

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOSE CORPORATION,
Petitioner,

v.

INGENIOSPEC, LLC,
Patent Owner.

Case No. IPR2025-01550
Patent No. 12,044,901

**PETITION FOR INTER PARTES REVIEW
UNDER 35 U.S.C. §§311-319 AND 37 C.F.R. §42.1 *et seq.***

TABLE OF CONTENTS

MANDATORY NOTICES.....	xii
A. Real Party-In-Interest – § 42.8(b)(1)	xii
B. Related Matters – § 42.8(b)(2)	xii
1. United States Patent & Trademark Office	xii
a. Alleged Priority Chain 1 (EX1001, 1:7-36, 2:4-19)	xii
b. Alleged Priority Chain 2 (EX1001, 2:20-42).....	xiii
c. Alleged Priority Chain 3 (EX1001, 3:34-59).....	xiii
d. Alleged Priority Chain 4 (EX1001, 3:34-48, 4:18-31)	xiii
e. Descendant Applications.....	xiv
2. United States District Courts.....	xiv
C. Counsel and Service Information – § 42.8(b)(3) and (4)	xv
I. CERTIFICATION OF GROUNDS FOR STANDING	1
II. UNPATENTABILITY GROUNDS.....	1
III. THE '4901 PATENT.....	2
A. Challenged Claims.....	4
B. Level of Ordinary Skill in the Art	4
C. Prosecution History	4
D. Priority	5
1. Priority Requires Consistent Written Description Support.....	5
2. Patent Owner Bears the Burden on Priority.....	6
3. The '4901 Patent Claims Lack Priority to Serial Nos. 11/580,222 and 11/891,411, Making Howell-887 Incontestable Prior Art.....	6
a. The '222- and '411-Applications Fail to Support the '4901 Patent Claims Because Neither Discloses a “Charging Apparatus,” and They Improperly Attempt to Incorporate- by-Reference the Relevant Matter From Provisional and Unpublished Applications.....	9

b. The Board May Also Find that the '222- and '411- Applications' Attempts to Incorporate Charging Apparatus Disclosure Lack Sufficient Particularity	17
IV. CLAIM INTERPRETATION	18
V. GROUND 1: HOWELL-887, INCORPORATING OR IN COMBINATION WITH ITS INCORPORATED APPLICATIONS RENDERS CLAIMS 1-59 UNPATENTABLE	18
VI. GROUND 2A: GRIFFIN IN VIEW OF HOLLEMANS	46
A. Griffin (EX1005)	46
B. Hollemans (EX1006)	48
C. The Griffin-Hollemans Combination	49
D. Claim-By Claim Analysis	51
1. Claim 1	51
a. [1PRE]	51
b. [1A]: “a head-worn personal electronic apparatus...”	51
c. [1B]: “...a speaker...worn proximate to the ear...”	52
d. [1C]: “a touch sensitive surface...”	52
e. [1D]: “a rechargeable battery...”	53
f. [1E]: “electronic circuitry...connected to at least the rechargeable battery,...”	53
g. [1F]: “wireless communication circuitry...”	54
h. [1G]: “at least one conductive element...partially- exposed to enable interconnection...[and] electrically connected to at least the rechargeable battery”	55
i. [1H]: “a charging apparatus having...a charging connector,”	58
j. [1I]: “...the rechargeable battery...recharged while the [headset] is placed in the charging apparatus.”	59
2. Claim 2: “...the sensed touch input...operates to at least alter operation of the [headset]”	59

3. Claim 3: “...support voice calls to the user, and wherein the at least one operation of the [headset] being altered concerns at least accepting or declining a voice call...”	60
4. Claim 4: “...configured to support audio output...via the speaker, and...[the] operation...being altered concerns control of the audio output being provided...”	60
5. Claim 5: “...distinguish at least a direction of the user input with respect to the touch sensitive surface.”	61
6. Claim 6: “...detect at least a sliding of a finger action with respect to the touch sensitive surface.	62
7. Claim 7: “...facilitate determination at least whether the user input pertains to a forward sliding action or a backward sliding action with respect to the touch sensitive surface.”	62
8. Claim 8: “...a physical condition sensor...configured to acquire data pertaining to a physical condition of the user....”	62
9. Claim 10: “...a microphone...to receive a voice input...determine or receive a determination of a requested operation from the voice input using voice recognition, and control an operation by the [headset] based on the requested operation”	63
10. Claim 11: “...a radiation sensor...”	64
11. Claim 12: “...a sensor...configured to sense data indicative of whether the [headset] is being worn by the user”	64
12. Claim 13: “...wherein the sensor is electrically connected to the electronic circuitry, and wherein the electronic circuitry...is configured to at least alter operation of the [headset] based...on the sensed data...”	65
13. Claim 14	66
14. Claim 18	66
a. [18PRE].....	66
b. [18A]	66
c. [18B]	66
d. [18C]: “a first microphone...positioned to pick up at least audio input from at least the user”	66

e. [18D]: “a second microphone...positioned to pick up at least environmental audio input associated with an environment around the head-worn personal electronic apparatus”.....	66
f. [18E].....	67
g. [18F].....	67
h. [18G] “...the electronic circuitry being configured to...process the audio input from...the user via the first microphone to remove...a portion of the environmental audio input...picked up via the second microphone...”.....	68
i. [18H]	70
j. [18I].....	70
k. [18J]70	
l. [18K]	70
15. Claim 19: “...the first microphone is positioned to be directed forward towards the user's front...and the second microphone is positioned to be directed outward away from the user’s head...”	70
16. Claim 20	71
17. Claim 21	71
18. Claim 23 “...sensor is positioned to be directed towards the user’s head...”	71
19. Claim 24: “...the data captured by the sensor is dependent on thermal characteristics of the user's head...”	71
20. Claim 25	71
21. Claim 26	71
22. Claim 27	72
23. Claim 28: “...a user input device...based on at least capacitive effect...”	72
24. Claim 29	72
25. Claim 30	72
26. Claim 31	72
27. Claim 34: “...the conductive element is a conductive pad”	73

28. Claim 35	73
29. Claim 36: "...the detected data by the 'being worn' sensor is dependent on a physical characteristic of the user."	74
VII. <u>GROUND 2B</u> : THE GRIFFIN-HOLLEMANS COMBINATION IN VIEW OF IRVIN RENDERS OBVIOUS CLAIMS 12-15, 18-21, 23-31, 34-39, 41-45, 47-54, 56-59	74
A. Irvin (EX1008)	75
B. The Griffin-Hollemans-Irvin Combination	75
1. Claims 12-14, 18-21, 23-31, and 34-36	77
2. Claim 15: "...low power operational mode."	78
3. Claim 37: "...an accelerometer...configured to sense movement data."	79
4. Claim 38	80
5. Claim 39	80
6. Claim 41	80
7. Claim 42	80
8. Claim 43	81
9. Claim 44	81
a. [44I] "a radiation emitter...configured to at least direct radiation towards the user..."	81
b. [44J] "a radiation detector...configured to detect at least a portion of the radiation from the radiation emitter that is reflected back from the user..."	82
10. Claim 45	82
11. Claim 47	83
12. Claim 48	83
13. Claim 49	83
14. Claim 50	83
15. Claim 51	83
16. Claim 52	83
17. Claim 53	83

18. Claim 54	83
19. Claim 56: "...a force sensor..."	84
20. Claim 57	84
21. Claim 58	84
22. Claim 59	84
VIII. <u>GROUND 2C</u> : THE GRIFFIN-HOLLEMANS AND/OR GRIFFIN-HOLLEMANS-IRVIN COMBINATION IN VIEW OF RITTER RENDERS OBVIOUS CLAIMS 16, 22, 32, AND 55	84
A. Ritter (EX1029)	85
B. The Combinations	86
C. The " <i>Hall Effect</i> " Claims.....	87
1. Claim 16	87
2. Claims 22, 32, and 55.....	87
IX. <u>GROUND 2D</u> : THE GRIFFIN-HOLLEMANS AND/OR GRIFFIN-HOLLEMANS-IRVIN COMBINATION IN VIEW OF LOWLES RENDER OBVIOUS CLAIMS 9, 40, AND 46.....	88
A. Lowles (EX1030)	88
B. The Combinations	89
C. The "Magnetic Element" Claims.....	90
1. Claim 9	90
2. Claims 40 and 46.....	91
X. CONCLUSION.....	91
XI. CLAIM LISTING APPENDIX	93

TABLE OF AUTHORITIES

CASES

<i>Advanced Display Sys. v. Kent State Univ.</i> , 212 F.3d 1272 (Fed. Cir. 2000)	17, 18, 21
<i>Ariad Pharms., Inc. v. Eli Lilly & Co.</i> , 598 F.3d 1336 (Fed. Cir. 2010)	10
<i>Droplets, Inc. v. E*Trade Bank</i> , 887 F.3d 1309 (Fed. Cir. 2018)	9, 12, 15
<i>Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.</i> , 800 F.3d 1375 (Fed. Cir. 2015)	6
<i>Encyclopedia Britannica, Inc. v. Alpine Elecs. of Am., Inc.</i> , 609 F.3d 1345 (Fed. Cir. 2010)	9
<i>Flex Logix Tech. v. Konda</i> , IPR2020-00260, Paper 22 (PTAB Aug. 3, 2020)	20, 21
<i>In re Floyd</i> , Appeal No. 2023-2395, 2025 WL 1163561 (Fed. Cir. Apr. 22, 2025)	5
<i>Hollmer v. Harari</i> , 681 F.3d 1351 (Fed. Cir. 2012)	8
<i>Hulu, LLC v. SITO Mobile R&D IP, LLC</i> , IPR2021-00304, Paper 30 (PTAB May 17, 2022)	16
<i>Konda v. Flex Logix Tech.</i> , 2022 WL 1436144 (Fed. Cir. May 6, 2022)	19
<i>KSR Int’l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007)	50
<i>Lexos Media IP, LLC v. eBay Inc.</i> , 722 F. Supp. 3d 1042 (N.D. Cal. 2024)	9
<i>Lockwood v. Am. Airlines</i> , 107 F.3d 1565 (Fed. Cir. 1997)	5, 6, 8, 12

<i>Medtronic CoreValve, LLC v. Edwards Lifesciences Corp.</i> , 741 F.3d 1359 (Fed. Cir. 2014)	12, 15
<i>Natural Alternatives Int’l, Inc. v. Iancu</i> , 904 F.3d 1375 (Fed. Cir. 2018)	6, 12
<i>Novartis Pharms. Corp. v. Shilpa Pharma, Inc.</i> , IPR2022-00886, Paper 75 (PTAB Sept. 29, 2023)	19
<i>NRG Energy, Inc. v. Midwest Energy Emissions Corp.</i> , IPR2020-00928, Paper 17 (PTAB Dec. 2, 2020)	16
<i>Paice LLC v. Ford Motor Co.</i> , 881 F.3d 894 (Fed. Cir. 2018)	17
<i>Reckitt Benckiser LLC v. Ansell Healthcare Prods. LLC</i> , IPR2017-00066, Paper 35 (PTAB Jan. 20, 2018)	5, 21
<i>In re Riggs</i> , 131 F.4th 1377 (Fed. Cir. 2025)	20
<i>Ex parte Rzigalinski</i> , 2020 WL 2617538 (PTAB May 19, 2020)	17
<i>SharkNinja Operating LLC v. iRobot Corp.</i> , IPR2020-00733, Paper 31 (PTAB Oct. 4, 2021)	16
<i>Tech. Licensing Corp. v. Videotek, Inc.</i> , 545 F.3d 1316 (Fed. Cir. 2008)	13
<i>Willis Elec. Co. v. Polygroup Macau Ltd.</i> , 777 F. App’x 495 (Fed. Cir. 2019)	19
<i>Zenon Env’tl. v. U.S. Filter Corp.</i> , 506 F.3d 1370 (Fed. Cir. 2007)	5, 15
<i>ZTE (USA), Inc. v. CyWee Grp. Ltd.</i> , IPR2019-00143, Paper 87 (PTAB Feb. 17, 2021)	11, 16
STATUTES	
35 U.S.C. § 102	1
35 U.S.C. § 102(b)	1, 2, 8, 18

35 U.S.C. § 102(e)	2
35 U.S.C. § 103	1
35 U.S.C. § 112	4, 11
35 U.S.C. § 120	12

REGULATIONS

37 C.F.R. § 1.14(a)(1)	20
37 C.F.R. § 1.57(d)	passim
37 C.F.R. § 1.57(e)	14
37 C.F.R. § 42.100(b)	18
37 C.F.R. § 42.104(a)	1

OTHER AUTHORITIES

<i>Changes To Support Implementation of the United States Patent and Trademark Office 21st Century Strategic Plan,</i> 69 F.R. 56482-01 (Sept. 21, 2004)	15
---	----

APPENDIX LISTING OF EXHIBITS

Exhibit	Description
1001	U.S. Patent No. 12,044,901
1002	Prosecution History of U.S. Patent No. 12,044,901
1003	Declaration of Andrew DeJaco
1004	Curriculum Vitae of Andrew DeJaco
1005	WIPO Patent Application Publication No. WO 02/39600 A2 (“Griffin”)
1006	U.S. Patent No. 7,925,029 (“Holleman’s”)
1007	WIPO Patent Application Publication No. 2004/093490 A1
1008	WIPO Patent Application Publication No. 01/063888 (“Irvin”)
1009	U.S. Patent Application Serial No. 11/580,222 (“the ’222-Application”)
1010	U.S. Patent Publication 2007/0046887 (“Howell-887”)
1011	U.S. Patent Application Serial No. 11/891,411 (“the ’411-Application”)
1012	U.S. Patent Publication No. 2005/0078274
1013	U.S. Patent Application Serial No. 10/822,218 (“’218-Application”)
1014	RESERVED
1015	U.S. Patent Application Serial No. 12/462,286
1016	U.S. Patent Application Serial No. 13/367,346
1017	U.S. Patent Application Serial No. 14/715,501
1018	U.S. Patent Application Serial No. 16/127,957
1019	U.S. Patent Application Serial No. 16/182,969
1020	U.S. Patent Application Serial No. 13/085,402
1021	U.S. Patent Application Serial No. 14/557,409
1022	U.S. Patent Application Serial No. 15/375,423
1023	U.S. Patent Application Serial No. 16/049,120
1024	U.S. Patent Application Serial No. 12/214,435

1025	U.S. Patent Application Serial No. 12/317,043
1026	U.S. Patent Application Serial No. 11/183,283 (“283-Application”)
1027	U.S. Patent Application Serial No. 11/183,262 (“262-Application”)
1028	U.S. Patent Application Serial No. 11/078,857 (“857-Application”)
1029	U.S. Patent No. 6,289,100 (“Ritter”)
1030	U.S. Patent No. 8,346,324 (“Lowles”)
1031	U.S. Patent No. 4,791,673 (“Schreiber”)
1032	U.S. Provisional Application 60/562,798 (“798-Provisional”)
1033	U.S. Provisional Application 60/647,826 (“826-Provisional”)
1034	U.S. Provisional Application 60/846,150 (“150-Provisional”)
1035	U.S. Patent No. 3,786,391
1036	WIPO Patent Application Publication No. 2005/053289
1037	U.S. Patent Publication No. 2006/0003803
1038	U.S. Patent Application Serial No. 13/955,336
1039	U.S. Patent No. 5,330,226 (“Gentry”)
1040	U.S. Patent No. 6,507,773 (“Parker”)
1041	U.S. Patent No. 5,400,244 (“Watanabe”)
1042	U.S. Patent No. 5,132,523 (“Bassett”)
1043	Application GB2,318,825 (“Wynne”)
1044	U.S. Patent No. 5,833,603 (“Kovacs”)

MANDATORY NOTICES

A. Real Party-In-Interest – § 42.8(b)(1)

Petitioner Bose Corporation is the Real Party-in-Interest.

B. Related Matters – § 42.8(b)(2)

1. United States Patent & Trademark Office

As explained below, U.S. Patent No. 12,044,901 (“the ’4901 patent”) issued from U.S. Patent Application Serial No. 18/375,893, which purports to be part of multiple priority chains as depicted in the following tables:

a. Alleged Priority Chain 1 (EX1001, 1:7-36, 2:4-19)

Application Ser. No.	Issued Patent No.	Filing Date
16/182,969	12,078,870	11/7/2018
16/127,957	11,086,147	9/11/2018
14/715,501	10,330,956	5/18/2015
13/367,346	9,033,493	2/6/2012
12/462,286	8,109,629	7/31/2009
11/580,222	7,581,833	10/11/2006
[Provisional] 60/846,150	N/A	9/20/2006
[Provisional] 60/787,850	N/A	4/1/2006
[Provisional] 60/725,999	N/A	10/11/2005
[Provisional] 60/725,896	N/A	10/11/2005

b. Alleged Priority Chain 2 (EX1001, 2:20-42)

Application Ser. No.	Issued Patent No.	Filing Date
16/182,969	12,078,870	11/7/2018
16/049,120	11,243,416	7/30/2018
15/375,423	10,061,144	12/12/2016
14/557,409	9,547,184	12/1/2014
13/955,336	8,905,542	7/31/2013
13/085,402	8,500,271	4/12/2011

c. Alleged Priority Chain 3 (EX1001, 3:34-59)

Application Ser. No.	Issued Patent No.	Filing Date
16/182,969	12,078,870	11/7/2018
15/409,723	N/A	1/19/2017
13/831,512	9,690,121	3/14/2013
12/806,312	8,465,151	8/10/2010
12/462,286	8,109,629	7/31/2009
11/580,222	7,581,833	10/11/2006

d. Alleged Priority Chain 4 (EX1001, 3:34-48, 4:18-31)

Application Ser. No.	Issued Patent No.	Filing Date
16/182,969	12,078,870	11/7/2018
15/409,723	N/A	1/19/2017
13/831,512	9,690,121	3/14/2013
12/806,312	8,456,151	8/10/2010
12/317,043	7,771,046	12/18/2008
12/214,435	7,481,531	6/19/2008
11/891,411	7,401,918	8/9/2007

e. Descendant Applications

The following purport to claim the benefit of priority to the '4901 patent:

Application Ser. No.	Issued Patent No.	Filing Date
18/597,874	12,313,913	3/6/2024
18/948,670	12,345,955	11/15/2024
18/991,006	N/A	12/20/2024

2. United States District Courts

The '4901 patent has been asserted in the following district court litigations:

- *IngenioSpec, LLC v. Samsung Elecs. Co., Ltd.*, 2:24-cv-00819 (E.D. Tex.) (dismissed);
- *IngenioSpec, LLC v. Sony Group Corp.*, 2:24-cv-00820 (E.D. Tex.);
- *IngenioSpec, LLC v. Bose Corp.*, 2:24-cv-00822 (E.D. Tex.) (dismissed¹);
- *IngenioSpec, LLC v. LG Elecs. Inc.*, 2:24-cv-00823 (E.D. Tex.);
- *IngenioSpec, LLC v. Apple Inc.*, 1:25-cv-00877 (W.D. Tex.);
- *Bose Corporation v. IngenioSpec, LLC*, 1:25-cv-12531 (D. Ma).

¹ Prior to its dismissal, 2:24-cv-00822 was consolidated with 2:24-cv-00819 and 2:24-cv-00823 and 2:24-cv-00822 was designated as the lead case. The district court ordered that 2:24-cv-00822 be kept open as the lead case despite its dismissal.

C. Counsel and Service Information – § 42.8(b)(3) and (4)

Lead Counsel	Michael N. Rader, Reg. No. 52,146
Backup Counsel	Nathan R. Speed (<i>pro hac vice</i> application forthcoming) John W. Custer (<i>pro hac vice</i> application forthcoming)
Service Information	<u>E-mail</u> : MRader-PTAB@wolfgreenfield.com Nathan.Speed@wolfgreenfield.com John.Custer@wolfgreenfield.com <u>Post and hand delivery</u> : Wolf, Greenfield & Sacks, P.C. 600 Atlantic Avenue Boston, MA 02210-2206 <u>Telephone</u> : 617-646-8000 <u>Facsimile</u> : 617-646-8646

A power of attorney is submitted with the Petition. Counsel for Petitioner consents to service of all documents via electronic mail.

Petitioner requests IPR of claims 1-59 of the '4901 patent.

I. CERTIFICATION OF GROUNDS FOR STANDING

The '4901 patent is available for IPR and Petitioner is not barred or estopped from requesting IPR. 37 C.F.R. §42.104(a).

II. UNPATENTABILITY GROUNDS

Petitioner requests cancellation of claims 1-59 as follows.

Ground Number and Reference(s)		Claims	Basis
1	Howell-887, incorporating or in combination with: • '283-Application • '262-Application • '218-Application • '857-Application • '798-Provisional • '826-Provisional • '150-Provisional	1-59	§102, §103
2A	Griffin, Hollemans	1-8, 10-14, 18-21, 23-31, 34-36	§103
2B	Griffin, Hollemans, Irvin	12-15, 18-21, 23-31, 34-39, 41-45, 47-54, 56-59	§103
2C	Griffin in view of (i) Hollemans and Ritter or (ii) Hollemans, Irvin and Ritter	16, 22, 32, 55	§103
2D	Griffin in view of (i) Hollemans and Lowles or (ii) Hollemans, Irvin and Lowles	9, 40, 46	§103

Ground 1 relies on a publication in the '4901 patent family, Howell-887, which is prior art under pre-AIA 35 U.S.C. §102 (b) as it published on March 1, 2007, more than a year before the earliest priority date to which the '4901 patent is entitled (June 19, 2008). *Infra* Ground 1.

Each Ground 2 reference is prior art as shown below even if the '4901 patent receives its earliest claimed priority date (October 11, 2005). All of the references are analogous to the challenged patent. EX1003 ("DeJaco-Decl."), ¶¶187-189.

Reference(s)	Relevant Date	Pre-AIA Prior Art Status
Griffin (EX1005)	Published 5/16/2002	§102(b)
Hollemans (EX1006)	PCT filed 4/15/2004 ²	§102(e)
Irvin (EX1008)	Published 8/30/2001	§102(b)
Lowles (EX1030)	Filed 2/27/2004	§102(e)
Ritter (EX1029)	Issued 9/11/2001	§102(b)

III. THE '4901 PATENT³

The '4901 patent is directed to head-worn personal devices like eyewear with electrical components. 6:57-59. Per the patent, previous "attempts to include electrical components within eyeglasses have had limited success" because "[m]any eyeglass frames tend to be very compact and light-weight and thus may not have a lot of space for electrical components." 5:63-6:6. The patent also identifies

² Hollemans is prior art under pre-AIA 35 U.S.C. §102(e)(2) as an issued U.S. patent that matured from a PCT application filed April 15, 2004, in the English language, designating the United States. EX1007.

³ Unless otherwise noted, citations in §III are to EX1001.

“substantial design tradeoffs” in attaching electrical components to eyeglass frames because they “are often fashionable items whose designs are very important.” 6:6-9.

The patent purports to identify ways that electrical components can be added to eyeglass frames “without having to substantially compromise aesthetic design principles of the eyewear.” 8:42-49. The patent discloses a “temple arrangement” that houses electrical components, which can be attached to an eyeglass frame, providing electrical capabilities “to the glasses [] without burdensome impact to the design of other parts of the frames.” 8:50-9:7, 9:27-65, Fig. 1.

While the specification focuses on eyeglasses, the claims recite “*a head-worn personal electronic apparatus*.” Rather than reciting the purportedly novel temple arrangement for housing electronic components, the claims merely require that the “*apparatus*” somehow “*contain[]*” various electrical components that were common in then-existing consumer devices like wireless headsets. DeJaco-Decl., ¶¶28-30.

As explained in Ground 1, the claims are unpatentable over one or more earlier related applications because the ’4901 patent’s priority claim is ineffective.

As explained in Grounds 2A-2D, the components and capabilities recited in the claims were conventional in the prior art for use in headsets and other wearable devices before the ’4901 patent’s earliest claimed priority date—thus rendering the claims unpatentable even if the priority claim was effective.

A. Challenged Claims

A Claim Listing is provided. *Infra* §XI. Exemplary independent claim 1 recites a system comprising a “*head-worn personal electronic apparatus*” including conventional electrical components such as a “*speaker*,” “*wireless communication circuitry*,” “*rechargeable battery*,” and a “*conductive element*” for charging the battery—all well-known in the prior art.

The other independent claims are similar. Dependent claims add known features like a “*microphone*” for “*voice input*,” and conventional sensors.

B. Level of Ordinary Skill in the Art

POSAs would have had a Bachelor’s or graduate degree in electrical engineering, mechanical engineering, signal processing, or a related field, and at least two years of experience with designing personal wireless communication devices. DeJaco-Decl., ¶26.

C. Prosecution History

On December 14, 2023, the Examiner issued rejections under §112(a) because many claim limitations were not supported by the specification. EX1002, 221-223. The applicants amended the specification, adding 59 new paragraphs, and argued that the added matter was found in prior applications that had been incorporated by reference. *Id.*, 534-535. A Notice of Allowance followed. *Id.*, 722.

D. Priority

1. Priority Requires Consistent Written Description Support

Priority to an earlier application requires that “each application in the chain leading back to the earlier application must comply with the written description requirement.” *Lockwood v. Am. Airlines*, 107 F.3d 1565, 1571 (Fed. Cir. 1997). Otherwise, publication of another application in the same patent family may render the claims unpatentable. *E.g., Zenon Envtl. v. U.S. Filter Corp.*, 506 F.3d 1370, 1374-75, 1382 (Fed. Cir. 2007) (patent-in-suit invalid over ancestor patent because intermediate applications failed to provide §112 support); *In re Floyd*, Appeal No. 2023-2395, 2025 WL 1163561 (Fed. Cir. Apr. 22, 2025) (claims anticipated by parent application that failed to provide §112 support); *Reckitt Benckiser LLC v. Ansell Healthcare Prods. LLC*, IPR2017-00066, Paper 35, 13-16 (Jan. 20, 2018) (same).

Here, the ’4901 patent’s claims are obvious over a related patent publication because, despite the ’4901 patent’s purported priority claims to Application Serial Nos. 11/580,222 (“the ’222-Application”) and 11/891,411 (“the ’411-Application”), and earlier provisional applications, the ’222 and ’411 Applications do not support the ’4901 patent’s claims. Those breaks in priority make Application Serial No. 12/214,435 (“the ’435-Application”), filed June 19, 2008, the earliest application to which the ’4901 patent can claim priority.

2. Patent Owner Bears the Burden on Priority

Once a challenger identifies prior art antedating a patent's filing (such as Howell-887 in Ground 1), the patentee has "the burden of going forward with evidence either that the prior art does not actually anticipate, or...that it is not prior art because the asserted claim is entitled to the benefit of a filing date prior to the alleged prior art." *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1379-80 (Fed. Cir. 2015) (quotation omitted). Thus, Patent Owner must prove the claims have written description support in the applications through (and to) which priority is claimed. *Lockwood*, 107 F.3d at 1571 ("each application in the chain leading back to the earlier application must comply with the written description requirement"); *Natural Alternatives Int'l, Inc. v. Iancu*, 904 F.3d 1375, 1380 (Fed. Cir. 2018) (patent owner must prove entitlement to §120 priority).

3. The '4901 Patent Claims Lack Priority to Serial Nos. 11/580,222 and 11/891,411, Making Howell-887 Incontestable Prior Art

The '4901 patent specification lists four alleged priority chains, summarized *supra* §I.B.13 (Alleged Priority Chains 1-4). The first one is illustrated below.

Alleged Priority Chain 1 (EX1001, 1:7-36)

'4901 Patent (EX1001)

U.S. Patent No. 12,044,901 Appl. Serial No. 18/375,893	Issued 7-23-2024 Filed 10-2-2023
---	-------------------------------------

CON

U.S. Patent No. 12,078,870 Appl. Serial No. 16/182,969	Issued 9-3-2024 Filed 11-7-2018
---	------------------------------------

CON

U.S. Patent No. 11,086,147 Appl. Serial No. 16/127,957	Issued 8-10-2021 Filed 9-11-2018
---	-------------------------------------

CON

U.S. Patent No. 10,330,956 Appl. Serial No. 14/715,501	Issued 6-25-2019 Filed 5-18-2015
---	-------------------------------------

CON

U.S. Patent No. 9,033,493 Appl. Serial No. 13/367,346	Issued 5-19-2015 Filed 2-6-2012
--	------------------------------------

CON

U.S. Patent No. 8,109,629 Appl. Serial No. 12/462,286	Issued 2-7-2012 Filed 7-31-2009
--	------------------------------------

~~CON~~

Howell-887 (EX1010)
EX1009

U.S. Patent No. 7,581,833 Pub. No. 2007/0046887 Appl. Serial No. 11/580,222	Issued 9-1-2009 Published 3-1-2007 Filed 10-11-2006
---	---

The '4901 patent purports to claim priority to the '222-Application (EX1009), filed October 11, 2006, via Alleged Priority Chains 1 and 3. The '4901 patent also purports to claim priority to the '411-Application (EX1011), filed August 9, 2007, via Alleged Priority Chain 4.

However, because the '222- and '411-Applications fail to provide written description support for the '4901 patent's claims, priority to these applications is not available. *Lockwood*, 107 F.3d at 1571. These priority breaks also rule out priority to any earlier applications, such as the four provisional applications listed at 2:4-19. *Hollmer v. Harari*, 681 F.3d 1351, 1355 (Fed. Cir. 2012).

Thus, the '4901 patent's earliest priority date is July 31, 2009 (filing of Serial No. 12/462,286) via Alleged Priority Chains 1 or 3, or June 19, 2008 (filing of Serial No. 12/214,435) via Alleged Priority Chain 4.⁴ The published version of the '222-Application ("Howell-887," EX1010), is thus incontestable prior art under pre-AIA 35 U.S.C. §102(b) because it published March 1, 2007, more than a year earlier.

For completeness, Petitioner notes that Priority Chains 2-4 are also ineffective because they claim the '4901 patent is a "continuation" of Serial Nos. 16/049,120 and 15/409,723 "via" Serial No. 16/182,969. *See* 2:20-23, 3:34-36. This language both impermissibly omits the '4901 patent's relationship with Serial No. 16/182,969 and misstates its relationship with the other two, with which it was never co-pending.

⁴ Via Alleged Priority Chain 2, the date is even later (2011).

*Droplets, Inc. v. E*Trade Bank*, 887 F.3d 1309, 1315-16 (Fed. Cir. 2018) (reference to earlier application must specify the relationship, e.g., “continuation”); *Encyclopedia Britanica, Inc. v. Alpine Elecs. of Am., Inc.*, 609 F.3d 1345, 1350 (Fed. Cir. 2010) (for priority, applications must be co-pending); *Lexos Media IP, LLC v. eBay Inc.*, 722 F. Supp. 3d 1042, 1052 (N.D. Cal. 2024) (rejecting similar priority claim).

a. The '222- and '411-Applications Fail to Support the '4901 Patent Claims Because Neither Discloses a “Charging Apparatus,” and They Improperly Attempt to Incorporate-by-Reference the Relevant Matter From Provisional and Unpublished Applications

Every independent claim in the '4901 patent requires a “*charging apparatus having at least a charging connector, wherein on placement of the head-worn personal electronic apparatus in the charging apparatus, electrical connection results...and thereby the rechargeable battery of the head-worn personal electronic apparatus is able to be recharged while the head-worn personal electronic apparatus is placed in the charging apparatus.*”

In the '4901 patent, this functionality is described at 32:19-45, which explains that the eyeglasses can be “simply placed within a charger” and the “charger can be considered a docking station, upon which the wireless eyeglasses are docked so that the battery within the wireless eyeglasses is able to be charged.” DeJaco-Decl., ¶39.

However, this functionality is not described in the '222- or '411-Applications. DeJaco-Decl., ¶¶40-44. While the '222-Application says the eyeglasses contain a “rechargeable battery” (EX1009, [0079]), and describes connecting a cable to “facilitate...battery charging.” EX1009, [0081]; *see also* [0074], it says nothing about the glasses being “***placed in the charging apparatus.***” DeJaco-Decl., ¶¶40-41.

Similarly, the '411-Application mentions recharging by “coupling to a charger through a connector at the glasses or by way of a solar cell,” EX1011, [00045], but does not mention placing the eyeglasses in a charging apparatus. DeJaco-Decl., ¶¶40, 42.

Accordingly, the '222- and '411-Applications both lack written description support for the '4901 patent claim limitations requiring that the head-worn personal electronic apparatus be recharged when “placed in the charging apparatus.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc) (to comply with §112, a specification must “clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed”).

Patent Owner may argue that the '222- and '411-Applications each incorporate by reference other applications which include disclosure of the claimed charging apparatus, namely Provisional Application Serial Nos. 60/509,631 and 60/618,107 (“the '631- and '107-Provisionals”) and non-provisional Application Serial Nos. 10/822,218 and 10/964,011 (“the '218- and '011-Applications”).

The '222- and '411-Applications purport to incorporate each of these applications by reference. EX1009, [0001]-[0002], [0004]; EX1011 [0001]-[0003]. However, these attempted incorporations by reference are ineffective as a matter of law.

With respect to the '631- and '107-Provisionals: incorporation by reference of provisional applications is never permitted to provide §112 support for claimed subject matter (“essential matter”). Essential matter can only be incorporated by reference from an issued U.S. patent or a published U.S. patent application. 37 C.F.R. §1.57(d); *ZTE (USA), Inc. v. CyWee Grp. Ltd.*, IPR2019-00143, Paper 87, 116 (Feb. 17, 2021).

With respect to the non-provisional applications, Patent Owner, which pursued a deliberately obfuscating strategy in developing its patent portfolio, drafted the '222- and '411-Applications to refer to the '218- and '011-Applications only by application serial number. EX1009, [0001], [0004]; EX1011, [0001], [0003]. The '011-Application published April 14, 2005 (EX1012) and the '218-Application published January 5, 2006 (EX1037), both prior to the October 11, 2006 filing of the '222-Application and the August 9, 2007, filing of the '411-Application. Thus, Patent Owner could have complied with Rule 1.57(d) by incorporating these corresponding published applications by reference in the '222- and '411-Applications, but chose not to do so.

USPTO rules like 37 C.F.R. §1.57(d) are intended to ensure the public (and patent examiners and judges) can readily understand the disclosures and priority relationships of patent applications to evaluate compliance with 35 U.S.C. §120. “[E]xaminers and adjudicators cannot be expected to scrutinize the prosecution history of...each parent application to determine whether the application would have met §120’s requirements...” *Natural Alternatives*, 904 F.3d at 1380; *see also Droplets*, 887 F.3d at 1317 (Fed. Cir. 2018) (“Congress may well have thought that Section 120 was necessary to eliminate the burden on the public to engage in long and expensive search of previous applications in order to determine the filing date of a later patent.”).

As discussed above, §120 requires consistent written description support, throughout a priority chain, for the claims of any patent that claims priority via that chain. *Lockwood*, 107 F.3d at 1571. Therefore, patent owners are expected to draft their patent specifications to allow members of the public to evaluate written description support, and thus determine priority, “with a minimum of effort.” *Droplets*, 887 F.3d at 1317. Allocating to the patentee responsibility for making priority claim compliance straightforward to evaluate “eliminates the inefficiencies associated with having the public expend efforts to unearth information when such information is readily available to the patentee.” *Medtronic CoreValve, LLC v. Edwards Lifesciences Corp.*, 741 F.3d 1359, 1366 (Fed. Cir. 2014).

Here, Patent Owner took the opposite approach, making it exceptionally difficult to determine the disclosures of the specifications of its priority applications by (1) disclosing only a portion of the subject matter in the specifications themselves, (2) purporting to incorporate numerous other patent applications by reference, and (3) amending the specifications to selectively include certain of the incorporated subject matter that varies between the applications in the chain. As a result, the specifications have vastly different disclosures. For example, the '4901 patent (EX1001) has 50 figures numbered 1-19C while the six earliest applications in Alleged Priority Chain 1 (EX1009 and EX1015-EX1019)) have 42 figures numbered 1-13C and the five earliest applications in Alleged Priority Chain 2 (EX1020-EX1023 and EX1038) have just 21 figures numbered 1-10C.⁵

This non-uniformity in disclosures contradicts the '4901 patent's characterization of these applications as "continuations," since the specifications of continuations must be the same. *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1321 n. 2 (Fed. Cir. 2008) ("a continuation contains the same disclosure found in an earlier application").

⁵ Some figures have multiple sub-figures.

The Patent Statute permits incorporation by reference, which can be used to help match the disclosures of continuation patent applications. However, in view of the public policy imperatives discussed above—particularly the importance of avoiding inconvenience to the public in understanding patents’ disclosures and priority dates—the USPTO has enacted strict rules limiting how incorporation by reference may be used.

37 C.F.R. §1.57 distinguishes between “essential” and “non-essential” material. Essential material is, *inter alia*, material needed to provide written description of the claimed invention. *Id.*, §1.57(d). Non-essential material is any material not defined as essential material. *Id.*, §1.57(e). The USPTO allows essential material to be incorporated by reference **only** from “a U.S. patent or U.S. patent application publication.” *Id.*, §1.57(d).

The logic and importance of this rule are clear from the precedent cited above. Unlike issued patents and published patent applications, which are readily accessible through USPTO and third-party databases, pending patent applications and provisional applications require additional effort to obtain. Even today, pending patent applications and provisional applications are accessible only through USPTO Patent Center, a specialized database that requires knowledge of patent procedure to navigate. Congress and the Federal Circuit have emphasized that this kind of effort should not be required for the public to understand patents’ disclosures and priority.

69 F.R. 56482-01 (Sept. 21, 2004) (“Where the incorporation is from an unpublished application that has not issued as a patent, such application may not be readily available and thus would impair the public’s access to the needed information.”); *Medtronic*, 741 F.3d at 1366 (explaining that the public should not be required to “expend efforts to unearth information when such information is readily available to the patentee”); *Droplets*, 887 F.3d 1309 at 1317 (explaining that the “patentee is the person best suited to understand the genealogy and relationship of her applications, and a requirement for her to clearly disclose this information should present no hardship”) (cleaned up).

“[P]atent draftsmanship is an exacting art, and no less care is required in drafting an incorporation by reference statement than in any other aspect of a patent application.” *Zenon*, 506 F.3d at 1382 n.3.

As discussed above, the ’222- and ’411-Applications contain no disclosure of the claimed charging apparatus, and thus could only support the ’4901 patent claims based on essential material they attempt, contrary to Rule 1.57(d), to incorporate by reference from the ’631- and ’107-Provisionals and the ’218- and ’011-Applications. The Board has consistently denied attempts to incorporate essential material by reference from provisional applications and non-provisional applications identified only by serial number.

For instance, in *Hulu, LLC v. SITO Mobile R&D IP, LLC*, IPR2021-00304, Paper 30 (PTAB May 17, 2022), intermediate applications in a priority chain attempted to incorporate essential matter contained in an earlier non-provisional application (“the ’519 Application”), referencing it only by serial number. The Board found the attempted incorporation failed Rule 1.57(d) because “the ’519 Application has not been shown to be (and indeed is not) either a U.S. Patent or U.S. Patent application publication.” *Hulu*, Paper 30 at 56 (May 17, 2022). The Federal Circuit affirmed. Appeal Nos. 2022-1990, 2022-1991 (Fed. Cir. Apr. 5, 2024).

The Board reached the same conclusion in *SharkNinja Operating LLC v. iRobot Corp.*, IPR2020-00733. Incorporating by reference a non-provisional application identified by serial number was “not effective as regards essential matter” which “may only be incorporated by reference by way of a U.S. patent or U.S. patent application publication.” *SharkNinja*, Paper 31 at 19 (Oct. 4, 2021).

The same is true for provisional applications. *E.g.*, *ZTE*, Paper 87 at 116 (final written decision: incorporation by reference of provisional application ineffective “[b]ecause a U.S. provisional application is not a ‘U.S. patent or U.S. patent application publication.’”); *NRG Energy, Inc. v. Midwest Energy Emissions Corp.*, IPR2020-00928, Paper 17 at 23-24 (Dec. 2, 2020) (institution decision: citing Rule 1.57 and concluding that incorporation by reference of provisional application “cannot cure the deficiencies” in ancestor applications lacking §112 support);

Ex Parte Rzigalinski, 2020 WL 2617538, *3 (PTAB May 19, 2020) (affirming written description rejection: “The instant Specification does not refer to the U.S. patent application *publication* number, but only to the application serial number, and therefore does not comply with 37 C.F.R. §1.57(d).”) (emphasis original).

The Board should likewise find that Patent Owner’s attempt to incorporate charging apparatus subject matter into the ’222- and ’411-Applications from the ’631- and ’107-Provisionals and the ’218- and ’011-Applications is ineffective. Since the ’222- and ’411-Applications thus fail to support the ’4901 patent claims, the ’4901 patent’s earliest possible priority date is June 19, 2008.

b. The Board May Also Find that the ’222- and ’411-Applications’ Attempts to Incorporate Charging Apparatus Disclosure Lack Sufficient Particularity

The Federal Circuit has explained that “[t]o incorporate material by reference, the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents.” *Advanced Display Sys. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000). Such detail is particularly important here since the ’4901 patent confusingly relies so extensively on incorporation-by-reference. *Supra* §III.D.3.a.⁶

⁶ Cases finding generic incorporation statements sufficient, like *Paice LLC v. Ford Motor Co.*, 881 F.3d 894, 907 (Fed. Cir. 2018), are thus distinguishable.

The '222- and '411-Applications' incorporation-by-reference statements for the '631- and '107-Provisionals and the '218- and '011-Applications are generic and fail to provide the “detailed particularity” required by *Advanced Display*. EX1009, [0001]-[0002], [0004]; EX1011 [0001]-[0003]. Thus, under *Advanced Display*, the charging apparatus disclosures of these applications are not incorporated into the '222- and '411-Applications, providing an independent reason why the '4901 patent cannot claim priority to the '222- or '411-Applications, making June 19, 2008 the '4901 patent's earliest possible priority date.

IV. CLAIM INTERPRETATION

Claim terms are construed according to their ordinary meaning in light of the specification and prosecution history. 37 C.F.R. §42.100(b).

V. GROUND 1: HOWELL-887, INCORPORATING OR IN COMBINATION WITH ITS INCORPORATED APPLICATIONS RENDERS CLAIMS 1-59 UNPATENTABLE

As explained above, Howell-887 is prior art under pre-AIA 35 U.S.C. §102(b) because it published on March 1, 2007, more than a year before the '4901 patent's priority date per Ground 1 (June 19, 2008).

Howell-887 (EX1010) is the publication of the '222-Application (EX1009). As explained *supra* §III.D.3.a, Rule 1.57(d) precludes the '222-Application from incorporating by reference essential material in provisionals and non-provisional applications referenced only by serial number to support the '4901 patent's claims.

However, documents, including patent publications, used as *prior art*, are not subject to Rule 1.57(d)'s requirements, and thus may render challenged claims unpatentable in part via disclosure in patent applications they identify by serial number for incorporation by reference—including provisional applications. *E.g.*, *Novartis Pharms. Corp. v. Shilpa Pharma, Inc.*, IPR2022-00886, Paper 75, 70 (PTAB Sept. 29, 2023) (“Rule 1.57 is not applicable to references that are alleged to be anticipatory that incorporate by reference material in other printed publications.”); *Willis Elec. Co. v. Polygroup Macau Ltd.*, 777 F. App’x 495, 497 n.1 & 501 (Fed. Cir. 2019) (relying on incorporated provisional application’s disclosure in obviousness analysis); *Konda v. Flex Logix Tech.*, 2022 WL 1436144, *3 (Fed. Cir. May 6, 2022) (affirming Board’s determination that challenged claims were unpatentable over prior art reference that incorporated provisional patent application by reference). Thus, as a prior art reference, Howell-887 includes the charging apparatus disclosure in the incorporated ’631- and ’107-Provisionals and ’218- and ’011-Applications—and anticipates, and at least renders obvious, every claim of the ’4901 patent.

Incorporated-by-reference applications, including provisional applications, are part of the disclosure of the prior art reference into which they are incorporated, and they also qualify as prior art references of their own accord when the incorporating reference publishes. *Flex Logix Tech. v. Konda*, IPR2020-00260, Paper 22, 15-16 (PTAB Aug. 3, 2020) (Per 37 C.F.R. §1.14(a)(1), provisional application became a prior art reference upon publication of the application incorporating it by reference), *aff'd*, 2022 WL 1436144; *see also In re Riggs*, 131 F.4th 1377, 1385 (Fed. Cir. 2025) (“Provisional applications become public when the corresponding non-provisional application publishes or the patent issues.”).

Howell-887 contains disclosure matching, almost identically, much of the text and many figures of the '4901 patent. *Compare* EX1010, [0043]-[0177], Figs. 1-13C *with* EX1001, 8:40-32:19, Figs. 1-13C. The remaining portions of the '4901 patent's disclosure relevant to supporting its claims are found in the following applications Howell-887 incorporates by reference (*see* EX1010, [0001]-[0004]): 11/183,283 (“’283-Application”) (EX1026); 11/183,262 (“’262-Application”) (EX1027); 10/822,218 (“’218-Application”) (EX1013); 11/078,857 (“’857-Application”) (EX1028); 60/562,798 (“’798-Provisional”) (EX1032); 60/647,826 (“’826-Provisional”) (EX1033); 60/846,150 (“’150-Provisional”) (EX1034) (collectively, the “Incorporated Applications”).

The chart below maps Howell-887 and the Incorporated Applications to the challenged claims. *See also* DeJaco-Decl., ¶¶64-186. The disclosures are nearly identical to the challenged claims and/or to the disclosures in the '4901 patent that purportedly support its claims (identified for comparison). *Reckitt*, IPR2017-00066, Paper 35, 16 (“Petitioner’s citations to portions of the ’384 publication disclosing each claim element, in essentially identical terms, is sufficient to satisfy its burden to show by a preponderance of the evidence that the challenged claims are anticipated.”). Patent Owner cannot in good faith dispute that the claim limitations are satisfied. *Id.*, at 5-6.

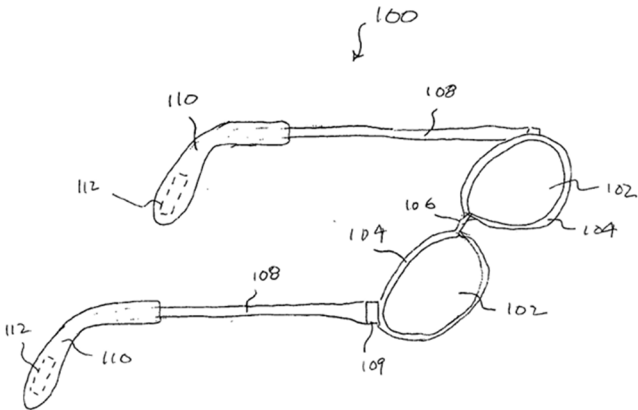
The Incorporated Applications are both part of Howell-887 and also became independent prior art references when Howell-887 published. *Flex Logix*, Paper 22, 15 (“The ’394 provisional...is prior art by virtue of the fact that it became publicly available due to its incorporation into the ’756 PCT, and in addition is prior art because it is part of the ’756 PCT itself.”). Including the Incorporated Applications, Howell-887 anticipates, and at least renders obvious, the challenged claims as detailed below. Under *Advanced Display*, which requires “detailed particularity” in the incorporation-by-reference statement, *see supra* §III.D.3.b, the challenged claims are also obvious, for the same reasons, over Howell-887 in combination with the Incorporated References as independent prior art references.

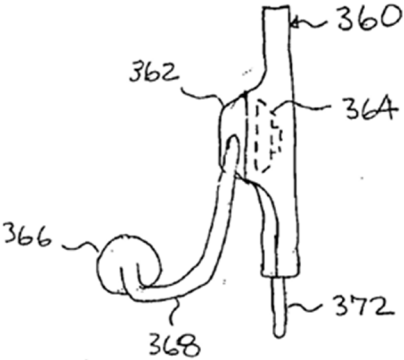
POSAs would be motivated to combine Howell-887 with each of the Incorporated References because Howell-887 explicitly identifies each of the Incorporated References. *See* EX1010, [0001]-[0004]. Thus, POSAs would naturally look to these references when considering modifications to the eyeglasses disclosed by Howell-887. DeJaco-Decl., ¶53.

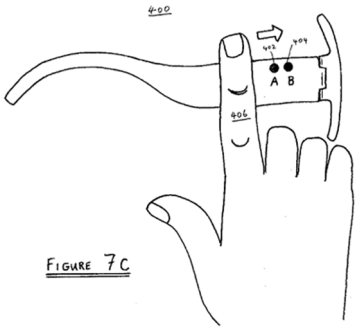
Further, like Howell-887 (and the '4901 Patent) each of the Incorporated References are similarly directed to eyeglasses with a speaker and other electronic components, and thus POSAs would be motivated to combine these components in the Howell-887 glasses and would have a reasonable expectation of success in doing so. *See* EX1034, [00041], [0054]; EX1013, [0002]; [0020], [0023]; EX1027, [0004], [0012]-[0013]; EX1026, [0004], [0012], [0050]-[0051]; EX1032, [0001], [0004], [0008]; EX1033, [0006], [0010], [0077], [00279]-[00280]; EX1028, [0007], [0078]; DeJaco-Decl., ¶¶54-63.⁷

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[1PRE] A system...	<u>Howell-887</u> “The invention can be implemented... [as]...a...system...” EX1010, [0014].	7:14-17.

⁷ To save space, the table below excerpts the most relevant claim language.

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[1A] a head-worn personal electronic apparatus...	Howell-887 “eyewear with electrical components” EX1010, [0043].  FIG. 1 EX1010, Fig. 1.	8:40-42; Fig. 1.

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[1B] ...a speaker... worn proximate to an ear...	Howell-887 “An audio sound output by the speaker 364 is coupled to an ear plug 366...A user...can place the ear plug 366 within her ear...” EX1010, [0069].  EX1010, Fig. 3E.	12:41-13:3; Fig. 3E.

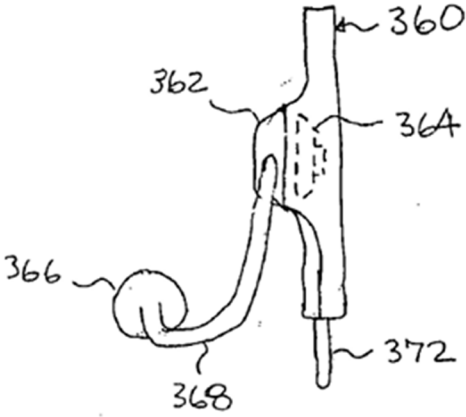
[1C] a touch sensitive surface...	<u>Howell-887</u> “The user interface...can include buttons...” EX1010, [0079]; <i>see also</i> [0078] (user interface can include “switches”). <u>’283-Application</u> “[T]he glasses include a switch, which typically is at least partially embedded in the glasses.” EX1026, [0074]. “The switch can be activated depending on electrical forces 158...For example, the capacitance is changed by placing one’s finger over a metallic pad.” EX1026, [0082]; <i>see also</i> [0091] (disclosing detection via “two photodiodes, 402 and 404” of a “finger 406 sliding” forward or backward).  FIGURE 7C EX1026, Fig. 7C. <u>’262-Application</u> “[T]he display is a touch-screen display, allowing entries to be entered directly on the display.” EX1027, [0142]. Either as part of Howell-887 or as separate references, it would have been obvious to incorporate these touch-sensitive surfaces into Howell-887’s glasses. DeJaco-Decl., ¶68.	38:42-44; 39:64- 40:5; 41:24-40; 43:10-12.
--	---	---

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[1D] a rechargeable battery...	<u>Howell-887</u> Eyeglasses “can include...a rechargeable battery.” EX1010, [0079].	14:38-42.
[1E] electronic circuitry...connected to at least the rechargeable battery...and...the touch sensitive surface;	<u>Howell-887</u> “[T]he body 1342 includes...electrical circuitry 1348...[T]he electrical circuitry 1348 can, for example, pertain to one or more of a...battery/power source...” EX1010, [0085]. “[A]n electronic component in a temple arrangement, temple adapter or removable temple part interacts with another electronic component in another part (e.g., frame) of the glasses...For example, a temple of a pair of glasses holds one portion of an electronic circuit. That portion can include generic parts, such as a battery, that are applicable to different applications.” EX1010, [0156]; <i>see also</i> [0047] (“circuit board”); [0083]; [0092]; [0169] (“interconnected electrical components, including the display 1118 and switches 1120”). <i>See also</i> [1C]. DeJaco-Decl., ¶70.	9:8-20; 15:38-60; 16:6-25; 17:28-45; 27:13-24; 29:66- 30:13; Fig. 3J.

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[1F] wireless communication circuitry... electrically connected to...the rechargeable battery	<u>Howell-887</u> “[T]he body 1342 includes at least one conductor 1347 and electrical circuitry 1348 internal to the body 1342...[T]he electrical circuitry 1348 includes a wireless receiver (e.g., Bluetooth, XM, FM)...[T]he electrical circuitry 1348 can, for example, pertain to one or more of a...battery/power source...” EX1010, [0085]. <i>See also</i> [1E].	16:10-25.

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[1G] at least one conductive element...partially exposed to enable interconnection... electrically connected to at least the rechargeable battery; and	<u>'218-Application</u> “[T]he frame of the eyeglasses includes at least one...conductive element (e.g., terminal, pin, pad, trace, etc.) so that the electrical coupling between the rechargeable battery and the charger can be achieved...[T]he...conductive element is...electrically connected to the battery. The placement of the...conductive element on the frame serves to allow the wireless eyeglasses to be simply placed within a charger and consequently have the...conductive element be in electrical contact with a counterpart...of the charger.” EX1013, [0055]. “[T]he charger can be considered a docking station, upon which the wireless eyeglasses are docked so that the battery within the wireless eyeglasses is able to be charged.” EX1013, [0056]. Either as part of Howell-887 or as a separate reference, it would have been obvious to incorporate the '218-Application's conductive elements in the eyeglasses, and its charging apparatus (e.g., docking station) into which the glasses can be placed for charging, into Howell-887's system. DeJaco-Decl., ¶¶72-74.	32:19-45.
[1H] a charging apparatus having...a charging connector,		
[1I] ...the rechargeable battery...recharged while the [headset] is placed in the charging apparatus.		

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[2] ...the sensed touch input...alter[s] operation of the [headset].	<u>'283-Application</u> “[T]he switch can be used to turn the speaker on, or to tune the frequency of a radio.” EX1026, [0074]. <i>See also</i> [1C]. DeJaco-Decl., ¶75.	38:42-45.
[3] ...support voice calls...the at least one operation of the [headset] being altered concerns at least accepting or declining a voice call to the user.	<u>Howell-887</u> “The user interface...can include buttons, which...can facilitate user input with respect to...accept or decline call.” EX1010, [0079]. “The electrical components 1116...include...a plurality of switches 1120 (e.g., buttons).” EX1010, [0168]. <i>See also</i> [1C]. DeJaco-Decl., ¶76.	14:49-58; 29:47-49.

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[4] ...configured to support audio output...via the speaker, and...[the] operation...being altered concerns control of the audio output being provided...	Howell-887 “An audio sound output by the speaker 364 is coupled to an ear plug 366 by way of the speaker housing 362 and a tube 368.” EX1010, [0069].  EX1010, Fig. 3E. “The user interface...can include buttons, which...can facilitate user input with respect to on/off, volume.” EX1010, [0079]. <i>See also</i> EX1010, [0168]. <i>See also</i> [1C]. DeJaco-Decl., ¶77.	12:47-52, 14:49-58; 29:57-59, Fig. 3E.

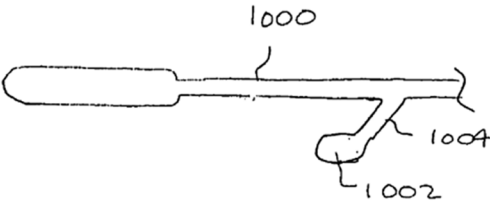
Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[5] ...distinguish at least a direction of the user input with respect to the touch sensitive surface.	<i>See</i> [1C]. DeJaco-Decl., ¶¶78-80.	
[6] ...detect at least a sliding of a finger action with respect to the touch sensitive surface.		
[7] ...facilitate determination at least whether the user input pertains to a forward sliding action or a backward sliding action with respect to the touch sensitive surface.		
[8] ...a physical condition sensor... configured to acquire data pertaining to a physical condition of the user...	<u>Howell-887</u> “[O]ne electrical component can be a sensor...to sense the temperature of the wearer.” EX1010, [0120].	20:34-38.

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[9] ...magnetic element...configured to support a magnetic force that facilitates an electrical connection.	<u>Howell-887</u> “In one embodiment, a temple tip, fit-over temple or temple cover according to the invention can further include a connector or cable to facilitate electrical connection with the at least one electrical component that is either attached to a temple or a temple tip or at least partially embedded therein.” EX1010, [0071]. <u>'218-Application</u> “Another feature...is one or more electrical connections on the frame of the wireless eyeglasses so as to facilitate electrical connection with a battery charger.” EX1013, [0055]. <u>'283-Application</u> “The switch in the glasses can...be activated by different type of forces, including...magnetic.” EX1026, [0075]; <i>see also</i> [0081]. Either as part of Howell-887, or as separate references, it would have been obvious to incorporate these disclosures of the '218- and '283-Applications into Howell-887's glasses. DeJaco-Decl., ¶82.	13:8-13; 32:19-22; 38:51-53; 39:48-63.

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[10] ...a microphone...to receive a voice input...and control an operation by the [headset] based on the requested operation.	<u>Howell-887</u> “[T]he temple adapter includes...[a] microphone.” EX1010, [0135]. <u>'798-Provisional</u> “In one embodiment, a pair of glasses has access to voice recognition software.” EX1032, [000100]. “[A] pair of glasses allows personalization by including...a system with a microphone and voice recognition software. The user can indicate his preference vocally.” EX1032, [000106]. <i>See also</i>, EX1033, [00299]; EX1027, [0142]. Either as part of Howell-887 or as separate references, it would have been obvious to include the voice-recognition technology of the '798-Provisional, '826-Provisional, and/or '262-Application, in Howell-887's glasses. DeJaco-Decl., ¶83.	22:28-35; 38:5-11; 42:48-54; 43:12-26.
[11] ...a radiation sensor...connected to the rechargeable battery	<u>Howell-887</u> “A radiation monitoring system can be...contained in a temple arrangement...” EX1010, [0155]; <i>see also</i> [0156] (“electronic component[s] in a temple arrangement” “interact[] with other electronic components” including “a battery.”); [0161]. <i>See also</i> [1E].	27:4-20; 27:51-63.

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[12] ...a sensor... configured to sense...whether the [headset] is being worn by the user.	<u>Howell-887</u> “The “being worn” sensor indicates whether the glasses are being worn by its user...for example, a thermal sensor, a motion detector, a stress sensor or a switch.” EX1010, [0125]-[0126].	21:11-20.
[13] ...wherein the sensor is electrically connected to the electronic circuitry, and wherein the electronic circuitry...is configured to at least alter operation of the [headset] based...on the sensed data...	<i>See</i> [1E]; [12]. <u>'150-Provisional</u> “[T]he ‘being-worn’ switch enables the activity monitoring system to automatically determine when to monitor activity and when not to monitor activity. In particular, the activity can be monitored when an eyeglass frame having the activity monitoring system is ‘being-worn’ and not when the eyeglass frame is not ‘being-worn.’” EX1034, [000113]. <u>Howell-887</u> “[T]he electrical components can provide audio player capabilities.” EX1010, [0157]. Either as part of Howell-887 or as a separate reference, it would have been obvious to include the '150-Provisional's monitoring in Howell-887's glasses and/or modify Howell-887's glasses to only perform other functions (such as its audio player capabilities) based on the being-worn sensor. DeJaco-Decl., ¶86.	35:9-26.

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[14] ...wherein the operation...being altered concerns control of the audio output...	<i>See</i> [2]; [12]; [13]. DeJaco-Decl., ¶87.	
[15] ...wherein the operation...being altered concerns...the low power operational mode.	<u>Howell-887</u> “For reduced power consumption, the sensors can remain in a low-power state unless data is being acquired by the sensors.” EX1010, [0133]. “In one embodiment, the sensor is a “being worn” sensor.” EX1010, [0126]. <i>See also</i> [12]-[14]. DeJaco-Decl., ¶88.	21:16-20; 22:10-12.
[16] ...a Hall effect detector configured to capture data associated with a magnetic characteristic.	<u>'283-Application</u> “The switch can be activated by magnetic forces 156. For example, there can be a magnetic sensor or a Hall effect detector inside a temple proximate to a joint of a pair of glasses.” EX1026, [0081]. Either as part of Howell-887 or as a separate reference, it would have been obvious to include the '283-Application's Hall effect detector in Howell-887's glasses. DeJaco-Decl., ¶89.	39:48-63.

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[17] ...a bone conducting element... operatively connected to the electronic circuitry	Howell-887 “The temple 1000 includes a bone conducting element 1002 that can provide audio sound to a user by coupling vibrations to at least one bone of the user’s face.” EX1010, [0147]; <i>see also</i> [0146] (“electrical signals would be internally or externally supplied to the bone conducting element.”).  FIG. 10A EX1010, Fig. 10A. <i>See also</i> [1E], EX1010, [0146]-[0149], Figs. 10B-10C. DeJaco-Decl., ¶90.	25:22-52; Figs. 10A-10C.
[18PRE]	<i>See</i> [1PRE].	
[18A]	<i>See</i> [1A].	
[18B]	<i>See</i> [1B].	

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[18C] a first microphone... positioned to pick up at least audio input from at least the user; [18D] a second microphone... positioned to pick up at least environmental audio...	'262-Application “[N]oise cancellation is achieved through a first and a second directional microphones. The first one points at the user’s mouth, and the second one points away...The second microphone can be in the vicinity of the other hinge, whose directionality favors sound arriving in front of or outside of the user. Signals received from the second microphone are subtracted from signals received from the first microphone...” EX1027, [0135]; <i>see also</i> Fig. 1. Either as part of Howell-887 or as a separate reference, it would have been obvious to include the '262-Application's noise cancellation in Howell-887's glasses. DeJaco-Decl., ¶¶94-95.	33:48-61.
[18E]	<i>See</i> [1D].	
[18F]	<i>See</i> [12].	
[18G]	<i>See</i> [1E], [1F], [13], [18C]. DeJaco-Decl., ¶98.	33:42-61.
[18H]	<i>See</i> [1F].	
[18I]	<i>See</i> [1G].	
[18J]	<i>See</i> [1H].	

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[18K]	<i>See</i> [1I].	
[19]	<i>See</i> [18C]. DeJaco-Decl., ¶103.	
[20]	<i>See</i> [1C], [2].	
[21]	<i>See</i> [4].	
[22]	<i>See</i> [16].	
[23] ...sensor is positioned to be directed towards the user's head...	<u>Howell-887</u> “In one embodiment, such a temperature sensor is in a temple tip. In measuring the temperature, the user can further press the temple tip towards his head to ensure better connection.” EX1010, [0120]; <i>see also</i> [1028].	20:37-40; 21:26-34.
[24] ...data captured by the sensor is dependent on thermal characteristics of the user's head...	<i>See</i> [23]. DeJaco-Decl., ¶108.	
[25]	<i>See</i> [10].	
[26]	<i>See</i> [13].	
[27]	<i>See</i> [14].	

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[28]...a user input device...based on at least capacitive effect...	<i>See</i> [1C], [5]-[7]. DeJaco-Decl., ¶¶112-115.	
[29]		
[30]		
[31]		
[32]	<i>See</i> [16].	
[33]	<i>See</i> [17].	
[34] ...the conductive element is a conductive pad.	<i>See</i> [1G]. <u>'218-Application</u> “[T]he frame of the eyeglasses includes...[a] conductive element (e.g., ...pad...)” EX1013, [0055]. Ether as part of Howell-887 or as a separate reference, it would have been obvious to use the '218-Application's pad in Howell-887's glasses. DeJaco-Decl., ¶118.	32:26-38.
[35PRE]	<i>See</i> [1PRE], [1A]. DeJaco-Decl., ¶119.	
[35A]	<i>See</i> [1A]-[1B].	
[35B]	<i>See</i> [1B].	

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[35C]	<i>See</i> [18C].	
[35D]	<i>See</i> [18D].	
[35E]	<i>See</i> [1D].	
[35F]	<i>See</i> [12].	
[35G]	<i>See</i> [1E], [12], [18G].	
[35H]	<i>See</i> [1F].	
[35I]	<i>See</i> [1G].	
[35J]	<i>See</i> [1H].	
[35K]	<i>See</i> [1I].	
[36] ...the detected data by the “being worn” sensor is dependent on a physical characteristic of the user.	<i>See</i> [12]. DeJaco-Decl., ¶131.	

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[37] ...an accelerometer... configured to sense movement data.	<u>Howell-887</u> “In one embodiment, a motion detector is used as a “being worn” sensor....The motion detector can, for example, be achieved by...an accelerometer.” EX1010, [0127]. <i>See</i> [1E], [12]-[13]. DeJaco-Decl., ¶132.	21:16-25.
[38PRE]	<i>See</i> [1PRE].	
[38A]	<i>See</i> [1A].	
[38B]	<i>See</i> [1A]-[1B].	
[38C]	<i>See</i> [1B].	
[38D] ...a motion detector...	<i>See</i> [37]. DeJaco-Decl., ¶137.	
[38E]	<i>See</i> [18C].	
[38F]	<i>See</i> [18D].	
[38G]	<i>See</i> [1C], [2].	
[38H]	<i>See</i> [1D].	
[38I]	<i>See</i> [1E].	
[38J]	<i>See</i> [1F].	

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[38K]	<i>See</i> [1G].	
[38L]	<i>See</i> [1H].	
[38M].	<i>See</i> [1I].	
[39PRE]-[39A]	<i>See</i> [18G].	
[39B]	<i>See</i> [10].	
[40]	<i>See</i> [9].	
[41PRE/41A]	<i>See</i> [12].	
[41B]	<i>See</i> [13].	
[42]	<i>See</i> [14].	
[43]	<i>See</i> [15].	
[44PRE]	<i>See</i> [1PRE].	
[44A]	<i>See</i> [1A].	
[44B]	<i>See</i> [1A]-[1B].	
[44C]	<i>See</i> [1B].	
[44D]	<i>See</i> [38D].	

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[44E]	<i>See</i> [18C].	
[44F]	<i>See</i> [1D], [18D].	
[44G];	<i>See</i> [1E].	
[44H]	<i>See</i> [1F].	
[44I] a radiation emitter...configured to at least direct radiation towards the user...;	<u>'857-Application</u> “One implementation for the heart-beat sensor utilizes an infrared emitter and an infrared detector as a component...In operation, the infrared emitter shines infrared radiation towards the user, and the detector captures the infrared signals reflected back by the skin of the user.” EX1028, [0091]. Either as part of Howell-887 or as a separate reference, it would have been obvious to include the '857-Application's heart-beat sensor in Howell-887's glasses. DeJaco-Decl., ¶163.	36:48-37:2.
[44J] a radiation detector...configured to detect at least a portion of the radiation from the radiation emitter that is reflected back from the user...		
[44K]	<i>See</i> [1G].	
[44L]	<i>See</i> [1H].	
[44M].	<i>See</i> [1I].	

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[45PRE/45A] ...the radiation detector is operatively connected to the electronic circuitry...	<i>See</i> [1E], [44J]. DeJaco-Decl., ¶167.	
[45B]	<i>See</i> [18G].	
[46]	<i>See</i> [9].	
[47]	<i>See</i> [12]-[13].	
[48]	<i>See</i> [14].	
[49]	<i>See</i> [15].	
[50Pre/50A]	<i>See</i> [18D].	
[50B]	<i>See</i> [18G].	
[50C]	<i>See</i> [10].	
[51] ...the radiation detector is an infrared radiation detector...	<i>See</i> [44I]-[44J].	
[52]	<i>See</i> [19].	
[53]	<i>See</i> [12], [13].	
[54Pre/54A]	<i>See</i> [18C]-[18D].	

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[54B]	<i>See</i> [18G].	
[54C]	<i>See</i> [10], [18C].	
[55]	<i>See</i> [16], [37].	
[56] ...a force sensor...	<u>Howell-887</u> “The user interface, for example, can include buttons, which, for example, can facilitate user input with respect to on/off, volume, and accept or decline call.” EX1010, [0079]. <i>See also</i> EX1010, [0078]. <i>See also</i> [1C]. <u>'283-Application</u> “The switch in the glasses can have different attributes. It can be activated by different type of forces, including mechanical, radiation, magnetic, electrical, and temperature.” EX1026, [0075]; <i>see also</i> [0076]-[0079] (discussing various switches activated by mechanical force from a user). Either as part of Howell-887 or as a separate reference, it would have been obvious to incorporate the '283-Application's switches into Howell-887's glasses. DeJaco-Decl., ¶183.	14:23-25; 14:53-56; 38:51-39:37.
[57]	<i>See</i> [4].	
[58]	<i>See</i> [3].	

Claim/Limitation	Howell-887 and Incorporated References	'4901 Patent
[59]	<i>See</i> [19].	

VI. GROUND 2A: GRIFFIN IN VIEW OF HOLLEMANS

A. Griffin (EX1005)

Griffin discloses a communication device with two components: a first communication module and a second communication module (*e.g.*, wireless headset) sized to fit inside the first module. Griffin, 4:13-5:5; Figs. 1-2. Among other things, the first module serves as a charging station for the second module and can take the form of or function of a “cellular phone.” *Id.*, 8:3-21; 10:1-10; 17:3-13; Figs. 5, 10, 14a; DeJaco-Decl., ¶¶190-198.

The first module is shown in Figure 3. It includes a cavity 16 into which the second module is designed to fit as shown in Figure 6:

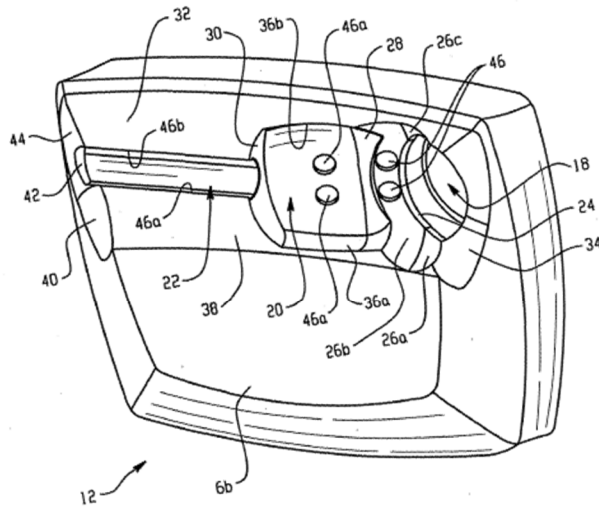


Fig. 3

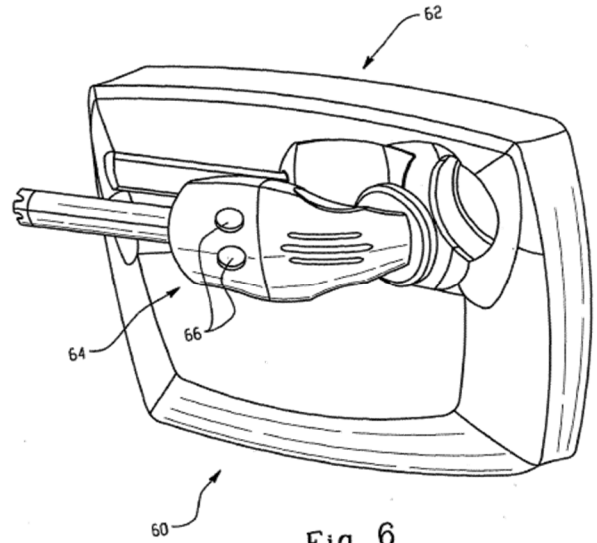


Fig. 6

When the headset is put into the first module, the “charging terminals 56” on the headset (*see* Fig. 5 below) “mate with corresponding charging terminals 46 on the first communication module 12 shown in Fig. 3.” Griffin, 8:3-6. The charging terminals allow a “rechargeable power source,” *e.g.*, battery, within the headset to be recharged. *Id.*, 8:6-12; *see also id.*, 16:9 (“rechargeable battery”); claim 2.

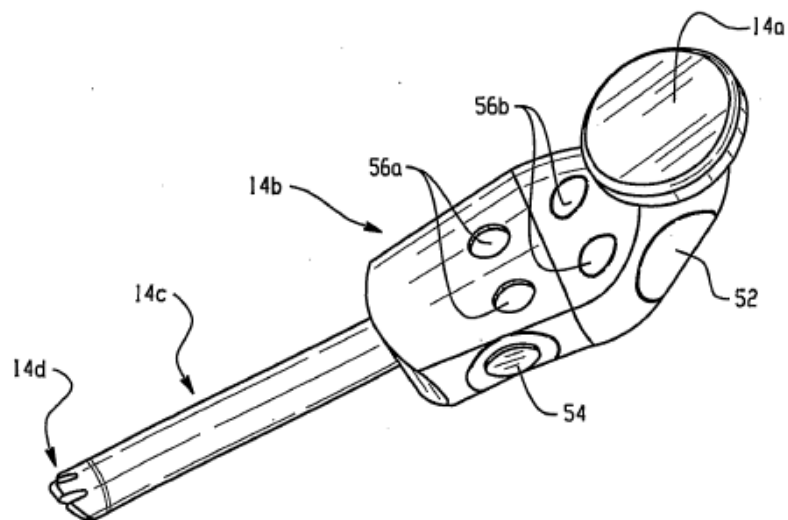
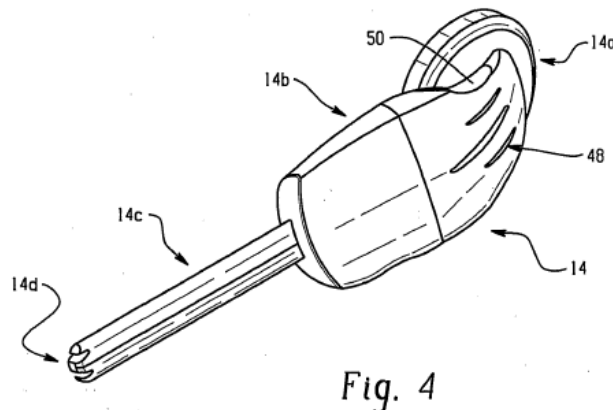


Fig. 5

Griffin also teaches (EX1005, 7:8-10) that the headset:

includes a noise cancellation circuit with a background noise microphone 48 as shown in Fig. 4. The background noise microphone 48 preferably detects background noise signals which are then subtracted from the corrupted speech received by the microphone 14d in the noise cancellation circuit. In this manner, a higher quality speech signal is provided.

As seen in Figure 4, microphone 14d is positioned closer to the user's mouth during use than background noise microphone 48:



See also Griffin, 7:1-3.

B. Hollemans (EX1006)

Hollemans discloses an earbud-type headphone with a touch-sensitive surface. Hollemans, Abstract, 1:44-49, 1:63-2:4, Fig. 2, claim 10; DeJaco-Decl., ¶¶199-202. The earbud detects “temporal patterns” and/or gestures by a user on the touch-sensitive surface, and controls the functionality of a remote device, *e.g.*, mobile phone or MP3 player, based on those patterns. *Id.*, 1:12-19, 2:5-18, 6:14-35.

“An example is a single short tap for pause/play, double short tap for next track, triple short tap for next artist/album and a long tap for adjusting the volume.” *Id.*, 2:15-18. Other examples include detecting gestures “for controlling a mouse pointer, navigating a menu, entering a tapping pattern, [or] scrolling content on display.” *Id.*, 6:23-26.

Hollemans touts its touch-sensitive design over prior designs that relied on a “tiny button,” which “require[] considerable time and attention from the user, which may lead to dangerous situations when the user takes part in traffic.” *Id.*, 1:12-40.

Hollemans also teaches the use of a second (or “further”) touch-sensitive surface that “is touched substantially by the ear when the controller is substantially worn in or by a human ear.” *Id.*, 2:19-27; 3:36-38. Hollemans’ device only sends a control signal to the remote device (*e.g.*, a mobile phone) if the second/further touch-sensitive surface is touched, which “prevent[s] the accidental remote control of the device when the remote controller is not wor[n], thus preventing unwanted activation of the device and unnecessary battery exhaustion.” *Id.*

C. The Griffin-Hollemans Combination

POSAs had reason to add Hollemans’ touch-sensitive surface to Griffin’s headset so that users could conveniently adjust the headset’s functionality, *e.g.*, volume. DeJaco-Decl., ¶¶203-208. Hollemans explicitly motivates using its touch-sensitive surface to increase user safety in scenarios such as driving.

Hollemans, 1:12-40. Implementing Hollemans’ touch-sensitive surface on Griffin’s headset is an obvious use of a known technique to improve similar devices in the same way. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-421 (2007).

Griffin also explains that its headset has a physical “power switch,” and that other headset functions—like mute—could be accessed by similar switches. Griffin, 7:14-8:2; *see also* Fig. 5. Incorporating Hollemans’ touch-sensitive surface in Griffin’s headset would have allowed users to adjust the headset’s functionality without needing to blindly locate the correct physical button on the headset. DeJaco-Decl., ¶206; Hollemans, 1:20-62 (describing advantages of touch-sensitive surface over prior-art controllers).

POSAs would have had a reasonable expectation of success in the proposed combination, as Hollemans’ technique is designed to work with “mobile phones” (Hollemans, 1:11-19; 3:15-17), the same type of external device to which Griffin’s headset is wirelessly connected (*e.g.*, Griffin, 7:25-8:2, 13:19-22, 17:10-14, 19:7-9, claim 13). The combination would have required only routine skill, well within POSAs’ capabilities. DeJaco-Decl., ¶208.

D. Claim-By Claim Analysis

1. Claim 1

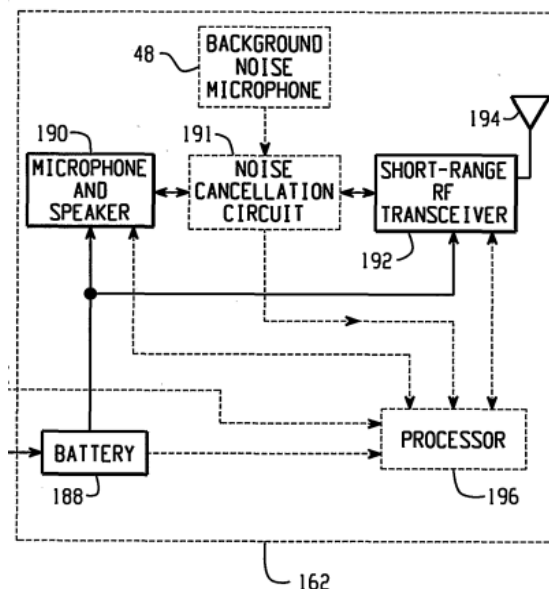
a. [1PRE]

Griffin's first and second modules, both used in the Griffin-Hollemans combination, collectively are a "*system.*" Griffin, Abstract, Figs. 1-10, 17; 17:3-13 (describing the modules together as "system 200"). DeJaco-Decl., ¶¶210-211.

b. [1A]: "a head-worn personal electronic apparatus...")

Griffin's headset is a "*head-worn personal electronic apparatus*" as it is worn in the ear and houses electrical circuits. Griffin, Abstract (the headset "may be fitted into or onto an ear"), claim 1, Figs. 17-18.

As seen in the excerpted version of Figure 16, Griffin's headset (element 162) houses various electronics:



See also *id.*, 15:3-4. DeJaco-Decl., ¶¶212-213.

c. [1B]: “...a speaker...worn proximate to the ear...”

Griffin’s headset includes “*a speaker.*” Griffin, 6:15-17 (“speaker 14a”), 14:6-7, 16:7-9; Figs. 4-5 (speaker 14a), Figs. 15-16; DeJaco-Decl., ¶¶214-217

Griffin’s speaker is configured to be “*worn proximate to the ear of the user.*” *Id.*, 6:17-18 (“speaker 14a is placed in the ear of a...user”); 14:20-21; claim 16. DeJaco-Decl., ¶218.

d. [1C]: “a touch sensitive surface...”

In the Griffin-Hollemans combination, Griffin’s headset includes Hollemans’ touch-sensitive area, *e.g.*, a surface on main body 14b Griffin, 6:15-16. A potential location for the touch-sensitive area is illustrated on Figure 4 of Griffin below. DeJaco-Decl., ¶220.

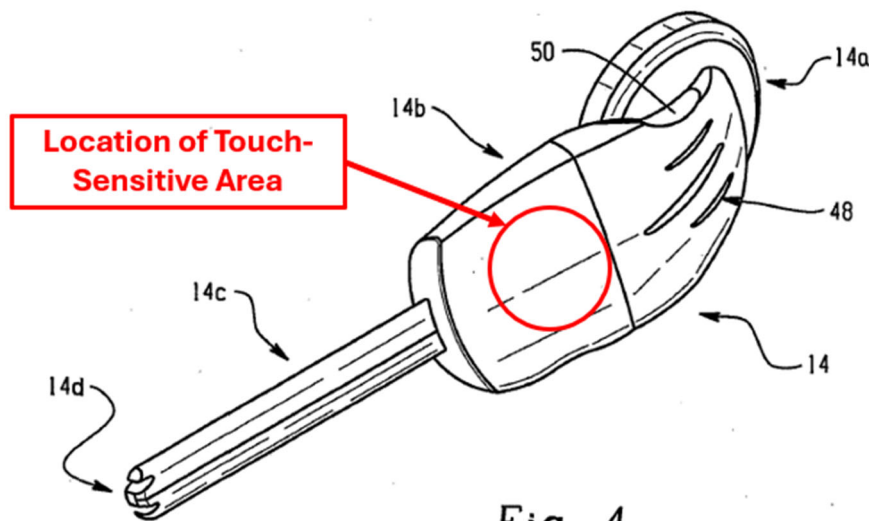


Fig. 4

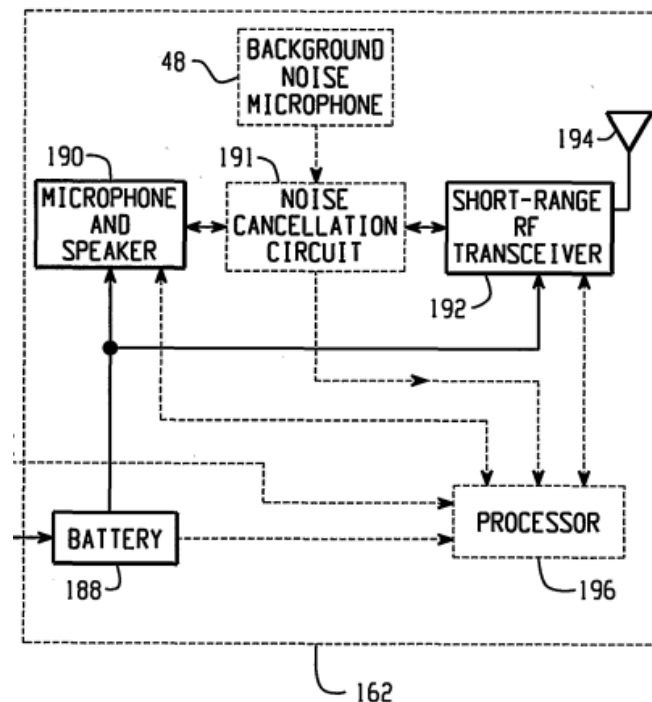
A user would tap or otherwise touch that surface to control a headset operation, *e.g.*, volume. Hollemans, 2:17-18 (“a long tap for adjusting volume”); claim 15; *see also id.*, 2:15-19 (describing other temporal patterns and functions to be controlled), 4:46-56 (same), 5:55-6:60 (same). DeJaco-Decl., ¶¶219-223.

e. [1D]: “a rechargeable battery...”

Griffin’s headset includes a “*rechargeable battery.*” Griffin, 9:3-5, 16:7-17; Fig. 16 (element 188). DeJaco-Decl., ¶224.

f. [1E]: “electronic circuitry...connected to at least the rechargeable battery,...”

Griffin’s headset (element 162 below) houses various electronic circuits, *i.e.*, “*electronic circuitry.*” Griffin, 15:3-4.

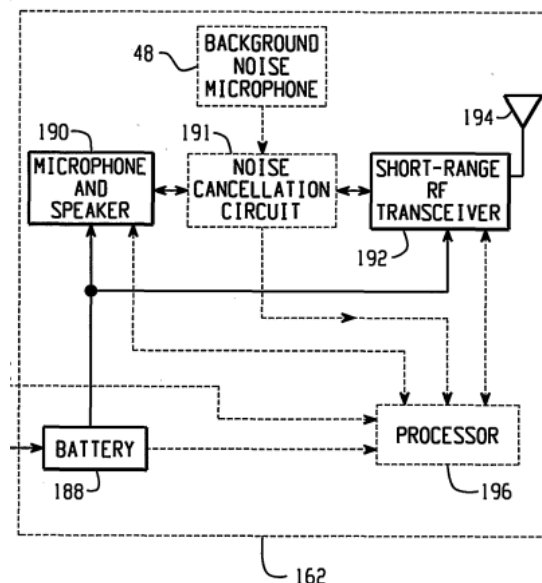


Griffin, Fig. 16.

As depicted above, and as expected in a modern consumer electronic, Griffin's battery 188 is "*electrically connected*" to Griffin's various electronic circuitry such as its processor, microphone/speaker, and transceiver so as to provide those circuits with power to operate. Griffin, 16:7-17; claim 2 ("a rechargeable power source coupled to the RF transceiver, microphone and speaker"). POSAs would understand the electronic circuitry of Griffin would likewise be "*electrically connected*" to Hollemans' touch-sensitive surface (*supra* [1C]) to provide it with power. DeJaco-Decl., ¶¶225-227.

g. [1F]: "wireless communication circuitry..."

Griffin's headset includes a short-range wireless transceiver 192 electrically connected to battery 188. Griffin, 15:25-16:9.



Griffin, Fig. 16; *see also id.* at claim 1, claim 2 ("a rechargeable power source coupled to the RF transceiver"). DeJaco-Decl., ¶¶228-229.

- h. [1G]: “at least one conductive element...partially-exposed to enable interconnection...[and] electrically connected to at least the rechargeable battery”**

Griffin’s headset includes charging terminals 56. Griffin, Fig. 5. POSAs would have known that the charging terminals were made of conductive materials (*e.g.*, metal) and are thus “*conductive element[s]*” as claimed.

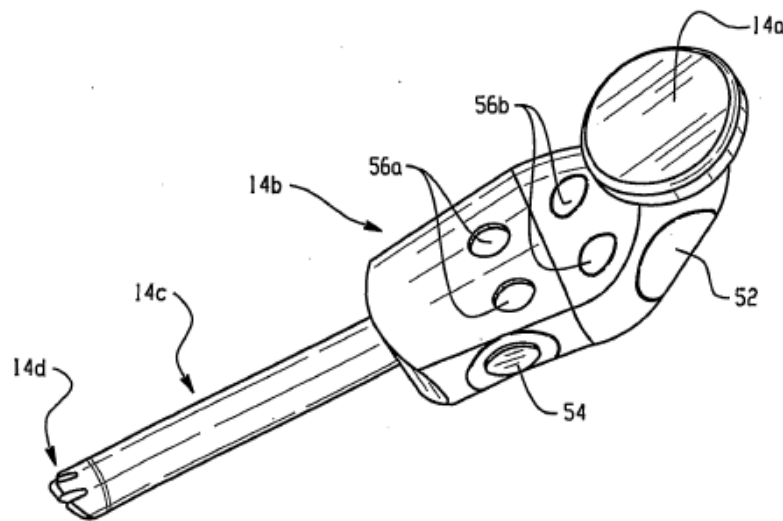


Fig. 5

“The charging terminals 56 on the second communication module 14 [*i.e.*, headset] preferably mate with corresponding charging terminals 46 on the first communication module 12 shown in Fig. 3 [below].” Griffin, 8:3-5. This mating, *i.e.*, “*interconnection,*” is enabled by the fact that the charging terminals on the headset are “*at least partially exposed.*” DeJaco-Decl., ¶¶231-232.

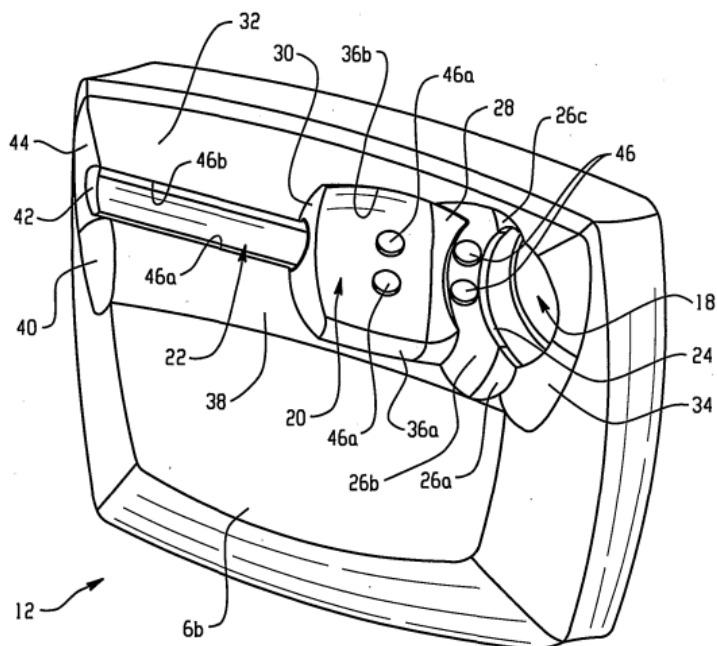
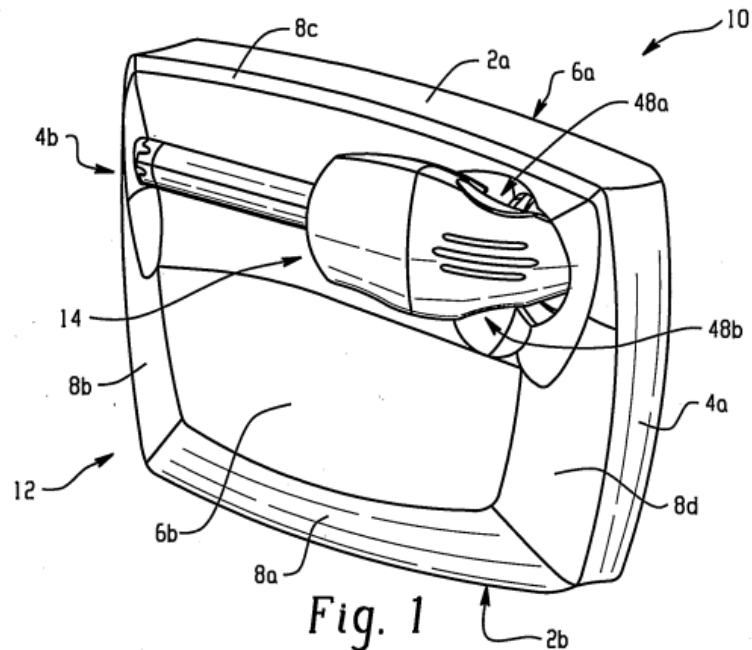


Fig. 3

Griffin’s rechargeable battery “is recharged by the first communication module 12 through the charging terminals 46 and 56 while the [headset] is in its fully mounted position as shown in Fig. 1 [below].” Griffin, 8:6-9; *see also id.*, 9:3-5. For recharging, the charging terminals are “*electrically connected*” to the battery. Griffin, claim 2 (“a first set of terminals coupled to the rechargeable power source on the second communication module”), claim 16.



As depicted in Figure 16 below, the rechargeable battery in Griffin's headset is recharged by a power source in the first module when the headset is mounted in the first module such that they "*are in electrical contact*" via their respective charging contacts. Griffin, 16:15-17; DeJaco-Decl., ¶234.

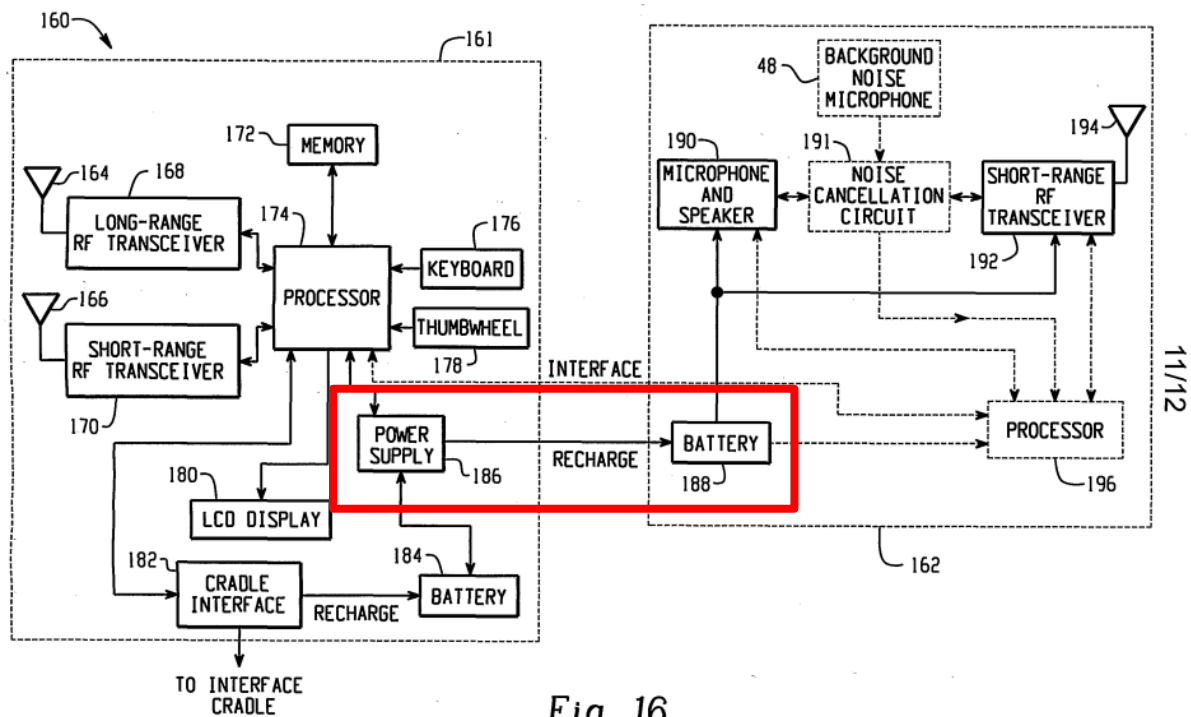


Fig. 16

See also *id.*, claim 2; Fig. 1 (depicting the mating of the two modules); 13:8-11. DeJaco-Decl., ¶¶230-234.

i. [1H]: “a charging apparatus having...a charging connector,”

As discussed *supra* [1G] and seen in Fig. 3 below, Figs. 3 and 5 below, Griffin’s first module charges the rechargeable battery in Griffin’s headset via charging terminals 46 that “mate” with charging terminals 56 on the second module when the second module is placed in the first module. Griffin, 8:3-5. Griffin’s first module is a “*charging apparatus*” and its charging terminals are each a “*charging connector*.” DeJaco-Decl., ¶235.

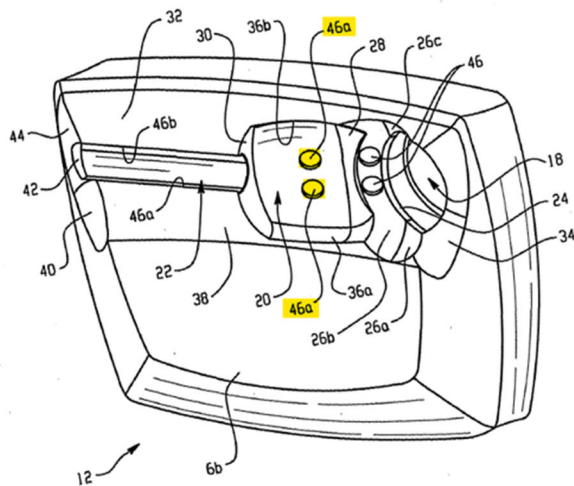


Fig. 3

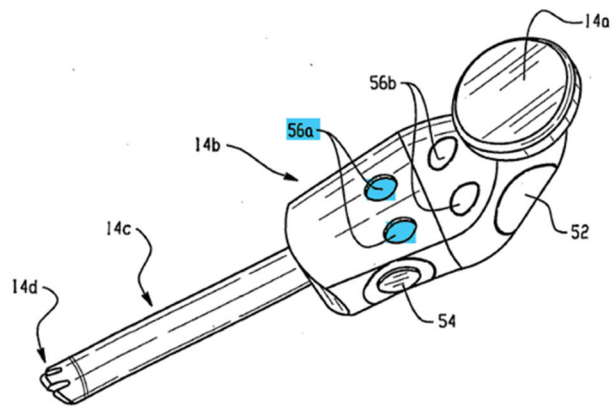


Fig. 5

- j. [1I]: “...the rechargeable battery...recharged while the [headset] is placed in the charging apparatus.”

See *supra* [1G]-[1H]; Griffin, 8:3-5, claim 2, Fig. 1. DeJaco-Decl., ¶¶236-237.

2. Claim 2: “...the sensed touch input...operates to at least alter operation of the [headset]”

As discussed *supra* [1C], in the Griffin-Hollemans combination, Griffin’s headset includes Hollemans’ touch-sensitive area, and a user would tap or otherwise touch that surface to control an operation of the headset, *e.g.*, volume of a telephone call. Hollemans, 2:15-19 (“a long tap for adjusting volume”); 4:46-56; 5:55-6:64; claim 15. DeJaco-Decl., ¶238.

3. Claim 3: “...support voice calls to the user, and wherein the at least one operation of the [headset] being altered concerns at least accepting or declining a voice call...”

Griffin’s headset “*is configured to support voice calls.*” Griffin, 15:3-16:4 (explaining that the first module includes an RF component for long-range wireless network communication, *e.g.*, cellular communication); 17:10-11 (first module can be a phone); 19:6-13 (“first communication module 212 is a cellular telephone”); Fig. 17; claim 13.

In the Griffin-Hollemans combination, a user can answer or decline a call by touching the touch-sensitive area added to Griffin’s headset. Hollemans, 6:54-60 (“[T]ouching the right earpiece could be mapped on answering the call and the left earpiece could be mapped to hanging up.”), claims 24-27; *see also id.*, 3:9-22 (Hollemans’ earbud can control “a mobile phone”). DeJaco-Decl., ¶¶239-241.

4. Claim 4: “...configured to support audio output...via the speaker, and...[the] operation...being altered concerns control of the audio output being provided...”

As discussed *supra* claim 3, the Griffin-Hollemans headset supports voice calling which results in “*audio output to the user via the speaker.*”

As discussed *supra* [1C] and [3], users can adjust the Griffin-Hollemans headset’s volume and hang up a phone call, *i.e.* “*at least one operation...[that] concerns control of the audio output,*” using Hollemans’ touch-sensitive surface. Hollemans, 2:17-18; 6:57-60. DeJaco-Decl., ¶¶242-243.

5. Claim 5: “...distinguish at least a direction of the user input with respect to the touch sensitive surface.”

Hollemans’ touch-sensitive surface “is used for picking up a gesture made on the [surface] with e.g., ...a finger.” Hollemans, 6:14-15. The gestures that the touch-sensitive surface can detect include a “planar gesture,” and the gesture can be used to “scroll[] content on a display” or to write a “character, like a letter from an alphabet.” Hollemans, 6:20-35.

In view of these teachings, POSAs would have had reason to implement the Griffin-Hollemans combination such that a user could scroll content (e.g., a list of phone numbers) shown on a phone or PDA display, to which Griffin’s headset is wirelessly connected, by sliding a finger up and down on the touch-sensitive surface. Griffin, 19:9-13; Hollemans, 6:23-30. Similarly, POSAs would configure the combination’s headset to recognize changes in the direction of a user’s finger to detect gestures corresponding to letters or other characters. Hollemans, 6:26-27; DeJaco-Decl., ¶¶246-247.

Implemented in this manner, the combination’s headset is configured to “*distinguish at least a direction of the user input with respect to the touch sensitive surface.*” DeJaco-Decl., ¶¶244-248.

6. Claim 6: “...detect at least a sliding of a finger action with respect to the touch sensitive surface.

In the implementation discussed *supra* claim 5, the combination’s headset would be configured to “*detect at least a sliding of a finger action with respect to the touch sensitive surface.*” DeJaco-Decl., ¶249.

7. Claim 7: “...facilitate determination at least whether the user input pertains to a forward sliding action or a backward sliding action with respect to the touch sensitive surface.”

Griffin-Hollemans meets claim 7 for the same reasons discussed *supra* claims 5-6. DeJaco-Decl., ¶250.

8. Claim 8: “...a physical condition sensor...configured to acquire data pertaining to a physical condition of the user....”

Hollemans’ earbud preferably includes a second touch-sensitive surface “touched substantially by the ear when...worn.” Hollemans, 2:19-27. The second touch-sensitive surface can be a “temperature sensor.” *Id.*, 3:36-43.

A “control signal” from the earbud (*e.g.*, to control a function of a connected device like a phone) is only sent if the second touch-sensitive surface “is touched,” which “prevent[s] unwanted activation of the device [being controlled by the earbud] and unnecessary battery exhaustion.” *Id.*, 2:19-27. That is, the earbud’s ability to change or adjust functions of a connected device only exists when the earbud is being worn as detected by the second touch-sensitive surface. DeJaco-Decl., ¶¶251-252.

Adding Hollemans' second touch-sensitive surface in the form of a temperature sensor to Griffin's headset would have preserved the battery of the remote device (phone) that the headset controls by preventing the headset from mistakenly sending a control signal to the remote device when the headset was not being worn as detected by the temperature sensor. DeJaco-Decl., ¶253. This obvious implementation of Griffin-Hollemans would include Hollemans' temperature sensor, *i.e.*, "*a physical condition sensor*" within the headset, rendering claim 8 obvious. DeJaco-Decl., ¶¶253-254.

9. Claim 10: "...a microphone...to receive a voice input... determine or receive a determination of a requested operation from the voice input using voice recognition, and control an operation by the [headset] based on the requested operation"

Griffin's headset includes a microphone. Griffin, 6:15-16 ("microphone 14d"), 14:7, 16:8, Figs. 4-5, 15-16.

Griffin's headset is also "adapted for voice control" to "provide a hands-free means for a user to answer and participate in a voice call received at the cellular telephone." Griffin, 19:6-13. Using voice control, a user may, for example, "initiate a telephone call [or] add a telephone number to a stored number list...by simply speaking into the microphone of the second communication module 214 [*i.e.*, the headset]." *Id.* Griffin's headset, as used in the Griffin-Hollemans combination, thus renders claim 10 obvious. DeJaco-Decl., ¶¶255-257.

10. Claim 11: “...a radiation sensor...”

For the same reasons Hollemans would have motivated POSAs to use a second touch-sensitive surface that detects whether the headset is being worn, *supra* claim 8, it would have been obvious to use Hollemans’ electromagnetic field sensor (Hollemans, 3:36-48) or “an IR movement sensor” (Hollemans, 6:14-18) in place of or in addition to Hollemans’ temperature sensor to improve the accuracy of the determination whether a headset is being worn.

POSAs would have known that an electromagnetic field sensor detects electromagnetic radiation and that an IR (*i.e.*, “infrared”) movement sensor detects infrared radiation; thus, each would constitute “*a radiation sensor*” as claimed. DeJaco-Decl., ¶¶258-262.

11. Claim 12: “...a sensor...configured to sense data indicative of whether the [headset] is being worn by the user”

As discussed *supra* claims 8 and 11, Hollemans would have motivated POSAs to include a second-touch sensitive surface to determine when the Griffin-Hollemans headset is being worn. That surface can comprise several different types of “*sensor[s]*” including a temperature sensor, pressure sensor, capacitive sensor, electromagnetic field sensor or IR movement sensor. Hollemans, 3:36-49, 6:14-18. Each of those sensors is “*configured to sense data indicative of whether the head-worn personal electronic apparatus is being worn by the user.*” DeJaco-Decl., ¶263.

12. Claim 13: “...wherein the sensor is electrically connected to the electronic circuitry, and wherein the electronic circuitry...is configured to at least alter operation of the [headset] based...on the sensed data...”

Hollemans explains that its second touch-sensitive surface is used not only to disable the headset’s ability to control a remote device (*e.g.*, phone) when the headset is not being used, but that the surface is also used to send a control signal when the surface is first touched or first ceases being touched. Hollemans, 2:28-32. “This makes it, for example, possible for the device to pause playing music as soon as the earpiece is taken out and to resume playing music upon re-insertion.” *Id.*

As discussed *supra* claim 12, the Griffin-Hollemans headset includes a sensor for detecting whether it is being worn. As Hollemans teaches, data from that sensor would be used to “*alter operation*” of the headset, *e.g.*, cause the headset to send a signal to a connected device like a phone or PDA to pause or resume audio. DeJaco-Decl., ¶266.

POSAs would have understood that Griffin’s processor 196 controls the headset’s functionality and that for the sensor’s data to be used by the processor for the above-discussed functionality, then the sensor would be “*electrically connected*” to the headset’s various electronic circuits, including Griffin’s processor 196, and/or that that would have been an obvious implementation of Griffin-Hollemans. Griffin, 16:5-9, Fig. 16; DeJaco-Decl., ¶¶264-267.

13. Claim 14

Supra [1B], claim 13. DeJaco-Decl., ¶268.

14. Claim 18

a. [18PRE]

Supra [1PRE]. DeJaco-Decl., ¶269.

b. [18A]

Supra [1A]. DeJaco-Decl., ¶270.

c. [18B]

Supra [1B]. DeJaco-Decl., ¶271.

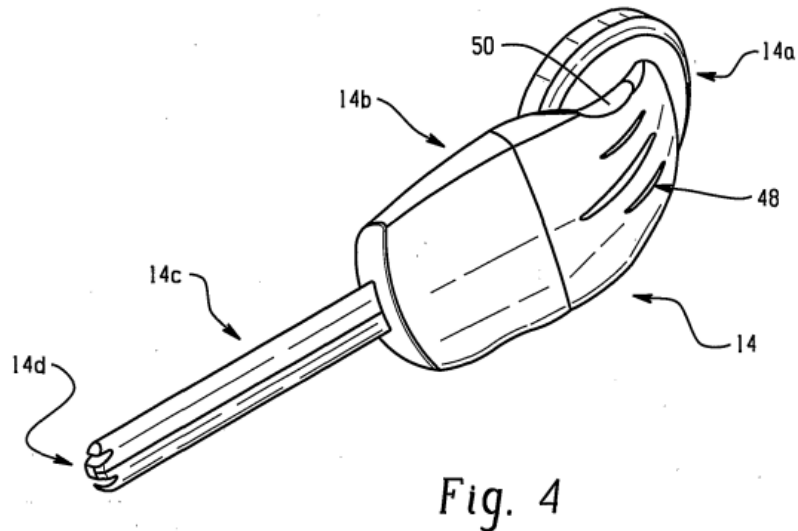
d. [18C]: “a first microphone...positioned to pick up at least audio input from at least the user”

Griffin’s headset includes a first microphone. Griffin, 6:15-17 (“microphone 14d”), 14:6-7, 16:7-9, Figs. 4-5, 15-16; *supra* claim 10. Griffin’s first microphone is located near a user’s mouth and receives a user’s speech. Griffin, 7:1-8, 14:20-23. DeJaco-Decl., ¶272.

e. [18D]: “a second microphone...positioned to pick up at least environmental audio input associated with an environment around the head-worn personal electronic apparatus”

Griffin’s headset includes “a noise cancellation circuit with a background noise microphone 48.” Griffin, 7:8-10. The background noise microphone is “*a second microphone.*”

As seen in Fig. 4, “background noise microphone 48” is positioned closer to the user’s ear, and further from the user’s mouth, than microphone 14d:



“The background noise microphone 48 preferably detects background noise signals which are then subtracted from the corrupted speech received by the microphone 14d [*i.e.*, the “*first microphone*”] in the noise cancellation circuit. In this manner, a higher quality speech signal is provided.” Griffin, 7:10-14. The background noise microphone therefore is “*positioned to pick up at least environmental audio input associated with an environment around the [headset].*” DeJaco-Decl., ¶¶273-275.

f. [18E]

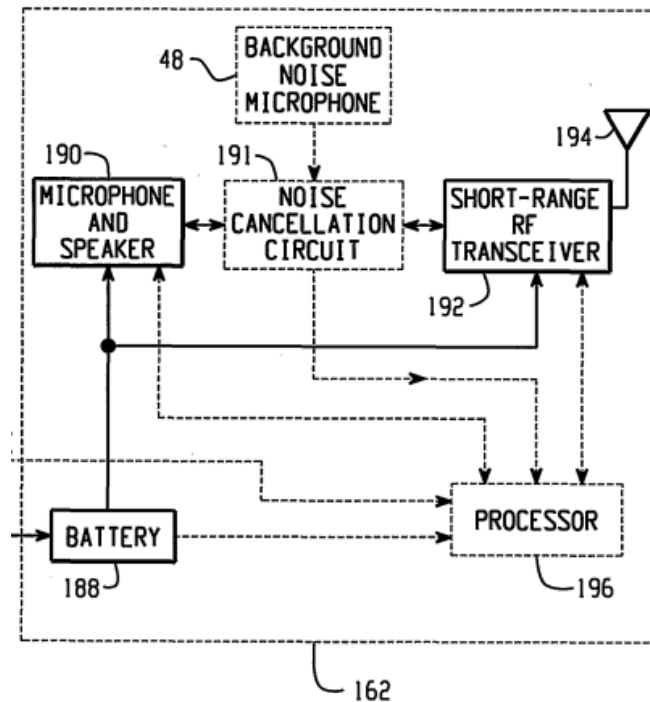
Supra [1D]. DeJaco-Decl., ¶276.

g. [18F]

Supra claims 8, 11-12. DeJaco-Decl., ¶277.

- h. [18G] “...the electronic circuitry being configured to...process the audio input from...the user via the first microphone to remove...a portion of the environmental audio input...picked up via the second microphone...”

As discussed above in relation to limitation [1E] and depicted below in an excerpt of Figure 16, the Griffin headset includes “*electronic circuitry*” such as its microphone(s), noise-cancellation circuit, and processor that is *electrically connected*” to the rechargeable battery 188.



In the Griffin-Hollemans combination, the battery would also be “*electrically connected*” to Hollemans’ sensors for detecting whether the headset is being worn to provide those sensors with power. *Supra* claims 8, 11-13. The headset in Griffin-Hollemans therefore contains “*electronic circuitry [that is] electrically connected to at least one or more of the first microphone, the second microphone, the rechargeable battery and the sensor.*” DeJaco-Decl., ¶¶278-279.

As discussed *supra* [18D], Griffin’s headset includes a background noise microphone and Griffin’s “noise cancellation circuit” subtracts that noise from the audio signal that Griffin’s first microphone captures (which contains both background noise and the user’s speech). Griffin, 7:8-14. Griffin’s “noise cancellation circuit” is part of Griffin’s “*electronic circuitry*,” and the circuit is “*configured to at least process the audio input from at least the user via the first microphone to remove at least a portion of the environmental audio input associated with the environment picked up via the second microphone.*” DeJaco-Decl., ¶280.

Finally, in the Griffin-Hollemans combination, Griffin’s processor 196 (which is part of Griffin’s “*electronic circuitry*”) would be “*configured to process at least the data captured by the sensor,*” i.e., the second touch-sensitive sensor discussed in claims 8 and 11-13, and the processor would use that data to determine if the headset “*is being worn by a user.*” Griffin, 16:5-9, Fig. 16; DeJaco-Decl., ¶281.

i. [18H]

Supra [1F]. DeJaco-Decl., ¶282.

j. [18I]

Supra [1G]. DeJaco-Decl., ¶283.

k. [18J]

Supra [1H]. DeJaco-Decl., ¶284.

l. [18K]

Supra [1I]. DeJaco-Decl., ¶285.

15. Claim 19: “...the first microphone is positioned to be directed forward towards the user's front...and the second microphone is positioned to be directed outward away from the user's head...”

Griffin's headset positions its “background noise microphone 48,” *i.e.*, “*second microphone*” away from the user's head and its microphone 14d, *i.e.*, “*first microphone*” toward the front of the user's face, *i.e.*, his/her mouth. Griffin, Fig. 4; DeJaco-Decl., ¶286; *supra* [18C], [18D].

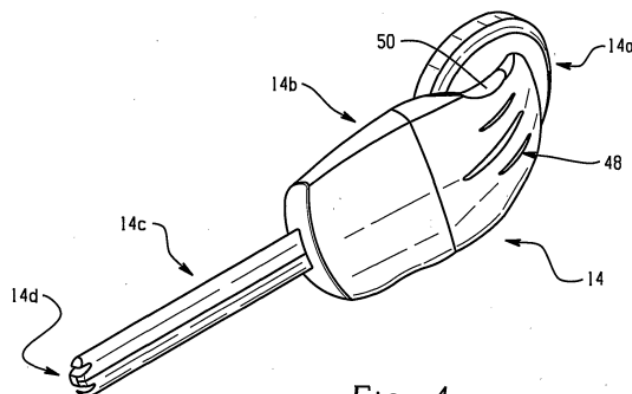


Fig. 4

16. Claim 20

Supra [1C], claim 2. DeJaco-Decl., ¶287.

17. Claim 21

Supra claim 4. DeJaco-Decl., ¶288.

18. Claim 23 “...sensor is positioned to be directed towards the user’s head...”

POSAs would orient Hollemans’ second touch-sensitive surface (*supra* claim 8) and/or the other sensor embodiments used in Hollemans for determining if the headset is being worn (*e.g.*, temperature, pressure, capacitive and/or electromagnetic field sensor, *supra* claims 11-12) “*towards the user’s head.*” For example, the Hollemans temperature sensor would be directed toward the user’s head to obtain an accurate temperature reading. DeJaco-Decl., ¶¶289-290.

19. Claim 24: “...the data captured by the sensor is dependent on thermal characteristics of the user’s head...”

Supra claim 8 (discussing temperature sensor, which captures data “*dependent on thermal characteristics of the user’s head*”). DeJaco-Decl., ¶291.

20. Claim 25

Supra claim 10. DeJaco-Decl., ¶292.

21. Claim 26

Supra claim 13. DeJaco-Decl., ¶293.

22. Claim 27

Supra claims 13-14. DeJaco-Decl., ¶294.

23. Claim 28: “...a user input device...based on at least capacitive effect...”

As discussed *supra* [1C], the Griffin-Hollemans headset includes Hollemans’ touch-sensitive surface. That surface is a “*user input device*” because a user can tap or otherwise touch it to control a function of the device with which the headset is wirelessly connected. Hollemans, 1:4-11, 2:5-19, 3:17-24, 5:55-6:64.

Hollemans teaches that its touch-sensitive surface “can be realized in many ways, including a sensor for changes in capacity or induced voltages or currents.” Hollemans, 3:38-40; *see also id.*, 6:15-18. Hollemans thus teaches an embodiment in which its touch-sensitive surface, used in Griffin-Hollemans, is “*based on at least capacitive effect, wherein the user input being received induces at least a capacitive change to produce at least an electrical response.*” DeJaco-Decl., ¶¶295-296.

24. Claim 29

Supra claim 5. DeJaco-Decl., ¶297.

25. Claim 30

Supra [1E], claim 6. DeJaco-Decl., ¶298.

26. Claim 31

Supra [1E], claim 7. DeJaco-Decl., ¶299.

27. Claim 34: “...the conductive element is a conductive pad”

As discussed *supra* [1G], Griffin’s headset includes charging terminals 56 depicted in, for example, Figure 5 as “*conductive pads*.” DeJaco-Decl., ¶300.

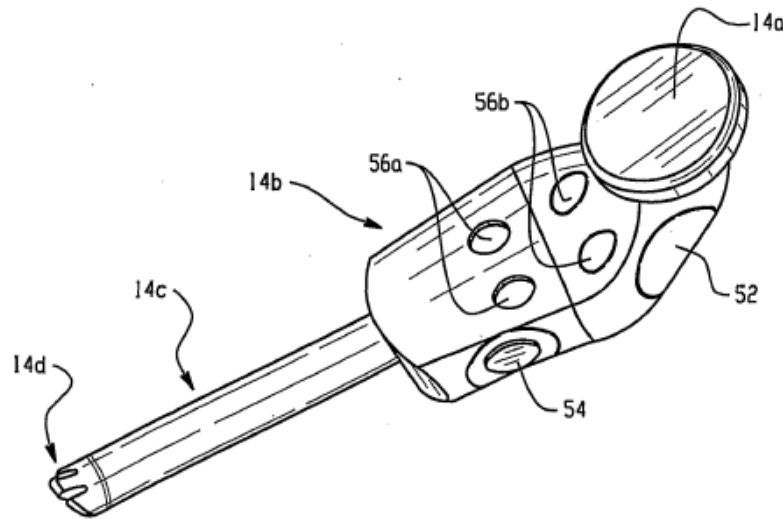


Fig. 5

28. Claim 35

Independent claim 35 is nearly identical to claim 18 with the lone substantive difference being that claim 18 recites “*a sensor...configured to capture data*” ([18F]) and “*electronic circuitry...configured to determine whether the head-worn structure is being worn by a user based on at least the processed sensor data*” ([18G]) whereas claim 35 recites “*a ‘being worn’ sensor...configured to detect data indicative of whether the [headset] is being worn*” ([35F]). DeJaco-Decl., ¶¶301-302.

As discussed *supra* claims 8, 11-13, the headset in Griffin-Hollemans includes a second touch-sensitive surface that uses a sensor, *e.g.*, a temperature sensor, connected to the electrical circuitry, to “*detect data indicative of whether the [headset] is being worn.*” The headset in Griffin-Hollemans thus meets all the limitations of claim 35 for the reasons discussed *supra* claims 8, 11-13, 18. DeJaco-Decl., ¶303.

29. Claim 36: “...the detected data by the ‘being worn’ sensor is dependent on a physical characteristic of the user.”

Supra claims 8, 35 (discussing temperature sensor). DeJaco-Decl., ¶304.

VII. GROUND 2B: THE GRIFFIN-HOLLEMANS COMBINATION IN VIEW OF IRVIN RENDERS OBVIOUS CLAIMS 12-15, 18-21, 23-31, 34-39, 41-45, 47-54, 56-59

Most of the additional claims challenged in Ground 2B require that the claimed “*system*” include “*a motion sensor,*” “*accelerometer,*” or “*motion detector*” that detects movement of the “*head-worn personal electronic apparatus.*” Those claims (and certain related claims) would have been obvious over the Griffin-Hollemans combination in further view of Irvin. Further, as discussed below, Irvin also discloses a “*being worn*” sensor and Ground 2B thus provides an alternative obviousness ground for claims 12-14, 18-21, 23-31, and 34-36 in addition to the Griffin-Hollemans combination in Ground 2A.

A. Irvin (EX1008)

Irvin discloses a wireless headset with a “sensor” that “provides indication that a user has placed the wireless headset 100 upon their body” so the headset can automatically be placed into an active (or inactive) state to conserve battery power. Irvin, Abstract, 2:29-3:10, 7:14-17, 9:12-13; DeJaco-Decl., ¶¶308-312. Irvin’s wireless headset is suitable for use with a “cellular telephone,” and “draws essentially no power” when in an inactive state. Irvin, 2:32-3:2; *see also* Abstract.

Irvin teaches that its sensor for detecting whether the headset is being used “may be based on a variety of technologies” so long as it “provide[s] a signal responsive to a natural stimulus associated with use of the headset by a user.” Irvin, 7:10-15. Irvin discloses various sensors that can be used “individually or in any combination,” such as an “accelerometer” that can detect movement of the headset and a “proximity sensor” that can include “an active or passive IR sensor.” Irvin, Abstract, 7:15-17, 9:9-17.

B. The Griffin-Hollemans-Irvin Combination

In view of Irvin, POSAs would have known that a motion sensor like an accelerometer and/or a proximity sensor like an active IR sensor could be used instead of or in addition to Hollemans’ second touch-sensitive surface to determine whether the headset was being worn.

POSAs thus would have considered using Irvin’s accelerometer or active IR sensor to be the simple substitution of (or use of) one known prior-art element for another to yield a predictable result, *i.e.*, a headset with a sensor that generates data indicative of whether the headset is being worn. DeJaco-Decl., ¶¶313-314.

Irvin motivates using sensors to detect whether a headset is being worn such that the headset can enter a low-power mode, conserving battery power, which POSAs would have considered important for a wireless device like Griffin’s headset, especially given Griffin’s teaching to “limit power consumption while the module 14 [*i.e.*, headset] is not in use.” Irvin, 2:29-3:2; Griffin 7:16-18. Indeed, while Hollemans’ second touch-sensitive surface disables the headset from being able to accidentally control (*e.g.*, turn on) a remote device like a phone, the touch-sensitive surface does not put the headset itself into a low-power mode, thus creating the potential for the headset’s battery to be drained while not in use. POSAs thus would have had reason to implement the Griffin-Hollemans combination with an accelerometer and/or an active IR sensor providing data to Griffin’s processor, which would use that data to conserve power by entering a low-power mode when the headset is not worn. The resulting Griffin-Hollemans-Irvin combination retains the features of Griffin-Hollemans (*supra* Ground 2A), and adds an accelerometer and/or IR sensor rather than (or in addition to) Hollemans’ second touch-sensitive surface. DeJaco-Decl., ¶¶315-319.

POSAs would have had a reasonable expectation of success implementing the combination, as accelerometers and active IR sensors and the use of their data for processing purposes was well-known, such that implementing Irvin's teachings in Griffin's headset would have required only routine skill. DeJaco-Decl., ¶320.

1. Claims 12-14, 18-21, 23-31, and 34-36

As discussed above, Griffin-Hollemans-Irvin adds Irvin's accelerometer and/or active IR sensor to detect whether the headset is being worn in place of (or in addition to) Hollemans' second touch-sensitive surface. Thus, as discussed below, limitations of claims 12-14, 18-21, 23-31, 34-36 that were mapped to Hollemans' second touch-sensitive surface in Ground 2A are also rendered obvious by the Irvin accelerometer and/or active IR sensor in the Griffin-Hollemans-Irvin combination.

As discussed above, the Irvin sensor in the Griffin-Hollemans-Irvin headset indicates that the headset has been placed on the user's body, meeting claim limitations 12, 18F, and 35F. EX1008, 7:12-17; 9:10-13. POSAs would understand the Irvin sensor to be connected to the electronic circuitry of the Griffin-Hollemans combination discussed above ([1E]) and that Griffin's processor 196 (*supra* claim 13, limitation 18G) would similarly process the data from the Irvin sensor to alter the headset's operation, such as by enabling/disabling the audio interface per Irvin (*see* Irvin, 5:25-30), meeting limitations 13, 14, 18G, 26 and 35F. Irvin, 6:20-7:9; Figs. 3A-3B. DeJaco-Decl., ¶¶321-329, 332-334.

Finally, POSAs would understand that Irvin's active IR sensor would be directed towards the user's head when in use (*infra* claim 44), meeting claim 23, and that because the sensor detects the infrared radiation reflected from a user's head, the data are "*dependent on thermal characteristics of the user's head*," meeting claim 24. DeJaco-Decl., ¶¶330-331.

Thus, as an alternative to Hollemans' second touch-sensitive surface in the Griffin-Hollemans combination, POSAs would also find claims 23-24 obvious in light of the Irvin sensor in the Griffin-Hollemans-Irvin combination. And, because the Griffin-Hollemans-Irvin combination retains the features of the Griffin-Hollemans combination discussed in Ground 2A, all the limitations in claims 12-14, 18-21, 23-31, and 34-36 not involving Hollemans' second touch-sensitive surface are met in the same way by Griffin-Hollemans-Irvin. DeJaco-Decl., ¶¶321-334.

2. Claim 15: "...low power operational mode."

Irvin discloses operating a headset in an "inactive state," *i.e.*, a "*low power operational mode*," in which the headset "draws essentially no power" when it is detected that the headset is not being worn. Irvin, Abstract, 2:29-3:10; *see also id.*, 7:10-15.

POSAs would have found it obvious to implement this teaching in the Griffin-Hollemans-Irvin combination, configuring the headset to enter a low power mode when Hollemans' second touch-sensitive surface determines that the headset is not being worn. *Supra* claims 11-12 in Ground 2A. DeJaco-Decl., ¶¶336.

Alternatively, POSAs would have found it obvious to include the Irvin sensor (accelerometer and/or active IR sensor) and configure the Griffin headset to enter a low power mode when that sensor determines the headset is not being worn. Irvin, 7:10-15, 9:10-13; *supra* claim 13. Both implementations render claim 15 obvious. DeJaco-Decl., ¶¶335-338.

3. Claim 37: “...an accelerometer...configured to sense movement data.”

As discussed above (*supra* §VII.B.), one implementation of the Griffin-Hollemans-Irvin combination includes Irvin's accelerometer, which detects movement of the user, inside the Griffin headset to determine if the headset is being worn. Irvin, 7:14-17; *see also id.*, 7:27-8:14 (“MEMS device” acting as an accelerometer to detect movement). POSAs would understand this combination provides “*an accelerometer...configured to sense movement data.*” Further, to implement this combination, POSAs would naturally “*operatively connect[]*” the accelerometer to “*the rechargeable battery*” of Griffin (*supra* limitation [1D]) to provide power to the accelerometer. DeJaco-Decl., ¶¶339-342.

4. Claim 38

Claim 38 is nearly identical to claim 18. The principal distinction between the two is that claim 18 recites “*a sensor...configured to capture data,*” ([18F]) whereas claim 38 recites “*a motion detector...configured to provide motion data pertaining to [the headset]*” ([38D]). As discussed above (claim 37), one implementation of the Griffin-Hollemans-Irvin combination includes Irvin’s accelerometer or MEMS device, both of which constitute a “*motion detector*” meeting this additional limitation of claim 38.

The remaining differences between the claims are that **(a)** claim 18 recites additional limitations pertaining to the electronic circuitry ([18G]) that are not found in claim 38, and **(b)** claim 38 requires “*a touch sensitive surface*” ([38G]). The Griffin-Hollemans-Irvin combination includes “*a touch sensitive surface*” for the reasons discussed above in Ground 2A for claim 20. DeJaco-Decl., ¶¶343-346.

5. Claim 39

Supra claim 10, [18G]. DeJaco-Decl., ¶¶347-348.

6. Claim 41

Supra claims 12-13. DeJaco-Decl., ¶349.

7. Claim 42

Supra claims 13-14. DeJaco-Decl., ¶350.

8. Claim 43

Supra claim 15. DeJaco-Decl., ¶351.

9. Claim 44

Independent claim 44 is nearly identical to claim 18 with the lone difference being that claim 18 recites “*a sensor...configured to capture data*” ([18F]), and additional limitations pertaining to the second microphone ([18D]) and electronic circuitry ([18G]) whereas claim 44 recites [38D]’s motion detector ([44D]) as well as limitations directed to a radiation emitter and radiation detector ([44I]-[44J]) discussed below. DeJaco-Decl., ¶¶352-353.

As discussed above, the Griffin-Hollemans-Irvin combination includes a motion detector. *Supra* [38F].

a. [44I] “a radiation emitter...configured to at least direct radiation towards the user...”

POSAs would know that “active” IR proximity sensors as disclosed by Irvin emit infrared radiation and detect when the radiation is reflected back to the sensor by an object. Irvin, 9:11-13; DeJaco-Decl., ¶¶355-361. (citing EX1039, EX1040, EX1041 corroborating how active IR sensors work). Thus, the active IR sensor in the Griffin-Hollemans-Irvin combination is a “*radiation emitter*” contained within the headset, and POSAs would know to configure the sensor to direct its radiation “*towards the user*” when the headset is being worn. DeJaco-Decl., ¶361.

Irvin further discloses that the IR proximity sensor and accelerometer can be used “in any combination,” and POSAs would be motivated to include both in the Griffin-Hollemans-Irvin combination to provide a more accurate determination of when the headset is worn. Irvin, Abstract. DeJaco-Decl., ¶362.

- b. [44J] “a radiation detector...configured to detect at least a portion of the radiation from the radiation emitter that is reflected back from the user...”**

POSAs would know that active IR sensors include a “*radiation detector*” that detects reflected radiation. DeJaco-Decl., ¶¶355-360, 363 (citing EX1039, EX1040, EX1041 for corroboration). Thus, the Irvin IR sensor in the combination “*detect[s] at least a portion of the radiation from the radiation emitter that is reflected back from the user*” when the Griffin headset is worn. DeJaco-Decl., ¶364.

10. Claim 45

POSAs would understand that Irvin’s active IR sensor (and thus its radiation detector) would be “*electrically connected*” to the electronic circuitry of Griffin (*supra* [1E]) to provide the sensor with power. Additionally, POSAs would configure the electronic circuitry (*e.g.*, Griffin’s processor 196) of the combination to use the data from the IR sensor to “*facilitate determining whether the head-worn structure of the head-worn personal electronic apparatus is being worn by the user*” in similar fashion to the discussion of claims 12-13 in Ground 2B. DeJaco-Decl., ¶¶365-366.

11. Claim 47

As noted *supra* claim 37, Griffin-Hollemans-Irvin uses Irvin's accelerometer to detect movement (*i.e.*, obtain “*motion data*”) indicating the headset is being worn. Thus, for the same reasons discussed in claim 13 in Ground 2B, the Griffin headset is “*configured to at least alter operation*” based on whether it is determined the headset is being worn based at least on “*the motion data.*” DeJaco-Decl., ¶367.

12. Claim 48

Supra claim 14. DeJaco-Decl., ¶368.

13. Claim 49

Supra claim 15. DeJaco-Decl., ¶369.

14. Claim 50

Supra claims 10, 18. DeJaco-Decl., ¶¶370-372.

15. Claim 51

Supra claim 44. DeJaco-Decl., ¶373.

16. Claim 52

Supra claim 19. DeJaco-Decl., ¶374.

17. Claim 53

See claim 47. DeJaco-Decl., ¶375.

18. Claim 54

See claims 10, 18. DeJaco-Decl., ¶¶376-378.

19. Claim 56: “...a force sensor...”

Hollemans teaches that its first touch-sensitive surface (*i.e.*, the surface a user touches to control functions of Griffin’s headset) can be “an ordinary pressure sensor” rather than a capacitive sensor. Hollemans, 3:38-43. Therefore, an obvious implementation of Griffin-Hollemans-Irvin is one in which the touch-sensitive surface is a pressure sensor, which POSAs would have understood is a “*force sensor*.” Additionally, the first touch-sensitive surface is used to “*alter operation of the [headset]*.” *Supra*, claim 2; DeJaco-Decl., ¶¶379-381.

20. Claim 57

Supra claim 4. DeJaco-Decl., ¶382.

21. Claim 58

Supra claim 3. DeJaco-Decl., ¶383.

22. Claim 59

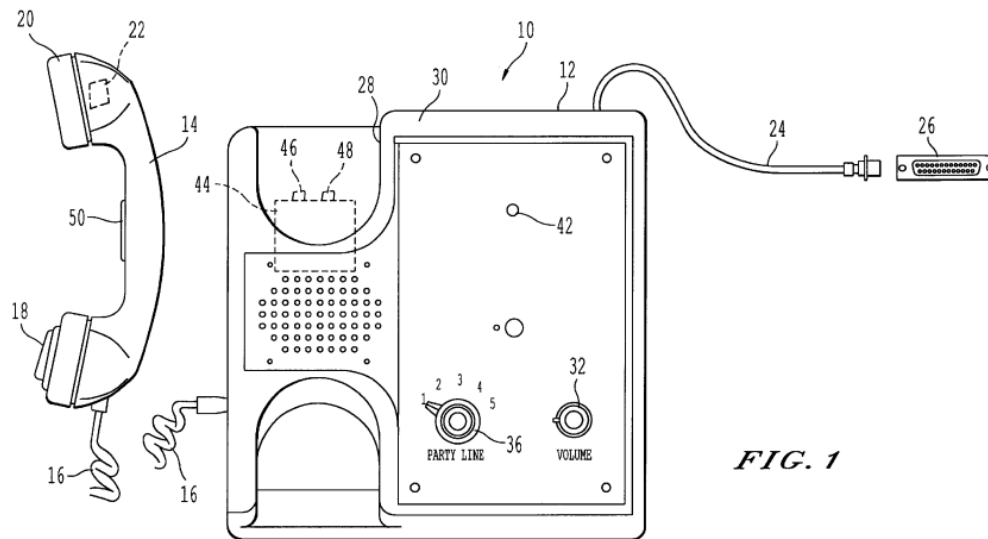
Supra claim 19. DeJaco-Decl., ¶384.

VIII. GROUND 2C: THE GRIFFIN-HOLLEMANS AND/OR GRIFFIN-HOLLEMANS-IRVIN COMBINATION IN VIEW OF RITTER RENDERS OBVIOUS CLAIMS 16, 22, 32, AND 55

The four dependent claims challenged in Ground 2C require that “*the system*” include a “*Hall effect detector*” (the “*Hall effect*” limitation). A Hall effect detector detects changes in magnetic fields. DeJaco-Decl., ¶¶387-388, 393-395. As demonstrated below, these dependent claims would have been obvious.

A. Ritter (EX1029)

Ritter discloses a telephone communication station that uses Hall-effect integrated circuits to automatically switch a telephone from an on-hook or off-hook state. Ritter, Abstract. Ritter's communication station is depicted as a conventional desktop telephone as seen below in Figure 1:



Ritter's communication station includes a Hall-effect device (elements 46/48 in Figure 1) within the communications station that detects a magnet (element 22 in Figure 1) in the handset when the handset is placed into a support cradle on the communication station. Ritter, 2:30-63, 3:64-67, 4:39-60; 6:16-19. The Hall-effect devices place the communications station into an on-hook or off-hook state "when the magnetic field generated about the handset 14 by the magnet 22 is present or absent with respect to the support cradle 28." *Id.*, 4:43-47; DeJaco-Decl., ¶¶386-388.

B. The Combinations

Griffin's headset "is also configured to turn on automatically when removed from its assembled position within the first communication module 12 [*i.e.*, charging station], and to turn off automatically when replaced in its mounted position." Griffin, 7:18-21. Griffin does not teach a particular technique for automatically switching the power state of the headset. POSAs would have been motivated to incorporate a known technique for this functionality. DeJaco-Decl., ¶389.

POSAs would have been aware of known techniques for automatically switching the state of an electronic telecommunication device, including Ritter's use of a Hall-effect sensor. Applying Ritter's teachings would have been the simple use of a known technique (a Hall-effect sensor and magnet to detect the presence or absence of a component) to improve similar telecommunication devices in the same predictable way. DeJaco-Decl., ¶390.

In an obvious implementation of the combination, POSAs would have added a Hall-effect sensor to Griffin's second module (headset) and a magnet to Griffin's first module (charging station). The Hall-effect sensor would detect the presence of the magnet in Griffin's first module when the headset was mounted in the first module for charging, and the headset would use that information to enter an OFF state. Likewise, when the Hall-effect sensor detected the absence of the magnet, the headset would use the information to enter an ON state. DeJaco-Decl., ¶391.

Although Ritter places its Hall-effect sensor in the station (not the handset), placing it in Griffin’s headset would have been a logical way to accomplish Griffin’s goal of turning the headset ON or OFF automatically since the headset controls that functionality. POSAs would have had a reasonable expectation of success implementing the combination since Hall-effect sensors and magnets had long been used for similar purposes. DeJaco-Decl., ¶¶392-396 (citing EX1042, EX1043).

C. The “*Hall Effect*” Claims

1. Claim 16

Claim 16 limits adds the “*Hall effect*” limitation to claim 1. As explained in Ground 2A, the Griffin-Hollemans combination renders claim 1 unpatentable. In view of Ritter, POSAs had reason to add a Hall effect sensor/detector to the headset of Griffin-Hollemans, and the resulting Griffin-Hollemans-Ritter combination renders claim 16 obvious. DeJaco-Decl., ¶397.

2. Claims 22, 32, and 55

Claims 22, 32, and 55 limit claims 20, 18, and 54, respectively, by adding the “*Hall effect*” limitation. As explained in Ground 2B, the Griffin-Hollemans-Irvin combination renders claims 18, 20, and 54 unpatentable. As explained above, POSAs had reason to add a Hall effect sensor/detector to the headset of Griffin-Hollemans-Irvin in view of Ritter. The resulting Griffin-Hollemans-Irvin-Ritter combination renders claims 22, 32, and 55 obvious. DeJaco-Decl., ¶¶398-401.

IX. GROUND 2D: THE GRIFFIN-HOLLEMANS AND/OR GRIFFIN-HOLLEMANS-IRVIN COMBINATION IN VIEW OF LOWLES RENDER OBVIOUS CLAIMS 9, 40, AND 46

The three dependent claims challenged in Ground 2D require that “*the head-worn structure*” contain “*at least one magnetic element...configured to support a magnetic force that facilitates an electrical connection*” (the “*magnetic element*” limitation). As demonstrated below, these dependent claims would have been obvious.

A. Lowles (EX1030)

Lowles discloses a holster with a mating structure that allows a user to charge a “peripheral device” (the preferred embodiment of which is a headset) using a mobile device (such as a mobile phone) instead of a traditional power source. Lowles, Abstract, 1:14-16; 1:54-2:8; 3:14-27; 4:33-38.

The mating structure is for “releasably retaining the [headset] such that a charging contact integral with the [headset] is in direct physical and electrical contact with the mobile device” so as to allow the mobile device’s battery to charge the headset. *Id.*, claim 1; *see also* claim 5; 1:58-60.

Lowles explains that there are many known mating structures that are suitable for releasably securing a headset to a charging source, “including magnetic fastening.” *Id.*, 5:30-34; *see also id.*, 1:67-2:1 (“Other examples of mating structures include...magnets...”); 3:42-47; 3:53-55.

In one exemplary embodiment, Lowles discloses the use of a magnet on the headset that secures the headset to the holster via a magnetic attraction to a magnet on the holster. *Id.*, 5:30-40. The headset is secured in the holster such that a “[c]harging contact” on the headset is in electrical connection with a charging port of a mobile device “to recharge the batteries” of the headset. *Id.*; *see generally* DeJaco-Decl., ¶¶403-407.

B. The Combinations

Griffin explains that its first module (charging station) includes a cavity 16 that has “retention means” to detachably hold the headset within the cavity. Griffin, 5:17-6:4. Griffin identifies certain exemplary retention means but explicitly teaches that “other retention means” can be used. *Id.*, 5:24-6:2. Griffin thus leaves the particular retention means used to detachably hold the headset within the first module for recharging for a POSA to decide. DeJaco-Decl., ¶408.

In view of Lowles, POSAs had reason to add a magnet to Griffin’s headset and a magnet (of opposite polarity) to Griffin’s charging station to releasably secure the headset to the charging station and align the headset’s charging terminals 56 with the charging stations’ charging terminals 46. DeJaco-Decl., ¶409. Like Griffin, Lowles recognizes various means, including magnets, for retaining a headset to a power-source. Using Lowles’ magnets as Griffin’s “other retention means” would have been a known technique to improve similar devices in a predictable manner.

DeJaco-Decl., ¶¶410-412, 414 (citing EX1035 and EX1036 as additional evidence detachably coupling electronic devices, including headsets to power sources using magnets was known).

In the Griffin-Hollemans-Lowles and/or Griffin-Hollemans-Irvin-Lowles combinations, Griffin's headset and first module would be modified to include magnets of opposite polarity to attract one another and thus releasably secure the headset to the first module and align their respective charging ports. All other aspects of the headset would remain as described in Grounds 2A (Griffin-Hollemans) and Ground 2B (Griffin-Hollemans-Irvin). POSAs would have had a reasonable expectation of success implementing the combination given that the use of magnets as a retention means was conventional by 2005. DeJaco-Decl., ¶¶413-414.

C. The “Magnetic Element” Claims

1. Claim 9

Claim 9 limits claim 1 by adding the “*magnetic element*” limitation discussed above. As explained in Ground 2A, the Griffin-Hollemans combination renders claim 1 unpatentable. For the reasons discussed *supra* Section IX.B, POSAs had reason to add a magnet to the headset of Griffin-Hollemans in view of Lowles, and the resulting Griffin-Hollemans-Lowles combination renders claim 9 obvious. DeJaco-Decl., ¶415.

2. Claims 40 and 46

Claims 40 and 46 limits claims 39 and 45 by adding the “*magnetic element*” limitation discussed above. As explained in Ground 2B, the Griffin-Hollemans-Irvin combination renders claims 39 and 45 unpatentable. For the reasons discussed *supra* IX.B, POSAs had reason to add a magnet to the headset of Griffin-Hollemans-Irvin in view of Lowles, and the resulting Griffin-Hollemans-Irvin-Lowles combination renders claims 40 and 46 obvious. DeJaco-Decl., ¶¶416-417.

X. CONCLUSION

The Board should institute review and cancel claims 1-59.

Date: September 19, 2025

Respectfully submitted,

Bose Corp.

By: /Michael N. Rader/

Michael N. Rader (Reg. No. 52,146)

WOLF, GREENFIELD & SACKS, P.C.

XI. CLAIM LISTING APPENDIX

Claim 1
[1PRE] A system, comprising:
[1A] a head-worn personal electronic apparatus, including at least:
[1B] a head-worn structure configured to be worn by a user; a speaker at least partially contained within the head-worn structure, the speaker being configured to be worn proximate to an ear of the user when the head-worn structure is being worn by the user;
[1C] a touch sensitive surface at least partially contained within the head-worn structure and configured to sense a touch input associated with the user;
[1D] a rechargeable battery contained within the head-worn structure;
[1E] electronic circuitry contained within the head-worn structure, the electronic circuitry being electrically connected to at least the rechargeable battery, and the electronic circuitry being electrically connected to the touch sensitive surface;
[1F] wireless communication circuitry at least partially contained within the head-worn structure, the wireless communication circuitry being electrically connected to at least the rechargeable battery; and
[1G] at least one conductive element at least partially included within the head-worn structure, the at least one conductive element being at least partially exposed to enable interconnection therewith, the at least one conductive element being electrically connected to at least the rechargeable battery; and
[1H] a charging apparatus having at least a charging connector,

[11] wherein on placement of the head-worn personal electronic apparatus in the charging apparatus, electrical connection results at least from the at least one conductive element connecting with the charging connector, and thereby the rechargeable battery of the head-worn personal electronic apparatus is able to be recharged while the head-worn personal electronic apparatus is placed in the charging apparatus.

Claim 2

A system as recited in claim 1, wherein the sensed touch input by the touch sensitive surface operates to at least alter operation of the head-worn personal electronic apparatus.

Claim 3

A system as recited in claim 2, wherein the head-worn personal electronic apparatus is configured to support voice calls to the user, and

wherein the at least one operation of the head-worn personal electronic apparatus being altered concerns at least accepting or declining a voice call to the user.

Claim 4

A system as recited in claim 2, wherein the head-worn personal electronic apparatus is configured to support audio output to the user via the speaker, and

wherein the at least one operation of the head-worn personal electronic apparatus being altered concerns control of the audio output being provided to the user.

Claim 5

A system as recited in claim 2, wherein the head-worn personal electronic apparatus is configured to distinguish at least a direction of the user input with respect to the touch sensitive surface.

Claim 6

A system as recited in claim 2, wherein the head-worn personal electronic apparatus is configured to detect at least a sliding of a finger action with respect to the touch sensitive surface.

Claim 7

A system as recited in claim 2, wherein the head-worn personal electronic apparatus is configured to facilitate determination at least whether the user input pertains to a forward sliding action or a backward sliding action with respect to the touch sensitive surface.

Claim 8

A system as recited in claim 1, wherein the head-worn structure comprises:

a physical condition sensor at least partially contained within the head-worn structure and configured to acquire data pertaining to a physical condition of the user, the physical condition sensor being provided at least partially contained within the head-worn structure.

Claim 9

A system as recited in claim 1, wherein the head-worn personal electronic apparatus comprises:

at least one magnetic element at least partially contained within the head-worn structure and configured to support a magnetic force that facilitates an electrical connection.

Claim 10

A system as recited in claim 1, wherein the head-worn personal electronic apparatus comprises:

[10A] a microphone at least partially contained within the head-worn structure,

[10B] wherein the head-worn personal electronic apparatus is configured to receive a voice input via the microphone, determine or receive a determination of a requested operation from the voice input using voice recognition, and control an operation by the head-worn personal electronic apparatus based on the requested operation.

Claim 11

A system as recited in claim 1, wherein the head-worn structure comprises:

a radiation sensor, operatively connected to the rechargeable battery, at least partially contained within the head-worn structure and configured to sense radiation.

Claim 12

A system as recited in claim 1, wherein the head-worn personal electronic apparatus comprises:

a sensor at least partially contained within the head-worn structure and configured to sense data indicative of whether the head-worn personal electronic apparatus is being worn by the user.

Claim 13

A system as recited in claim 12, wherein the sensor is electrically connected to the electronic circuitry, and wherein the electronic circuitry contained within the head-worn structure of the head-worn personal electronic apparatus is configured to at least alter operation of the head-worn personal electronic apparatus based at least in part on the sensed data from the sensor.

Claim 14

A system as recited in claim 13, wherein the head-worn personal electronic apparatus is configured to support audio output to the user via the speaker, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns control of the audio output being provided to the user.

Claim 15

A system as recited in claim 13, wherein the head-worn personal electronic apparatus is configured to support a low power operational mode, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns operation of the head-worn personal electronic apparatus in the low power operational mode.

Claim 16

A system as recited in claim 1, wherein the system comprises:

a Hall effect detector configured to capture data associated with a magnetic characteristic.

Claim 17

A system as recited in claim 1, wherein the head-worn personal electronic apparatus comprises:

a bone conducting element at least partially contained within the head-worn structure and configured to operate in accordance with acoustic characteristics, the bone conducting element being operatively connected to the electronic circuitry.

Claim 18

[18PRE] A system, comprising:

[18A] a head-worn personal electronic apparatus, including at least:

[18B] a head-worn structure configured to be worn by a user; a speaker at least partially contained within the head-worn structure, the speaker being configured to be at or adjacent to an ear of the user when the head-worn structure is being worn by the user;

[18C] a first microphone at least partially contained within the head-worn structure, the first microphone being positioned to pick up at least audio input from at least the user;
[18D] a second microphone at least partially contained within the head-worn structure, the second microphone being positioned to pick up at least environmental audio input associated with an environment around the head-worn personal electronic apparatus;
[18E] a rechargeable battery contained within the head-worn structure;
[18F] a sensor at least partially contained within the head-worn structure and configured to capture data;
[18G] electronic circuitry contained within the head-worn structure, the electronic circuitry being electrically connected to at least one or more of the first microphone, the second microphone, the rechargeable battery and the sensor, the electronic circuitry being configured to at least process the audio input from at least the user via the first microphone to remove at least a portion of the environmental audio input associated with the environment picked up via the second microphone, the electronic circuitry being configured to process at least the data captured by the sensor, and the electronic circuitry being configured to determine whether the head-worn structure is being worn by a user based on at least the processed sensor data;
[18H] wireless communication circuitry at least partially contained within the head-worn structure, the wireless communication circuitry being electrically connected to at least the rechargeable battery; and
[18I] at least one conductive element at least partially included within the head-worn structure, the at least one conductive element being at least partially exposed to enable interconnection therewith, the at least one conductive element being electrically connected to at least the rechargeable battery; and
[18J] a charging apparatus having at least a charging connector,

[18K] wherein on placement of the head-worn personal electronic apparatus in the charging apparatus, electrical connection results at least from the at least one conductive element connecting with the charging connector, and thereby the rechargeable battery of the head-worn personal electronic apparatus is able to be recharged while the head-worn personal electronic apparatus is placed in the charging apparatus.

Claim 19

A system as recited in claim 18, wherein the first microphone is positioned to be directed forward towards the user's front when the head-worn structure is being worn by the user, and the second microphone is positioned to be directed outward away from the user's head when the head-worn structure is being worn by the user.

Claim 20

A system as recited in claim 19, wherein the head-worn personal electronic apparatus comprises:

a touch sensitive surface at least partially contained within the head-worn structure and configured to sense a touch input associated with the user, wherein the sensed touch input operating to at least alter operation of the head-worn electronic personal audio apparatus.

Claim 21

A system as recited in claim 20, wherein the head-worn electronic personal audio apparatus is configured to support audio output to the user via the speaker, and

wherein the at least one operation of the head-worn electronic personal audio apparatus being altered concerns control of the audio output being provided to the user.

Claim 22

A system as recited in claim 20, wherein the system comprises:

a Hall effect detector configured to capture data associated with a magnetic characteristic.

Claim 23

A system as recited in claim 18, wherein the sensor is positioned to be directed towards the user's head when the head-worn structure is being worn.

Claim 24

A system as recited in claim 23, wherein the data captured by the sensor is dependent on thermal characteristics of the user's head when the head-worn structure is being worn.

Claim 25

A system as recited in claim 18, wherein the head-worn personal electronic apparatus is configured to receive a voice input via the first microphone, determine or receive a determination of a requested operation from the voice input using voice recognition, and control an operation by the head-worn personal electronic apparatus based on the requested operation.

Claim 26

A system as recited in claim 18, wherein the head-worn personal electronic apparatus is configured to at least alter operation of the head-worn personal electronic apparatus based at least in part on the sensed data from the sensor.

Claim 27

A system as recited in claim 26, wherein the head-worn personal electronic apparatus is configured to support audio output to the user via the speaker, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns control of the audio output being provided to the user.

Claim 28

A system as recited in claim 18, wherein the head-worn personal electronic apparatus comprises:

a user input device supported by the head-worn structure, the user input device being configured to receive a user input, the user input device is based on at least capacitive effect, wherein the user input being received induces at least a capacitive change to produce at least an electrical response.

Claim 29

A system as recited in claim 28, wherein the user input device is configured to distinguish at least a direction of the user input with respect to the user input device.

Claim 30

A system as recited in claim 28, wherein the electronic circuitry is electrically connected to the user input device to receive user input data from the user input device, and wherein the head-worn personal electronic apparatus is configured to detect at least a sliding of a finger action with respect to the user input device using at least the electronic circuitry and the user input data.

Claim 31

A system as recited in claim 28, wherein the electronic circuitry is electrically connected to the user input device to receive user input data from the user input device, and wherein the head-worn personal electronic apparatus is configured to distinguish at least whether the user input pertains to a forward sliding action or a backward sliding action with respect to the user input device using at least the electronic circuitry and the user input data.

Claim 32

A system as recited in claim 18, wherein the system comprises:

a Hall effect detector.

Claim 33

A system as recited in claim 18, wherein the head-worn personal electronic apparatus comprises:

a bone conducting element at least partially contained within the head-worn structure and configured to operate based on signals associated with sound, the bone conducting element being operatively connected to the electronic circuitry.

Claim 34

A system as recited in claim 18, wherein the conductive element is a conductive pad.

Claim 35

[35PRE] A system, comprising: a head-worn personal electronic apparatus, including at least:

[35A] a head-worn structure configured to be worn by a user;

[35B] a speaker at least partially contained within the head-worn structure, the speaker being configured to be worn proximate to an ear of the user when the head-worn structure is being worn by the user;

[35C] a first microphone at least partially contained within the head-worn structure, the first microphone being positioned to pick up at least audio input from at least the user;

[35D] a second microphone at least partially contained within the head-worn structure, the second microphone being positioned to pick up at least environmental audio input associated with an environment around the head-worn personal electronic apparatus;

[35E] a rechargeable battery contained within the head-worn structure;

[35F] a “being worn” sensor at least partially contained within the head-worn structure and configured to detect data indicative of whether the head-worn structure of the head-worn personal electronic apparatus is being worn;

[35G] electronic circuitry contained within the head-worn structure, the electronic circuitry being electrically connected to at least one or more of the first microphone, the second microphone, the rechargeable battery and the “being worn” sensor, the electronic circuitry being configured to at least process the audio input from at least the user via the first microphone to remove at least a portion of the environmental audio input associated with the environment picked up via the second microphone, the electronic circuitry being configured to process at least the detected data captured by the “being worn” sensor;

[35H] wireless communication circuitry at least partially contained within the head-worn structure, the wireless communication circuitry being electrically connected to at least the rechargeable battery; and

[35I] at least one conductive element at least partially included within the head-worn structure, the at least one conductive element being at least partially exposed to enable interconnection therewith, the at least one conductive element being electrically connected to at least the rechargeable battery; and

[35J] a charging apparatus having at least a charging connector,

[35K] wherein on placement of the head-worn personal electronic apparatus in the charging apparatus, electrical connection results at least from the at least one conductive element connecting with the charging connector, and thereby the rechargeable battery of the head-worn personal electronic apparatus is able to be recharged while the head-worn personal electronic apparatus is placed in the charging apparatus.

Claim 36

A system as recited in claim 35, wherein the detected data by the “being worn” sensor is dependent on a physical characteristic of the user.

Claim 37

A system as recited in claim 35, wherein the head-worn structure comprises:

an accelerometer, operatively connected to the rechargeable battery, at least partially contained within the head-worn structure and configured to sense movement data.

Claim 38

[38PRE] A system, comprising:

[38A] a head-worn personal electronic apparatus, including at least:

[38B] a head-worn structure configured to be worn by a user;

[38C] a speaker at least partially contained within the head-worn structure, the speaker being configured to be at or adjacent to an ear of the user when the head-worn structure is being worn by the user;

[38D] a motion detector at least partially contained within the head-worn structure and configured to provide motion data pertaining to the head-worn personal electronic apparatus;

[38E] a first microphone at least partially contained within the head-worn structure, the first microphone being positioned to pick up at least audio input from at least the user;

[38F] a second microphone at least partially contained within the head-worn structure, the second microphone being positioned to pick up at least environmental audio input associated with an environment around the head-worn personal electronic apparatus;

[38G] a touch sensitive surface at least partially contained within the head-worn structure and configured to sense a touch input associated with the user, wherein the sensed touch input operating to at least alter operation of the head-worn electronic personal audio apparatus;

[38H] a rechargeable battery contained within the head-worn structure;
[38I] electronic circuitry contained within the head-worn structure, the electronic circuitry being electrically connected to at least the rechargeable battery;
[38J] wireless communication circuitry at least partially contained within the head-worn structure, the wireless communication circuitry being electrically connected to at least the rechargeable battery; and
[38K] at least one conductive element at least partially included within the head-worn structure, the at least one conductive element being at least partially exposed to enable interconnection therewith, the at least one conductive element being electrically connected to at least the rechargeable battery; and
[38L] a charging apparatus having at least a charging connector,
[38M] wherein on placement of the head-worn personal electronic apparatus in the charging apparatus, electrical connection results at least from the at least one conductive element connecting with the charging connector, and thereby the rechargeable battery of the head-worn personal electronic apparatus is able to be recharged while the head-worn personal electronic apparatus is placed in the charging apparatus.
Claim 39
A system as recited in claim 38, wherein the head-worn personal electronic apparatus comprises:
[39A] wherein the electronic circuitry is configured to process the audio input from at least the user via the first microphone to remove at least a portion of the environmental audio input associated with the environment picked up via the second microphone, and
[39B] wherein the head-worn personal electronic apparatus is configured to receive a voice input via the first microphone, determine or receive a determination of a requested operation from the voice input using voice recognition, and control an operation by the head-worn personal electronic apparatus based on the requested operation.

Claim 40

A system as recited in claim 39, wherein the head-worn personal electronic apparatus comprises:

at least one magnetic element at least partially contained within the head-worn structure and configured to support a magnetic force that facilitates an electrical connection.

Claim 41

A system as recited in claim 39, wherein the head-worn personal electronic apparatus comprises:

[41A] a sensor at least partially contained within the head-worn structure and configured to sense data indicative of whether the head-worn personal electronic apparatus is being worn by the user,

[41B] wherein the head-worn personal electronic apparatus is configured to at least alter operation of the head-worn personal electronic apparatus based at least in part on the sensed data from the sensor.

Claim 42

A system as recited in claim 41, wherein the head-worn personal electronic apparatus is configured to support audio output to the user via the speaker, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns control of the audio output being provided to the user.

Claim 43

A system as recited in claim 41, wherein the head-worn personal electronic apparatus is configured to support a low power operational mode, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns operation of the head-worn personal electronic apparatus in the low power operational mode.

Claim 44
[44PRE] A system, comprising:
[44A] a head-worn personal electronic apparatus, including at least:
[44B] a head-worn structure configured to be worn by a user;
[44C] a speaker at least partially contained within the head-worn structure, the speaker being configured to be at or adjacent to an ear of the user when the head-worn structure is being worn by the user;
[44D] a motion detector at least partially contained within the head-worn structure and configured to provide motion data pertaining to the head-worn personal electronic apparatus;
[44E] a first microphone at least partially contained within the head-worn structure, the first microphone being positioned to pick up at least audio input from at least the user;
[44F] a second microphone at least partially contained within the head-worn structure; a rechargeable battery contained within the head-worn structure;
[44G] electronic circuitry contained within the head-worn structure, the electronic circuitry being electrically connected to at least the rechargeable battery;
[44H] wireless communication circuitry at least partially contained within the head-worn structure, the wireless communication circuitry being electrically connected to at least the rechargeable battery;
[44I] a radiation emitter at least partially contained within the head-worn structure and configured to at least direct radiation towards the user when at least the head-worn structure of the head-worn personal electronic apparatus is being worn;

[44J] a radiation detector at least partially contained within the head-worn structure and configured to detect at least a portion of the radiation from the radiation emitter that is reflected back from the user when at least the head-worn structure of the head-worn personal electronic apparatus is being worn; and
[44K] at least one conductive element at least partially included within the head-worn structure, the at least one conductive element being at least partially exposed to enable interconnection therewith, the at least one conductive element being electrically connected to at least the rechargeable battery; and
[44L] a charging apparatus having at least a charging connector,
[44M] wherein on placement of the head-worn personal electronic apparatus in the charging apparatus, electrical connection results at least from the at least one conductive element connecting with the charging connector, and thereby the rechargeable battery of the head-worn personal electronic apparatus is able to be recharged while the head-worn personal electronic apparatus is placed in the charging apparatus.
Claim 45
A system as recited in claim 44,
[45A] wherein the radiation detector is operatively connected to the electronic circuitry, and
[45B] wherein electronic circuitry within the head-worn structure is configured to facilitate determining whether the head-worn structure of the head-worn personal electronic apparatus is being worn by the user.
Claim 46
A system as recited in claim 45, wherein the head-worn personal electronic apparatus comprises:
at least one magnetic element at least partially contained within the head-worn structure and configured to support a magnetic force that facilitates an electrical connection.

Claim 47

A system as recited in claim 45, wherein

the head-worn personal electronic apparatus is configured to at least alter operation of the head-worn personal electronic apparatus based at least in part on the determination of whether the head-worn structure of the head-worn personal electronic apparatus is being worn by the user based on at least the motion data.

Claim 48

A system as recited in claim 47, wherein the head-worn personal electronic apparatus is configured to support audio output to the user via the speaker, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns control of the audio output being provided to the user.

Claim 49

A system as recited in claim 47, wherein the head-worn personal electronic apparatus is configured to support a low power operational mode, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns operation of the head-worn personal electronic apparatus in the low power operational mode.

Claim 50

A system as recited in claim 45,

[50A] wherein the second microphone is positioned to pick up at least environmental audio input associated with an environment around the head-worn personal electronic apparatus,

[50B] wherein the electronic circuitry is configured to process the audio input from at least the user via the first microphone to remove at least a portion of the environmental audio input associated with the environment picked up via the second microphone, and

[50C] wherein the head-worn personal electronic apparatus is configured to receive a voice input via the first microphone, determine or receive a determination of a requested operation from the voice input using voice recognition, and control an operation by the head-worn personal electronic apparatus based on the requested operation.

Claim 51

A system as recited in claim 45, wherein the radiation detector is an infrared radiation detector, and wherein the radiation being detected by the radiation detector includes infrared radiation.

Claim 52

A system as recited in claim 51, wherein the first microphone is positioned to be directed forward towards the user's front when the head-worn structure is being worn by the user, and the second microphone is positioned to be directed outward away from the user's head when the head-worn structure is being worn by the user.

Claim 53

A system as recited in claim 52, wherein the head-worn personal electronic apparatus is configured to at least alter operation of the head-worn personal electronic apparatus based at least in part on the determination of whether the head-worn structure of the head-worn personal electronic apparatus is being worn by the user.

Claim 54

A system as recited in claim 53,

[54A] wherein the second microphone is positioned to pick up at least environmental audio input associated with an environment around the head-worn personal electronic apparatus,

[54B] wherein the electronic circuitry is configured to process the audio input from at least the user via the first microphone to remove at least a portion of the environmental audio input associated with the environment picked up via the second microphone, and

[54C] wherein the head-worn personal electronic apparatus is configured to receive a voice input via the first microphone, determine or receive a determination of a requested operation from the voice input using voice recognition, and control an operation by the head-worn personal electronic apparatus based on the requested operation.

Claim 55

A system as recited in claim 54,

wherein the motion detector comprises an accelerometer, and wherein the system comprises a Hall effect detector.

Claim 56

A system as recited in claim 44, wherein the head-worn personal electronic apparatus comprises:

a force sensor at least partially contained within the head-worn structure and configured to sense a force input associated with the user, wherein the sensed force input operating to at least alter operation of the head-worn electronic personal audio apparatus.

Claim 57

A system as recited in claim 56, wherein the head-worn electronic personal audio apparatus is configured to support audio output to the user via the speaker, and

wherein the at least one operation of the head-worn electronic personal audio apparatus being altered concerns control of the audio output being provided to the user.

Claim 58

A system as recited in claim 56, wherein the head-worn personal electronic apparatus is configured to support voice calls to the user, and

wherein the at least one operation of the head-worn personal electronic apparatus being altered concerns at least accepting or declining a voice call to the user.

Claim 59

A system as recited in claim 44, wherein the first microphone is positioned to be directed forward towards the user's front when the head-worn structure is being worn by the user, and the second microphone is positioned to be directed outward away from the user's head when the head-worn structure is being worn by the user.

CERTIFICATE OF SERVICE UNDER 37 C.F.R. § 42.6 (e)(4)

I certify that on September 19, 2025, I will cause a copy of the foregoing document, including any exhibits or appendices filed therewith, to be served via Overnight FedEx at the following correspondence address of record for the patent:

IPVENTURE, INC.
4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

Date: September 19, 2025

/MacAulay Rush/
MacAulay Rush
Paralegal
WOLF, GREENFIELD & SACKS, P.C.

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24, the undersigned certifies that the foregoing Petition for *Inter Partes* Review contains 13,864 words excluding a table of contents, a table of authorities, Mandatory Notices under § 42.8, a certificate of service or word count, or appendix of exhibits or claim listing. Petitioner has relied on the word count feature of the word processing system used to create this paper in making this certification.

Date: September 19, 2025

/MacAulay Rush/
MacAulay Rush
Paralegal
WOLF, GREENFIELD & SACKS, P.C.