

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.
Petitioner,

v.

INGENIOSPEC, LLC.
Patent Owner.

Patent No. 12,001,599

Inter Partes Review No. IPR2026-00143

DECLARATION OF DR. JOSHUA R. SMITH

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. SUMMARY OF GROUNDS	3
III. QUALIFICATIONS AND EXPERTISE	3
IV. LEGAL UNDERSTANDING	7
A. My Understanding of Claim Construction	7
B. A Person Having Ordinary Skill in the Art	8
C. My Understanding of Obviousness	9
V. THE '599 PATENT	10
A. Background of the '599 Patent	10
B. Priority Date	11
C. Prosecution History of the '599 Patent	13
D. Claim Construction	13
VI. JANNARD IN VIEW OF BURSON RENDERS OBVIOUS CLAIMS 1-25	14
A. Ground 1: Claims 1-7, 10, 11, and 24 are Rendered Obvious by Jannard in view of Burson	14
2. Summary of Jannard	14
3. Summary of Burson	15
4. Claim 1	21
5. Claim 2	37
6. Claim 3	37
7. Claim 4	38
8. Claim 5	39
9. Claim 6	40
10. Claim 7	41
11. Claim 10	43
12. Claim 11	43

TABLE OF CONTENTS
(continued)

	Page
13. Claim 24	44
B. Ground 2: Claim 8 is Rendered Obvious by Jannard in view of Burson and Zadesky	49
2. Summary of Zadesky	49
3. Claim 8	51
C. Ground 3: Claims 9, 12-18, 20, and 25 are Rendered Obvious by Jannard in view of Burson and Abreu	55
2. Summary of Abreu	55
3. Claim 9	57
4. Claim 12	60
5. Claim 13	63
6. Claim 14	63
7. Claim 15	63
8. Claim 16	65
9. Claim 17	65
10. Claim 18	65
11. Claim 20	66
12. Claim 25	69
D. Ground 4: Claims 19 and 21-23 are Rendered Obvious by Jannard in view of Burson, Abreu, and Zadesky	69
2. Claim 19	69
3. Claim 21	70
4. Claim 22	70
5. Claim 23	72
VII. GRIFFIN RENDERS OBVIOUS CLAIMS 1-25	73

TABLE OF CONTENTS
(continued)

	Page
A. Ground 5: Claims 1-7, 14-15, 20, and 24 are Rendered Obvious by Griffin.....	73
2. Summary of Griffin.....	73
3. Claim 1	75
4. Claim 2.....	82
5. Claim 3	83
6. Claim 4.....	84
7. Claim 5.....	85
8. Claim 6.....	86
9. Claim 7	87
10. Claim 24	88
B. Ground 6: Claims 8 and 11 are Rendered Obvious by Griffin in view of Zadesky	91
2. Claim 8.....	91
3. Claim 11	95
C. Ground 7: Claims 9-10, 12-18, 20, and 25 are Rendered Obvious by Griffin in view of Abreu	97
2. Claim 9.....	97
3. Claim 10.....	99
4. Claim 12.....	99
5. Claim 13.....	100
6. Claim 14.....	100
7. Claim 15	101
8. Claim 16.....	101
9. Claim 17.....	102
10. Claim 18.....	102

TABLE OF CONTENTS
(continued)

	Page
11. Claim 20	103
12. Claim 25	105
D. Ground 8: Claims 19 and 21-23 are Rendered Obvious by Griffin in view of Zadesky and Abreu	105
2. Claim 19	105
3. Claim 21	106
4. Claim 22	106
5. Claim 23	108

Exhibit List

Exhibit Description	Exhibit #
U.S. Patent No. 12,001,599 to Howell et al.	EX1001
Prosecution History of U.S. Patent No. 12,001,599	EX1002
Declaration of Dr. Joshua R. Smith	EX1003
Curriculum Vitae for Dr. Joshua R. Smith	EX1004
U.S. Provisional Patent Appl. No. 60/725,896	EX1005
U.S. Provisional Patent Appl. No. 60/725,999	EX1006
U.S. Provisional Patent Appl. No. 60/787,850	EX1007
U.S. Provisional Patent Appl. No. 60/846,150	EX1008
U.S. Provisional Patent Appl. No. 60/592,045	EX1009
U.S. Provisional Patent Appl. No. 60/605,191	EX1010
U.S. Provisional Patent Appl. No. 60/618,107	EX1011
U.S. Provisional Patent Appl. No. 60/620,238	EX1012
U.S. Provisional Patent Appl. No. 60/646,836	EX1013
U.S. Provisional Patent Appl. No. 60/647,826	EX1014
U.S. Patent Appl. No. 11/183,256	EX1015
U.S. Patent No. 10,222,617 to Jannard	EX1016
U.S. Patent No. 7,313,423 to Griffin et al.	EX1017
U.S. Patent No. 7,046,230 to Zadesky et al.	EX1018

Exhibit Description	Exhibit #
U.S. Patent No. 10,729,371 to Abreu	EX1019
U.S. Patent No. 6,923,688 to Burson et al.	EX1020
Excerpts from Edwards, C. and Penney, D., ELEMENTARY DIFFERENTIAL EQUATIONS WITH BOUNDARY VALUE PROBLEMS, 4TH ED. (Prentice-Hall, Inc., 2000)	EX1021

I, Dr. Joshua R. Smith, make this declaration in connection with the proceeding identified above.

I. INTRODUCTION

1. I have been retained by counsel for Apple Inc. (“Petitioner” or “Apple”) in connection with the proceeding identified above. I submit this declaration in support of Apple’s Petition for *Inter Partes* Review of United States Patent No. 12,001,599 (EX1001, “the ’599 patent”).

2. I have reviewed and am familiar with the ’599 patent, which issued on June 4, 2024. I understand that the Petition for *inter partes* review that accompanies this Declaration (the “Petition”) seeks to cancel claims 1-25 (the “challenged claims”) of the ’599 patent.

3. In preparation for this Declaration, I reviewed the exhibits provided by the Petitioner, including the ’599 patent. In addition to the above exhibits and other documents, my opinions herein are based upon my personal knowledge, professional judgment, education, and experience gained through my years as a computer scientist, professor, and consultant.

4. The ’599 patent is generally directed to wireless wearable devices. (EX1001, 3:66-4:47.) I am familiar with the technology described in the ’599 patent as of its earliest possible priority date of July 28, 2004, as of the assumed

priority date of October 11, 2005, and as of its actual U.S. filing date of November 27, 2023.

5. I have been asked to consider how a person of ordinary skill in the art (“POSITA”) would have understood the challenged claims in light of the disclosure of the ’599 patent. I also have been asked to consider how a POSITA would have understood the following prior art references:

Prior Art Reference	Abbreviation
U.S. Patent No. 10,222,617 to Jannard	Jannard (EX1016)
U.S. Patent No. 7,313,423 to Griffin et al.	Griffin (EX1017)
U.S. Patent No. 7,046,230 to Zadesky et al.	Zadesky (EX1018)
U.S. Patent No. 10,729,371 to Abreu	Abreu (EX1019)
U.S. Patent No. 6,923,688 to Burson et al.	Burson (EX1020)

6. Further, I have been asked to consider and provide my technical review, analysis, insights, and opinions regarding whether a POSITA would have understood the disclosures of the above references to render obvious the challenged claims.

7. I am being paid \$650 per hour for my work on this matter. My compensation is not dependent on the outcome of this *inter partes* review and in no way affects the substance of my statements in this declaration.

8. I reside in Seattle, Washington, USA.

II. SUMMARY OF GROUNDS

9. I understand that the Petition for inter partes review of the '599 patent asserts the following grounds of unpatentability:

Ground	35 U.S.C. §	Claims	Prior Art References
1	103	1-7, 10, 11, 24	Jannard, Burson
2	103	8	Jannard, Burson, Zadesky
3	103	9, 12-18, 20, 25	Jannard, Burson, Abreu
4	103	19, 21-23	Jannard, Burson, Abreu, Zadesky
5	103	1-7, 24	Griffin
6	103	8, 11	Griffin, Zadesky
7	103	9-10, 12-18, 20, 25	Griffin, Abreu
8	103	19, 21-23	Griffin, Zadesky, Abreu

III. QUALIFICATIONS AND EXPERTISE

10. In formulating my opinions, I have relied upon my knowledge, training, and experience. My qualifications are stated more fully in my curriculum vitae, which has been provided as EX1004. Here, I provide a brief summary of my qualifications.

11. I am the Milton and Delia Zeuschel Professor at the University of Washington, jointly appointed in the Department of Electrical and Computer Engineering and in the Allen School. I am providing this Declaration as an

independent professional working through my consulting company, Sensor Expert LLC, not as a representative of the University of Washington or any other organization.

12. I have at least twenty years of experience with wireless communication, wireless sensing, and audio technology. I have worked on wireless systems as an engineer, in academic research, and as a supervisor of academic research. I am a Fellow of the National Academy of Inventors (NAI). According to the NAI, "Election to NAI Fellow status is the highest professional distinction accorded solely to academic inventors." I am also a Fellow of the Institute of Electrical and Electronic Engineers ("IEEE"). According to the IEEE, the "Grade of Fellow is conferred by the Board of Directors upon a person with an extraordinary record of accomplishments." The specific citation in my elevation to Fellow was for "contributions to far- and near-field wireless power, backscatter communication and electric field sensing." At most one tenth of one percent of the worldwide membership can join the ranks of IEEE Fellow each year.

13. I received my Ph.D. and S.M. degrees in Media Arts and Sciences from the Massachusetts Institute of Technology. This was an interdisciplinary program at the MIT Media Lab. As part of this program, my group, led by Neil Gershenfeld, engaged with the fields of Applied Physics, Electrical Engineering, and Computer Science. I also received a M.A. in Physics from Cambridge

University, and dual B.A. degrees in Computer Science and Philosophy from Williams College. As a graduate student at the MIT Media Lab, I worked on numerous projects relating to wearable technology and audio. For the Brain Opera, which premiered in 1996 at Lincoln Center in New York City, I developed firmware for numerous custom digital musical instruments. For the 1997 Wearable Computing event at the Media Lab, I collaborated on two wearable audio projects: a musical dress which used capacitive sensing to convert body motion into sound, and a musical jacket with a conductive thread embroidered keypad. I designed a custom Midi synthesizer circuit board used in both of these projects. In addition to science/engineering publications like SIGGRAPH, both projects appeared in Vogue, the fashion magazine.

14. From 2004 to 2011, I worked at Intel Corporation, where I rose to the rank of Principal Engineer before leaving Intel to become a professor. At Intel, I started the Wireless Identification and Sensing Platform (“WISP”) project, in which we designed and built wirelessly powered and wirelessly charged sensor tags from the ground up. We demonstrated a number of firsts, such as the first wirelessly powered accelerometer sensor. In the area of audio, we developed a wirelessly powered speaker that produced sound with no wires or batteries, by directly converting strong electromagnetic signals into audio signals.

15. At Intel, I also served on a committee that made patent filing decisions about wireless technology for the entire company. I also served on Intel's Strategic Patent Team for wireless technology, which allocated patent filing budgets for each year for the company among various technical subjects within the wireless area. Prior to Intel, I was Chief Scientist at Escher Group and Director of Escher Labs, where I worked on a variety of sensor systems.

16. In 2011, I joined the University of Washington as an Associate Professor. I received tenure in 2014, and was promoted to Professor and awarded the Milton and Delia Zeuschel Professorship in 2017. At the University of Washington, I currently lead research in a number of areas including wireless sensing, wireless communication, and other topics. At UW, I have worked on projects at the intersection of wireless and audio, such as a battery-free wireless microphone, and a battery free phone, which uses ultra-low power methods to convert between radio waves and audio in both directions: phone to basestation and basestation to phone. My research in these areas has been funded by Federal agencies including the National Science Foundation (NSF), National Institutes for Health (NIH), the Department of Defense (DoD), Defense Advanced Research Projects Agency (DARPA), the Advanced Research Projects Agency for Energy (ARPA-E), and the National Aeronautics and Space Administration (NASA). It has also been funded by corporations such as Intel, Google, Bosch, Microsoft, and

Amazon. I teach or have taught wireless communication, wireless power, analog electronics, digital circuits and systems, and other topics. In my wireless communication class, I also cover selected topics in wireless transmission of audio signals, as well as synthesis of audio signals. I am also the Electrical and Computer Engineering Department's Associate Chair for Professional Programs. In this role, I make decisions about which courses are offered in the Department's Professional Masters Degree Program and often who will teach them. I recently added a course on synthesis and processing of digital audio. I have also co-founded three startup companies, each based on technology developed in my lab.

17. I am a named inventor on 57 U.S. patents and at least 16 foreign patents. At least 27 of my U.S. patents and 13 of my foreign patents have been licensed. I have published over 188 articles and edited one book, entitled "Wirelessly Powered Sensor Networks and Computational RFID." My work has been cited over 27,000 times, and my "H-index," which measures publication impact, is 80. My nine most cited works all relate to wireless technology.

IV. LEGAL UNDERSTANDING

A. My Understanding of Claim Construction

18. I have been advised and understand that claim construction is a matter of law and that the final claim construction will ultimately be determined by the Patent Trial and Appeal Board (the "Board"). I have been advised and understand

that patent claims are construed from the perspective of one of ordinary skill in the art at the time the claimed invention was made. I have further been advised and understand that, in an *inter partes* review, patent claims are to be construed according to the methodology set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). In performing my analysis and rendering my opinions, I have interpreted claim terms by giving them the ordinary and customary meaning they would have to the POSITA reading the '599 patent as of the assumed priority date of October 11, 2005, and in light of its specification and file history (including the file history of the *ex parte* reexamination). However, even if I had applied the ordinary and customary meaning of the claim terms as of the earliest possible priority date of July 28, 2004, it would not change any of my opinions or analysis herein.

B. A Person Having Ordinary Skill in the Art

19. I have been advised and understand that a POSITA is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity, not an automaton. With this understanding, based on the disclosures of the '599 patent and the assumed priority date of October 11, 2005, a POSITA would have had a Bachelor's degree and a Master's degree in Electrical Engineering, Computer Engineering, Physics, or a related field, as well as one to two years of academic or industry experience in mobile devices, wireless

communications, or audio electronics, or comparable industry experience.

However, even if the earliest possible priority date of July 28, 2004, were applied, it would not change the level of ordinary skill.

C. My Understanding of Obviousness

20. I have been advised and understand that a claimed invention is unpatentable if the differences between the invention and the prior art are such that, at the time the invention was made, the subject matter as a whole would have been obvious at the time the invention was made to a POSITA to which the subject matter pertains. This means that even if all of the requirements of the claim cannot be found in a single prior art reference that would anticipate the claim, the claim can still be invalid.

21. It is my understanding that obviousness is a question of law based on underlying factual findings: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of skill in the art; and (4) objective considerations of non-obviousness. I understand that for a single reference or a combination of references to render the claimed invention obvious, a POSITA must have been able to arrive at the claims by altering or combining the applied references.

22. I also understand that prior art references can be combined under several different circumstances. For example, it is my understanding that one such

circumstance is when a proposed combination of prior art references results in a system that represents a predictable variation, which is achieved using prior art elements according to their established functions.

23. I also understand that when considering the obviousness of a patent claim, one should consider whether a teaching, suggestion, or motivation to combine the references exists so as to avoid impermissibly applying hindsight when considering the prior art. I understand this test should not be rigidly applied, but that the test can be important to avoiding such hindsight.

V. THE '599 PATENT

A. Background of the '599 Patent

24. The '599 patent relates to wearable devices, such as eyeglasses that can serve as wireless headsets, with rechargeable batteries that can be charged via coupling to an external connector. (EX1001, Abstract, 17:34-36.) As described by the patent, audio communication or listening using a wearable device wirelessly coupled to a portable device can be cumbersome because a user must interact with the portable device to control the audio communication or listening. (EX1001, 3:14-62.) The patent purports to integrate audio communication and listening functionality into a wearable device to limit the extent a user must interact with a portable device coupled to the wearable device. (EX1001, 3:66-67, 4:1-6.)

However, as set forth herein, it is my view that the claims of the '599 patent do not represent any patentable improvement over the prior art.

B. Priority Date

25. I understand that the application that became the '599 patent (Appl. No. 18/519,802) was filed on November 27, 2023, and claims priority to various patent filings, including ten provisional applications and a continuation-in-part filed between 2004 and 2006:

- Provisional Appl. No. 60/725,896, filed October 11, 2005 (EX1005);
 - Provisional Appl. No. 60/725,999, filed October 11, 2005 (EX1006);
 - Provisional Appl. No. 60/787,850, filed April 1, 2006 (EX1007);
 - Provisional Appl. No. 60/846,150, filed September 20, 2006 (EX1008);
 - Provisional Appl. No. 60/592,045, filed July 28, 2004 (EX1009);
 - Provisional Appl. No. 60/605,191, filed August 28, 2004 (EX1010);
 - Provisional Appl. No. 60/618,107, filed October 12, 2004 (EX1011);
 - Provisional Appl. No. 60/620,238, filed October 18, 2004 (EX1012);
 - Provisional Appl. No. 60/646,836, filed January 31, 2005 (EX1013);
 - Provisional Appl. No. 60/647,826, filed January 31, 2005 (EX1014);
- and

- U.S. Patent Appl. No. 11/183,256, filed July 15, 2005 (EX1015).
(EX1001, (60).)

26. In my view, the '599 patent is not entitled to its earliest claimed priority date. All challenged claims rely on a claim limitation directed to conductive areas that can removably couple to and separate from counterpart contacts on an external connector via spring-force. (EX1001, 45:44-49:11.) But as shown in Exhibits EX1005 through EX1015, no subject matter that can support this “spring force” limitation was disclosed in the '599 patent's priority chain until the filing of Provisional Appl. No. 60/725,896 on October 11, 2005. For example, no priority document prior to October 11, 2005, includes even a mention of “spring force,” let alone disclosure of conductive areas that can removably couple to and separate from counterpart contacts on an external connector via spring-force, as required by the claims. (EX1005-EX1015.) I understand that the Examiner identified this “spring force” limitation as a basis for finding the claims patentable over the prior art. (EX1002, April 8, 2024, Notice of Allowance.)

27. Therefore, based on the disclosures of the '599 patent and the applications in its priority chain, and based further on the nature and scope of the claims, and the existing knowledge in the field, it is my view that the challenged claims are not entitled to a priority date earlier than October 11, 2005. Thus, for the purposes of this Petition only, a priority date of October 11, 2005, is assumed.

However, even if the applicant's failure to disclose the spring force limitation prior to October 11, 2005, is disregarded, I understand that the '599 patent is under no circumstances entitled to a priority date earlier than July 28, 2004, which is the filing date of the earliest application to which the '599 patent claims priority.

C. Prosecution History of the '599 Patent

28. I understand that the prosecution of the '599 patent was not robust, and that the claims were indicated to be allowable in a first Office Action, which presented only a non-statutory double patenting rejection that was overcome by the applicant via a terminal disclaimer. (EX1002.) I understand that in the Notice of Allowance, the Examiner suggested that limitations of claim 1 were not met by the prior art. (EX1002, April 8, 2024, Notice of Allowance.) But as demonstrated herein, all limitations of claim 1, and the remaining challenged claims, were known in the prior art and thus cannot confer patentability.

D. Claim Construction

29. As discussed above, I understand that, during an *inter partes* review, words in a claim are given their ordinary and customary meaning, which is the meaning understood by a POSITA at the time of the alleged invention after reading the entire patent. In performing my analysis and rendering my opinions, I have interpreted claim terms by giving them the ordinary and customary meaning they

would have to the POSITA reading the '599 patent as of October 11, 2005, and in light of its specification and file history.

30. I believe the challenged claims are unpatentable under any reasonable interpretation of the claim language.

VI. JANNARD IN VIEW OF BURSON RENDERS OBVIOUS CLAIMS 1-25

A. Ground 1: Claims 1-7, 10, 11, and 24 are Rendered Obvious by Jannard in view of Burson

31. It is my view that Jannard in view of Burson teaches every limitation of claims 1-7, 10, 11, and 24, for the reasons set forth below.

2. Summary of Jannard

32. Jannard is a U.S. patent that was filed on July 5, 2013, as a continuation of Appl. No. 11/022,367, which was filed on December 22, 2004. (EX1016, (63).) I understand Jannard is thus prior art to the '599 patent under at least 35 U.S.C. §§102(a) and (e).

33. Jannard discloses wearable electronic devices, and systems for managing their connection to data sources. (EX1016, 1:15-18.) For example, Jannard discloses eyeglasses that may include an audio device with speakers for presenting audio signals to the wearer of the eyeglasses. (EX1016, 5:13-6:46.) The audio signals may be provided by a remote device, such as a cell phone, that

communicates wirelessly with the eyeglasses. (EX1016, 20:57-21:42.) FIG. 8 illustrates:

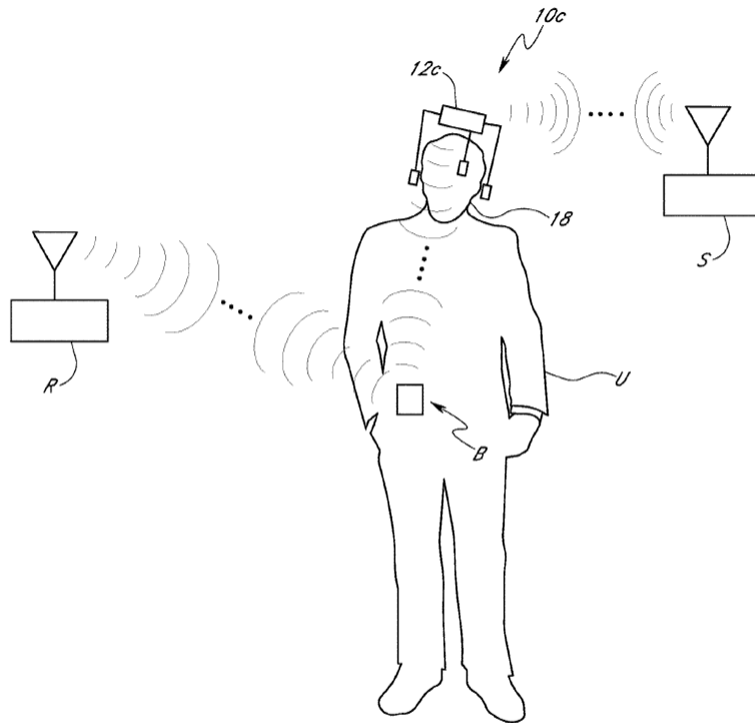


FIG. 8

(EX1016, 20:57-21:42, FIG. 8.)

3. Summary of Burson

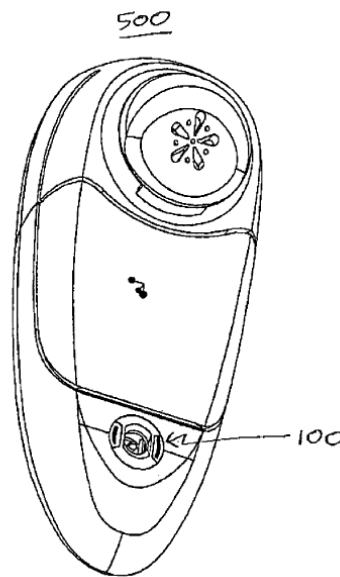
34. Burson is a U.S. patent that was filed on July 16, 2003, and issued on Aug. 2, 2005. (EX1020, (22).) I understand Burson is thus prior art to the '599 patent under at least 35 U.S.C. §§102(a) and (e).

35. Burson discloses a charging interface for a portable device, such as a wireless headset, with a rechargeable battery. (EX1020, 3:31-45.) When the

headset is inserted into a docking cradle of the charging base, electrical contacts of the charging base couple to corresponding electrical contacts of the headset, and current is supplied by the charging base to recharge the headset's battery.

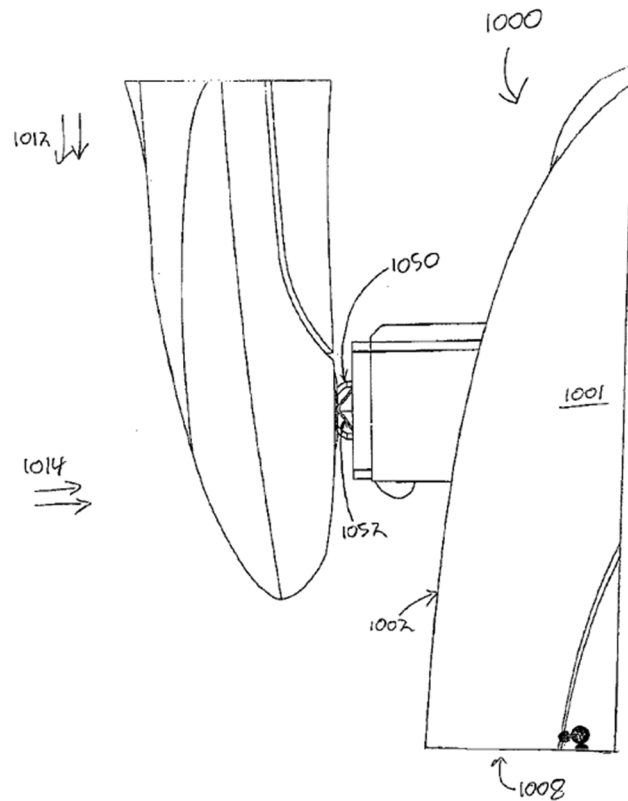
(EX1020, 1:26-42, 2:5-53, 3:31-4:55, 7:65-9:26.) Spring-loaded surface contacts allow the user to “simply drop the headset into [the] cradle without fumbling with a plug.” (EX1020, 1:43-59.)

36. Burson discloses docking cradles that include such spring-loaded contacts for charging wireless headsets. FIG. 5 illustrates an example headset 500 that includes charging interface 100, for insertion into a docking cradle and coupling with a spring-loaded charging contact:



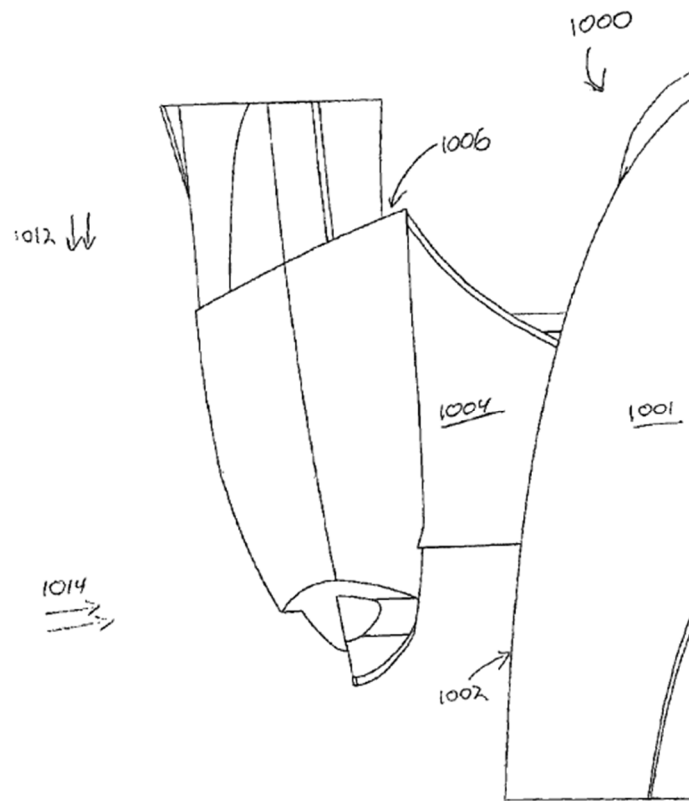
(EX1020, 5:54-6:67, FIG. 5.)

37. FIG. 10A shows an example headset charging base 1000. (EX1020, 9:39-57.) The base's spring-loaded contacts 1052 retract as the headset is inserted into the cradle, contacting actuator 1050, and extend to "form contact with the headset contacts" once the headset's contacts are aligned:



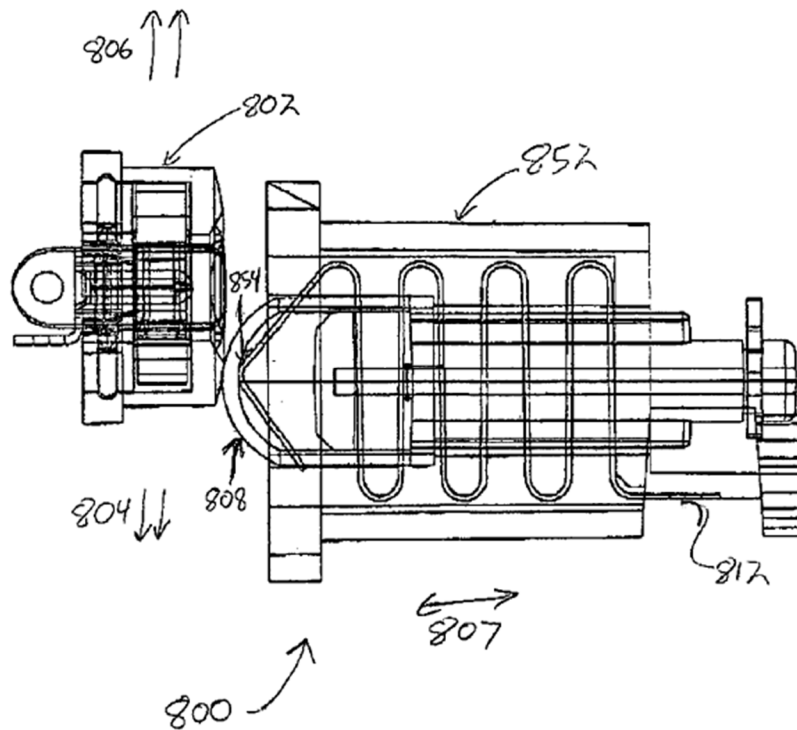
(EX1020, 9:39-10:64.)

38. FIG. 10B illustrates cradle 1004 of charging base 1000:



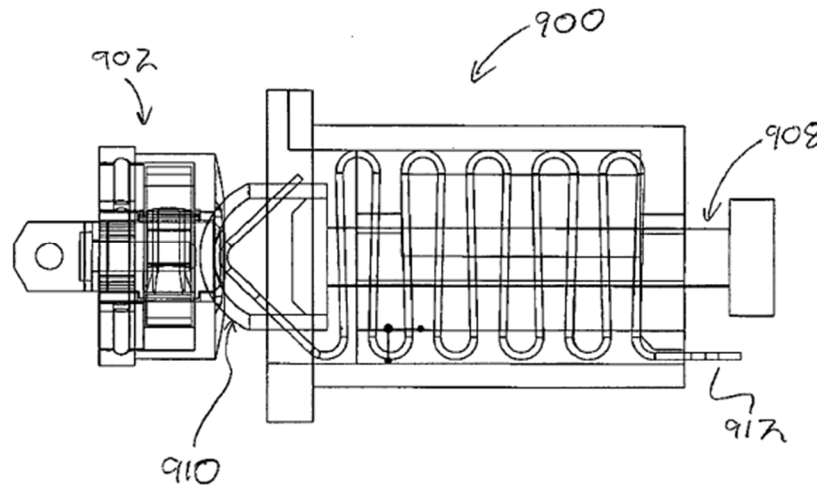
(EX1020, 9:51-57, FIG. 10B.)

39. FIG. 8 illustrates the base's spring-loaded charging contacts in more detail. As shown, a headset charging contact 802 couples with a spring-loaded charging base charging contact 800, causing a pair of springs of the spring apparatus 812 (which is attached to actuator 808) to retract as the headset is inserted into the dock:



(EX1020, 8:54-9:6, 10:49-64, FIG. 8.)

40. And FIG. 9 shows that when the headset contact is aligned with the base contact, the spring-loaded base contact 900 enters a detent position, in which the spring 912 applies pressure to the actuator 910 to “complete the charging loop” with the headset contact 902:



(EX1020, 9:7-26.)

41. Jannard and Burson are analogous art to the claimed invention at least because they are directed to the same field of endeavor—wireless, wearable communication devices (*e.g.*, headsets) with rechargeable batteries. (*See* EX1001, 3:28-4:52.) By disclosing wearable systems (*e.g.*, eyeglasses; earbuds) that present audio from remote audio devices such as cell phones, Jannard is reasonably pertinent to problems faced by the '599 patent inventors. Similarly, Burson is reasonably pertinent to the problems of the '599 patent, because it describes improvements to a wearable, battery-powered, wireless communication devices (*e.g.*, a wireless headsets) with embedded electrical components, including charging contacts. (*See* EX1001, 3:28-62, 45:44-67 (claim reciting a rechargeable battery configured to be charged via an electrical connector).)

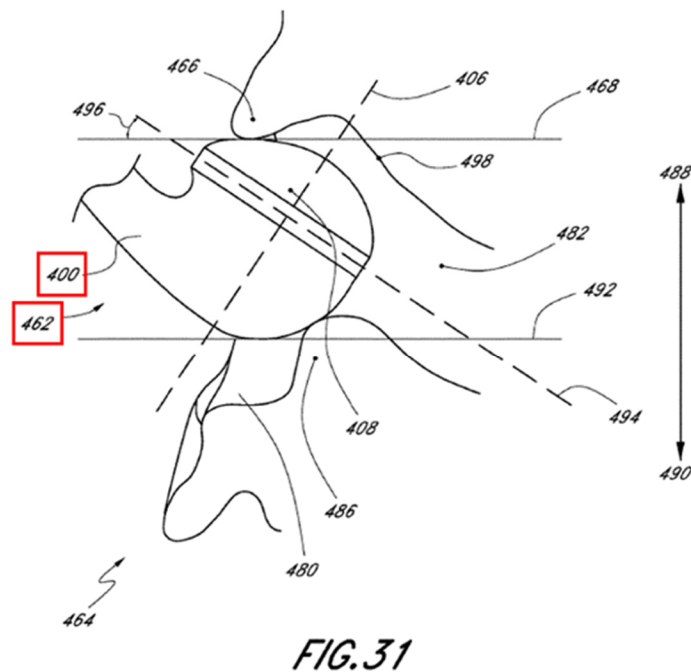
42. I understand that neither Jannard nor Burson was cited during prosecution of the '599 patent.

4. Claim 1

- a. ***[Preamble] A wireless wearable device, with at least a portion of the wireless wearable device configured to be worn in at least one ear of a user, to at least help the user hear audio outputs produced by the device, the wireless wearable device comprising:***

43. The preamble is met by Jannard. For example, Jannard discloses an audio device 304 “adapted to be worn on the head of a user as a pair of eyeglasses.” (EX1016, 47:10-13.) The audio device is wireless; for example, it can include a data port 308 for wireless coupling of the audio device with a communications link 306. (EX1016, 41:59-61.) The audio device 304 further includes audio components, such as speakers and speaker drivers, to present audio output to the user. (EX1016, 41:47-49.)

44. The audio device is configured to be worn in the user’s ear. For example, in embodiments, a speaker 400 may be “placed partially within the ear 462 of a user.” (EX1016, 51:25.) FIG. 31 illustrates:



(EX1016, FIG. 31.)

45. Jannard explains that positioning the device in the user's ear assists the user in hearing the audio output. For example, Jannard discloses that the device's speaker is positioned "such that sound emitted from the speaker 400 along the sound propagation axis 406 is directed towards an anterior wall 498 of the outer ear canal 482." (EX1016, 51:26-33.) Further, by "adjusting the orientation angle 496 of the speaker face 408 with respect to the tragus-tragus line 468, sound quality and enjoyment may be enhanced." (EX1016, 51:26-33.) Thus, the audio device disclosed by Jannard can be worn in the ear of a user and can produce audio output, adjustable at least by adjusting the audio device in the user's ear. Additionally, the device provides noise cancellation functionality to help the user

hear the audio output, *e.g.*, by reducing noise that would otherwise limit the user's ability to hear the audio output. (EX1016, 34:10-32.)

b. [A] *a speaker at least partially in the wireless wearable device; and*

46. This element is met by Jannard. For example, Jannard describes that audio device 304 “includes” speakers 318, which the POSITA would understand to disclose that the speaker is at least partially within the audio device. (EX1016, 41:47-49.) FIG. 22 illustrates:

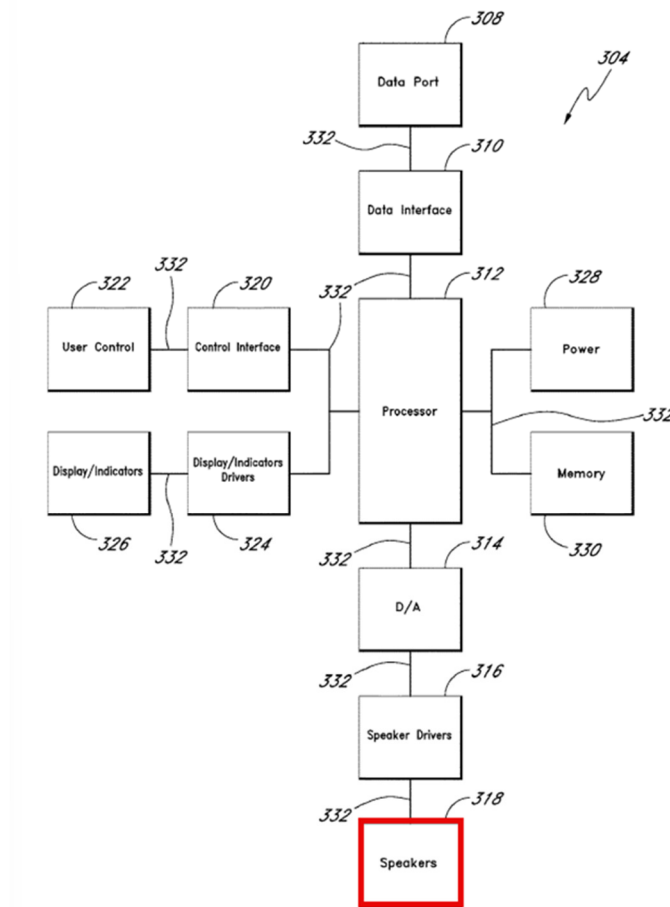


FIG. 22

(EX1016, FIG. 22.)

- c. ***[B] an electrical connector at least partially in the wireless wearable device, wherein the electrical connector includes at least two conductive areas, each area on a surface of the wireless wearable device, and***

47. This element is met by Jannard. For example, Jannard discloses that the audio device can “include power contacts 164 for recharging any rechargeable batteries connected thereto.” (EX1016, 33:13-15.) For example, Jannard explains

that “with an appropriate recharging cradle (not shown), the audio device 10D can be laid on the cradle, thereby making contact between the power contacts 164 and corresponding contacts in the cradle (not shown).” (EX1016, 33:16-20.) The POSITA would understand the power contacts 164 to meet the claimed electrical connector (i.e., for connecting to the corresponding contacts of the cradle).

Further, Jannard discloses at least two conductive areas, each area on a surface of the audio device. For example, Jannard discloses that the power contacts 164 can be disposed at the ends of the ear stems 54D, 56D, and further can be disposed on the upper or lower edges of the orbitals 48D, 58D. (EX1016, 33:13-35.) FIG. 12 illustrates:

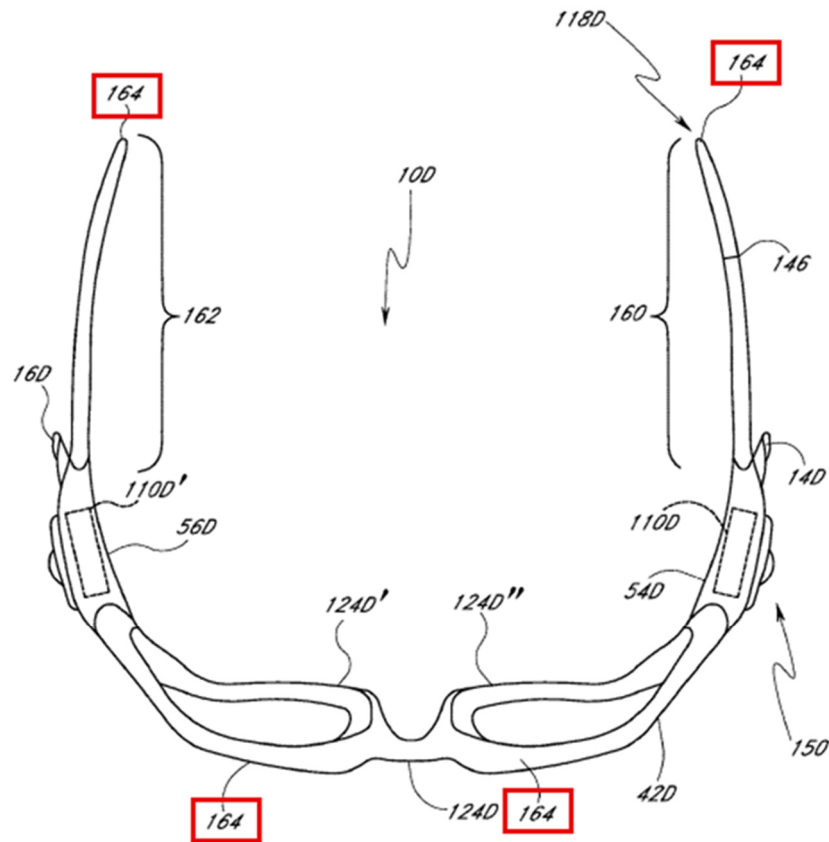


FIG. 12

(EX1016, FIG. 12 (annotated).)

48. Based on these disclosures, the POSITA would understand the ends of the ear stems, and the orbital edges, to include surfaces of the audio device 304. Moreover, Jannard explains that “with an appropriate recharging cradle (not shown), the audio device 10D can be laid on the cradle, thereby making contact between the power contacts 164 and corresponding contacts in the cradle (not shown).” (EX1016, 33:16-20.) The POSITA would understand that to make

contact by being lain on the cradle, the disclosed power contacts are on the surface of the audio device, because the surface is the portion of the audio device that physically contacts the cradle in disclosed embodiments.

- d. ***[C] wherein the at least two conductive areas are configured to removably couple to corresponding conductive contacts of a counterpart connector external to and separate from the wireless wearable device, at least via spring-force, to at least enable each of the at least two conductive areas to be electrically connected to its corresponding conductive contact;***

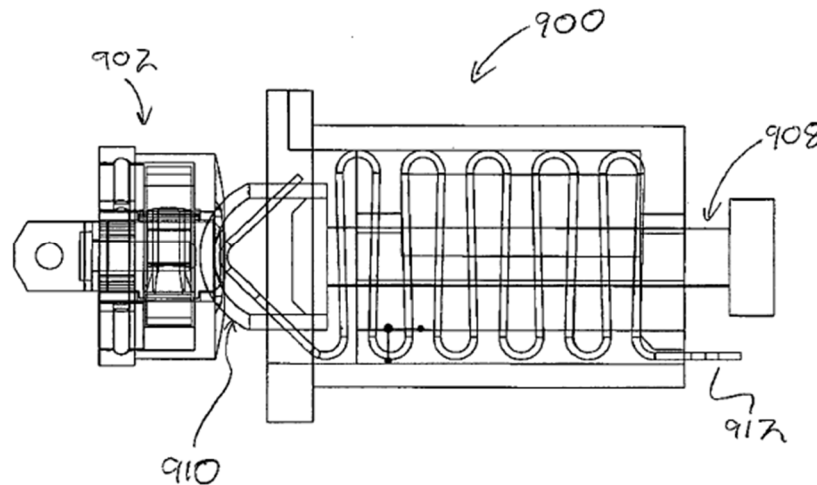
49. This element is met by Jannard in view of Burson. For example, Jannard discloses that “with an appropriate recharging cradle (not shown), the audio device 10D can be laid on the cradle, thereby making contact between the power contacts 164 and corresponding contacts in the cradle (not shown).” (EX1016, 33:16-20.)

50. To the extent that Jannard alone does not teach the conductive areas coupling to corresponding conductive contacts, at least via spring-force, this element is taught by Jannard in combination with Burson. For example, as described above, Jannard discloses that power contacts on a wireless, wearable headset (Jannard’s audio device, *see* EX1016 at 38:62-39:1) can removably connect to corresponding contacts on a cradle to recharge the headset’s battery. Burson similarly discloses a wireless, wearable headset that utilizes a cradle to

recharge its battery. In Burson, positive and negative surface charging contacts (which may be integrated with the headset) removably couple the device's battery to corresponding charging contacts on a powered charging base. (EX1020, 2:5-53, 3:31-4:55, 8:54-57.) When the device is inserted into a docking cradle of the charging base, charging current is supplied through the coupled contacts to recharge the device's battery. (EX1020, 1:26-42, 6:56-67.)

51. Burson discloses that the charging base's surface contacts can advantageously be spring-loaded, thus allowing the user to "simply drop the headset into [the] cradle without fumbling with a plug." (EX1020, 1:43-59.) As the headset in Burson is inserted into the cradle, *e.g.*, via a downward and forward motion, the headset's charging contacts exert pressure on the charging base's corresponding spring-loaded contacts, causing the spring-loaded contacts to retract. (EX1020, 6:56-67.) Once the headset is fully inserted, the spring-loaded contacts "form an electrical connection" with the headset's contacts. (EX1020, 6:56-67.) That is, once the headset's contacts become aligned with the charging base's contacts in a detent position, an actuator of the spring-loaded contact extends into the headset contact apparatus 902, "allowing the spring loaded contacts to couple with the corresponding contacts on the headset contact apparatus 902 to complete the charging loop." (EX1020, 9:7-26.) Conversely, the electrical connection is discontinued when the headset is removed from the cradle. (EX1020, 9:27-37.)

FIG. 9 illustrates an electrical coupling of headset contact apparatus 902 in the detent position with the corresponding spring-loaded contact 900, via actuator 910 and spring 912:



(EX1020, 9:7-26.)

52. Burson provides that in the detent position, pressure is applied by the actuator member against the headset contact to “complete the charging loop” and permit the electrical coupling. (EX1020, 9:7-26.) The POSITA would understand this pressure to be the result of a spring-force applied by spring 912: as the POSITA would recognize, when a spring (such as spring 912) is coupled to a mass (such as actuator 910) and compressed (*e.g.* by the downward and forward motion of the headset against the cradle), the spring—by the operation of Hooke’s law—exerts a restorative spring force on the mass. (See EX1021, 132-33.) Thus, the POSITA would understand spring 912 to exert a spring force on the actuator

toward the headset contact 902 when the headset is docked, thereby “allowing the spring loaded contacts to couple with the corresponding contacts on the headset contact apparatus 902 to complete the charging loop.” (EX1020, 9:7-26.)

53. Applying Burson’s teachings to Jannard, the electrical contacts of Jannard’s docking cradle would be spring-loaded, as in Burson, to removably couple to (and separate from) the corresponding power contacts 164 of Jannard’s headset. The inclusion of the spring-loaded contacts would simplify charging by allowing a user to “simply drop the headset into [the] cradle without fumbling with a plug.” (EX1020, 1:43-59.) As described above for Burson, the spring-loaded contacts of the docking cradle would utilize spring-force to enable the docking cradle’s contacts to electrically connect to the corresponding power contacts 164 when Jannard’s headset is inserted into the charging cradle. This electrical connection between power contacts 164 and the charger’s corresponding contacts enables charging the battery of Jannard’s headset, as described above for Jannard. (EX1016, 33:13-15.)

(ii) *Motivation to Combine*

54. A POSITA would have had multiple motivations to combine the teachings of Jannard and Burson as described. For example, as described above, Jannard discloses that audio device 10D can be laid on the recharging cradle, and that doing so causes the power contacts 164 to make contact with the

corresponding contacts in the cradle. (EX1016, 33:16-20.) However, the specific details of the recharging cradle, including how the power contacts engage with the contacts of the charger, are “not shown.” (EX1016, 33:16-20.) The POSITA thus would have been motivated to look to other references to supply these missing details from Jannard.

55. The POSITA would have looked to Burson, which (like Jannard) discloses a wireless wearable headset that uses a cradle to recharge the headset’s battery. In both Burson and Jannard, as described above, electrical contacts of the wearable headset removably couple with corresponding electrical contacts of a battery charger. And both Burson and Jannard describe inserting the headset into a charging cradle to couple the headset’s contacts to the charger’s contacts.

56. Burson supplies implementation detail not specified in Jannard: that the charging base’s electrical contacts include a spring-force mechanism (*e.g.*, spring contact apparatus 912) to facilitate coupling with the headset’s charging contacts, as described above. (EX1020, 6:56-67, 8:54-9:6, FIG. 8.) Moreover, Burson explains benefits of its spring-loaded contacts: they permit the user to “simply drop the headset into [the] cradle without fumbling with a plug.” (EX1020, 1:43-59.) The spring-loaded contacts enable that approach because their additional compliance makes the contacts more tolerant of headset-cradle misalignment, by electrically engaging over a wider range of positions.

57. Burson discloses that spring-loaded contacts can provide additional benefits in aligning and securing the headset with the cradle. For example, springs can be used to retract the cradle's charging contacts from the headset as the headset is inserted to the cradle, thus "minimizing friction" between the cradle's contacts and the headset housing and protecting the headset from damage and wear. (EX1020, 10:52-64.) And once the headset is "properly guided" to its location in the charging base, the spring-loaded contacts "enabl[e] secure contact" between the headset's contacts and their corresponding cradle contacts, thus helping to retain proper alignment of the contacts. (EX1020, 10:7-13.)

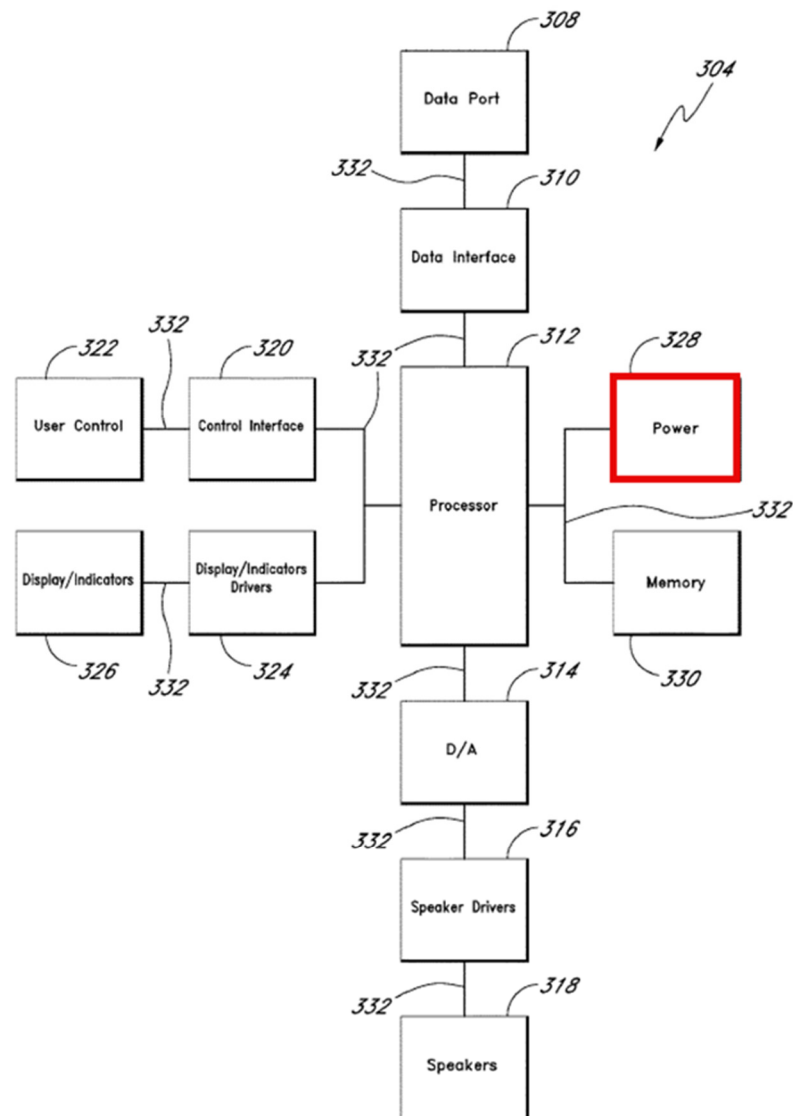
58. The benefits of Burson's spring-loaded contacts apply equally to Jannard, in which it is beneficial for the wearable device to be easily inserted and removed from its charger, yet securely mounted. For example, the POSITA would understand that without a securing mechanism such as Burson's spring force, the power contacts of Jannard's wearable device would be susceptible to dimensional and positional variation in the charger, such that an electrical connection may be lost between the device and the charger's power contacts. This is problematic because a faulty connection to the charging contacts can result in the wearable device's battery failing to charge properly; the POSITA would thus have been motivated to improve the reliability of the electrical connection to mitigate this problem. The POSITA would have been motivated to apply Burson's spring-force

teachings to Jannard, in order to realize these benefits; and because Burson's solution is designed for wearable headsets, analogous to those of Jannard, and permits the easy removability of those headsets from the charging hardware. Additionally, Burson's teachings of using spring-loaded contacts to "enabl[e] secure contact" and protect the headset from damage and wear would apply beneficially to Jannard, which explains that avoiding unnecessary force on the headset is a consideration for the charging cradle. (EX1016, 33:28-35.)

59. Moreover, Burson and Jannard utilize analogous hardware components (wearable headset devices; battery charging cradles; corresponding sets of electrical contacts) to achieve analogous goals (recharging the wearable device), and the combination relates to using straightforward and well-understood technology (springs). Further, Burson emphasizes the broad applicability of its teachings to "any device having contacts which couple with contacts of a removable device," which includes the wearable devices of Jannard. (EX1020, 10:65-11:1.) Thus, the POSITA would have had a reasonable expectation of success in making the combination.

- e. ***[D] a rechargeable battery at least partially in the wireless wearable device, with the battery configured to be charged via at least the electrical connector; and***

60. This element is met by Jannard. For example, Jannard discloses that the audio device 304 “includes a power module 328,” which provides power to the audio device 304. (EX1016, 44:39-41.) Jannard further discloses that the power module 328 may be a rechargeable battery, such as a lithium-ion polymer battery. (EX1016, 44:47-48.) FIG. 22 illustrates power module 328:

**FIG. 22**

(EX1016, FIG. 22 (annotated).)

61. The battery of power module 328 may be charged via the electrical connector (*i.e.*, power contacts 164) when the device is connected to a recharging cradle, as described above for elements [B] and [C].

62. Additionally, Burson discloses that the rechargeable battery is “disposed within the headset.” (EX1020, 8:39-41.)

f. [E] *a microphone at least partially in the wireless wearable device.*

63. This element is met by Jannard. For example, Jannard discloses that audio device 304 includes at least one microphone 75. (EX1016, 18:45-46.) FIG. 4B illustrates:

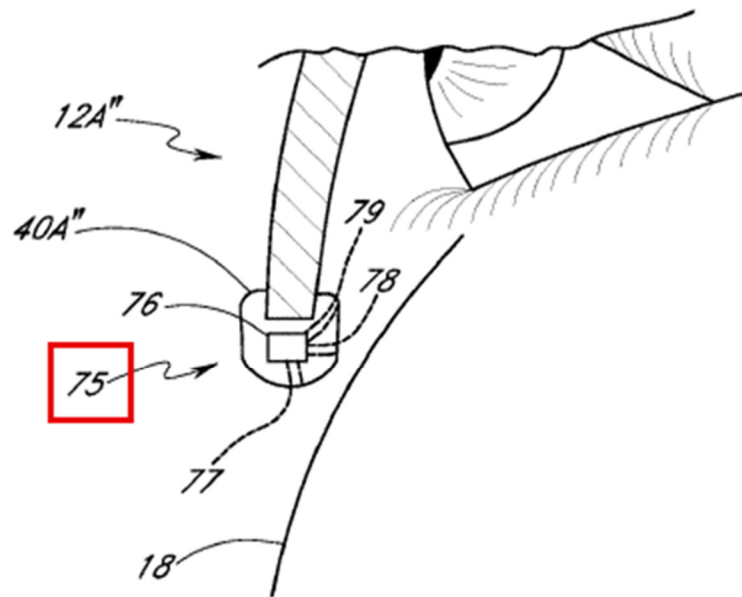


FIG. 4B

(EX1016, FIG. 4B (annotated).)

5. Claim 2

- a. [Preamble] *A wireless wearable device as recited in claim 1 comprising***

64. The preamble is met as described for claim 1.

- b. [A] *another microphone at least partially in the wireless wearable device configured to capture at least sound in vicinity of the wireless wearable device.***

65. This element is met by Jannard. For example, Jannard describes that its audio device can include banks of microphones that can be positioned within the audio device. (EX1016, 34:10-19.) One of the microphones can be a “noise-canceling-microphone,” while another a “speaking-microphone,” and the microphones can be used in conjunction with “algorithms to discern, reduce, and/or eliminate noise.” (EX1016, 34:10-32.) The POSITA would understand the noise-canceling microphone to capture sound in the vicinity of the audio device to at least enable noise reduction (i.e., via the microphones in conjunction with the algorithms).

6. Claim 3

- a. [Preamble] *A wireless wearable device as recited in claim 2 comprising***

66. The preamble is met as described for claim 2.

- b. [A] *electronic circuitry at least partially in the wireless wearable device configured to cancel at least a portion of the sound captured by the another microphone to produce the audio outputs.***

67. This element is met by Jannard. For example, Jannard describes that its audio device can include a speaking-microphone bank and a noise-canceling microphone bank. (EX1016, 34:10-45.) The speaking-microphone bank receives “verbal input” (*i.e.*, the user’s speech), and the noise-canceling microphone bank provides an “ambient noise-cancellation function.” (EX1016, 34:10-45.) These microphone banks include “ASIC-based noise-canceling technology,” and are used with algorithms to “discern, reduce, and/or eliminate noise for the purpose of voice recognition.” (EX1016, 34:10-45.) Based on these disclosures, the POSITA would understand the audio device’s ASIC circuitry to cancel sound captured by the noise-canceling microphone bank, in order to reduce or eliminate noise in the audio output (*e.g.*, to provide improved voice recognition).

7. Claim 4

- a. [Preamble] *A wireless wearable device as recited in claim 2,***

68. The preamble is met as described for claim 2.

- b. *[A] wherein at least the microphone and the another microphone are configured to receive audio inputs, with at least some sound in the audio inputs configured to be cancelled based on using at least the microphone and the another microphone.*

69. This element is met as described for claim 3[A].

8. Claim 5

- a. *[Preamble] A wireless wearable device as recited in claim 2,*

70. The preamble is met as described for claim 2.

- b. *[A] wherein the microphone is configured to be positioned closer to mouth of the user than the another microphone, when the wireless wearable device is worn by the user.*

71. This element is met by Jannard. Jannard describes that its speaking microphone and noise-canceling microphone are “positioned at any suitable location,” including at “opposing sides of the audio device,” and are “separated by desired distances.” (EX1016, 34:10-45.) Based on this disclosure, the POSITA would understand Jannard to disclose that the speaking microphone is preferably located close to the user’s mouth (*e.g.*, at a first side of the audio device near the mouth), in order to best detect “verbal input”; and the noise-canceling microphone to be located farther from the user’s mouth (*e.g.*, at an opposing side of the audio device) in order to best detect ambient noise. (EX1016, 34:10-45.) The POSITA

would understand this configuration of Jannard's microphones would optimize Jannard's voice recognition and noise cancellation processes, by improving the quality of the verbal and ambient input signals provided to those processes.

9. Claim 6

- a. [Preamble] *A wireless wearable device as recited in claim 2 comprising***

72. The preamble is met as described for claim 2.

- b. [A] *a storage medium at least partially in the wireless wearable device configured to store at least computer program codes for facilitating voice recognition to recognize at least a word received at least by the microphone for an operation of the wireless wearable device.***

73. This element is met by Jannard. For example, Jannard describes that the audio device includes a selector 610 (*e.g.*, RAM, ROM, or other storage mediums) to store computer programs that can switch between wirelessly connected sources “based upon verbal commands” from the user received from an audio input 616 (*i.e.*, a microphone) (EX1016, 26:21-25, 26:56-27:6, 27:27-33.), as illustrated in FIG. 8A:

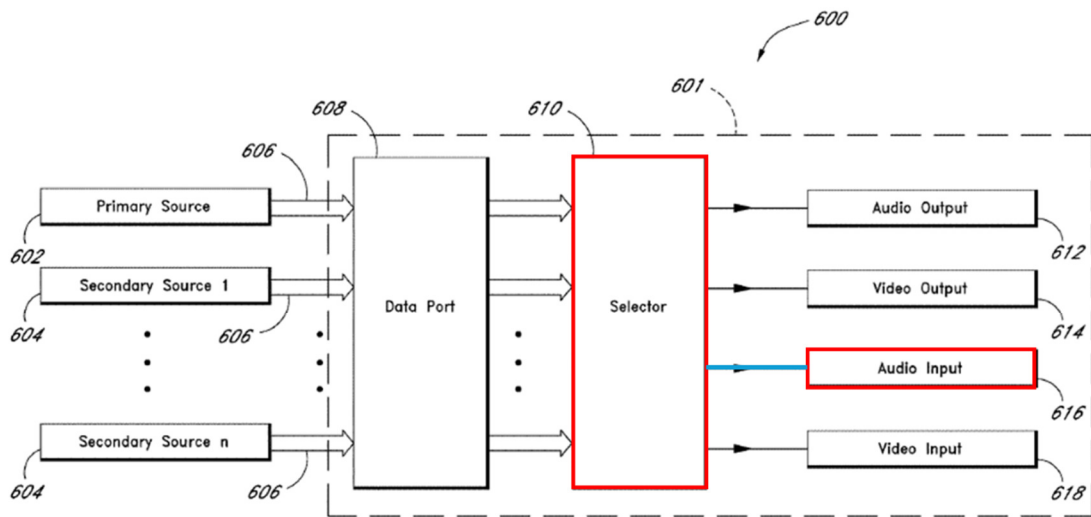


FIG. 8A

(EX1016, FIG. 8A (annotated).)

74. Because Jannard's microphone banks can be used with algorithms for voice recognition, as described above for claim 3, element [A], the POSITA would understand the selector 610's stored computer program codes to be for facilitating voice recognition, including by recognizing words (*e.g.*, verbal commands) spoken by the user and received by the microphone banks.

10. Claim 7

- a. **[Preamble]** *A wireless wearable device as recited in claim 2 comprising*

75. The preamble is met as described for claim 2.

- b. [A] *wireless communication circuitry at least partially in the wireless wearable device configured for coupling to at least a Bluetooth network.*

76. This element is met by Jannard. For example, Jannard describes that “the audio device 10C preferably comprises... an interface device 110. The interface device 110 includes... a transceiver 114.” (EX1016, 22:3-8.) FIG. 9A illustrates such an embodiment:

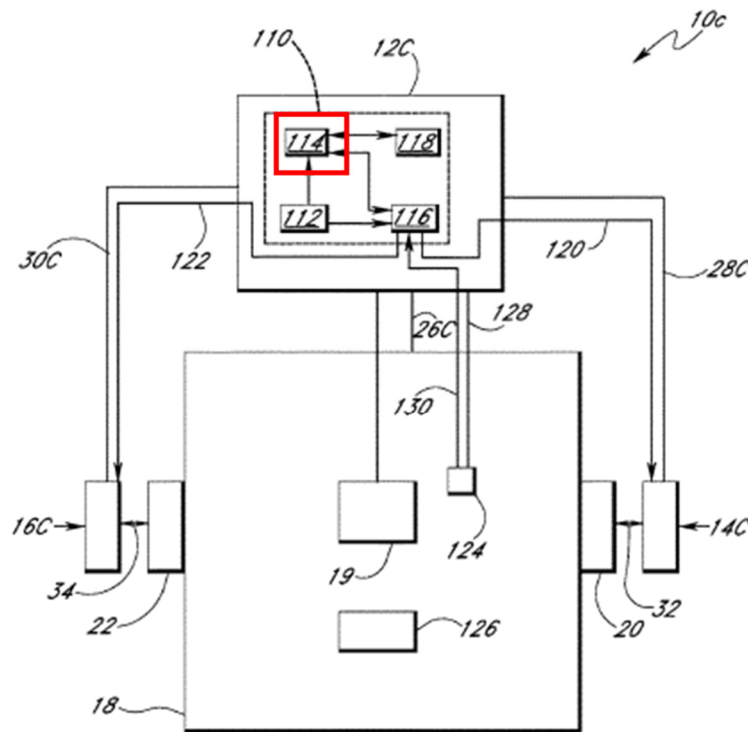


FIG. 9A

(EX1016, FIG. 9A (annotated).)

77. Jannard explains that the “[t]he transceiver 114 can be in the form of a digital wireless transceiver for one-way or two-way communication. For example,

the transceiver 114 can be a transceiver used in known wireless networking devices that operate under... the standard that has become known as BLUETOOTH™.” (EX1016, 22:13-18.) The POSITA would thus understand Jannard to teach coupling to a Bluetooth network via transceiver 114.

11. Claim 10

- a.** *[Preamble] A wireless wearable device as recited in claim 2 comprising*

78. The preamble is met as described for claim 2.

- b.** *[A] a motion sensor at least partially in the wireless wearable device.*

79. This element is met by Jannard. For example, Jannard explains that the audio device can include “a variety of sensors, including but not limited to motion.” (EX1016, 35:4-9.)

12. Claim 11

- a.** *[Preamble] A wireless wearable device as recited in claim 2 comprising*

80. The preamble is met as described for claim 2.

- b. ***[A] a touch-sensitive input surface on the wireless wearable device, wherein the touch-sensitive input surface is configured to facilitate generating at least an electrical signal for an operation of the wireless wearable device based on receiving at least a touch input.***

81. This element is met by Jannard. For example, Jannard describes that user controls 322 can include a touchpad (*i.e.*, a touch-sensitive input surface) that may be used to “control the audio device 304.” (EX1016, 44:4-7.) For example, the touchpad can be used to play audio, fast-forward, turn power on or off, adjust volume, or “perform any other function related to an audio data file.” (EX1016, 44:14-24.) The POSITA would understand the touchpad to generate an electrical signal, *e.g.*, to control audio device 304 via these commands, upon receiving touch input from the user.

13. Claim 24

- a. ***[Preamble] A wireless wearable device to at least help a user hear audio outputs produced by the device, with at least a portion of the wireless wearable device to be worn in an ear of the user, the wireless wearable device comprising:***

82. The preamble is met as described for claim 1[Preamble].

- b. ***[A]an electrical connector at least partially in the wireless wearable device, wherein the electrical connector includes at least two conductive areas, each area on a surface of the wireless wearable device, and***

83. This element is met as described for claim 1[B].

- c. ***[B]wherein the at least two conductive areas are configured to removably couple to corresponding conductive contacts of a counterpart connector of an apparatus external to and separate from the wireless wearable device, at least via spring-force, to at least enable each of the at least two conductive areas to be electrically connected to its corresponding conductive contact;***

84. This element is met as described for claim 1[C].

- d. ***[C]a rechargeable battery in the wireless wearable device, with the battery configured to be charged via at least the electrical connector;***

85. This element is met as described for claim 1[D].

- e. ***[D]a speaker at least partially in the wireless wearable device, with the battery configured to provide power to the speaker;***

86. This element is met by Jannard. For example, Jannard's audio device 304 includes speakers 318. (EX1016, 41:46-49, Figs. 21-22.) Jannard also describes that the audio device 304 includes conductors 332, which "provide direct or indirect electrical communication between the various components of the audio device." (EX1016, 45:22-24.)

87. Jannard's conductors 332 distribute power from the power module 328 (e.g., a rechargeable battery) to the various components of the audio device 304, which include speakers 318. (EX1016, 41:46-49, 44:39-49.) FIG. 22 illustrates the conductors providing power from the battery to the speakers 318 via speaker drivers 316:

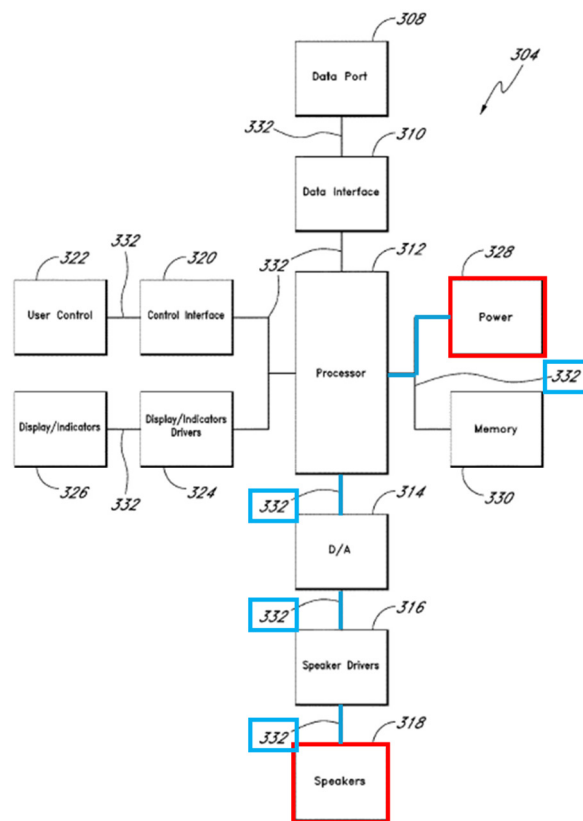


FIG. 22

(EX1016, FIG. 22 (annotated).)

- f. ***[E] a first microphone, at least partially in the wireless wearable device, configured to capture at least sound in vicinity of the wireless wearable device, with the battery configured to provide power to the first microphone; and***

88. This element is met by Jannard. As described above for claim 3, element [A], Jannard teaches that user controls 322 include a speaking microphone to capture verbal input, and a noise-canceling microphone to capture ambient sound in the vicinity of the audio device, to enable noise reduction (*i.e.*, via noise-reduction algorithms). (EX1016, 34:10-45, 44:4-13.)

89. As described above, Jannard's conductors 332 distribute power from the power module 328 to the various components of the audio device 304, including the noise-canceling microphone. (EX1016, 41:46-58, 44:4-23, 44:45-47). FIG. 22 illustrates the conductors providing power from the battery (*i.e.*, power module 328) to the microphone (*i.e.*, user controls 322):

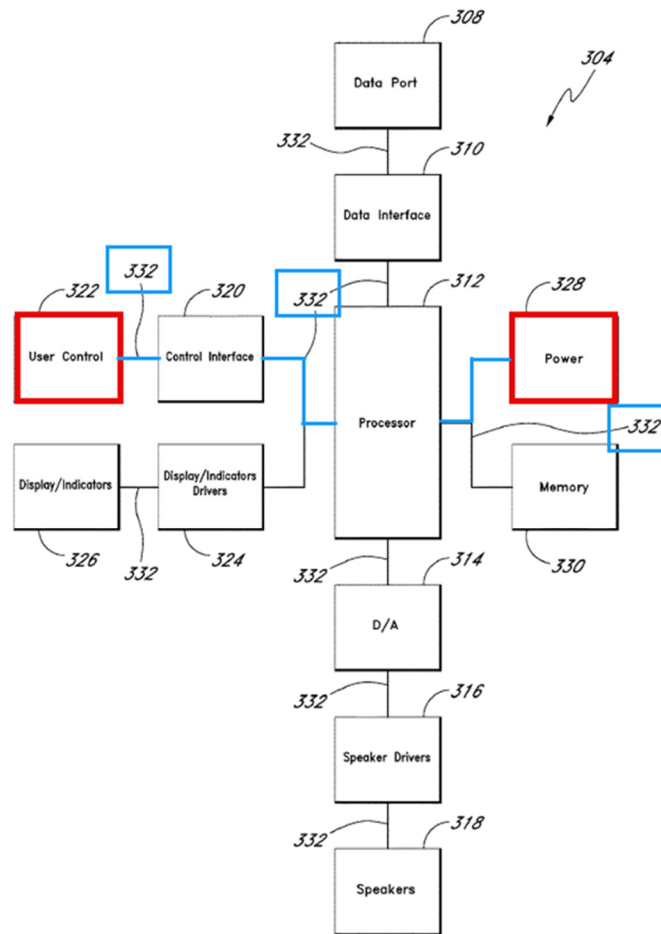


FIG. 22

(EX1016, FIG. 22 (annotated).)

- g. **[F]** *a second microphone, at least partially in the wireless wearable device,*

90. This element is met as described for claim 24[E].

- h. **[G]** *wherein the battery is configured to provide power to the second microphone, and*

91. This element is met as described for claim 24[E].

- i. ***[H] wherein the second microphone is configured to be positioned closer to mouth of the user than the first microphone, when the wireless wearable device is worn by the user.***

92. This element is met as described for claim 5[A].

B. Ground 2: Claim 8 is Rendered Obvious by Jannard in view of Burson and Zadesky

93. It is my view that Jannard in view of Burson and Zadesky teaches every limitation of claim 8, for the reasons set forth below.

2. Summary of Zadesky

94. Zadesky is a U.S. patent assigned to Apple. Zadesky was filed on July 1, 2002, published on April 24, 2003, and issued on May 16, 2006.

(EX1018.) I understand Zadesky is thus prior art to the '599 patent under at least 35 U.S.C. §§ 102(a), (b), and (e).

95. Zadesky relates generally to portable media players, and describes that a media player can include a touchpad for receiving touch input from a user and controlling the media player. (EX1018, 1:47-3:22.) The touchpad can control the media player based on a sliding input from the user, as shown in FIG. 3C:

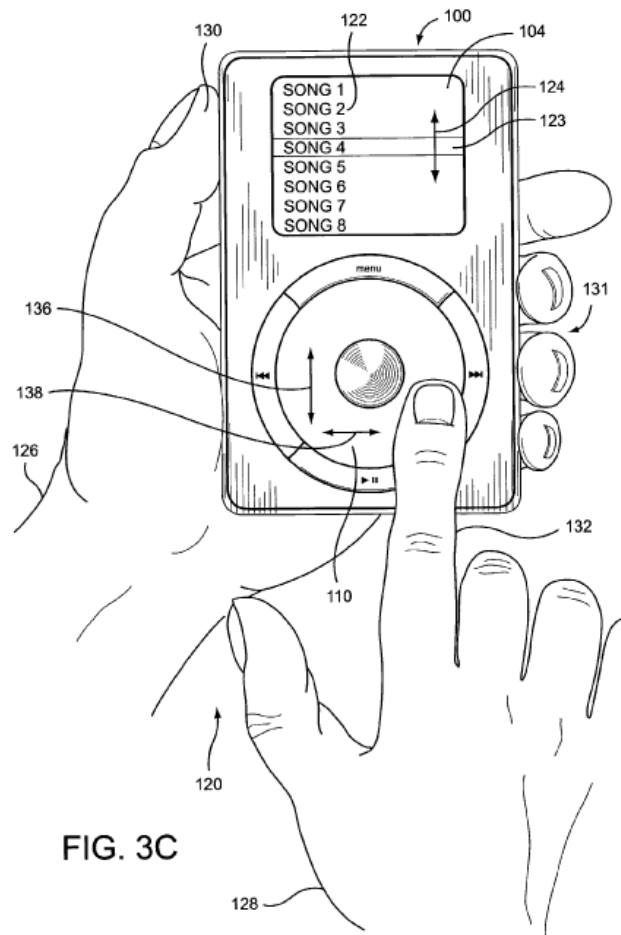


FIG. 3C

(EX1018, FIG. 3C.)

96. Jannard and Zadesky are analogous art to the claimed invention at least because they include analogous technology, *e.g.*, portable devices with media player functionality and touch-sensitive controls. Jannard describes that the audio devices can be integrated with touchpads, but does not disclose the functionality or operation of said touchpads. By describing portable devices and touch sensors to

controlling such devices, Jannard and Zadesky are reasonably pertinent to the problem faced by the '599 patent inventors.

3. Claim 8

a. **[Preamble] *A wireless wearable device as recited in claim 2 comprising:***

97. The preamble is met as described for claim 2.

b. **[A] *a touch-sensitive input surface on a portion of the wireless wearable device; and***

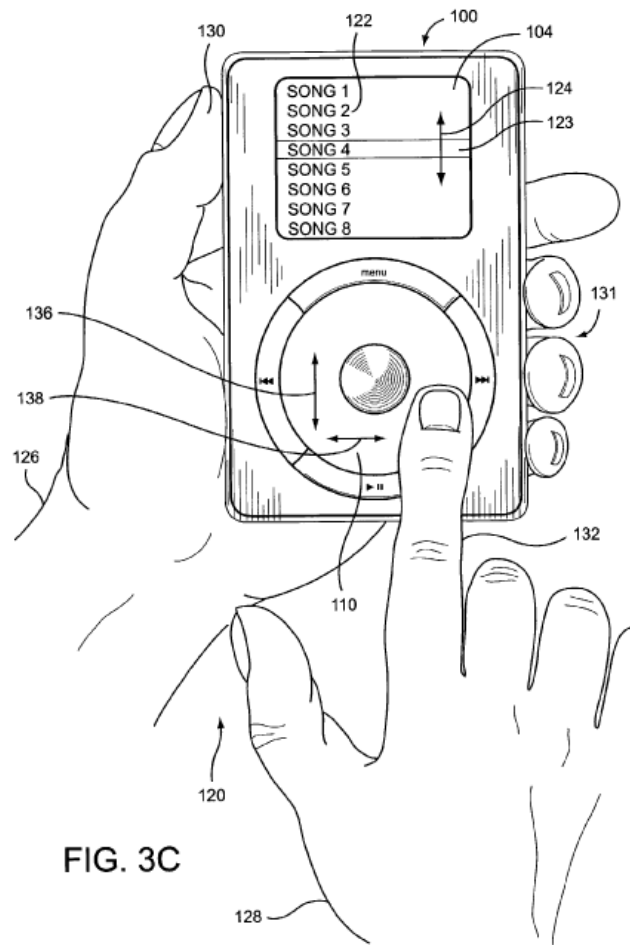
98. This element is met by Jannard. As described above for Ground 1, claim 11[A], Jannard teaches a touchpad that receives touch input to control audio device operations (*e.g.*, fast-forwarding an audio track). (EX1016, 44:4-24.) The POSITA would understand the touchpad to be on a portion of the audio device that is accessible via the user's finger, in order to receive the touch input.

c. **[B] *a storage medium at least partially in the wireless wearable device configured to store at least computer program codes for facilitating an operation of the wireless wearable device based on identifying a sliding user-input action across at least a portion of the touch-sensitive input surface.***

99. This element is met by Jannard in view of Zadesky. For example, Jannard describes that a processor 312 controls audio device 304 by executing stored software (*e.g.*, computer program codes) to perform commands received via user controls 322 (*e.g.*, the touchpad). (EX1016, 42:21-32, 43:65-67, 44:1-3.) The

executable software can be downloaded, and a POSITA would thus understand Jannard to teach a storage medium to store the downloaded software.

100. To the extent that Jannard alone does not expressly disclose *facilitating an operation of the wireless wearable device based on identifying a sliding user-input action across at least a portion of the touch-sensitive input surface*, this element is taught by Jannard in view of Zadesky. For example, Zadesky teaches that a portable media player device includes a touchpad 110 that is configured to “receive input from a finger moving across the surface of the touch pad 110” and control the media player accordingly, *e.g.*, by scrolling through a list of media files on the player, or “vary[ing] a characteristic of the media player,” such as changing the volume. (EX1018, 5:61-6:8, 10:40-51.) The POSITA would understand such input to include a sliding user input, *e.g.*, from a “linear finger motion.” (EX1018, 6:9-11.) FIG. 3C illustrates the sliding input (136, 138) controlling the media player (scroll operation 124):



(EX1018, 8:52-9:21, FIG. 3C.)

101. The POSITA would have combined the sliding-input teachings of Zadesky with the touchpad of Jannard to meet the claim limitation; for example, by configuring the touchpad to recognize sliding user input, as in Zadesky, to control Jannard's audio device operations, *e.g.*, “adjust[ing] volume” or performing “function[s] related to an audio data file.”

(ii) *Motivation to Combine*

102. A POSITA would have been motivated to combine the teachings of Jannard and Burson with Zadesky to meet the claim limitations. For example, as described above, Jannard discloses that audio device 304 can include a touchpad and a processor with executable software to at least control the audio device 304. (EX1016, 41:50-51, 44:1-7, 42:21-32, 43:65-67.) However, the specific details of how user input is provided to the touchpad to control the audio device are not expressly described in Jannard. The POSITA thus would have been motivated to look to other references to supply these missing details from Jannard.

103. The POSITA would have looked to Zadesky because Zadesky describes touchpad input techniques that “facilitate user interaction” with media players such as Jannard’s wearable device; and explains the “numerous” advantages, including ease and speed of use, accessibility, ergonomics. (EX1018, 3:26-37, 4:37-40, 5:61-6:8, 13:36-60.) Zadesky describes using sliding input on a touchpad to improve on audio-device functions, such as volume adjustment, that are performed by Jannard’s touchpad. (EX1018, 10:40-51; EX1016, 44:15-23.) The POSITA would have combined the sliding input with Jannard in order to realize Zadesky’s advantages, such as faster, intuitive, and ergonomic user control. These advantages are especially significant for Jannard’s wearable-glasses format,

in which the user may not be able to see the touchpad (because it is worn on the user's head), and may thus benefit from intuitive touch-based control techniques.

104. Additionally, Jannard and Zadesky describe analogous components (*e.g.*, portable devices, computer processors, touchpad input devices), which are “common” and well-understood. (EX1018, 1:47-48.) And applying Zadesky's teachings could be implemented using the components of Jannard (*e.g.*, user controls 322, processor 312) to perform functions common to both Jannard and Zadesky (*e.g.*, volume control). The combination would further have been compatible with Burson, which applies broadly to “any device having contacts which couple with contacts of a removable device.” (EX1020, 10:65-11:1.) The POSITA therefore would have had a reasonable expectation of success in making the combination.

C. Ground 3: Claims 9, 12-18, 20, and 25 are Rendered Obvious by Jannard in view of Burson and Abreu

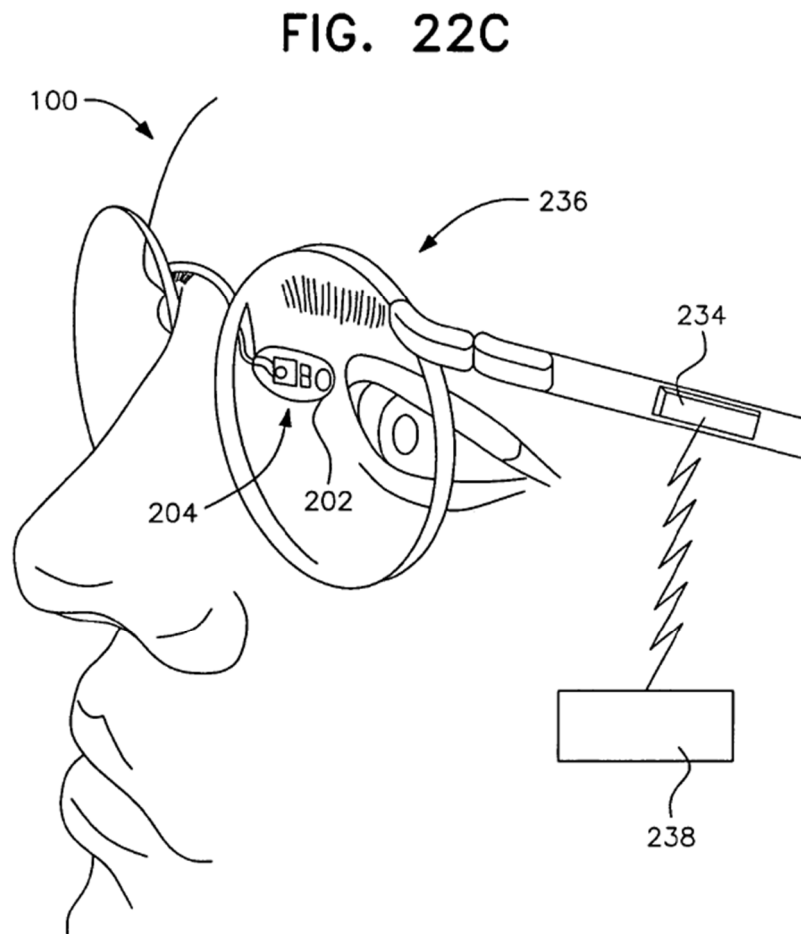
105. It is my view that Jannard in view of Burson and Abreu teaches every limitation of claims 9, 12-18, 20, and 25, for the reasons set forth below.

2. Summary of Abreu

106. Abreu is a U.S. patent issued to inventor Marcio Marc Abreu. Abreu is a continuation of a U.S. patent application that was filed on February 26, 2004.

(EX1019). I understand Abreu is thus prior art to the '599 patent under at least 35 U.S.C. §§ 102(a) and (e).

107. Abreu discloses sensing systems for measuring biological, physical, and/or chemical parameters of a user. (EX1019, 2:52-56.) The sensing systems can include “eyeglasses, head mounted gear and the like.” (EX1016, 3:6-9.) FIG. 22C illustrates an embodiment:



(EX1016, FIG. 22C.)

108. As shown in FIG. 22C, a pair of eyeglasses (236) includes a medial canthal pad (204) with a sensor (202). (EX1019, 45:52-59.) Signals from sensor 202 are wirelessly transmitted from a transmitter (234) housed in the temple of the eyeglasses to a receiving unit (238), such as a watch, cell phone, pager, or handheld computer for processing and display. (EX1019, 45:52-59.)

3. Claim 9

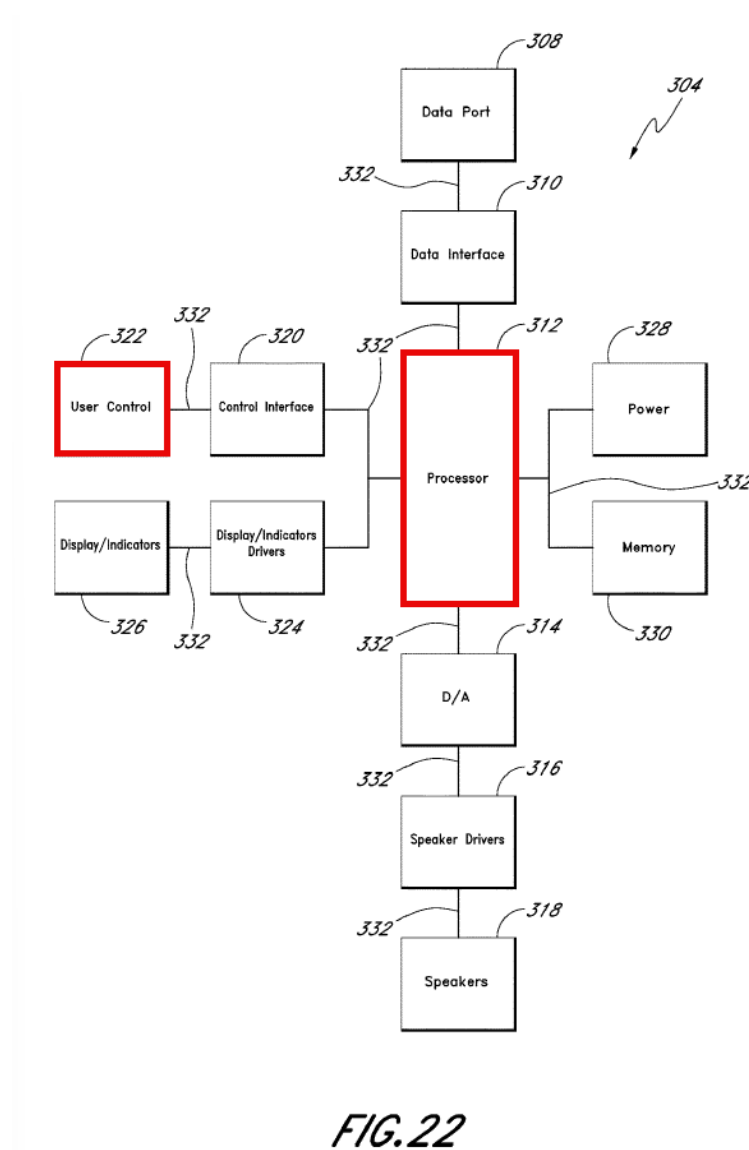
a. **[Preamble] *A wireless wearable device as recited in claim 2 comprising***

109. The preamble is met as described for claim 2.

b. **[A] *a controller at least partially in the wireless wearable device configured to determine whether the wireless wearable device is being worn based on outputs from a sensor at least partially in the wireless wearable device.***

110. This element is met by Jannard in view of Abreu. For example, Abreu discloses that in a head-mounted device such as sunglasses, “pressure sensing devices” can be “incorporated in the end of the temples to detect if the sunglasses are being worn,” such that a decrease in the pressure signal indicates the glasses were removed. (EX1019, 16:2-7.) The POSITA would have combined Abreu’s teaching of pressure sensors with Jannard, such that Jannard’s user controls 322 would include such a sensor to determine if the glasses are being worn. Jannard’s audio device 304 includes a processor 312—a controller in the

device that executes commands received via user controls 322. (EX1016, 41:46-49, 43:65-44:23.) FIG. 22 illustrates:



(EX1016, FIG. 22 (annotated).)

(ii) Motivation to Combine

111. The POSITA would have been motivated to combine the teachings of Jannard and Burson with Abreu to meet the claim limitations. For example,

Jannard explains that user controls 322 can include sensors that are “responsive to any biometric provided by a user to control the audio device 304.” (EX1016, 44:4-14.) While Jannard provides some examples, such as sensors that monitor eye movement, Jannard does not enumerate all sensors that could be used. (EX1016, 44:4-14.) The POSITA would thus have been motivated to look to other references for additional sensors (*e.g.*, biometric sensors) that could be advantageously used with Jannard and Burson. The POSITA would have looked to Abreu, which relates to head-mounted devices, including eyeglasses such as in Jannard, and teaches biometric sensors that can be beneficially used with such devices.

112. Further, the POSITA would have been motivated to apply Abreu’s teachings of using pressure sensors to detect whether the eyeglasses are being worn, at least because Abreu describes that this feature is useful for determining whether a user’s glasses have been removed—which can have user safety benefits that the POSITA would have desired. (EX1019, 15:63-16:7.)

113. Further, as the POSITA would have understood, Abreu’s teachings would have been used to improve Jannard’s sleep mode. Jannard discloses that such a sleep state is entered after a period of non-use (*e.g.*, 5 minutes), in order to conserve power consumption; but this could be improved by entering the sleep state based on a determination by Abreu’s pressure sensor that the device is not

being worn. (EX1016, 44:63-45:3.) This would beneficially allow the device to further conserve power by entering the sleep state without having to wait for the period of non-use to elapse.

114. The POSITA would have had a reasonable expectation of success in making the combination at least because Jannard and Abreu describe analogous devices (electronic eyeglasses) that utilize common and well-understood components (*e.g.*, sensors, a power source, microcontroller, and transmitter) used in standard ways for analogous purposes (*e.g.*, sensing). (EX1016, 22:13-38, 35:4-9, 42:25-28, 47:30-32; EX1019, 10:43-50.) Jannard invites the combination by disclosing that user controls 322 include biometric sensors, of the kind described in Abreu, further suggesting the references' teachings are compatible. (EX1016, 44:4-14.) The combination would further have been compatible with Burson, which applies broadly to "any device having contacts which couple with contacts of a removable device." (EX1020, 10:65-11:1.)

4. Claim 12

a. [Preamble] *A wireless wearable device as recited in claim 2 comprising*

115. The preamble is met as described for claim 2.

b. [A] *an area configured for attachment via magnetic force.*

116. This element is met by Jannard in view of Abreu. For example, Jannard describes that attachments “may be provided as desired anywhere along the length of the frame, lenses or orbitals” of the audio device, which the POSITA would understand to disclose that the audio device includes an area for attachments. (EX1016, 36:17-19.) Further, Jannard describes that support arms 68, 70 can be “attached” to respective ear stems of the audio device with “mechanical devices (*not shown*) configured to allow the support arms 68, 70 to be adjustable.” (EX1016, 8:17-20.)

117. To the extent that Jannard alone does not teach the area *configured for attachment via magnetic force*, this element is taught by Jannard in combination with Abreu. For example, as described above, Jannard discloses that the audio device describes that areas of the audio device can receive attachments. Abreu discloses clip-on 340 which can be attached to eyeglasses via a magnet (i.e., attachment device 338), which the POSITA would understand to disclose that the eyeglasses have a corresponding magnet to at least enable the clip-on to attach to the eyeglasses. (EX1019, 47:51-60.) The POSITA would further understand that magnet of the clip-on and the corresponding magnetic on the eyeglasses attach via magnetic force.

(ii) *Motivation to Combine*

118. The POSITA would have been motivated to combine the teachings of Jannard and Burson with Abreu to meet the claim limitations. For example, as described above, Jannard discloses that areas of the audio device can receive attachments. However, the specific details of how the attachments are attached are missing. Further, as described above, Jannard discloses that support arms can be attached to respective ear stems of the audio device with “not shown” mechanical devices. (EX1016, 8:17-20.) The POSITA thus would have been motivated to look to other references to supply these missing details from Jannard.

119. The POSITA would have looked to Abreu, which (like Jannard) discloses eyeglasses with electrical functionality. For example, both Abreu and Jannard disclose eyeglasses with sensors, a power source, microcontroller, and transmitter. (EX1016, 22:13-38, 35:4-9, 42:25-28, 47:30-32; EX1019, 10:43-50.) Further, both Abreu and Jannard disclose that functional attachments can be added to the eyeglasses. (EX1016, 36:17-19; EX1019, 51-60.) Abreu supplies implementation detail not specific in Jannard: that the attachments can be connected via magnetic force. The POSITA thus would have been motivated to apply Abreu’s magnetic force teachings to Jannard. Moreover, Abreu and Jannard utilize analogous hardware components (eyeglasses, sensors, power source), thus the POSITA would have had a reasonable expectation of success in making the

combination. The combination would further have been compatible with Burson, which applies broadly to “any device having contacts which couple with contacts of a removable device.” (EX1020, 10:65-11:1.)

5. Claim 13

- a.** *[Preamble] A wireless wearable device as recited in claim 12 comprising*

120. The preamble is met as described for claim 12.

- b.** *[A] a magnet in the area.*

121. This element is met as described for claim 12[A].

6. Claim 14

- a.** *[Preamble] A wireless wearable device as recited in claim 12 comprising*

122. The preamble is met as described for claim 12.

- b.** *[A] a storage medium at least partially in the wireless wearable device configured to store at least computer program codes for facilitating voice recognition to recognize at least a word received at least by the microphone for an operation of the wireless wearable device.*

123. This element is met as described for claim 6[A].

7. Claim 15

- a.** *[Preamble] A wireless wearable device as recited in claim 14 comprising*

124. The preamble is met as described for claim 14.

- b. *[A] wireless communication circuitry at least partially in the wireless wearable device configured for coupling to at least a wireless network.*

125. This element is met by Jannard. For example, Jannard describes that “the audio device 10C preferably comprises... an interface device 110. The interface device 110 includes... a transceiver 114.” (EX1016, 22:3-8.) FIG. 9A illustrates such an embodiment:

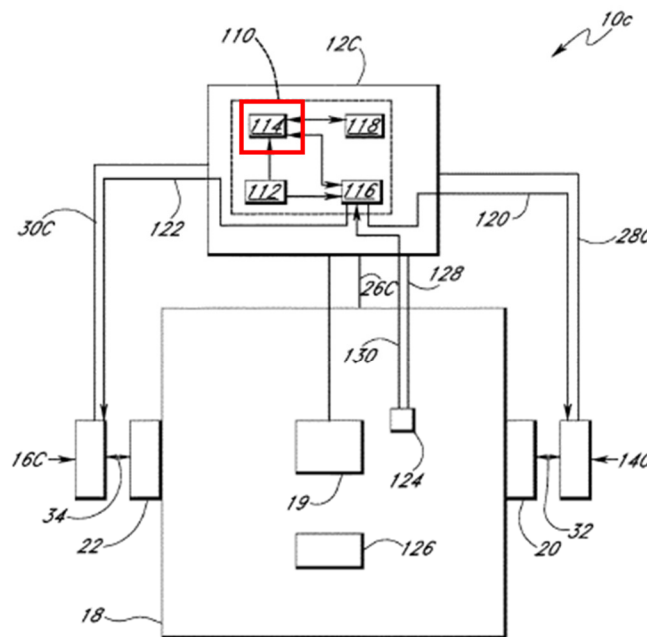


FIG. 9A

(EX1016, FIG. 9A (annotated).)

126. Jannard explains that the “[t]he transceiver 114 can be in the form of a digital wireless transceiver for one-way or two-way communication. For example, the transceiver 114 can be a transceiver used in known wireless networking

devices that operate under... the standard that has become known as
BLUETOOTH™.” (EX1016, 22:13-18.)

8. Claim 16

- a. ***[Preamble] A wireless wearable device as recited in claim 15 comprising***

127. The preamble is met as described for claim 15.

- b. ***[A] a pressure sensor at least partially in the wireless wearable device.***

128. This element is met as described for claim 9[B].

9. Claim 17

- a. ***[Preamble] A wireless wearable device as recited in claim 15 comprising***

129. The preamble is met as described for claim 15.

- b. ***[A] a controller at least partially in the wireless wearable device configured to determine whether the wireless wearable device is being worn based on outputs from a sensor at least partially in the wireless wearable device.***

130. This element is met as described for claim 9[A].

10. Claim 18

- a. ***[Preamble] A wireless wearable device as recited in claim 17 comprising***

131. The preamble is met as described for claim 17.

- b. ***[A] a motion sensor at least partially in the wireless wearable device.***

132. This element is met as described for claim 10[A].

11. Claim 20

- a. ***[Preamble] A wireless wearable device, to at least help a user hear audio outputs produced by the device, with at least a portion of the wireless wearable device configured to be worn in an ear of the user, and the wireless wearable device comprising:***

133. The preamble is met as described for claim 1[Preamble].

- b. ***[A] a speaker at least partially in the wireless wearable device;***

134. This element is met as described for claim 1[A].

- c. ***[B] an electrical connector at least partially in the wireless wearable device, wherein the electrical connector includes at least two conductive areas, each area on a surface of the wireless wearable device, and***

135. This element is met as described for claim 1[B].

- d. ***[C] wherein the at least two conductive areas are configured to removably couple to corresponding conductive contacts of a counterpart connector external to and separate from the wireless wearable device, at least via spring-force, to at least enable each of the at least two conductive areas to be electrically connected to its corresponding conductive contact;***

136. This element is met as described for claim 1[C].

- e. ***[D] a rechargeable battery at least partially in the wireless wearable device, with the battery configured to be charged via at least the electrical connector;***

137. This element is met as described for claim 1[D].

- f. ***[E] a microphone at least partially in the wireless wearable device;***

138. This element is met as described for claim 1[E].

- g. ***[F] another microphone at least partially in the wireless wearable device configured to capture at least sound in vicinity of the wireless wearable device, wherein the microphone is configured to be positioned closer to mouth of the user than the another microphone, when the wireless wearable device is worn by the user;***

139. This element is met as described for claim 2[A] and claim 5[A].

- h. ***[G] a storage medium at least partially in the wireless wearable device configured to store at least computer program codes for facilitating voice recognition to recognize at least a word received at least by the microphone for an operation of the wireless wearable device;***

140. This element is met as described for claim 6[A].

- i. ***[H] wireless communication circuitry at least partially in the wireless wearable device; and***

141. This element is met by Jannard. For example, Jannard describes that

“the audio device 10C preferably comprises... an interface device 110. The

interface device 110 includes... a transceiver 114.” (EX1016, 22:3-8.) FIG. 9A illustrates such an embodiment:

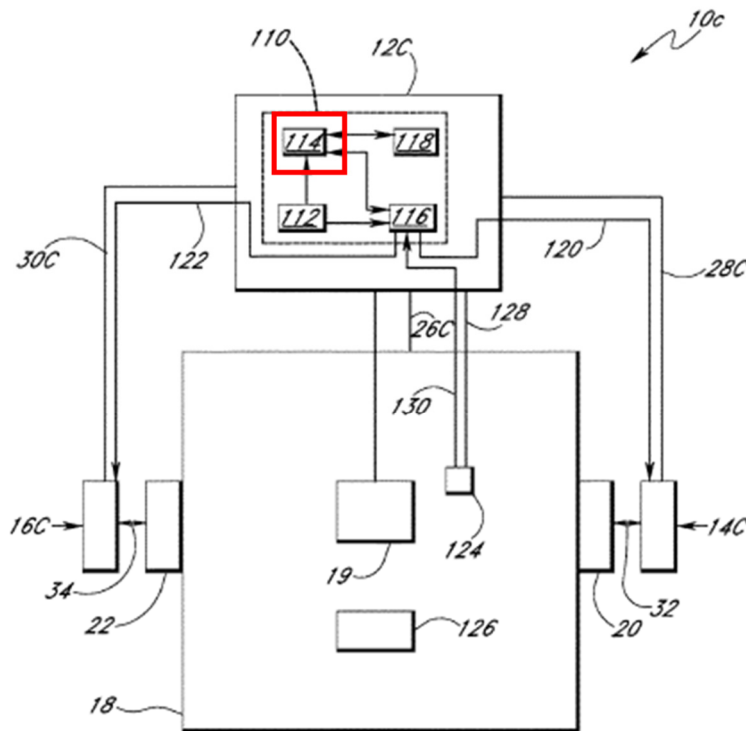


FIG. 9A

(EX1016, FIG. 9A (annotated).)

142. Jannard explains that the “[t]he transceiver 114 can be in the form of a digital wireless transceiver for one-way or two-way communication. For example, the transceiver 114 can be a transceiver used in known wireless networking devices that operate under... the standard that has become known as BLUETOOTH™.” (EX1016, 22:13-18.)

- j. ***[I] an area configured for attachment via magnetic force.***

143. This element is met as described for claim 12[A].

12. Claim 25

- a. ***[Preamble] A wireless wearable device as recited in claim 24 comprising***

144. The preamble is met as described for claim 24.

- b. ***[A] an area configured for attachment via magnetic force.***

145. This element is met as described for claim 13[A].

D. Ground 4: Claims 19 and 21-23 are Rendered Obvious by Jannard in view of Burson, Abreu, and Zadesky

146. It is my view that Jannard in view of Burson, Abreu, and Zadesky teaches every limitation of claims 19 and 21-23, for the reasons set forth below.

2. Claim 19

- a. ***[Preamble] A wireless wearable device as recited in claim 18 comprising***

147. The preamble is met as described for claim 18.

- b. ***[A] a touch-sensitive input surface on the wireless wearable device, wherein the touch-sensitive input surface is configured to facilitate generating at least an electrical signal for an operation of the wireless wearable device based on receiving at least a touch input.***

148. This element is met as described for claim 11[A].

3. Claim 21

- a. **[Preamble] *A wireless wearable device as recited in claim 20 comprising:***

149. The preamble is met as described for claim 20.

- b. **[A] *a touch-sensitive input surface on a portion of the wireless wearable device; and***

150. This element is met as described for claim 8[A].

- c. **[B] *electronic circuitry configured to identify a sliding user-input action across at least a portion of the touch-sensitive input surface.***

151. This element is met as described for claim 8[B].

4. Claim 22

- a. **[Preamble] *A wireless wearable device to at least help a user hear audio outputs produced by the device, with at least a portion of the wireless wearable device to be worn in an ear of the user, and the wireless wearable device comprising:***

152. The preamble is met as described for claim 1[Preamble].

- b. **[A] *a speaker at least partially in the wireless wearable device;***

153. This element is met as described for claim 1[A].

- c. **[B] *an electrical connector at least partially in the wireless wearable device, wherein the electrical connector includes at least two conductive areas, each area on a surface of the wireless wearable device, and***

154. This element is met as described for claim 1[B].

- d. ***[C] wherein the at least two conductive areas are configured to removably couple to corresponding conductive contacts of a counterpart connector external to and separate from the wireless wearable device, at least via spring-force, to at least enable each of the at least two conductive areas to be electrically connected to its corresponding conductive contact;***

155. This element is met as described for claim 1[C].

- e. ***[D] a rechargeable battery at least partially in the wireless wearable device, with the battery configured to be charged via at least the electrical connector;***

156. This element is met as described for claim 1[D].

- f. ***[E] a microphone at least partially in the wireless wearable device;***

157. This element is met as described for claim 1[E].

- g. ***[F] another microphone at least partially in the wireless wearable device configured to capture at least sound in vicinity of the wireless wearable device, wherein the microphone is configured to be positioned closer to mouth of the user than the another microphone, when the wireless wearable device is worn by the user;***

158. This element is met as described for claim 2[A] and claim 5[A].

- h. ***[G] wireless communication circuitry at least partially in the wireless wearable device;***

159. This element is met as described for claim 20[H].

- i. ***[H] a touch-sensitive input surface on the wireless wearable device, wherein the touch-sensitive input surface is configured to facilitate generating at least an electrical signal for an operation of the wireless wearable device based on receiving at least a touch input; and***

160. This element is met as described for claim 11[A].

- j. ***[I] an area configured for attachment via magnetic force.***

161. This element is met as described for claim 12[A].

5. Claim 23

- a. ***[Preamble] A wireless wearable device as recited in claim 22 comprising:***

162. The preamble is met as described for claim 22.

- b. ***[A] a pressure sensor at least partially in the wireless wearable device; and***

163. This element is met as described for claim 9[A].

- c. ***[B] a controller at least partially in the wireless wearable device configured to determine whether the wireless wearable device is being worn based on outputs from a sensor at least partially in the wireless wearable device.***

164. This element is met as described for claim 9[A].

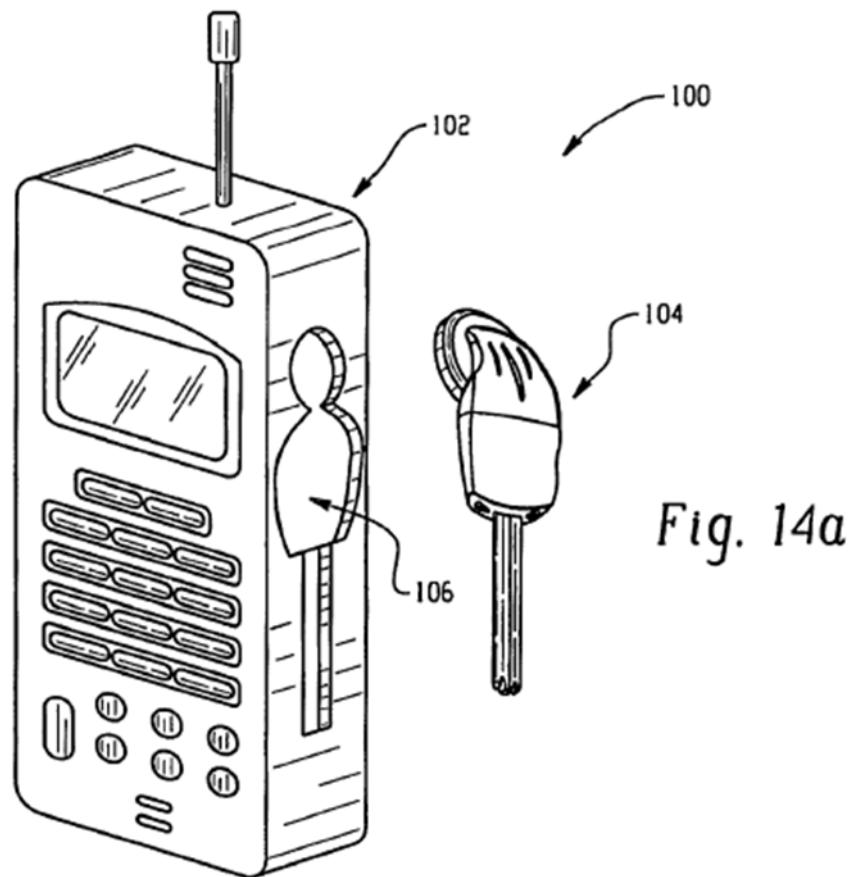
VII. GRIFFIN RENDERS OBVIOUS CLAIMS 1-25**A. Ground 5: Claims 1-7, 14-15, 20, and 24 are Rendered Obvious by Griffin**

165. It is my view that Griffin teaches every limitation of claims 1-7, 14-15, 20, and 24, for the reasons set forth below.

2. Summary of Griffin

166. Griffin is a U.S. patent that was filed on October 24, 2003, published on April 1, 2004, and issued on Dec. 25, 2007. (EX1016, (63).) I understand Griffin is thus prior art to the '599 patent under at least 35 U.S.C. §§102(a), (b), and (e).

167. Griffin discloses wearable audio devices, such as earbuds, that communicate wirelessly with a remote audio source, such as a cell phone. (EX1016, 1:44-2:2, 7:62-8:14.) Griffin's earbuds are rechargeable and include a connector plug to couple to a recharging device, such as a cradle. (EX1016, 5:9-36.) FIG. 14a illustrates an earbud configured to removably attach to a cell phone:



(EX1016, FIG. 14a, 8:2-7.)

168. Griffin is analogous art to the claimed invention at least because it is directed to the same field of endeavor—wearable devices with integrated audio functionality to interact with remote portable devices. By disclosing wearable systems (e.g., eyeglasses; earbuds) that present audio from remote audio devices such as cell phones, Griffin is reasonably pertinent to the problem faced by the '599 patent inventors.

3. Claim 1

- a. ***[Preamble] A wireless wearable device, with at least a portion of the wireless wearable device configured to be worn in at least one ear of a user, to at least help the user hear audio outputs produced by the device, the wireless wearable device comprising:***

169. The preamble is met by Griffin. For example, Griffin discloses a wireless wearable communication device 10 having a first communication module 12 (*e.g.*, a mobile communications device such as a cell phone); and a detachable second communication module 14 that is “physically dimensioned so that it may be fitted into or onto an ear of a communication device user.” (EX1017, 1:53-55, 2:53:57, 2:65-3:16, 9:58-10:5, FIG. 1, FIG. 17.) The second communication module 14 includes a speaker, which is “placed in the ear of a communication device user,” to present audio output to the user. (EX1017, 3:61-67, FIG. 4.) The second communication module can include a short-range wireless transceiver 192 and an antenna 194 for wireless communication with the first communication module. (EX1017, 9:24-66.) FIG. 16 illustrates:

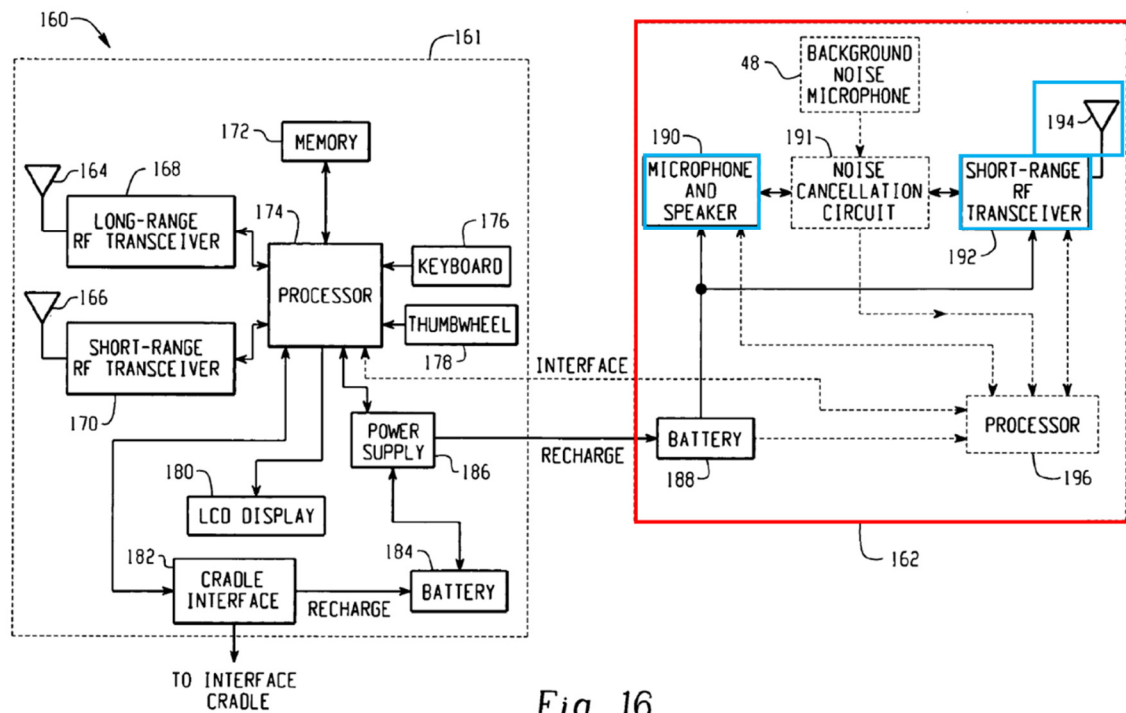
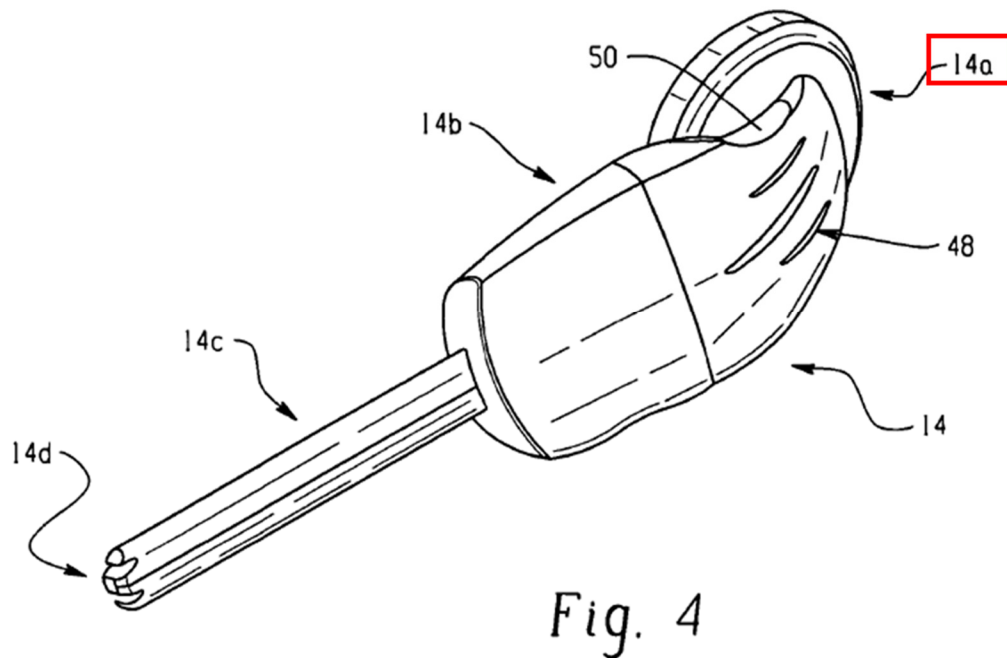


Fig. 16

(EX1017, FIG. 16.)

b. [A] a speaker at least partially in the wireless wearable device; and

170. This element is met by Griffin. For example, Griffin describes that the second communication module 14 “includes” a speaker 14a, which the POSITA would understand to disclose that the speaker is at least partially within the second communication device. (EX1017, 3:61-65.) FIG. 4 illustrates:



(EX1017, FIG. 4.)

- c. **[B] an electrical connector at least partially in the wireless wearable device, wherein the electrical connector includes at least two conductive areas, each area on a surface of the wireless wearable device, and**

171. This element is met by Griffin. For example, Griffin describes that the second communication module can include charging terminals 56 for recharging a rechargeable power source also included in the second communication module. (EX1017, 4:30-65.) Griffin explains that the charging terminals 56 “preferably mate with corresponding charging terminals 46 on the first communication module 12” when the second communication module is mounted in the first communication module. (EX1017, 4:30-65.) The POSITA

would understand the charging terminals to include an electrical connector (i.e., for connecting to the corresponding terminals of the first communication module).

Further, Griffin discloses at least two conductive areas, each area on a surface of the audio device, such as depicted in FIG. 5:

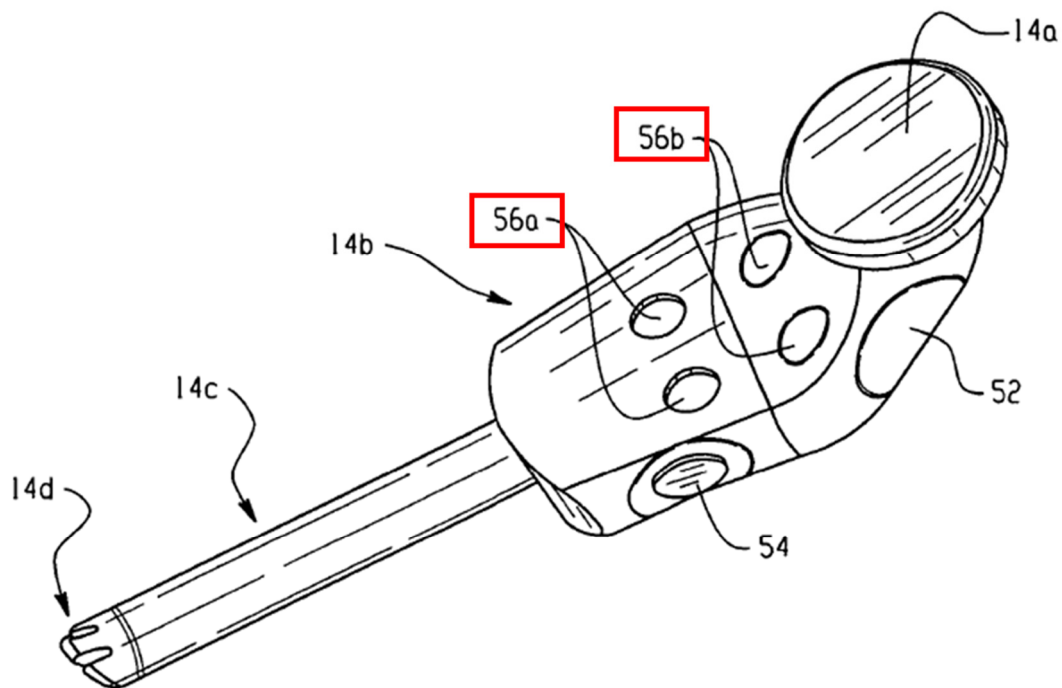


Fig. 5

(EX1017, FIG. 5 (annotated).)

- d. [C] *wherein the at least two conductive areas are configured to removably couple to corresponding conductive contacts of a counterpart connector external to and separate from the wireless wearable device, at least via spring-force, to at least enable each of the at least two conductive areas to be electrically connected to its corresponding conductive contact;*

172. This element is met by Griffin. For example, Griffin describes that to recharge the power source, the second communication module 14 can be inserted into a cavity 16 of the first communication module, where charging terminals 56 of the second communication module preferably mate with “corresponding charging terminals 46” of the first communication module. (EX1017, 4:30-65.) FIG. 7 illustrates the charging terminals 46, and FIG. 8 illustrates the charging terminals 56:

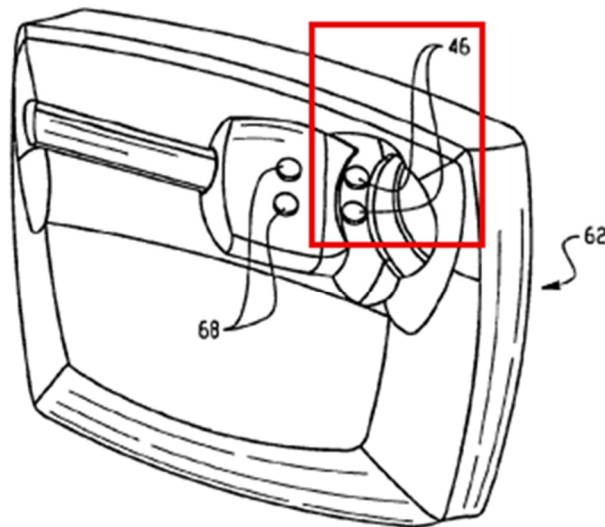
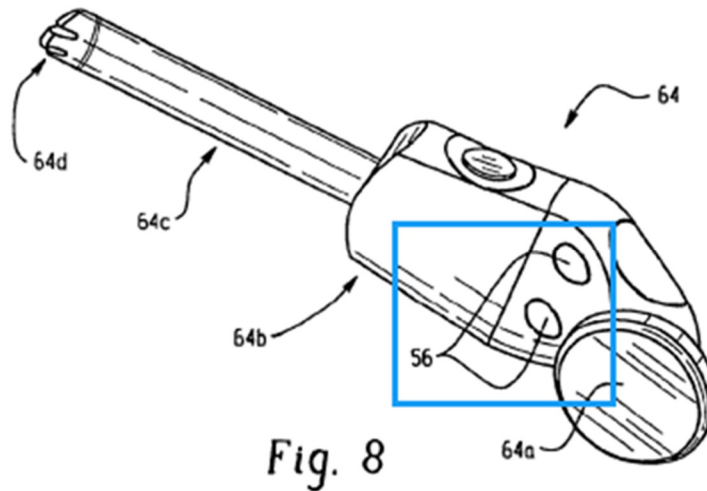


Fig. 7



(EX1017, FIG. 7 (annotated), FIG. 8 (annotated).)

173. Griffin provides mechanical detail for how the charging terminals 46 couple to charging terminals 56. For example, “springs or otherwise elastically-biased protrusions or hooks, may be included on the first or second communication module that cooperate with appropriate mating retention means on the other of the first or second communication module.” (EX1017, 3:51-55.) The POSITA would understand elastically-biased springs to utilize a spring force to couple to and separate from with the retention means.

- e. **[D] a rechargeable battery at least partially in the wireless wearable device, with the battery configured to be charged via at least the electrical connector; and**

174. This element is met by Griffin. For example, Griffin describes that the second communication “preferably includes a rechargeable power source” (i.e., a rechargeable battery) that is charged “through the charging terminals 46 and 56,” as described above for elements [B] and [C]. (EX1017, 4:51-60.)

- f. **[E] a microphone at least partially in the wireless wearable device.**

175. This element is met by Griffin. For example, Griffin describes that the second communication module 14 includes at least one microphone 14d. (EX1017, 3:61-65.) FIG. 4 illustrates:

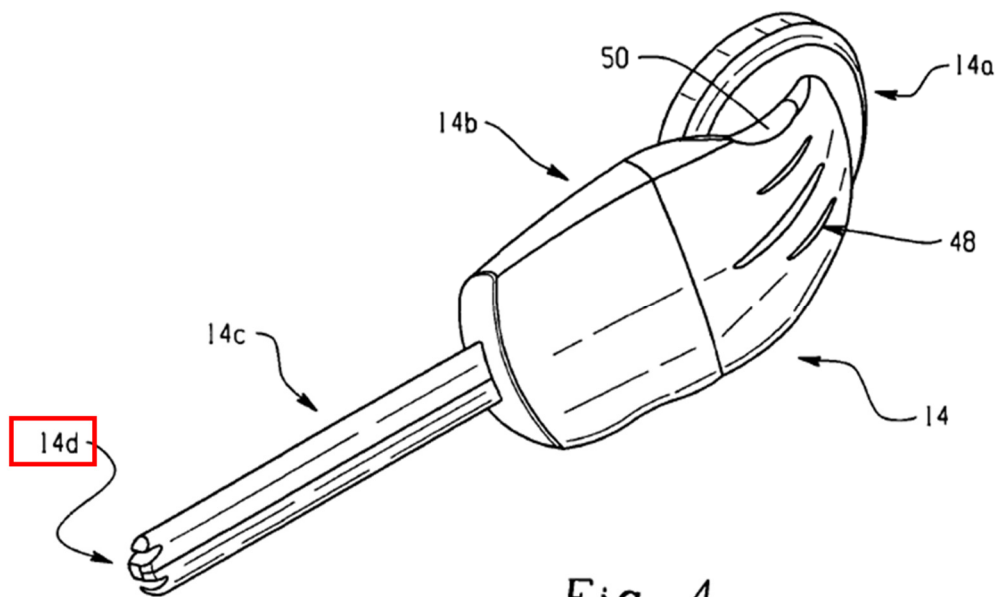


Fig. 4

(EX1017, FIG. 4 (annotated).)

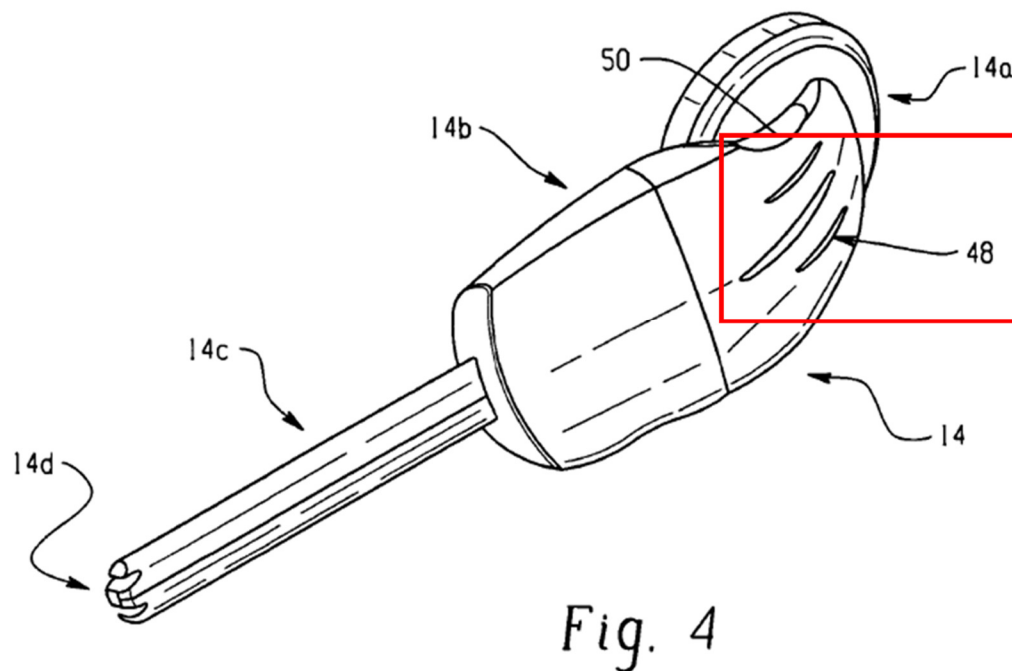
4. Claim 2

- a. **[Preamble]** *A wireless wearable device as recited in claim 1 comprising*

176. The preamble is met as described for claim 1.

- b. **[A]** *another microphone at least partially in the wireless wearable device configured to capture at least sound in vicinity of the wireless wearable device.*

177. This element is met by Griffin. For example, Griffin describes that the second communication module can include a background noise microphone 48 that “detects background noise signals. (EX1017, 4:11:29.) FIG. 4 illustrates:



(EX1017, FIG. 4 (annotated).)

178. The POSITA would understand the background noise microphone to capture sound in the vicinity of the second communication module.

5. Claim 3

- a. [Preamble] *A wireless wearable device as recited in claim 2 comprising***

179. The preamble is met as described for claim 2.

- b. [A] *electronic circuitry at least partially in the wireless wearable device configured to cancel at least a portion of the sound captured by the another microphone to produce the audio outputs.***

180. This element is met by Griffin. Griffin describes that the second communication module can include a “noise cancellation circuit” (i.e., electronic circuitry) which subtracts the background noise signals (i.e., captured by the background noise microphone 48) from the sound from the microphone 14d. (EX1017, 4:18-29.) Griffin explains that the noise cancellation circuitry may execute “noise cancellation operations for the desired but corrupted voice or audio signals” received at the microphone 120d (i.e., an embodiment of microphone 14d). (EX1017, 8:29-33.) Based on these disclosures, the POSITA would understand the second communication module’s circuitry to cancel sound captured by the background noise microphone, in order to reduce or eliminate noise in the audio output (e.g., to provide the desired audio signals). FIG. 16 illustrates:

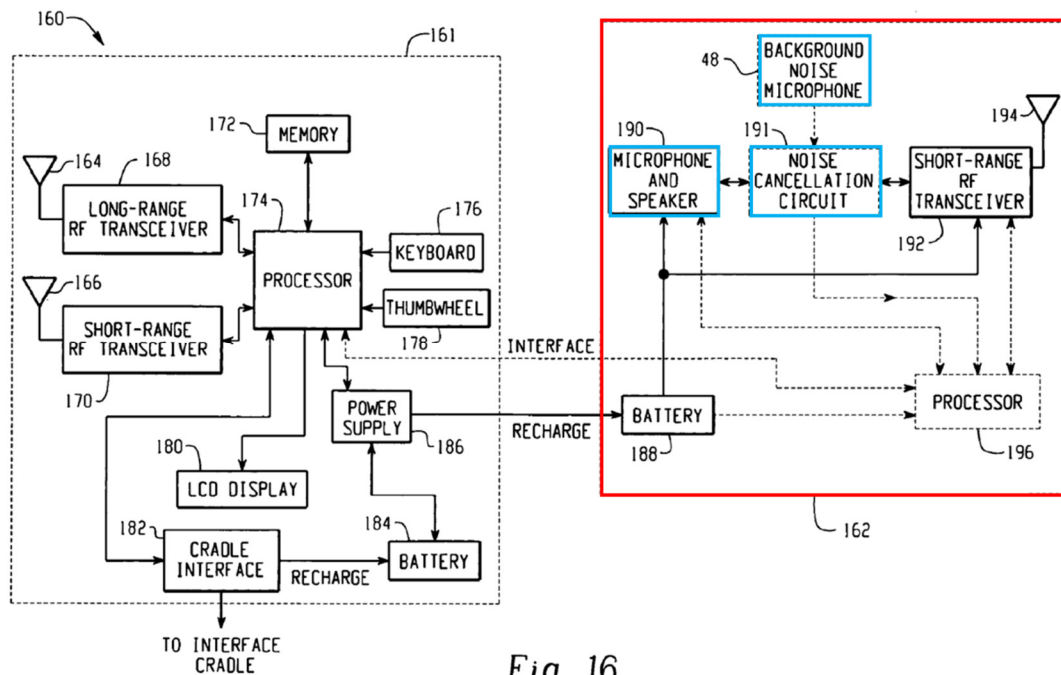


Fig. 16

(EX1017, FIG. 16 (annotated).)

6. Claim 4

- a. **[Preamble]** *A wireless wearable device as recited in claim 2,*

181. The preamble is met as described for claim 2.

- b. **[A]** *wherein at least the microphone and the another microphone are configured to receive audio inputs, with at least some sound in the audio inputs configured to be cancelled based on using at least the microphone and the another microphone.*

182. This element is met as described for claim 3[A].

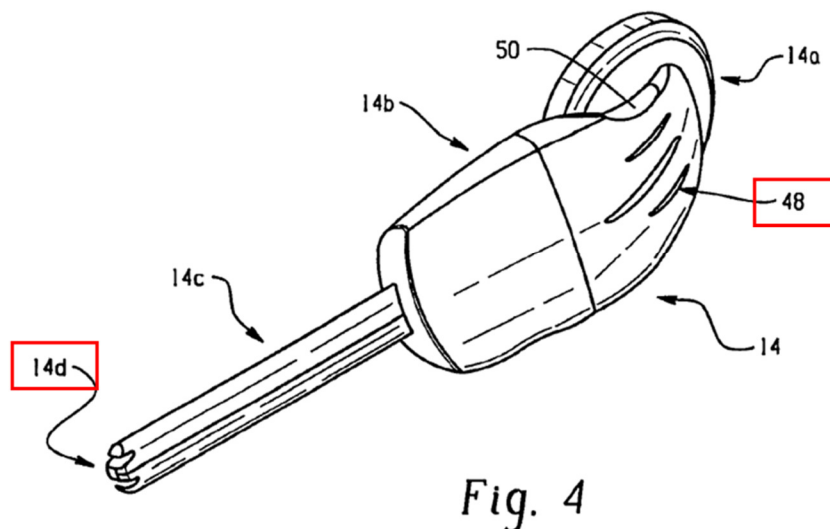
7. Claim 5

- a. **[Preamble]** *A wireless wearable device as recited in claim 2,*

183. The preamble is met as described for claim 2.

- b. **[A]** *wherein the microphone is configured to be positioned closer to mouth of the user than the another microphone, when the wireless wearable device is worn by the user.*

184. This element is met by Griffin. Griffin explains that “the microphone 14d is located in the proximity of the communication device user’s mouth when the [second communication] module 14 is in use.” (EX1017, 4:12-14.) FIG. 4 illustrates that the background noise cancellation microphone 48 is positioned farther away from the mouth of the user:



(EX1017, FIG. 4 (annotated).)

8. Claim 6

- a. [Preamble] *A wireless wearable device as recited in claim 2 comprising***

185. The preamble is met as described for claim 2.

- b. [A] *a storage medium at least partially in the wireless wearable device configured to store at least computer program codes for facilitating voice recognition to recognize at least a word received at least by the microphone for an operation of the wireless wearable device.***

186. This element is met by Griffin. For example, Griffin describes that the second communication module can include a processor 196, which the POSITA would understand to include codes that control aspects of the second communication module. Griffin explains that the modules (i.e., first and second) can be “adapted for voice control,” such that the user can speak into the microphone of the second communication module to “control execution” of functions by the first module. (EX1017, 11:3-14.) The POSITA would understand that functions by the first module necessarily alters operation of the second module, such as by enabling the user to “participate in a voice call” by receiving/transmitting audio to the first module (e.g., via the transceiver, microphone, and speaker). (EX1017, 11:4-8.) FIG. 16 illustrates:

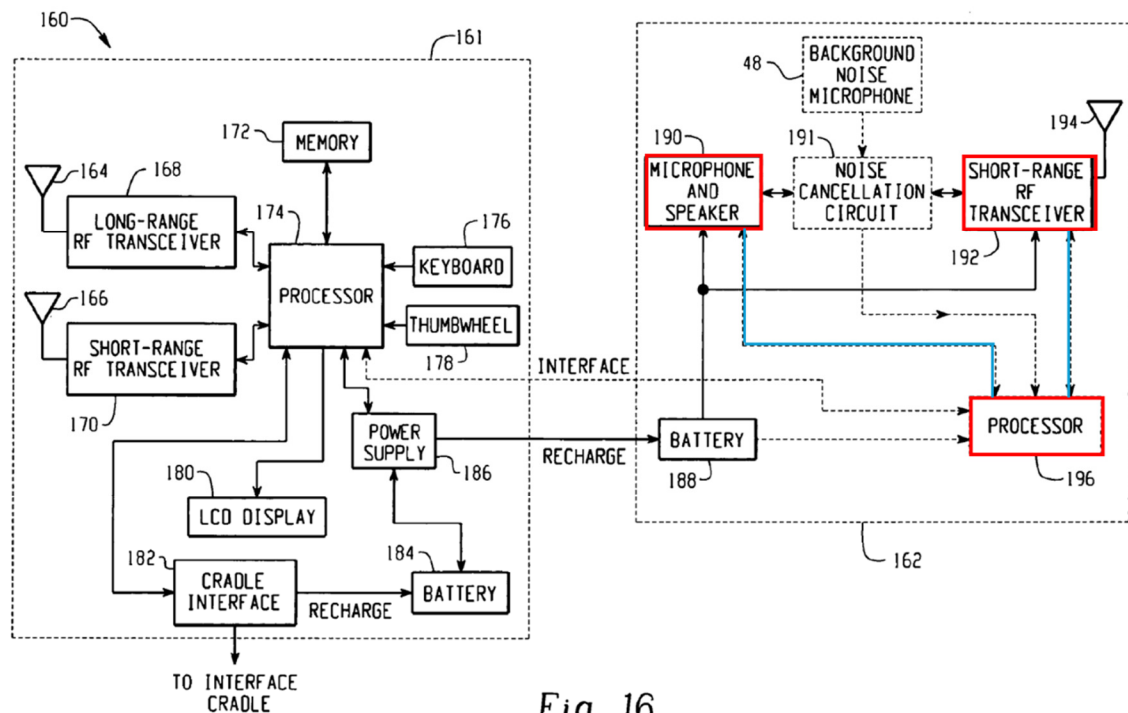


Fig. 16

(EX1017, FIG. 16 (annotated).)

9. Claim 7

- a. **[Preamble]** *A wireless wearable device as recited in claim 2 comprising*

187. The preamble is met as described for claim 2.

- b. **[A]** *wireless communication circuitry at least partially in the wireless wearable device configured for coupling to at least a Bluetooth network.*

188. This element is met by Griffin. For example, Griffin describes that the second communication module includes “a short-range wireless transceiver 192,” that enables short-range “wireless communications” between the first and

second modules. (EX1017, 9:27-31, 9:61-66.) The POSITA would understand “short-range communication” to disclose coupling to a Bluetooth network.

(EX1017, 9:61-64.) For example, the ’599 patent describes that Bluetooth is a type of “short-distance wireless transmission standard.” (EX1001, 44:4-12.)

10. Claim 24

- a. ***[Preamble] A wireless wearable device to at least help a user hear audio outputs produced by the device, with at least a portion of the wireless wearable device to be worn in an ear of the user, the wireless wearable device comprising:***

189. The preamble is met as described for claim 1[Preamble].

- b. ***[A]an electrical connector at least partially in the wireless wearable device, wherein the electrical connector includes at least two conductive areas, each area on a surface of the wireless wearable device, and***

190. This element is met as described for claim 1[B].

- c. ***[B]wherein the at least two conductive areas are configured to removably couple to corresponding conductive contacts of a counterpart connector of an apparatus external to and separate from the wireless wearable device, at least via spring-force, to at least enable each of the at least two conductive areas to be electrically connected to its corresponding conductive contact;***

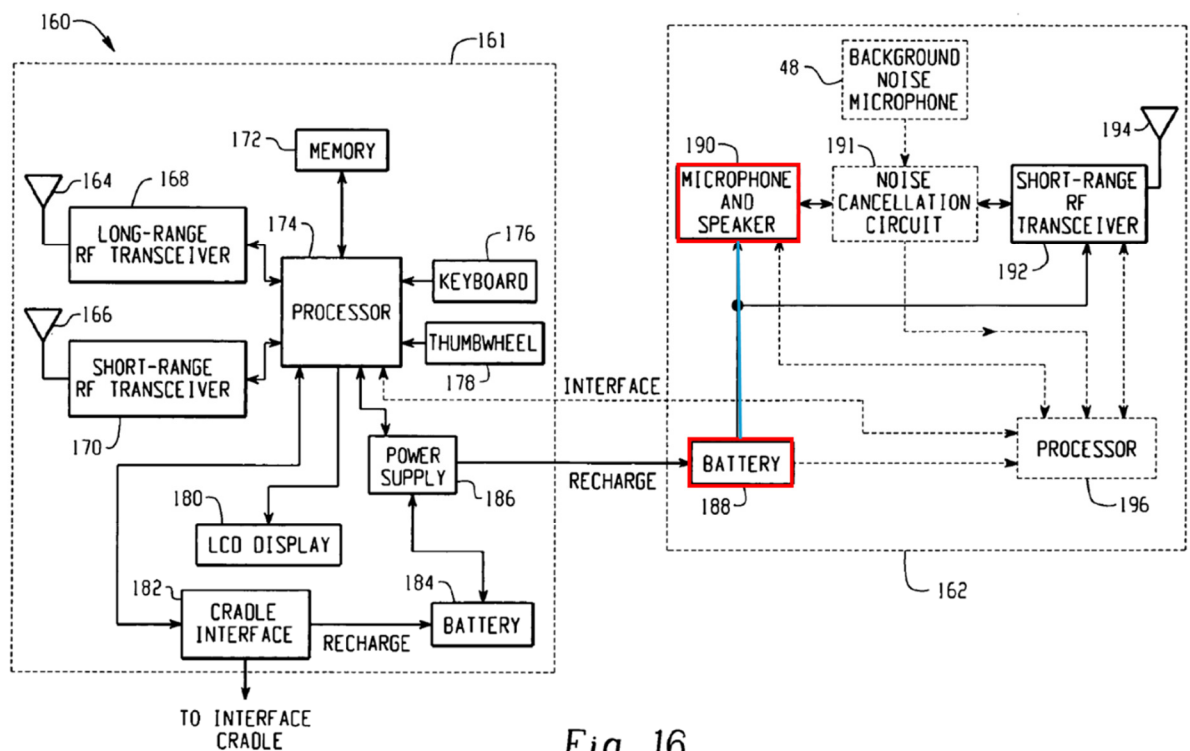
191. This element is met as described for claim 1[C].

- d. **[C]** *a rechargeable battery in the wireless wearable device, with the battery configured to be charged via at least the electrical connector;*

192. This element is met as described for claim 1[D].

- e. **[D]** *a speaker at least partially in the wireless wearable device, with the battery configured to provide power to the speaker;*

193. This element is met by Griffin. For example, Griffin's second communication module includes a speaker. (EX1017, 9:27-31.) FIG. 16 illustrates that the battery (i.e., rechargeable power source, as described in 1[D]) connects to the speaker (and microphone), to at least provide power to the speaker (and microphone):



(EX1017, FIG. 16 (annotated).)

- f. ***[E] a first microphone, at least partially in the wireless wearable device, configured to capture at least sound in vicinity of the wireless wearable device, with the battery configured to provide power to the first microphone; and***

194. This element is met by Griffin. As described above for claim 2, element [A], Griffin teaches that the second communication module can include a background noise microphone 48 to capture background noise signals. (EX1017, 4:11:29.)

195. As described above, Griffin's battery provides power to the microphone (i.e., microphone 14d). The POSITA would understand then that the battery provides power to the background noise microphone.

- g. ***[F] a second microphone, at least partially in the wireless wearable device,***

196. This element is met as described for claim 24[E].

- h. ***[G] wherein the battery is configured to provide power to the second microphone, and***

197. This element is met as described for claim 24[E].

- i. ***[H] wherein the second microphone is configured to be positioned closer to mouth of the user than the first microphone, when the wireless wearable device is worn by the user.***

198. This element is met as described for claim 5[A].

B. Ground 6: Claims 8 and 11 are Rendered Obvious by Griffin in view of Zadesky

199. It is my view that Griffin in view of Zadesky teaches every limitation of claims 8 and 11, for the reasons set forth below.

2. Claim 8

a. [Preamble] *A wireless wearable device as recited in claim 2 comprising:*

200. The preamble is met as described for claim 2.

b. [A] *a touch-sensitive input surface on a portion of the wireless wearable device; and*

201. This element is met by Griffin and Zadesky. For example, Griffin describes that the second module has user input devices by disclosing a power switch 54 (i.e., for turning the second module on/off) and “one or more additional switches” (i.e., for “other switched functions) on the second module. (EX1017, 4:30-50.) Zadesky provides examples of user input devices, which includes Griffin’s disclosed switches and touch screens, that are known to be used in “consumer electronic device[s].” (EX1018, 1:26-46.) Thus, the combination of Griffin and Zadesky describe an electronic device (i.e., the second module) with a known, user input device of a touchpad (i.e., touch sensitive surface). describes that the second module may include “sensory circuits” for monitoring the user’s vitals. (EX1017, 9:44-57.)

(ii) *Motivation to Combine*

202. The POSITA would have been motivated to combine the teachings of Griffin and Zadesky to meet the claim limitations. For example, integrating a touchpad onto the second module would enable users to answer calls, go on mute, add a telephone number, or “control execution of other functions by the first module,” without requiring access to the first module, speaking into a microphone, which may be inconvenient for certain situations (e.g., exercising) or when concerned about privacy, or relying on physical switches, which may be less ergonomic. (EX1017, 11:3-14.) Further, Zadesky describes that switches typically “provide limited control” and can only make “specific selections,” but that touchpads enable advanced user input functionality, like swiping, tapping, gestures, by sensing “relative movements of the user’s finger.” (EX1018, 1:24-65.)

203. The POSITA would have a reasonable expectation of success because Griffin discloses that the second module can include “sensory circuits” for monitoring vitals of the user. (EX1017, 9:44-57.) The POSITA would understand the sensory circuits to sense a touch input, at least to enable the second module to monitor the user’s vitals. And, the POSITA would understand that the second module includes a surface sensitive to the touch input, at least to enable the second module to monitor the user’s vitals. Thus, the POSITA would have had a

reasonable expectation of success when combining Zadesky's touchpad with Griffin, at least because both Griffin and Zadesky describe electronics for sensing. For example, Zadesky describes touchpads with sensors that operate via a variety of sensing techniques, like "resistive sensing, surface acoustic wave sensing, pressure sensing, ... optical sensing, capacitive sensing and the like." (EX1018, 9:39-61.) The POSITA would have combined the sensing techniques of Zadesky with Griffin in order to realize the sensory circuit functionality disclosed by Griffin. Further, Zadesky describes that the signals sensed by the sensors may be reported to an internal processor, which can control how the audio device responds to the sensed touch input. (EX1018, 9:61-10:33.) Griffin similarly discloses processor 196, so the POSITA would have had a reasonable expectation of success with integrating Zadesky's touchpad functionality, at least to relate Griffin's sensory circuits to the processor 196. (EX1017, 9:24-43.) The POSITA would have combined the processor functionality of Zadesky with Griffin in order to relate the sensory circuits to the processor.

- c. ***[B] a storage medium at least partially in the wireless wearable device configured to store at least computer program codes for facilitating an operation of the wireless wearable device based on identifying a sliding user-input action across at least a portion of the touch-sensitive input surface.***

204. This element is met by Griffin in view of Zadesky. For example, Griffin describes that the second communication module can include a processor 196, which the POSITA would understand to include codes that control aspects of the second communication module. (EX1017, 9:24-31.)

205. To the extent that Griffin alone does not expressly disclose *facilitating an operation of the wireless wearable device based on identifying a sliding user-input action across at least a portion of the touch-sensitive input surface*, this element is taught by Griffin in view of Zadesky. For example, Zadesky teaches that a portable media player device includes a touchpad 110 that is configured to “receive input from a finger moving across the surface of the touch pad 110” and control the media player accordingly, *e.g.*, by scrolling through a list of media files on the player, or “vary[ing] a characteristic of the media player,” such as changing the volume. (EX1018, 5:61-6:8, 10:40-51.) The POSITA would understand such input to include a sliding user input, *e.g.*, from a “linear finger motion.” (EX1018, 6:9-11.) FIG. 3C illustrates the sliding input (136, 138) controlling the media player (scroll operation 124):

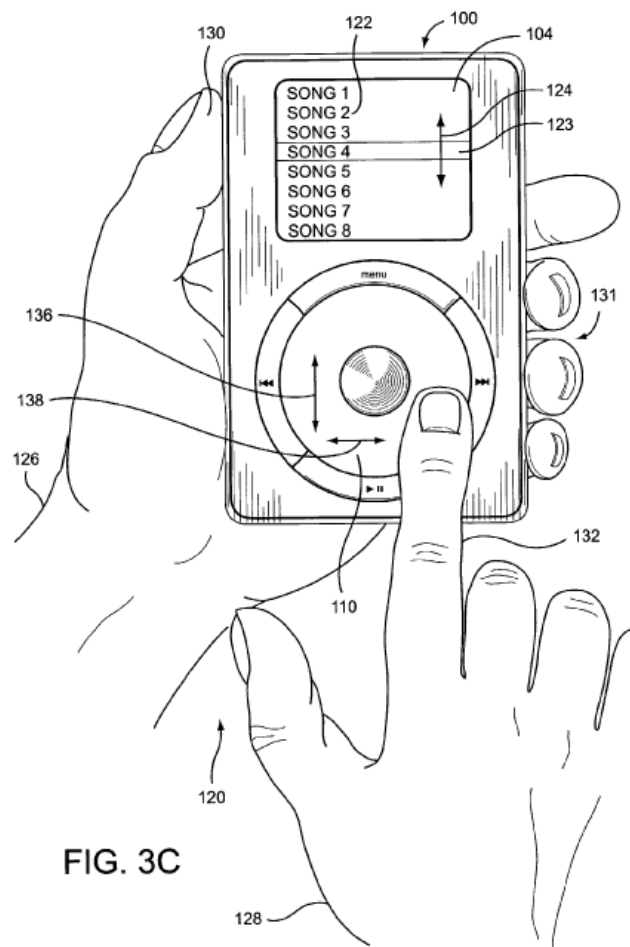


FIG. 3C

(EX1018, 8:52-9:21, FIG. 3C.)

206. The POSITA would have been motivated to combine Griffin and Zadesky, with a reasonable expectation of success, as for claim 8[A].

3. Claim 11

- a. **[Preamble]** *A wireless wearable device as recited in claim 2 comprising*

207. The preamble is met as described for claim 2.

- b. [A] *a touch-sensitive input surface on the wireless wearable device, wherein the touch-sensitive input surface is configured to facilitate generating at least an electrical signal for an operation of the wireless wearable device based on receiving at least a touch input.***

208. This element is met by Griffin in view of Zadesky. For example, Griffin in view of Zadesky describes the touch-sensitive surface, as for claim 8[A].

209. To the extent that Griffin alone does not expressly disclose generating the electrical signal *for an operation of the wireless wearable device*, this element is taught by Griffin in view of Zadesky. For example, Zadesky describes that the touchpad can be divided into zones that includes a sensor for detecting a presence of the user's finger. (EX1018, 9:39-61.) The sensor generates a position signal which is acquired by a control assembly 212. (EX1018, 9:39-67.) Zadesky explains that the control assembly 212 is an application specific integrated circuit (ASIC), thus the POSITA would understand the disclosed position signals to be electrical signals, at least to enable the control assembly 212 to acquire such signals. (EX1018, 9:62-10:4.) Further, Zadesky describes that an internal processor may receive the signals from the control assembly 212, and the processor can control how the audio device responds to the sensed touch input. (EX1018, 9:62-10:20.) Thus, the POSITA would understand the combination of Griffin and Zadesky to describe a touchpad generating an electrical signal to control an

operation of a device. The POSITA would have been motivated to combine the teachings of Griffin and Zadesky at least as for described in claim 8[B].

C. Ground 7: Claims 9-10, 12-18, 20, and 25 are Rendered Obvious by Griffin in view of Abreu

210. It is my view that Griffin in view of Abreu teaches every limitation of claims 9-10, 12-18, 20, and 25, for the reasons set forth below.

2. Claim 9

a. [Preamble] *A wireless wearable device as recited in claim 2 comprising*

211. The preamble is met as described for claim 2.

b. [A] *a controller at least partially in the wireless wearable device configured to determine whether the wireless wearable device is being worn based on outputs from a sensor at least partially in the wireless wearable device.*

212. This element is met by Griffin in view of Abreu. For example, Griffin discloses that the second module includes a processor 196, which the POSITA would understand to describe a controller. (EX1017, 9:24-31.) Further, Griffin discloses that the second module includes “sensory circuits” for monitoring aspects of the user, such as the user’s vitals. (EX1017, 9:44-57.) The POSITA would understand the sensory circuits to be a sensor, and for them to be connected to the processor 196, at least to enable the circuits to monitor the user’s vitals. To the extent that Griffin alone does not disclose the controller determining whether the

device is being worn based on the outputs from the sensor, this is taught by Griffin in combination with Abreu. For example, Abreu discloses that in a head-mounted device such as headphones, “pressure sensing devices” can be “incorporated in the end of the temples to detect if the sunglasses are being worn,” such that a decrease in the pressure signal indicates the glasses were removed. (EX1019, 16:2-7.)

(ii) *Motivation to Combine*

213. The POSITA would have been motivated to combine Abreu’s teaching of pressure sensors with Griffin. For example, Griffin discloses that that the second module can include “sensory circuits” for monitoring aspects of the user, such as the user’s vitals. (EX1017, 9:44-57.) However, Griffin does not teach how the sensory circuits monitor the user, thus the POSITA would have been motivated to look for other references to supply these implementation details. For example, Griffin describes that the sensory circuits may monitor the user’s pulse and blood pressure but does not teach how the sensory circuits do so. (EX1017, 9:44-57.) Abreu describes that the head-mounted device can be integrated with a pressure sensor “to measure pulse” and can provide “monitoring of blood pressure.” (EX1019, 13:13-40.) Thus, the POSITA would have been motivated to combine Griffin and Abreu, at least to realize Griffin’s disclosed pulse and blood pressure monitoring. Additionally, Griffin and Abreu describe analogous components (e.g., head-worn devices, sensors) and can be used to perform

analogous functionality (e.g., monitoring user's vitals). Thus, the POSITA would have had a reasonable expectation of success in making the combination.

3. Claim 10

a. [Preamble] *A wireless wearable device as recited in claim 2 comprising*

214. The preamble is met as described for claim 2.

b. [A] *a motion sensor at least partially in the wireless wearable device.*

215. This element is met by Griffin in view of Abreu. For example, Griffin explains that the second module may include “sensory circuits” for monitoring the user’s vitals. (EX1016, 9:44-57.) The POSITA would understand this to describe a sensor. To the extent that Griffin alone does not teach *a motion sensor*, this is taught by Griffin in combination with Abreu. For example, Abreu discloses that the head-worn structures may include “motion sensors.” (EX1019, 13:38-40.) The POSITA would have been motivated to combine Griffin and Abreu, with a reasonable expectation of success, as for claim 9[A].

4. Claim 12

a. [Preamble] *A wireless wearable device as recited in claim 2 comprising*

216. The preamble is met as described for claim 2.

b. [A] *an area configured for attachment via magnetic force.*

217. This element is met by Griffin and Abreu. For example, Griffin describes that the second module may be mounted in the first module via “a moveable clip arrangement.” (EX1017, 3:28-46.) Abreu discloses clip-on 340 which can be attached to eyeglasses via a magnet, which the POSITA would understand to disclose that the eyeglasses have a corresponding magnet to at least enable the clip-on to attach to the eyeglasses. (EX1019, 47:51-60.) Since Griffin also discloses the clip arrangement for mounting the second module in the first module, the POSITA would have combined Abreu and Griffin to mount the second module in the first module via a magnet.

5. Claim 13

a. [Preamble] *A wireless wearable device as recited in claim 12 comprising*

218. The preamble is met as described for claim 12.

b. [A] *a magnet in the area.*

219. This element is met as described for claim 12[A].

6. Claim 14

a. [Preamble] *A wireless wearable device as recited in claim 12 comprising*

220. The preamble is met as described for claim 12.

- b. ***[A] a storage medium at least partially in the wireless wearable device configured to store at least computer program codes for facilitating voice recognition to recognize at least a word received at least by the microphone for an operation of the wireless wearable device.***

221. This element is met as described for claim 6[A].

7. Claim 15

- a. ***[Preamble] A wireless wearable device as recited in claim 14 comprising***

222. The preamble is met as described for claim 14.

- b. ***[A] wireless communication circuitry at least partially in the wireless wearable device configured for coupling to at least a wireless network.***

223. This element is met by Griffin in view of Abreu. For example, Griffin describes that the second communication module includes “a short-range wireless transceiver 192,” that enables short-range “wireless communications” between the first and second modules. (EX1017, 9:27-31, 9:61-66.)

8. Claim 16

- a. ***[Preamble] A wireless wearable device as recited in claim 15 comprising***

224. The preamble is met as described for claim 15.

- b. ***[A] a pressure sensor at least partially in the wireless wearable device.***

225. This element is met as described for claim 9[B].

9. Claim 17

- a. ***[Preamble] A wireless wearable device as recited in claim 15 comprising***

226. The preamble is met as described for claim 15.

- b. ***[A] a controller at least partially in the wireless wearable device configured to determine whether the wireless wearable device is being worn based on outputs from a sensor at least partially in the wireless wearable device.***

227. This element is met as described for claim 9[A].

10. Claim 18

- a. ***[Preamble] A wireless wearable device as recited in claim 17 comprising***

228. The preamble is met as described for claim 17.

- b. ***[A] a motion sensor at least partially in the wireless wearable device.***

229. This element is met as described for claim 10[A].

11. Claim 20

- a. ***[Preamble] A wireless wearable device, to at least help a user hear audio outputs produced by the device, with at least a portion of the wireless wearable device configured to be worn in an ear of the user, and the wireless wearable device comprising:***

230. The preamble is met as described for claim 1[Preamble].

- b. ***[A] a speaker at least partially in the wireless wearable device;***

231. This element is met as described for claim 1[A].

- c. ***[B] an electrical connector at least partially in the wireless wearable device, wherein the electrical connector includes at least two conductive areas, each area on a surface of the wireless wearable device, and***

232. This element is met as described for claim 1[B].

- d. ***[C] wherein the at least two conductive areas are configured to removably couple to corresponding conductive contacts of a counterpart connector external to and separate from the wireless wearable device, at least via spring-force, to at least enable each of the at least two conductive areas to be electrically connected to its corresponding conductive contact;***

233. This element is met as described for claim 1[C].

- e. ***[D] a rechargeable battery at least partially in the wireless wearable device, with the battery configured to be charged via at least the electrical connector;***

234. This element is met as described for claim 1[D].

- f. ***[E] a microphone at least partially in the wireless wearable device;***

235. This element is met as described for claim 1[E].

- g. ***[F] another microphone at least partially in the wireless wearable device configured to capture at least sound in vicinity of the wireless wearable device, wherein the microphone is configured to be positioned closer to mouth of the user than the another microphone, when the wireless wearable device is worn by the user;***

236. This element is met as described for claim 2[A] and claim 5[A].

- h. ***[G] a storage medium at least partially in the wireless wearable device configured to store at least computer program codes for facilitating voice recognition to recognize at least a word received at least by the microphone for an operation of the wireless wearable device;***

237. This element is met as described for claim 6[A].

- i. ***[H] wireless communication circuitry at least partially in the wireless wearable device; and***

238. This element is met by Griffin in view of Abreu. For example, Griffin describes that the second communication module includes “a short-range wireless

transceiver 192,” that enables short-range “wireless communications” between the first and second modules. (EX1017, 9:27-31, 9:61-66.)

- j. **[I] *an area configured for attachment via magnetic force.***

239. This element is met as described for claim 12[A].

12. Claim 25

- a. **[Preamble] *A wireless wearable device as recited in claim 24 comprising***

240. The preamble is met as described for claim 24.

- b. **[A] *an area configured for attachment via magnetic force.***

241. This element is met as described for claim 13[A].

D. Ground 8: Claims 19 and 21-23 are Rendered Obvious by Griffin in view of Zadesky and Abreu

242. It is my view that Griffin in view of Zadesky and Abreu teaches every limitation of claims 19 and 21-23, for the reasons set forth below.

2. Claim 19

- a. **[Preamble] *A wireless wearable device as recited in claim 18 comprising***

243. The preamble is met as described for claim 18.

- b. ***[A] a touch-sensitive input surface on the wireless wearable device, wherein the touch-sensitive input surface is configured to facilitate generating at least an electrical signal for an operation of the wireless wearable device based on receiving at least a touch input.***

244. This element is met as described for claim 11[A].

3. Claim 21

- a. ***[Preamble] A wireless wearable device as recited in claim 20 comprising:***

245. The preamble is met as described for claim 20.

- b. ***[A] a touch-sensitive input surface on a portion of the wireless wearable device; and***

246. This element is met as described for claim8[A].

- c. ***[B] electronic circuitry configured to identify a sliding user-input action across at least a portion of the touch-sensitive input surface.***

247. This element is met as described for claim 8[B].

4. Claim 22

- a. ***[Preamble] A wireless wearable device to at least help a user hear audio outputs produced by the device, with at least a portion of the wireless wearable device to be worn in an ear of the user, and the wireless wearable device comprising:***

248. The preamble is met as described for claim 1[Preamble].

- b. ***[A] a speaker at least partially in the wireless wearable device;***

249. This element is met as described for claim 1[A].

- c. ***[B] an electrical connector at least partially in the wireless wearable device, wherein the electrical connector includes at least two conductive areas, each area on a surface of the wireless wearable device, and***

250. This element is met as described for claim 1[B].

- d. ***[C] wherein the at least two conductive areas are configured to removably couple to corresponding conductive contacts of a counterpart connector external to and separate from the wireless wearable device, at least via spring-force, to at least enable each of the at least two conductive areas to be electrically connected to its corresponding conductive contact;***

251. This element is met as described for claim 1[C].

- e. ***[D] a rechargeable battery at least partially in the wireless wearable device, with the battery configured to be charged via at least the electrical connector;***

252. This element is met as described for claim 1[D].

- f. ***[E] a microphone at least partially in the wireless wearable device;***

253. This element is met as described for claim 1[E].

- g. ***[F] another microphone at least partially in the wireless wearable device configured to capture at least sound in vicinity of the wireless wearable device, wherein the microphone is configured to be positioned closer to mouth of the user than the another microphone, when the wireless wearable device is worn by the user;***

254. This element is met as described for claim 2[A] and claim 5[A].

- h. ***[G] wireless communication circuitry at least partially in the wireless wearable device;***

255. This element is met as described for claim 20[H].

- i. ***[H] a touch-sensitive input surface on the wireless wearable device, wherein the touch-sensitive input surface is configured to facilitate generating at least an electrical signal for an operation of the wireless wearable device based on receiving at least a touch input; and***

256. This element is met as described for claim 11[A].

- j. ***[I] an area configured for attachment via magnetic force.***

257. This element is met as described for claim 12[A].

5. Claim 23

- a. ***[Preamble] A wireless wearable device as recited in claim 22 comprising:***

258. The preamble is met as described for claim 22.

- b. ***[A] a pressure sensor at least partially in the wireless wearable device; and***

259. This element is met as described for claim 9[A].

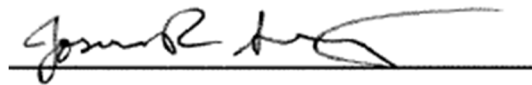
- c. ***[B] a controller at least partially in the wireless wearable device configured to determine whether the wireless wearable device is being worn based on outputs from a sensor at least partially in the wireless wearable device.***

260. This element is met as described for claim 9[A].

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code.

Executed the 19th of November, 2025 in Seattle, Washington.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Joshua R. Smith", is written over a solid black horizontal line.

Joshua R. Smith