

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

INGENIOSPEC, LLC,
Patent Owner.

Case No. IPR2026-00143
U.S. Patent No. 12,001,599

**DECLARATION OF DR. JOSEPH J. LAVIOLA JR.
IN SUPPORT OF PATENT OWNER'S RESPONSE**

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	BACKGROUND AND QUALIFICATIONS	1
III.	MATERIALS CONSIDERED	6
IV.	SUMMARY OF ASSERTED GROUNDS	7
V.	RELEVANT LAW	8
VI.	LEVEL OF ORDINARY SKILL IN THE ART.....	13
VII.	CLAIM CONSTRUCTION	14
VIII.	OVERVIEW OF THE '599 PATENT	14
IX.	OVERVIEW OF THE ASSERTED ART	15
	A. U.S. Patent No. 10,222,617 to Jannard (EX1016).....	15
	B. U.S. Patent No. 7,313,423 to Griffin et al. (EX1017).....	17
	C. U.S. Patent No. 7,046,230 to Zadesky et al. (EX1018).....	19
	D. U.S. Patent No. 10,729,371 to Abreu (EX1019)	20
	E. U.S. Patent No. 6,923,688 to Burson et al. (EX1020).....	21
X.	GROUND 1-4: JANNARD AND BURSON.....	25
	A. The '599 Patent Claims Are Fully Supported By The '045 Application Via Its Incorporation By Reference Of The '169 Application.....	26
	B. No Motivation To Combine Jannard And Burson With A Reasonable Expectation Of Success (All Grounds 1-4)	29

C.	Jannard Did Not Disclose Claim 5[A] And The Same Or Comparable Limitations In Claims 20, 22, And 24 (Claims 5 And 20-25)	41
D.	No Motivation To Combine Jannard And Zadesky With A Reasonable Expectation Of Success (Claims 8 And 21)	44
XI.	GROUND 5-8: GRIFFIN	50
A.	The Petition Fails To Show Griffin Disclosed “Corresponding Conductive Contacts Of Counterpart Connector External To And Separate From The Wireless Wearable Device” (All Grounds 5-8)	50
B.	Griffin Did Not Disclose “At Least Two Conductive Areas Are Configured To Removably Couple To Corresponding Conductive Contacts... 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” (All Grounds 5-8)	53
C.	No Motivation To Combine Griffin And Zadesky With A Reasonable Expectation Of Success (Grounds 6 And 8)	57
D.	No Motivation To Combine Griffin And Abreu With A Reasonable Expectation Of Success	65
E.	The Petition Fails To Show Unpatentability Of Claim 7 In Ground 5	73
XII.	CONCLUSION	75

I, Joseph J. LaViola Jr., hereby declare as follows:

I. INTRODUCTION

1. I have prepared this Declaration in support of Patent Owner’s Response to Apple, Inc.’s (“Apple” or “Petitioner”) Petition for *Inter Partes* Review of U.S. Patent No. 12,001,599 (“’599 Patent”).

2. I have been retained by IngenioSpec, LLC (“IngenioSpec” or “Patent Owner”) in connection with the IPR proceeding identified above. I have been asked to provide testimony about IngenioSpec’s ’599 Patent challenged by Apple in this IPR and to respond to certain opinions of Apple’s expert, Dr. Joshua R. Smith.

3. In the course of preparing this Declaration, I reviewed the ’599 Patent, the asserted art, as well as the documents listed in Section III and/or discussed in this Declaration.

4. I am being compensated at my normal consulting rate for my time. My compensation is not dependent on the outcome of this case and in no way affects the substance of my statements in this Declaration. I have no financial interest in IngenioSpec, the ’599 Patent, or the owner of the ’599 Patent.

II. BACKGROUND AND QUALIFICATIONS

5. In formulating my opinions, I have relied upon my knowledge, training, and experience. Further details regarding my qualifications are set forth in my curriculum vitae (EX2041). A brief summary of my qualifications is set forth below.

6. I am the Charles N. Millican Professor of Computer Science in the Department of Computer Science at the University of Central Florida, located in Orlando, Florida. I also serve as the Director of the Interactive Computing Experiences Research Cluster at the University of Central Florida. Through these functions, I supervise over ten graduate and undergraduate students working on various research projects in the general area of human-computer interaction. In addition, up until 2024, I served as an Adjunct Associate Professor of Computer Science and Visiting Scholar in Computer Science at Brown University, located in Providence, Rhode Island.

7. I have over 25 years of experience working in the virtual reality (“VR”) and augmented reality (“AR”) fields, as well as advancing three-dimensional (“3D”) interaction techniques and user interfaces for use in both VR and AR applications. I have worked extensively on and with user and object motion tracking sensors, algorithms and systems.

8. I received my Bachelor of Science degree in Computer Science from Florida Atlantic University in 1996. I also hold two Masters degrees—an Sc.M. in Computer Science and an Sc.M. in Applied Mathematics from Brown University—which were awarded in 2000 and 2001 respectively. I received my Ph.D. in Computer Science from Brown University in 2005.

9. I serve as Associate Editor for various publications in the area of human-computer interaction, including the International Journal of Human-Computer Studies and the Association for Computing Machinery's (ACM) Transactions on Interactive Intelligent Systems. I have also served as an associate editor for IEEE Computer Graphics & Applications.

10. I have contributed to more than 200 peer-reviewed journal publications, refereed conferences, workshop papers, and other writings, the majority of which deal with virtual and augmented reality and user and object motion tracking. I am the lead author of the second edition of the most comprehensive textbook on 3D user interaction, entitled "3D User Interfaces: Theory and Practice." As part of that work, I analyzed many different types of input and output hardware, 3D user interfaces, perceptual user interfaces, and general topics related to virtual and augmented reality—including, for example, wearable circuitry. I have also worked specifically with wearable devices. For example, my students and I developed a wearable telepresence system that lets people see what other people are doing in the real world in real time.

11. I have been working with virtual and augmented reality systems, including wearable devices for virtual and augmented reality systems. I have implemented aspects of virtual and augmented reality systems in practice and written

several papers on them as part of my work in motion tracking and 3D interfaces, including the following:

- a. Pfeil, K., Taranta, E., Kulshreshth, A., Wisniewski, P., and LaViola, J. “A Comparison of Eye-Head Coordination Between Virtual and Physical Realities,” Proceedings of the 15th ACM Symposium on Applied Perception (SAP '18), Article 18: 7 pages, August 2018.
- b. Kulshreshth, A. and LaViola, J. “Dynamic Stereoscopic 3D Parameter Adjustment for Enhanced Depth Discrimination,” Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16), 177-187, May 2016.
- c. Gupta, P., da Vitoria Lobo, N., and LaViola, J. “Markerless Tracking Using Polar Correlation of Camera Optical Flow,” Proceedings of IEEE Virtual Reality 2010, 223-226, March 2010.
- d. LaViola, J. “Input Devices,” Wiley Encyclopedia of Computer Science and Engineering, B. Wah (ed.), Wiley, Vol. 3, 1575-1584, January 2009.
- e. LaViola, J., Forsberg, A., Huffman, J., and Bragdon, A. “The Influence of Head Tracking and Stereo on User Performance with Non-Isomorphic 3D Rotation,” In the Proceedings of the 14th Eurographics Symposium on Virtual Environments, 111-118, May 2008.

12. I have also been teaching topics related to virtual and augmented reality systems to my students over the last 20 years. I have developed and taught courses related to 3D interaction and user interfaces for virtual and augmented reality systems. For example, I have taught the course “3D User Interfaces for Games and

Virtual Reality” every year since 2008. Examples of courses on 3D user interfaces and virtual and augmented reality that I have taught at conferences include:

- a. LaViola, J. and Keefe, D. “3D Spatial Interaction: Applications for Art, Design, and Science,” Course #1, Presented at ACM SIGGRAPH 2011, Vancouver, Canada, August 2011.
- b. LaViola, J., Kruijff, E., Bowman, D., Poupyrev, I., and Stuerzlinger, W. “3D User Interfaces: Design, Implementation, Usability,” Course #16, Presented at ACM CHI 2009, Boston, Massachusetts, April 2009.
- c. Bowman, D., LaViola, J., Mine, M., and Poupyrev, I. “Advanced Topics in 3D User Interface Design,” Course #44, Presented at ACM SIGGRAPH 2001, Los Angeles, California, August 2001.

13. I am a named inventor on five U.S. patents. These patents are generally related to computer visualization, interfaces, and simulation, including for augmented reality systems.

14. Throughout my career I have received several best paper awards at top conferences including the ACM conference on Human Factors in Computing Systems (CHI) and the ACM Symposium on Spatial User Interfaces. I have been active in reviewing papers for respected journals and conferences including the IEEE Virtual Reality conference and the ACM CHI conference as well as IEEE Transactions on Visualization and Computer Graphics. I also served as the program chair for IEEE Virtual Reality 2013 and for the IEEE Symposium on 3D User Interfaces from 2010 to 2012. In 2010, I served as an external conference reviewer for the IEEE International Symposium on Wearable Computers. In 2025, I was

elected to the IEEE VGTC Virtual Reality Academy and in 2026 I was elected to the ACM SIGCHI Academy. I am also a senior member of ACM and IEEE.

III. MATERIALS CONSIDERED

15. In addition to any other documents cited or referenced herein, I have reviewed the following materials in preparing this Declaration:

- d. Petition for *Inter Partes* Review (Paper 2); and
- e. Patent Owner's Preliminary Response (Paper 8).

16. In addition, I reviewed at least the following exhibits:

Exhibit No.	Description
1001	U.S. Patent No. 12,001,599
1002	File History of U.S. Patent No. 12,001,599
1003	Declaration of Dr. Joshua R. Smith
1009	U.S. Provisional Application No. 60/592,045
1010	U.S. Provisional Application No. 60/605,191
1011	U.S. Provisional Application No. 60/618,107
1012	U.S. Provisional Application No. 60/620,238
1016	U.S. Patent No. 10,222,617 to Jannard
1017	U.S. Patent No. 7,313,423 to Griffin et al.
1018	U.S. Patent No. 7,046,230 to Zadesky et al.
1019	U.S. Patent No. 10,729,371 to Abreu
1020	U.S. Patent No. 6,923,688 to Burson et al.
2020	Claim Construction Order, <i>IngenioSpec, LLC v. Apple Inc.</i> , Case No. 1:25-cv-00867, Dkt. No. 69 (W.D. Tex. Apr. 6, 2026)
2030	U.S. Provisional Application No. 60/583,169
2031	U.S. Patent No. 7,500,747
2032	U.S. Patent No. 7,806,525

2033	U.S. Patent No. 8,434,863
2034	U.S. Patent No. 8,430,507
2035	U.S. Patent No. 10,345,625
2036	U.S. Patent No. 11,630,331
2037	U.S. Patent No. 11,803,069
2038	U.S. Patent No. 11,829,518
2039	Transcript of Deposition of Dr. Joshua R. Smith (August 4, 2026)

IV. SUMMARY OF ASSERTED GROUNDS

17. I understand that Apple’s Petition asserts that Claims 1-25 of the ’599 Patent are unpatentable as obvious under 35 U.S.C. § 103. The following table enumerates the Grounds found in Apple’s Petition including the claims challenged and references relied upon in each Ground.

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

V. RELEVANT LAW

18. I am not an attorney. For the purposes of this Declaration, I have been informed about certain aspects of the law that are relevant to my opinions. My understanding of the law is summarized below.

19. I have been informed and understand that determining whether a patent claim is valid requires a two-step analysis. First, the claim must be construed. Second, the properly construed claim must be compared to the prior art.

20. I have been informed and understand that claim construction is a matter of law and that the final claim constructions for this proceeding will be determined by the Patent Trial and Appeal Board.

21. I have been informed and understand that in the context of an *inter partes* review, claims are construed from the perspective of a person of ordinary skill in the art at the time of the purported invention (which is approximated based on the earliest priority date of the patent). I understand that absent disclaimer or express definition, claim terms are given their plain and ordinary meaning to a person of ordinary skill in the art in view of the specification, file history, and knowledge of a person of ordinary skill in the art.

22. I have been informed and understand that a patent claim is obvious and therefore invalid if the claimed subject matter, as a whole, would have been obvious to a person of ordinary skill in the art (POSITA) as of the priority date of the patent

based on one or more prior art references and/or the knowledge of one of ordinary skill in the art. I understand that an obviousness analysis must consider (1) the scope and content of the prior art, (2) the differences between the claims and the prior art, (3) the level of ordinary skill in the pertinent art, and (4) secondary considerations, if any, of non-obviousness (such as unexpected results, industry praise, commercial success, long-felt but unmet need, failure of others, copying by others, and skepticism of experts).

23. I understand that a prior art reference may be combined with other references to disclose each element of the invention under 35 U.S.C. § 103. I understand that a reference may also be combined with the knowledge of a POSITA, and that this knowledge may be used to combine multiple references. I further understand that a POSITA is presumed to know the relevant prior art. I understand that the obviousness analysis may take into account the inferences and creative steps that a POSITA would employ.

24. In determining whether a prior art reference could have been combined with other prior art or other information known to a person having ordinary skill in the art, I understand that the following principles may be considered:

- a. A combination of familiar elements according to known methods is likely to be obvious if it yields predictable results;

- b. The substitution of one known element for another is likely to be obvious if it yields predictable results;
- c. The use of a known technique to improve similar items or methods in the same way is likely to be obvious if it yields predictable results;
- d. The application of a known technique to a prior art reference that is ready for improvement, to yield predictable results;
- e. Any need or problem known in the field and addressed by the reference can provide a reason for combining the elements in the manner claimed;
- f. A POSITA often will be able to fit the teachings of multiple references together like a puzzle; and
- g. The proper analysis of obviousness requires a determination of whether a POSITA would have a “reasonable expectation of success” – not “absolute predictability” of success – in achieving the claimed invention by combining prior art references.

25. I understand that an obviousness analysis can consider common sense and common knowledge if explained with sufficient reasoning. I have been informed that to avoid impermissible use of hindsight, common sense cannot be used to fill a missing limitation or provide a motivation to combine without reasoned

analysis and evidentiary support. I have also been informed that even with reasoned analysis and evidentiary support, courts have only permitted common sense to fill a missing limitation when the missing limitation was unusually simple and the technology was particularly straightforward, such as where the missing limitation was merely repeating earlier steps already taught by the prior art.

26. I am informed that whether a prior art reference invalidates a patent claim as obvious is determined from the perspective of a POSITA. While there is no requirement that the prior art contain an express suggestion to combine known elements to achieve the claimed invention, a suggestion to combine known elements to achieve the claimed invention may come from the prior art as a whole or individually, as filtered through the knowledge of one skilled in the art. In addition, the inferences and creative steps a POSITA would employ are also relevant to the determination of obviousness.

27. When a work is available in one field, design alternatives and other market forces can prompt variations of it, either in the same field or in another. If a POSITA can implement a predictable variation and would see the benefit of doing so, that variation is likely to be obvious. In many fields, there may be little discussion of obvious combinations, and in these fields market demand – not scientific literature – may drive design trends. When there is a design need or market

pressure and there are a finite number of predictable solutions, a POSITA has good reason to pursue those known options.

28. It is my understanding that there is no rigid rule that a reference or combination of references must contain a “teaching, suggestion, or motivation” to combine references, but I understand that the “teaching, suggestion, or motivation” test can be a useful guide in establishing a rationale for combining elements of the prior art. This test poses the question as to whether there is an express or implied teaching, suggestion, or motivation to combine prior art elements in a way that realizes the claimed invention, and it seeks to counter impermissible hindsight analysis.

29. It is also my understanding that to render a claim obvious, the prior art, taken as a whole, must enable a POSITA to make and use the claimed invention. I understand that if an obviousness case is based on a non-self-enabled reference and no other prior art reference or evidence would have enabled a POSITA to make the claimed invention without undue experimentation, then the invention cannot be said to have been obvious.

30. I understand that patents frequently claim priority to earlier-filed applications. I have been informed that for a later-filed patent to gain the benefit of an earlier application’s priority date, the earlier application must provide a written description of the claimed invention determined on a claim-by-claim basis. I

understand that the earlier application's disclosure must reasonably convey to a POSITA that the inventor had possession of the subject matter of each claim for which priority is sought as of the filing date of the earlier application. I understand that patents and patent applications may incorporate by reference other patent applications or references and that when incorporated by reference, it is the same as if the incorporated document were fully set forth in the incorporating document.

VI. LEVEL OF ORDINARY SKILL IN THE ART

31. Dr. Smith proposes a definition for a POSITA as of October 11, 2005 to be a practitioner with “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.” EX1003 (Smith Declaration) ¶ 19. Dr. Smith further opines that “even if the earliest possible priority date of July 28, 2004, were applied, it would not change the level of ordinary skill.” EX1003 (Smith Declaration) ¶ 19; *see also* Petition at page 5 (setting forth description of “Level of Ordinary Skill”).

32. For purposes of this Declaration, I adopt Dr. Smith's definition. However, I would clarify that “related field” in Dr. Smith's definition includes Computer Science.

VII. CLAIM CONSTRUCTION

33. I have not been asked to provide an opinion on the construction of any claim terms in the '599 Patent.

34. I understand that the district court in the co-pending litigation provided the following construction of the preamble, including “to at least help [a/the] user hear audio outputs produced by the device,” in independent Claims 1, 20, 22, and 24 of the '599 Patent:

Preamble is only partially limiting. The structural component of the preamble is limiting, but the “to at least help [a/the] user hear audio outputs produced by the device” component is not limiting.

“to at least help [a/the] user hear audio outputs produced by the device” is not indefinite.

EX2020 (Claim Construction Order) at page 4. For purposes of this Declaration, I have been asked to apply the above construction in my analysis.

VIII. OVERVIEW OF THE '599 PATENT

35. The '599 Patent is titled “Head-Worn Device with Connection Region.” EX1001 ('599 Patent) at page 1.

36. In my opinion, the '599 Patent is entitled to a priority date of no later than July 28, 2004, which is the filing date of U.S. Provisional Application No. 60/592,045 (EX1009), from which the '599 Patent claims priority. EX1001 ('599

Patent) at page 2. As I explain below, it is my opinion that the claims of the '599 Patent are fully supported by the disclosures of U.S. Provisional Application No. 60/592,045, via its express incorporation by reference of U.S. Provisional Application No. 60/583,169 (EX2030). EX1009 ('045 Application) ¶ [0001].

37. The '599 Patent describes a wireless wearable device with “one or more embedded or partially embedded electrical components” which make the device “easier to operate” and “improve[] wireless communication techniques for users of mobile communication devices.” EX1001 ('599 Patent) at cols. 3:60-4:3. Among other electronic components in the wearable wireless device, the '599 Patent describes, for example, “speakers,” an “electrical connector,” a “rechargeable battery,” a “microphone,” and “wireless communication circuitry.” EX1001 ('599 Patent) at col. 4:31-39. The '599 Patent also describes an “embedded storage medium” and a “microprocessor or controller.” EX1001 ('599 Patent) at cols. 12:62-13:7, 13:21-23.

IX. OVERVIEW OF THE ASSERTED ART

A. U.S. Patent No. 10,222,617 to Jannard (EX1016)

38. Jannard is a U.S. patent that issued on March 5, 2019. EX1016 (Jannard) at page 1. Jannard states that it is a continuation of Application No. 11/022,367, filed on December 22, 2004. EX1016 (Jannard) at page 1 (63). Jannard described eyeglasses, as shown for example in annotated Figure 12 below, and

disclosed that “power contacts 164” can be disposed “on a lower edge of the orbitals 48D, 50D,” “on the upper edges of the orbitals 48D, 50D,” or “at the ends of the ear stems 54D, 56D.” EX1016 (Jannard) at col. 33:13-35. Jannard described that its eyeglasses are intended to “retain[] a sleek, low weight configuration.” EX1016 (Jannard) at col. 21:32-34.

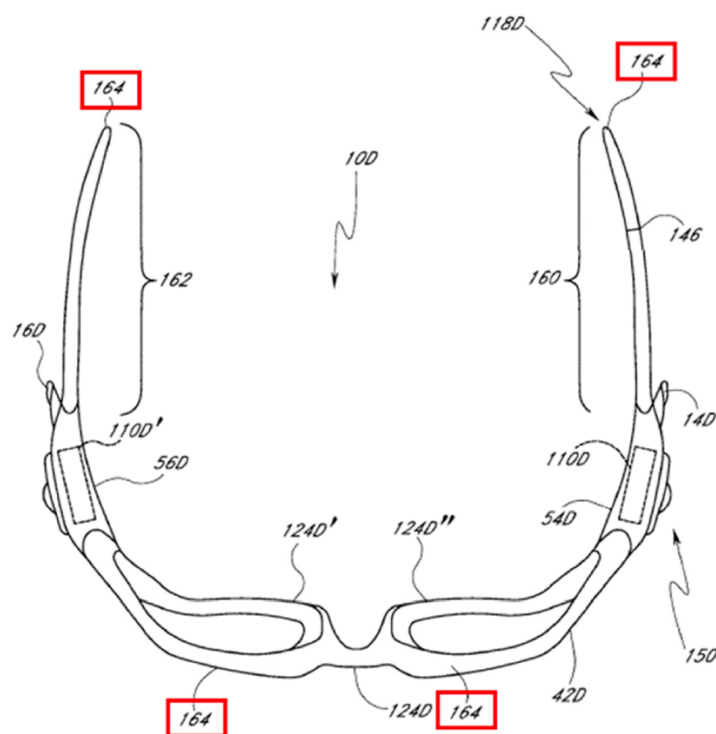


FIG. 12

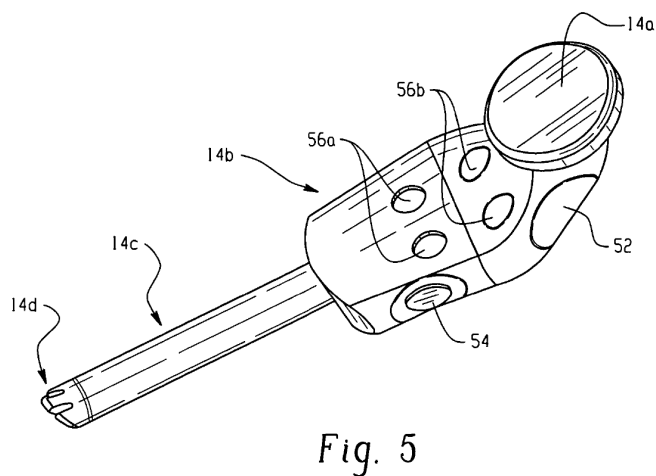
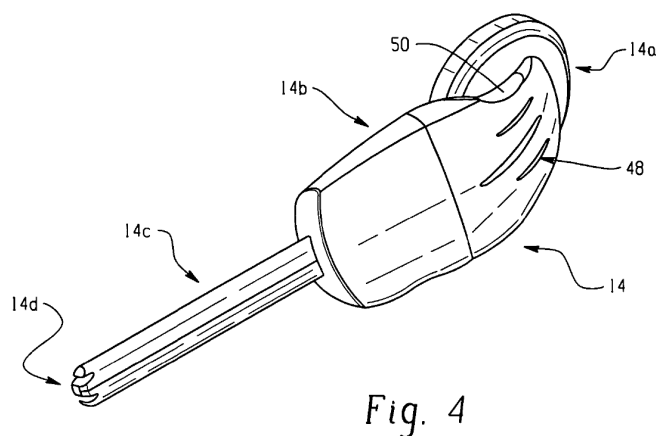
Petition at page 20 (showing annotated Figure 12 from Jannard).

39. As I explain below in Section X.A, each of the '599 Patent claims is supported by the disclosures of U.S. Provisional Application No. 60/592,045 (EX1009) filed on July 28, 2004. As such, the priority date of the '599 Patent claims predates that of Jannard, whose earliest priority date is December 22, 2004 based on

its priority claim to US Patent Application No. 11/022,367. EX1016 (Jannard) at page 1 (63). Because the priority date of the '599 Patent claims predates Jannard, Jannard is not prior art. Nonetheless, even if Jannard were prior art, as I explain in my analysis below it is my opinion that Apple's challenges based on Jannard in Grounds 1-4 fail to show obviousness of the '599 Patent claims.

B. U.S. Patent No. 7,313,423 to Griffin et al. (EX1017)

40. Griffin is a U.S. patent that issued on December 25, 2007. EX1017 (Griffin) at page 1. As illustrated in Figure 1, Griffin described a “communication device 10 having a first communication module 12 and a second detachable communication module 14 for insertion into the communication device user's ear.” EX1017 (Griffin) at col. 2:53-57. As shown in Figures 4 and 5, reproduced below, Griffin's second communication module 14 has an earpiece form factor, with a “boom portion 14c” and “microphone 14d.” EX1017 (Griffin) at cols. 3:61-4:29.



EX1017 (Griffin) at Figures 4-5.

41. Griffin disclosed that the second communication module 14 may include “power switch 54 [that] is preferably a pushbutton switch that turns the second communication module 14 on and off,” as well as “other switched functions, such as a mute function, controlled by one or more additional switches located on the... second module.” EX1017 (Griffin) at col. 4:30-50.

C. U.S. Patent No. 7,046,230 to Zadesky et al. (EX1018)

42. Zadesky is a U.S. patent, titled “Touch Pad Handheld Device,” that issued on May 16, 2006. EX1018 (Zadesky) at page 1. Zadesky explained: “The present invention relates generally to a media player having a touch pad. More particularly, the present invention relates to touch pads having scrolling features.” EX1018 (Zadesky) at col. 1:22-24. Thus, Zadesky pertained to touchpads for scrolling. I understand that Dr. Smith agrees. EX2039 (Smith Deposition Tr.) at 94:7-10 (“Q. So Zadesky’s invention is about using touchpads for scrolling, correct? A. Correct.”). According to Zadesky, “[t]he term ‘scrolling’ as used herein generally pertains to moving displayed data or images (e.g., text or graphics) across a viewing area *on a display screen 104* so that a new set of data (e.g., line of text or graphics) is brought into view in the viewing area.” EX1018 (Zadesky) at col. 6:24-28 (emphasis added).

43. Indeed, Zadesky disclosed that its “media player is a handheld device” having both a touch pad and a display. EX1018 (Zadesky) at col. 4:39-40 (“In one embodiment, the media player is a handheld device.”); *see also* EX1018 (Zadesky) at cols. 3:64-65 (“The invention relates... to a user input system having a touch pad, a display and a controller.”), 5:46-6:1 (describing “media player 100” including a “display screen 104” and a “touch pad 110”), Figures 2-3.

44. Zadesky further disclosed using buttons for making selections or issuing commands. EX1018 (Zadesky) at col. 8:8-30 (“In addition to above, the media player 100 may also include one or more buttons 112. The buttons 112 are configured to provide one or more dedicated control functions for making selections or issuing commands associated with operating the media player 100.... In most cases, the button functions are implemented via a mechanical clicking action.... By way of example, the plurality of buttons 112 may consist of a menu button, play/stop button, forward seek button and a reverse seek button, and the like.”). In fact, Zadesky explained that even mice and trackballs use buttons. EX1018 (Zadesky) at col. 1:63-65 (“Both mice and trackballs generally include one or more buttons for making selections on the display screen.”).

D. U.S. Patent No. 10,729,371 to Abreu (EX1019)

45. Abreu is a U.S. patent that issued on August 4, 2020. EX1019 (Abreu) at page 1. Abreu was focused on measurements at a “Brain Temperature Tunnel.” EX1019 (Abreu) at col. 3:20-23 (“The search for a better way to measure biological parameters has resulted in long and careful research, which included the discovery of a Brain Temperature Tunnel (BTT) and other physiologic tunnels in humans and animals.”); *see also* EX1019 (Abreu) at col. 3:25-29 (“The present invention was yet the first to recognize the end of the tunnel on the skin surface in which an optimal signal is acquired and measurements can be done without the presence of interfering

constituents and background noise that exceeds the signal being measured.”). Abreu explained that “[t]here are six characteristics needed to define a BTT,” EX1019 (Abreu) at col. 3:66-67, and “[a]ll six characteristics are present on the skin on the medial canthal area adjacent to the medial corner of the eye above the medial canthal tendon and in the medial third of the upper eyelid,” EX1019 (Abreu) at col. 4:16-19. Abreu thus focused its disclosure on this particular area.

46. Abreu discussed measuring blood pressure and pulse using a medial canthal pad. EX1019 (Abreu) at cols. 13:26-28 (“Pressure can be applied to a blood vessel through a micro cuff mounted in the medial canthal pads, or alternatively by the temples of eyeglasses.”), 13:38-40 (“Motion sensors and/or pressure sensors can be mounted in the medial canthal pad to measure pulse.”). The medial canthal pad is placed on the skin at the medial canthal area, which is adjacent to the middle corner of the eye and on the middle third of the upper eyelid. EX1019 (Abreu) at cols. 4:16-19, 6:48-51 (“A medial canthal piece is also referred to herein as a medial canthal pad and includes a pad or a piece which positions sensing devices on the skin at the medial canthal area on top of a tunnel....”).

E. U.S. Patent No. 6,923,688 to Burson et al. (EX1020)

47. Burson is a U.S. patent that issued on August 2, 2005. EX1020 (Burson) at page 1. Burson described that its “dual system charging interface 100

includes two charging interfaces.” EX1020 (Burson) at col. 4:26-27. Burson’s

Abstract explained:

The present invention provides a charging interface. The interface ***includes a first contact interface system*** for receiving a male connector. The first interface contact interface system includes a housing with a front surface, where the front surface includes an aperture leading to a well within the housing. A first positive contact is disposed within the well and a first negative contact is disposed within the well. The interface ***also includes a second contact interface system*** comprising conductive contacts disposed on the front surface outside the aperture. The conductive contacts comprise a second positive contact and a second negative contact.

EX1020 (Burson) at Abstract (emphases added).

48. Burson’s dual system charging interface 100 is illustrated in Figure 1, reproduced below.

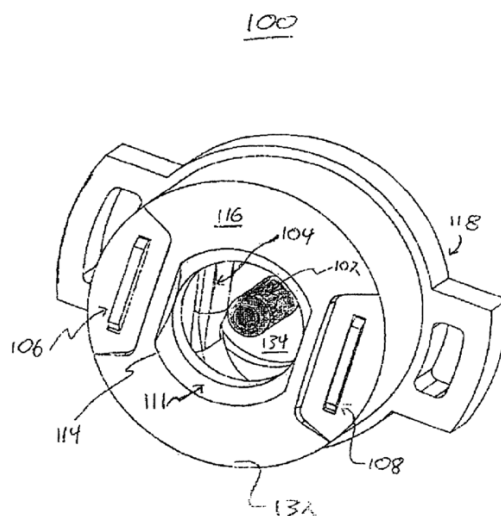


FIGURE 1

EX1020 (Burson) at Figure 1; *see also* EX1020 (Burson) at col. 4:27-55 (“The first charging interface utilizes stationary charging contacts comprising negative contact arc 106 and positive contact arc 108 disposed on front surface 116.... The second charging interface comprises a negative contact 104 and positive contact 102 disposed within well 134 behind aperture 114....”).

49. Figure 8 of Burson, reproduced below, shows “a side view illustration of the charging contact during coupling or decoupling with a headset charging contact.” EX1020 (Burson) at col. 3:8-10.

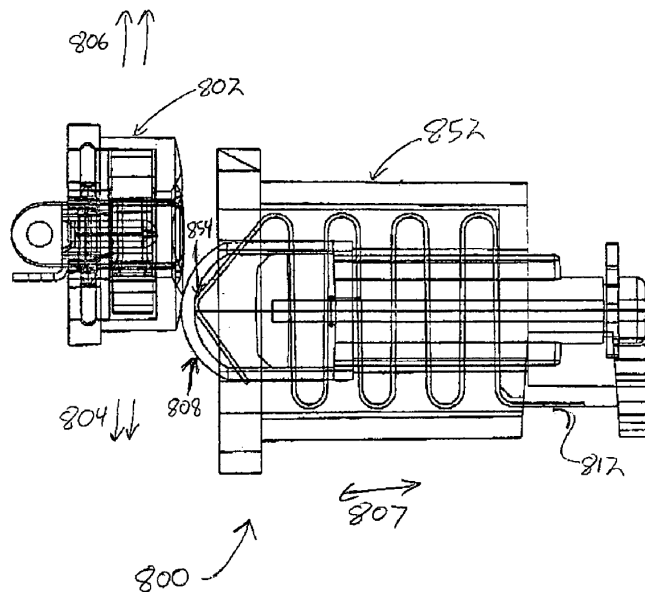


FIGURE 8

EX1020 (Burson) at Figure 8.

50. In Figure 8, the contacts are not yet aligned and the springs are partly retracted. Burson explained:

During coupling, the headset contact apparatus 802 is moved in a downward coupling direction 804 while in contact with actuator 808 of the base charging contact apparatus 800, resulting in actuator 808 retracting along longitudinal axis 807. Retraction of actuator 808 results in retraction of spring contact apparatus 812 within outer housing 852, thereby lifting away the spring conductive contacts 854 from the headset charging contact 802 and headset during headset docking.

EX1020 (Burson) at cols. 8:65-9:6.

51. Figure 9 of Burson, reproduced below, then shows “a side diagram illustration of the charging contact after coupling with a headset charging contact.”

EX1020 (Burson) at col. 3:11-12.

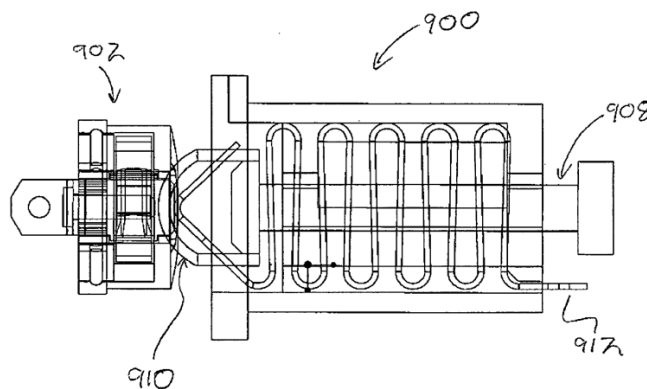


FIGURE 9

EX1020 (Burson) at Figure 9.

52. Figure 9 shows Burson’s detent position. In describing Figure 9, Burson explained: “During a state of detent, the base charging contact apparatus 900 is in an extended state, with actuator 908 and spring contact apparatus 912 returned to their resting extended state following retraction during the coupling process described in reference to FIG. 8.” EX1020 (Burson) at col. 9:9-13. As shown in Figure 9, “actuator outer member 910 extends into a well disposed within the headset contact apparatus 902, allowing contacts of the spring contact apparatus 912 to couple in a detent position with associated contacts of the headset contact apparatus.” EX1020 (Burson) at col. 9:13-18. It is the actuator outer member 910 extending into a well in Figure 9 in the detent position that holds the contacts in position allowing them to maintain contact. EX1020 (Burson) at col. 9:22-25 (“The pressure of the actuator member against the aperture leading to the well provides a means of detenting the headset in place.”).

X. GROUNDS 1-4: JANNARD AND BURSON

53. Grounds 1-4 challenge Claims 1-25 based on Jannard and Burson (as well as Zadesky and/or Abreu in Grounds 2-4). As explained below, in my opinion Grounds 1-4 fail to show obviousness of any challenged claim.

A. The '599 Patent Claims Are Fully Supported By The '045 Application Via Its Incorporation By Reference Of The '169 Application

54. I understand that Apple asserts that the '599 Patent “challenged claims are not entitled to a priority date earlier than October 11, 2005,” which is the filing date of U.S. Provisional Application No. 60/725,896 (“’896 Application,” EX1005). Petition at page 3. More specifically, I understand that it is Apple’s position that “[a]ll 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” but “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.” Petition at page 3. I disagree. As I explain below, the ’599 Patent claims are supported by the disclosures of U.S. Provisional Application No. 60/592,045 filed on July 28, 2004 (“’045 Application,” EX1009).

55. The ’599 Patent claims priority to the ’045 Application. EX1001 (’599 Patent) at page 2. The ’045 Application incorporated by reference U.S. Provisional Application No. 60/583,169 (“’169 Application,” EX2030). EX1009 (’045 Application) ¶ [0001] (“U.S. Provisional Patent Application No. 60/583,169, filed June 26, 2004, entitled ‘ELECTRICAL COMPONENTS FOR USE WITH

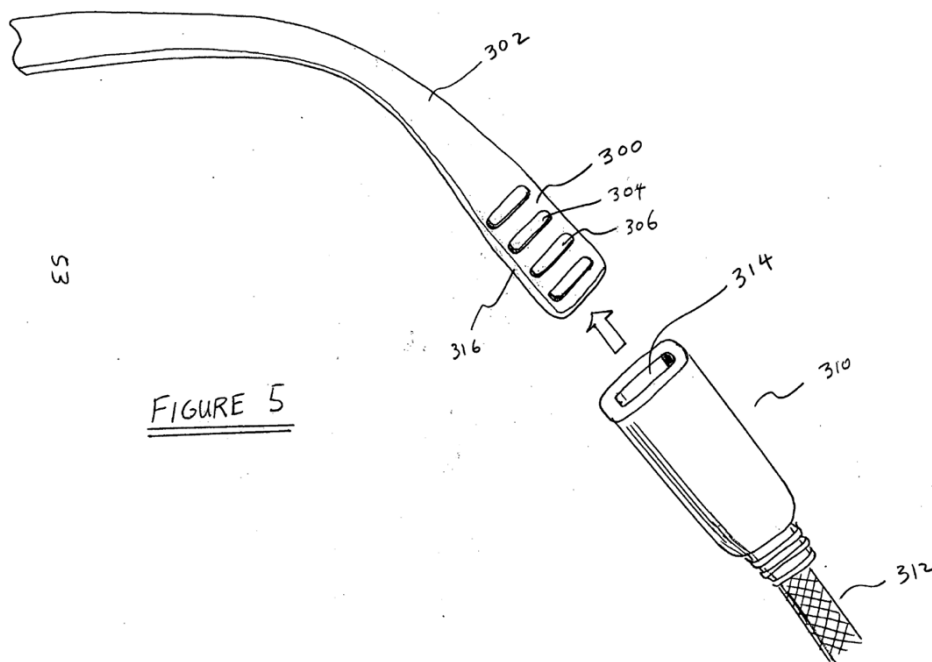
EYEWEAR, AND METHODS THEREFOR,’ and which is hereby incorporated herein by reference”).

56. Every patent or application in the priority chain of the ’599 Patent, from the ’599 Patent itself to the ’045 Application, incorporated by reference the ’169 Application. EX1001 (’599 Patent) at col. 2:30-34; EX2038 (U.S. Patent No. 11,829,518) at col. 2:26-30; EX2037 (U.S. Patent No. 11,803,069) at col. 2:22-26; EX2036 (U.S. Patent No. 11,630,331) at col. 1:44-48; EX2035 (U.S. Patent No. 10,345,625) at col. 1:41-45; EX2034 (U.S. Patent No. 8,430,507) at col. 1:35-39; EX2033 (U.S. Patent No. 8,434,863) at col. 1:31-35; EX2032 (U.S. Patent No. 7,806,525) at col. 1:26-30; EX2031 (U.S. Patent No. 7,500,747) at col. 1:23-27; EX1009 (’045 Application) ¶ [0001].

57. As shown in the claim chart appended to my declaration as **Appendix A**, the ’045 Application, through its incorporation by reference of the ’169 Application, provides written description support for every limitation of every claim of the ’599 Patent.

58. As to the single “spring-force” limitation challenged by Apple, the ’045 Application, via its incorporation by reference of the ’169 Application, provided supporting disclosures for this limitation. For example, the ’169 Application disclosed with reference to Figures 6A and 6B “a process to make the non-standard female plug 310.” EX2030 (’169 Application) ¶ [00061]. The paragraph then

explains the process used to make the female plug 310. The paragraph concludes with the following: “When the temple (i.e., male connector 300) is inserted into the female plug, the soft PVC material stretches slightly, providing a *spring-force to keep the contacts connected.*” EX2030 (’169 Application) ¶ [00061] (emphasis added); *see also* EX2030 (’169 Application) ¶ [00063] (“Referring to both FIG. 5 and FIG. 6B, when the male connector 300 is inserted into the slot 314 of the female connector 310, the metal pads, 304 and 306, will get in contact, or mate, with the metal sheets, 364 and 366.”); Figures 5 (showing male connector 300 and female connector 310), 6B (showing a cross-section of female connector 310). Figure 5 from the ’169 Application is reproduced below.



EX2030 (’169 Application) at Figure 5.

59. Based on his review of “Exhibits EX1005 through EX1015,” it was Dr. Smith’s opinion that “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.” EX1003 (Smith Declaration) ¶ 26. However, the same disclosures in the ’896 Application that Dr. Smith found sufficient also appear in the ’169 Application. *Compare* EX2030 (’169 Application) ¶¶ [00061], [00063], Figures 5, 6B, *with* EX1005 (’896 Application) ¶¶ [00068], [00070], Figures 5, 6B. I understand that Dr. Smith admitted at his deposition that the disclosures in the ’896 Application and in the ’169 Application are indeed the same. EX2039 (Smith Deposition Tr.) at 27:1-28:4 (Dr. Smith: “I do see that the term ‘spring force’ shows up in this paragraph, the paragraph 61 of Exhibit 2030.”).

60. Thus, it is my opinion that the challenged claims of the ’599 Patent are fully supported by the ’045 Application, filed July 28, 2004, through its incorporation by reference of the ’169 Application, which provides written description support for every limitation of every claim of the ’599 Patent, including the “spring-force” limitation challenged by Apple.

B. No Motivation To Combine Jannard And Burson With A Reasonable Expectation Of Success (All Grounds 1-4)

61. Each of Grounds 1-4 relies on at least Jannard and Burson. For Claim 1[C], which requires “at least two conductive areas are configured to

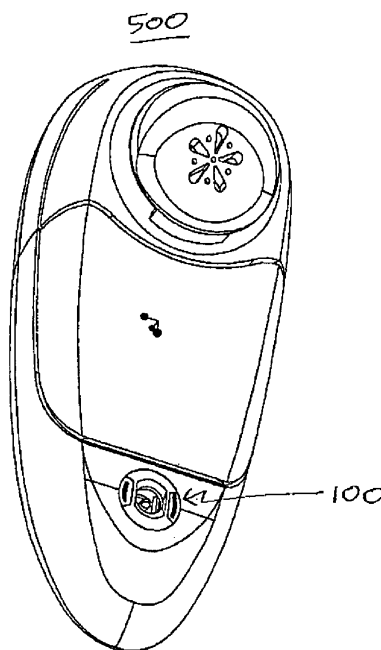
removably couple to corresponding conductive contacts of a counterpart connector... at least via spring-force,” the Petition asserts that “[t]his element is met by Jannard in view of Burson.” Petition at page 21. Independent Claims 20[C], 22[C], and 24[B] have the same requirement, and the Petition simply cross-references to its analysis for Claim 1[C]. Petition at pages 39 (Claim 24[B]), 61 (Claim 20[C]), 66 (Claim 22[C]).

62. I agree with the Petition that “Jannard alone does not teach the conductive areas coupling to corresponding conductive contacts, at least via spring-force.” Petition at page 21. However, the Petition further asserts that “this element is taught by Jannard in combination with Burson.” Petition at page 21. As I explain below, I disagree that a POSITA would have combined Jannard and Burson for the requirement of “at least two conductive areas are configured to removably couple to corresponding conductive contacts of a counterpart connector... at least via spring-force.”

63. In alleging that a POSITA would have been motivated to combine Jannard and Burson, the Petition asserts that “the specific details of [Jannard’s] recharging cradle, including how the power contacts engage with the contacts of the charger, are ‘not shown’” and that, consequently, a POSITA “would have been motivated to look to other references to supply these missing details from Jannard.” Petition at page 25. Apple then asserts that “Burson supplies implementation detail

not specified in Jannard.” Petition at page 25. In other words, Apple’s alleged motivation for combining Jannard with Burson is based on Burson purportedly providing “implementation detail” missing from Jannard.

64. In my opinion, a POSITA would not have had any motivation or reason to look to Burson’s alleged “implementation detail” for Jannard’s eyeglasses relied upon in the Petition. For example, although Burson does not explain in detail how its headset 500 operates, it does show the headset 500 in Figure 5. EX1020 (Burson) at col. 5:56-58 (“Referring to FIG. 5, a headset 500 incorporating dual system charging interface 100 is illustrated.”). Figure 5 is reproduced below.



EX1020 (Burson) at Figure 5. Burson’s “headset 500” appears to be a handheld device with the upper portion containing a speaker that would be held up to the ear

when in use. This is a much larger device than Jannard’s eyeglasses relied upon in the Petition. It would not have been obvious to a POSITA to look to the “dual system charging interface 100” on Burson’s larger device to find implementation detail for a charging connector on a pair of eyeglasses, such as Jannard’s eyeglasses.

65. For the Claim 1[B] requirement of “at least two conductive areas, each area on a surface of the wireless wearable device,” Apple relies on Jannard’s “power contacts 164.” Petition at pages 18-19. Apple asserts that “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.” Petition at page 19 (citing EX1016 (Jannard) at col. 33:13-35). For Claim 1[C], Apple then pivots to “the spring-loaded contacts of the docking cradle” in Burson and asserts that Burson’s “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.” Petition at page 24. Jannard’s “power contacts 164” are shown in annotated Figure 12 reproduced below.

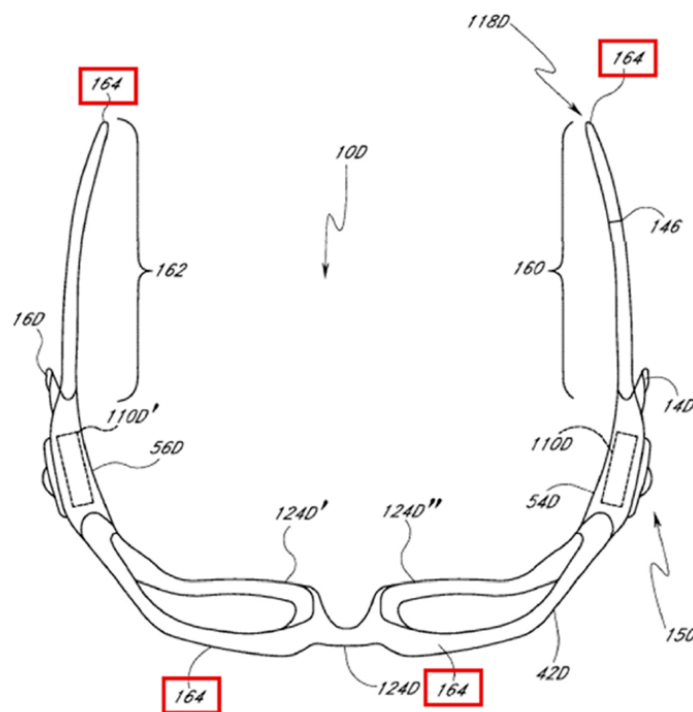


FIG. 12

Petition at page 20.

66. As an initial matter, a POSITA reading Burson would have understood Burson as teaching and requiring *two* charging interfaces, as shown for example in Burson’s Figure 1. As I discuss in **Section IX.E** above, Burson described that its “dual system charging interface 100 includes two charging interfaces.” EX1020 (Burson) at col. 4:26-27; EX1020 (Burson) at col. 5:56-58 (“Referring to FIG. 5, a headset 500 incorporating *dual system charging interface 100* is illustrated.” (emphasis added)); EX2039 (Smith Deposition Tr.) at 39:1-7 (Dr. Smith: Figure 5 in Burson uses the dual system charging interface 100 from Figure 1). Indeed, Burson explained that in prior art chargers “only one charging interface is included,”

and went on to explain that “improved charging interfaces for chargers and wireless devices are needed,” such that “charging interfaces offering increased flexibility are needed.” EX1020 (Burson) at col. 1:64-67. Figure 1, reproduced below, illustrates Burson’s dual system charging interface that includes a surface-type charging interface (106, 108) and a plug-type interface (102, 104). EX1020 (Burson) at col. 4:26-55. A POSITA would have appreciated that the surface-type charging interface (106, 108) would require a flat surface. As I explain further below, a POSITA would have also appreciated that the plug-type charging interface (102, 104) would require a surface with enough depth for a well.

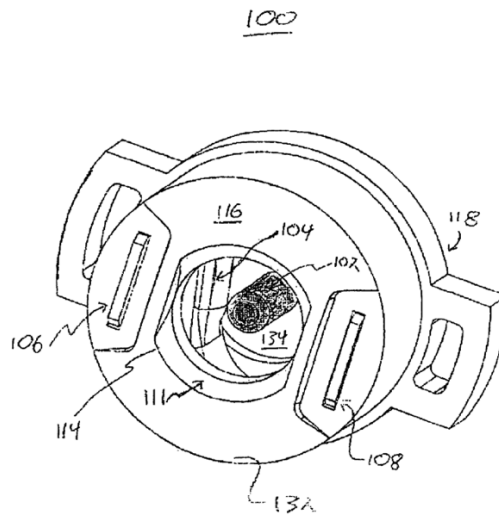


FIGURE 1

EX1020 (Burson) at Figure 1.

67. Neither Apple nor Dr. Smith explain how Burson’s dual system charging interface could be formed at the ends of the ear stems or on the edges of the orbitals of Jannard’s eyeglasses where both Apple and Jannard explain the contacts would be located. Petition at page 19 (citing EX1016 (Jannard) at col. 33:13-35). That is unsurprising, because, in my opinion, a POSITA would have had no motivation, let alone a reasonable expectation of success, in forming Burson’s dual system charging interface on Jannard’s eyeglasses, much less without eliminating the “sleek, low weight configuration” that Jannard both illustrates and touts. EX1016 (Jannard) at col. 21:32-34; *see also* EX1016 (Jannard) at Figure 12. To accommodate Burson’s dual charging interface relied upon by the Petition and Dr. Smith would have required a combination of both a flat surface to accommodate the surface contacts and a depth of structure to accommodate the well needed for the plug interface. Neither Apple nor Dr. Smith identifies any such location on Jannard’s eyeglasses as depicted in Figure 12 below. Additionally, both the Petition and Dr. Smith propose that Burson’s dual charging interface 100 would make contact with Jannard’s power contacts 164, which are shown in the locations below from Figure 12 of Jannard. Petition at page 24 (“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.”); EX1003 (Smith Declaration) ¶ 53 (same). The

identified locations of power contacts 164 in Jannard's eyeglasses do not have either or both of a flat surface for Burson's surface contacts or a depth of structure to accommodate the well of Burson's plug interface. Thus, a POSITA would not have used Burson's dual charging interface on Jannard's eyeglasses nor would such a POSITA have reasonably expected success in doing so.

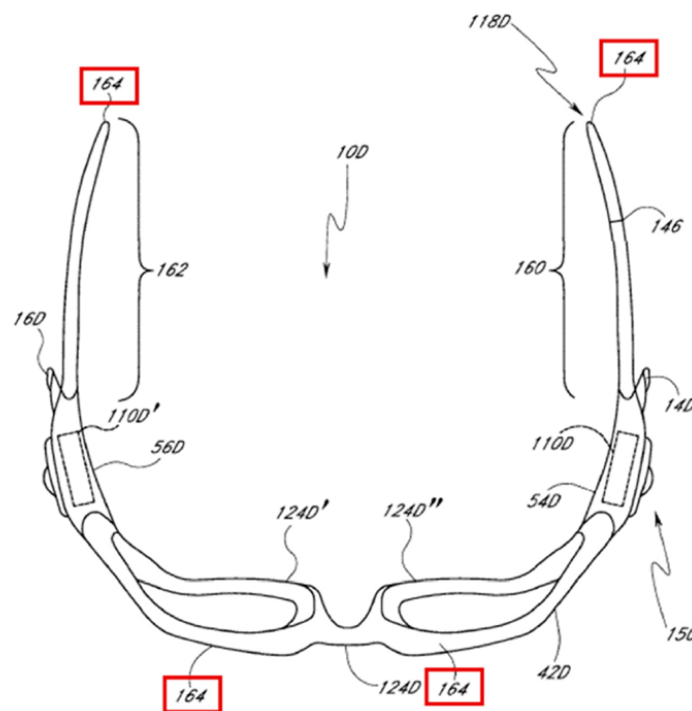


FIG. 12

Petition at page 20.

68. Moreover, and for at least similar reasons, using the spring-loaded contacts of Burson's docking cradle does not make sense in the proposed combination. In my opinion, a POSITA would have had no motivation to use the spring-loaded contacts of Burson's docking cradle because the proposed benefits

asserted by Apple and Dr. Smith result from Burson’s detent mechanism requiring the use of a well, which Jannard’s eyeglasses neither possess nor could reasonably accommodate.

69. In the Petition, Apple explains:

[O]nce 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.”

Petition at pages 22-23 (citing EX1020 (Burson) at col. 9:7-26). As I discuss in **Section IX.E** above, the implementation described in Burson requires a “well disposed within the headset contact apparatus 902.” EX1020 (Burson) at col. 9:15-16. According to Burson, an actuator outer member 910 “extends into a well disposed within the headset contact apparatus 902, allowing contacts of the spring contact apparatus 912 to couple in a detent position with associated contacts of the headset contact apparatus.” EX1020 (Burson) at col. 9:14-18. The actuator outer member 910 “slips into the well disposed within 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 (Burson) at col. 9:18-22. Burson explained, and a POSITA would have understood, that “[t]he pressure of the actuator member against the aperture leading to the well provides a

means of detenting the headset in place.” EX1020 (Burson) at col. 9:22-26; *see also* EX2039 (Smith Deposition Tr.) at 67:11-68:4 (Dr. Smith: “I agree that as Burson says, the pressure of the actuator member against the aperture leading to the well provides a means of detenting the headset in place.”), 69:5-16 (Dr. Smith identifying the actuator member as actuator outer member 910).

70. Jannard’s eyeglasses do not include and could not accommodate a well like in Burson. Further, a POSITA would have understood that forming a well in Jannard’s eyeglasses device would have been unworkable or at least impractical. Once again, neither Apple nor Dr. Smith explain how Burson’s well could be formed at the ends of the ear stems or on the edges of the orbitals of Jannard’s eyeglasses where their proposed power contacts 164 are located. Petition at page 19 (citing EX1016 (Jannard) at col. 33:13-35); EX1003 (Smith Declaration) ¶ 47 (same). Again, that is unsurprising, because, in my opinion, a POSITA would have had no motivation, let alone a reasonable expectation of success, in forming Burson’s well on Jannard’s eyeglasses, let alone without eliminating the “sleek, low weight configuration” that Jannard both illustrates and touts. EX1016 (Jannard) at col. 21:32-34; *see also* EX1016 (Jannard) at Figure 12.

71. The absence of a well in Jannard is noteworthy. That is because, in Burson, the well or aperture leading to the well is what allows the headset to detent in place. EX1020 (Burson) at col. 9:22-26. That, in turn, provides the alleged

benefits the Petition and Dr. Smith assert would apply similarly to Jannard. Petition at page 26 (“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.”), pages 26-27 (“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.”); EX1003 (Smith Declaration) ¶¶ 56, 58 (Dr. Smith asserting the same alleged benefits). Burson’s detenting mechanism is what provides the alleged benefits asserted by Apple and Dr. Smith. EX1020 (Burson) at col. 9:22-25 (“The pressure of the actuator member against the aperture leading to the well provides a means of detenting the headset in place.”). If Burson’s well were *not* included with Jannard’s device—which is consistent with the path a POSITA would have taken—the benefits asserted by Apple and Dr. Smith as allegedly providing a motivation for the combining Jannard and Burson, would not exist.

72. A POSITA reviewing Burson would have considered the requirements of the detenting mechanism. In my opinion, Apple and Dr. Smith attempt to rely on the alleged benefits flowing from Burson’s detenting mechanism while entirely ignoring the requirements of the detenting mechanism. Indeed, I understand that Dr.

Smith confirmed at deposition that he ignored Burson’s disclosure on the specific implementation detail that both he and Apple purport to rely on Burson for. EX2039 (Smith Deposition Tr.) at 64:15-65:16 (“I didn’t rely on these particular sentences [describing Burson’s means of detenting] in my analysis.”). A POSITA considering Burson’s actual teachings would not have considered using those teachings with Jannard’s “sleek, low weight configuration” eyewear device. EX1016 (Jannard) at col. 21:32-34; *see also* EX1016 (Jannard) at Figure 12. And a POSITA further would have had no reasonable expectation of success in combining Burson and Jannard, in the manner set forth in the Petition, much less without eliminating Jannard’s “sleek, low weight configuration.”

73. Finally, Dr. Smith and the Petition propose using force to engage Jannard’s eyeglasses with Burson’s dual charging interface even though Jannard teaches avoiding unnecessary force on the headset, which is the very purpose of using a charging cradle. According to the Petition, the “headset in Burson is inserted into the cradle, *e.g.*, via a downward and forward motion,” Petition at page 22, and “by the operation of Hooke’s law,” the spring “exerts a restorative spring force on the” headset, Petition at pages 23-24. But using Burson’s implementation, which requires exerting force on Jannard’s device, goes against Jannard’s teachings. Indeed, Apple and Dr. Smith agree. Petition at page 27 (“Jannard... explains that avoiding unnecessary force on the headset is a consideration for the charging

cradle.” (citing EX1016 (Jannard) at col. 33:28-35)); EX1003 (Smith Declaration) ¶ 58 (same). They do not explain why a POSITA would adopt a force mechanism in contravention of Jannard’s teachings.

74. In sum, it is my opinion that the Petition has not shown a motivation to combine Jannard and Burson with a reasonable expectation of success.

C. Jannard Did Not Disclose Claim 5[A] And The Same Or Comparable Limitations In Claims 20, 22, And 24 (Claims 5 And 20-25)

75. Claim 5[A] recites that the “the microphone is configured to be positioned closer to mouth of the user than the another microphone.” Petition at page 33. Independent Claims 20[F], 22[F], and 24[H] have the same or comparable requirements. For each of Claims 20[F], 22[F], and 24[H], the Petition simply cross-references its analysis for Claim 5[A]. Petition at pages 43 (Claim 24[H]), 62 (Claim 20[F]), 66 (Claim 22[F]).

76. In the Petition, Apple asserts that “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.’” Petition at page 33 (quoting EX1016 (Jannard) at col. 34:10-45). The quoted passages in Jannard state:

In another embodiment, a further modification of the audio devices 10, 10A, 10B, 10C, and 10D is provided wherein the audio devices include at least two banks of microphones, with one bank acting

as a speaker of received [sic] and one bank providing an ambient noise-cancellation function. The microphone banks can be *positioned at any suitable location* or combination of locations (e.g., on the audio device, within the audio device, *opposing sides of the audio device*, or the like). In one embodiment, *automatic switching of the speaking-microphone and noise-canceling-microphone banks' functions* advantageously enhances ease of use.... For example, without limitation, a series of miniature microphones can be supported down a cord from the audio device, *separated by desired distances*, and aimed in different directions.

EX1016 (Jannard) at col. 34:10-41 (emphases added).

77. The Petition states that, “[b]ased 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.” Petition at pages 33-34 (emphases added) (citing EX1003 (Smith Declaration) ¶ 71). Dr. Smith’s declaration at paragraph 71 simply repeats the Petition language verbatim. In other words, Apple and Dr. Smith rely on Jannard’s “disclosure” to assert that it “disclose[d]” the Claim 5[A] requirement.

78. I disagree that Jannard disclosed that the “the microphone is configured to be positioned closer to mouth of the user than the another microphone.” Neither Apple nor Dr. Smith point to any disclosure in Jannard that a POSITA would have understood to disclose this Claim 5[A] requirement. Indeed, Jannard’s statement

that its “microphone banks can be positioned at any suitable location or combination of locations (e.g., on the audio device, within the audio device, opposing sides of the audio device, or the like),” EX1016 (Jannard) at col. 34:16-19, did not disclose the specific claimed arrangement of microphones. Nor did Jannard’s statement that, in another embodiment, the microphones can be “separated by desired distances.” EX1016 (Jannard) at col. 34:36-41. Jannard’s statements do not identify any “suitable location” or “desired distances” that meet Claim 5[A]’s requirements. Nor is any such suitable location or desired distance inherent in Jannard’s disclosure. As Jannard explained in the passage quoted above, “For example, without limitation, a series of miniature microphones can be supported down a cord from the audio device, *separated by desired distances*, and aimed in different directions.” EX1016 (Jannard) at col. 34:38-41 (emphasis added). Although these microphones are separate by “desired distances,” Jannard did not explain the function of any specific microphone much less its proximity to the user’s mouth.

79. Jannard’s disclosure does not support the Petition’s disclosure theory. In fact, Jannard taught that, “[i]n one embodiment, automatic switching of the speaking-microphone and noise-canceling-microphone banks’ function advantageously enhances ease of use.” EX1016 (Jannard) at col. 34:19-22. In my opinion, it would not make sense to automatically switch the function of two microphones if one were deliberately located closer to the user’s mouth to detect

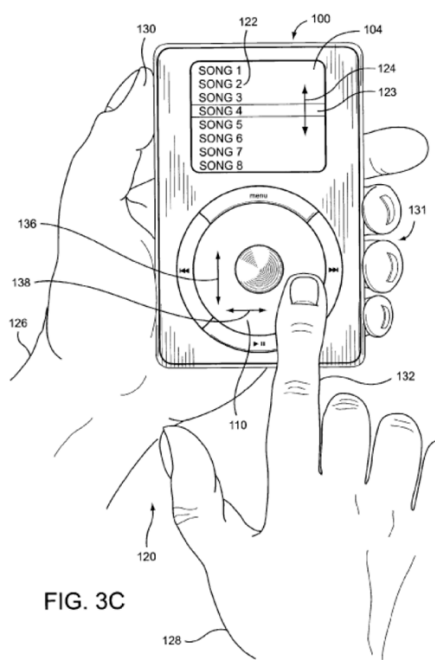
speech from a user. Indeed, that would defeat the purpose of having one of the two microphones placed closer to the user’s mouth to detect speech. A POSITA would not have switched (or allowed automatic switching of) the two microphones’ functions if one microphone were positioned closer to the user’s mouth (than the other microphone) to detect speech. To me, Jannard’s automatic switching of the two microphones’ functions only confirms that it in no way disclosed that the “the microphone is configured to be positioned closer to mouth of the user than the another microphone.”

80. In sum, a POSITA would not have understood Jannard to disclose that the “the microphone is configured to be positioned closer to mouth of the user than the another microphone.”

D. No Motivation To Combine Jannard And Zadesky With A Reasonable Expectation Of Success (Claims 8 And 21)

81. The Ground 2 challenge to Claim 8 and the Ground 4 challenge to Claim 21 both rely on the combination of Jannard and Zadesky. Specifically, both Claims 8[B] and 21[B] require “a sliding user-input action across at least a portion of the touch-sensitive input surface.” Petition at pages 45, 65. For that requirement, the Petition asserts that a POSITA “would have combined the sliding-input teachings of Zadesky with the touchpad of Jannard to meet the claim limitation.” Petition at page 47; *see also* Petition at page 65 (Claim 21[B] cross-referencing Claim 8[B]).

82. I disagree that a POSITA would have combined Zadesky's sliding-input teachings with Jannard's eyeglasses device. Notably, the Petition relies on Zadesky's "sliding input (136, 138) controlling the media player (scroll operation 124)," as shown in Zadesky's Figure 3C, reproduced below from the Petition. Petition at pages 46-47.



Petition at page 47.

83. The Petition's premise for looking to Zadesky is that "the specific details of how user input is provided to the touchpad to control the audio device are not expressly described in Jannard," and, consequently, a POSITA "would have been motivated to look to other references to supply these missing details from Jannard." Petition at page 48.

84. First, I disagree that a POSITA would have thought there were pertinent details missing from Jannard. Neither Apple nor Dr. Smith indicate what “specific details” are allegedly “missing.” Petition at page 48; EX1003 (Smith Declaration)

¶ 102. Indeed, Jannard disclosed:

[T]he user controls 322 include a button, dial, switch, lever, sensor, touchpad, microphone, and/or any other input device that may be used by a user to control the audio device 304.... [U]ser controls 322 may be used to fast-forward, skip, cue, play, pause, turn power on or off, rewind, review, adjust volume, balance, tone, bass, or treble, randomize file selection, load a playlist, set a playlist, delete a playlist, repeat playback of all audio files, selected audio files, or a playlist, or perform any other function related to an audio data file.

EX1016 (Jannard) at col. 44:4-23. With respect to Jannard’s touch pad, Jannard disclosed all the various functions it may perform. Jannard also disclosed that those same functions could be performed using buttons, dials, or switches, instead of a touch pad. As I discuss in **Section IX.C** above, even Zadesky disclosed using buttons on its media player for making selections or issuing commands. EX1018 (Zadesky) at col. 8:8-30; *see also* EX2039 (Smith Deposition Tr.) at 104:15-105:11 (agreeing Zadesky disclosed using buttons on its media player in addition to the touch pad).

85. Second, even assuming there were details missing in Jannard that a POSITA would have needed to know (there are not), I disagree that a POSITA would have looked to Zadesky. As I discuss in **Section IX.C** above, Zadesky

disclosed a “media player [that] is a handheld device” having both a touch pad and a display. EX1018 (Zadesky) at col. 4:40; *see also* EX1018 (Zadesky) at cols. 3:64-65 (“The invention relates... to a user input system having a touch pad, a display and a controller.”), 5:46-6:1 (describing “media player 100” including a “display screen 104” and a “touch pad 110”), Figures 2-3. In contrast, as I discuss in **Section IX.A** above, Jannard described eyeglasses, and Jannard disclosed that its touchpad may be “located on an earstem, an orbital or the bridge.” EX1016 (Jannard) at col. 27:13-18. A POSITA would have had no motivation or reason to look to Zadesky’s circular sliding input for a handheld media player shown in Figure 3C to use with Jannard’s eyeglasses. Apple asserts that a 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.*” Petition at page 48 (emphasis added). I disagree because Zadesky’s media players were handheld devices with displays, which have a different form factor and implicate different considerations than “Jannard’s wearable-glasses.” Petition at 49.

86. Citing the verbatim testimony of Dr. Smith, the Petition asserts that a POSITA “would have combined the sliding input with Jannard in order to realize Zadesky’s advantages, such as faster, intuitive, and ergonomic user control,” and that “Jannard’s wearable-glasses format... may thus benefit from intuitive touch-based control techniques.” Petition at pages 48-49 (citing EX1003 (Smith

Declaration) ¶ 103). Neither Apple nor Dr. Smith explain how or why Jannard would benefit from these generic alleged “advantages,” much less explain how Zadesky’s handheld device touch pad would be implemented in Jannard’s eyeglasses that are “worn on the user’s head” to achieve the purported advantages. Pet. at 48-49. In my opinion, using any touch pad and especially one large enough to accommodate a sliding input would be fraught with potential disadvantages. For example, given Jannard’s eyeglasses are worn on a user’s head, there would likely be unintentional contact with the surface of the device (such as the earstem or the surface of an orbital) which would be undesirable if the surface were touch-sensitive. As to Apple’s assertion that Jannard would benefit from “intuitive touch-based control techniques,” Petition at page 49, both Jannard and Zadesky disclosed buttons or switches, and using Zadesky’s sliding-input touchpad would eliminate the tactile feedback of those buttons or switches.

87. Finally, in my opinion, neither Apple nor Dr. Smith have established a reasonable expectation of success in combining Zadesky’s handheld device touch pad with Jannard’s eyeglasses. The Petition asserts, for example, that “Zadesky’s teachings could be implemented using the components of Jannard.” Petition at page 49 (citing EX1003 (Smith Declaration) ¶ 104). Dr. Smith repeats this assertion verbatim. EX1003 (Smith Declaration) ¶ 104. I disagree. As just one example, Zadesky explained that “a more complex arrangement of zones may be used” in its

touch pads, including for example “angular and radial zones 240” shown in Figure 7. EX1018 (Zadesky) at col. 11:42-49; *see also* EX1018 (Zadesky) at Figures 5-7. This is consistent with the Figure 3C embodiment relied upon in the Petition. Petition at 46-47. In discussing Figure 3C, Zadesky explained that “the user 120 can slide his or her finger 132 substantially tangentially from all sides of the [circular] touch pad 110.” EX1018 (Zadesky) at col. 9:16-21. Even setting aside the incongruity of the combination (which would have dissuaded a POSITA from making it), I discern nothing in the Petition explaining how Zadesky’s more complex touchpad, made for a larger, more substantial handheld device, could be used with or incorporated into Jannard’s small form factor eyeglasses. Additionally, a POSITA would have understood that a user is unlikely to be able to successfully implement a circular or linear sliding motion on a touch pad that the user cannot see somewhere on the side of the user’s head. The amount of time it would take the user to feel for the contours of the touch pad before beginning the sliding motion would likely result in inadvertent inputs and render such an interface so un-ergonomic as to dissuade a POSITA from considering it.

88. In sum, it is my opinion that the Petition has not shown a motivation to combine Jannard and Zadesky with a reasonable expectation of success.

XI. GROUNDS 5-8: GRIFFIN

89. Grounds 5-8 challenge Claims 1-25 based on Griffin (as well as Zadesky and/or Abreu in Grounds 6-8). As explained below, in my opinion Grounds 5-8 fail to show obviousness of any challenged claim.

A. The Petition Fails To Show Griffin Disclosed “Corresponding Conductive Contacts Of Counterpart Connector External To And Separate From The Wireless Wearable Device” (All Grounds 5-8)

90. In my opinion, the Petition’s theory for applying the challenged claims to Griffin is internally inconsistent and fails to show “corresponding conductive contacts of a counterpart connector *external to and separate from the wireless wearable device*,” as required by all claims. Petition at page 21 (emphasis added) (Claim 1[C]); *see also* Petition at pages 39 (Claim 24[B]: similar), 61 (Claim 20[C]), 66 (Claim 22[C]).

91. Claim 1[Preamble] recites,

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:

Petition at pages 15, 70; EX1001 (’599 Patent) at col. 45:44-48. For this limitation, the Petition asserts the following:

The preamble is met by Griffin. (EX1003, ¶169.) 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; EX1003, ¶169.)

Petition at page 70. Dr. Smith offers a verbatim opinion. EX1003 (Smith Declaration) ¶ 169. The Petition and Dr. Smith thus identify Griffin’s “wireless wearable communication device 10” as the claimed “wireless wearable device.” The Petition and Dr. Smith also note that “wireless wearable communication device 10” has both “*a first communication module 12 (e.g., a mobile communications device such as a cell phone); and a detachable second communication module 14.*” Petition at page 70 (emphases added); EX1003 (Smith Declaration) ¶ 169; *see also* EX1017 (Griffin) at col. 2:53-57. Independent Claims 20[Preamble], 22[Preamble], and 24[Preamble] also require a “wireless wearable device,” and the Petition simply cross-references to its analysis for Claim 1[Preamble]. Petition at pages 82 (Claim 24[Preamble]), 95 (Claim 20[Preamble]), 97 (Claim 22[Preamble]). I understand that Dr. Smith confirmed at deposition that his opinion relies on “the combination of the first communication module 12 and second communication module 14” as the claimed “wireless wearable device.” EX2039 (Smith Deposition Tr.) at 77:18-79:3; *see also* EX1003 (Smith Declaration) ¶ 169.

92. Subsequently, for the Claims 1[C], 20[C], 22[C], and 24[B] requirement of “corresponding conductive contacts of a counterpart connector external to and separate from the wireless wearable device,” the Petition relies on Griffin’s first communication module 12, which is a part of the identified “wireless wearable device.” Petition at pages 73-74, 82, 95, 97. The Petition states:

[T]he 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.***

Petition at page 73 (emphasis added). I understand that Dr. Smith confirmed at deposition that he identified charging terminals 56 of the second communication module 14 as the claimed “at least two conductive areas” and identified “corresponding charging terminals 46 of the first communication module as the corresponding conductive contacts.” EX2039 (Smith Deposition Tr.) at 80:11-81:22; *see also* EX1003 (Smith Declaration) ¶¶ 171-172.

93. To summarize, the Petition relies on Griffin’s charging terminals 46 of the first communication module 12 for the “corresponding conductive contacts of a counterpart connector” that must be “external to and separate from the wireless wearable device” even though the Petition had already identified first communication module 12 as part of the wireless wearable device. Petition at pages

70, 73-74. As I explained above, the Petition and Dr. Smith identified Griffin’s “wireless wearable communication device 10,” including first communication module 12, as the claimed “wireless wearable device.” Petition at page 70 (“Griffin discloses a wireless wearable communication device 10 having a first communication module 12....”); EX2039 (Smith Deposition Tr.) at 77:18-79:3; EX1003 (Smith Declaration) ¶ 169. Because Griffin’s first communication module 12 is part of the alleged “wireless wearable device,” a POSITA would not have understood it to be—indeed it could not be—“external to and separate from the wireless wearable device.” Indeed, a POSITA would not have understood something that is a *component* of a device to be “external to and separate from” that device.

94. In sum, in my opinion the Petition failed to show Griffin disclosed “corresponding conductive contacts of a counterpart connector external to and separate from the wireless wearable device.”

B. Griffin Did Not Disclose “At Least Two Conductive Areas Are Configured To Removably Couple To Corresponding Conductive Contacts... 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” (All Grounds 5-8)

95. For the Claim 1[C] requirement that “at least two conductive areas are configured to removably couple to corresponding conductive contacts of a

counterpart connector... 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,” Petition at page 21, the Petition relies solely on Griffin, Petition at page 73 (“This element is met by Griffin.”). Apple did not assert that this “spring-force” limitation would have been obvious but instead relies exclusively on Griffin as having allegedly disclosed it. Petition at pages 73-75. Independent Claims 20[C], 22[C], and 24[B] have the same requirement, and the Petition simply cross-references to its analysis for Claim 1[C]. Petition at pages 82 (Claim 24[B]), 95 (Claim 20[C]), 97 (Claim 22[C]).

96. In my opinion, Griffin did not disclose the claimed “spring-force” limitation. In the Petition, Apple cites exclusively to Griffin’s passage at column 3, lines 38-43. Although the Petition’s citation says “3:51-55,” Petition at page 75, I understand that to be an error/typo. EX2039 (Smith Deposition Tr.) at 82:17-84:5 (Dr. Smith addressing the same mistake in his declaration). The column 3, lines 38-43 passage in Griffin states:

In yet another embodiment, other retention means, such as *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 (Griffin) at col. 3:38-43 (emphases added). This passage is part of a larger paragraph in Griffin describing various embodiments “for retention of the second communication module 14 within the cavity 16” of the first communication module 12. EX1017 (Griffin) at col. 3:28-46. I understand both Apple and Dr. Smith rely exclusively on the embodiment at column 3, lines 38-43. Petition at page 75; EX1003 (Smith Declaration) ¶ 173; EX2039 (Smith Deposition Tr.) at 92:16-93:2 (Dr. Smith agreeing that he does not cite anything else for this embodiment).

97. A POSITA would not have understood Griffin’s column 3, lines 38-43 passage to disclose “at least two conductive areas are configured to removably couple to corresponding conductive contacts of a counterpart connector... 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.” The Petition asserts that “Griffin provides mechanical detail for how the charging terminals 46 couple to charging terminals 56.” Petition at pages 74-75. But Griffin’s column 3:38-43 passage does not refer to charging contacts at all. Indeed, nothing in the entire paragraph at column 3:28-46 describing several retention means mentions charging contacts. Instead, the entire paragraph, as it specifically states, relates to “retention of the second communication module 14 within the cavity 16” of the first communication module 12, as mentioned above. EX1017 (Griffin) at col. 3:28-30

(“The surfaces of the cavity 16 preferably also provide for retention of the second communication module 14 within the cavity 16.”).

98. Griffin includes no detail or explanation about how its mechanism at column 3:38-43 works, much less whether any spring or elastic bias would act to force opposing charging contacts together. Indeed, Griffin disclosed nothing about how “springs” or other “elastically-based protrusions or hooks” would work to retain second communication module 14 within cavity 16 in the first communication module 12. EX1017 (Griffin) at col. 3:38-43. In my opinion, one could use a spring to act in a direction perpendicular to the axis of contact between charging terminals 56 (of the second communication module) and 46 (of the first communication module), which would then retain second communication module 14 within cavity 16 of the first communication module. In this scenario, there would be no force exerted by one set of charging terminals 56 on the other set of charging terminals 46. Although Griffin did not disclose this scenario either, the scenario is consistent with Griffin’s disclosure. And it shows that Griffin’s disclosure does not necessarily mean that any spring force utilized would act to couple the charging contacts.

99. In sum, a POSITA would not have understood Griffin to disclose “at least two conductive areas are configured to removably couple to corresponding conductive contacts of a counterpart connector... 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.”

C. No Motivation To Combine Griffin And Zadesky With A Reasonable Expectation Of Success (Grounds 6 And 8)

100. All of the challenges in Grounds 6 and 8 rely on the combination of Griffin and Zadesky. Petition at pages 84-90, 96-98. The Petition asserts that a POSITA “would have been motivated to combine the teachings of Griffin and Zadesky to meet the claim limitations.” Petition at page 85.

101. The Petition relies on the combination of Griffin and Zadesky for both the Claim 8[A] requirement of “a touch-sensitive input surface on a portion of the wireless wearable device,” Petition at page 45, as well as the Claim 8[B] requirement of “a sliding user-input action across at least a portion of the touch-sensitive input surface,” Petition at page 45. As explained below, I disagree that a POSITA would have combined Griffin and Zadesky as set forth in the Petition.

102. With respect to Claim 8[A], which requires “a touch-sensitive input surface on a portion of the wireless wearable device,” Petition at page 45, the Petition states:

[I]ntegrating 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.

Petition at page 85 (citing EX1017 (Griffin) at col. 11:3-14). In my opinion, this does not show that a POSITA would have integrated Zadesky's handheld media player touch pad with Griffin's in-ear second communication module. As I discuss in **Section IX.C** above, Zadesky disclosed a "media player [that] is a handheld device" having both a touch pad and a display. EX1018 (Zadesky) at col. 4:40; *see also* EX1018 (Zadesky) at cols. 3:64-65 ("The invention relates... to a user input system having a touch pad, a display and a controller."), 5:46-6:1 (describing "media player 100" including a "display screen 104" and a "touch pad 110"), Figures 2-3. In contrast, as I discuss in **Section IX.B** above, Griffin taught a second communication module 14 having an earpiece form factor.

103. Regarding the Petition's claim that a touch pad would allow controlling functions "without requiring access to the first module" or "speaking into a microphone," Petition at page 85, a POSITA would have understood that Griffin's in-ear second module already included physical switches for user input including controlling functions without requiring access to the first module or speaking into a microphone. Griffin disclosed: "the second communication module 14 may also include other switched functions, such as a mute function, controlled by one or more additional switches located on the... second module." EX1017 (Griffin) at col.

4:44-47. Switches on the second module that, for example, controlled a mute function, would allow controlling the mute function without access to the first module and without speaking into a microphone. Thus, Griffin already provided the benefit that the Petition asserts would motivate a combination. Additionally, Griffin did not indicate any disadvantages to using switches for its in-ear second module.

104. Both Apple and Dr. Smith assert, without support, that “relying on physical switches... may be less ergonomic.” Petition at page 85; EX1003 (Smith Declaration) ¶ 202. In my opinion, adding Zadesky’s touch pad to Griffin’s in-ear second module would be fraught with potential disadvantages, including making Griffin less ergonomic by eliminating the tactile feedback of Griffin’s switches, particularly given the second module’s small earpiece form factor. In addition, given Griffin’s second module is worn in the ear, there would likely be unintentional contact with the surface of the device (including when inserting or removing the device from the ear), which would be undesirable if the surface were touch-sensitive. Additionally, as I explained above with respect to the proposed combination of Jannard and Burson with Zadesky, a POSITA would have understood that a user is unlikely to be able to successfully implement a circular or linear sliding motion on a touch pad that the user cannot see somewhere on the side of the user’s head. The amount of time it would take the user to feel for the contours of the touch pad before beginning the sliding motion would likely result in inadvertent inputs and render

such an interface so un-ergonomic as to dissuade a POSITA from considering it. Griffin's earpiece form factor has the additional disadvantage of touch that is not offset by opposing touch which is likely to result in simply knocking the device out of the ear. While you can push a button with an opposing touch on the opposite side of a device, it would be quite difficult indeed to use a sliding or swiping touch gesture on one side of a device while opposing that force with a separate finger of the same hand on the other side of the device.

105. Moreover, as I discuss in **Section IX.C** above, Zadesky disclosed using buttons for making selections or issuing commands. EX1018 (Zadesky) at col. 8:8-12 ("In addition to above, the media player 100 may also include one or more buttons 112. The buttons 112 are configured to provide one or more dedicated control functions for making selections or issuing commands associated with operating the media player 100."). Despite acknowledging that Zadesky taught using buttons in its media player, EX2039 (Smith Deposition Tr.) at 104:15-105:11, Dr. Smith never considers or weighs both the advantages and disadvantages of using a touch pad over buttons in Griffin's in-ear device. Indeed, Zadesky explained that there are "many styles of input devices for performing operations in a consumer electronic device," including, for example, "buttons, switches, keyboards, mice, trackballs, touch pads, joy sticks, touch screens and the like," each having "advantages and disadvantages that are taken into account when designing the

consumer electronic device.” EX1018 (Zadesky) at col. 1:26-34. Neither Apple nor Dr. Smith considers both the advantages and disadvantages, and they also fail to consider the small earpiece form factor of Griffin’s second module. Petition at pages 84-87; EX1003 (Smith Declaration) ¶¶ 201-203.

106. Quoting Zadesky, the Petition also asserts that “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.’” Petition at pages 85-86 (citing EX1018 (Zadesky) at col. 1:24-65). This is a misleading assertion. Dr. Smith agrees that what Zadesky described is that switches “provide limited control *with regards to the movement of a cursor (or other selector).*” EX1018 (Zadesky) at col. 1:36-39 (emphasis added); EX2039 (Smith Deposition Tr.) at 95:22-96:14. As I discuss in **Section IX.C** above, Zadesky disclosed that its media player is a handheld device with both a touch pad and a display. Zadesky explained:

With a touch pad, the movement of an input pointer (i.e., cursor) corresponds to the relative movements of the user’s finger (or stylus) as the finger is moved along a surface of the touch pad. ***Touch pads can also make a selection on the display screen*** when one or more taps are detected on the surface of the touch pad.

EX1018 (Zadesky) at col. 1:48-54 (emphasis added). Thus, Zadesky’s only stated disadvantage for switches or buttons is with regard to the movement of a cursor on

a screen. Griffin’s device cannot suffer from such a deficiency because the second communication module 14 has no display or screen.

107. Despite its various assertions, the Petition provides no reasoning for its proposal to add Zadesky’s handheld-device touch pad to Griffin’s second module (which lacks a display and is worn in the ear), let alone how that would be accomplished. Instead, the Petition states that a POSITA “would have combined the sensing techniques of Zadesky with Griffin in order to realize the sensory circuit functionality disclosed by Griffin” to “monitor the user’s vitals.” Petition at page 86. Having reviewed Zadesky (EX1018), I did not see any disclosure or suggestion of monitoring vitals or using its media player touch pad for monitoring vitals, nor would that have made sense in the context of Zadesky’s media player. I understand that Dr. Smith agreed that Zadesky never disclosed monitoring vital signs, and that Dr. Smith never even considered whether vital signs could be detected using Zadesky’s capacitive touch. EX2039 (Smith Deposition Tr.) at 106:3-7, 108:15-22. The Petition also provides no explanation for adding a touch pad to Griffin to monitor vitals or why the two would have any relationship or influence on each other. Petition at pages 86-87.

108. Neither the Petition nor Dr. Smith provide any explanation for its leap from Zadesky’s disclosure of using a touchpad, for example, to sense movement (*e.g.*, angular/radial positions) of a finger for purposes of scrolling through a list of

songs on a media player, to Griffin’s disclosure of monitoring a user’s vitals. Nor can I discern any reason why a POSITA would have looked to Zadesky’s media player touch pad given Griffin’s mention of monitoring vitals. Indeed, Griffin’s monitoring of user vitals would involve entirely different mechanisms and considerations from Zadesky’s sensing the movement of a finger across a surface of a touch pad for the purpose of scrolling. Plus, Griffin already taught monitoring vitals, and I can discern no need for or even usefulness in adding a touch pad to do so.

109. With respect to Claim 8[B], which requires “a sliding user-input action across at least a portion of the touch-sensitive input surface,” Petition at page 45, the Petition similarly relies on Griffin and Zadesky. Specifically, the Petition relies on Zadesky’s “sliding input (136, 138) controlling the media player (scroll operation 124),” shown in Figure 3C reproduced below from the Petition. Petition at pages 87-88.

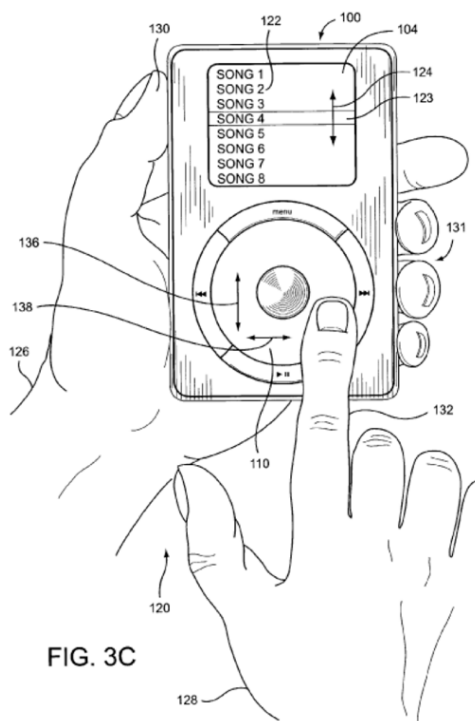


FIG. 3C

Petition at page 88.

110. For Claim 8[B], the Petition simply states that a “POSITA would have been motivated to combine Griffin and Zadesky with a reasonable expectation of success, *as for claim 8[A].*” Petition at page 88 (emphasis added). As explained above, I disagree.

111. Further, for Claim 8[B], the Petition asserts that Zadesky’s “touchpad 110 [] 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....” Petition at page 87; *see also* EX1018 (Zadesky) at col. 9:16-21 (“the touch pad 110 may be actuated forwards and backwards as

shown by arrows 136 and side to side by arrows 138”). As I discuss in **Section IX.C** above, Zadesky pertained to touch pads for scrolling, and Zadesky defined scrolling to mean “moving displayed data or images (e.g., text or graphics) across a viewing area *on a display screen 104*.” EX1018 (Zadesky) at col. 6:24-28 (emphasis added). The Petition provides no reason, and I can discern none, why a POSITA would have combined Zadesky’s sliding-input or forwards or backwards actuation on a touch pad with Griffin’s *in-ear* device. Indeed, sliding-input or forwards or backwards actuation are scrolling actions, as Dr. Smith acknowledged. EX1018 (Zadesky) at col. 8:52-57 (“In all of these embodiments [Figures 3A-3C], the user 120 is linearly scrolling 104 (as shown by arrow 124) through a list of songs 122 displayed on the display screen via a slider bar 123.”); EX2039 (Smith Deposition Tr.) at 101:17-102:11 (Dr. Smith agreeing that the “linear finger movement” in Zadesky’s Figure 3C is “about scrolling through a list of songs”).

112. In sum, it is my opinion that the Petition has not shown a motivation to combine Griffin and Zadesky with a reasonable expectation of success.

D. No Motivation To Combine Griffin And Abreu With A Reasonable Expectation Of Success

113. The Petition relies on the combination of Griffin and Abreu for at least Claims 9-10, 16-19, and 23 in Grounds 7 and 8. In particular, the Petition relies on “Griffin in view of Abreu” for Claim 9[A], Petition at page 90, and relies on this

same Claim 9 analysis for Claims 10, 16-19, and 23, Petition at pages 92, 94-96, 98.¹

As explained below, I disagree that a POSITA would have combined Griffin and Abreu as set forth in the Petition.

114. The Petition baselessly claims that a POSITA “would have been motivated to combine Abreu’s teaching of pressure sensors with Griffin.” Petition at page 91. More specifically, the Petition asserts that “Abreu describes that the head-mounted device can be integrated with a pressure sensor ‘to measure pulse’ and can provide ‘monitoring of blood pressure.’” Petition at page 91 (citing EX1019 (Abreu) at col. 13:13-40). In my opinion, the Petition’s proposal to combine Griffin with Abreu to measure pulse and blood pressure is based on a failure to comprehend or at least consider Abreu’s disclosure.

115. As I discuss in **Section IX.D** above, Abreu dealt with measurements at a Brain Temperature Tunnel adjacent to the middle corner of the eye and on the

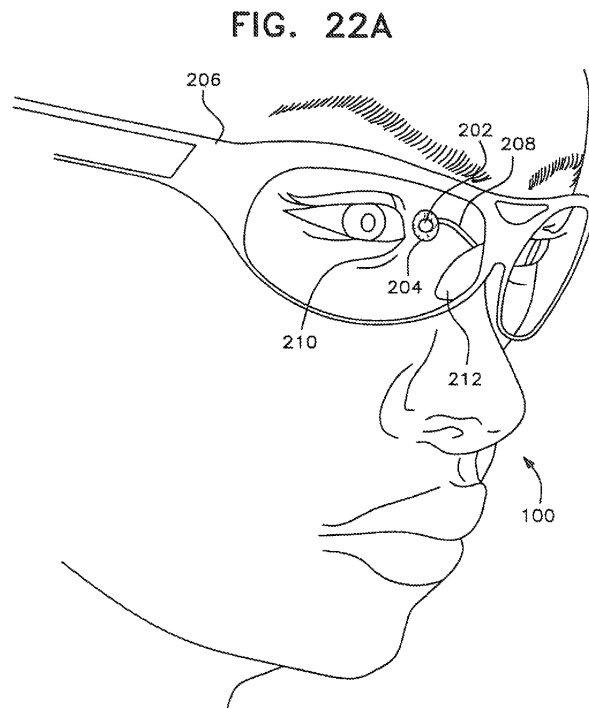
¹ The Petition cross-references Claim 9[B] for Claim 16. Petition at page 94. Dr. Smith does the same. EX1003 (Smith Declaration) ¶ 225 (“This element is met as described for claim 9[B].”). However, Claim 9[B] does not exist. Although it is not clear to me what the Petition or Dr. Smith had intended to cross-reference, my analysis here assumes the Petition and Dr. Smith meant to cross-reference Claim 9[A] for Claim 16.

middle third of the upper eyelid. EX1019 (Abreu) at cols. 3:20-23 (“The search for a better way to measure biological parameters has resulted in long and careful research, which included the discovery of a Brain Temperature Tunnel (BTT) and other physiologic tunnels in humans and animals.”), 3:25-29, 3:66-67 (“There are six characteristics needed to define a BTT.”), 4:16-19 (“All six characteristics are present on the skin on the *medial canthal area adjacent to the medial corner of the eye above the medial canthal tendon and in the medial third of the upper eyelid.*” (emphasis added)). Notably, Abreu explained that pulse and blood pressure are measured using a motion or pressure sensor mounted on “medial canthal pads, or alternatively by the temples of eyeglasses.” EX1019 (Abreu) at cols. 13:26-28, 13:38-40. Although Abreu mentions the temples of eyeglasses here, Abreu does not disclose any example involving pulse or blood pressure measurement using the temple of eyeglasses. The only descriptions of actual sensors in the temple of eyeglasses are for ion and pH detection, sweat detection, and for sensing whether the eyeglasses are being worn, and in each case, the sensor is located at the end of the temple. EX1019 (Abreu) at col. 12:39-45 (“Microminiature glass electrodes mounted in the end portion of the temple of eyeglasses sitting behind the ear or alternatively mounted on the lens rim against the forehead can be used to detect divalent cations such as calcium, as well as sodium and potassium ion and pH. Chloride-ion detectors can be used to detect the salt concentration in the sweat and

the surface of the skin.”), 16:2-7 (“By way of illustration, but not of limitation, pressure sensing devices can be incorporated in the end of the temples to detect if the sunglasses are being worn, and an abrupt drop in the pressure signal indicates glasses were removed or misplacement of the sensor can also generate an identifiable signal.”), 45:62-67 (“FIG. 23A is a perspective view showing eyeglasses 244 containing a modified nose pad 242 with sensor 240 and processor 241, sweat sensor 246 and power source 248 supported by temple 250, and transmitter 252 supported by temple 254, all of which are electrically connected.”), 46:4-7 (“FIG. 23B is a perspective view showing eyeglasses 256 containing an oversized modified nose pad 258 with sensor 240, sweat sensor 260 supported by temple 262, and transmitter 264 supported by temple 266.”), 46:32-38 (“FIG. 26A is a rear perspective view of one preferred embodiment showing sensors 299, 300 supported by medial canthal pads 290, 289 of eyeglasses 292 and includes lens rim 297 and display 298 in addition to transmitter 288, sweat sensor 294 and wires 296 disposed within temple 295 and lens rim 293 of said eyeglasses 292 and connected to display device 296.”), 46:39-42 (“FIG. 26B is a front perspective view of eyeglasses 292 including sweat sensor 294, transmitter 288 and wires 296 disposed within temple 295 and lens rim 293 of eyeglasses 292 and connected to a display device.”), Figure 23A (showing sweat sensor 246 at the end of the temple), Figure 23B (showing sweat sensor 260 at the

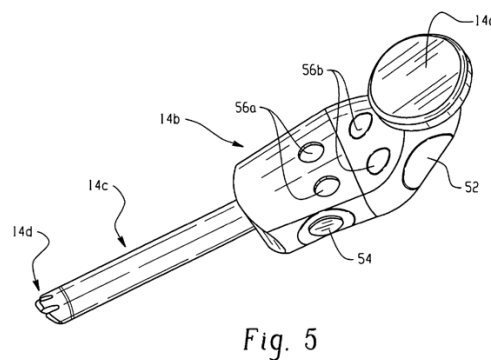
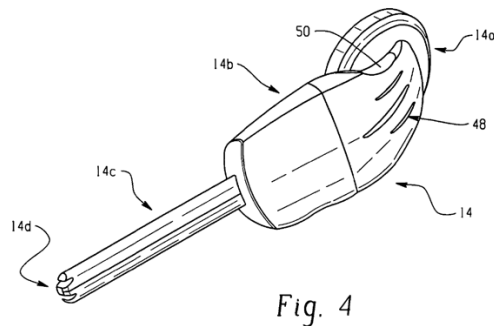
end of the temple), Figure 26A (showing sweat sensor 294 at the end of the temple), Figure 26B (showing sweat sensor 294 at the end of the temple).

116. Figure 22A reproduced below shows a sensor 202 at Abreu's medial canthal region:



EX1019 (Abreu) at Figure 22A. Abreu explained that “[s]ensor 202 is positioned on the superior aspect of the medial canthal area adjacent to the medial corner of the eye 210.” EX1019 (Abreu) at col. 45:30-32; *see also* EX2039 (Smith Deposition Tr.) at 114:17-115:15 (Dr. Smith agreeing that Abreu’s medial canthal pad covers the “medial canthal area adjacent to the medial corner of the eye above the medial canthal tendon and in the medial third of the upper eyelid”).

117. As I discuss in **Section IX.B** above, Griffin disclosed that its “second communication module,” that the Petition relies on for Claim 9, is an in-ear device as shown in Figures 4 and 5 reproduced below.



EX1017 (Griffin) at Figures 4-5.

118. Both Apple and Dr. Smith fail to explain any means of combining Griffin’s in-ear second module with Abreu to allow measuring blood pressure or pulse at the medial canthal region (or anywhere near the user’s eye), which Abreu emphasized was significant for sensing vital signs. Petition at pages 90-92; EX1003 (Smith Declaration) ¶¶ 212-213; *see also* EX1019 (Abreu) at cols. 3:25-29 (“The present invention was yet the first to recognize the end of the tunnel on the skin surface in which an optimal signal is acquired and measurements can be done

without the presence of interfering constituents and background noise that exceeds the signal being measured.”), 3:66-4:19 (“There are six characteristics needed to define a BTT.... All six characteristics are present on the skin on the medial canthal area adjacent to the medial corner of the eye above the medial canthal tendon and in the medial third of the upper eyelid.”). Nor can I discern any reason why, much less how, a POSITA would have combined Griffin’s in-ear second module with Abreu’s teachings about measuring pulse and blood pressure adjacent to the user’s eye. Indeed, even if desiring to measure vital signs, a POSITA would not have looked to Abreu’s teachings about measuring blood pressure and pulse at the medial canthal region. Even assuming that the end of the temple could also be used for measuring pulse or blood pressure despite Abreu’s lack of such disclosure, Griffin’s second communication module cannot put pressure on any location behind the ear with its earpiece form factor.

119. I understand that when Dr. Smith was questioned about the proposed combination of Griffin’s in-ear device and Abreu’s medial canthal region vital sign monitoring, Dr. Smith stated: “I mean, I wasn’t discussing things at the level of form factor. It was more you can take this principle, sensing method, put it in this other device. It’s not to say that I have to explain specifically the form factor.” EX2039 (Smith Deposition Tr.) at 116:15-117:4. I take Dr. Smith’s response to mean he did

not thoughtfully consider, as a POSITA would have, whether Abreu’s teachings are even applicable to Griffin.

120. I further understand that when questioned about the fact that Griffin’s in-ear second module does not cover Abreu’s medial canthal region, Dr. Smith testified: “These pieces shown in Figure 4 and 5 of Griffin don’t cover the medial canthal pad, but a person skilled in the art would understand that you can take a sensor from one part of the body, *move it somewhere else.*” EX2039 (Smith Deposition Tr.) at 117:5-14 (emphasis added). In the context of Abreu’s specific emphasis on measuring blood pressure and pulse at the medial canthal region—which is what the Petition relies on, Petition at page 91 (citing EX1019 (Abreu) at col. 13:13-40)—I disagree with Dr. Smith that it would have been possible to simply move Abreu’s sensor to Griffin’s in-ear device. The only other possible option based on Abreu would have been the end of the temple of the eyeglasses, even though Abreu does not disclose this option, and as I explained above, Griffin’s second communication module earpiece could not place pressure behind the ear. Even in this undisclosed scenario, a POSITA would have understood that the combination is not feasible. In any event, there is no discussion in the Petition or in Dr. Smith’s declaration about moving Abreu’s sensor “somewhere else.” Petition at pages 90-92; EX1003 (Smith Declaration) ¶¶ 212-213.

121. In sum, it is my opinion that the Petition has not shown a motivation to combine Griffin and Abreu with a reasonable expectation of success.

E. The Petition Fails To Show Unpatentability Of Claim 7 In Ground 5

122. For the Claim 7 requirement of “wireless communication circuitry at least partially in the wireless wearable device configured for coupling to at least a Bluetooth network,” EX1001 (’599 Patent) at col. 46:27-30, Apple relies exclusively on Griffin, Petition at page 82 (“This element is met by Griffin.”).

123. I disagree that Griffin disclosed “coupling to at least a Bluetooth network” as required by Claim 7. Citing Griffin’s disclosure at columns 9:27-31 and 9:61-66, the Petition asserts that “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.” Petition at page 82. Griffin’s disclosure at columns 9:27-31 and 9:61-66 are reproduced below. Dr. Smith relies on those same disclosures. EX1003 (Smith Declaration) ¶ 188.

The second communication module 162 preferably includes a microphone and a speaker 190, a short-range wireless transceiver 192, an antenna 194, a rechargeable battery 188, and possibly an integral processor 196.

EX1017 (Griffin) at col. 9:27-31.

In this system 200, the first communication module 212 and second communication module 214 incorporate compatible short-range communication systems. This allows wireless communications between the first and second modules 212 and 214 over a short-range RF link 216.

EX1017 (Griffin) at col. 9:61-66.

124. Having reviewed Griffin, I did not see any disclosure or mention of using Bluetooth. Citing the '599 Patent at column 44:4-12, Dr. Smith asserts that a “POSITA would understand ‘short-range communication’ to disclose coupling to a Bluetooth network.” EX1003 (Smith Declaration) ¶ 188. Although Bluetooth is a type of short-range communication, a POSITA reading Griffin would not have understood the mere reference to “short-range communication” to refer to Bluetooth. Indeed, short-range wireless communications can use any communication protocol or format, and the choices are not limited even to the standards that were conventional at the time. But, for example, there were other types of standard short-range communication available in 2004 as well. As one example, NFC (Near Field Communication) is a type of short-range communication that is not Bluetooth. I understand that NFC was first proposed by Philips and Sony on September 5, 2002. See <https://www.sony.com/en/SonyInfo/News/Press/200209/02-0905E/> (last visited Aug. 12, 2026).

125. In sum, a POSITA would not have understood Griffin’s mere reference to “short-range communication” to disclose Bluetooth.

XII. CONCLUSION

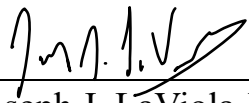
126. Based on the foregoing analysis, it is my opinion that Petitioner has failed to establish by a preponderance of the evidence that the challenged claims of the ’599 Patent are unpatentable over the cited references.

127. In signing this Declaration, I recognize that the Declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be called upon to testify in deposition or before the Patent Trial and Appeal Board. If called upon to testify, I would testify truthfully and competently to all matters stated in this Declaration.

128. I reserve the right to supplement my opinions in the future to respond to any arguments that Petitioner raises and to take into account new information as it becomes available to me.

129. I hereby 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 such statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: 8/13/2026



Joseph J. LaViola Jr.

APPENDIX A

Claim Chart Showing Written Description Support for '599 Patent Claims

U.S. Provisional Application No. 60/583,169 (“’169 Application,” EX2030) is incorporated by reference into U.S. Provisional Application No. 60/592,045 (“’045 Application,” EX1009), filed on July 28, 2004 and from which U.S. Patent No. 12,001,599 (“’599 Patent”) claims priority.

Every patent or application in the priority chain of the ’599 Patent, from the ’599 Patent itself to the ’045 Application, incorporated by reference the ’169 Application. *See* EX1001 (’599 Patent) at col. 2:30-34; EX2038 (U.S. Patent No. 11,829,518) at col. 2:26-30; EX2037 (U.S. Patent No. 11,803,069) at col. 2:22-26; EX2036 (U.S. Patent No. 11,630,331) at col. 1:44-48; EX2035 (U.S. Patent No. 10,345,625) at col. 1:41-45; EX2034 (U.S. Patent No. 8,430,507) at col. 1:35-39; EX2033 (U.S. Patent No. 8,434,863) at col. 1:31-35; EX2032 (U.S. Patent No. 7,806,525) at col. 1:26-30; EX2031 (U.S. Patent No. 7,500,747) at col. 1:23-27; EX1009 (U.S. Provisional Application No. 60/592,045) ¶ [0001].

The following applications from which the ’599 Patent claims priority also incorporate by reference the ’169 Application: U.S. Provisional Application No. 60/605,191, filed August 28, 2004 (EX1010); U.S. Provisional Application No. 60/618,107, filed October 12, 2004 (EX1011); and U.S. Provisional Application No. 60/620,238, filed October 18, 2004 (EX1012).

<u>Claims</u>	<u>Examples of Supporting Disclosures from the ’169 Application (EX2030)¹</u>
<u>Claim 1</u>	
[Preamble] A wireless wearable device, with at least a portion of the wireless wearable device	Pages 18-19: ²

¹ Emphasis is added unless otherwise noted.

² Pages refer to the original page numbers at the bottom of the ’169 Application, not the page numbers added to EX2030 for purposes of this IPR.

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:	[00095] “A number of embodiments of the present invention have been described where electrical signals are transmitted to or from a pair of glasses through a physical connection. <u>In one embodiment, electrical signals are wirelessly coupled to a pair of glasses.</u> The coupling can be short range or long range. The coupling can be directly to the glasses, or to a base connected to a pair of glasses. The glasses with wireless coupling capabilities can be used to couple to a Bluetooth network, the Internet, a WiFi network, a WiMax network, a cell-phone network or other types of networks. The coupling can also be through a point-to-point link, such as an infrared link.” Page 8: [00049] “<u>To further enhance sound coupling, in one approach, there is a plug 156 at the end of the tube for inserting into an ear of the user. The plug can be an ear bud.</u> The plug can provide a cushion, foam rubber or other materials. Such materials give comfort and/or enhance sound coupling to the ear canal.”
[A] a speaker at least partially in the wireless wearable device; and	Pages 6-7: [00038] “FIG. 1 shows one embodiment 100 of the invention <u>where there is a speaker 102 at least partially embedded in one of the temples 104 of the glasses 106.</u> The speaker 102 is closer to one end of the temple 104 than the other end. The end of the temple that the speaker 102 is closer to is the end that is in the vicinity of the lens holder or the hinge of the glasses 106,

	instead of the end 108 that is free. <u><i>The speaker can be partially embedded in the glasses. For example, the mouth of the speaker, where sometimes there can be small holes on a cover, can be exposed.</i></u>
[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	Page 10: [00056] “As shown in FIG. 5, the free end of the temple 302 can have a relatively flat cross section. <u><i>There can be one or more electrically-conductive contacts, such as 304 and 306, on one or both of the flat surfaces of the temple. In FIG. 5, four contacts are shown on one surface of the temple. The contacts, 304 and 306, can be metal pads or bumps.</i></u>” [00057] “In one embodiment, a non-standard connector can be made using printed-circuit board technologies. <u><i>First, a printed-circuit board with printed conductors connected to metal contact bumps is produced.</i></u> Then plastic is overmolded around the printed-circuit board, with the mold designed to shut off around the bumps or pads. <u><i>The overmolded plastic can serve as the temple, and the pads would be left exposed. Thus, portions of the printed circuit board are covered by plastic, and areas with the bumps or pads are exposed for connection. These pads serve as the connectors for the glasses.</i></u>”
[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	Page at 11: [00061] “FIGS. 6A-6B illustrate a process to make the non-standard female plug 310. First, an electrical wire 354 is attached to a small sheet or piece of metal 356. FIG. 6A shows

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;

a number of such wires, with a number of the metal sheets or pieces crimped to a hard PVC 358. The figure shows the back side of the crimped board with the wires and with a number of holes, such as 360. Then the frame is overmolded with a soft PVC. FIG. 6B shows a cross section of the overmolded frame 362 with the soft PVC. *As shown in the figure, a number of the metal sheets, such as 364 and 366, are exposed. They are the metal contacts in the female connector 310.* Instead of the above approach, alternatively, a wire can be attached to a sheet of metal by putting the wire between the metal and the plastic as the metal is crimped onto a plastic. *When the temple (i.e., male connector 300) is inserted into the female plug, the soft PVC material stretches slightly, providing a spring-force to keep the contacts connected.*”

[00063] “Referring to both FIG. 5 and FIG. 6B, *when the male connector 300 is inserted into the slot 314 of the female connector 310, the metal pads, 304 and 306, will get in contact, or mate, with the metal sheets, 364 and 366.*”

Page 53, Fig. 5:

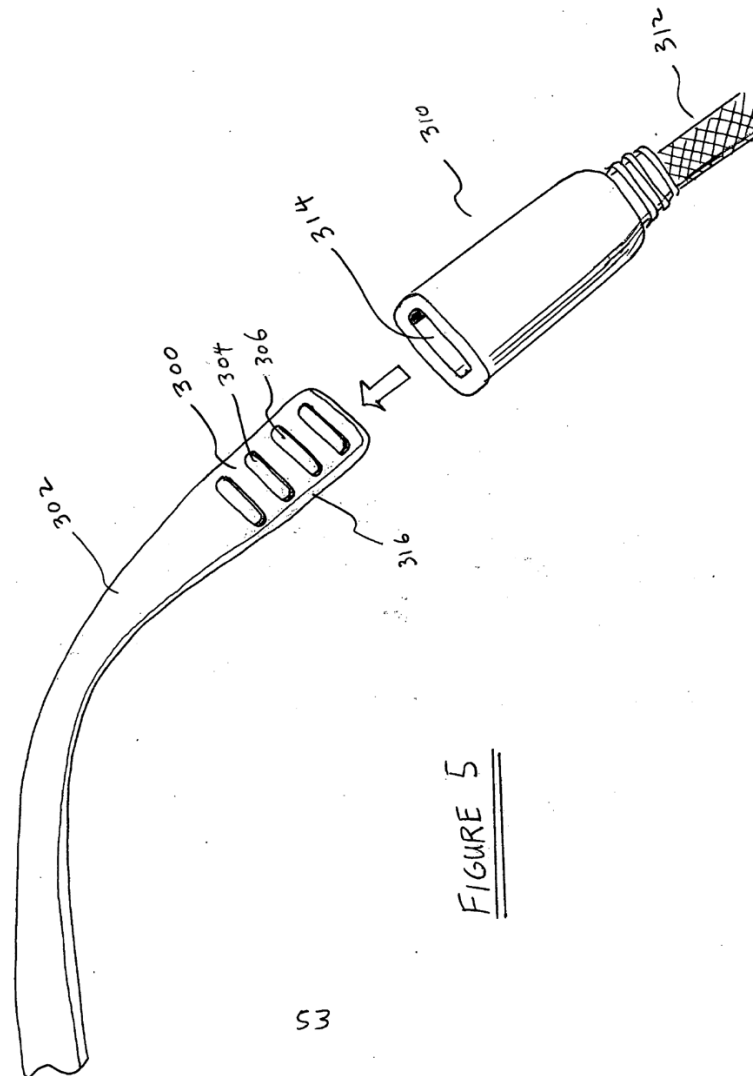


FIGURE 5

Page 54, Fig. 6A:

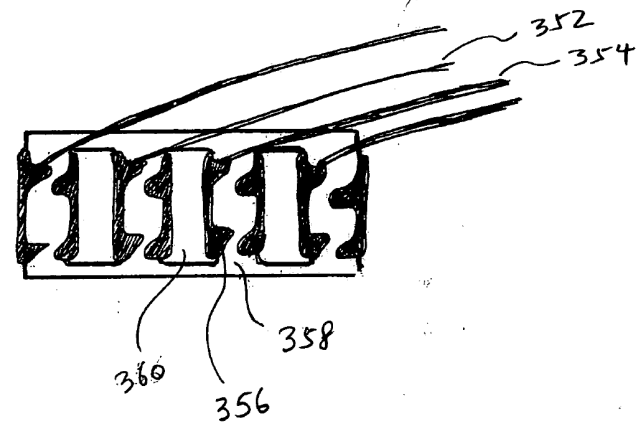


FIGURE 6A

Page 55, Fig. 6B:

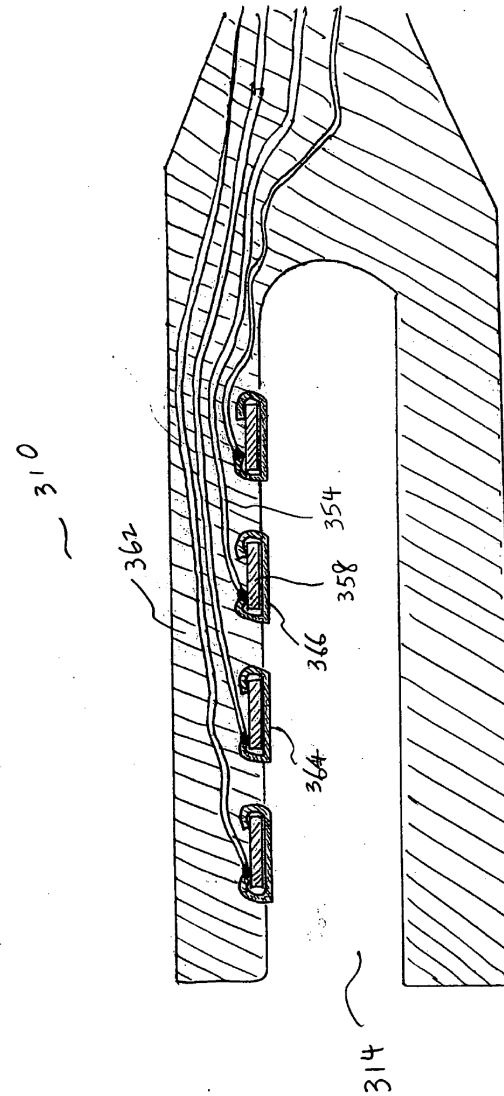


FIGURE 6B

	EX2039 (Smith Deposition Tr.) at 27:13-28:4 (Dr. Smith: “I do see that the term ‘spring force’ shows up in this paragraph, the paragraph 61 of Exhibit 2030.”)
[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	Page 16: [00082] “<u><i>As described, power (e.g., external power source) can be coupled to the glasses through a connector. In one embodiment, the power source is embedded inside or inserted into the glasses.</i></u> Different types of power sources are applicable. For example, <u><i>the power source can be a battery, a fuel cell, a solar cell, or a re-chargeable battery. The rechargeable battery can be charged through a connector at the glasses.</i></u>”
[E] a microphone at least partially in the wireless wearable device.	Page 21: [000108] “In one embodiment, for the glasses operating as a cell phone head set, the head set includes active noise cancellation mechanism. <u><i>For example, the glasses include two microphones. One microphone is for capturing the voice of the user. But the microphone captures ambient noise also. It can be embedded in a protrusion extending from the end of the temple close to a lens holder, towards the mouth of the user, as the microphone 110 in FIG. 1.</i></u> Another microphone can be located at the top of one of the lens holders pointing away from the mouth of the user. This microphone is for capturing ambient noise. As a first order approximation,

	outputs from the two microphones could be subtracted from each other to provide voice signals with noise reduced.” Page 2: [0001] “The present invention provides a pair of glasses with one or more embedded or partially embedded electrical components.” Page 6: [00037] “A number of embodiments according to the present invention regarding glasses with one or more electrical component partially or fully embedded, will be described.” Pages 28-29: [000142] “In other embodiments, some of the components are embedded fully or partially in other areas of the glasses, such as the lens holders or the bridges of the glasses.” Page 31: [000153] “A number of embodiments have been described regarding one or more electrical components at least partially embedded in a pair of glasses. In one embodiment, one or more electrical components are at least partially embedded in a temple tip of a pair of glasses.... In one embodiment, such an enclosure is a temple tip, and there is an electrical component, partially or fully, embedded in the tip.”
--	--

	Page 32: [000154] “The temple tip 914 includes at [sic: least] one electrical component 916 that is at least partially embedded therein.” Pages 32-33: [000155] “The temple cover 920 includes at [sic: least] one electrical component 922 that is either attached thereto or at least partially embedded therein.... The fit-over temple 926 includes at [sic: least] one electrical component 928 that is either attached thereto or at least partially embedded therein.” Page 33: [000159] “A number of embodiments have been described where one or more electrical components are at least partially embedded in a pair of glasses. In yet another embodiment, the one or more electrical components are at least partially embedded in an eye mask.”
<u>Claim 2</u>	
[Preamble] A wireless wearable device as recited in claim 1 comprising	<i>See Claim 1</i>
[A] another microphone at least partially in the wireless wearable device configured to capture	Page 21: [000108] “In one embodiment, for the glasses operating as a cell phone head set, the head set includes active noise

at least sound in vicinity of the wireless wearable device.	cancellation mechanism. For example, the glasses include two microphones. One microphone is for capturing the voice of the user. But the microphone captures ambient noise also. It can be embedded in a protrusion extending from the end of the temple close to a lens holder, towards the mouth of the user, as the microphone 110 in FIG. 1. <u><i>Another microphone can be located at the top of one of the lens holders pointing away from the mouth of the user. This microphone is for capturing ambient noise.</i></u> As a first order approximation, outputs from the two microphones could be subtracted from each other to provide voice signals with noise reduced.” Page 2: [0001] “The present invention provides a pair of glasses with one or more embedded or partially embedded electrical components.” Page 6: [00037] “A number of embodiments according to the present invention regarding glasses with one or more electrical component partially or fully embedded, will be described.” Pages 28-29: [000142] “In other embodiments, some of the components are embedded fully or partially in other areas of the glasses, such as the lens holders or the bridges of the glasses.”
--	--

	Page 31: [000153] “A number of embodiments have been described regarding one or more electrical components at least partially embedded in a pair of glasses. In one embodiment, one or more electrical components are at least partially embedded in a temple tip of a pair of glasses.... In one embodiment, such an enclosure is a temple tip, and there is an electrical component, partially or fully, embedded in the tip.” Page 32: [000154] “The temple tip 914 includes at [sic: least] one electrical component 916 that is at least partially embedded therein.” Pages 32-33: [000155] “The temple cover 920 includes at [sic: least] one electrical component 922 that is either attached thereto or at least partially embedded therein.... The fit-over temple 926 includes at [sic: least] one electrical component 928 that is either attached thereto or at least partially embedded therein.” Page 33:
--	--

	[000159] “A number of embodiments have been described where one or more electrical components are at least partially embedded in a pair of glasses. In yet another embodiment, the one or more electrical components are at least partially embedded in an eye mask.”
<u>Claim 3</u>	
[Preamble] A wireless wearable device as recited in claim 2 comprising	<i>See Claim 2</i>
[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.	Page 21: [000108] “<u>In one embodiment, for the glasses operating as a cell phone head set, the head set includes active noise cancellation mechanism.</u> For example, the glasses include two microphones. One microphone is for capturing the voice of the user. But the microphone captures ambient noise also. It can be embedded in a protrusion extending from the end of the temple close to a lens holder, towards the mouth of the user, as the microphone 110 in FIG. 1. Another microphone can be located at the top of one of the lens holders pointing away from the mouth of the user. This microphone is for capturing ambient noise. As a first order approximation, outputs from the two microphones could be subtracted from each other to provide voice signals with noise reduced.” Page 33:

	[000157] “In one embodiment, an electrical component is a component of an electrical circuit, and the electrical circuit is for performing at least a desired, intended or predetermined function.” Page 2: [0001] “The present invention provides a pair of glasses with one or more embedded or partially embedded electrical components.” Page 6: [00037] “A number of embodiments according to the present invention regarding glasses with one or more electrical component partially or fully embedded, will be described.” Pages 28-29: [000142] “In other embodiments, some of the components are embedded fully or partially in other areas of the glasses, such as the lens holders or the bridges of the glasses.” Page 31: [000153] “A number of embodiments have been described regarding one or more electrical components at least partially embedded in a pair of glasses. In one embodiment, one or more electrical components are at least partially embedded in a temple tip of a pair of glasses.... In one embodiment, such an
--	--

	enclosure is a temple tip, and there is an electrical component, partially or fully, embedded in the tip.” Page 32: [000154] “The temple tip 914 includes at [sic: least] one electrical component 916 that is at least partially embedded therein.” Pages 32-33: [000155] “The temple cover 920 includes at [sic: least] one electrical component 922 that is either attached thereto or at least partially embedded therein.... The fit-over temple 926 includes at [sic: least] one electrical component 928 that is either attached thereto or at least partially embedded therein.” Page 33: [000159] “A number of embodiments have been described where one or more electrical components are at least partially embedded in a pair of glasses. In yet another embodiment, the one or more electrical components are at least partially embedded in an eye mask.”
<u>Claim 4</u>	
[Preamble] A wireless wearable device as recited in claim 2,	<i>See Claim 2</i>

[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.	Page 21: [000108] “<u>In one embodiment, for the glasses operating as a cell phone head set, the head set includes active noise cancellation mechanism. For example, the glasses include two microphones. One microphone is for capturing the voice of the user. But the microphone captures ambient noise also. It can be embedded in a protrusion extending from the end of the temple close to a lens holder, towards the mouth of the user, as the microphone 110 in FIG. 1. Another microphone can be located at the top of one of the lens holders pointing away from the mouth of the user. This microphone is for capturing ambient noise. As a first order approximation, outputs from the two microphones could be subtracted from each other to provide voice signals with noise reduced.</u>”
<u>Claim 5</u>	
[Preamble] A wireless wearable device as recited in claim 2,	See Claim 2
[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.	Page 21: [000108] “In one embodiment, for the glasses operating as a cell phone head set, the head set includes active noise cancellation mechanism. <u>For example, the glasses include two microphones. One microphone is for capturing the voice of the user. But the microphone captures ambient noise also. It can be embedded in a protrusion extending from the end of the temple close to a lens holder, towards the mouth of the</u>

	<u>user, as the microphone 110 in FIG. 1. Another microphone can be located at the top of one of the lens holders pointing away from the mouth of the user.</u> This microphone is for capturing ambient noise. As a first order approximation, outputs from the two microphones could be subtracted from each other to provide voice signals with noise reduced.”
<u>Claim 6</u>	
[Preamble] A wireless wearable device as recited in claim 2 comprising	See Claim 2
[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.	Page 3: [0006] “In yet another embodiment, <u>a pair of glasses includes a speaker, a coder/decoder, a processor and a storage medium.</u>” Page 20: [000102] “<u>A number of processors have been described.</u> The processors can use different types of operating systems. In one embodiment, Symbian Operating Systems are used. In another embodiment, operating systems, such as TinyOS, are used. <u>The operating system could be programmed in C++ and then compiled into machine codes.</u>”

[000105] “*In one embodiment, a pair of glasses has access to voice recognition software. The software can be embedded in (a) the glasses,* (b) a base tethered to the glasses, (c) a portable device wired or wirelessly coupled to the glasses or to the base, or (d) a computing system wired or wirelessly coupled to the glasses. Or, the software or firmware can be in more than one of the above devices.”

Page 14:

[00076] “In one embodiment of the invention, the glasses have a storage medium (i.e., memory). *The memory can be on a printed-circuit board and, for example, store up to 256 MB. The memory can be a built-in or removable flash memory.* The memory can be coupled to a device external to the glasses through one or more connectors at the glasses. *As an example, a 256 MB flash memory is in one of the temples of a pair of glasses, and there is a USB connector at the free end of that temple to couple to an external device.*”

Page 36:

[000168] “A number of embodiments in the invention can be implemented in software, hardware or a combination of hardware and software. *A number of embodiments of the invention can also be embodied as computer readable code on a computer readable medium. The computer readable medium is any data storage device that can store data which can thereafter be read by a computer system.* Examples of the computer readable medium include read-only memory,

	random-access memory, CD-ROMs, magnetic tape, optical data storage devices, and carrier waves. The computer readable medium can also be distributed over network-coupled computer systems so that the computer readable code is stored and executed in a distributed fashion.” Page 2: [0001] “The present invention provides a pair of glasses with one or more embedded or partially embedded electrical components.” Page 6: [00037] “A number of embodiments according to the present invention regarding glasses with one or more electrical component partially or fully embedded, will be described.” Pages 28-29: [000142] “In other embodiments, some of the components are embedded fully or partially in other areas of the glasses, such as the lens holders or the bridges of the glasses.” Page 31: [000153] “A number of embodiments have been described regarding one or more electrical components at least partially embedded in a pair of glasses. In one embodiment, one or more electrical components are at least partially embedded in a temple tip of a pair of glasses.... In one embodiment, such an
--	---

	enclosure is a temple tip, and there is an electrical component, partially or fully, embedded in the tip.” Page 32: [000154] “The temple tip 914 includes at [sic: least] one electrical component 916 that is at least partially embedded therein.” Pages 32-33: [000155] “The temple cover 920 includes at [sic: least] one electrical component 922 that is either attached thereto or at least partially embedded therein.... The fit-over temple 926 includes at [sic: least] one electrical component 928 that is either attached thereto or at least partially embedded therein.” Page 33: [000159] “A number of embodiments have been described where one or more electrical components are at least partially embedded in a pair of glasses. In yet another embodiment, the one or more electrical components are at least partially embedded in an eye mask.”
<u>Claim 7</u>	
[Preamble] A wireless wearable device as recited in claim 2 comprising	<i>See Claim 2</i>

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

Pages 18-19:

[00095] “A number of embodiments of the present invention have been described where electrical signals are transmitted to or from a pair of glasses through a physical connection. **In one embodiment, electrical signals are wirelessly coupled to a pair of glasses. The coupling can be short range or long range. The coupling can be directly to the glasses, or to a base connected to a pair of glasses. The glasses with wireless coupling capabilities can be used to couple to a Bluetooth network,** the Internet, a WiFi network, a WiMax network, a cell-phone network or other types of networks. The coupling can also be through a point-to-point link, such as an infrared link.”

Page 19:

[00096] “**FIGS. 11A-11B show examples of some of the electrical components in** or tethered to **a pair of glasses for wireless connections, according to embodiments of the present invention.** In FIG. 11A, a high frequency or RF antenna 602 wirelessly captures high frequency or RF signals for RF transceiver circuits 604. If the transceiver circuits are for a conventional superheterodyne system, the transceiver circuits 604 mix the RF signals down to IF signals. Then the IF signals are processed by baseband circuits. Digital outputs from the baseband circuits are coupled to a processor 608 for analysis and synthesis.”

	[00097] “Outputs from the processor 608 are fed to a D-to-A converter 610 to generate audio signals for a speaker 612. Similarly, audio analog signals from a microphone 614 can be fed to an A-to-D converter 616 to generate digital low frequency signals for the processor 608 and then to the RF transceiver circuits 604. The low frequency signals are up-converted by the RF transceiver circuits 604 and wirelessly transmitted by the antenna 602.” Page 2: [0001] “The present invention provides a pair of glasses with one or more embedded or partially embedded electrical components.” Page 6: [00037] “A number of embodiments according to the present invention regarding glasses with one or more electrical component partially or fully embedded, will be described.” Pages 28-29: [000142] “In other embodiments, some of the components are embedded fully or partially in other areas of the glasses, such as the lens holders or the bridges of the glasses.” Page 31: [000153] “A number of embodiments have been described regarding one or more electrical components at least partially
--	--

	embedded in a pair of glasses. In one embodiment, one or more electrical components are at least partially embedded in a temple tip of a pair of glasses.... In one embodiment, such an enclosure is a temple tip, and there is an electrical component, partially or fully, embedded in the tip.” Page 32: [000154] “The temple tip 914 includes at [sic: least] one electrical component 916 that is at least partially embedded therein.” Pages 32-33: [000155] “The temple cover 920 includes at [sic: least] one electrical component 922 that is either attached thereto or at least partially embedded therein.... The fit-over temple 926 includes at [sic: least] one electrical component 928 that is either attached thereto or at least partially embedded therein.” Page 33: [000159] “A number of embodiments have been described where one or more electrical components are at least partially embedded in a pair of glasses. In yet another embodiment, the one or more electrical components are at least partially embedded in an eye mask.” Page 33:
--	--

	[000157] “In one embodiment, an electrical component is a component of an electrical circuit, and the electrical circuit is for performing at least a desired, intended or predetermined function.”
<u>Claim 8</u>	
[Preamble] A wireless wearable device as recited in claim 2 comprising:	<i>See Claim 2</i>
[A] a touch-sensitive input surface on a portion of the wireless wearable device; and	Pages 14-15: [00078] “In yet another embodiment of the invention, a pair of glasses includes a multimedia asset player, such as a MP3 player. FIG. 9 shows some of the electrical components for a MP3 player 500 according to an embodiment of the invention.” Page 15: [00080] “There are different approaches to select a song. In one embodiment, the songs or the media assets can be categorized in the MP3 player, and the categorization can be hierarchical, with multiple levels in the hierarchy. To illustrate, assume that there are three levels. The top level can be the name of the singer; the second level can be the time period when the asset was produced, and the third level can be the names of the songs. The entries, such as the name of the singer, can be abbreviated. There can be a small display and a control knob to allow a user to scroll down entries in a level. By pushing the knob, the user selects an entry, which can lead the user to a

lower level. There can be an entry for moving up a level also. **In another embodiment, the display is a touch-screen display, allowing entries to be entered directly on the display.** In yet another embodiment, entries can be selected based on voice recognition.”

Page 1:

“The following disclosure describes various inventions as well aspects and implementations thereof. The disclosure is organized into two sections. The sections are as follows:

A. EYEGLASSES WITH ELECTRICAL COMPONENTS

B. EYEWEAR WITH ULTRAVIOLET DETECTION SYSTEM

C. EYEGLASSES WITH USER INPUT CAPABILITY

The inventions, aspects, or implementations discussed in these sections can be used separately or in any combination.”

Page 172:

[0057] “The switch can be activated depending on electrical forces 158. In one embodiment, the electrical force depends on capacitive effect. By changing the capacitance, the switch is turned on and off. For example, the capacitance is changed by placing one’s finger over a metallic pad. In another example, by changing the amount of overlap between two metallic sheets

	that are not in contact, the capacitance between the two metallic sheets will change. This then changes the range of control of the switch.” Pages 174-175: [0066] “FIG. 7C shows an embodiment 400 again using two photodiodes, 402 and 404, but without a wheel. The two diodes, 402 and 404, are exposed to ambient light unless they are covered. In this embodiment, whether the finger 406 or another object is moving from the first diode 402 to the second diode 404, or from the second diode 404 to the first diode 402 can be determined based on the differential output from the diodes. For example, if the finger 406 goes from the first 402 to the second 404, the differential output (the first - the second) would go from negative to positive. On the other hand, if the finger goes from the second to the first, the output will go from positive to negative. The differential output thus can show the direction of movement of the finger. One can then assign forward movement (from the first 402 to the second 404) as increment, and backward movement (from the second 402 to the first 402) as decrement.”
[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	<i>See Claim 6[A]</i> Page 15: [00080] “There are different approaches to select a song.... The entries, such as the name of the singer, can be abbreviated. There can be a small display and a control knob to allow a user

across at least a portion of the touch-sensitive input surface.

to scroll down entries in a level. By pushing the knob, the user selects an entry, which can lead the user to a lower level. There can be an entry for moving up a level also. In another embodiment, the display is a touch-screen display, allowing entries to be entered directly on the display. In yet another embodiment, entries can be selected based on voice recognition.”

Page 1:

“The following disclosure describes various inventions as well aspects and implementations thereof. The disclosure is organized into two sections. The sections are as follows:

A. EYEGLASSES WITH ELECTRICAL COMPONENTS

B. EYEWEAR WITH ULTRAVIOLET DETECTION SYSTEM

C. EYEGLASSES WITH USER INPUT CAPABILITY

The inventions, aspects, or implementations discussed in these sections can be used separately or in any combination.”

Page 172:

[0057] “The switch can be activated depending on electrical forces 158. In one embodiment, the electrical force depends on capacitive effect. By changing the capacitance, the switch is turned on and off. For example, the capacitance is changed by

placing one's finger over a metallic pad. In another example, by changing the amount of overlap between two metallic sheets that are not in contact, the capacitance between the two metallic sheets will change. This then changes the range of control of the switch.”

Pages 174-175:

[0066] “FIG. 7C shows an embodiment 400 again using two photodiodes, 402 and 404, but without a wheel. The two diodes, 402 and 404, are exposed to ambient light unless they are covered. In this embodiment, whether the finger 406 or another object is moving from the first diode 402 to the second diode 404, or from the second diode 404 to the first diode 402 can be determined based on the differential output from the diodes. For example, if the finger 406 goes from the first 402 to the second 404, the differential output (the first - the second) would go from negative to positive. On the other hand, if the finger goes from the second to the first, the output will go from positive to negative. The differential output thus can show the direction of movement of the finger. One can then assign forward movement (from the first 402 to the second 404) as increment, and backward movement (from the second 402 to the first 402) as decrement.”

Page 194, Fig. 7C:

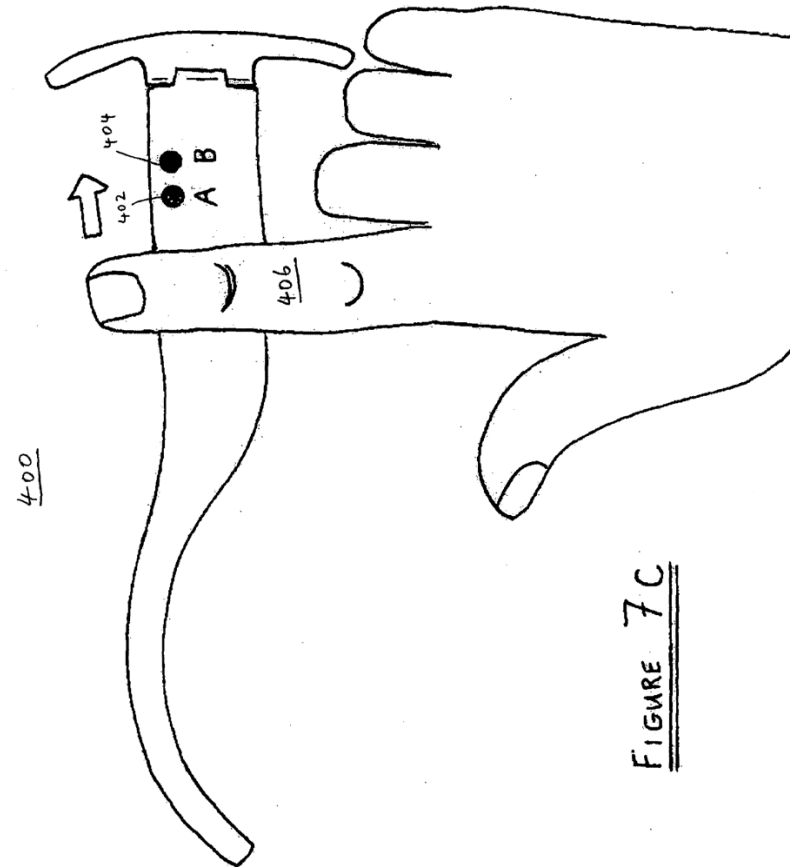


FIGURE 7C

Claim 9

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

See Claim 2

[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.

Page 3:

[0006] “In yet another embodiment, a pair of glasses includes a speaker, a coder/decoder, a processor and a storage medium. The pair of glasses can serve as a multimedia asset player, such as a MP3 player. There can also be a connector at the glasses to facilitate the transfer of multimedia assets.”

Page 29:

[000144] “In yet another embodiment, a pair of glasses also includes a sensor. FIG. 17A is a chart 900 that depicts examples of sensors in the glasses.”

[000145] “In one embodiment, the sensor is a ‘being worn’ sensor. The ‘being worn’ sensor indicates whether the glasses are being worn by its user. The ‘being worn’ operation can be performed using, for example, a thermal sensor, a motion detector, a stress sensor or a switch.”

[000146] “In one embodiment, a motion detector is used as a ‘being worn’ sensor. A threshold can be set, such that if the amount of motion exceeds the threshold, the eyewear is assumed to be worn. The motion detector can, for example, be achieved by a mechanical means or an accelerometer.”

Pages 30-31:

[000152] “The sensors can be provided in a redundant or fault-tolerant manner. For example, sensors can come in pairs in the

glasses. When one malfunctions, the other one will take over its operation. ***In another embodiment, the sensor information can be processed in a differential manner to examine changes to the sensor information.*** The sensors can by [sic] powered by a battery, solar energy, or kinetic energy. For reduced power consumption, the sensors can remain in a low-power state unless data is being acquired by the sensors. ***In yet another embodiment, two or more of the auxiliary sensors can communicate with one another (wired or wirelessly) to exchange data or control information.***”

Page 2:

[0001] “The present invention provides a pair of glasses with one or more embedded or partially embedded electrical components.”

Page 6:

[00037] “A number of embodiments according to the present invention regarding glasses with one or more electrical component partially or fully embedded, will be described.”

Pages 28-29:

[000142] “In other embodiments, some of the components are embedded fully or partially in other areas of the glasses, such as the lens holders or the bridges of the glasses.”

Page 31:

	[000153] “A number of embodiments have been described regarding one or more electrical components at least partially embedded in a pair of glasses. In one embodiment, one or more electrical components are at least partially embedded in a temple tip of a pair of glasses.... In one embodiment, such an enclosure is a temple tip, and there is an electrical component, partially or fully, embedded in the tip.” Page 32: [000154] “The temple tip 914 includes at [sic: least] one electrical component 916 that is at least partially embedded therein.” Pages 32-33: [000155] “The temple cover 920 includes at [sic: least] one electrical component 922 that is either attached thereto or at least partially embedded therein.... The fit-over temple 926 includes at [sic: least] one electrical component 928 that is either attached thereto or at least partially embedded therein.” Page 33: [000159] “A number of embodiments have been described where one or more electrical components are at least partially embedded in a pair of glasses. In yet another embodiment, the one or more electrical components are at least partially embedded in an eye mask.”
--	---

<u>Claim 10</u>	
[Preamble] A wireless wearable device as recited in claim 2 comprising	<i>See Claim 2</i>
[A] a motion sensor at least partially in the wireless wearable device.	Page 29: [000144] “In yet another embodiment, a pair of glasses also includes a sensor. FIG. 17A is a chart 900 that depicts examples of <u>sensors in the glasses.</u>” [000145] “In one embodiment, the sensor is a ‘being worn’ sensor. The ‘being worn’ sensor indicates whether the glasses are being worn by its user. The ‘being worn’ operation can be performed using, for example, a thermal sensor, <u>a motion detector</u>, a stress sensor or a switch.” [000146] “In one embodiment, <u>a motion detector is used as a ‘being worn’ sensor. A threshold can be set, such that if the amount of motion exceeds the threshold, the eyewear is assumed to be worn.</u> The motion detector can, for example, be achieved by a mechanical means or an accelerometer.” Pages 30-31: [000152] “The sensors can be provided in a redundant or fault-tolerant manner. For example, sensors can come in pairs in the glasses. When one malfunctions, the other one will take over its operation. <u>In another embodiment, the sensor information can be processed in a differential manner to examine changes</u>

to the sensor information. The sensors can by [sic] powered by a battery, solar energy, or kinetic energy. For reduced power consumption, the sensors can remain in a low-power state unless data is being acquired by the sensors. **In yet another embodiment, two or more of the auxiliary sensors can communicate with one another (wired or wirelessly) to exchange data or control information.**”

Page 2:

[0001] “The present invention provides a pair of glasses with one or more embedded or partially embedded electrical components.”

Page 6:

[00037] “A number of embodiments according to the present invention regarding glasses with one or more electrical component partially or fully embedded, will be described.”

Pages 28-29:

[000142] “In other embodiments, some of the components are embedded fully or partially in other areas of the glasses, such as the lens holders or the bridges of the glasses.”

Page 31:

[000153] “A number of embodiments have been described regarding one or more electrical components at least partially embedded in a pair of glasses. In one embodiment, one or

	more electrical components are at least partially embedded in a temple tip of a pair of glasses.... In one embodiment, such an enclosure is a temple tip, and there is an electrical component, partially or fully, embedded in the tip.” Page 32: [000154] “The temple tip 914 includes at [sic: least] one electrical component 916 that is at least partially embedded therein.” Pages 32-33: [000155] “The temple cover 920 includes at [sic: least] one electrical component 922 that is either attached thereto or at least partially embedded therein.... The fit-over temple 926 includes at [sic: least] one electrical component 928 that is either attached thereto or at least partially embedded therein.” Page 33: [000159] “A number of embodiments have been described where one or more electrical components are at least partially embedded in a pair of glasses. In yet another embodiment, the one or more electrical components are at least partially embedded in an eye mask.”
--	---

<u>Claim 11</u>	
[Preamble] A wireless wearable device as recited in claim 2 comprising	<i>See Claim 2</i>
[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.	Pages 14-15: [00078] “In yet another embodiment of the invention, a pair of glasses includes a multimedia asset player, such as a MP3 player. FIG. 9 shows some of the electrical components for a MP3 player 500 according to an embodiment of the invention.” Page 15: [00080] “There are different approaches to select a song. In one embodiment, the songs or the media assets can be categorized in the MP3 player, and the categorization can be hierarchical, with multiple levels in the hierarchy. To illustrate, assume that there are three levels. The top level can be the name of the singer; the second level can be the time period when the asset was produced, and the third level can be the names of the songs. The entries, such as the name of the singer, can be abbreviated. There can be a small display and a control knob to allow a user to scroll down entries in a level. By pushing the knob, the user selects an entry, which can lead the user to a lower level. There can be an entry for moving up a level also. <u>In another embodiment, the display is a touch-screen display, allowing entries to be entered directly on the display.</u> In yet

	another embodiment, entries can be selected based on voice recognition.” Page 1: “The following disclosure describes various inventions as well aspects and implementations thereof. The disclosure is organized into two sections. The sections are as follows: A. EYEGLASSES WITH ELECTRICAL COMPONENTS B. EYEWEAR WITH ULTRAVIOLET DETECTION SYSTEM C. EYEGLASSES WITH USER INPUT CAPABILITY <u>The inventions, aspects, or implementations discussed in these sections can be used separately or in any combination.”</u> Page 172: [0057] “The switch can be activated depending on electrical forces 158. In one embodiment, the electrical force depends on capacitive effect. By changing the capacitance, the switch is turned on and off. For example, the capacitance is changed by placing one’s finger over a metallic pad. In another example, by changing the amount of overlap between two metallic sheets that are not in contact, the capacitance between the two
--	---

	metallic sheets will change. This then changes the range of control of the switch.” Pages 174-175: [0066] “FIG. 7C shows an embodiment 400 again using two photodiodes, 402 and 404, but without a wheel. The two diodes, 402 and 404, are exposed to ambient light unless they are covered. In this embodiment, whether the finger 406 or another object is moving from the first diode 402 to the second diode 404, or from the second diode 404 to the first diode 402 can be determined based on the differential output from the diodes. For example, if the finger 406 goes from the first 402 to the second 404, the differential output (the first - the second) would go from negative to positive. On the other hand, if the finger goes from the second to the first, the output will go from positive to negative. The differential output thus can show the direction of movement of the finger. One can then assign forward movement (from the first 402 to the second 404) as increment, and backward movement (from the second 402 to the first 402) as decrement.”
<u>Claim 12</u>	
[Preamble] A wireless wearable device as recited in claim 2 comprising	<i>See Claim 2</i>
[A] an area configured for attachment via magnetic force.	Page 33:

	[000158] “A number of embodiments have been described above for an eyeglass frame, i.e., primary frame, are also applicable to an auxiliary frame. An auxiliary frame can attach to a primary frame through different techniques, such as using clips. <u>Another technique to attach an auxiliary frame to a primary frame is by way of magnets.</u> Examples of using magnets as an attachment technique can be found, for example, in U.S. Patent 6,012,811, entitled, ‘EYEGLASS FRAMES WITH MAGNETS AT BRIDGES FOR ATTACHMENT.’”
<u>Claim 13</u>	
[Preamble] A wireless wearable device as recited in claim 12 comprising	<i>See Claim 12</i>
[A] a magnet in the area.	Page 33: [000158] “A number of embodiments have been described above for an eyeglass frame, i.e., primary frame, are also applicable to an auxiliary frame. An auxiliary frame can attach to a primary frame through different techniques, such as using clips. <u>Another technique to attach an auxiliary frame to a primary frame is by way of magnets.</u> Examples of using magnets as an attachment technique can be found, for example, in U.S. Patent 6,012,811, entitled, ‘EYEGLASS FRAMES WITH MAGNETS AT BRIDGES FOR ATTACHMENT.’”

<u>Claim 14</u>	
[Preamble] A wireless wearable device as recited in claim 12 comprising	<i>See Claim 12</i>
[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.	<i>See Claim 6[A]</i>
<u>Claim 15</u>	
[Preamble] A wireless wearable device as recited in claim 14 comprising	<i>See Claim 14</i>
[A] wireless communication circuitry at least partially in the wireless wearable device configured for coupling to at least a wireless network.	<i>See Claim 7[A]</i>
<u>Claim 16</u>	
[Preamble] A wireless wearable device as recited in claim 15 comprising	<i>See Claim 15</i>
[A] a pressure sensor at least partially in the wireless wearable device.	Page 30: [000150] “ <i><u>In one embodiment, another type of sensor is an environmental sensor. The environmental sensor can sense</u></i>

	environmental conditions, such as one or more of ultraviolet radiation, temperature (e.g., ambient temperature), <u>pressure</u>, light, humidity and toxins (e.g., chemicals, radiation, etc.).” Pages 30-31: [000152] “<i>In another embodiment, the sensor information can be processed in a differential manner to examine changes to the sensor information.</i> The sensors can by [sic] powered by a battery, solar energy, or kinetic energy. For reduced power consumption, the sensors can remain in a low-power state unless data is being acquired by the sensors. In yet another embodiment, two or more of the auxiliary sensors can communicate with one another (wired or wirelessly) to exchange data or control information.” Page 2: [0001] “The present invention provides a pair of glasses with one or more embedded or partially embedded electrical components.” Page 6: [00037] “A number of embodiments according to the present invention regarding glasses with one or more electrical component partially or fully embedded, will be described.” Pages 28-29:
--	--

	[000142] “In other embodiments, some of the components are embedded fully or partially in other areas of the glasses, such as the lens holders or the bridges of the glasses.” Page 31: [000153] “A number of embodiments have been described regarding one or more electrical components at least partially embedded in a pair of glasses. In one embodiment, one or more electrical components are at least partially embedded in a temple tip of a pair of glasses.... In one embodiment, such an enclosure is a temple tip, and there is an electrical component, partially or fully, embedded in the tip.” Page 32: [000154] “The temple tip 914 includes at [sic: least] one electrical component 916 that is at least partially embedded therein.” Pages 32-33: [000155] “The temple cover 920 includes at [sic: least] one electrical component 922 that is either attached thereto or at least partially embedded therein.... The fit-over temple 926 includes at [sic: least] one electrical component 928 that is either attached thereto or at least partially embedded therein.” Page 33:
--	--

	[000159] “A number of embodiments have been described where one or more electrical components are at least partially embedded in a pair of glasses. In yet another embodiment, the one or more electrical components are at least partially embedded in an eye mask.” Page 33: [000157] “In one embodiment, an electrical component is a component of an electrical circuit, and the electrical circuit is for performing at least a desired, intended or predetermined function.”
<u>Claim 17</u>	
[Preamble] A wireless wearable device as recited in claim 15 comprising	<i>See Claim 15</i>
[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.	<i>See Claim 9[A]</i>
<u>Claim 18</u>	
[Preamble] A wireless wearable device as recited in claim 17 comprising	<i>See Claim 17</i>

[A] a motion sensor at least partially in the wireless wearable device.	<i>See Claim 10[A]</i>
<u>Claim 19</u>	
[Preamble] A wireless wearable device as recited in claim 18 comprising	<i>See Claim 18</i>
[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.	<i>See Claim 11[A]</i>
<u>Claim 20</u>	
[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:	<i>See Claim 1[Preamble]</i>
[A] a speaker at least partially in the wireless wearable device;	<i>See Claim 1[A]</i>
[B] an electrical connector at least partially in the wireless wearable device, wherein the electrical connector includes at least two	<i>See Claim 1[B]</i>

conductive areas, each area on a surface of the wireless wearable device,	
[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;	<i>See Claim 1[C]</i>
[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;	<i>See Claim 1[D]</i>
[E] a microphone at least partially in the wireless wearable device;	<i>See Claim 1[E]</i>
[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;	<i>See Claim 2[A] and Claim 5[A]</i>

[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;	<i>See Claim 6[A]</i>
[H] wireless communication circuitry at least partially in the wireless wearable device; and	<i>See Claim 7[A]</i>
[I] an area configured for attachment via magnetic force.	<i>See Claim 12[A]</i>
<u>Claim 21</u>	
[Preamble] A wireless wearable device as recited in claim 20 comprising	<i>See Claim 20</i>
[A] a touch-sensitive input surface on a portion of the wireless wearable device; and	<i>See Claim 8[A]</i>
[B] electronic circuitry configured to identify a sliding user-input action across at least a portion of the touch-sensitive input surface.	<i>See Claim 8[B]</i>
<u>Claim 22</u>	
[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	<i>See Claim 1[Preamble]</i>

wireless wearable device to be worn in an ear of the user, and the wireless wearable device comprising:	
[A] a speaker at least partially in the wireless wearable device;	<i>See Claim 1[A]</i>
[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	<i>See Claim 1[B]</i>
[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;	<i>See Claim 1[C]</i>
[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;	<i>See Claim 1[D]</i>

[E] a microphone at least partially in the wireless wearable device;	<i>See Claim 1[E]</i>
[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;	<i>See Claim 2[A] and Claim 5[A]</i>
[G] wireless communication circuitry at least partially in the wireless wearable device;	<i>See Claim 7[A]</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	<i>See Claim 11[A]</i>
[I] an area configured for attachment via magnetic force.	<i>See Claim 12[A]</i>
<u>Claim 23</u>	
[Preamble] A wireless wearable device as recited in claim 22 comprising	<i>See Claim 22</i>

[A] a pressure sensor at least partially in the wireless wearable device; and	<i>See Claim 16[A]</i>
[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.	<i>See Claim 9[A]</i>
<u>Claim 24</u>	
[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:	<i>See Claim 1[Preamble]</i>
[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	<i>See Claim 1[B]</i>
[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	<i>See Claim 1[C]</i>

enable each of the at least two conductive areas to be electrically connected to its corresponding conductive contact;	
[C] a rechargeable battery in the wireless wearable device, with the battery configured to be charged via at least the electrical connector;	<i>See Claim 1[D]</i>
[D] a speaker at least partially in the wireless wearable device, with the battery configured to provide power to the speaker;	<i>See Claim 1[A]</i> Page 9: [00054] “<u><i>Electrical signals can be coupled to an electrical component, such as a speaker, in a pair of glasses through a number of mechanisms. In one embodiment, there is an electrical connector at least partially embedded in the glasses.</i></u>” In other words, at least a portion of the connector is inside the glasses. The connector is electrically coupled to the speaker (or other electrical component) by, for example, a conductor. The conductor can be on a printed-circuit board. In one embodiment, the conductor is also embedded in the glasses.” Page 10: [00055] “Regarding connectors, FIG. 5 shows one embodiment where the connector is not a standard connector. In FIG. 5, the connector is a male plug or a male connector 300 at the end of a temple 302 of a pair of glasses. The connector 300 is connected to the speaker through, for example, one or more wires embedded in the temple. <u><i>Electrical signals external to</i></u>

	<u><i>the glasses can then be coupled to the speaker (or other electrical component) through the plug.</i></u> Pages 15-16: [00081] “<u><i>A number of embodiments have been described with the glasses having a connector.</i></u> In one embodiment, the glasses can have more than one connector. For example, a pair of glasses with two connectors also has a speaker. One connector is, for example, at a broad side of a temple, as in FIG. 8D. The connector can be for coupling to multimedia assets of a MP3 player. Another connector is, for example, at the end of a temple, as in FIG. 8A. <u><i>That connector can couple power to the glasses. The speaker can play the multimedia assets accessed from one connector, based on power from another connector.</i></u>” Page 16: [00082] “<u><i>As described, power (e.g., external power source) can be coupled to the glasses through a connector. In one embodiment, the power source is embedded inside or inserted into the glasses.</i></u> Different types of power sources are applicable. For example, <u><i>the power source can be a battery, a fuel cell, a solar cell, or a re-chargeable battery. The rechargeable battery can be charged through a connector at the glasses.</i></u>”
[E] a first microphone, at least partially in the wireless wearable device, configured to capture	See Claim 1[E]

at least sound in vicinity of the wireless wearable device, with the battery configured to provide power to the first microphone; and

Page 9:

[00054] “*Electrical signals can be coupled to an electrical component*, such as a speaker, in a pair of glasses through a number of mechanisms. In one embodiment, *there is an electrical connector at least partially embedded in the glasses*. In other words, at least a portion of the connector is inside the glasses. *The connector is electrically coupled to the speaker (or other electrical component) by, for example, a conductor*. The conductor can be on a printed-circuit board. In one embodiment, the conductor is also embedded in the glasses.”

Page 10:

[00055] “Regarding connectors, FIG. 5 shows one embodiment where the connector is not a standard connector. In FIG. 5, the connector is a male plug or a male connector 300 at the end of a temple 302 of a pair of glasses. The connector 300 is connected to the speaker through, for example, one or more wires embedded in the temple. *Electrical signals external to the glasses can then be coupled to* the speaker *(or other electrical component) through the plug*.”

Pages 15-16:

[00081] “*A number of embodiments have been described with the glasses having a connector*. In one embodiment, the glasses can have more than one connector. For example, a pair of glasses with two connectors also has a speaker. One connector is, for example, at a broad side of a temple, as in

	FIG. 8D. The connector can be for coupling to multimedia assets of a MP3 player. Another connector is, for example, at the end of a temple, as in FIG. 8A. <u><i>That connector can couple power to the glasses. The speaker can play the multimedia assets accessed from one connector, based on power from another connector.</i></u> Page 16: [00082] “<u><i>As described, power (e.g., external power source) can be coupled to the glasses through a connector. In one embodiment, the power source is embedded inside or inserted into the glasses.</i></u> Different types of power sources are applicable. For example, <u><i>the power source can be a battery, a fuel cell, a solar cell, or a re-chargeable battery. The rechargeable battery can be charged through a connector at the glasses.</i></u>”
[F] a second microphone, at least partially in the wireless wearable device,	<i>See Claim 2[A]</i>
[G] wherein the battery is configured to provide power to the second microphone, and	<i>See 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.	<i>See Claim 5[A]</i>

<u>Claim 25</u>	
[Preamble] A wireless wearable device as recited in claim 24 comprising	<i>See Claim 24</i>
[A] an area configured for attachment via magnetic force.	<i>See Claim 12[A]</i>