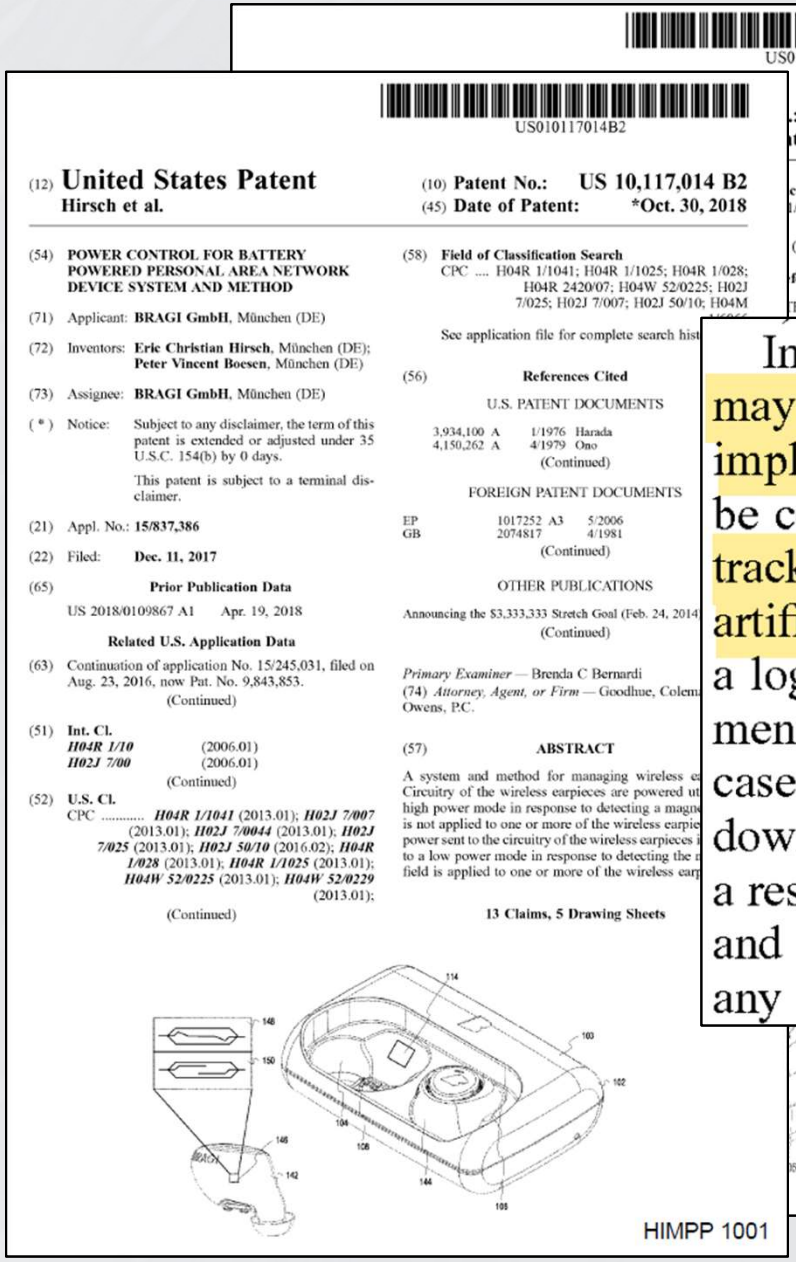
Ex. 1001 at 1:17-20

Paper 3 (Petition) at 7; Paper 29 (Pet. Opp. to RMTA) at 6

* All citations to IPR2023-01204 unless stated otherwise

Alleged Invention (cont.)

HIMPP



US010117014B2

(12) **United States Patent**
Hirsch et al.

(10) **Patent No.: US 10,117,014 B2**
(45) **Date of Patent: *Oct. 30, 2018**

(54) **POWER CONTROL FOR BATTERY POWERED PERSONAL AREA NETWORK DEVICE SYSTEM AND METHOD**

(71) Applicant: **BRAGI GmbH**, München (DE)

(72) Inventors: **Eric Christian Hirsch**, München (DE); **Peter Vincent Boesen**, München (DE)

(73) Assignee: **BRAGI GmbH**, München (DE)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/837,386**

(22) Filed: **Dec. 11, 2017**

(65) **Prior Publication Data**

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(Continued)

(51) **Int. Cl.**
H04R 1/10 (2006.01)
H02J 7/00 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***H04R 1/1041*** (2013.01); ***H02J 7/007*** (2013.01); ***H02J 7/0044*** (2013.01); ***H02J 7/025*** (2013.01); ***H02J 50/10*** (2016.02); ***H04R 1/028*** (2013.01); ***H04R 1/1025*** (2013.01); ***H04W 52/0225*** (2013.01); ***H04W 52/0229*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC H04R 1/1041; H04R 1/1025; H04R 1/028; H04R 2420/07; H04W 52/0225; H02J 7/025; H02J 7/007; H02J 50/10; H04M
See application file for complete search hist

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,934,100 A 1/1976 Harada
4,150,262 A 4/1979 Ono
(Continued)

FOREIGN PATENT DOCUMENTS

EP 1017252 A3 5/2006
GB 2074817 4/1981
(Continued)

OTHER PUBLICATIONS

Announcing the $3,333,333 Stretch Goal (Feb. 24, 2014
(Continued)

Primary Examiner — Brenda C Bernardi
(74) *Attorney, Agent, or Firm* — Goodhue, Colem
Owens, P.C.

(57) **ABSTRACT**

A system and method for managing wireless e
Circuitry of the wireless earpieces are powered ut
high power mode in response to detecting a magn
is not applied to one or more of the wireless earpie
power sent to the circuitry of the wireless earpieces
to a low power mode in response to detecting the
field is applied to one or more of the wireless ear

13 Claims, 5 Drawing Sheets

HIMPP 1001

US010397688B2

US 10,397,688 B2
***Aug. 27, 2019**

(Continued)

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HIMPP 1001

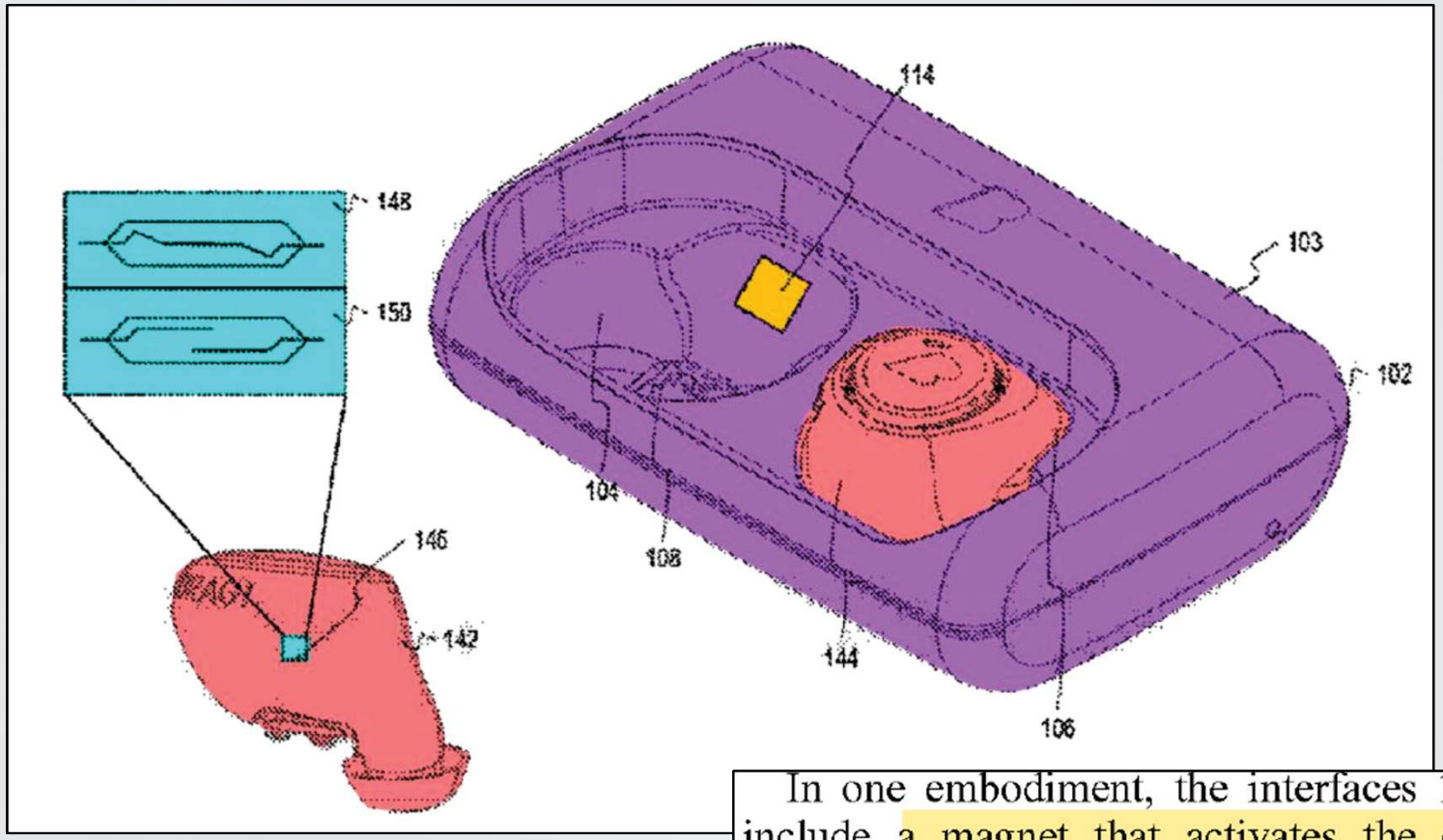
In another embodiment, the wireless earpieces **142**, **144** may represent wireless devices that may be ingested or implanted into a user. For example, the smart case **102** may be configured to work with an endoscopic pill, pacemaker, tracking device, contact lenses, oral implants, bone implants, artificial organs, or so forth. The smart case **102** may act as a logging tool for receiving information, data, or measurements made by the wireless devices. For example, the smart case **102** may be attached to a belt or worn by the user to download data from the wireless device(s) in real-time. As a result, the smart case **102** may be utilized to store, charge, and synchronize data for the wireless earpieces **142**, **144** in any number of embodiments.

Ex. 1001 at 3:15-27

Paper 29 (Pet. Opp. to RMTA) at 20-21; Paper 35 (Pet. Sur-Reply) at 3

Alleged Invention (cont.)

HIMPP



Ex. 1001 at Fig. 1 (annotated)

In one embodiment, the interfaces **108**, **110** may each include a magnet that activates the corresponding reed switch (i.e., reed switch **146** described below) to power off or initiate a low power mode (e.g., lower power state or mode) for one or both of the wireless earpieces **142**, **144** when one or more of the wireless earpieces **142**, **144** are placed within the receptacles **104**, **106**. In another embodi-

Ex. 1001 at 4:30-36

Paper 3 (Petition) at 7-10

'014 Patent – Claim 1

HIMPP

1. A method for managing a wireless earpiece, comprising:

powering circuitry of the wireless earpiece utilizing a low power mode in response to detecting a magnetic field is applied to the wireless earpiece; and

altering the power sent to the circuitry of the wireless earpiece to a high power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces.

Ex. 1001 at 10:55-63

'014 Patent – Claim 10

HIMPP

10. A system comprising:

a left earpiece and a right earpiece each of the left earpiece and the right earpiece comprising circuitry operating the earpiece, a battery powering the circuitry operating the earpiece, and a reed switch connecting the battery to the circuitry, wherein the reed switch connects the circuitry to the battery when a magnetic field is not detected and wherein the reed switch disconnects the circuitry from the battery when a magnetic field is detected;

a smart case housing for charging the left earpiece and the right earpiece;

a first receptacle for receiving the left earpiece disposed within the smart case housing;

a second receptacle for receiving a right earpiece disposed within the smart case housing;

a first interface associated with the first receptacle for electrically connecting the smart case to the left earpiece;

a second interface associated with the second receptacle for electrically connecting the smart case to the right earpiece;

an intelligent control disposed within the smart case housing and operatively connected to the first interface and the second interface.

Ex. 1001 at 11:23-12:19

’688 Patent – Claim 1

HIMPP

1. A method for power control for a wireless earpiece, comprising:

powering circuitry of the wireless earpiece utilizing a low power mode in response to detecting a magnetic field is applied to the wireless earpiece;

powering circuitry of the wireless earpieces utilizing a high-power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces;

altering the power sent to the circuitry of the wireless earpiece to a high-power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces;

altering the power sent to the circuitry of the wireless earpieces to a low power mode in response to detecting a magnetic field is applied to one or more of the wireless earpieces; and

charging an onboard battery of the wireless earpiece in response to detecting a magnetic field is applied to the wireless earpiece.

IPR2023-01205, Ex. 1001 at 10:59-11:12

'688 Patent – Claim 9

HIMPP

9. A method for power control for a wireless earpiece, comprising:

determining if a magnetic field is present at the wireless earpiece in a powered state;

opening a reed switch located within the wireless earpiece when the magnetic field is detected and placing the wireless earpiece in a low-power mode;

coupling the wireless earpiece to a smart case;

charging a battery located within the wireless earpiece with power supplied by a second battery within the smart case;

remaining in a high-power mode if no magnetic field is detected; and

operating the wireless earpiece with power supplied by the battery within the wireless earpiece.

IPR2023-01205, Ex. 1001 at 12:3-16

Claim Construction

"smart case"

HIMPP

1. "smart case"

With respect to the phrase "smart case," recited in claims 4, 6–8, and 10–13, we disagree with Patent Owner's narrow construction requiring that the smart case includes a rechargeable battery utilized to charge a wireless device. The patent discloses an illustrative embodiment that includes a presumably rechargeable battery, i.e., "[t]he smart case 102 encloses a battery, and various other circuitry (not shown) . . . . For example, the battery of the smart case 102 may be utilized to charge the wireless earpieces 142, 144 any number of times before the smart case 102 and corresponding battery may require charging." Ex. 1001, 3:28–37. However, as quoted below, we note the '014 patent also discloses alternative embodiments of the smart case that do not require a rechargeable battery to recharge a wireless device:

Paper 8 (DI) at 20-21

Paper 21 (Pet. Reply) at 5

"earpiece[s]"

HIMPP

2. "earpiece[s]"

With respect to Patent Owner's proposed construction of the term "earpiece[s]" as used in all challenged claims 1–13, we disagree with Patent Owner's construction that limits the construction only to earpieces "configured to fit *into* a user's ears."[13] *See* Prelim. Resp. 17 (emphasis added). We note a relevant dictionary definition of "earpiece" is: "**1**. A part, as of a telephone receiver, that fits in or is held next to the ear. **2**. See **earphone**." *Earpiece*, THE AMERICAN HERITAGE DICTIONARY, 266 (3d ed. 1994); *see id.* ("Earphone": "A device that converts electric signals to audible sound and fits over or in the ear.").[14]

Paper 8 (DI) at 21-23

Paper 21 (Pet. Reply) at 5-6

"one or more"

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First, we do not read the claim language "one or more" to limit the scope of the claim to only the circumstance when both earpieces are in high power mode due to not detecting a magnetic field. In other words, based on the current record, it is sufficient to meet the claim limitation by showing that at least one earpiece goes into high power mode because it does not detect a magnetic field. This accords with Federal Circuit holdings that have found that claim language written in the alternative may be anticipated by a reference that discloses either alternative. *See e.g.*, Brown v. 3M, 265 F.3d 1349, 1353 (Fed. Cir. 2001) (interpreting "at least one of two-digit, three-digit, or four-digit year-date representations"); *In re Theresa*, 720 Fed. Appx. 634, 637 (Fed. Cir. 2018) (interpreting "preset words or pre-set symbols"). As such, the disputed limitation may be met by a system in which either one earpiece goes into high power mode when a magnetic field is not detected, *or* a system in which more than one earpiece goes into high power mode when a magnetic field is not detected. Here, based on the current record, we are persuaded that the cited art demonstrates both alternatives.

Paper 8 (DI) at 38-39

Paper 21 (Pet. Reply) at 6-7

Grounds

IPR2023-01204 – '014 Patent – Grounds

HIMPP

Ground	Basis	Claims	Reference(s)
1	§ 102	1-3, 5	Hain
2	§ 102	10, 11	Steinbrecher
3	§ 103	1-7, 9	Shaffer and Hain
4	§ 103	4, 6-8	Shaffer, Hain, and Sorensen
5	§ 103	10-13	Shaffer and Steinbrecher
6	§ 103	10-13	Shaffer, Steinbrecher, and Sorensen

Paper 3 (Petition) at 6

IPR2023-01205 – '688 Patent – Grounds

HIMPP

Ground	Basis	Claims	Reference(s)
1	§ 102	1, 2, 4	Hain
2	§ 103	1-6, 8-12, 14	Shaffer and Hain
3	§ 103	3, 5-7, 9-14	Shaffer, Hain, and Sorensen

IPR2023-01205, Paper 3 (Petition) at 6-7

Hain

Hain

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(19) Federal Republic of Germany German Patent and Trademark Office

[logo]

(10) **DE 10 2007 039 455 A1** 02/26/2009

(12) **Patent Application**

(21) Reference number: 10 2007 039 455.3
(22) Filing date: 08/21/2007
(43) Publication date: 02/26/2009

(51) Int Cl.*: *H04R 25/00* (2006.01)

(71) Applicant:
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(74) Counsel:
Maier, D., Dipl.-Ing. Univ., Pat.-Ass., 85221 Dachau

(72) Inventor:
Hain, Jens, 91077 Kleinsendelbach, DE

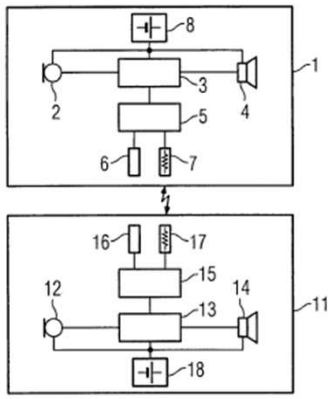
(56) Documents considered for the assessment of patentability:
EP 13 98 994 A2
EP 09 41 014 A2
DE 31 09 049 C2

The following information is derived from the documents submitted by the applicant

Examination request pursuant to § 44 PatG [*Patentgesetz* (German Patent Act)] has been filed.

(54) Title: **Hearing aid system with magnetic field sensors**

(57) Abstract: In a hearing aid system with two hearing aids (1, 11) that can be worn on the head, an automatic detection of the hearing situation "telephoning" and an automatic switching off of the hearing aids (1, 11) when they are removed from the head should be implemented. According to the invention, the hearing aids (1, 11) have sensor devices (6, 16) for this purpose, which are used in order to detect whether the relevant hearing aid (1, 11) is in a magnetic field that exceeds a specific field strength. Relevant data in this regard can be exchanged between the hearing aids (1, 11) by means for wireless signal transmission (5, 7; 15, 17). If only one of the two hearing aids (1, 11) detects a magnetic field, it can be deduced that the hearing situation is "telephoning". On the other hand, if both hearing aids (1, 11) detect a magnetic field at the same time, then both hearing aids (1, 11) are located in a storage box equipped with a permanent magnet and are switched off automatically.



HIMPP 1004

Ex. 1004 at Fig. 1 (annotated)

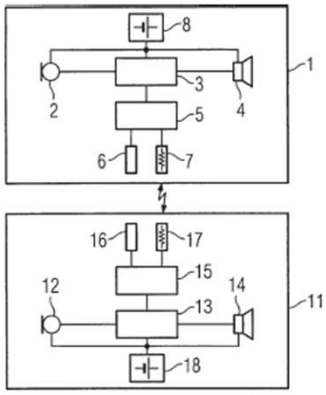
(10) **DE 10 2007 039 455 A1** 2009.02.26

Offenlegungsschrift

(51) Int Cl.*: *H04R 25/00* (2006.01)

(72) Erfinder:
Hain, Jens, 91077 Kleinsendelbach, DE

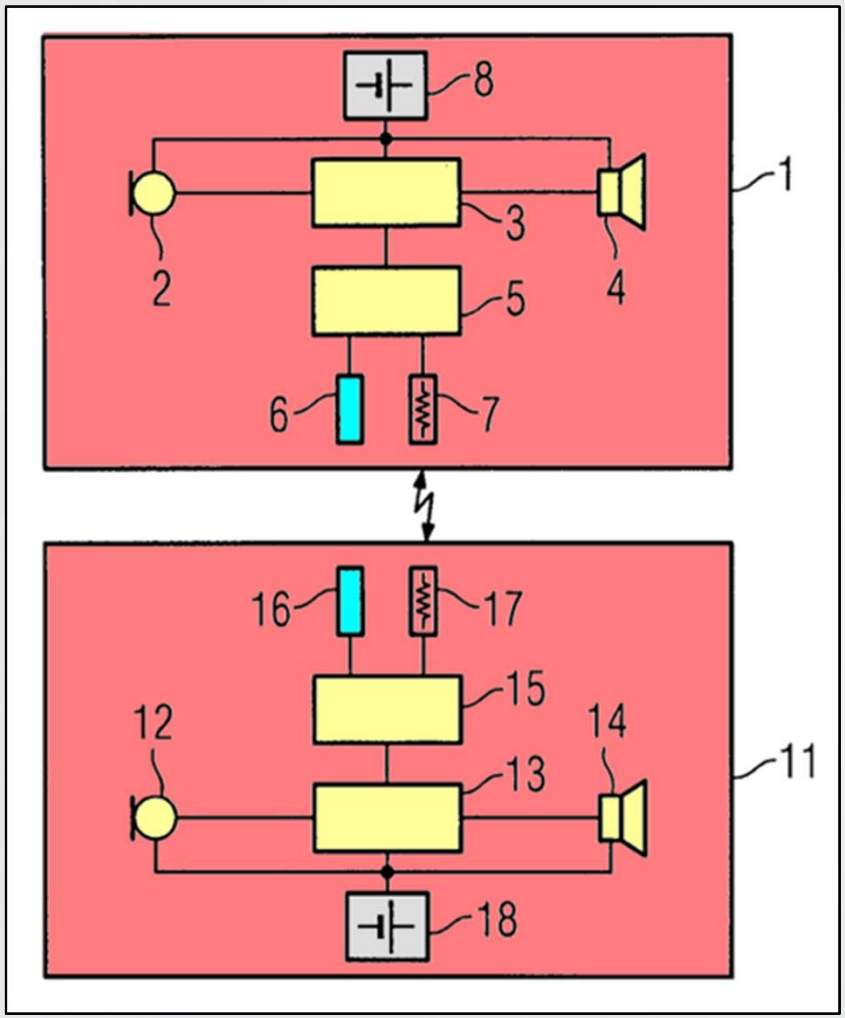
(56) Für die Beurteilung der Patentfähigkeit in Betracht gezogene Druckschriften:
EP 13 98 994 A2
EP 09 41 014 A2
DE 31 09 049 C2



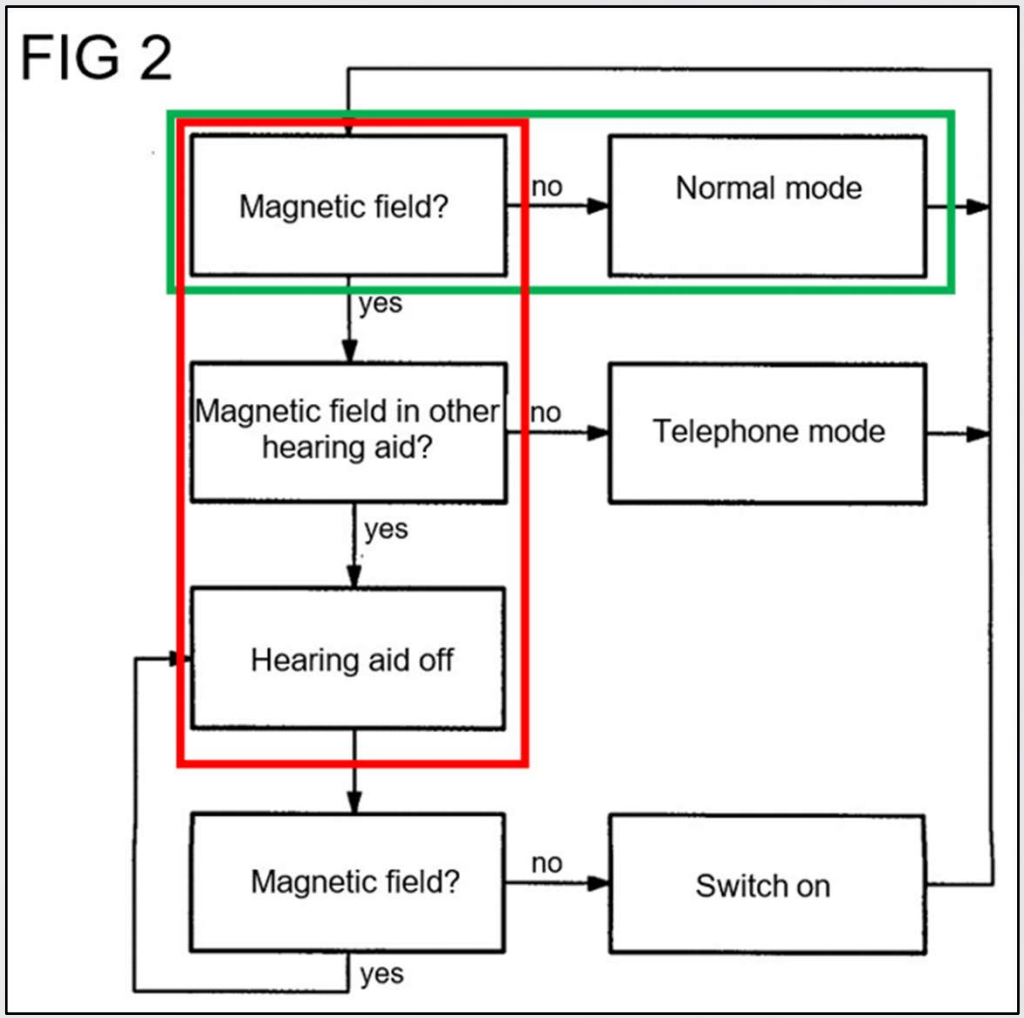
HIMPP 1009

Ex. 1009

Paper 3 (Petition) at 6



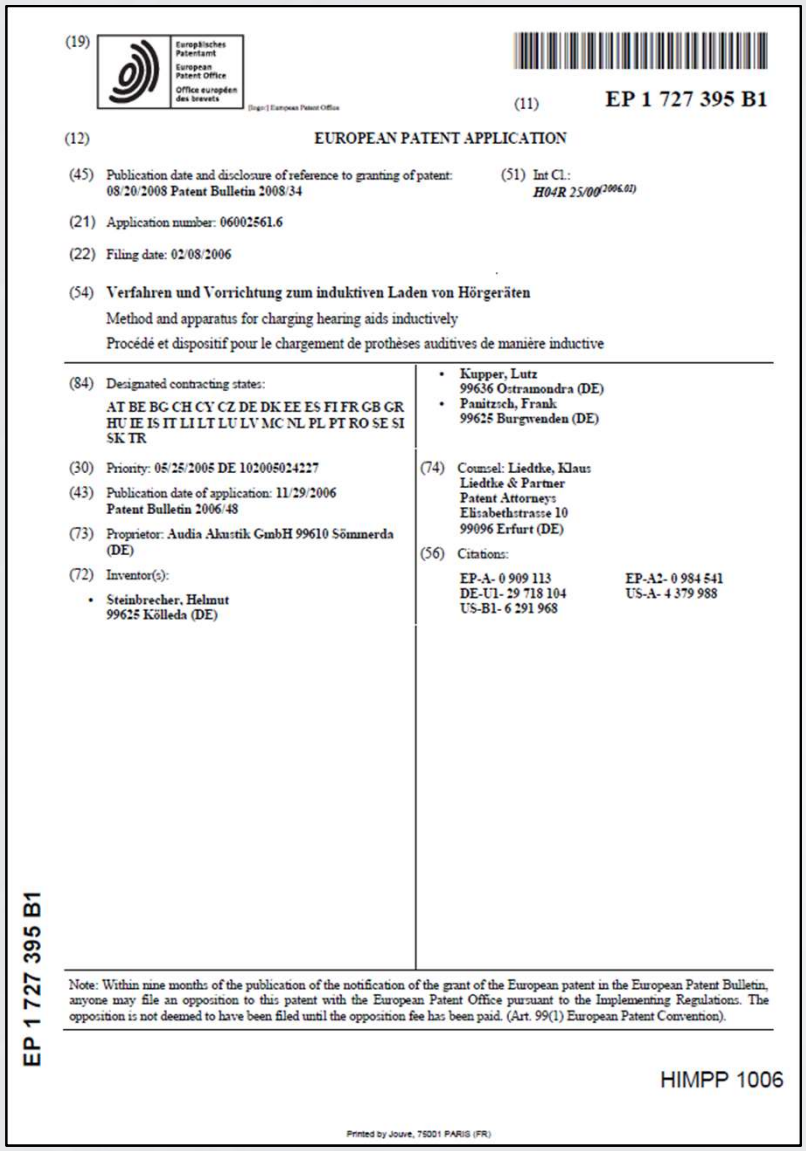
Ex. 1004 at Fig. 1 (annotated)



Ex. 1004 at Fig. 2 (annotated)

Paper 3 (Petition) at 18, 22

Steinbrecher



(19) Europäisches Patentamt / European Patent Office / Office européen des brevets

(11) EP 1 727 395 B1

(12) EUROPEAN PATENT APPLICATION

(45) Publication date and disclosure of reference to granting of patent: 08/20/2008 Patent Bulletin 2008/34

(51) Int Cl.: *H04R 25/00 (2006.01)*

(21) Application number: 06002561.6

(22) Filing date: 02/08/2006

(54) **Verfahren und Vorrichtung zum induktiven Laden von Hörgeräten**
Method and apparatus for charging hearing aids inductively
Procédé et dispositif pour le chargement de prothèses auditives de manière inductive

(84) Designated contracting states:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

(30) Priority: 05/25/2005 DE 102005024227

(43) Publication date of application: 11/29/2006 Patent Bulletin 2006/48

(73) Proprietor: Audia Akustik GmbH 99610 Sömmerda (DE)

(72) Inventor(s):
- **Steinbrecher, Helmut** 99625 Kölleda (DE)
- **Kupper, Lutz** 99636 Ostramondra (DE)
- **Panitzsch, Frank** 99625 Burgwenden (DE)

(74) Counsel: Liedtke, Klaus Liedtke & Partner Patent Attorneys Elisabethstrasse 10 99096 Erfurt (DE)

(56) Citations:
EP-A- 0 909 113
DE-U1- 29 718 104
US-B1- 6 291 968
EP-A2- 0 984 541
US-A- 4 379 988

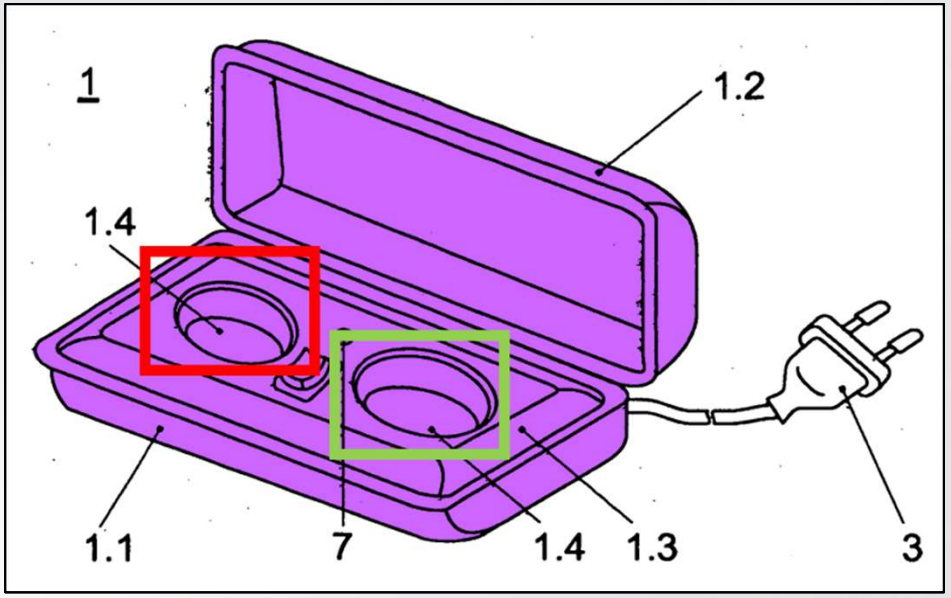
Note: Within nine months of the publication of the notification of the grant of the European patent in the European Patent Bulletin, anyone may file an opposition to this patent with the European Patent Office pursuant to the Implementing Regulations. The opposition is not deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 1 727 395 B1

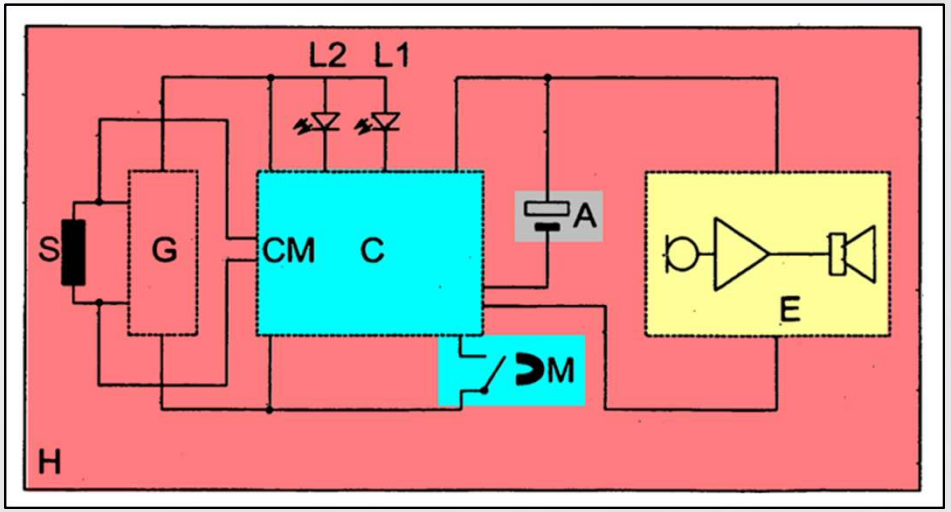
HIMPP 1006

Printed by Jouve, 75001 PARIS (FR)

Ex. 1006



Ex. 1006 at Fig. 1 (annotated)



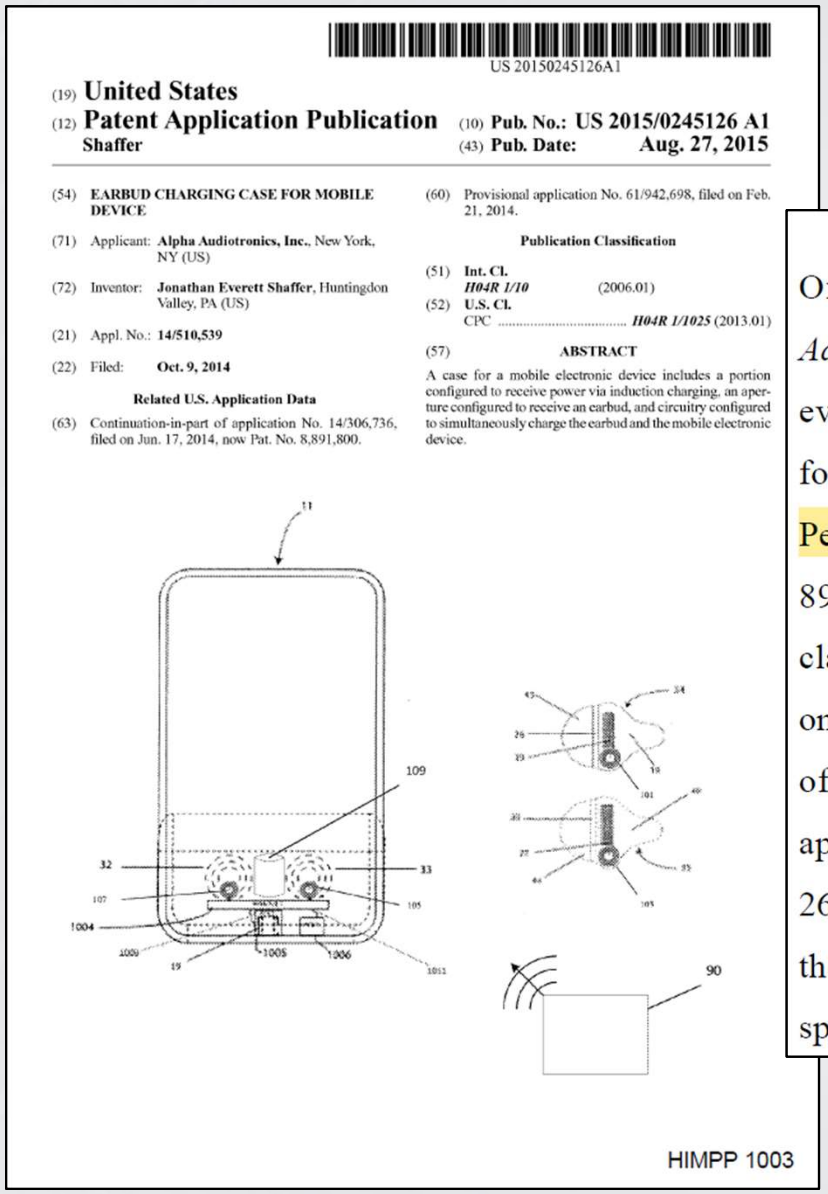
Ex. 1006 at Fig. 2 (annotated)

Paper 3 (Petition) at 6, 27

Shaffer

Shaffer

HIMPP



US 20150245126A1

(19) **United States**

(12) **Patent Application Publication**

Shaffer

(10) **Pub. No.: US 2015/0245126 A1**

(43) **Pub. Date: Aug. 27, 2015**

(54) **EARBUD CHARGING CASE FOR MOBILE DEVICE**

(71) Applicant: **Alpha Audiotronics, Inc.**, New York, NY (US)

(72) Inventor: **Jonathan Everett Shaffer**, Huntingdon Valley, PA (US)

(21) Appl. No.: **14/510,539**

(22) Filed: **Oct. 9, 2014**

Related U.S. Application Data

(63) Continuation-in-part of application No. 14/306,736, filed on Jun. 17, 2014, now Pat. No. 8,891,800.

(60) Provisional application No. 61/942,698, filed on Feb. 21, 2014.

Publication Classification

(51) **Int. Cl.**
H04R 1/10 (2006.01)

(52) **U.S. Cl.**
CPC *H04R 1/1025* (2013.01)

(57) **ABSTRACT**

A case for a mobile electronic device includes a portion configured to receive power via induction charging, an aperture configured to receive an earbud, and circuitry configured to simultaneously charge the earbud and the mobile electronic device.

HIMPP 1003

Ex. 1003

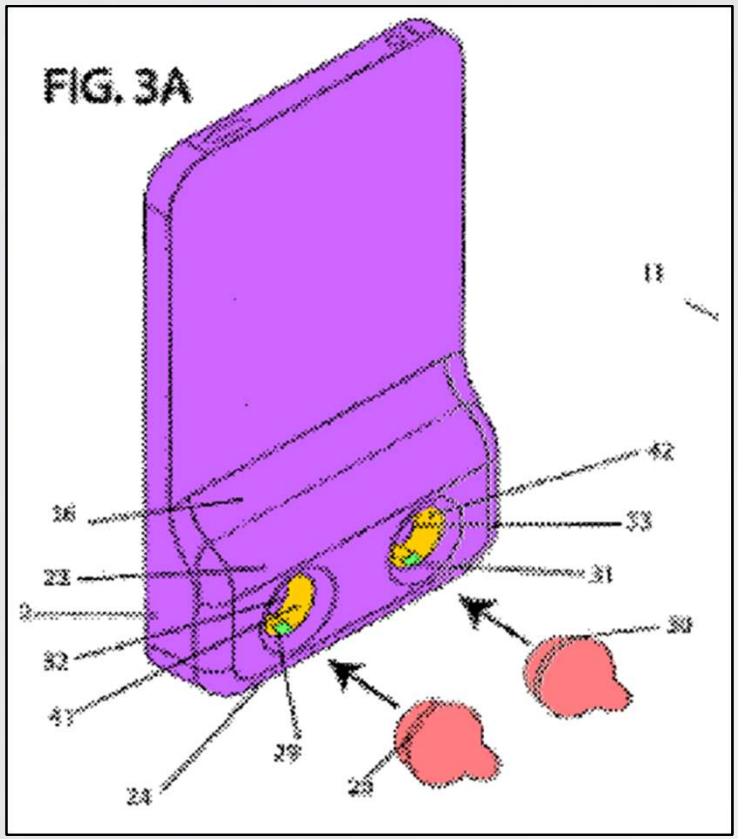
Paper 3 (Petition) at 6

We find that Petitioner has demonstrated a material error by the Office in the prior consideration of Shaffer. Under the second prong of *Advanced Bionics*, we consider "the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection." *Becton, Dickinson*, Paper 8 at 17. Here, we agree with Petitioner that, although Shaffer was cited by the Examiner on a form PTO-892, Shaffer was not applied as a prior art reference in any rejection because claims 1–13 in the application leading to the '014 patent were only rejected on the ground of non-statutory double patenting over claims 1–9 and 18–21 of the '853 patent. *See* Ex. 1017, 45–50; *see also* Pet. 10–11.[11] The applicant filed a terminal disclaimer and overcame the rejection. Ex. 1017, 269–81, 315–22. In both the office action and the Notice of Allowability, the Examiner stated that "[n]othing in the prior art showed or suggested the specific limitations of these claims." *Id.* at 48, 280.

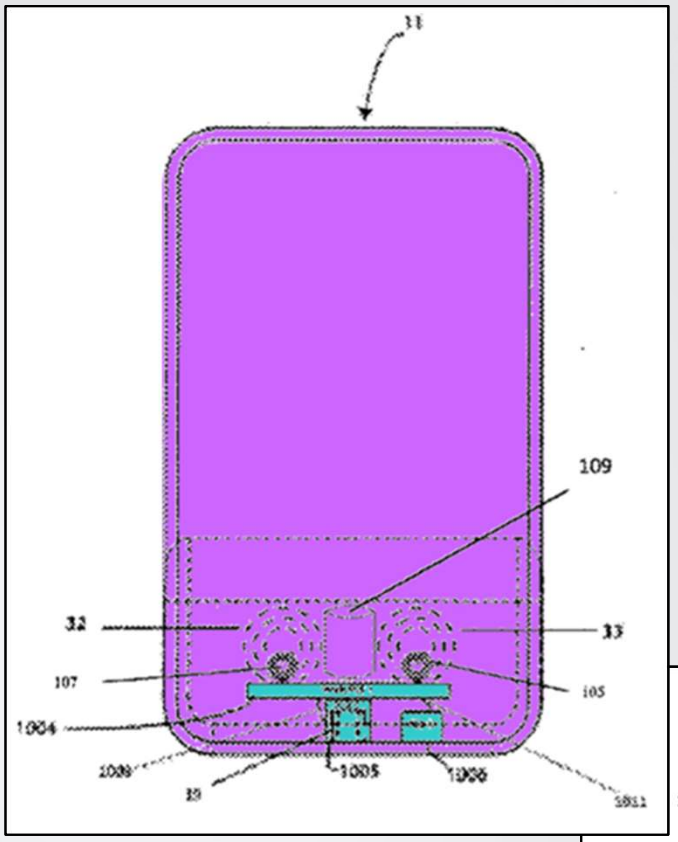
Paper 8 (DI) at 15

Shaffer

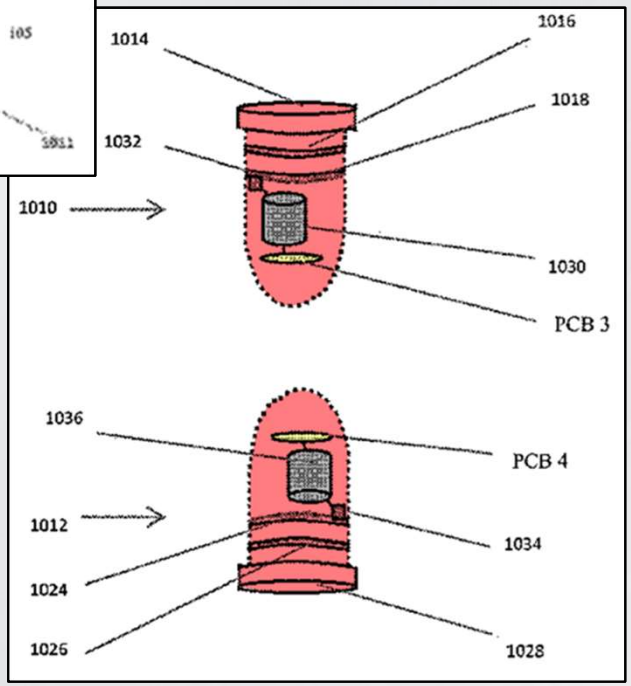
HIMPP



Ex. 1003 at Fig. 1 (annotated)



Ex. 1003 at Fig. 4 (annotated)



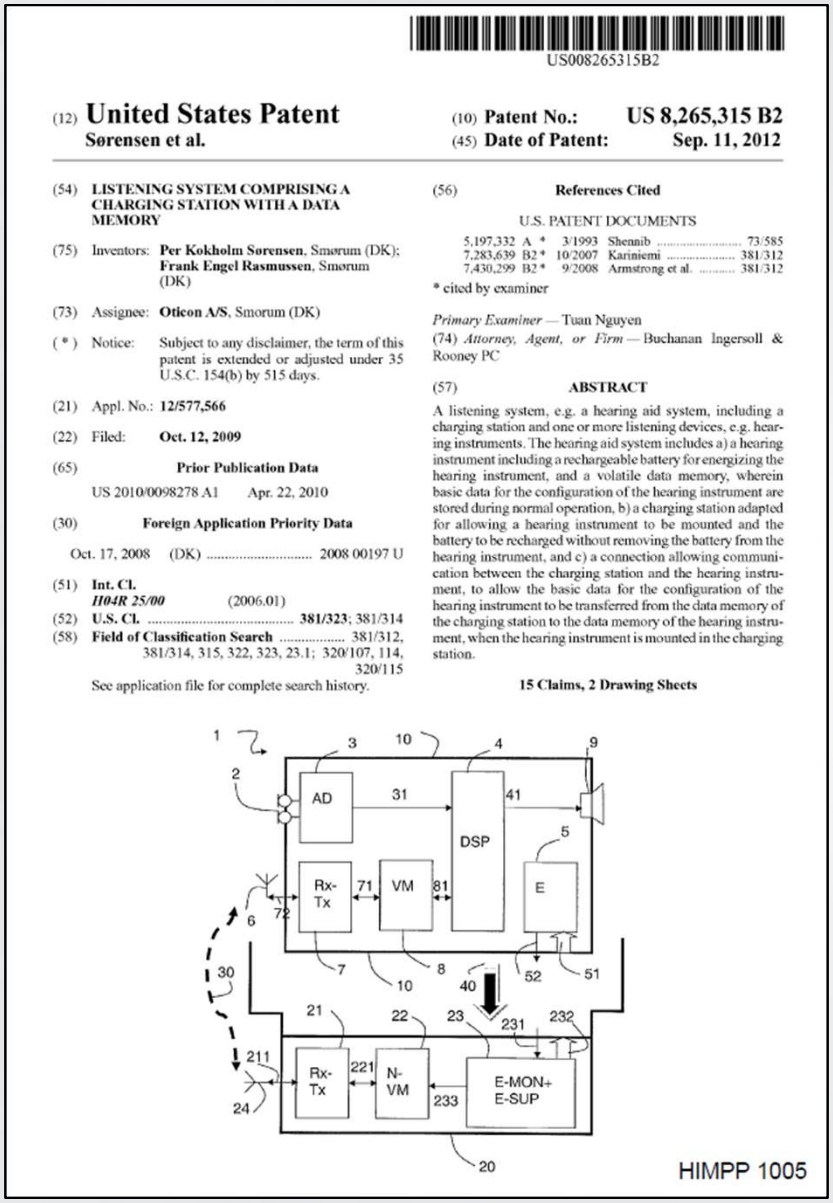
Ex. 1003 at Fig. 10 (annotated)

Paper 3 (Petition) at 40, 41, 54

Sorensen

Sorensen

HIMPP



US008265315B2

(12) **United States Patent**
Sørensen et al.

(10) **Patent No.: US 8,265,315 B2**
(45) **Date of Patent: Sep. 11, 2012**

(54) **LISTENING SYSTEM COMPRISING A CHARGING STATION WITH A DATA MEMORY**

(75) Inventors: **Per Kokholm Sørensen**, Smørum (DK); **Frank Engel Rasmussen**, Smørum (DK)

(73) Assignee: **Oticon A/S**, Smørum (DK)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 515 days.

(21) Appl. No.: **12/577,566**

(22) Filed: **Oct. 12, 2009**

(65) **Prior Publication Data**

US 2010/0098278 A1 Apr. 22, 2010

(30) **Foreign Application Priority Data**

Oct. 17, 2008 (DK) ..... 2008 00197 U

(51) **Int. Cl.**
H04R 25/00 (2006.01)

(52) **U.S. Cl.** **381/323**; 381/314

(58) **Field of Classification Search** 381/312, 381/314, 315, 322, 323, 23.1; 320/107, 114, 320/115

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

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7,430,299	B2 *	9/2008	Armstrong et al.	381/312

* cited by examiner

Primary Examiner — Tuan Nguyen
(74) *Attorney, Agent, or Firm* — Buchanan Ingersoll & Rooney PC

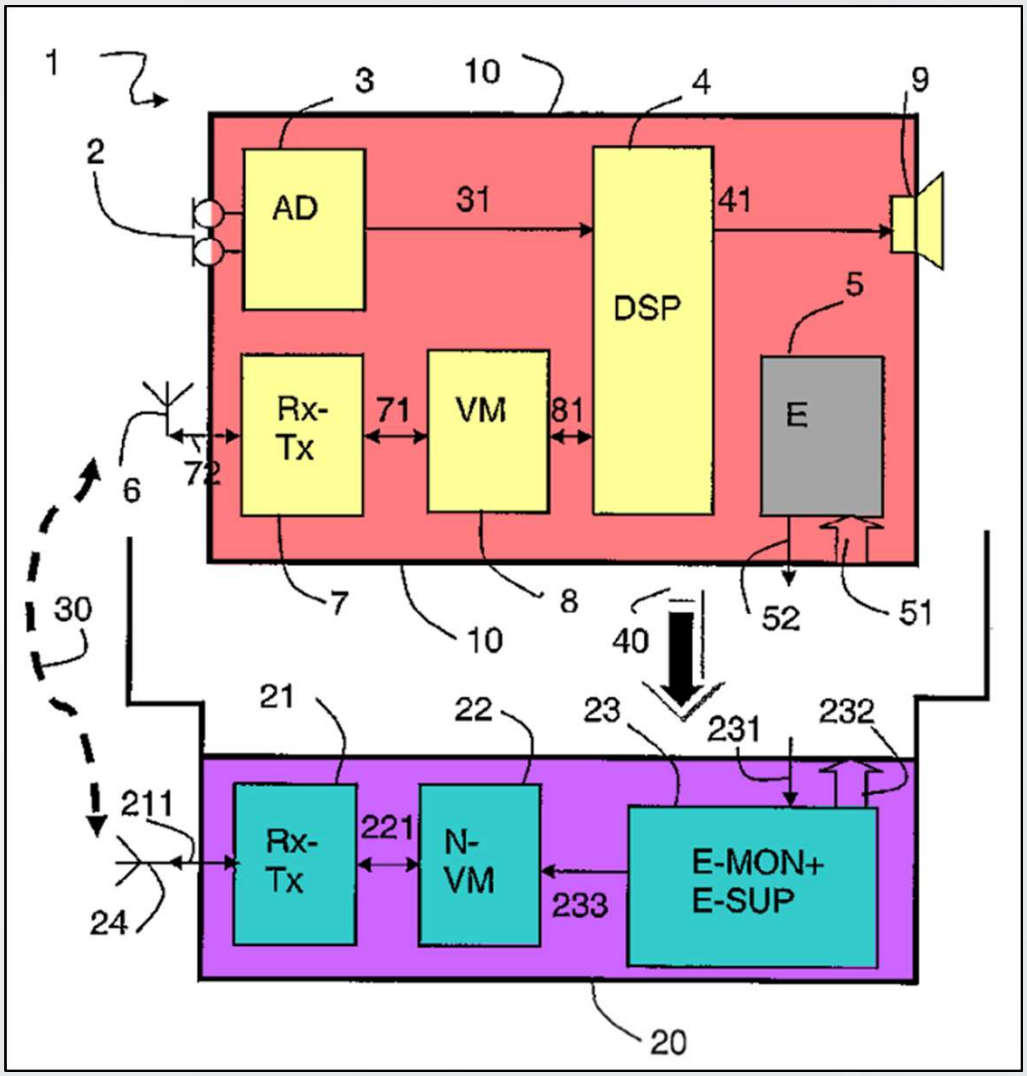
(57) **ABSTRACT**

A listening system, e.g. a hearing aid system, including a charging station and one or more listening devices, e.g. hearing instruments. The hearing aid system includes a) a hearing instrument including a rechargeable battery for energizing the hearing instrument, and a volatile data memory, wherein basic data for the configuration of the hearing instrument are stored during normal operation, b) a charging station adapted for allowing a hearing instrument to be mounted and the battery to be recharged without removing the battery from the hearing instrument, and c) a connection allowing communication between the charging station and the hearing instrument, to allow the basic data for the configuration of the hearing instrument to be transferred from the data memory of the charging station to the data memory of the hearing instrument, when the hearing instrument is mounted in the charging station.

15 Claims, 2 Drawing Sheets

HIMPP 1005

Ex. 1005



Ex. 1005 at Fig. 1 (annotated)

Paper 3 (Petition) at 6, 62

Institution Decisions

IPR2023-01204 – Institution Decision

HIMPP

> In light of the above analysis, we preliminarily determine that Petitioner's evidence and arguments are sufficient to demonstrate a reasonable likelihood of success in its challenges to claims 1–3 and 5 as anticipated by Hain.

> In light of the above analysis, we preliminarily determine that Petitioner's evidence and arguments are sufficient to demonstrate a reasonable likelihood of success in its challenges to claims 10 and 11 as anticipated by Steinbrecher.

> Accordingly, Petitioner establishes sufficiently for purposes of institution that claims 1–7 and 9 are unpatentable under § 103 as obvious over Shaffer and Hain (Ground 3) (*see* Pet. 39–61); claims 4 and 6–8 are unpatentable under § 103 as obvious over Shaffer, Hain, and Sørensen (Ground 4) (*see id.* at 61–66); claims 10–13 are unpatentable under § 103 as obvious over Shaffer and Steinbrecher (Ground 5) (*see id.* at 66–84); and claims 10–13 are unpatentable under § 103 as obvious over Shaffer, Steinbrecher, and Sørensen (Ground 6) (*see id.* at 85).

Paper 8 (DI) at 43, 51, 53

IPR2023-01205 – Institution Decision

HIMPP

> Upon consideration of Petitioner's evidence and argument in light of Patent Owner's opposition, we are persuaded that Petitioner has shown sufficiently for purposes of this Decision that Hain discloses all of the limitations recited in claim 1.

> Based on the evidence in the present record, we are persuaded that Petitioner has shown sufficiently for purposes of this Decision that Hain discloses all of the limitations recited in claims 2 and 4.

> We have reviewed Petitioner's arguments and evidence and based on the evidence in the present record, we are persuaded that Petitioner has shown sufficiently for purposes of this Decision that the combination of Hain and Shaffer teaches all of the limitations recited in claims 1–6, 8–12, and 14.

> We have reviewed Petitioner's arguments and evidence and based on the evidence in the present record, we are persuaded that Petitioner has shown sufficiently for purposes of this Decision that the combination of Hain, Shaffer, and Sørensen teaches all of the limitations recited in claims 3, 5–7, and 9–14.

IPR2023-01205, Paper 8 (DI) at 28, 29

Patent Owner Waived All Arguments to Dispute Unpatentability of Original Claims

Petitioner's Reply

HIMPP

PO was on notice and waived any argument against the anticipation and obviousness challenges in the Petition. *See* Paper 9 at 9 ("Patent Owner is cautioned that any arguments not raised in the response may be deemed waived."). This includes the arguments that PO advanced in its preliminary response. *See* CTPG at 52 (citing *In re Nuvasive, Inc.*, 842 F.3d 1376, 1381 (Fed. Cir. 2016) (explaining that a patent owner waives an issue presented in its preliminary response if it fails to renew the issue in its response after trial is instituted)). Indeed, in similar

Paper 21 (Pet. Reply) at 2

Petitioner's Reply

HIMPP

IV. CONCLUSION

All claims of the '014 patent are unpatentable and should be canceled. Petitioner presented substantial evidence in its Petition to support a finding of unpatentability for each claim, as the Board correctly recognized in its Institution Decision. PO did not proffer rebuttal arguments or evidence, and thus more than a preponderance of the evidence demonstrates that the claims are unpatentable. *See In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1376 n. 1 (Fed. Cir. 2016) ("We note, however, that while the institution of an IPR does not by itself translate to a conclusion of unpatentability and the patent owner is not required to use its opportunity under the regulations to file a patent owner response, as in district court validity challenges, **the patent owner would be well advised to introduce evidence on the asserted challenge**." (internal quotation omitted)).

Paper 21 (Pet. Reply) at 8

Patent Owner's Revised Motions to Amend

Patent Owner's RMTA – '014 Patent

HIMPP

Claim 14. [Proposed substitute for claim 1] A method for managing a wireless earpiece, comprising:

powering circuitry of the wireless earpiece utilizing a low power mode in response to detecting a magnetic field is applied to the wireless earpiece;

wherein a portion of the wireless earpiece fits within the ear canal opening and the wireless earpiece is configured to read user biometrics, and

altering the power sent to the circuitry of the wireless earpiece to a high power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces.

Paper 25 (RMTA) at APPX A-1

Patent Owner's RMTA – '014 Patent

HIMPP

Claim 23. [Proposed substitute for claim 10] A system comprising:

a left earpiece and a right earpiece each of the left earpiece and the right earpiece comprising circuitry operating the earpiece, a battery powering the circuitry operating the earpiece, and a reed switch connecting the battery to the circuitry, wherein the reed switch connects the circuitry to the battery when a magnetic field is not detected and wherein the reed switch disconnects the circuitry from the battery when a magnetic field is detected;

a smart case housing for charging the left earpiece and the right earpiece,

a first receptacle for receiving the left earpiece disposed within the smart case housing, wherein a portion of the left wireless earpiece fits within the ear canal opening and the left wireless earpiece is configured to read user biometrics, and;

a second receptacle for receiving ~~a~~ the right earpiece disposed within the smart case housing, wherein a portion of the right wireless earpiece fits within the ear canal opening and the right wireless earpiece is configured to read user biometrics, and;

a first interface associated with the first receptacle for electrically connecting the smart case to the left earpiece;

a second interface associated with the second receptacle for electrically connecting the smart case to the right earpiece;

an intelligent control disposed within the smart case housing and operatively connected to the first interface and the second interface.

Paper 25 (RMTA) at APPX A-3-4

Patent Owner's RMTA – '014 Patent

HIMPP

A. Ground 1 – Hain

The Petition states that Hain discloses claims 1-3 and 5 (substitute claims 14-16 and 18). But Hain does not disclose a wireless earpiece(s) "configured to read user biometrics." Hain does not state the claimed hearing aids are configured to read user biometrics. Nor does Hain mention biometrics at a

Therefore, Hain does not disclose substitute claims 14-1

B. Ground 2 – Steinbrecher in view of Marks

The Petitioner's Opposition asserts that Steinbrecher in view of Marks renders obvious original substitute claims 23 and 24.[3] However, Steinbrecher does not disclose a wireless earpiece(s) "configured to read user biometrics," as required by

C. Grounds 3-4

Grounds 3-4 rely on a combination of references, which include Shaffer, Hain, Sorensen and Marks (for the original substitute claims). *See* Petition, 34-66; Opposition at 10. However, none of the references asserted for these grounds discloses a wireless earpiece(s) "configured to read user biometrics," as claimed by

D. Grounds 5-6

Grounds 5-6 rely on a combination of references, including some combination of Shaffer, Steinbrecher, Sorensen, and Marks. *See* Petition, 66-85. Grounds 5-6 challenge claims 10-13 (corresponding to proposed substitute claims 23-26). However, none of these references disclose a wireless earpiece(s) "configured to read user biometrics," as required by proposed substitute claim 23 (the independent

Paper 25 (RMTA) at 8-10

Patent Owner's RMTA – '688 Patent

HIMPP

Claim 15. [Proposed substitute for claim 1] A method for power control for a wireless earpiece, comprising:

powering circuitry of the wireless earpiece utilizing a low power mode in response to detecting a magnetic field is applied to the wireless earpiece;

powering circuitry of the wireless earpiece~~s~~ utilizing a high-power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces;

wherein a portion of the wireless earpiece fits within the ear canal opening and the wireless earpiece is configured to read user biometrics, and

altering the power sent to the circuitry of the wireless earpiece to a high-power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces;

altering the power sent to the circuitry of the wireless earpieces to a low power mode in response to detecting a magnetic field is applied to one or more of the wireless earpieces; and

charging an onboard battery of the wireless earpiece in response to detecting a magnetic field is applied to the wireless earpiece.

IPR2023-01205, Paper 26 (RMTA) at APPX A-1

Patent Owner's RMTA – '688 Patent

HIMPP

Claim 23. [Proposed substitute for claim 9] A method for power control for a wireless earpiece, comprising:

determining if a magnetic field is present at the wireless earpiece in a powered state, wherein a portion of the wireless earpiece fits within the ear canal opening and the wireless earpiece is configured to read user biometrics, and;

opening a reed switch located within the wireless earpiece when the magnetic field is detected and placing the wireless earpiece in a low-power mode;

coupling the wireless earpiece to a smart case

charging a battery located within the wireless earpiece with power supplied by a second battery within the smart case;

remaining in a high-power mode if no magnetic field is detected; and

operating the wireless earpiece with power supplied by the battery within the wireless earpiece.

IPR2023-01205, Paper 26 (RMTA) at APPX A-3-4

Patent Owner's RMTA – '688 Patent

HIMPP

A. Ground 1 – Hain

The Petition states that Hain discloses claims 1, 2, and 4 (original substitute claims 15, 16 and 18). But Hain does not disclose a wireless earpiece(s) "configured to read user biometrics." Hain does not state the claimed hearing aids are configured to read user biometrics. Nor does Hain mention biometrics at all. *See* Ex. 2005 ¶¶ 66-68. Therefore, Hain does not disclose Proposed Substitute Claims 15, 16 and 18.

B. Grounds 2-3

Grounds 2-3 in the Petition and modified Grounds 2-3 as stated in Petitioner's (*see* III.C) rely on a combination of references Shaffer, Hain, Sorsenson, and Marks (modified Grounds only). *See* Petition, 34-66; Opposition at 14-19. However, none of these references discloses a wireless earpiece(s) "configured to read user biometrics," as required by the Proposed Substitute Claims. The '031 Application

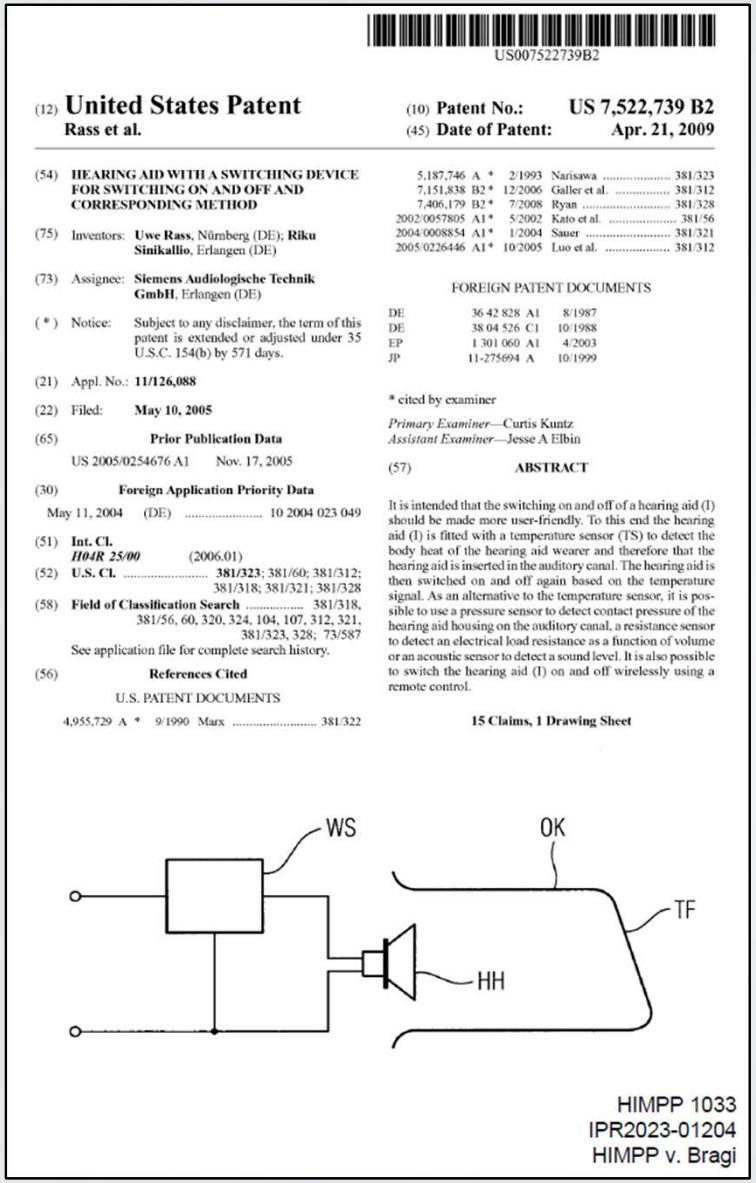
IPR2023-01205, Paper 26 (RMTA) at 7-8

Petitioner's Oppositions

Rass

Rass

HIMPP



US007522739B2

(12) **United States Patent**
Rass et al.

(10) **Patent No.: US 7,522,739 B2**
(45) **Date of Patent: Apr. 21, 2009**

(54) **HEARING AID WITH A SWITCHING DEVICE FOR SWITCHING ON AND OFF AND CORRESPONDING METHOD**

(75) Inventors: **Uwe Rass**, Nürnberg (DE); **Riku Sinikallio**, Erlangen (DE)

(73) Assignee: **Siemens Audiologische Technik GmbH**, Erlangen (DE)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 571 days.

(21) Appl. No.: **11/126,088**

(22) Filed: **May 10, 2005**

(65) **Prior Publication Data**

US 2005/0254676 A1 Nov. 17, 2005

(30) **Foreign Application Priority Data**

May 11, 2004 (DE) 10 2004 023 049

(51) **Int. Cl.**
H04R 25/00 (2006.01)

(52) **U.S. Cl.** **381/323**; 381/60; 381/312; 381/318; 381/321; 381/328

(58) **Field of Classification Search** 381/318, 381/56, 60, 320, 324, 104, 107, 312, 321, 381/323, 328; 73/587
See application file for complete search history.

(56) **References Cited**

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5,187,746	A *	2/1993	Narisawa	381/323
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7,406,179	B2 *	7/2008	Ryan	381/328
2002/0057805	A1 *	5/2002	Kato et al.	381/56
2004/0008854	A1 *	1/2004	Sauer	381/321
2005/0226446	A1 *	10/2005	Luo et al.	381/312

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DE	36 42 828	A1	8/1987
DE	38 04 526	C1	10/1988
EP	1 301 060	A1	4/2003
JP	11-275694	A	10/1999

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Primary Examiner—Curtis Kuntz
Assistant Examiner—Jesse A Elbin

(57) **ABSTRACT**

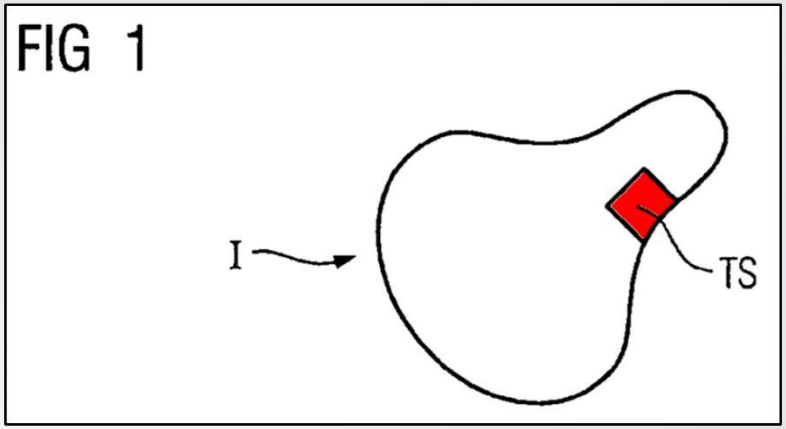
It is intended that the switching on and off of a hearing aid (I) should be made more user-friendly. To this end the hearing aid (I) is fitted with a temperature sensor (TS) to detect the body heat of the hearing aid wearer and therefore that the hearing aid is inserted in the auditory canal. The hearing aid is then switched on and off again based on the temperature signal. As an alternative to the temperature sensor, it is possible to use a pressure sensor to detect contact pressure of the hearing aid housing on the auditory canal, a resistance sensor to detect an electrical load resistance as a function of volume or an acoustic sensor to detect a sound level. It is also possible to switch the hearing aid (I) on and off wirelessly using a remote control.

15 Claims, 1 Drawing Sheet

HIMPP 1033
IPR2023-01204
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Ex. 1033

Paper 29 (Pet. Opp. to RMTA) at 3-4



Ex. 1033 at Fig. 1 (annotated)

(57) **ABSTRACT**

It is intended that the switching on and off of a hearing aid (I) should be made more user-friendly. To this end the hearing aid (I) is fitted with a temperature sensor (TS) to detect the body heat of the hearing aid wearer and therefore that the hearing aid is inserted in the auditory canal. The hearing aid is then switched on and off again based on the temperature signal. As an alternative to the temperature sensor, it is possible to use a pressure sensor to detect contact pressure of the hearing aid housing on the auditory canal, a resistance sensor to detect an electrical load resistance as a function of volume or an acoustic sensor to detect a sound level. It is also possible to switch the hearing aid (I) on and off wirelessly using a remote control.

Ex. 1033 at Abstract

Rass

HIMPP

FIG. **1** shows a schematic diagram of an in-the-ear hearing aid I. It has a temperature sensor TS. When worm, the hearing aid I or its shell heats up. The temperature sensor TS registers this heat. Once a certain temperature threshold is exceeded, the device is switched on. If the temperature drops back to below a lower temperature threshold, the hearing aid I switches off again. This temperature-controlled switching on and off is also possible in principle with a single temperature threshold.

Ex. 1033 at 2:63-3:4

With a particular development of the hearing aid unit according to the invention, the switching on and off operations include switching to or from standby mode. This mode extends the useful life or endurance of the hearing aid battery during normal operation.

Ex. 1033 at 2:27-31

Patent Owner's Admission

establish this was well-known. Petitioner points to a single patent (Ex. 1028 – Rass) that discloses the ability to power up or down a hearing aid based on temperature of the hearing aid or shell, registered by a temperature sensor. Ex. 2007 ¶¶ 68-69.

Ex. 1034 (PO Reply in IPR2023-01150) at 5

'014 Patent

dard or protocol being utilized (e.g., NFC, RFID, etc.). In another embodiment, 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 or status of the wireless earpieces **142**, **144**, as well as the smart case **102** (e.g., may be placed in a low power mode). For

Ex. 1001 at 5:17-22

Paper 29 (Pet. Opp. to RMTA) at 3-4

POSITA Would Have Been Motivated to Combine Hain, Steinbrecher, or Shaffer with Rass

Motivations to Combine with Rass

HIMPP

Petitioner's Expert Dr. Sayfe Kiaei

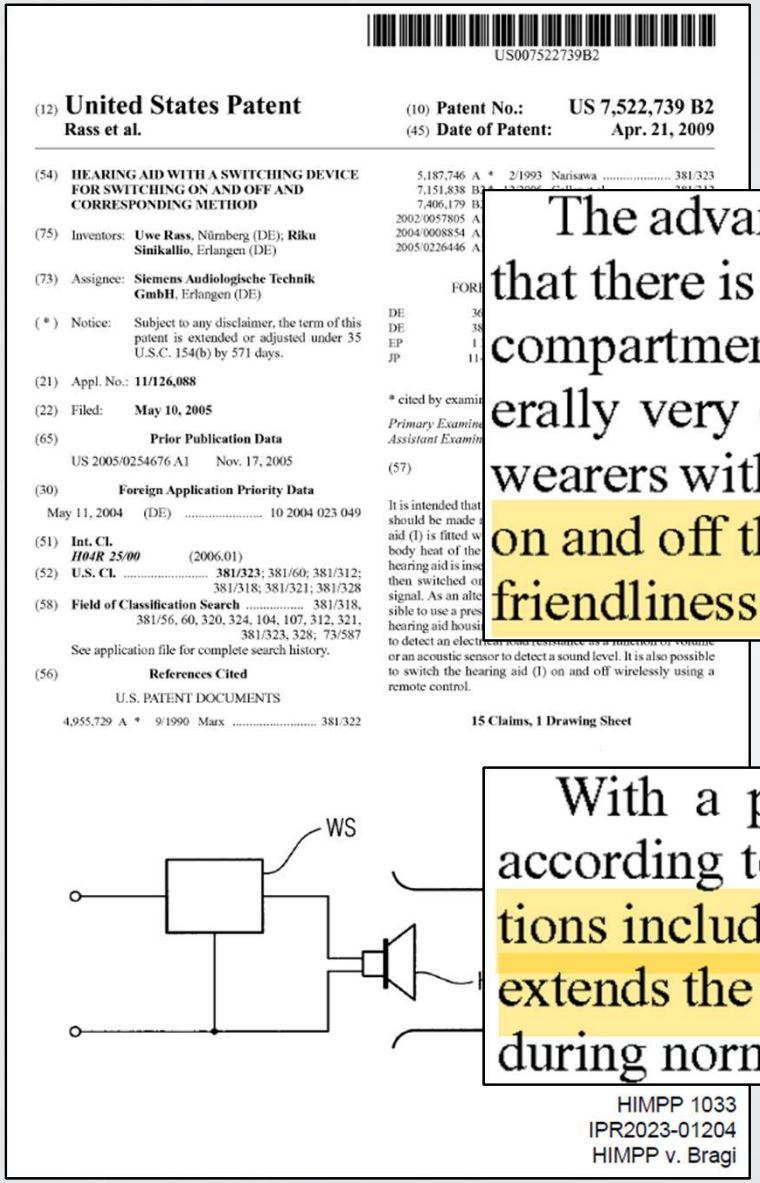
- Rass is analogous to the challenged patent.
- POSITA would have known how to include a sensor to read user biometrics, as taught by Rass, in earpieces, as taught by Hain, Steinbrecher, or Shaffer, with a reasonable expectation of success.
- Rass explicitly discloses several benefits of switching on and off a hearing aid based on the temperature detected by a temperature sensor fitted therein.

Ex. 1026 at ¶¶ 15-17, 19-20, 22-24, 29-31, 33-34, 36-38, 43-45, 47-48, 50-52

Paper 29 (Pet. Opp. to RMTA) at 5-10

Motivations to Combine with Rass (cont.)

HIMPP



US007522739B2

(12) **United States Patent**
Rass et al.

(10) **Patent No.: US 7,522,739 B2**
(45) **Date of Patent: Apr. 21, 2009**

(54) **HEARING AID WITH A SWITCHING DEVICE FOR SWITCHING ON AND OFF AND CORRESPONDING METHOD**

(75) Inventors: **Uwe Rass**, Nürnberg (DE); **Riku Sinikallio**, Erlangen (DE)

(73) Assignee: **Siemens Audiologische Technik GmbH**, Erlangen (DE)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 571 days.

(21) Appl. No.: **11/126,088**

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(65) **Prior Publication Data**

US 2005/0254676 A1 Nov. 17, 2005

(30) **Foreign Application Priority Data**

May 11, 2004 (DE) 10 2004 023 049

(51) **Int. Cl.**
H04R 25/00 (2006.01)

(52) **U.S. Cl.** **381/323**; 381/60; 381/312; 381/318; 381/321; 381/328

(58) **Field of Classification Search** 381/318, 381/56, 60, 320, 324, 104, 107, 312, 321, 381/323, 328; 73/587
See application file for complete search history.

(56) **References Cited**

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2005/0226446 A1 10/2005 Gellert et al. 381/313

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DE 36 [illegible]
DE 38 [illegible]
EP 1 [illegible]
JP 11 [illegible]

* cited by examiner

Primary Examiner [illegible]
Assistant Examiner [illegible]

(57)

It is intended that [illegible] should be made [illegible] aid (I) is fitted [illegible] body heat of the [illegible] hearing aid is inse[illegible] then switched o[illegible] signal. As an alte[illegible] sible to use a pres[illegible] hearing aid housi[illegible] to detect an electrical load resistance as a function of volume or an acoustic sensor to detect a sound level. It is also possible to switch the hearing aid (I) on and off wirelessly using a remote control.

15 Claims, 1 Drawing Sheet

HIMPP 1033
IPR2023-01204
HIMPP v. Bragi

Ex. 1033 (Rass)

The advantage of the solution according to the invention is that there is no need for a mechanical switch, e.g. the battery compartment switch. The battery compartment switch is generally very difficult to operate, in particular for hearing aid wearers with impaired motor functions. Automatic switching on and off therefore represents a significant increase in user-friendliness.

Ex. 1033 at 2:14-20

With a particular development of the hearing aid unit according to the invention, the switching on and off operations include switching to or from standby mode. This mode extends the useful life or endurance of the hearing aid battery during normal operation.

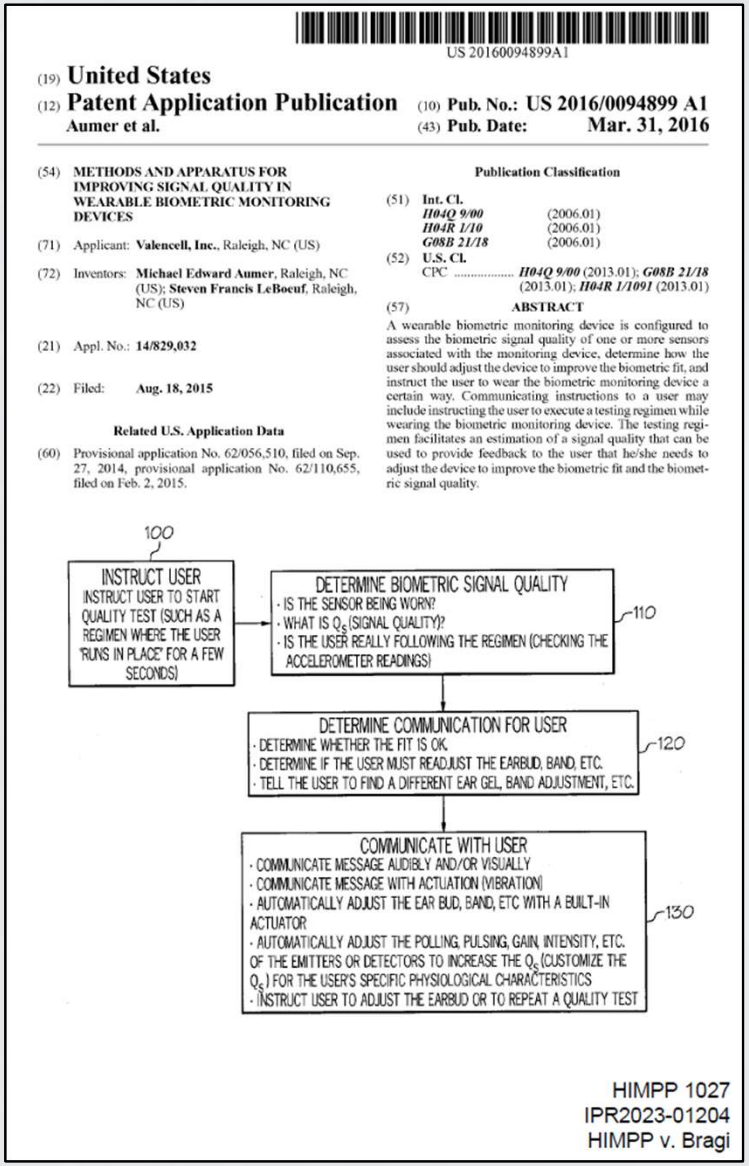
Ex. 1033 at 2:27-31

Paper 29 (Pet. Opp. to RMTA) at 9-10

Aumer

Aumer

HIMPP



US 20160094899A1

(19) **United States**

(12) **Patent Application Publication**

Aumer et al.

(10) **Pub. No.: US 2016/0094899 A1**

(43) **Pub. Date: Mar. 31, 2016**

(54) **METHODS AND APPARATUS FOR IMPROVING SIGNAL QUALITY IN WEARABLE BIOMETRIC MONITORING DEVICES**

(71) Applicant: **Valencell, Inc.**, Raleigh, NC (US)

(72) Inventors: **Michael Edward Aumer**, Raleigh, NC (US); **Steven Francis LeBoeuf**, Raleigh, NC (US)

(21) Appl. No.: **14/829,032**

(22) Filed: **Aug. 18, 2015**

Related U.S. Application Data

(60) Provisional application No. 62/056,510, filed on Sep. 27, 2014, provisional application No. 62/110,655, filed on Feb. 2, 2015.

Publication Classification

(51) **Int. Cl.**

H04Q 9/00	(2006.01)
H04R 1/10	(2006.01)
G08B 21/18	(2006.01)

(52) **U.S. Cl.**

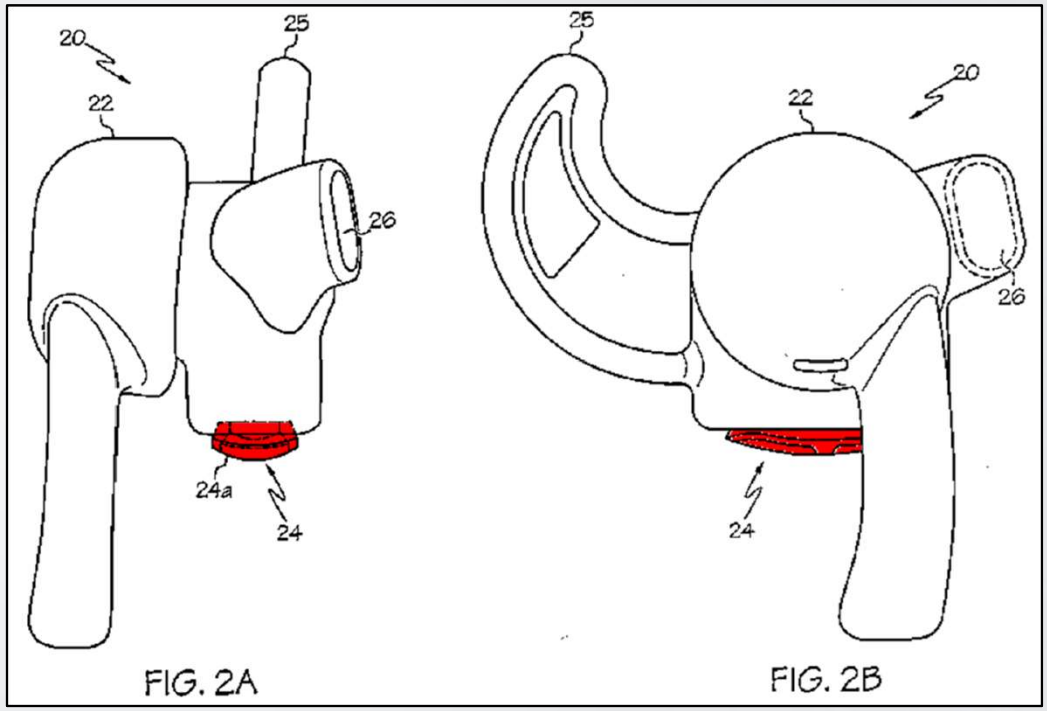
CPC ***H04Q 9/00*** (2013.01); ***G08B 21/18*** (2013.01); ***H04R 1/1091*** (2013.01)

(57) **ABSTRACT**

A wearable biometric monitoring device is configured to assess the biometric signal quality of one or more sensors associated with the monitoring device, determine how the user should adjust the device to improve the biometric fit, and instruct the user to wear the biometric monitoring device a certain way. Communicating instructions to a user may include instructing the user to execute a testing regimen while wearing the biometric monitoring device. The testing regimen facilitates an estimation of a signal quality that can be used to provide feedback to the user that he/she needs to adjust the device to improve the biometric fit and the biometric signal quality.

HIMPP 1027
IPR2023-01204
HIMPP v. Bragi

Ex. 1027

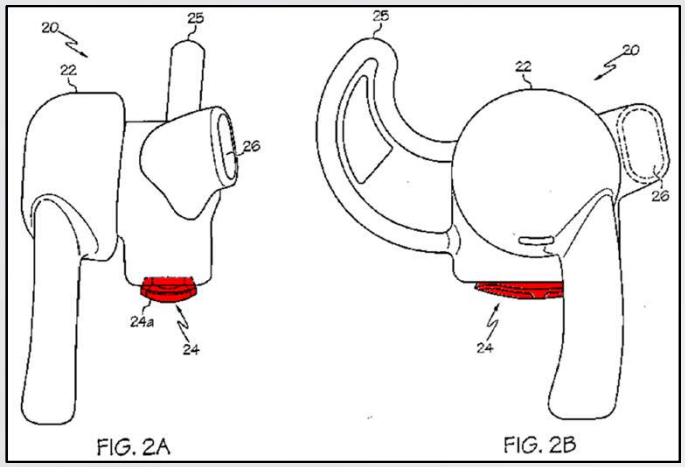


Ex. 1027 at Figs. 2A-2B (annotated)

Paper 29 (Pet. Opp. to RMTA) at 10-13

Aumer

HIMPP



Ex. 1027 at Figs. 2A-2B

[0066] FIGS. **2**A-**2**B illustrate a monitoring apparatus **20** configured to be secured to an ear of a subject and that may function as the monitoring device **10** of FIG. **1**, according to some embodiments of the present invention. The illustrated apparatus **20** includes an earpiece body or housing **22**, a sensor module **24**, a stabilizer **25**, and a sound port **26**. When positioned within the ear of a subject, the sensor module **24** has a region **24***a* configured to contact a selected area of the ear. The illustrated sensor region **24***a* may be contoured (i.e.,

Ex. 1027 at ¶ 66

[0069] The sensor modules **24**, **34** for the illustrated monitoring devices **20**, **30** of FIGS. **2**A-**2**B and **3**A-**3**B are configured to detect and/or measure physiological information from the subject. In some embodiments, the sensor modules **24**, **34**

Ex. 1027 at ¶ 69

Patent Owner's Expert Dr. Young

18	Q	So in your opinion, user biometrics
19		in the context of the '853 patent means
20		biological, physiological or chemical
21		characteristics of the user, correct?
22	A	I remember that's what I said.

Paper 29 (Pet. Opp. to RMTA) at 11-12

Ex. 1032 at 15:18-22

Aumer v. '014 Patent

HIMPP

Aumer

[0064] The ear is an ideal location for wearable health and environmental monitors. The ear is a relatively immobile platform that does not obstruct a person's movement or vision. Monitoring devices located at an ear have, for example, access to the inner-ear canal and tympanic membrane (for measuring core body temperature), muscle tissue (for monitoring muscle tension), the pinna, earlobe, and elsewhere (for monitoring blood gas levels), the region behind the ear (for measuring skin temperature and galvanic skin response), and the internal carotid artery (for measuring cardiopulmonary functioning), etc. A particularly distinct pulsatile blood flow waveform can be discerned optically, via PPG, between the anti-tragus and concha region of the ear. The ear is also at or near the point of exposure to: environmental breathable toxicants of interest (volatile organic compounds, pollution, etc.); noise pollution experienced by the ear; and lighting conditions for the eye. Furthermore, as the ear canal is naturally designed for transmitting acoustical energy, the ear provides a good location for monitoring internal sounds, such as heartbeat, breathing rate, and mouth motion.

Ex. 1027 at ¶ 64

'014 Patent

dard or protocol being utilized (e.g., NFC, RFID, etc.). In another embodiment, biometric readings, such as heart beat or temperature may be utilized by the wireless earpieces

Ex. 1001 at 5:17-19

the smart case. The data may include biometric information (e.g., pulse rate, oxygenation, distance travelled, calories burned, etc.), exercise information, commands received, and other data logged by sensors (e.g., heart rate monitor, pulse oximeter, accelerometers, gyroscopes, etc.) of the wireless earpiece or otherwise determined. The data may represent

Ex. 1001 at 9:64-10:2

Paper 29 (Pet. Opp. to RMTA) at 11-12

Aumer v. '014 Patent

HIMPP

Aumer

[0070] A sensor module utilized in accordance with embodiments of the present invention may be an optical sensor module that includes at least one optical emitter and at least one optical detector. Exemplary optical emitters include, but are not limited to light-emitting diodes (LEDs), laser diodes (LDs), organic light-emitting diodes (OLEDs), compact incandescent bulbs, micro-plasma emitters, IR blackbody sources, or the like. In addition, a sensor module may include various types of sensors including and/or in addition to optical sensors. For example, a sensor module may include one or more inertial sensors (e.g., an accelerometer, piezoelectric sensor, vibration sensor, photoreflector sensor, etc.) for detecting changes in motion, one or more thermal sensors (e.g., a thermopile, thermistor, resistor, etc.) for measuring temperature of a part of the body, one or more electrical sensors for measuring changes in electrical conduction, one or more skin humidity sensors, and/or one or more acoustical sensors.

Ex. 1027 at ¶ 70

'014 Patent

the smart case. The data may include biometric information (e.g., pulse rate, oxygenation, distance travelled, calories burned, etc.), exercise information, commands received, and other data logged by sensors (e.g., heart rate monitor, pulse oximeter, accelerometers, gyroscopes, etc.) of the wireless earpiece or otherwise determined. The data may represent

Ex. 1001 at 9:64-10:2

Paper 29 (Pet. Opp. to RMTA) at 12-13

POSITA Would Have Been Motivated to Combine Hain, Steinbrecher, or Shaffer with Aumer

Motivations to Combine with Aumer

HIMPP

Petitioner's Expert Dr. Sayfe Kiaei

- Aumer is analogous art to the challenged patent.
- POSITA would have known how to include a sensor to read user biometrics, as taught by Aumer, in earpieces, as taught by Hain, Steinbrecher, or Shaffer, with a reasonable expectation of success.
- Increased consumer interests in monitoring personal health and advances in miniaturizing sensors.
- Switching an earpiece on or off depending on user biometrics was known and provides added benefit of saving battery life of the earpiece.

Ex. 1026 at ¶¶ 63, 65-67, 69-72, 77, 79-81, 83-86, 91, 93-95, 97-100

Paper 29 (Pet. Opp. to RMTA) at 14-19

Patent Owner's Replies

Patent Owner's Reply

HIMPP

6. The predictability or unpredictability of the art; 7. quantity of experimentation necessary; 8. and amount of direction or guidance presented.

A POSITA would have known how to implement a sensor for reading various user biometrics. Little experimentation would be needed to make or use the claimed system, and the specification

biometric readings in a wireles

Paper 33 (PO Reply) at 11

6. The predictability or unpredictability of the art. Techniques to read biometrics that would be implemented in an earpiece, such as heartbeat or temperature, were known in the art and within the skill level of a POSITA to implement as of the priority date. Ex. 2007 ¶ 60.

Ex. 1034 (PO Reply in IPR2023-01150) at 10

establish this was well-known. Petitioner points to a single patent (Ex. 1028 – Rass) that discloses the ability to power up or down a hearing aid based on temperature of the hearing aid or shell, registered by a temperature sensor. Ex. 2007 ¶¶ 68-69.

Ex. 1034 (PO Reply in IPR2023-01150) at 5

Analogous Art – Two Separate Tests

HIMPP

***In re Ethicon, Inc.*, 844 F.3d 1344, 1349 (Fed. Cir. 2017)**
(quoting *In re Clay* , 966 F.2d 656, 658-59 (Fed. Cir. 1992))

> "Prior art is analogous where either (1) 'the art is from the same field of endeavor, regardless of the problem addressed' or (2) even if the reference is not within the same field of endeavor, 'the reference still is reasonably pertinent to the particular problem with which the inventor is involved.'"

***Ethicon*, 844 F.3d, 1349**

> "Generally, a skilled artisan would only have been motivated to combine analogous art."

Paper 33 (PO Reply) at 2

Petitioner's Sur-Replies

Rass
is
Analogous Art

Rass is from Same Field of Endeavor

HIMPP

Airbus S.A.S. v. Firepass Corp., 941 F.3d 1374, 1380 (Fed. Cir. 2019)

> "To determine the applicable field of endeavor, the factfinder must consider 'explanations of the invention's subject matter in the patent application, including the embodiments, function, and structure of the claimed invention.'"

Netflix, Inc. v. DivX, LLC, 80 F.4th 1352, 1359 (Fed. Cir. 2023)

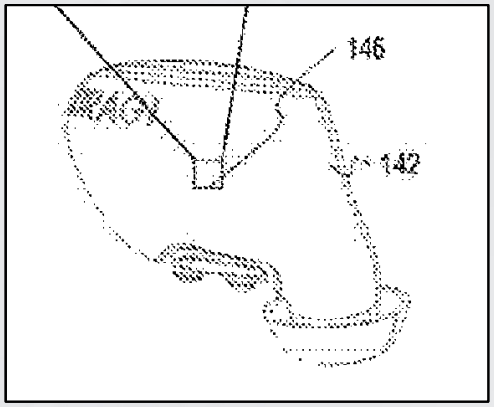
> "field of endeavor may be broadly defined because it relies on 'the complete disclosure of all embodiments in the patent's specification'"
>
> "We have affirmed findings of analogous art where the references shared a general field of endeavor."

Paper 35 (Pet. Sur-Reply) at 3; Paper 29 (Pet. Opp. to RMTA) at 6

Rass is from Same Field of Endeavor

HIMPP

’014 Patent



Ex. 1001 at Fig. 1 (excerpted)

I. Field of the Disclosure

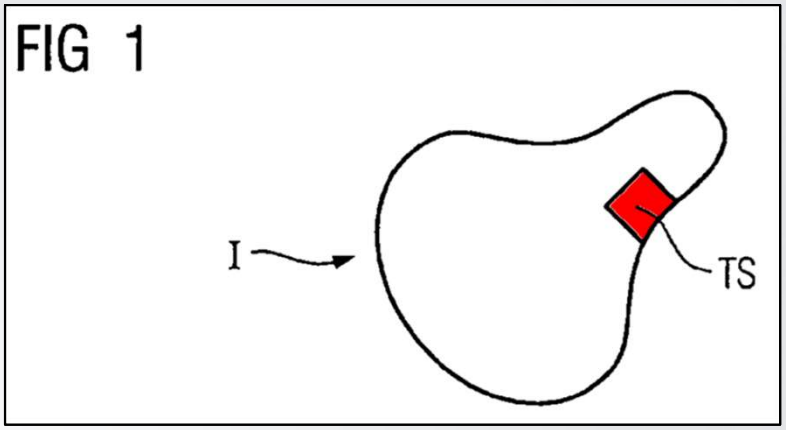
The present invention relates to wireless electronics and battery systems. More specifically, but not exclusively, the present invention relates to wireless earpieces that manage and extend battery life.

Ex. 1001 at 1:16-20

In another embodiment, the wireless earpieces **142**, **144** may represent wireless devices that may be ingested or implanted into a user. For example, the smart case **102** may

Ex. 1001 at 3:15-17

Rass



Ex. 1033 at Fig. 1 (annotated)

FIELD OF INVENTION

The present invention relates to a hearing aid unit with a switching device for switching the hearing aid on and off. The present invention also relates to a corresponding method for switching a hearing aid on and off.

Ex. 1033 at 1:12-17

With a particular development of the hearing aid unit according to the invention, the switching on and off operations include switching to or from standby mode. This mode extends the useful life or endurance of the hearing aid battery during normal operation.

Ex. 1033 at 2:27-31

Paper 3 (Petition) at 7-8; Paper 29 (Pet. Opp. to RMTA) at 6-7; Paper 35 (Pet. Sur-Reply) at 3

Rass is from Same Field of Endeavor

HIMPP

***Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1001 (Fed. Cir. 2016)**

> "The field of endeavor of a patent is not limited to the specific point of novelty, the narrowest possible conception of the field, or the particular focus within a given field."

Patent Owner's RMTA

Claim 14. [Proposed substitute for claim 1] A method for managing a wireless earpiece, comprising:

powering circuitry of the wireless earpiece utilizing a low power mode in response to detecting a magnetic field is applied to the wireless earpiece;

wherein a portion of the wireless earpiece fits within the ear canal opening and the wireless earpiece is configured to read user biometrics, and

altering the power sent to the circuitry of the wireless earpiece to a high power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces.

Paper 25 (RMTA) at APPX A-1

Paper 29 (Pet. Opp. to RMTA) at 7

Rass

(57) **ABSTRACT**

It is intended that the switching on and off of a hearing aid (I) should be made more user-friendly. To this end the hearing aid (I) is fitted with a temperature sensor (TS) to detect the body heat of the hearing aid wearer and therefore that the hearing aid is inserted in the auditory canal. The hearing aid is then switched on and off again based on the temperature signal. As an alternative to the temperature sensor, it is possible to use a pressure sensor to detect contact pressure of the hearing aid housing on the auditory canal, a resistance sensor to detect an electrical load resistance as a function of volume or an acoustic sensor to detect a sound level. It is also possible to switch the hearing aid (I) on and off wirelessly using a remote control.

Ex. 1033 at Abstract

Rass is Reasonably Pertinent

HIMPP

***Netflix*, 80 F.4th at 1361–1362**
(quoting *In re GPAC Inc.*, 57 F.3d 1573, 1578 (Fed. Cir. 1995))

> "[A] prior art reference is reasonably pertinent only if 'a person of ordinary skill would reasonably have consulted those references and applied their teachings in seeking a solution to the problem that the inventor was attempting to solve.'"

***In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992)**

> "If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection."

Paper 29 (Pet. Opp. to RMTA) at 7-8

Rass is Reasonably Pertinent

HIMPP

Patent Owner's Reply

> Rass is also not reasonably pertinent to the problem with which the inventor of the '014 Patent is involved. As its title discloses, Rass is concerned with switching a hearing aid on and off, Ex. 1033 (1:15-1:17), whereas the '014 Patent is concerned with managing and extending battery life of wireless electronics through the variation of power modes and methods of charging. Ex. 1001 (1:24-1:41).

Paper 33 (PO Reply) at 3

Rass

> With a particular development of the hearing aid unit according to the invention, the switching on and off operations include switching to or from standby mode. This mode extends the useful life or endurance of the hearing aid battery during normal operation.

Ex. 1033 at 2:27-31

Paper 35 (Pet. Sur-Reply) at 3-4; Paper 29 (Pet. Opp. to RMTA) at 7-8

Rass is Reasonably Pertinent

HIMPP

Patent Owner's RMTA

Claim 14. [Proposed substitute for claim 1] A method for managing a wireless earpiece, comprising:

powering circuitry of the wireless earpiece utilizing a low power mode in response to detecting a magnetic field is applied to the wireless earpiece;

wherein a portion of the wireless earpiece fits within the ear canal opening and the wireless earpiece is configured to read user biometrics, and

altering the power sent to the circuitry of the wireless earpiece to a high power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces.

Paper 25 (RMTA) at APPX A-1

Rass

(57) **ABSTRACT**

It is intended that the switching on and off of a hearing aid (I) should be made more user-friendly. To this end the hearing aid (I) is fitted with a temperature sensor (TS) to detect the body heat of the hearing aid wearer and therefore that the hearing aid is inserted in the auditory canal. The hearing aid is then switched on and off again based on the temperature signal. As an alternative to the temperature sensor, it is possible to use a pressure sensor to detect contact pressure of the hearing aid housing on the auditory canal, a resistance sensor to detect an electrical load resistance as a function of volume or an acoustic sensor to detect a sound level. It is also possible to switch the hearing aid (I) on and off wirelessly using a remote control.

Ex. 1033 at Abstract

Paper 35 (Pet. Sur-Reply) at n. 3; Paper 29 (Pet. Opp. to RMTA) at 7-8

Rass is Combinable with Hain, Steinbrecher, or Shaffer

Rass is Combinable with Primary References

HIMPP

Patent Owner's Reply:	Petitioner's Sur-Reply:
Rass is not from same field of endeavor as or analogous to Hain, Steinbrecher, or Shaffer	It is not required that the references be analogous art to each other (M.P.E.P. §2141.01(a)(I))
Rass's temperature sensor measures temperature of hearing aid or its shell, not a user biometric	Rass explicitly discloses that its hearing aid temperature sensor "detect[s] the body heat of the hearing aid wearer"
Rass's temperature sensor is incompatible with Hain's telephone mode because of alleged "interference signal" imposed by magnetic field emitted by telephone	Patent Owner and its expert provide no support as to why a magnetic field would interfere with a temperature sensor Hain's telephone mode is irrelevant
Combination with Rass suffers from hindsight bias	Rass disclosed several benefits at least a decade before the priority date

Paper 35 (Pet. Sur-Reply) at 4-7

Rass is Combinable with Primary References HIMPP

Patent Owner's Reply

Second, implementing a magnetic-field hearing aid system as taught by Hain to include a temperature sensor would not have been a "predictable result" because, as discussed above, Rass is not in the same field of endeavor as Hain. *See In re Clay*, 966 F.2d at 658. A POSITA would not have been motivated to incorporate a

Paper 33 (PO Reply) at 4

have combined Hain with Rass. Additionally, a POSITA would not have been motivated to combine Steinbrecher with Rass because they are not directed to solving the same problems or the same technological fields. Steinbrecher relates to a "procedure and a device for the contactless loading of an accumulator battery in a hearing aid . . . located in a charging shell." Ex. 1011 (9:3-5). Steinbrecher is not concerned with monitoring biometrics, and besides hindsight, a POSITA would not have combined Steinbrecher's charging with biometric readings. Ex. 2006 ¶¶ 70-71.

Paper 33 (PO Reply) at 5

Petitioner's Sur-Reply

PO argues that Petitioner's stated field of endeavor—wireless electronics, namely wireless earpieces—is "oversimplified." PO Reply at 3. But the '014 patent itself discloses that its "invention relates to ***wireless electronics… but not exclusively… to wireless earpieces***." Ex-1001-USP014, 1:17–20; *see also id*., 3:15–27 ("[W]ireless earpieces 142, 144 may represent ***wireless devices that may be ingested or implanted into a user***."). Notably, the "field of endeavor may be broadly defined." *Netflix, Inc. v. DivX, LLC*, 80 F.4th 1352, 1359 (Fed. Cir. 2023)); *see also id.* at 1359 ("We have affirmed findings of analogous art where the references shared a general field of endeavor."). PO does not dispute that Rass (or any of Hain, Steinbrecher, and Shaffer) discloses a wireless earpiece.

Paper 35 (Pet. Sur-Reply) at 3

Rass is Combinable with Primary References

HIMPP

***In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004)**

> "References within the statutory terms of 35 U.S.C. § 102 qualify as prior art for an obviousness determination only when ***analogous to the claimed invention***."

M.P.E.P. § 2141.01(a)(I) (citing *Sanofi-Aventis Deutschland GMbH v. Mylan Pharms. Inc.*, 66 F.4th 1373, 1380 (Fed. Cir. 2023); *Corephotonics, Ltd. v. Apple Inc.*, 84 F.4th 990, 1007 (Fed. Cir. 2023))

> "When more than one prior art reference is used as the basis of an obviousness rejection, ***it is not required that the references be analogous art to each other***."

Paper 35 (Pet. Sur-Reply) at 4-5

Rass is Combinable with Primary References

HIMPP

Patent Owner's Reply

is related to the temperature of the hearing aid shell. Rass discloses an in-ear hearing aid that includes a temperature sensor. "When wor[n], the hearing aid I or its shell heats up. The temperature sensor TS registers this heat. Once a certain temperature threshold is exceeded, the device is switched on." Ex. 1033 at 2:64-2:67. This temperature sensor is not detecting the body temperature of the wearer, which is understood by a POSITA to be a biometric signal. Rather, the temperature sensor is detecting an increase in heat, which could be the result of power dissipation of the hearing aid device itself. *See* Ex. 2006 ¶¶ 64-67.

Paper 33 (PO Reply) at 4

6. The predictability or unpredictability of the art. Techniques to read biometrics that would be implemented in an earpiece, such as heartbeat or temperature, were known in the art and within the skill level of a POSITA to implement as of the priority date. Ex. 2007 ¶ 60.

Ex. 1034 (PO Reply in IPR2023-01150)at 10

Paper 35 (Pet. Sur-Reply) at 5-6

Rass

(57) **ABSTRACT**

It is intended that the switching on and off of a hearing aid (I) should be made more user-friendly. To this end the hearing aid (I) is fitted with a temperature sensor (TS) to detect the body heat of the hearing aid wearer and therefore that the hearing aid is inserted in the auditory canal. The hearing aid is then switched on and off again based on the temperature signal. As an alternative to the temperature sensor, it is possible to use a pressure sensor to detect contact pressure of the hearing aid housing on the auditory canal, a resistance sensor to detect an electrical load resistance as a function of volume or an acoustic sensor to detect a sound level. It is also possible to switch the hearing aid (I) on and off wirelessly using a remote control.

Ex. 1033 at Abstract

Rass is Combinable with Primary References HIMPP

Patent Owner's Reply

Second, implementing a magnetic-field hearing aid system as taught by Hain to include a temperature sensor would not have been a "predictable result" because, as discussed above, Rass is not in the same field of endeavor as Hain. *See In re Clay*, 966 F.2d at 658. A POSITA would not have been motivated to incorporate a temperature sensor in Hain because of the interference signal imposed on the temperature sensor and sensor electronics due to the magnetic field emitted by the telephone when it is being held next to the user's ear during conversation. *See* Ex. 2006 ¶ 68. The interference signal can produce a wrong temperature reading, thus, causing the hearing aid to shut down. *See id.*

Paper 33 (PO Reply) at 4-5

Patent Owner's Expert Dr. Young

68. Second, implementing a hearing aid that adjusts power modes based on magnetic fields as taught by Hain to include a temperature sensor taught by Rass would not yield a predictable result. A POSITA would not have been motivated to incorporate a temperature sensor in Hain because of the interference signal imposed on the temperature sensor and sensor electronics due to the magnetic field emitted by the telephone when it is being held next to the user's ear during conversation. The interference signal can produce a wrong temperature reading, thus, causing the hearing aid to shut down.

Ex. 2006 at ¶ 68

Paper 35 (Pet. Sur-Reply) at 6

Rass is Combinable with Primary References

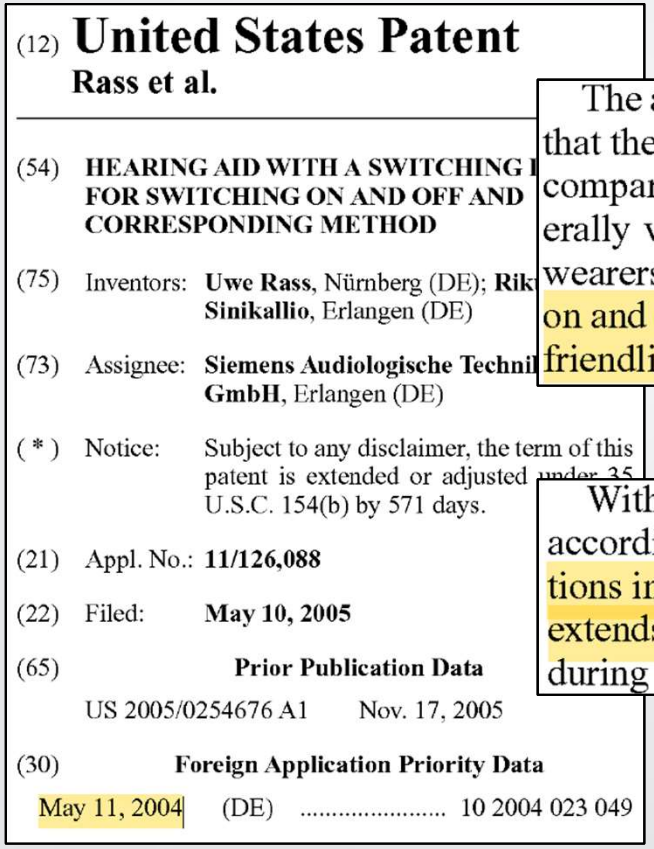
HIMPP

Patent Owner's Reply

> ***Third***, a POSITA would not have had a reasonable expectation of success in combining Hain and Rass because there was no motivation to combine these references besides Petitioner's hindsight.

Paper 33 (PO Reply) at 5

Rass



(12) **United States Patent**
Rass et al.

(54) **HEARING AID WITH A SWITCHING I FOR SWITCHING ON AND OFF AND CORRESPONDING METHOD**

(75) Inventors: **Uwe Rass**, Nürnberg (DE); **Rik Sinikallio**, Erlangen (DE)

(73) Assignee: **Siemens Audiologische Technil GmbH**, Erlangen (DE)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 571 days.

(21) Appl. No.: **11/126,088**

(22) Filed: **May 10, 2005**

(65) **Prior Publication Data**

US 2005/0254676 A1 Nov. 17, 2005

(30) **Foreign Application Priority Data**

May 11, 2004 (DE) 10 2004 023 049

Ex. 1033 at Cover

> The advantage of the solution according to the invention is that there is no need for a mechanical switch, e.g. the battery compartment switch. The battery compartment switch is generally very difficult to operate, in particular for hearing aid wearers with impaired motor functions. Automatic switching on and off therefore represents a significant increase in user-friendliness.

Ex. 1033 at 2:14-20

> With a particular development of the hearing aid unit according to the invention, the switching on and off operations include switching to or from standby mode. This mode extends the useful life or endurance of the hearing aid battery during normal operation.

Ex. 1033 at 2:27-31

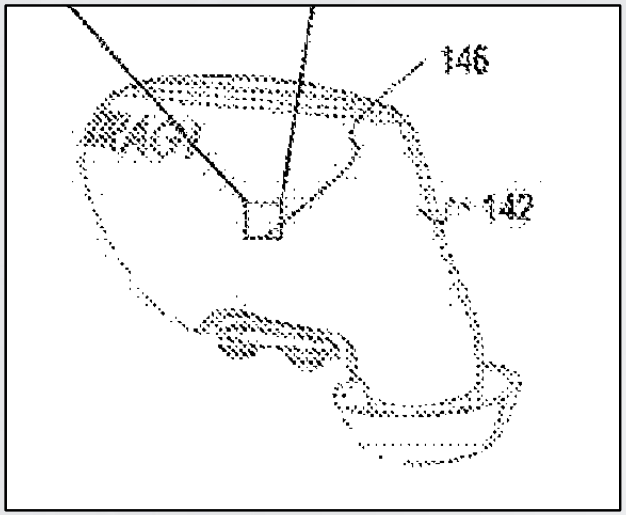
Paper 35 (Pet. Sur-Reply) at 6-7; Paper 29 (Pet. Opp. to RMTA) at 9-10

Aumer
is
Analogous Art

Aumer is from Same Field of Endeavor

HIMPP

’014 Patent



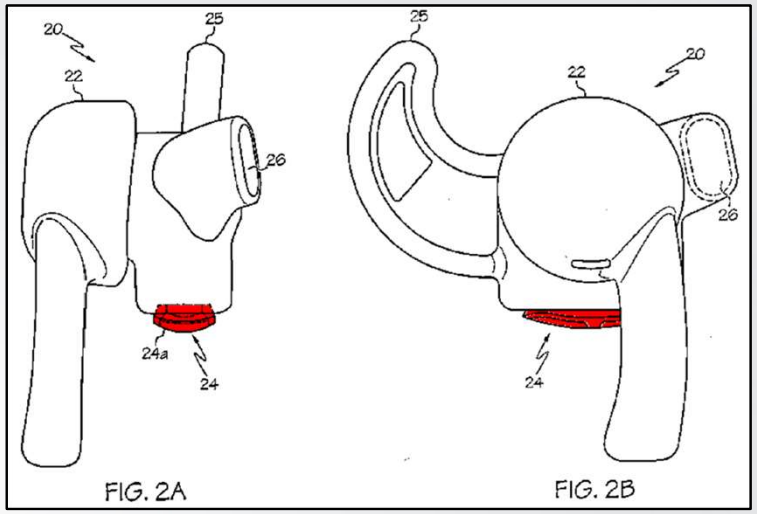
Ex. 1001 at Fig. 1 (excerpted)

I. Field of the Disclosure

The present invention relates to wireless electronics and battery systems. More specifically, but not exclusively, the present invention relates to wireless earpieces that manage and extend battery life.

Ex. 1001 at 1:16-20

Aumer



Ex. 1027 at Figs. 2A-2B

[0066] FIGS. **2A-2B** illustrate a monitoring apparatus **20** configured to be secured to an ear of a subject and that may function as the monitoring device **10** of FIG. **1**, according to some embodiments of the present invention. The illustrated apparatus **20** includes an earpiece body or housing **22**, a sensor module **24**, a stabilizer **25**, and a sound port **26**. When

Ex. 1027 at ¶ 66

Paper 3 (Petition) at 7-8; Paper 29 (Pet. Opp. to RMTA) at 14-15; Paper 35 (Pet. Sur-Reply) at 7-8

Aumer is from Same Field of Endeavor

HIMPP

Patent Owner's RMTA

Claim 14. [Proposed substitute for claim 1] A method for managing a wireless earpiece, comprising:

powering circuitry of the wireless earpiece utilizing a low power mode in response to detecting a magnetic field is applied to the wireless earpiece;

wherein a portion of the wireless earpiece fits within the ear canal opening and the wireless earpiece is configured to read user biometrics, and

altering the power sent to the circuitry of the wireless earpiece to a high power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces.

Paper 25 (RMTA) at APPX A-1

Aumer

FIELD OF THE INVENTION

[0002] The present invention relates generally to monitoring devices and methods, more particularly, to monitoring devices and methods for measuring physiological information.

Ex. 1027 at ¶ 2

Patent Owner's Expert Dr. Young

Q So in your opinion, user biometrics in the context of the '853 patent means biological, physiological or chemical characteristics of the user, correct?

A I remember that's what I said.

Ex. 1032 at 15:18-22

Paper 29 (Pet. Opp. to RMTA) at 14-15; Paper 35 (Pet. Sur-Reply) at 7-8

Aumer is Reasonably Pertinent

HIMPP

Patent Owner's RMTA

Claim 14. [Proposed substitute for claim 1] A method for managing a wireless earpiece, comprising:

powering circuitry of the wireless earpiece utilizing a low power mode in response to detecting a magnetic field is applied to the wireless earpiece;

wherein a portion of the wireless earpiece fits within the ear canal opening and the wireless earpiece is configured to read user biometrics, and

altering the power sent to the circuitry of the wireless earpiece to a high power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces.

Paper 25 (RMTA) at APPX A-1

Aumer's Title

(54) **METHODS AND APPARATUS FOR IMPROVING SIGNAL QUALITY IN WEARABLE BIOMETRIC MONITORING DEVICES**

Ex. 1027 at Title

Aumer's Abstract

(57) **ABSTRACT**

A wearable biometric monitoring device is configured to assess the biometric signal quality of one or more sensors associated with the monitoring device, determine how the user should adjust the device to improve the biometric fit, and instruct the user to wear the biometric monitoring device a certain way. Communicating instructions to a user may include instructing the user to execute a testing regimen while wearing the biometric monitoring device. The testing regimen facilitates an estimation of a signal quality that can be used to provide feedback to the user that he/she needs to adjust the device to improve the biometric fit and the biometric signal quality.

Ex. 1027 at Abstract

Paper 29 (Pet. Opp. to RMTA) at 15-16; Paper 35 (Pet. Sur-Reply) at 8

Aumer is Combinable with Hain, Steinbrecher, or Shaffer

Aumer is Combinable with Primary References

HIMPP

Patent Owner's Reply:	Petitioner's Sur-Reply:
Aumer is not from same field of endeavor as or analogous to Hain, Steinbrecher, or Shaffer	It is not required that the references be analogous art to each other (M.P.E.P. §2141.01(a)(I))
A POSITA concerned with the problems described in Hain would not have been motivated to add biometric monitoring to magnetic-field hearing aid system of Hain	"familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle" (*KSR*, 550 U.S., 420–421)
Not known for wireless earpiece to switch power mode based on biometrics because Rass measures temperature of hearing aid or shell, not direct body temperature of user	Rass explicitly discloses that its hearing aid temperature sensor "detect[s] the body heat of the hearing aid wearer"

Paper 35 (Pet. Sur-Reply) at 8-9

Aumer is Combinable with Primary References

HIMPP

Patent Owner's Reply

> ***Second***, implementing a magnetic field hearing aid system as taught by Hain to include a biometric monitoring would not have been a "predictable result" because Aumer is not in the same field of endeavor as Hain. *See In re Clay*, 966 F.2d at 658. Hain is concerned with adjusting power modes based a magnetic field. Aumer is concerned with detecting biometric signals. Ex. 2006 ¶ 80.

Paper 33 (PO Reply) at 7

Petitioner's Sur-Reply

> PO argues that combining primary reference Hain—and similarly Steinbrecher or Shaffer—with Aumer would not have been a "predictable result" essentially because Aumer is not from the same field of endeavor as these primary references. PO Reply at 6–7. But, as explained above for Rass, the test is whether a reference is "analogous to the claimed invention," not other references. PO does not dispute that Hain, Steinbrecher, or Shaffer is analogous to the '014 patent or PO's proposed substitute claims. Even then, Prof. Kiaei explained that these references, just like Aumer (*see* Section II.B.1), are analogous art. *See* Ex-1026-Kiaei-Decl., ¶¶63–68, 77–82, 91–96.

Paper 35 (Pet. Sur-Reply) at 8-9

Paper 35 (Pet. Sur-Reply) at 8-9

Aumer is Combinable with Primary References

HIMPP

***In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004)**

> "References within the statutory terms of 35 U.S.C. § 102 qualify as prior art for an obviousness determination only when ***analogous to the claimed invention***."

M.P.E.P. § 2141.01(a)(I) (citing *Sanofi-Aventis Deutschland GMbH v. Mylan Pharms. Inc.*, 66 F.4th 1373, 1380 (Fed. Cir. 2023); *Corephotonics, Ltd. v. Apple Inc.*, 84 F.4th 990, 1007 (Fed. Cir. 2023))

> "When more than one prior art reference is used as the basis of an obviousness rejection, ***it is not required that the references be analogous art to each other***."

Paper 35 (Pet. Sur-Reply) at 4-5, 8-9

Aumer is Combinable with Primary References

HIMPP

Patent Owner's Reply

> ***Third***, "increased consumer interest in personal health and advances in miniaturizing sensors," *see* Opp. at 17, is irrelevant. A POSITA concerned with the problems described in Hain would not have been motivated to add biometric monitoring to the magnetic-field hearing aid system of Hain. This would not have helped with improving the magnetic field to adjust power modes disclosed by Hain. Ex. 2006 ¶ 81.

Paper 33 (PO Reply) at 7

KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 420–421 (2007)

> "familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle"

Paper 35 (Pet. Sur-Reply) at 9

Aumer is Combinable with Primary References

HIMPP

Patent Owner's Reply

Fourth, Petitioner alleges that "it was known in the art prior to the priority date of the '014 Patent that a sensor in a wireless earpiece could allow the wireless earpiece to automatically switch its power mode . . . depending on biometrics." Opp. at 18. However, Petitioner cites one reference (Rass) that mentions using the temperature of the hearing aid or shell to turn a hearing aid on or off, not the direct body temperature of the user. Ex. 1033 (2:64-2:65). Further, a POSITA would not consider the temperature of a hearing aid or hearing aid shell to be a biometric reading. *See* Ex. 2006 ¶ 82.

Paper 33 (PO Reply) at 7-8

Rass

(57) **ABSTRACT**

It is intended that the switching on and off of a hearing aid (I) should be made more user-friendly. To this end the hearing aid (I) is fitted with a temperature sensor (TS) to detect the body heat of the hearing aid wearer and therefore that the hearing aid is inserted in the auditory canal. The hearing aid is then switched on and off again based on the temperature signal. As an alternative to the temperature sensor, it is possible to use a pressure sensor to detect contact pressure of the hearing aid housing on the auditory canal, a resistance sensor to detect an electrical load resistance as a function of volume or an acoustic sensor to detect a sound level. It is also possible to switch the hearing aid (I) on and off wirelessly using a remote control.

Ex. 1033 at Abstract

Paper 35 (Pet. Sur-Reply) at 9

Patent Owner's Substitute Claims Lack Enablement

Specification Must Enable Full Scope

HIMPP

***Amgen Inc. v. Sanofi*, 598 U.S. 594, 610 (2023)**

> "If 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. In other words, the specification must enable the full scope of the invention as defined by its claims. The more one claims, the more one must enable."

Paper 29 (Pet. Opp. to RMTA) at 19-20; Paper 35 (Pet. Sur-Reply) at 9

"User Biometrics" Class

HIMPP

Patent Owner's Expert Dr. Darrin Young

Q As a person of ordinary skill in the art, what would you say is the meaning of user biometrics in the context of the '853 Patent?

A Well, the user biometrics, you know, to a person of ordinary skill in the art looking at the claim term, the art of the specification, that term means about biological, physiological or chemical characteristics with respect to the individual. And that individual is a user, right, and that user is the person who -- who uses or wears the wireless earpieces.

Ex. 1032 at 15:2-14

Q So in your opinion, user biometrics in the context of the '853 patent means biological, physiological or chemical characteristics of the user, correct?

A I remember that's what I said.

Ex. 1032 at 15:18-22

Paper 29 (Pet. Opp. to RMTA) at 20; Paper 35 (Pet. Sur-Reply) at 9-10

"User Biometrics" Examples

HIMPP

Petitioner's Expert Dr. Sayfe Kiaei

106. But Dr. Young's broad definition of "user biometrics" also includes, for example, DNA sequencing, retinal scans, vein patterns, and facial features. *See id.* at 16:24–17:3 ("for example, I [came across] technology where something is scanning an individual's retinal eye . . . that will be considered a biometrics"). It is

Ex. 1026, ¶ 106

Patent Owner's Expert Dr. Darrin Young

Q Is a facial feature for facial recognition a type of using biometrics?

A I didn't offer that opinion in my report, but I can maybe -- just to be fair, I can tell you that for example, I can cross technology where something is scanning an individual's retinal eye, for example. You know, that will be considered a biometrics, but when you say facial, I just have not thought about that yet.

Ex. 1032 at 16:20-17:3

Paper 29 (Pet. Opp. to RMTA) at 21; Paper 35 (Pet. Sur-Reply) at 10-11

Patent Owner's Reply

HIMPP

> **4. The state of the prior art.** The "evolving" research Petitioner points to relating to DNA sequencing, facial recognition, and retinal scans is irrelevant as these techniques would not be employed in an earpiece or in any other embodiment listed in the specification. *Id.* ¶ 62.

> **1. The breath of the claims.** The Substitute Claims require a wireless earpiece configured to fit within the ear canal and to read user biometrics. Thus, a POSITA would know that only a limited set of biometrics would be suitable for an earpiece worn within the ear and for performing associated functions, which would include controlling various power modes, and would not logically include things like endoscopic pill, bone implants, etc. Ex. 1001 (2:1-2:2, 3:23-3:26). Ex. 2006 ¶ 62.

Paper 33 (PO Reply) at 9-11

Petitioner's Sur-Reply

HIMPP

Substitute Claims:	Therefore:
Do not limit type of user biometrics Do not recite any use of measured user biometrics (except substitute claim 22)	Any "biological, physiological or chemical characteristics of the user" per Patent Owner's expert's definition
Require only "a portion of the wireless earpiece" to fit within the ear canal	Portion of the earpiece may be outside the ear canal
Do not require earpiece to read user biometrics while worn within the ear	Earpiece could read user biometrics while not positioned within the ear

Paper 35 (Pet. Sur-Reply) at 10-12

Claim 14. [Proposed substitute for claim 1] A method for managing a wireless earpiece, comprising:

powering circuitry of the wireless earpiece utilizing a low power mode in response to detecting a magnetic field is applied to the wireless earpiece;

wherein a portion of the wireless earpiece fits within the ear canal opening and the wireless earpiece is configured to read user biometrics, and

altering the power sent to the circuitry of the wireless earpiece to a high power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces.

Paper 25 (RMTA) at APPX A-1

User Biometrics with a Wireless Earpiece

HIMPP

Petitioner's Expert Dr. Sayfe Kiaei

scanning an individual's retinal eye . . . that will be considered a biometrics"). It is important to note that Patent Owner's proposed substitute claims do not require that the wireless earpiece read user biometrics while it is worn within the ear. Thus, it is plausible for a wireless earpiece to incorporate an optical sensor (*e.g.*, an infrared sensor or a camera) that can scan the user's face or eyes while the user looks into the sensor or the user's vein patterns when placed on the user's hand or finger. If such a wireless earpiece is paired with another electronic device (*e.g.*, a computer, a smart television, a smartphone), identifying a user through facial, retinal, or vein pattern recognition could not only unlock the device itself but also features, applications, and other settings within the device that are tailored for this specific user. In fact, the '014 patent itself contemplates embodiments of wireless earpieces that "may be ingested or implanted into a user," allowing for measurements of all sorts of biological, physiological, or chemical characteristics of the user. Exhibit 1001 ('014 patent) at 3:15–20. The specification of the '853 and '014 patents does not disclose

Ex. 1026, ¶ 106

'014 Patent

In another embodiment, the wireless earpieces **142**, **144** may represent wireless devices that may be ingested or implanted into a user. For example, the smart case **102** may be configured to work with an endoscopic pill, pacemaker, tracking device, contact lenses, oral implants, bone implants, artificial organs, or so forth. The smart case **102** may act as a logging tool for receiving information, data, or measurements made by the wireless devices. For example, the smart case **102** may be attached to a belt or worn by the user to download data from the wireless device(s) in real-time. As a result, the smart case **102** may be utilized to store, charge, and synchronize data for the wireless earpieces **142**, **144** in any number of embodiments.

Ex. 1001 at 3:15-27

Paper 29 (Pet. Opp. to RMTA) at 20-21

Petitioner's Sur-Reply

HIMPP

- Substitute claims indefinite under 35 U.S.C. § 112(b) if Patent Owner's interpretation were to be accepted.
- Unclear which types of biometrics fall within the claims that are:
  - "suitable for an earpiece worn within the ear" and
  - suitable "for performing associated functions, which would include controlling various power modes"

1. The breath of the claims. The Substitute Claims require a wireless earpiece configured to fit within the ear canal and to read user biometrics. Thus, a POSITA would know that only a limited set of biometrics would be suitable for an earpiece worn within the ear and for performing associated functions, which would include controlling various power modes, and would not logically include things like endoscopic pill, bone implants, etc. Ex. 1001 (2:1-2:2, 3:23-3:26). Ex. 2006 ¶ 62.

Paper 33 (PO Reply) at 10

Paper 35 (Pet. Sur-Reply) at 11-12

Respectfully submitted,

/Trishan Esram/
Trishan Esram
Registration No. 74,075

CERTIFICATE OF SERVICE

I hereby certify that on January 23, 2025, I caused a true and correct copy of the foregoing materials:

- Petitioner's Demonstrative Exhibits

to be served via electronic mail by consent on counsel of record at:

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Respectfully Submitted

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