

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LUXOTTICA OF AMERICA INC.,
Petitioner,

v.

E-VISION OPTICS, LLC,
Patent Owner.

IPR2024-01070
U.S. Patent No. 8,801,174

DECLARATION OF JOHN FELAND, PH.D.

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I, John Feland, Ph.D., declare as follows:

1. I am making this declaration at the request of Luxottica of America Inc. (“Luxottica”).

2. I am being compensated for my work in this matter and I am being reimbursed at cost for my expenses. My compensation in no way depends upon the outcome of this proceeding. I do not own any stock in Luxottica and, to my knowledge, I have no financial interest in Luxottica.

3. In preparing this declaration, I considered the following materials:

Exhibit No.	Description
1001	U.S. Patent No. 8,801,174 (“174 patent”)
1003	U.S. Patent No. 2,915,598 to D.L. Brunton (“Brunton”)
1004	PCT Publication No. WO 2010/080999 to Kokonaski et al. (“Kokonaski-999”)
1005	U.S. Patent No. 2,207,705 to J.W. Cox (“Cox”)
1006	Japanese Patent Application Publication No. S58-113913 (“Hattori-913”)
1007	U.S. Patent No. 3,883,701 to Delorenzo (“Delorenzo”)
1008	G.B. Patent No. 799,294 to Carling (“Carling”)
1009	U.S. Patent No. 2,930,857 to Hollingsworth (“Hollingsworth”)
1010	U.S. Patent 4,290,052 (Eichelberger)
1011	Injection Molding Handbook, Ch. 17 (3d ed. 2000)
1012	U.S. Provisional Application 61/157,579 to Kokonaski et al. (“Kokonaski-579”)

Exhibit No.	Description
1013	U.S. Publication No. 2008/0012832 to Li GuangHai (“GuangHai”)
1014	U.S. Publication No. 2007/0030254 to Robrecht et al. (“Robrecht”)
1015	U.S. Patent Publication No. 2005/0230596 A1 (“Howell-596”)
1016	Sikonowiz, Walter, DESIGNING AND CREATING PRINTED CIRCUITS (Hayden Book Co., 1981)
1017	U.S. Publication No. 2008/0088596 to Prest et al. (“Prest”)
1018	U.S. Publication No. 2008/0136788 to Nishikawa et al. (“Nishikawa”)
1019	U.S. Provisional Patent Application No. 60/583,169 (“Howell-169”)
1020	U.S. Patent No. 5,049,090 to Johnson (“Johnson”)
1021	U.S. Patent No. 4,598,960 to DiSanto et al. (“DiSanto”)

4. I have also relied on my education, training, and experience, and my knowledge of pertinent literature in the field of the ’174 patent.

I. BACKGROUND

A. Experience and Qualifications

5. My experience and qualifications are summarized in my *curriculum vitae*, a copy of which is provided as Exhibit 1022.

6. I have over 30 years of experience in mechanical engineering, electromechanical engineering, and mechatronics. I graduated from the Massachusetts Institute of Technology with a bachelor of science degree in

mechanical engineering in 1994. After graduating from MIT, I attended Stanford University, where I received an M.S. in 1996 and then a Ph.D. in 2005, both also in mechanical engineering. Although my degrees were in mechanical engineering, I completed coursework and research involving electronic circuitry, electromechanical engineering, and mechatronics.

7. Beginning in June 1996, I worked as a mechatronic design engineer for IDEO Product Development. From March 1997 to April 1999, I worked for the National Air Intelligence Center as a Program Manager, Defense Intelligence Systems, managing mission requirements and software development for an \$18 billion missile warning satellite program. From April to July 1999, I served as Director, Measurement and Signals Intelligence Systems, for the Joint Analysis Center, supervising classified intelligence support for Operation Allied Force in Kosovo.

8. From August 1999 to July 2001, I was an Assistant Professor of Engineering Mechanics for the United States Air Force Academy. In that time, I launched the Academy's first mechatronics course. From 2002 to 2004, I worked as a design strategy consultant for Trusted Nomad, taught at Stanford, and worked as Senior Mechanical Engineer for Symyx Technologies, developing MEMS industrial sensors.

9. From December 2004 to August 2008, I worked at Synaptics. While at Synaptics, I designed and built several mobile devices and mobile-device accessories. The team I managed retrofitted or designed from scratch hundreds of capacitive touch interfaces for multiple consumer electronic devices. Through this work, I gained deep experience with manufacturing electronic assemblies and integrating them into a wide array of consumer electronics. This work also provided me with significant experience in the path to mass production, including how to deliver technological improvements that could be mass produced, as we recommended these prototypes as potential product features for customers. My work at Synaptics included architecting the Onyx, a working multitouch-controlled mobile phone prototype, which gained international recognition in 2006, winning the Red Dot Design Concept Award months ahead of Apple's 2007 launch of the iPhone.

10. Also at Synaptics, I both developed and evaluated gesture interactions on multiple consumer devices, including audits of the then-nascent iPhone interface and attempts by competitors to leverage Synaptics's touch technology to compete in the market. This included work on designing improved capacitive touch switches for integration into consumer electronics.

11. After Synaptics, I was Chief Technologist at SK Telecom Americas from September 2008 to September 2009. While at SK Telecom Americas, I

evaluated several user experience designs across a range of interfaces, including voice, touch, and gesture. From October 2009 to September 2011, I held positions at Stanford, including Executive Director of the Global Design Innovation course that connects graduate students with corporate partners, as well as Consulting Assistant Professor in the Design Group of the Mechanical Engineering department. In 2012, I served as Distinguished Lecturer at Cogswell Polytechnical College, teaching courses in robotics and entrepreneurship.

12. After leaving SK Telecom in September 2009, I founded Argus Insights, a consulting firm that I have run for nearly 15 years. Some of my projects have included analyzing what UX aspects are driving adoption in autonomous vehicles and designing UX for industrial cutting tools to lower training requirements and increase operator effectiveness.

13. I am currently a Principal Strategist at CableLabs, a non-profit think tank for the broadband industry. I pursue a mixture of quantitative and qualitative research on consumer behaviors and preferences. I also coach innovation teams and work extensively in artificial intelligence strategy. From April 2017 to September 2018, I served as forum chair and moderator for the IoT (Internet of Things) Forum in Silicon Valley. Since August 2018, I have also taught engineering at the Nueva School.

14. As shown in my CV, I have authored or co-authored over 30 publications, most of which relate to engineering or design. I am a named inventor on at least six issued patents, including patents on technology involving capacitive touch sensing.

B. Applicable Legal Standards

15. I have been asked to provide my opinion as to whether certain claims of U.S. Patent No. 8,801,174 would have been obvious to a person of ordinary skill in the art (“POSITA”) at the time of the alleged invention, in view of the prior art.

16. I am an engineer and product designer by training and profession. The opinions I am expressing in this report involve the application of my training and technical knowledge and experience to the evaluation of certain prior art with respect to the ’174 patent.

17. Although I have been involved as a technical expert in patent matters before, I am not an expert in patent law. Therefore, the attorneys from Knobbe, Martens, Olson & Bear, LLP have provided me with guidance as to the applicable patent law in this matter. The paragraphs below express my understanding of how I must apply legal principles relating to patent validity in my analysis.

18. It is my understanding that in determining whether a patent claim is anticipated by or obvious in view of the prior art, the Patent Office construes the claim by giving the claim its ordinary and customary meaning ascribed to it by a

person of ordinary skill in the art at the time of the invention, consistent with the specification. I also understand that in reading the claim, I must not import limitations from the specification into the claim terms; in other words, I must not narrow the scope of the claim terms by implicitly adding disclosed limitations that have no express basis in the claims.

19. It is my understanding that a claim is “anticipated” if a prior art reference describes, either expressly or inherently, each limitation of the claim. I understand that this description must be recognizable to a person of ordinary skill in the art at the time of the alleged invention.

20. It is my understanding that a claim is “obvious” if the claimed subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time of the alleged invention. I also understand that an obviousness analysis takes into account the scope and content of the prior art, the differences between the claimed subject matter and the prior art, and the level of ordinary skill in the art at the time of the invention.

21. In determining the scope and content of the prior art, it is my understanding that a reference is considered appropriate (e.g., analogous) prior art if it falls within the field of the inventor’s endeavor. In addition, a reference is prior art if it is reasonably pertinent to the particular problem with which the inventor was involved. A reference is reasonably pertinent if it logically would have commended

itself to an inventor's attention in considering his problem. If a reference relates to the same problem as the claimed invention, that supports use of the reference as prior art in an obviousness analysis.

22. To assess the differences between prior art and the claimed subject matter, it is my understanding that the law requires the claimed invention to be considered as a whole. This "as a whole" assessment requires showing that one of ordinary skill in the art at the time of invention, confronted by the same problems as the inventor and with no knowledge of the claimed invention, would have selected the elements from the prior art and combined them in the claimed manner.

23. It is my understanding that something is "inherent in," and therefore taught by, the prior art, if it necessarily flows from the explicit disclosure of the prior art. I understand that the fact that a certain result or characteristic may be present in the prior art is not sufficient to establish inherency. However, if the result or characteristic is necessarily present based upon the explicit disclosure in the prior art, it is inherent in the prior art and is therefore disclosed.

24. It is my further understanding that the law recognizes several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include: combining prior art elements according to known methods to yield predictable results; simple substitution of one known element for another to obtain predictable results; a predictable use of prior

art elements according to their established functions; applying a known technique to a known device (method or product) ready for improvement to yield predictable results; choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

25. I understand that a prior art reference may also suggest a limitation of the claims. In that case, even if the prior art reference does not explicitly or inherently disclose the limitation, the motivation to modify the prior art reference to include the limitation may exist within the prior art reference itself. Thus, the limitation would have been obvious over that prior art reference alone. This is the case if a person of ordinary skill in the art would have had a simple design choice or a finite number of identified, predictable solutions, for example, and if the modification furthers the goals of the prior art reference.

26. I further understand that the obviousness analysis must be performed from the perspective of a person of ordinary skill in the art at the time of the alleged invention. This is to avoid using impermissible hindsight in the analysis. The claims of the patent must not be used to provide a road map for obviousness; instead, the claims would have been obvious if a person of ordinary skill in the art would have

been motivated to combine the teachings of the prior art to arrive at the claimed invention and had a reasonable expectation of success in doing so.

27. I also understand that an obviousness analysis must consider whether there are additional factors that would indicate that the invention would not have been obvious. These factors include whether there was: (i) a long-felt need in the industry; (ii) any unexpected results; (iii) skepticism of the invention; (iv) a teaching away from the invention; (v) commercial success; (vi) praise by others for the invention; and (vii) copying by other companies. I am not aware of any evidence that would suggest that the claims of the '174 patent would have been non-obvious. To the extent Patent Owner submits such evidence during the course of the *inter partes* review, I may provide my opinion on such evidence if asked to do so by counsel.

C. Person of Ordinary Skill in the Art

28. It is my understanding that when interpreting the claims of the '174 patent, I must do so based on the perspective of a person of ordinary skill in the art at the relevant priority date. As discussed below, I understand the earliest possible priority date to be February 11, 2011.

29. The '174 patent describes the use of well-known technologies relating to eyewear with electronics integrated into the eyewear frame. Based on my review of the specification and claims of the '174 patent, it is my opinion that a person of

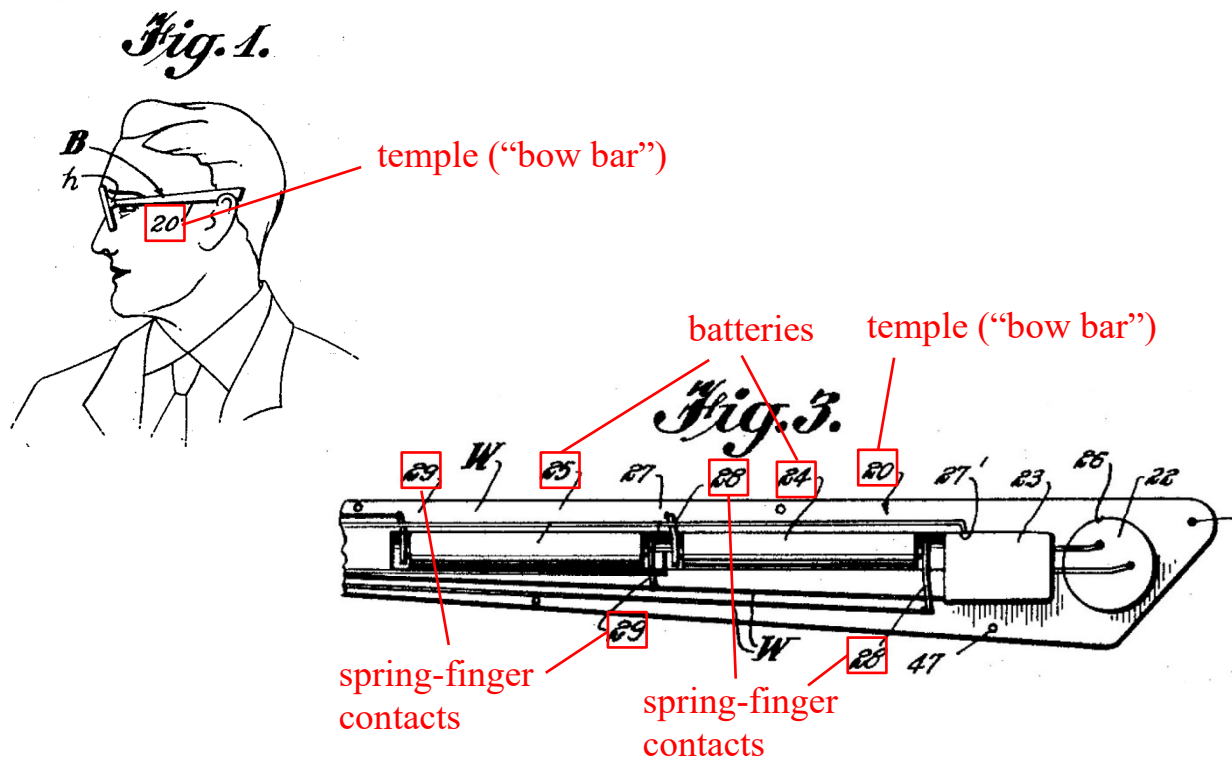
ordinary skill in the art would have had a minimum of a bachelor's degree in mechanical or manufacturing engineering; mechatronics; electrical engineering plus coursework in mechanical engineering, manufacturing engineering, or mechatronics; or a similar technical degree. A POSITA would have also had at least 2 years of experience designing consumer electronics, such as eyewear with electronics. Additional work experience could serve as a substitute for a formal degree and vice versa. However, my opinions do not turn on this specific definition of the level of ordinary skill. The claims would be anticipated and/or obvious from the perspective of a person of ordinary skill under any reasonable definition.

30. I am able to make this assessment because in the 2000s, I was familiar with design and operation principles common in the mechanical, manufacturing, and mechatronic arts. I, and the engineers that I worked with during the 2000s, had the requisite knowledge to make and use eyewear as described in the claims of the '174 patent. Because I have worked with and supervised engineers, I know very well what their capabilities were in the 2000s, how those engineers would interpret and understand the claims of the '174 patent, and how they would understand the disclosures in the prior art discussed herein.

31. In my opinion, as set forth in more detail below, a person having ordinary skill in the art at the time of the invention would have considered the

B. Hollingsworth (Ex. 1009)

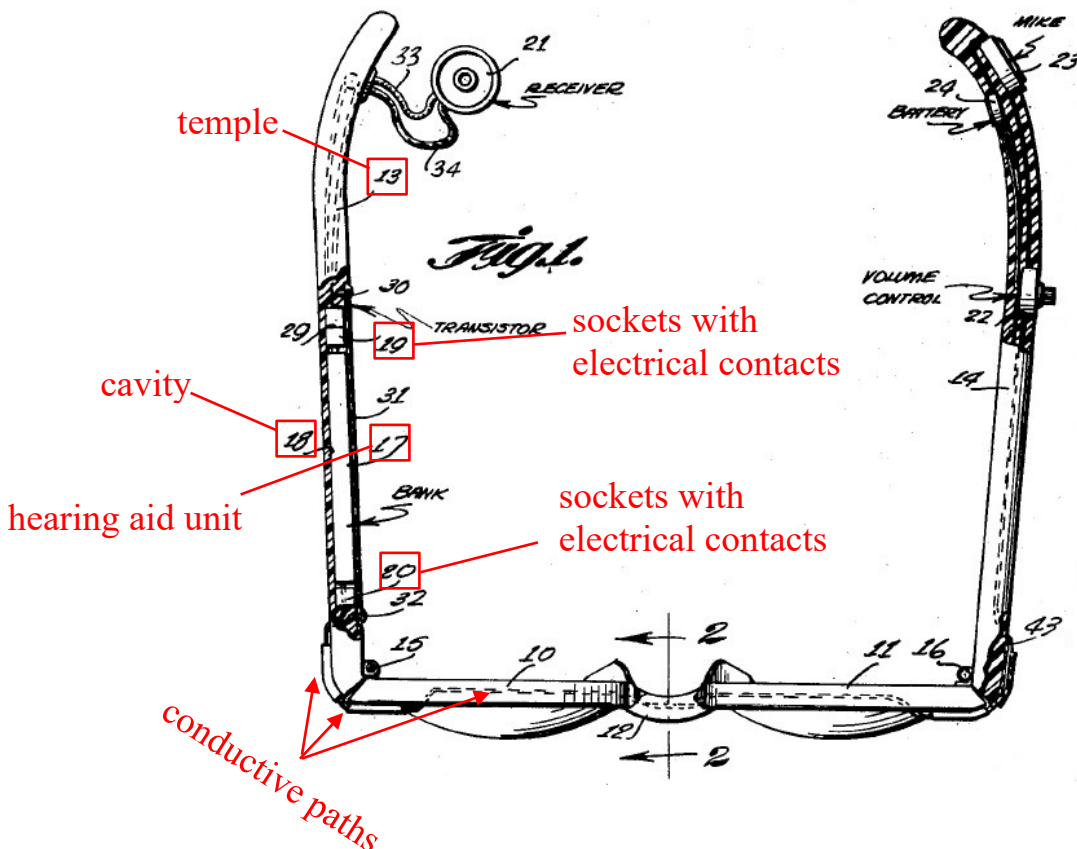
33. Hollingsworth was filed in 1953, also many decades before the '174 patent's earliest possible priority date. Hollingsworth describes "improvements in hearing-aids wherein the component parts are inconspicuously and operatively incorporated within the frames of spectacles." Ex. 1009, 1:15-18. Hollingsworth illustrates in Figure 3 below a temple ("bow bar") which has electrical conductors, including "spring-finger contacts 28 and 29," that are "resiliently pressing against the terminals" of batteries 24 and 25 to constrain the batteries in the temple. *Id.*, 5:75-6:8.



Id., Figs. 1 and 3.

C. **Brunton (Ex. 1003)**

34. Brunton was filed in 1954, again many decades before the '174 patent's earliest possible priority date. Brunton discloses approaches for mounting a hearing aid unit in spectacles. Ex. 1003, Title. Brunton illustrates in Figure 1 below spectacles having a temple 13 with a cavity 18 for housing a cartridge (such as, hearing aid unit 17). Ex. 1003, 3:34-44, Fig. 1.



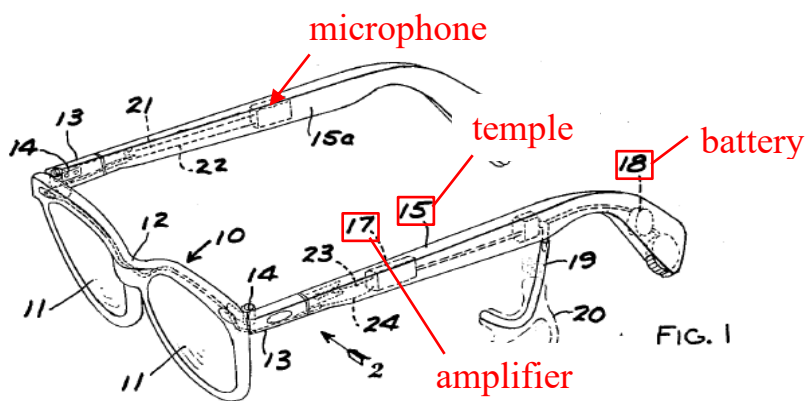
Id., Fig. 1. Brunton's temple 13 has electrical sockets 19 and 20 which constrain the hearing aid unit 17 in the temple (*id.*, 3:57-65) and form a portion of the conductive paths from the temple to Brunton's lens housing. *Id.*, 4:2-15.

D. Carling (Ex. 1008)

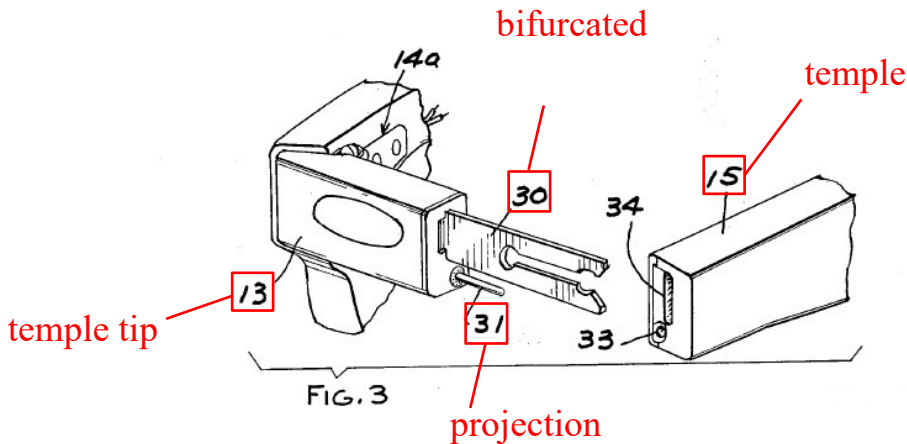
35. Carling was filed in 1958, many decades before the '174 patent's earliest possible priority date. Carling discloses “hearing aids constructed in the form of pairs of spectacles.” Ex. 1008, 1:8-10; *id.*, 4:41-45. According to Carling, “[t]he side arms of spectacles may be hinged to the front hinges embodying slip rings and brushes and the present invention also provides a preferred form of such hinges.” *Id.*, 4:93-96.

E. Delorenzo (Ex. 1007)

36. Delorenzo was filed in 1971, many decades before the '174 patent's earliest possible priority date. Delorenzo describes eyeglass frames having integrated hearing aid components, such as a microphone, amplifier, and battery. Ex. 1007, Abstract, Fig. 1. Brunton illustrates in Figure 1 below one embodiment.



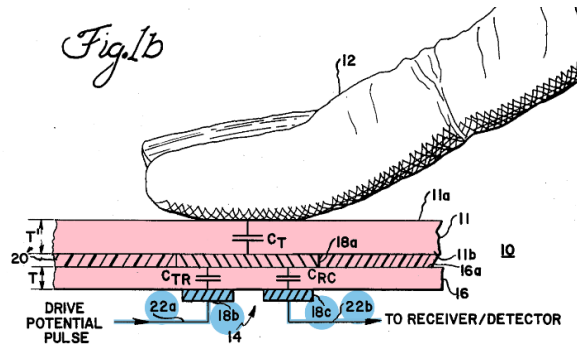
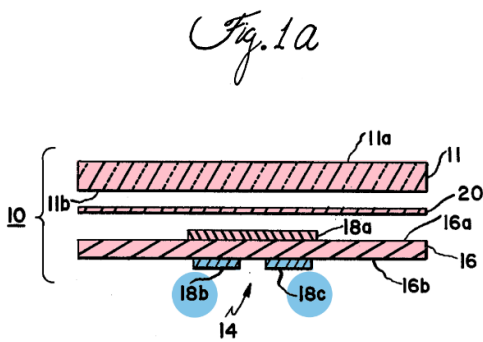
Id., Fig. 1. Delorenzo's temples having two electrical conductors including a “bifurcated connector 30” and a “projection or male element 31,” as illustrated in Figure 3 below.



Id., Fig. 3. According to Delorenzo, the two electrical conductors both electrically couple and mechanically constrain the components in temple's back portion (the back portion of temple 15). The electrical conductors are also part of the conductive paths which extend across the hinges to the eyeglasses' front frame, as illustrated above in Figure 1. *Id.*, 2:46-56.

F. Eichelberger (Ex. 1010)

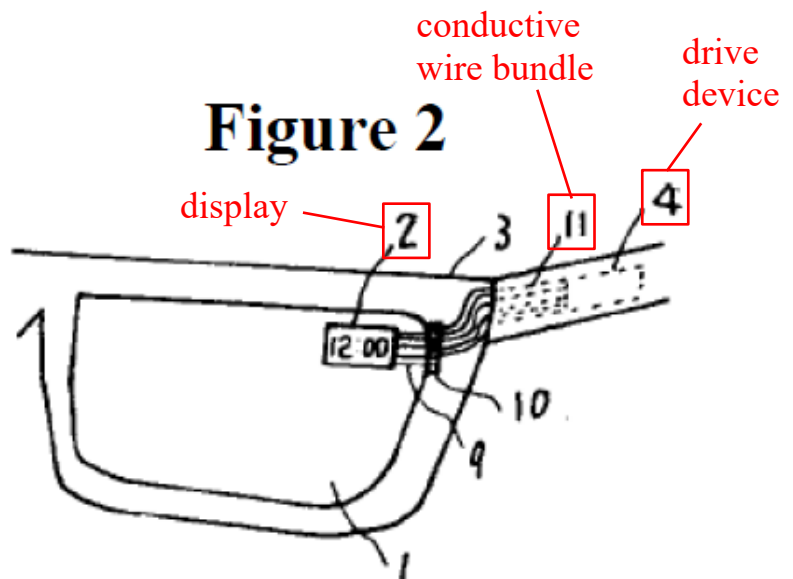
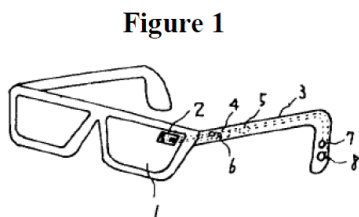
37. Eichelberger was filed in 1979. Eichelberger describes a capacitive touch switch and disposing multiple electronic components on the capacitive switch, as illustrated in Figures 1a-1b below.



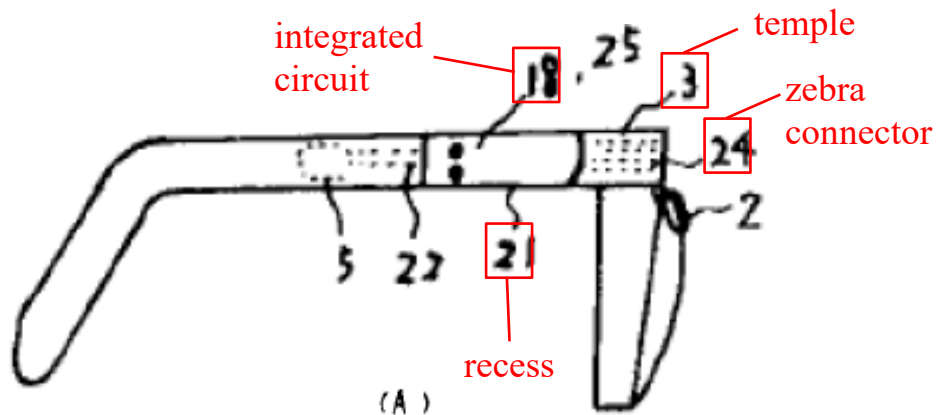
Ex. 1010, Figs. 1(a)-1(b). Eichelberger's capacitive touch switch has a double-sided printed circuit board 16 on which electrodes 18b and 18c are fabricated. *Id.*, 3:20–23, 3:43–47, 3:54–57.

G. Hattori-913 (Ex. 1006)

38. Hattori-913 was filed in 1981, which is 30 years before the '174 patent's earliest possible priority date. Hattori-913 describes eyeglasses which have a drive device 4 in the temple for controlling a liquid crystal display 2 in the lens 1, as illustrated in Figures 1-2 below.



Ex. 1006, Figs. 1-2; *id.*, 68. According to Hattori-913, the drive device 4 may be implemented with an integrated circuit 18 positioned in a recess 21 in the temple 3, as illustrated in Figure 3 below.



Id., Fig. 4A; *id.*, 68. Hattori-913 provides that the integrated circuit 18 is “connected to zebra connector 24 embedded in the temple 3,” constraining the integrated circuit 18 in the temple 3. *Id.*

H. Sikonowiz (Ex. 1016)

39. Sikonowiz published in 1981 and focuses on designing and manufacturing printed circuit boards (PCBs). Chapter 9 covers final assembly and devotes an entire section to the step of “Conformal Coating.” Ex. 1016, 122, 135. “The purpose of a conformal coating is to cover a printed-circuit assembly and protect it from environmental hazards such as moisture, dirt, and chemicals.” *Id.*, 135–36. “Of these, moisture protection is probably of the greatest general significance.” *Id.*, 136.

I. Howell-596 (Ex. 1015)

40. Howell-596 was filed in 2005 and discloses eyewear with an integrated detection module. Ex.1015, Abstract, ¶¶[0194]-[0196]. The eyewear includes electronic components that are mounted in an eyewear frame's temple and may be enclosed in a waterproof protective module housing. *Id.*

J. Kokonaski-999 (Ex. 1004)

41. Kokonaski-999 published in 2010. Kokonaski-999 describes an electronic module in the temple of eyeglass frames where the electronic module controls electro-active lenses. Ex. 1004, ¶¶[0033]-[0036], [0039]-[0057]. Kokonaski-999 illustrates in Figure 2 below an eyeglass frame having an electronics module 202 in a temple.

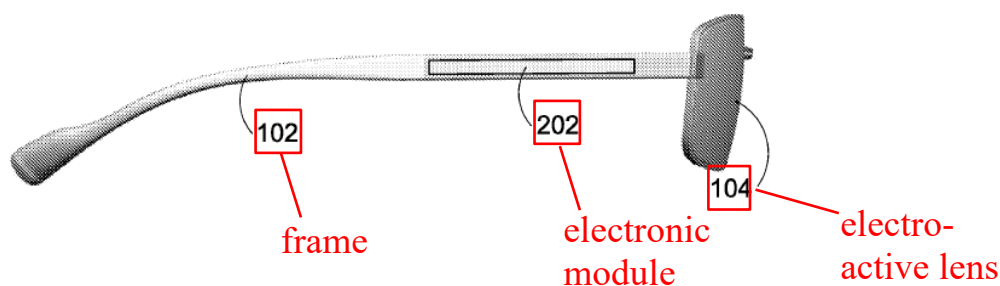
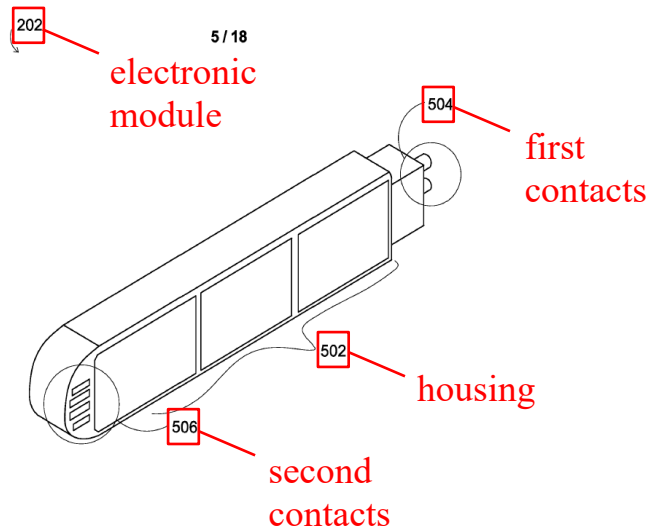


FIGURE 2

Id., Fig. 2; *id.*, ¶[0033]. Kokonaski-999 illustrates in Figure 5 below an electronic module with a housing 502 that holds various electrical components, such as first contacts 504.



Id., Fig. 5. According to Kokonaski-999, the first contacts 504 are pins that provide electrical connectivity to conductors embedded in the temple and form a conductive path to the electro-active lenses. *Id.*, ¶¶[0039], [0064]-[0067].

K. Kokonaski-579 (Ex. 1012)

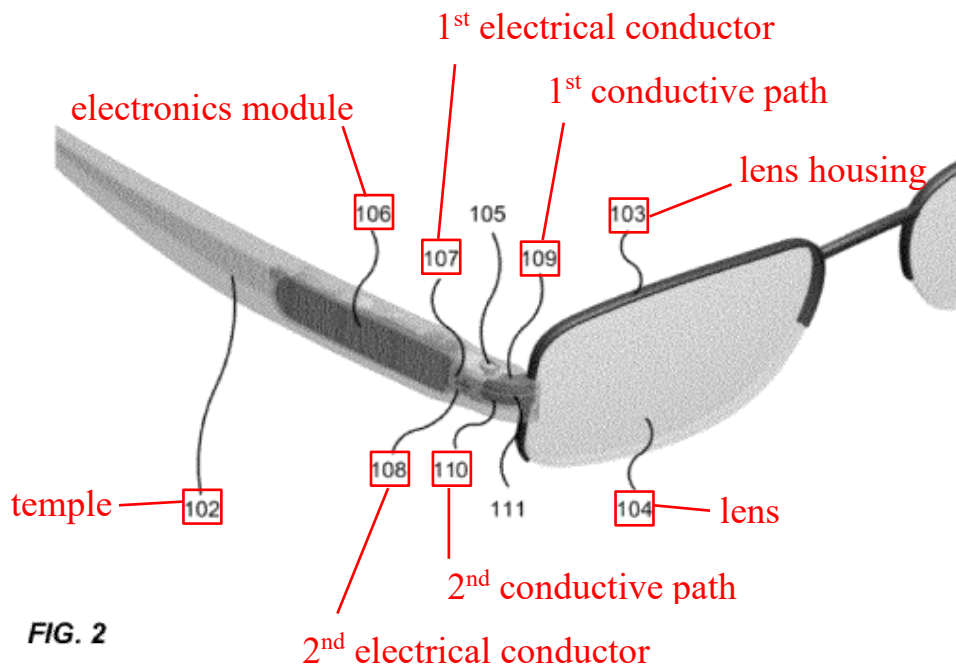
42. Kokonaski-579 is a provisional application to which Kokonaski-999 claims priority and is incorporated by reference in its entirety in Kokonaski-999. Ex. 1004, field (30), ¶[0001]. Kokonaski-579 discloses methods for assembling electro-active spectacles, such as including capacitive touch switches into spectacles' temples. *See* Ex. 1012, pp. 9-11. I have been instructed to assume that Kokonaski-579 is prior art as of the date Kokonaski-999 published (that is, on July 15, 2010).

III. THE '174 PATENT

A. Summary of the '174 Patent

1. The Specification

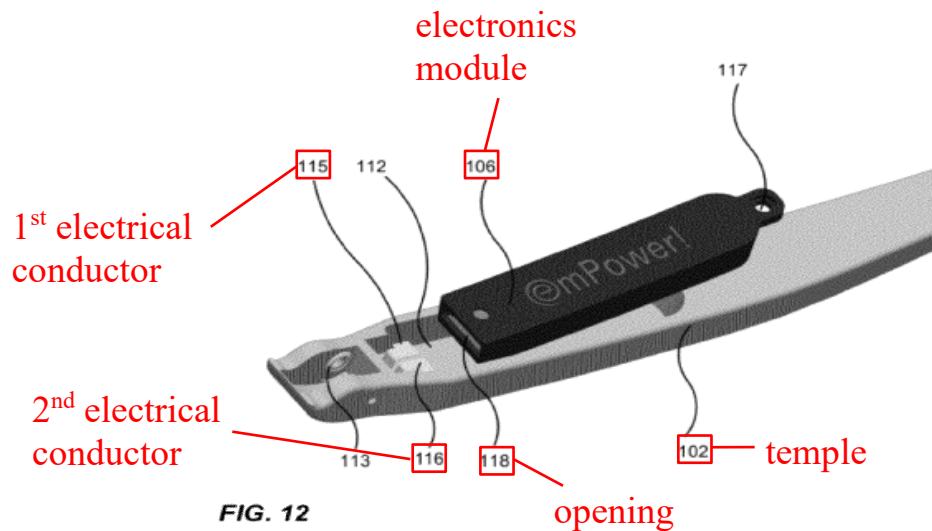
43. The '174 patent discloses eyeglass frames “having one or more conductors that may be utilized to form part of a conductive path from the temple to the lens housing of the frames.” Ex. 1001, 1:39-42. The '174 patent illustrates in Figure 2 below one disclosed set of eyeglasses.



Id., Fig. 2. According to the '174 patent, the eyeglasses include a first temple 102 and a lens housing 103 with a lens 104, such as an electronic lens. *Id.*, 15:23-33. The first temple 102 has an electronics module 106 that is “coupled to the temple 102 in part by two electrical conductors: a first electrical conductor 107 and a second electrical conductor 108.” *Id.*, 15:42-28. “[T]he first 107 and second 108 electrical

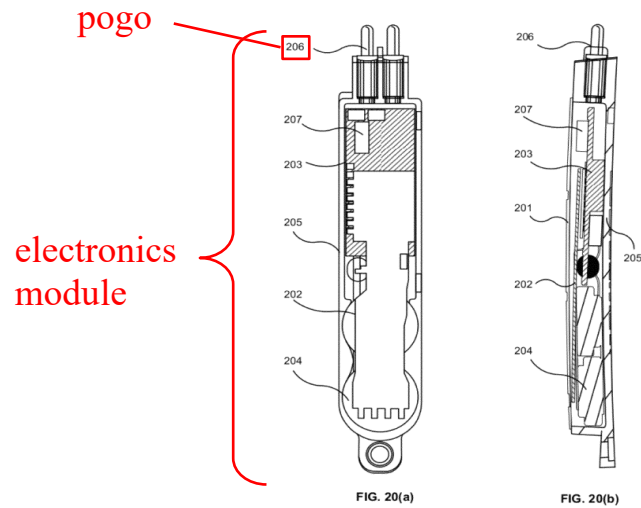
conductors are each coupled to the temple 102.” *Id.*, 15:48-51. The ’174 patent provides that the first electrical conductor 107 and the second electrical conductor 108 respectively form part of a first conductive path 109 and a second conductive path 110 to the lens housing 103. *Id.*, 15:51-61, 15:67-16:6.

44. The ’174 patent illustrates in Figure 12 below an embodiment of the electronics module that has “an opening 118” for “portions 115 and 116 of the electrical conductors 107 and 108, respectively, to be disposed into the electronics module 106.” *Id.*, 18:56-59.



Id., Fig. 12. According to the ’174 patent, such a structure permits the conductors to form “electrical connections with the electronic components” and/or “couple the electronics module 106 to the temple 102.” *Id.*, 18:59-62.

45. The '174 patent illustrates in Figures 20(a)-20(b) another embodiment of the electronics module that has electrical conductors 206 (“pogo pins”) which connect to the electrical conductors in the temple.



Id., Figs. 20(a)-20(b), 3:33-35, 25:49-54, 27:35-45, 27:60-28:4.

2. The Claims

46. The '174 patent includes 19 claims, of which two (claims 1 and 15) are independent. I offer opinions regarding all 19 claims in this declaration.

47. Claim 1 is set forth below:

Claim 1	
1[pre]	1. A first device, comprising:
1[a]	a lens housing adapted to support a first lens and a second lens;
1[b]	a first temple movably coupled to the lens housing;
1[c]	a second temple movably coupled to the lens housing;
1[d]	an electronics module disposed at least partially within the first temple;
1[e]	a first electrical conductor coupled to the first temple,
1[f]	wherein a first conductive path is provided from the first temple to the lens housing at least in part by the first electrical conductor; and
1[g]	a second electrical conductor coupled to the first temple,
1[h]	wherein a second conductive path is provided from the first temple to the lens housing at least in part by the second electrical conductor;
1[i]	wherein the first and second electrical conductors are configured to couple the electronics module to the first temple to constrain the electronics module.

48. Claim 15 is set forth below:

Claim 15	
15[pre]	15. A first method, comprising:
15[a]	providing a capacitive touch switch;
15[b]	disposing a plurality of electronic components on the capacitive switch; and
15[c]	coupling the capacitive touch switch to a partial enclosure to constrain the capacitive touch switch.

B. Priority Date of the '174 Patent

49. For purposes of this analysis, I have been asked to assume that the '174 patent's earliest possible priority date is its earliest claimed priority date, February 11, 2011.

C. Claim Construction

50. I understand that claim construction in this proceeding requires that all claims be construed using the same claim construction standard that would be used in a district court action, including giving the claim language its ordinary and customary meaning as understood by a person of ordinary skill in the art at the time of filing and in accordance with the specification and prosecution history.

51. The '174 patent's specification provides multiple claim terms in quotation marks. *See* Ex. 1001, 6:27-9:43. I excerpted below the '174 patent's descriptions of particular claim terms that reflect the inventor's understanding of the scope of these terms:

electronics module: “[A]n ‘electronics module’ may refer to a housing or container that may comprise one or more electronic components disposed therein.” Ex. 1001, 8:8-10. For instance, an electronics module may include electronic components like a battery, controller, switch, circuit, electrical connector, or controller. *Id.*, 7:65-8:14.

electrical conductor: “[A]n ‘electrical conductor’ may refer to any material or component that can be used to conduct electric signals or power. The conductor may comprise a single component or a plurality of components.” *Id.*, 11:15-20.

coupled: “[C]oupled’ may refer to any manner of connecting two components together in any suitable manner, such as by way of example only: attaching (e.g. attached to a surface), disposing on, disposing within, disposing substantially within, embedding within, embedded substantially within, etc. ‘Coupled’ may further comprise fixedly attaching two components..., but does not so require.” *Id.*, 6:52-60.

conductive path: “A ‘conductive path’ refers to a continuous path for which electrons (i.e. current) may flow from one point to another. The conductive path may comprise one component, or more than one component.” *Id.*, 6:45-47. For instance, a conductive path “may comprise portions of a lens

housing, a temple, a hinge, a lens, and/or conductive material disposed between (or within) some or all of the components.” *Id.*, 6:49-51.

constrain: “[C]onstrain’ may refer to when the first electrical conductor is configured to provide support (i.e. a restraining force) for the electronics module to retain the module in a fixed position within the temple. That is, the first electrical conductor may be configured to hold the electronics module in place.” *Id.*, 11:52-58. The ’174 patent also provides that “[t]he second electrical conductor may be configured to couple (e.g. constrain) the electronics module.” *Id.*, 2:13-14.

integrally coupled: “The term ‘integrally coupled’ as used in this context may refer to when the first electrical conductor is coupled to the temple in such a manner that it cannot readily be removed without damaging or otherwise affecting the structure of the temple.” *Id.*, 12:6-10.

insert molded: “[I]nset molded’ may refer to when, for instance, during the manufacturing of the temple the material that comprises the temple (e.g. a plastic material in some embodiments) may be injected into a cavity (which is typically in the shape of the temple or a portion thereof) and around the first electrical conductor that is disposed in the cavity prior to the molding process. This may result in the first electrical conductor being encapsulated by the material that comprises the temple.” *Id.*, 12:11-21.

lug: “A ‘lug’ may refer to a copper, brass, or any other conductive material that constitutes a fitting to which electrical wires or conductors may be soldered or otherwise electrically coupled to so as to form a conductive path.” *Id.*, 12:33-37. As a result, “lug” refers at least to any conductive material which constitutes a fitting to which electrical wires or conductors can be electrically coupled to form a conductive path. The ’174 patent highlights the intended breadth of “lug” by further providing that “[i]n other words, the first conductor may form an electrical connection between two other electrical components (such as wires, components of a slip ring, soldered components, PCB, electrical circuits, etc.).” *Id.*, 12:38-41.

slip ring: “A slip ring may comprise any device or combination of devices designed to make an electrical connection through a rotating assembly.” *Id.*, 13:18-20.

single structural element: “[F]or instance, the electrical conductor may comprise a single contiguous piece of material (i.e. unlike other electrical connectors such as a pogo pin that may include one or more springs that may expand or contract the conductor so as to maintain an electrical contact between two contact[s] by providing an axial force).” *Id.*, 14:38-45.

I adopt and apply ’174 patent’s descriptions of particular claim terms in my analysis unless I state otherwise.

IV. BRUNTON ANTICIPATES CLAIMS 1-2, 4, 9, AND 12

52. As I explain below, Brunton discloses each element of claims 1-2, 4, 9, and 12, and thus anticipates these claims.

A. Claim 1

1. Preamble and Limitations 1[a]-1[c]: lens housing and first/second temples

53. The preamble of claim 1 and limitations 1[a], 1[b], and 1[c] recite:

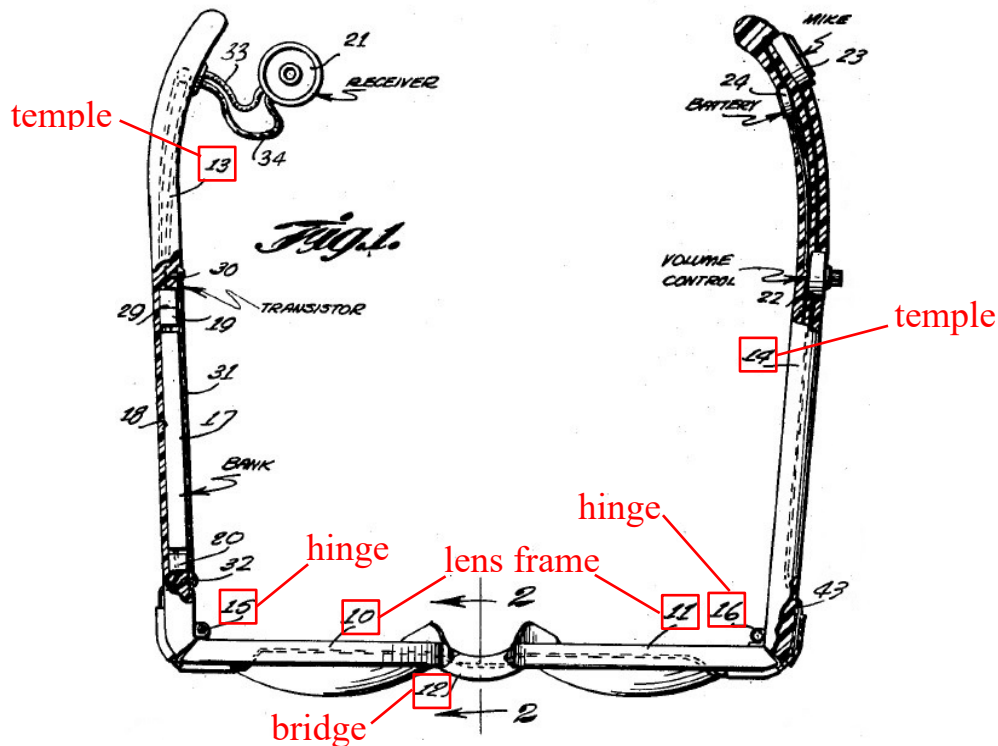
1. A first device, comprising:

a lens housing adapted to support a first lens and a second lens;

a first temple movably coupled to the lens housing;

a second temple movably coupled to the lens housing.

54. These limitations are disclosed by Brunton. *See, e.g.*, Ex. 1003, 3:36-39 (“[T]his invention includes a lens frame having sections 10 and 11 connected by a bridge 12 with temples 13 and 14 connected to ends of the lens frame with hinges 15 and 16”), Figs. 1-3, 1:15-23, 1:29-35, 3:6-9, 2:55-63, 4:10-15, 4:51-55.



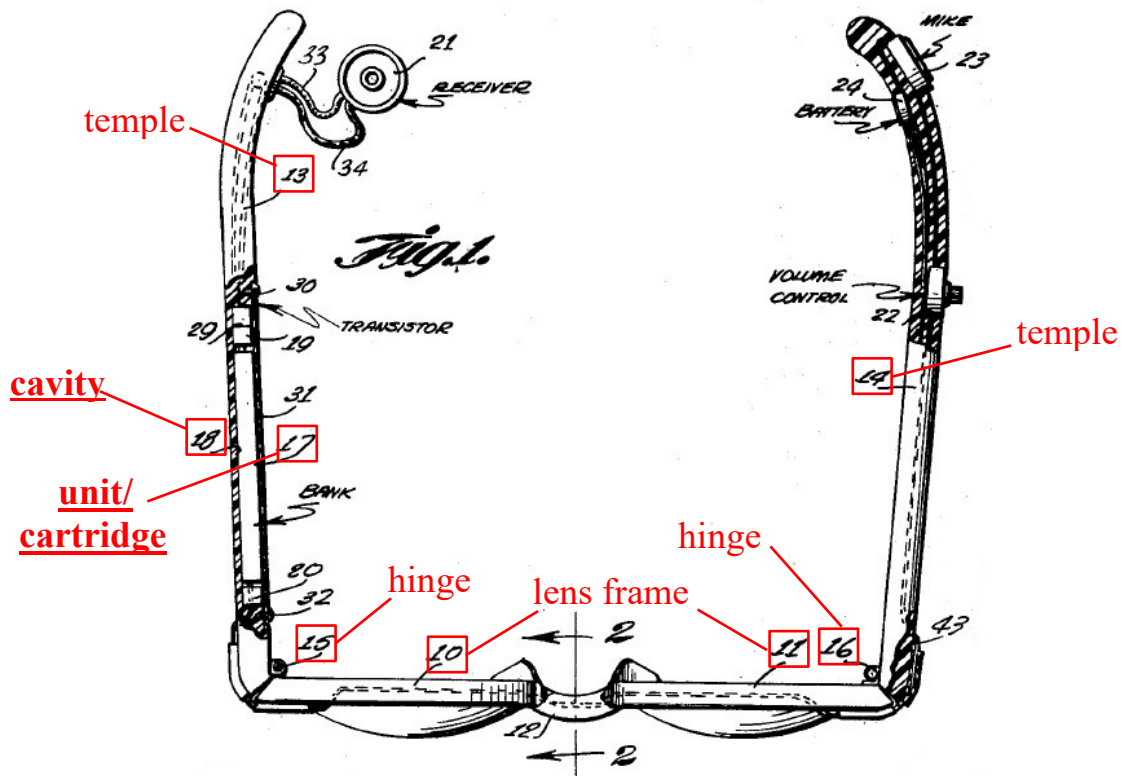
Ex. 1003, Fig.1. According to Brunton, the temples 13 and 14 are “movably coupled” to the lens housing because Brunton’s spectacles have hinges 15 and 16 which permit the individual temples to move relative the lens housing. *Id.*, 4:10-15 (explaining that “temples are folded against the front.”).

55. Therefore, Brunton discloses the preamble of claim 1 and limitations 1[a], 1[b], and 1[c].

2. **Limitation 1[d]: “an electronics module disposed at least partially within the first temple”**

56. Brunton discloses limitation 1[d]. According to Brunton, its “hearing aid unit 17 [is] positioned in a cavity 18 in the temple 13.” Ex. 1003, 3:39-40; *id.*, Figs. 1, 2, 6. As I explained previously in Section III.C, the ’174 patent describes

its electronics module as including one or more electronic components. *Supra* Section III.C. Brunton's unit has electronic elements, "such as resistors, transistors, and capacitors." Ex. 1003, 3:32-33, 3:51-52; *see also id.*, 2:55-63, 3:51-56. These electronic elements are "installed in a unit, such as a cartridge, and the unit being adapted to be inserted in a cavity in one of the temples of a pair of spectacles." *Id.*, 2:36-39. Brunton illustrates in Figure 1 below an example of hearing aid unit 17 positioned in cavity 18 of temple 13.

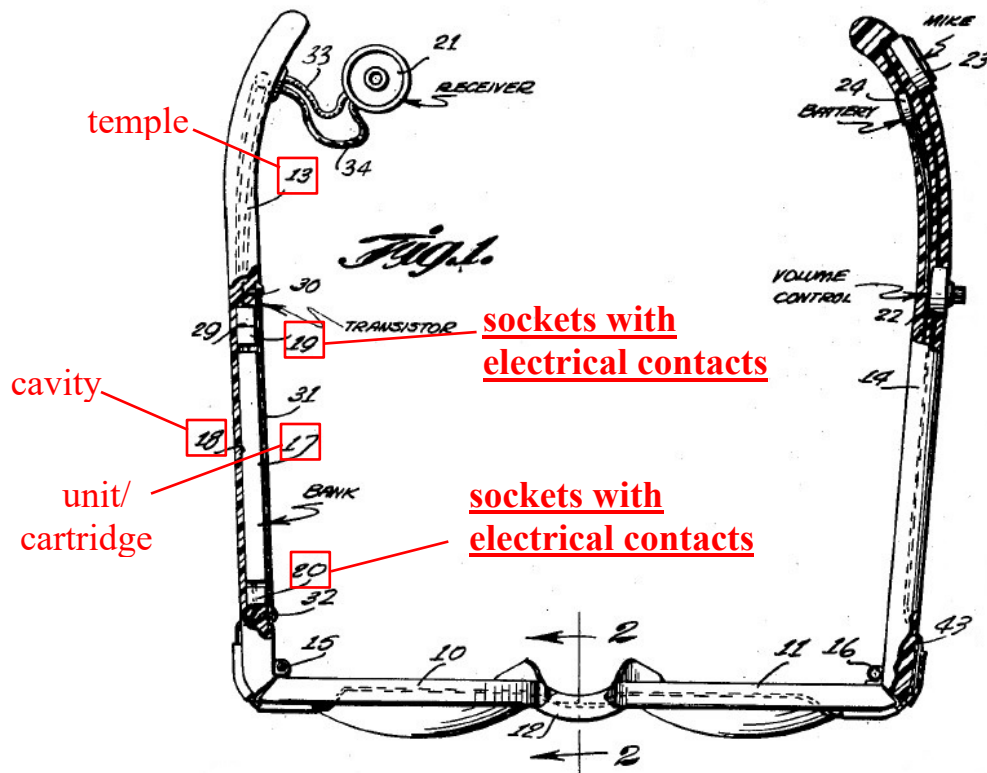


Id., Fig. 1. Therefore, Brunton discloses an electronics module disposed at least partially within the first temple.

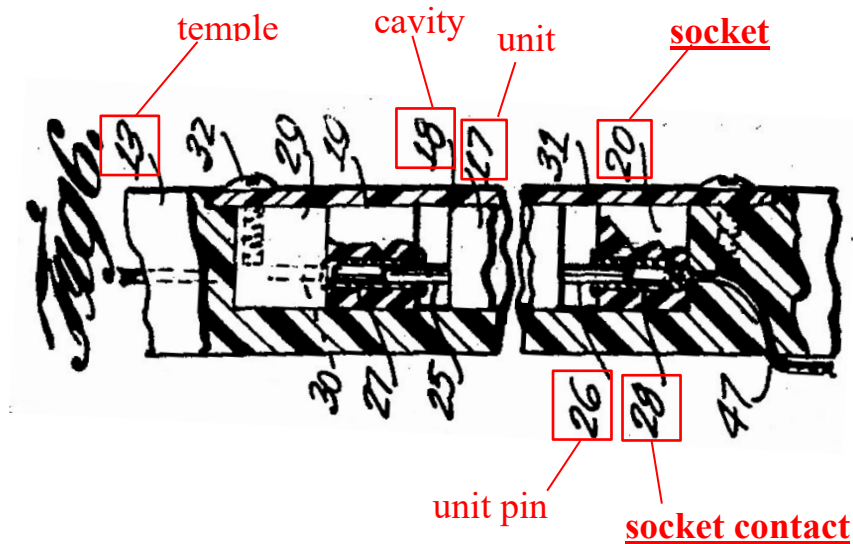
3. **Limitation 1[e]/1[g]: “a first/second electrical conductor coupled to the first temple”**

57. According to the '174 patent, “electrical conductor” encompasses “any material that can be used to conduct electrical signals or power,” as I explained above in Section III.C. *Supra* Section III.C.

58. Brunton discloses that a first electrical conductor and a second electrical conductor are coupled to the first temple. According to Brunton, its spectacles include sockets embedded in the temple that receive the hearing aid unit. Ex. 1003, 3:71-74 (“The sockets for the transistor and unit, such as the sockets 19 and 20, may be frictionally held in the cavity or may be embedded in the material of the temple, as may be desired.”), 2:3-5 (“sockets for receiving hearing aid elements may or may not be embedded in material of the temples at the ends of cavities of the temples”); *id.*, 3:39-44, 3:57-61, Figs. 1, 6-7. Brunton illustrates in Figure 1 below the sockets 19 and 20 coupled to temple 13.



Id., Fig. 1. Brunton's temple sockets have electrical contacts or terminals. *Id.*, 3:57-61 ("The ends of the unit 17 are provided with contact pins, such as the pins 25 and 26, and these pins are adapted to be inserted in tubular contacts, such as the contacts 27 and 28, in the sockets 19 and 20, respectively, as shown in Figure 6."), 4:2-4 ("The terminals of the sockets in which the hearing aid unit 17 and transistor 29 are positioned are connected by wires 33 and 34..."). Brunton illustrates in Figure 6 below "the mounting of the hearing aid unit in a cavity of the temple," with socket 20 embedded in cavity 18.



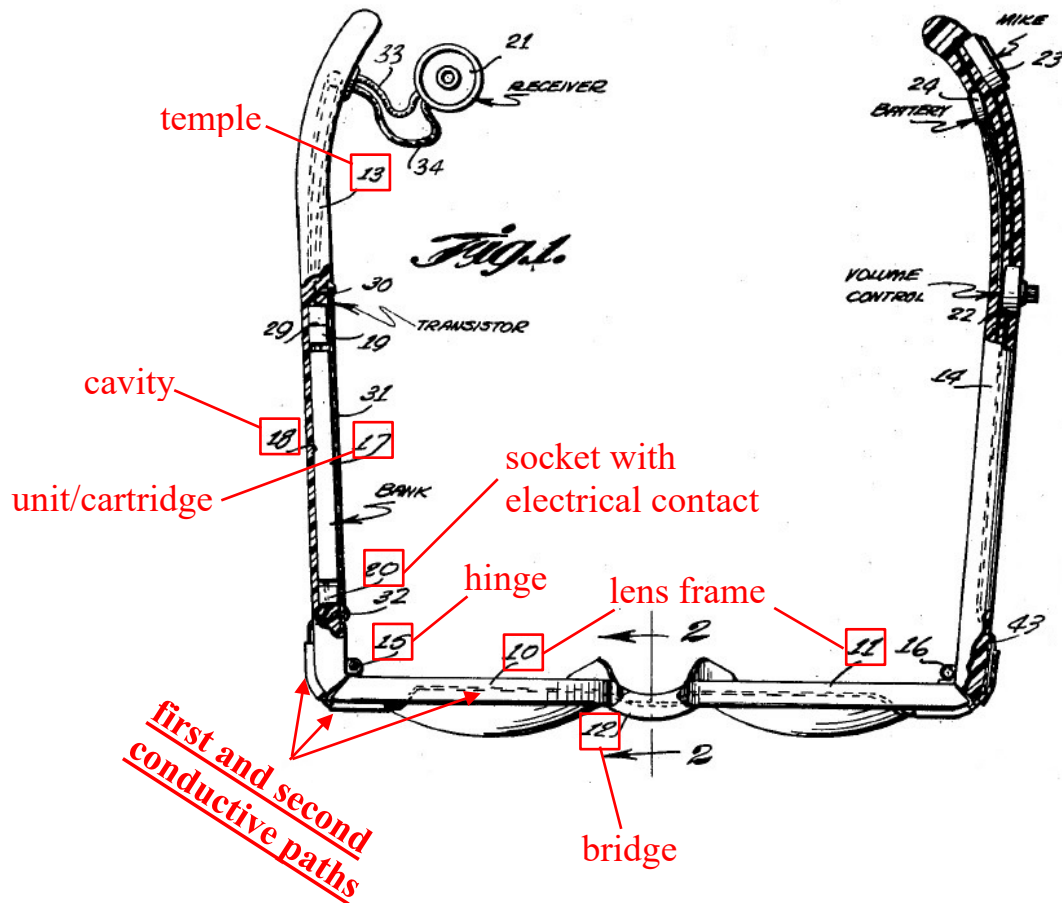
Id., Fig. 6.

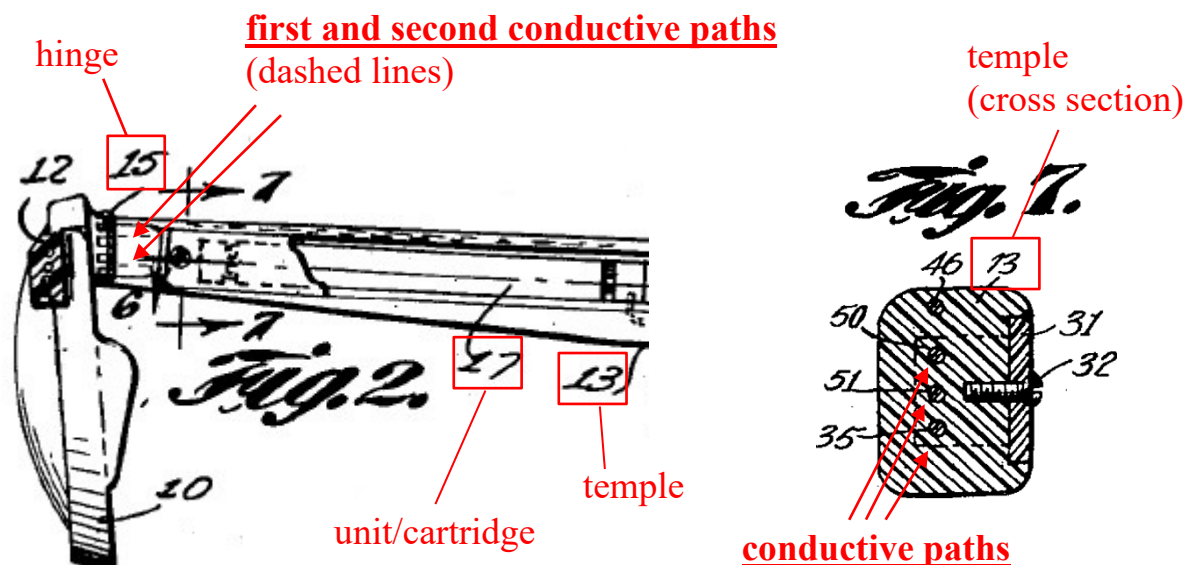
59. Each of Brunton's socket may have multiple electrical contacts that correspond to a number of contact pins on the hearing aid unit. *Id.*, 3:61-65 ("It will be understood that the units may be provided with any suitable number of contact pins and the sockets provided with a corresponding number of tubular contacts..."). Brunton accordingly discloses a first electrical conductor coupled to the first temple and a second electrical conductor coupled to the first temple. Therefore, Brunton discloses limitations 1[e] and 1[g].

4. **Limitation 1[f]/1[h]: "wherein a first/second conductive path is provided from the first temple to the lens housing at least in part by the first/second electrical conductor"**

60. Brunton discloses limitations 1[f] and 1[h]. For example, Brunton discloses that its spectacles provide first and second conductive paths from the temple to the lens frame. Brunton illustrates this Figures 1-2 and 7 below, which

show conducting wires creating conductive paths that extend from the socket 20 in temple 13, through temple 13, around hinge 15, then into lens frame sections 10 and 11 (and across bridge 12):



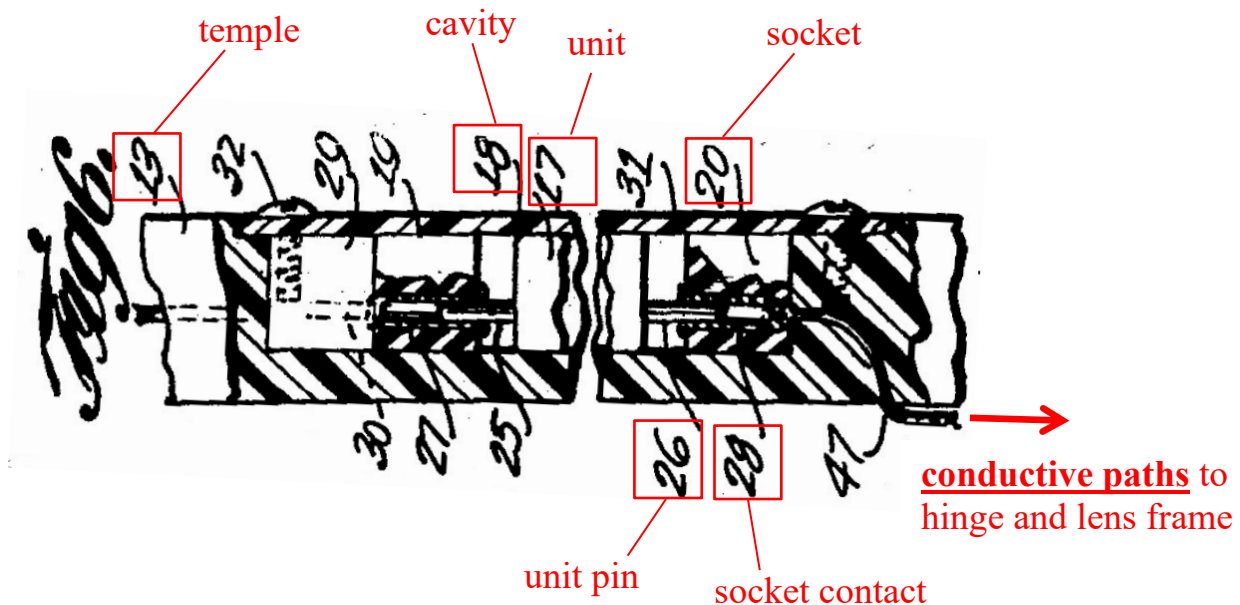


Ex. 1003, Figs. 1-2, 7; *id.*, 3:36-44 (describing the temple sockets and elements in temples as “connected by suitable conductors”), 4:6-7 (“the wires 35 and 36 being connected across the hinge 15”), 4:10-15 (describing the “circuits connected across the hinges” to electrically connect the elements in each temple), 4:16-21 (“wires connecting the elements may be embedded in the material of the temples as shown in Figure 1, or the wires may be positioned against surfaces as shown at the hinge portions of Figure 1....”).

61. According to Brunton, its first and second conductive paths are provided at least partly by the first and second electrical conductors, respectively. Brunton provides in one example that Brunton’s sockets with electrical conductors/terminals in the cavity are connected to the wires in the temple which extend across the hinge to the lens frame:

The terminals of the sockets in which the hearing aid unit 17 and transistor 29 are positioned are connected by wires 33 and 34 to terminals 56 and 57 of the receiver 21, as shown in Figure 2, and the other terminals of the unit are connected by the wires 35 and 36 to the microphone, the wires 35 and 36 being connected across the hinge 15 with contacts 37 and 38 and across the hinge 16 with similar contacts 39 and 40.

Id., 4:2-9. Brunton further illustrates this in Figure 6 below, in which the contact 28 for socket 20 in cavity 18 is connected to the electrical wire (labeled as 47 in Figure 6), creating the conductive paths from the socket contacts to the hinge and the lens frame:



Id., Fig. 6; *see id.*, 3:57-65. As a result, socket contact 28 (referred to in Brunton also as a “terminal”) forms a portion of the conductive path that leads from the temple to the lens frame. Moreover, for the reasons I explained previously, Brunton discloses that the cavity has multiple socket contacts on each side of the cavity that correspond to a number of contact pins on the hearing aid unit. *Id.*, 3:61-65.

62. Brunton accordingly discloses that the spectacles provide first and second conductive paths from the temple to the lens frame, provided at least in part by the first and second electrical conductors. Therefore, Brunton discloses these limitations.

5. **Limitation 1[i]: “wherein the first and second electrical conductors are configured to couple the electronics module to the first temple to constrain the electronics module”**

63. According to the ’174 patent, the term “constrain” encompasses “retain[ing] the module in a fixed position within the temple,” as I explained above in Section III.C. *Supra* Section III.C.

64. Brunton discloses limitation 1[i]. According to Brunton, its contact pins on the hearing aid unit are “frictionally retained” by the sockets in the temple cavity:

It will be understood that the units may be provided with any suitable number of contact pins and the sockets provided with a corresponding

number of tubular contacts that are positioned to receive the pins and in which the pins are frictionally retained.

Ex. 1003, 3:61-65; *id.*, 4:56-63 (claim 1 reciting contacts on the unit are “frictionally retained in said sockets, whereby the contacts and sockets provides means for removing and replacing the unit including component parts of the hearing aid.”). Frictionally retaining the hearing aid unit’s pins in the cavity means that the socket contacts couple the hearing aid unit to the temple and constrain the hearing aid unit. Brunton’s socket contacts (corresponding to the claimed first and second electrical conductors) accordingly are configured to couple the hearing aid unit (corresponding to the claimed electronics module) to the temple to constrain the hearing aid unit. Therefore, Brunton discloses this limitation.

65. Brunton therefore discloses each limitation of claim 1 and anticipates claim 1.

B. Claim 2

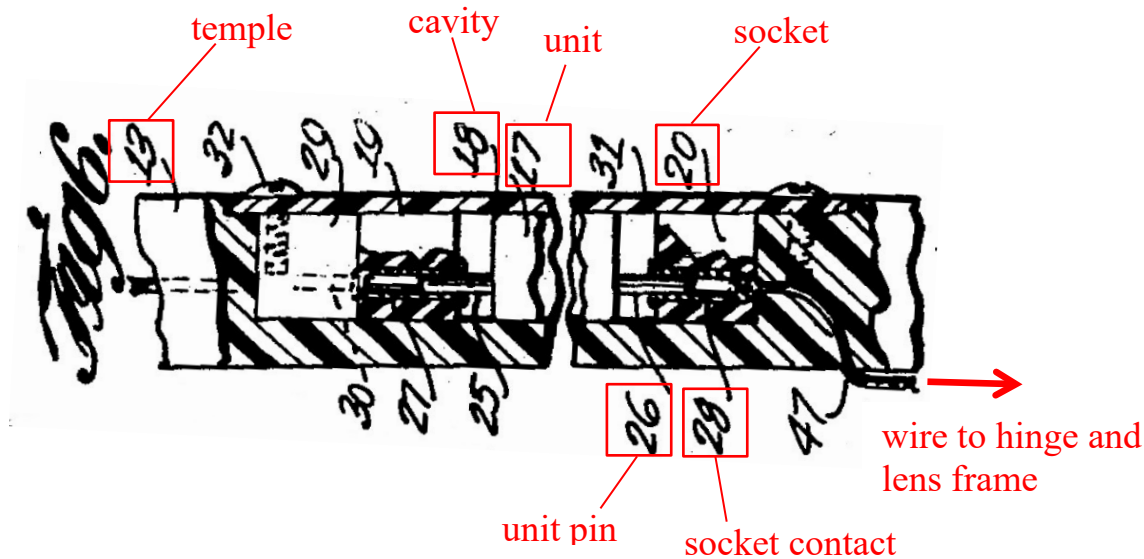
66. Claim 2 depends from claim 1 and recites: “wherein the first electrical conductor is integrally coupled to the first temple.” Brunton discloses this limitation. According to Brunton, its sockets “may be embedded in the material of the temple,” which Brunton distinguishes from the sockets being “frictionally held in the cavity.” Ex. 1003, 3:71-74; *id.*, 2:1-5, 2:59-63. Brunton’s sockets with socket contacts are

accordingly integrally coupled to the first temple. Therefore, Brunton discloses claim 2.

C. Claim 4

67. Claim 4 depends from claim 1 and recites: “wherein the first electrical conductor comprises a lug.” According to the ’174 patent, “lug” encompasses any conductive material that constitutes a fitting to which electrical wires or conductors may be electrically coupled to form a conductive path, as I explained above in Section III.C. *Supra* Section III.C.

68. Brunton meets this limitation because Brunton discloses sockets that include a lug as disclosed in the ’174 patent. The socket contacts in Brunton are electrical conductors as I explained above (*see* limitation 1[e]/1[g]), and the socket contacts meet the “lug” limitation of claim 4 because the socket contacts constitute fittings of conductive material to which electrical wires are electrically coupled. Ex. 1003, 3:57-65, 4:2-9. Brunton illustrated in Figure 6 below one example of its socket contacts serving as lugs, where socket contacts 28 provide an electrical connection between pins 26 on hearing aid unit 17 and the wire extending through the temple frame (identified as 47):



Id., Fig. 6.

D. Claim 9

69. Claim 9 depends from claim 1 and recites: “wherein the electronics module is configured to be removably coupled to the first temple.” Brunton discloses this limitation. According to Brunton, the “hearing aid unit is removable and replaceable.” Ex. 1003, 3:32-33; *see also, id.*, 1:32-39, 2:58-59, 3:55-56, 4:61-63, 5:28-6:4. Therefore, Brunton discloses and anticipates claim 9.

E. Claim 12

70. Claim 12 depends from claim 1 and recites: “wherein the first electrical conductor comprises a single structural element.” According to the ’174 patent, the phrase “single structural element” encompasses a single contiguous piece of material and is contrasted with conductors requiring additional components (such as, springs on pogo pins which expand and contract) to establish connectivity with the

electronics module, as I explained above in Section III.C. Ex. 1001, 14:38-45; *Supra* Section III.C.

71. Brunton describes using “tubular contacts...in the sockets” to receive and retain the contact pins on the hearing aid unit. Ex. 1003, 3:57-65. It would have been understood by a POSITA from Brunton that the tubular contacts form the tubular shape of the sockets to receive the hearing aid unit’s pins. The tubular contacts forming the sockets in Brunton are accordingly a single structural element. Therefore, Brunton discloses and anticipates claim 12.

V. BRUNTON RENDERS OBVIOUS CLAIMS 1-4, 9, AND 12

72. Brunton anticipates claims 1-2, 4, 9, and 12 for the reasons I explained above in Section IV. *Supra* Section IV. These claims also would have been obvious in view of Brunton because Brunton further at least suggests the limitations of these claims. Moreover, a POSITA would have found claims 3 and 12 obvious in view of Brunton and the knowledge of a POSITA.

A. Claim 3

73. Claim 3 depends from claim 2 and recites: “wherein the first electrical conductor is insert molded with the first temple.” According to the ’174 patent, “insert molded” encompasses injection molding the temple material around the first electrical conductor such that it is “encapsulated by the material that comprises the

temple,” as I explained above in Section III.C. Ex. 1001, 12:11-21; *Supra* Section III.C.

74. To the extent that Brunton does not disclose its sockets are “insert molded” within the temple, a POSITA would have found it obvious to insert mold the sockets within the temple. According to Brunton, the sockets are “embedded in the material of the temple.” Ex. 1003, 3:71-74; *id.*, 2:1-5, 2:59-63. A POSITA understood that injection molding was a well-known and desirable process to embed components in materials prior to 1954 when Brunton was filed. A POSITA understood that injection molding allows the sockets to be embedded in eyewear using a simple, well-understood manufacturing process, which also provides stability and durability to the eyewear product. This understanding is confirmed by the Injection Molding Handbook, which provides that the history of injection molding dates back to the late 1800s (Ex. 1011, 1350-54), and describes its use in “electrical and electronics” and “mechanical” markets. *Id.*, 1325.

75. Hollingsworth (Ex. 1009), which was filed in 1953, provides one example of injection molding a conductor in spectacles. Ex. 1009. According to Hollingsworth, its spectacles, similar to Brunton’s, include hearing aid components in the temples and its “spring-finger contacts 23 and 29 are fixedly supported in the bow bar 20 to extend into the recess 27, as by being molded in the block.” *Id.*, 5:75-6:4.

76. Therefore, a POSITA would have been motivated to injection mold the sockets to “insert mold” the sockets within the material of Brunton’s temple, which would embed the sockets in the temples as Brunton provides. A POSITA would have had a reasonable expectation of success in doing so because a POSITA had necessary education and experience to work with experienced vendors to design and specify the insert molding.

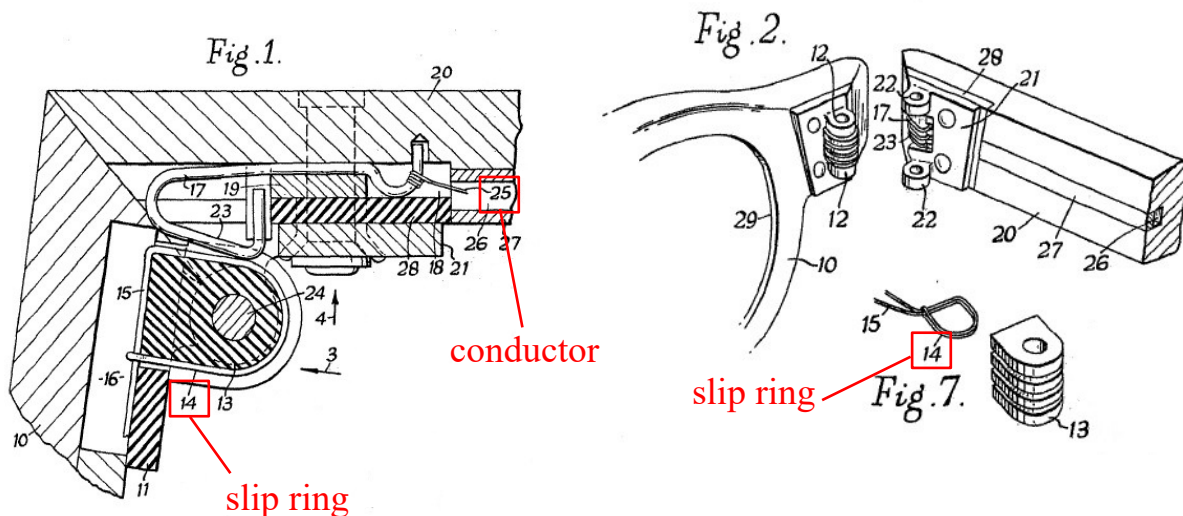
B. Claim 12

77. Claim 12 depends from claim 1 and recites: “wherein the first electrical conductor comprises a single structural element.” To the extent the tubular contacts and sockets in claim 12 are distinct structural elements, a POSITA would have been motivated to use a single structural element for Brunton’s sockets in view of Brunton and the knowledge of a POSITA. As one example, a POSITA would have found it advantageous to shape Brunton’s sockets with contacts as a single structural element to correspond to the shape of the pins on the hearing aid and allow for simple insertion and removal of the hearing aid unit. This also simplifies the manufacturing process because the sockets with contacts are a single structural element. In turn, the tubular metal contacts may then be embedded in the temple’s material, as described in Brunton, to receive the hearing aid unit’s pins. Ex. 1003, 3:57-65, 3:71-74.

VI. BRUNTON AND CARLING RENDER OBVIOUS CLAIMS 7-8 AND 13

78. Claim 7 depends from claim 1 and recites: “wherein the first electrical conductor is electrically coupled to a slip ring.” Claim 8 depends from claim 7 and recites the device “further compris[es] a hinge, wherein the slip ring is disposed substantially within the hinge.” According to the ’174 patent, the term “slip ring” encompasses “any device or combination of devices designed to make an electrical connection through a rotating assembly,” as I explained above in Section III.C. Ex. 1001, 13:18-20; *Supra* Section III.C.

79. Carling discloses these limitations. For instance, Carling illustrates in Figures 1-2 and 7 below that Carling’s spectacles have slip rings 14 in the grooved insulating block 13, which, when assembled, form part of the hinge for the spectacles.



Ex. 1008, Figs. 1-2, 7; *id.*, 2:5-43. According to Carling, a conductor is connected to the pair ends 15 projecting from the slip rings 14 and passed through a groove 16 formed in the front 10 of the spectacles. *Id.*, 2:16-25. Carling provides that brushes 17 engage the slip rings 14 and are formed of wires bent, which is illustrated in Figures 1-2 above. *Id.*, 2:25-29. Furthermore, additional conductors 25 are connected to each brush in Carling, and these conductors pass through slot 16 in the side arm 20 (temple). *Id.*, 2:37-41.

80. Carling also discloses that a hinge pin 24 passes through apertures in the lugs 12 and 22, to secure the front portion 10 with side arm 20 at the hinge. *Id.*, 2:30-37. As a result, “the hinges embody[] slip rings and brushes.” *Id.*, 4:93-96.

81. Claim 13 depends from claim 1 and recites: “wherein the first electrical conductor is configured to maintain the first conductive path as the first temple is moved relative to the lens housing.” Carling discloses this limitation. For instance, Carling describes electrical conductors on either side of the hinges which maintain the conductive path through the hinge as the side arms are moved relative to the front. Ex. 1008, 2:11-16, 2:26-37 (describing electrical contacts made between slip rings and brushes in the hinge), 2:16-25 (describing conductor passing from hinge “through a groove formed in the front 10”), 2:37-41 (describing conductor extending from the hinge “through a slot 26 in the side arm”).

82. A POSITA would have found it obvious to combine the teachings of Carling with the teachings of Brunton to arrive at the inventions of claims 7 and 8. Brunton and Carling both describe spectacles having hearing aid components in the temples and both describe using conductive wires through the temples and across hinges and the lens housing to connect the components. Ex. 1003, 3:34-44; Ex. 1008, 2:68-71.

83. According to Brunton, moving its temples at the hinges will break the circuit between the temples and the lens housing. Ex. 1003, 4:10-15, Fig. 5. A POSITA would have been motivated to use slip rings and hinges, similar to those in Carling, in Brunton's spectacles to maintain the electrical connections across the hinges. Brunton provides that the electrical contacts on the lens housing and the temples should precisely align each time the temples are opened and closed to reestablish and maintain the electrical connections. A POSITA would have understood that structural distortion of the frames (or even repeated use of the hinges) could potentially lead to misalignment of the electrical contacts, disruption of the electrical connections between the temples and lens housing, which could potentially lead to failure of the hearing aid unit (or other electronic circuitry). A POSITA would have been motivated to use slip rings and hinges, like those in Carling, in Brunton's spectacles to avoid such issues because Carling's electrical connections are maintained despite structural distortion of the spectacle frames or

any misalignment created between the temple and lens housing that would occur over time from use.

84. A POSITA would have had a reasonable expectation of success in using slip rings and hinges like those in Carling in Brunton's spectacles. Carling describes, for instance, that its hinge design allows for straightforward assembly similar to traditional spectacle frames: "Owing to the slip rings and brushes and the hinges, the side arms and fronts can be assembled in the same way as normal spectacle frames, no additional skill being required." Ex. 1008, 2:71-75.

85. Therefore, it would have been obvious to combine the teachings of Carling with Brunton to arrive at the inventions of claims 7, 8 and 13.

VII. KOKONASKI-999 AND BRUNTON RENDER OBVIOUS CLAIMS 1-2, 4-6, 9, 12, AND 14

A. Claim 1

1. Preamble and Limitations 1[a]-1[c]: lens housing and first/second temples

86. The preamble of claim 1 and limitations 1[a], 1[b], and 1[c] recite:

1. A first device, comprising:

a lens housing adapted to support a first lens and a second lens;

a first temple movably coupled to the lens housing;

a second temple movably coupled to the lens housing.

87. These limitations are disclosed by Kokonaski-999. For instance, according to Kokonaski-999, its electro-active spectacles can be “fully rimmed eyeglasses comprising left and right temples and a frame front.” Ex. 1004, ¶[0026]; *id.*, ¶¶[0023]-[0036], Figs. 1, 2, 7-13.

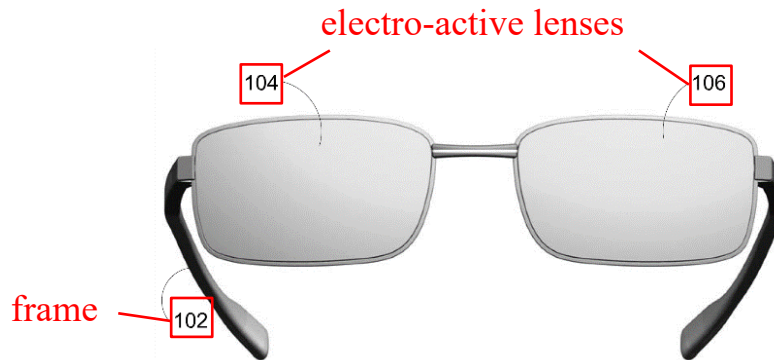


FIGURE 1

Id., Fig. 1.

88. In addition, Kokonaski-999 describes that its temples are movable relative to the lens housing, for instance, explaining that the temples move between a state when “the spectacles are in use (i.e. when they are opened)” and another state when “the spectacles are not in use (i.e., when they are closed).” *Id.*, ¶[0091], Fig. 12; *id.*, ¶¶[0088]-[0089] (describing “link conductors” in the temples that bend with the frame). Therefore, Kokonaski-999 discloses the preamble of claim 1 and limitations 1[a], 1[b], and 1[c].

2. **Limitation 1[d]: “an electronics module disposed at least partially within the first temple”**

89. Kokonaski-999 discloses limitation 1[d]. For instance, according to Kokonaski-999, “[t]he electronic module 202 can be positioned near the front temple of the frame 102...[and] can be positioned within the frame 102 (e.g., in an area or cavity of the frame 102) and can be removable and replaceable.” Ex. 1004, ¶[0033].

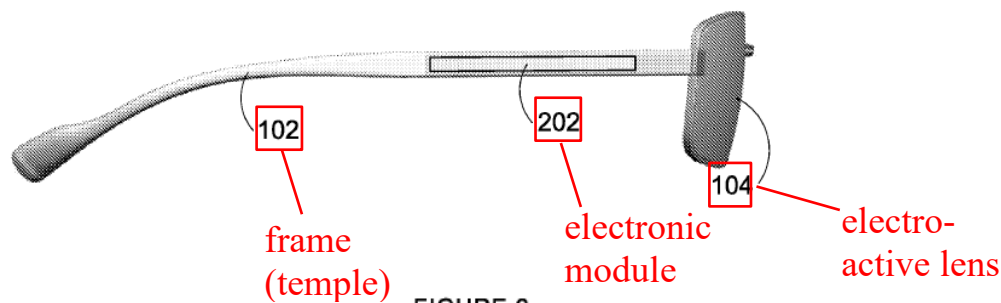
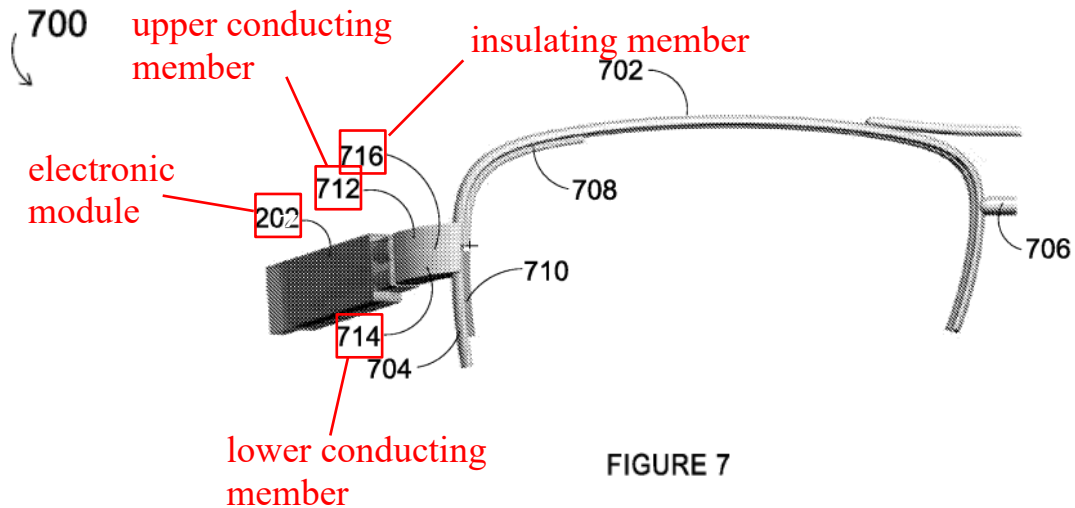


FIGURE 2

Id., Fig. 2. Therefore, Kokonaski-999 discloses an electronics module disposed at least partially within the first temple.

3. **Limitation 1[e]/1[g]: “a first/second electrical conductor coupled to the first temple”**

90. Kokonaski-999 discloses that a first electrical conductor and a second electrical conductor are coupled to the first temple. For instance, Kokonaski-999 discloses and illustrates with respect to Figure 7 below that “[t]he frame 700 can include an upper conducting member 712, a lower conducting member 714, and an insulating member 716.” Ex. 1004, ¶[0065].



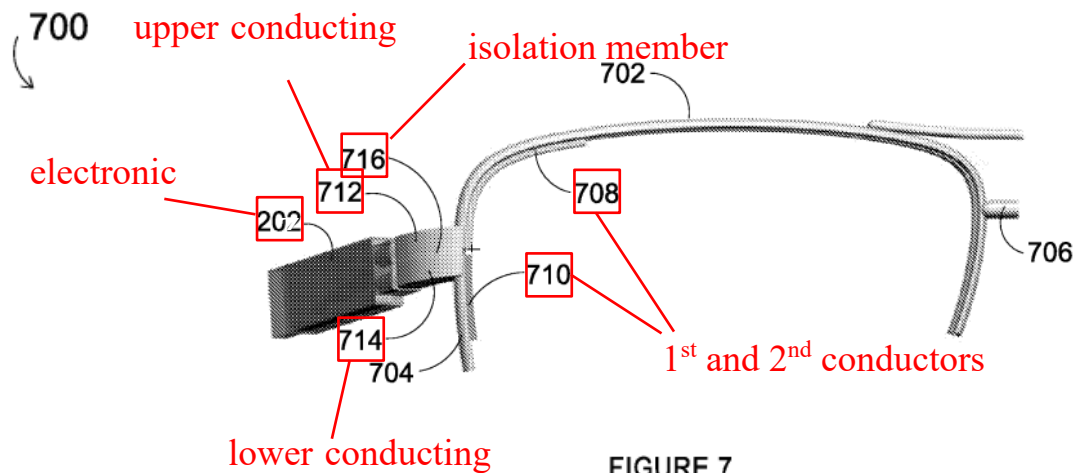
Id., Fig. 7. According to Kokonaski-999, “[t]he upper conducting member 712, the lower conducting member 714 and the insulating member 716 can physically couple the temple of the frame 700 to the eye-wire portion.” *Id.*, ¶[0065].

91. Kokonaski-999 further describes additional embodiments that include first and second electrical conductors coupled to the first temple. *See id.*, ¶¶[0073]-[0076] (describing conducting members in Fig. 9 embodiment), ¶¶[0088]-[0089] (describing conductor links in Fig. 11 embodiment), ¶¶[0090]-[0093] (describing spring conductors and upper and lower conducting members in Fig. 12 embodiment), Figs. 7-9, 11-12.

92. Kokonaski-999 accordingly discloses a first electrical conductor coupled to the first temple and a second electrical conductor coupled to the first temple. Therefore, Kokonaski-999 discloses limitations 1[e] and 1[g].

4. **Limitation 1[f]/1[h]: “wherein a first/second conductive path is provided from the first temple to the lens housing at least in part by the first/second electrical conductor”**

93. Kokonaski-999 discloses limitations 1[f] and 1[h]. As I explained above in Section VII.A.3, Kokonaski-999 discloses and illustrates with respect to Figure 7 that upper conducting member 712 and lower conducting member 714 are coupled to the temple. *Supra* Section VII.A.3. Furthermore, according to Kokonaski-999, the “upper conducting member 712 can provide connectivity between the electronic module 202 and the first conductor 708,” which is located in the lens housing. Ex. 1004, ¶[0066]. Kokonaski-999 provides that “the lower conducting member [714] can provide connectivity between the electronic module 202 and the second conductor 710,” which is located in the lens housing. *Id.*



Id., Fig. 7.

94. Kokonaski-999 further describes other embodiments in which the first and second conductors provide at least part of the first and second conductive paths

from the first temple to the lens housing. *See id.*, ¶¶[0073]-[0076] (describing conducting members in Fig. 9 embodiment), ¶¶[0088]-[0089] (describing conductor links in Fig. 11 embodiment), ¶¶[0090]-[0093] (describing spring conductors and upper and lower conducting members in Fig. 12 embodiment), Figs. 7-9, 11-12.

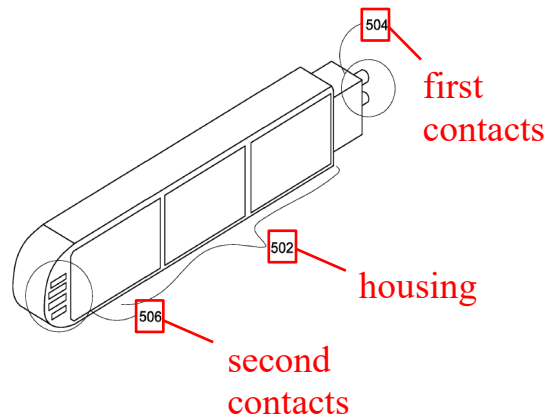
95. Kokonaski-999 accordingly discloses that the spectacles provide first and second conductive paths from the temple to the lens frame, provided at least in part by the first and second electrical conductors. Therefore, Kokonaski-999 discloses these limitations.

5. **Limitation 1[i]: “wherein the first and second electrical conductors are configured to couple the electronics module to the first temple to constrain the electronics module”**

96. To the extent Kokonaski-999 does not disclose that its electrical conductors are configured to couple the electronics module to the first temple to constrain the electronics module, this limitation would have been obvious to a POSITA in view of Brunton.

97. As I explained above in Section IV, Brunton satisfies all the limitations of claim 1 including limitation 1[i]. *Supra* Section IV. According to Brunton, its sockets with electrical contacts in the temple cavity couple the hearing aid unit to the temple to constrain it by “frictionally retain[ing]” the pins on the hearing aid unit. *Supra* Section IV; Ex. 1003, 3:61-65, 4:56-63.

98. In addition, the electronic module in Kokonaski-999 has pins (“first contacts 504”) that extend from one end. Ex. 1004, ¶¶[0039]-[0040], Fig. 5. Kokonaski-999’s electronic module is illustrated below in Figure 5 showing the first contacts’ pins.



Id., Fig. 5.

FIGURE 5

99. A POSITA would have found it obvious to use sockets, as provided in Brunton, in Kokonaski-999’s temple to “frictionally retain[]” the electronic module via at least the first contacts pins 504. A POSITA would have been motivated for multiple reasons to use sockets as part of the electrical conductors in Kokonaski-999’s temples to constrain the electronic module.

100. First, a POSITA would have been motivated to use sockets, as provided in Brunton, to secure the electronic module in the temple and prevent the electronic module from inadvertently falling out. According to Kokonaski-999, “the electronic module 202 can be positioned within the frame 102 (e.g., in an area or cavity of the frame 102) and can be removable and replaceable.” Ex. 1004, ¶[0033]. Kokonaski-

999 does not, however, specify how to constrain the electronic module in the cavity until the user determines to remove the electronic module.

101. Similar to Kokonaski-999, Brunton provides that its hearing aid unit is “removable and replaceable.” Ex. 1003, 3:30-33; *id.*, 3:51-56. Brunton further provides a mechanism for constraining the hearing aid unit in the cavity where the pins are “snapped into sockets” embedded in the temples. *Id.*, 2:55-63. According to Brunton, the sockets provide a way to “frictionally retain[]” the hearing aid unit in the temple to secure it in place until the user decides to remove it. *Id.*, 3:59-65, 4:55-63. A POSITA would have been motivated to use the same or similar approach to Brunton’s to secure Kokonaski-999’s electronic module in the temple until the user decides to remove it.

102. Second, Kokonaski-999’s teachings of pins as the electronic module’s “first contacts” would have motivated a POSITA because they provide a basis for constraining the electronics module in the temple via sockets. For instance, because the first contacts 504 are tubular pins which protrude from the end of the housing 502, a POSITA would have understood that their purpose is to be received into the temple, such as in tubular sockets like Brunton’s. Ex. 1004, Fig. 5. Kokonaski-999’s electronic module additionally has second contacts 506, which are flat contacts and positioned flush against the housing’s bottom surface. *Id.* It would have been recognized by a POSITA that there is a physical difference between the first and

second contacts and that the flush second contacts 506 are not constrained by the temple while the second contacts' pins are shaped to be constrained by the temple.

103. A POSITA would have reasonably expected success in such a combination of the teachings in Kokonaski-999 and Brunton. It would have been readily understood by a POSITA that a portion of the upper and lower conducting members 712, 714 may be shaped to have sockets that receive the pins on Kokonaski-999's electronic module. For instance, Kokonaski-999 illustrates in Figure 7 that a portion of the temple is narrowed where the pins on the electronic module extend towards and physically contact the upper and lower conducting members 712, 714. A POSITA would have had a reasonable expectation of success when forming sockets similar to the narrowed region for the pins on Kokonaski-999's electronic module, which would be retained by the upper and lower conducting members 712, 714.

104. Therefore, claim 1 would have been obvious to a POSITA over Kokonaski-999 and Brunton.

B. Claim 2

105. Claim 2 depends from claim 1 and recites: "wherein the first electrical conductor is integrally coupled to the first temple." According to the '174 patent, "integrally coupled" encompasses coupling such that the conductor "cannot be readily removed without damaging or otherwise affecting the structure of the

C. Claim 4

108. Claim 4 depends from claim 1 and recites: “wherein the first electrical conductor comprises a lug.” According to the ’174 patent, “lug” encompasses any conductive material that constitutes a fitting to which electrical wires or conductors may be electrically coupled to form a conductive path, as I explained above in Section III.C. *Supra* Section III.C.

109. Kokonaski-999 discloses this limitation. According to Kokonaski-999, the upper and lower conductive members 712 and 714 “can be conductive (e.g., made of metal and coated with a non-conductive material) or a portion of the upper and lower conducting members 712 and 714 can be conductive (e.g., an internal portion that is encapsulated by non-conductive material).” Ex. 1004, ¶[0067]. Kokonaski-999 further provides that the upper and lower conductive members 712 and 714 constitute fittings to couple electrical wires or conductors to form a conductive path. *Id.*, ¶[0066] (describing conductive member 712 connectivity to electronics module 202 and first conductor 708).

110. Therefore, claim 4 would have been obvious to a POSITA over Kokonaski-999 and Brunton.

D. Claims 5 and 6

111. Claim 5 depends from claim 1 and recites: “wherein the electronics module comprises any two of a power source, a controller, and a sensor.” According

to the '174 patent, “a controller could include, by way of example, a micro-processor or an ASIC” and “any suitable sensor may be utilized” such as “a membrane switch, an analog switch, a gyroscope, or an accelerometer.” Ex. 1001, 13:8-9, 13:13-15.

112. Kokonaski-999 satisfies this limitation by providing an electronics module with a power source, a controller, and a sensor. For instance, according to Kokonaski-999, the electronics of the electro-active spectacles “can include a processor, memory, a power source (e.g., a battery) and a gyroscope or accelerometer” where “these components can be grouped together to form a self-contained electronic module.” Ex. 1004, ¶[0032]; *id.*, ¶[0047].

113. Claim 6 depends from claim 5 and recites: “wherein the sensor comprises a touch switch.” According to the '174 patent, “where the electronics module comprises a sensor, the sensor may comprise a touch switch” and “the touch switch is any one of a membrane switch or a capacitive touch switch.” Ex. 1001, 13:10-13.

114. Kokonaski-999 satisfies this limitation by providing a sensor in the electronics module which includes a capacitive touch switch. For instance, according to Kokonaski-999, “the electronic module 202 can include a switch or device to enable a user to interact with the electronic module 202” and “[t]he switch or device can be a press button switch, a capacitive switch (e.g., comprising a capacitive sense pad), a toggle switch or other manual switch.” Ex. 1004, ¶[0056].

115. Therefore, claims 5-6 would have been obvious to a POSITA over Kokonaski-999 and Brunton.

E. Claim 9

116. Claim 9 depends from claim 1 and recites: “wherein the electronics module is configured to be removably coupled to the first temple.” Kokonaski-999 discloses this limitation. For instance, according to Kokonaski-999, “the electronic module 202 can be positioned within the frame 102 (e.g., in an area or cavity of the frame 102) and can be removable and replaceable.” Ex. 1004, ¶¶[0033]; *id.*, ¶¶[0023], [0041], Figs. 2, 5, 7, 9.

117. Therefore, claim 9 would have been obvious to a POSITA over Kokonaski-999 and Brunton.

F. Claim 12

118. Claim 12 depends from claim 1 and recites: “wherein the first electrical conductor comprises a single structural element.” Kokonaski-999 discloses this limitation. For instance, Kokonaski-999 provides that the upper and lower conducting members 712 and 714 are single structural elements. *See* Ex. 1004, ¶¶[0065]-[0071], Figs. 7-9.

119. Therefore, claim 12 would have been obvious to a POSITA over Kokonaski-999 and Brunton.

G. Claim 14

120. Claim 14 depends from claim 1 and recites that the device further “compris[es] a first lens and a second lens coupled to the lens housing:

wherein the first lens has a first electrical contact; and

wherein the first conductive path is electrically coupled to the first electrical contact.”

121. Kokonaski-999 discloses these limitations. According to Kokonaski-999, eyeglasses have a first lens and a second lens coupled to the lens housing. Ex. 1004, Abstract, ¶¶[0026]-[0027], [0077]-[0079], [0094]-[0096], Figs., 1, 10, 13.

122. In addition, Kokonaski-999 provides that its first lens has a first electrical contact. *Id.*, ¶¶[0058]-[0061]. Kokonaski-999 illustrates in Figure 6 below that the “electro-active lens 600 can comprise a first electrical lead or connector 608 and a second electrical lead or connector 610.” *Id.*, ¶[0060].

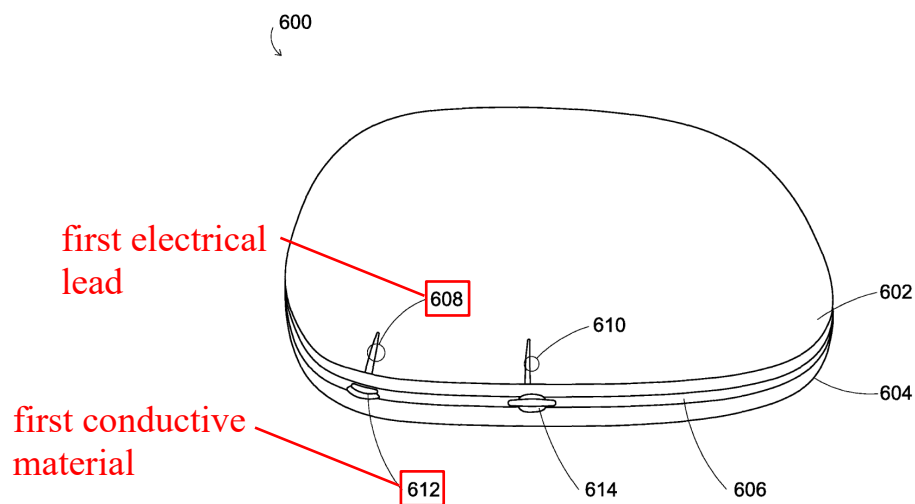
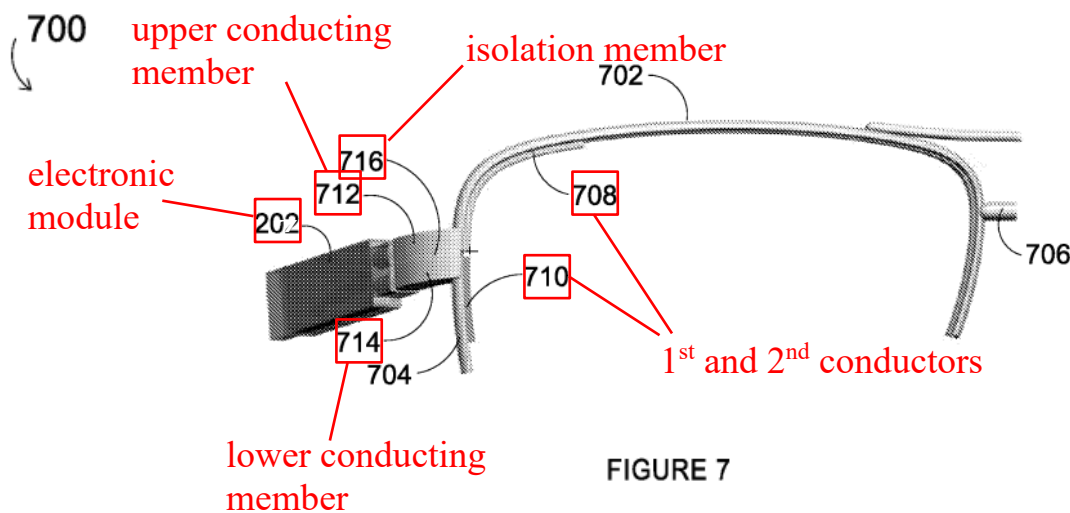


FIGURE 6

Id., Fig. 6. The lens 600 also includes “a first conductive material 612...placed in the groove 604 on top of the first electrical lead 608.” *Id.*, ¶[0061].

123. Kokonaski-999 also provides that the first conductive path is electrically coupled to the first electrical contact. Kokonaski-999 discloses, for instance, that its frame “can provide electrical connectivity between the electro-active lenses...and the electrical components used to operate electro-active lenses.” *Id.*, ¶[0062]. Kokonaski-999 illustrates in Figure 7 below one example of such a conductive path.



Id., Fig. 7. Kokonaski-999 further provides that the upper conducting member 712 is electrically connected to the first conductor 708 in the eyeglass frame. *Id.*, ¶[0066]. According to Kokonaski-999, “[t]he first conductor 708 can provide connectivity to the first conductive material 612 (and, as a result, connectivity to the

first electrical lead 608) depicted in FIG. 6.” *Id.* The first conductive path is thus electrically coupled to the first electrical contact in the lens.

124. Therefore, claim 14 would have been obvious to a POSITA over Kokonaski-999 and Brunton.

VIII. HATTORI-913 RENDERS OBVIOUS CLAIMS 1-2, 5-6, 12, AND 13

A. Claim 1

1. Preamble and Limitations 1[a]-1[c]: lens housing and first/second temples

125. The preamble of claim 1 and limitations 1[a], 1[b], and 1[c] recite:

1. A first device, comprising:

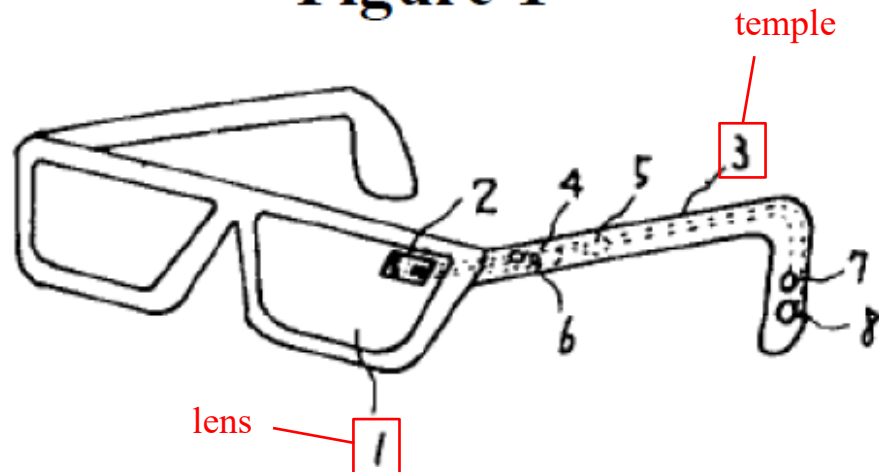
a lens housing adapted to support a first lens and a second lens;

a first temple movably coupled to the lens housing;

a second temple movably coupled to the lens housing.

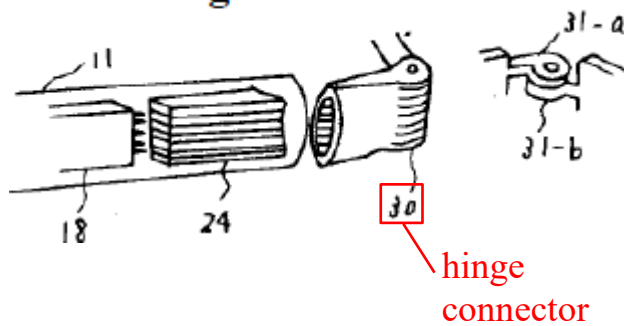
126. These limitations are disclosed by Hattori-913. For example, Hattori-913 discloses eyeglasses that include temples 3 and lenses 1 located in a lens housing. This is illustrated in Figure 1 below:

Figure 1



Ex. 1006, Fig. 1; *id.*, Figs. 2, 4; *id.*, 68-69. Further, it is understood that the temples 3 are movably coupled to the lens holder by, for example, the hinge connectors 30 shown in Figure 6:

Figure 6



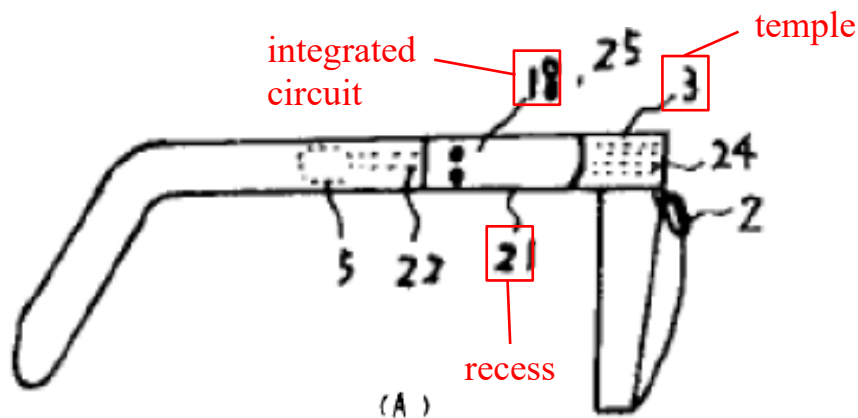
Id., Fig. 6; *id.*, 68.

127. Therefore, Hattori-913 discloses the preamble of claim 1 and limitations 1[a]-1[c].

2. **Limitation 1[d]: “an electronics module disposed at least partially within the first temple”**

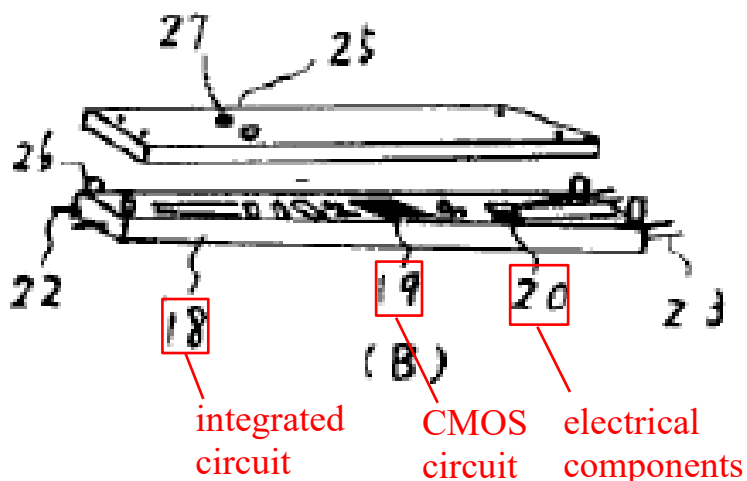
128. Hattori-913 discloses limitation 1[d]. Hattori-913 discloses that its eyeglasses have a drive device 4 in the temple that serves as the claimed electronics module. Hattori-913 explains that one of the lenses has a liquid crystal panel to display content such as “time, date, air temperature, body temperature, animation, games, video information, etc.” Ex. 1006, 68. Hattori-913 states that the content on the display is controlled by the drive unit 4 in the temple: “The drive control of these display contents is performed by electronic circuits such as CMOS provided in the drive device 4.” *Id.*, 68; *see also id.*, Figs. 1-2.

129. Hattori-913 provides a specific example of the drive device 4 as an integrated circuit 18 in the eyeglass temple, which is illustrated in Figure 4(A).



Id., Fig. 4(A). Hattori-913 states: “CMOS circuit 19 and semiconductor integrated circuit 18 incorporating individual electronic components 20 such as capacitors and transistors are embedded in recess 21 processed in temple [3].” *Id.*, 68.

130. Hattori-913 illustrates in Figure 4(B) an example of the integrated circuit 18, “incorporating individual electronic components 20 such as capacitors and transistors” and also incorporating a CMOS circuit 19:



Id., Fig. 4(B); *id.*, 68. Therefore, Hattori-913 discloses an electronics module disposed at least partially within the first temple.

3. **Limitation 1[e]/1[g]: “a first/second electrical conductor coupled to the first temple”**

131. According to the ’174 patent, “electrical conductor” encompasses “any material that can be used to conduct electrical signals or power,” as I explained above in Section III.C. *Supra* Section III.C.

132. Hattori-913 discloses limitations 1[e] and 1[g]. Hattori-913 discloses a “zebra connector 24 embedded in the temple,” which serves as the claimed first electrical conductor and second electrical conductor coupled to the first temple. Ex. 1006, 68. Hattori-913 illustrates the zebra connector in Figure 4(A) and Figure 6:

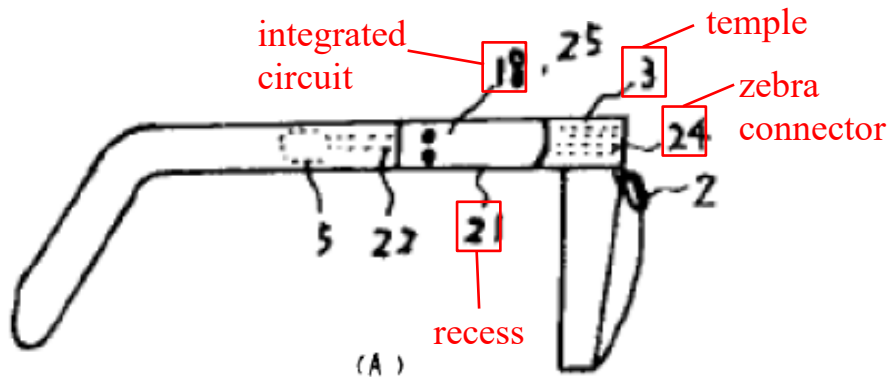
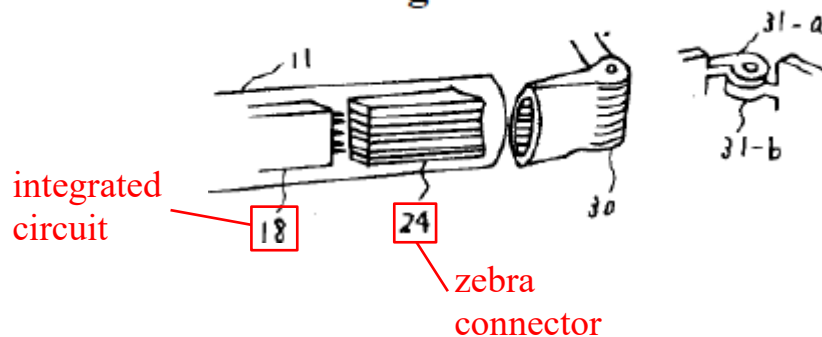


Figure 6



Id., Figs. 4(A), 6.

133. A zebra connector is a type of electrical connector that is well-known and made up of alternating layers of conductive and insulating materials. The insulating material is usually a rubber or elastomeric matrix. Issued in 1991, the Johnson patent describes a Zebra strip” as a “a conductive elastomer that is known widely” and comprised of “alternate layers of conductive and nonconductive elastomers.” Ex. 1020, 3:37-44.

134. Due to its construction, a zebra connector can transmit multiple electrical signals while maintaining excellent electrical conductivity and providing mechanical stability. The DiSanto patent, issued in 1986, states:

Placed within the aperture is a conductive coupling material sold by many companies and referred to in general as a Zebra strip. The trademark Zebra is a registered mark of Techknit Corporation of 129 Demody Street, Cranford, N.J. Zebra connectors have alternating parallel layers of conductive carbon filled and non-conductive silicone rubber. They make reliable connections by exerting pressure between contacting surfaces. They come in various configurations with various conducting area size and insulator width as well as different materials.... A Zebra strip essentially constitutes a plurality of conductors which are each separated by a plurality of insulators....

Ex. 1021, 6:41-62.

135. Additionally, Hattori-913 discloses that the zebra connector is “embedded in the temple.” Ex. 1006, 68. According to the ’174 patent, “coupled” encompasses “any manner of connecting two components together in any suitable manner, such as by way of example only: ... embedding within, embedded substantially within,....” Ex. 1001, 6:52-60; *Supra* Section III.C. Therefore, the zebra connector disclosed in Hattori-913 is coupled to the temple. Ex. 1006, 68.

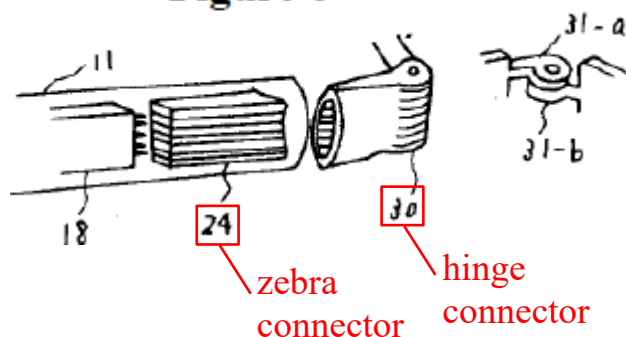
136. Hattori-913 accordingly discloses a first electrical conductor coupled to the first temple and a second electrical conductor coupled to the first temple. Therefore, Hattori-913 discloses limitations 1[e] and 1[g].

4. **Limitation 1[f]/1[h]: “wherein a first/second conductive path is provided from the first temple to the lens housing at least in part by the first/second electrical conductor”**

137. Hattori-913 discloses limitations 1[f] and 1[h]. As I explained above for limitations 1[e] and 1[g], Hattori-913 discloses the zebra connector 24 is embedded in the temple. Ex. 1006, 68; *see also id.*, Figs. 4 and 6.

138. As taught by Hattori-913, first and second conductive paths are provided at least in part by the zebra connector. For example, Hattori-913 discloses the zebra connector 24 is part of the conductive path leading from the drive circuit 4 (e.g., integrated circuit 18) to the hinge connector 30 and then to the lens housing and lens 1. Ex. 1006, 68, Figs. 1-2, 4, 6. Hattori-913 specifically states that the “output terminal group 23” on the integrated circuit is “connected to zebra connector 24.” Ex. 1006, 68. Hattori-913 continues, stating that the “hinge connector 30 and the semiconductor integrated circuit 18 are connected by a zebra-type connector 24, and the hinge connector 30 is formed by a plurality of paired lead electrodes 31-a, 31-b contacting each other.” *Id.* Hattori-913 illustrates the conductive path in Figure 6 below.

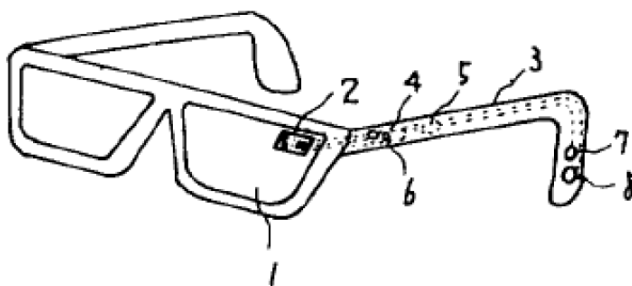
Figure 6



Id., Fig. 6.

139. The conductive paths then continues from the hinge connector through the lens housing to the lens, where Hattori-913 explains that “the transparent lead 9 from the display device 2 is connected to the lead rubber 10 at the edge of the lens 1” and the leads are connected to the drive circuit 4 in the temple. *Id.*, 68. Hattori-913 illustrates in Figure 1 the conductive paths traveling to the lens housing and lens.

Figure 1



Id., Fig. 1; *see also id.*, Fig. 4(A).

140. Hattori-913 accordingly discloses that the eyeglasses provide first and second conductive paths from the temple to the lens frame, provided at least in part

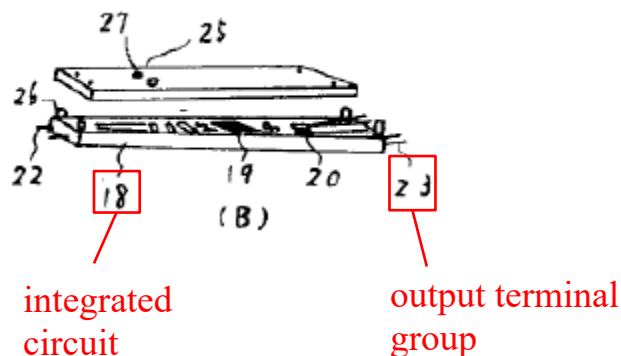
by the first and second electrical conductors (the zebra connector). Therefore, Hattori-913 discloses limitations 1[f] and 1[h].

5. **Limitation 1[i]: “wherein the first and second electrical conductors are configured to couple the electronics module to the first temple to constrain the electronics module”**

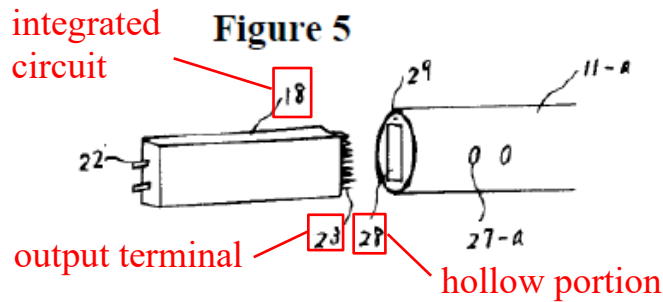
141. According to the '174 patent, the term “constrain” encompasses “retain[ing] the module in a fixed position within the temple,” as I explained above in Section III.C. *Supra* Section III.C.

142. Hattori-913 discloses limitation 1[i] or it would have been obvious in view of Hattori-913’s disclosure and a POSITA’s knowledge.

143. Hattori-913 illustrates in Figure 4(B) below the integrated circuit 18 with an output terminal group 23 that extends from one end.

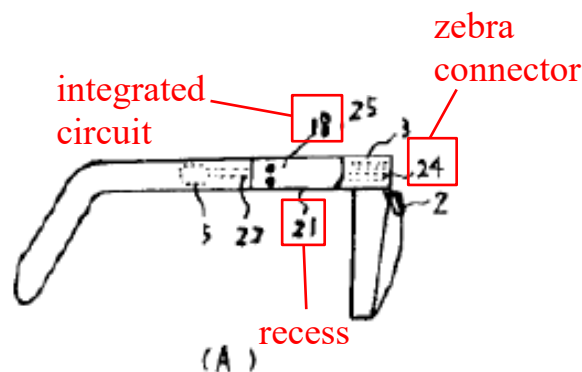


Id., Fig. 4(B). Hattori-913 illustrates also in Figure 5 below an embodiment where the integrated circuit 18 includes the output terminal group 23:



Id., Fig. 5 (excerpted); *id.*, 68. In view of Hattori-913's disclosure, a POSITA would understand that the output terminal group 23 is multiple electrical terminals, such as contact pins, that extend from one end of the integrated circuit 18.

144. Hattori-913 states that the output terminal group 23 is “connected to zebra connector 24 embedded in the temple.” *Id.*, 68. As I explained above in Section VIII.A.2, Hattori-913 discloses that the drive device 4 (e.g., integrated circuit 18) is inserted “in the “recess 21 processed in temple 1.” Ex. 1006, 68. Hattori-913 illustrates this in Figure 4(A):



145. The embedded zebra connector 24 is electrically and mechanically coupled to the integrated circuit 18 in the temple 3. The zebra connector is an elastomeric material that exerts pressure on the integrated circuit's output terminal group 23 by compressing against it, which creates a secure electrical connection and also physically couples the integrated circuit to the temple to retain it in a fixed position. *See* Ex. 1021, 6:50-53 (Zebra connectors "make reliable connections by exerting pressure between contacting surfaces."). Thus, it is my opinion that a POSITA would have understood Hattori-913's zebra connector is configured, as recited in limitation 1[i], to couple the electronics module to the temple to constrain the electronics module.

146. Therefore, as I have explained above, Hattori-913 discloses or renders obvious all limitations of claim 1 and thus renders the claim obvious.

B. Claim 2

147. Claim 2 depends from claim 1 and recites: "wherein the first electrical conductor is integrally coupled to the first temple." Hattori-913 discloses this limitation. According to Hattori-913, its zebra connector is "embedded in the temple." Ex. 1006, 68. The zebra connector is accordingly integrally coupled to the first temple. Therefore, Hattori-913 renders claim 2 obvious.

C. Claims 5 and 6

148. Claim 5 depends from claim 1 and recites: “wherein the electronics module comprises any two of a power source, a controller, and a sensor.” According to the ’174 patent, “a controller could include, by way of example, a micro-processor or an ASIC” and “any suitable sensor may be utilized” such as “a membrane switch, an analog switch, a gyroscope, or an accelerometer.” Ex. 1001, 13:8-9, 13:13-15.

149. Hattori-913 satisfies this limitation by providing an electronics module with a controller and a sensor. Hattori-913’s drive device 4 and integrated circuit 18 are controllers. For instance, Hattori-913 provides “[t]he drive control of these display contents is performed by electronic circuits such as CMOS provided in the drive device 4.” Ex. 1006, 68. According to Hattori-913, the integrated circuit 18, along with CMOS circuit 19, is one example of the drive device 4 which controls the electronic components in the eyeglasses. *Id.*, 68, Fig. 1.

150. In addition, Hattori-913 provides that its electronics module includes a sensor when Hattori-913 explains that “a switch 6 is provided to turn the power on and off and control the display as necessary.” *Id.* Hattori-913 also discloses a switch 27 is included on protective plate 25 of the integrated circuit 18. *Id.*, 68, Fig. 4(B).

151. Claim 6 depends from claim 5 and recites: “wherein the sensor comprises a touch switch.” According to the ’174 patent, “where the electronics module comprises a sensor, the sensor may comprise a touch switch” and “the touch

switch is any one of a membrane switch or a capacitive touch switch.” Ex. 1001, 13:10-13.

152. Hattori-913 satisfies this limitation by providing “[t]he switch 6 can be like a touch switch.” Ex. 1006, 68.

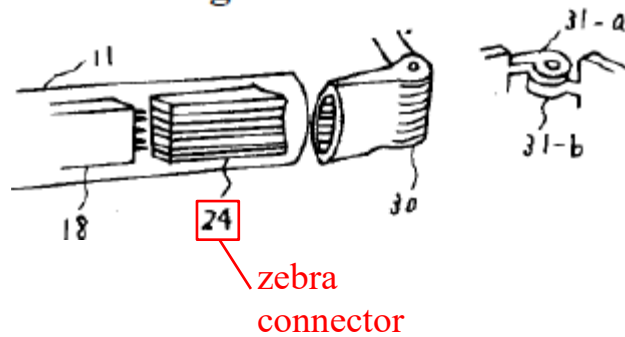
153. Therefore, Hattori-913 renders claims 5-6 obvious.

D. Claim 12

154. Claim 12 depends from claim 1 and recites: “wherein the first electrical conductor comprises a single structural element.” According to the ’174 patent, the phrase “single structural element” encompasses a single contiguous piece of material and is contrasted with conductors requiring additional components (such as, springs on pogo pins which expand and contract) to establish connectivity with the electronics module, as I explained above in Section III.C. Ex. 1001, 14:38-45; *Supra* Section III.C.

155. Hattori-913 discloses and illustrates with respect to Figure 6 below that its zebra connector 24 is a single discrete structural element:

Figure 6

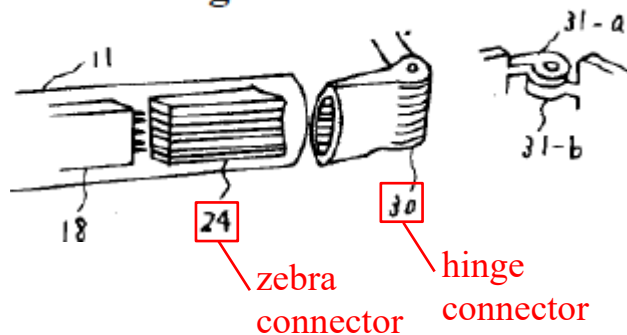


Ex. 1006, Fig. 6; *id.*, 68. Therefore, Hattori-913 renders claim 12 obvious.

E. Claim 13

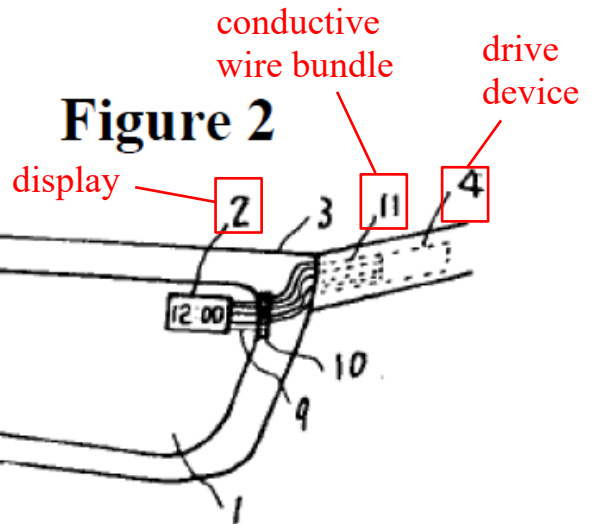
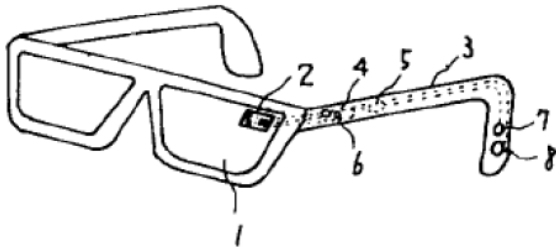
156. Claim 13 depends from claim 1 and recites: “wherein the first electrical conductor is configured to maintain the first conductive path as the first temple is moved relative to the lens housing.” According to Hattori-913, “the hinge connector 30 and the semiconductor integrated circuit 18 are connected by a zebra-type connector 24, and the hinge connector 30 is formed by a plurality of paired lead electrodes 31-a, 31-b contacting each other.” Ex. 1006, 68. Hattori-913 illustrates in Figure 6 below this electrical connection through the hinge.

Figure 6



Id., Fig. 6. Hattori-913 illustrates in Figures 1-2 below that the electrical path is maintained through the hinges, thereby maintaining the electrical path as the temple is moved relative to the lens housing.

Figure 1



Id., Figs. 1-2. Therefore, Hattori-913 renders claim 13 obvious.

IX. DELORENZO ANTICIPATES CLAIMS 1-2, 4, 9, AND 12-13

A. Claim 1

1. Preamble and Limitations 1[a]-1[c]: lens housing and first/second temples

157. The preamble of claim 1 and limitations 1[a], 1[b], and 1[c] recite:

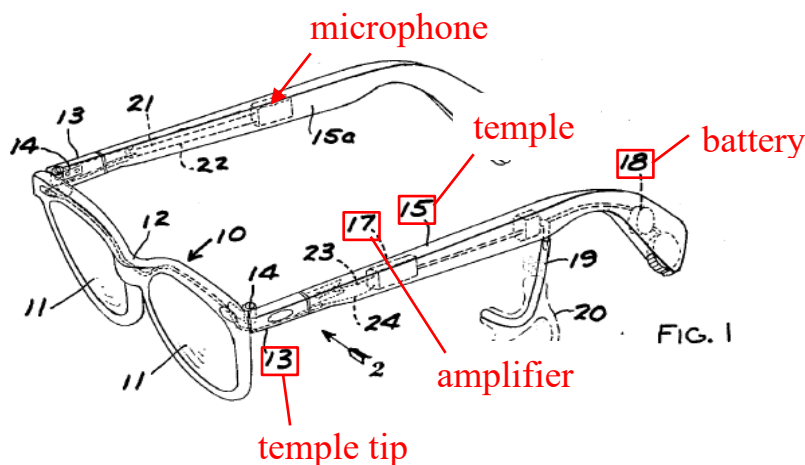
1. A first device, comprising:

a lens housing adapted to support a first lens and a second lens;

a first temple movably coupled to the lens housing;

a second temple movably coupled to the lens housing.

158. These limitations are disclosed by Delorenzo. For instance, Delorenzo discloses its “invention comprises an eyeglass frame front 10 in which lenses 11 can be positioned....and temples 15 are removably interconnected to the temple tips.” Ex. 1007, 2:3-7. Delorenzo illustrates this structure in Figure 1 below.

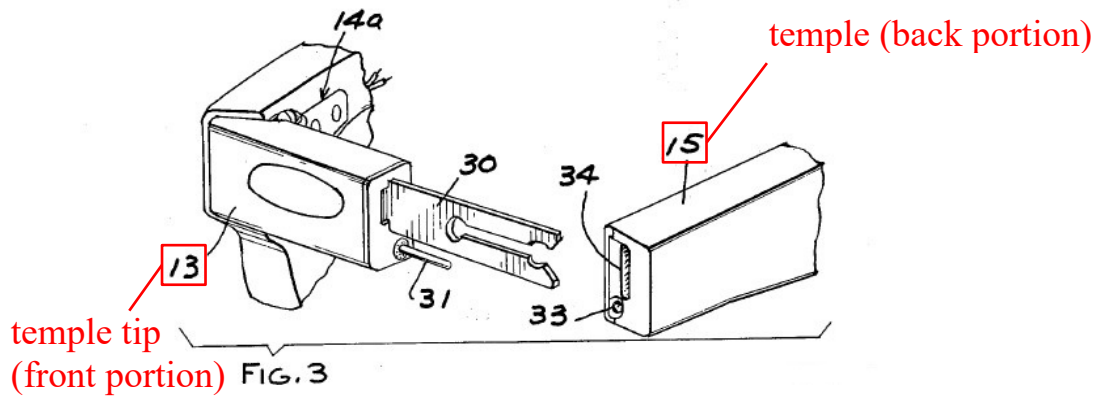


Id., Fig. 1. According to Delorenzo, its eyeglasses include hinges 14 that permit each temple to move relative the lens housing, meaning that temples 15 and 15a are “movably coupled” to the lens housing. *Id.*, 1:44-45 (“Each temple is mechanically connected to a temple tip hinged to the frame front...”).

159. Therefore, Delorenzo discloses the preamble of claim 1 and limitations 1[a], 1[b], and 1[c].

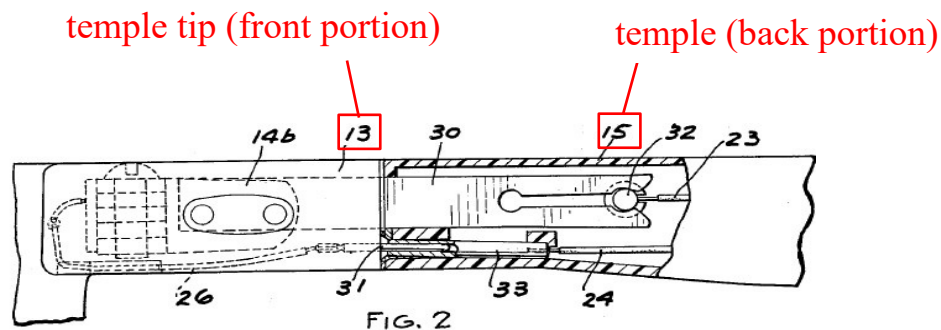
2. **Limitation 1[d]: “an electronics module disposed at least partially within the first temple”**

160. Delorenzo discloses limitation 1[d]. According to Delorenzo, its electronics modules are housed in temple 15 of its eyewear, which is illustrated in Figure 3 below.



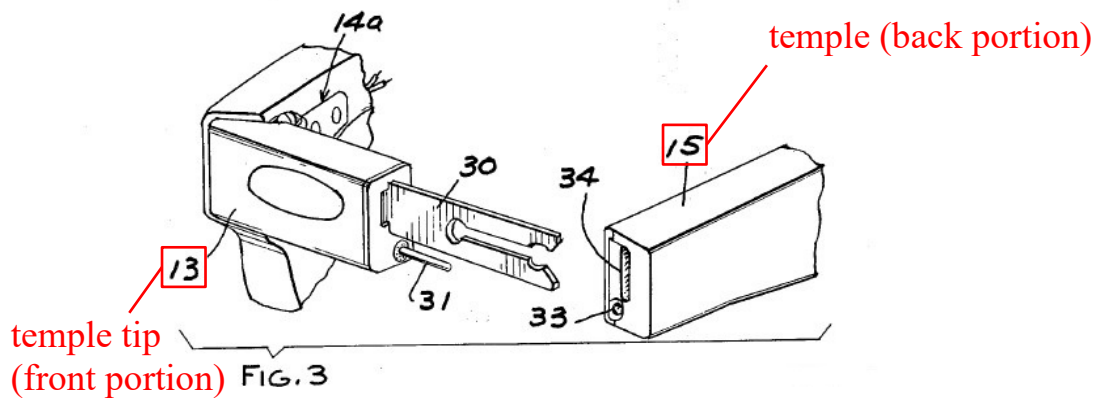
Ex. 1007, Fig. 3.

161. Delorenzo provides that the front portion of its temple (temple tip 13) and the back portion of its temple (temple 15) may be mechanically and electrically connected as illustrated in Figure 2 below. Ex. 1007, 1:44:51, 2:44-54.



Id., Fig. 2.

162. In addition, Delorenzo provides that the back portion of the temple (temple 15) and the front portion (temple tip 13) may be mechanically and electrically separate, which “permit[s] ready removal and replacement of the temple with the electrical element therein.” *Id.*, 1:44-51.



Id., Fig. 3.

163. Furthermore, according to Delorenzo, “[o]ne of the temples 15a is provided with a microphone element 16 while the other has an amplifier element 17 removably embedded therein.” Ex. 1007, 2:9-11; *id.*, Abstract, 1:41-44, Fig. 1. Delorenzo’s temple 15 is thus an electronics module, which is disposed at least partially within the eyewear’s fully assembled temple (temple tip 13 and temple 15).

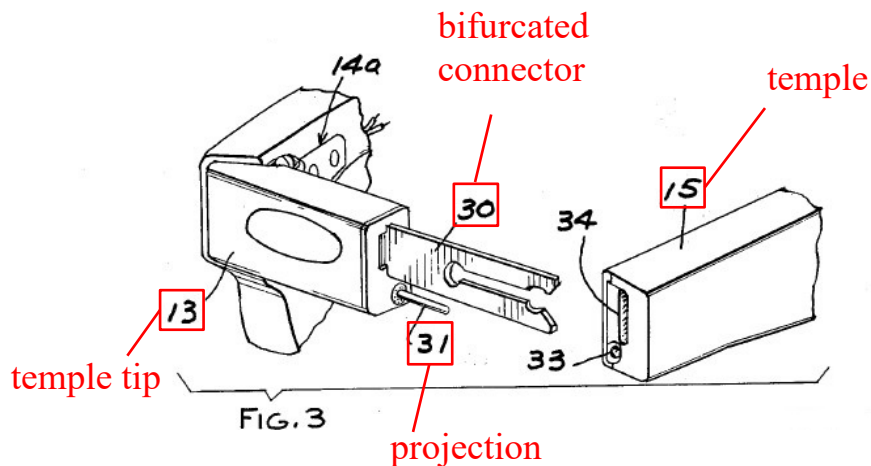
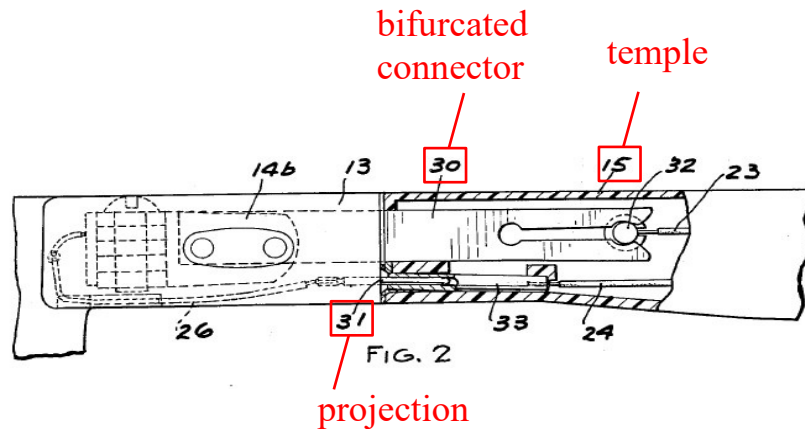
164. Therefore, Delorenzo discloses an electronics module that is disposed at least partially within the first temple.

3. Limitation 1[e]/1[g]: “a first/second electrical conductor coupled to the first temple”

165. According to the ’174 patent, “electrical conductor” encompasses “any material that can be used to conduct electrical signals or power,” as I explained above in Section III.C. *Supra* Section III.C.

166. Delorenzo discloses limitations 1[e] and 1[g]. Delorenzo’s “bifurcated connector 30” is a first electrical conductor, and Delorenzo’s “projection or male

element 31” is a second electrical conductor. Ex. 1007, 2:31-35. According to Delorenzo, its bifurcated connector 30 and projection 31 are coupled to the first temple. *Id.*, 2:31-33, 2:44-46 (bifurcated connector 30 is “fixed in the associated temple tip 13” and “extends through passage 34 and mechanically connects onto post 32”), 2:49-53 (projection 31 “establishes a connection” with female connector 33). Delorenzo illustrates in Figures 2-3 below the bifurcated connector 30 and the projection 31 coupled to the first temple.

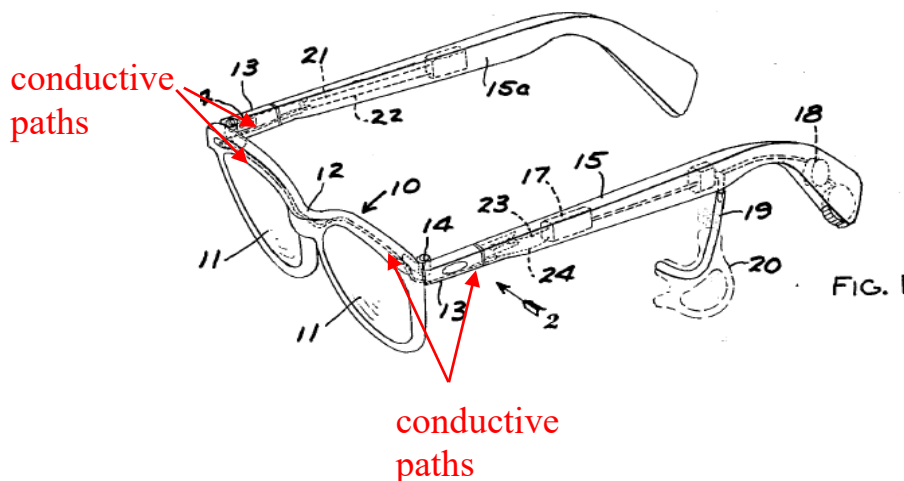


Id., Figs. 2-3.

167. Therefore, Delorenzo discloses a first and second electrical conductor coupled to the first temple.

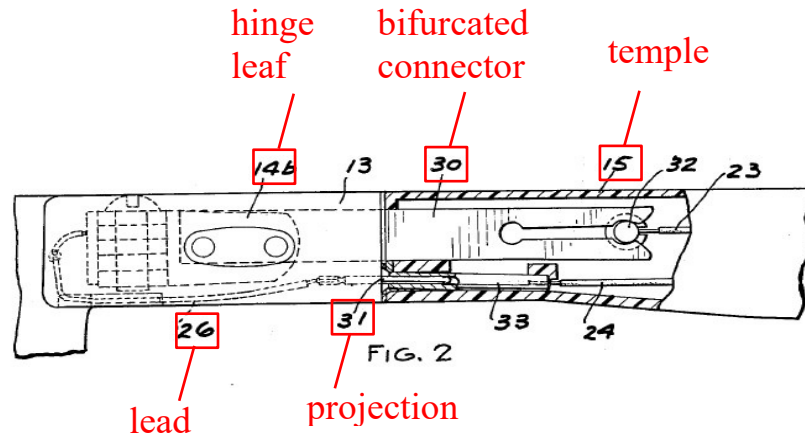
4. **Limitation 1[f]/1[h]: “wherein a first/second conductive path is provided from the first temple to the lens housing at least in part by the first/second electrical conductor”**

168. Delorenzo discloses limitations 1[f] and 1[h]. According to Delorenzo, “each temple is mechanically and electrically interconnected to the other through the eyeglass frame front.” Ex. 1007, 2:54-56. Delorenzo illustrates in Figure 1 below the conductive paths connecting each the temples and the eyeglass front.



Id., Fig. 1.

169. Delorenzo provides that the conductive paths extend from the bifurcated connector 30 and projection 31 in the temples to leads 25 and 26 in the temple, and in turn, “leads 25, 26 are electrically connected to the leaf of hinge 14b” as illustrated in Figure 2 below. *Id.*, 2:28-31.



Id., Fig. 2. According to Delorenzo, the conductive path further extends from the leaf hinge 14b, through the hinge 14, to the frame front 10. *Id.*, 2:26-28, Fig. 7 (illustrating conductive path through the hinge).

170. Delorenzo accordingly discloses that the eyeglasses provide first and second conductive paths from the temple to the lens frame, provided at least in part by the first and second electrical conductors. Therefore, Delorenzo discloses these limitations.

5. **Limitation 1[i]: “wherein the first and second electrical conductors are configured to couple the electronics module to the first temple to constrain the electronics module”**

171. According to the ’174 patent, the term “constrain” encompasses “retain[ing] the module in a fixed position within the temple,” as I explained above in Section III.C. *Supra* Section III.C.

172. Delorenzo discloses limitation 1[i]. According to Delorenzo, “each temple is mechanically and electrically interconnected to the other through the

eyeglass frame front.” Ex. 1007, 2:54-56. Delorenzo’s electrical conductors at the front portion of the temple (temple tip 13) extend into and mechanically constrain the electronics module (temple 15) containing the electronic components. *Id.*, 2:44-46 (“[T]he bifurcated element 30 extends through passage 34 and mechanically connects onto post 32.”), 2:49-54 (describing “connection between connectors 31, 33”), Figs. 1-3. Delorenzo accordingly discloses that the first and second electrical conductors are configured to couple the electronics module to the first temple to constrain the electronics module.

173. Delorenzo therefore discloses each limitation of claim 1 and anticipates claim 1.

B. Claim 2

174. Claim 2 depends from claim 1 and recites: “wherein the first electrical conductor is integrally coupled to the first temple.” Delorenzo discloses this limitation. According to Delorenzo, its bifurcated connector 30 is “fixed in the associated temple tip 13.” Ex. 1007, 2:31-33. The bifurcated connector in Delorenzo is thus “integrally coupled” to the first temple. Therefore, Delorenzo discloses claim 2.

C. Claim 4

175. Claim 4 depends from claim 1 and recites: “wherein the first electrical conductor comprises a lug.” According to the ’174 patent, “lug” encompasses any

conductive material that constitutes a fitting to which electrical wires or conductors may be electrically coupled to form a conductive path, as I explained above in Section III.C. *Supra* Section III.C.

176. Delorenzo meets this limitation because Delorenzo discloses its bifurcated connector includes a conductive material that constitutes a fitting to which conductors (such as, hinge leaf 14b and transversely extending post 32) are coupled for forming a conductive path. Ex. 1007, 2:31-34 (“Each hinge leaf 14b is electrically connected to a bifurcated connector 30”), 2:44-48 (“bifurcated element 30 extends through passage 34 and mechanically connects onto post 32. This also provides an electrical connection....”); *id.*, Figs. 2-3. Therefore, Delorenzo discloses claim 4.

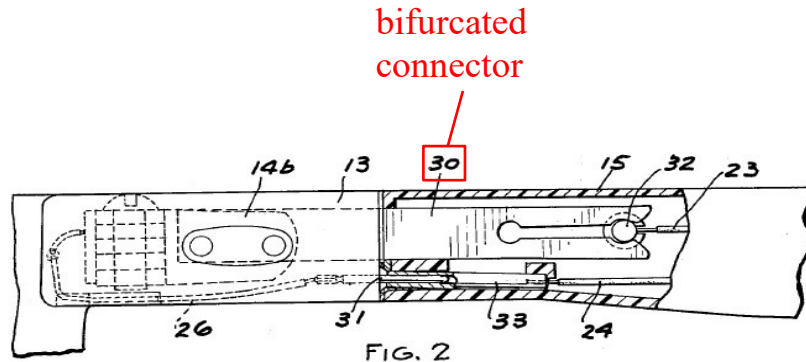
D. Claim 9

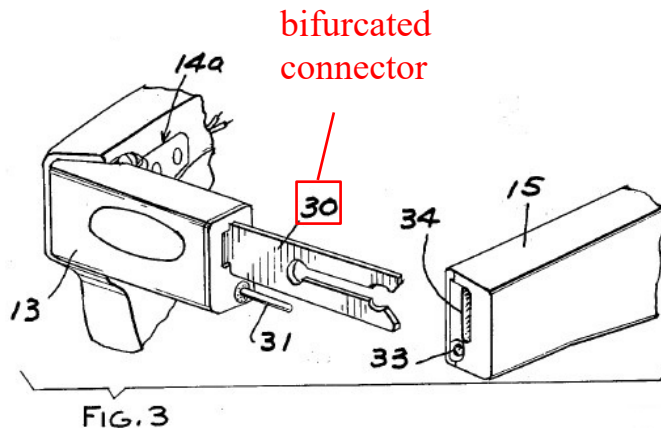
177. Claim 9 depends from claim 1 and recites: “wherein the electronics module is configured to be removably coupled to the first temple.” Delorenzo discloses this limitation. According to Delorenzo, its mechanical and electrical connections between the electronics module (temple 15) and temple 13 of the eyewear may be broken, which “permit[s] ready removal and replacement of the temple with the electrical element therein.” Ex. 1007, 1:44-51. *id.*, Figs. 1, 3. Therefore, Delorenzo discloses and anticipates claim 9.

E. Claim 12

178. Claim 12 depends from claim 1 and recites: “wherein the first electrical conductor comprises a single structural element.” According to the ’174 patent, the phrase “single structural element” encompasses a single contiguous piece of material and is contrasted with conductors requiring additional components (such as, springs on pogo pins which expand and contract) to establish connectivity with the electronics module, as I explained above in Section III.C. Ex. 1001, 14:38-45; *Supra* Section III.C.

179. According to Delorenzo, the bifurcated connector 30 is a single structural element. Delorenzo illustrates this in Figures 2-3 below:



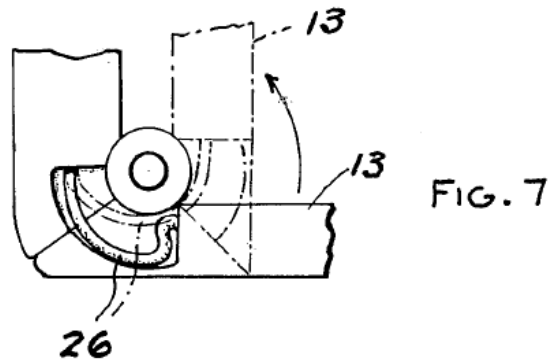


Ex. 1007, Figs. 2-3; *id.*, 2:31-33 (bifurcated connector 30 being “fixed in the associated temple tip 13 and extending externally therefrom”). Therefore, Delorenzo discloses and anticipates claim 12.

F. Claim 13

180. Claim 13 depends from claim 1 and recites: “wherein the first electrical conductor is configured to maintain the first conductive path as the first temple is moved relative to the lens housing.”

181. Delorenzo discloses this limitation. According to Delorenzo, “each temple is mechanically and electrically interconnected to the other through the eyeglass frame front.” Ex. 1007, 2:54-56. The conductive paths in Delorenzo extend from the bifurcated connector 30 and projection 31, through the hinges 14 via leads 25 and 26, to the frame front 10. *Id.*, 2:26-36, Figs. 4, 7. Delorenzo illustrated in Figure 7 below that the conductive path is maintained while the temple moves relative to the frame front 10.



Id., Fig. 7. Therefore, Delorenzo discloses and anticipates claim 13.

X. DELORENZO RENDERS OBVIOUS CLAIMS 1-4 AND 9-13

182. Delorenzo anticipates claims 1-2, 4, 9, 12, and 13 for the reasons I explained above in Section IX. *Supra* Section IX. These claims also would have been obvious in view of Delorenzo because Delorenzo further at least suggests the limitations of these claims. Moreover, a POSITA would have found claims 3 and 10-11 obvious in view of Delorenzo and the knowledge of a POSITA.

A. Claim 3

183. Claim 3 depends from claim 2 and recites: “wherein the first electrical conductor is insert molded with the first temple.” According to the ’174 patent, “insert molded” encompasses injection molding the temple material around the first electrical conductor such that it is “encapsulated by the material that comprises the temple,” as I explained above in Section III.C. Ex. 1001, 12:11-21; *Supra* Section III.C.

184. To the extent that Delorenzo does not disclose its sockets are “insert molded” within the temple, a POSITA would have been motivated to insert mold the sockets within the temple. According to Delorenzo, the bifurcated connector 30 is “fixed in the associated temple tip 13 and extending externally therefrom.” Ex. 1007, 2:31-33, Figs. 1-3. This structure is consistent with how the ’174 patent discusses an electrical conductor being encapsulated by the temple material.

185. It would have been understood by a POSITA that the bifurcated connector would have been readily “fixed” in the temple tip by injection molding. As I explained above in Section V.A, injection molding has long been known as a desirable process to embed components in materials, such as electronic components in spectacles, to provide stability and durability to the product. *Supra* Section V.A.

186. A POSITA would have been motivated to use injection molding to “insert mold” the bifurcated connector within the temple tip in Delorenzo, and thereby “fix” Delorenzo’s bifurcated connector as disclosed by Delorenzo. Therefore, claim 3 would have been obvious to a POSITA.

B. Claims 10-11

187. Claim 10 depends from claim 1 and recites:

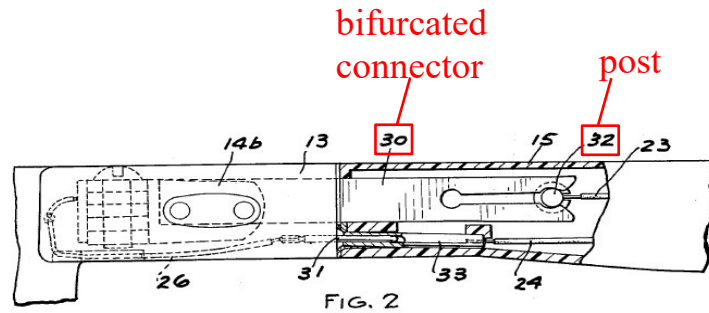
10. The first device of claim 1, wherein the electronics module comprises an opening;

wherein the first electrical conductor has a first portion that extends a first distance of at least approximately 1 cm into the electronic module through the opening, and

wherein the first electrical conductor has a second portion that extends [a] second distance of at least approximately 1 cm outside of the electronics module away from the opening.

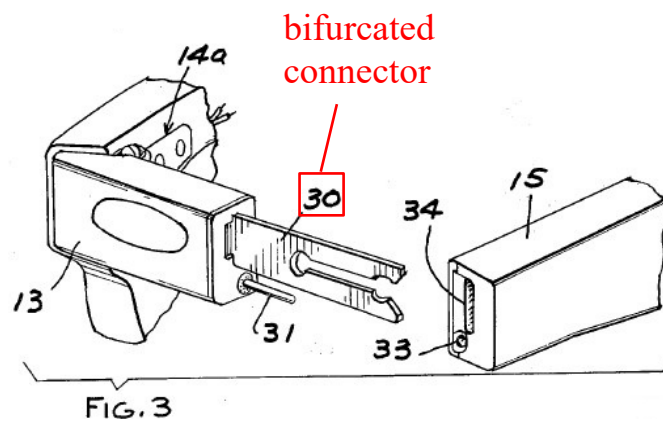
Claim 11 depends from claim 10 and recites that the first and second distances are at least each 2 cm rather than 1 cm.

188. A POSITA would have found claims 10-11 obvious in view of Delorenzo and the POSITA's knowledge. A POSITA would have understood that the width of a temple with electronic components like Delorenzo's would be approximately 1-2 cm. For instance, according to Hollingsworth, temples with electronic components may range in width between $\frac{1}{2}$ to 1 inch, which is roughly 1.25 to 2.5 cm. Ex. 1009, 5:26-33. Moreover, Delorenzo, similar to Hollingsworth, has hearing aid components in the temples. Ex. 1007, 2:9-17; Ex. 1009, 5:60-6:24. The temple in Delorenzo necessitates a width which accommodates the "transversely extending post 32" that couples with the bifurcated connector 30. Ex. 1007, 2:36-38.



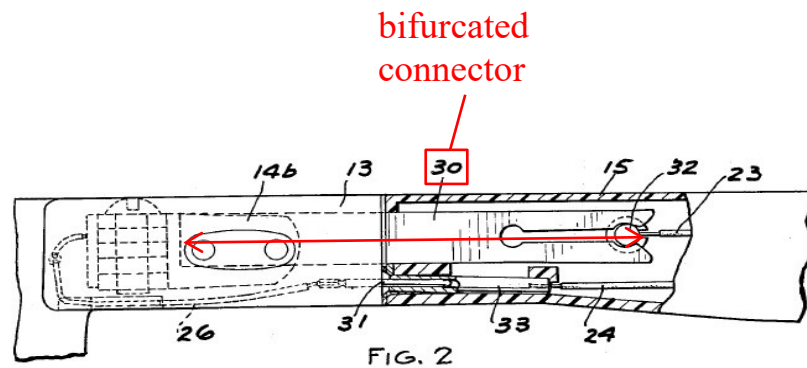
Id., Fig. 2.

189. A POSITA would also have understood from the description and illustrations in Delorenzo that Delorenzo's bifurcated connector 30, which extends from the front portion of the temple (temple tip 13), is three to four times as long as Delorenzo's temple is wide.



Id., Fig. 3. As a result, if Delorenzo's temple is 1 cm wide, a POSITA would have understood that the bifurcated connector 30 extends 3-4 cm from the temple's front portion (temple tip 13) and into the opening (passage 34) in the temple's rear portion (temple 15) and provide appropriate structural support and a sturdy connection of temple 15 to tip 13. Delorenzo illustrates in Figure 2 below that the bifurcated

connector 30 additionally extends a distance into the temple's front portion (temple tip 13), which is outside of Delorenzo's electronics module away from the opening (passage 34). It would have been understood by a POSITA that this second distance would be slightly less than the distance into the opening (passage 34) but greater than 2 cm nonetheless to provide structural integrity to the eyeglass connections.



Id., Fig. 2.

190. Furthermore, irrespective of dimensions from Delorenzo's figures, a POSA would have been motivated to use an electrical conductor of at least 4 cm (i.e., extending 2 cm into the electronics module and 2 cm away from it) to provide stability in holding the electronics module securely in the eyeglasses' temple. It is my opinion that a POSITA would have understood that the more the electrical conductor extends into the electronics module, the greater stability it can provide. And the more the electrical conductor extends away from the electronics module, the better it can be secured by the temple. Additionally, the longer conductor would be more resilient to the routine handling of the eyeglass temples, such as the minor

flexing of the temples during donning or removing of the eyewear. To design and develop an electrical conductor extending 2 cm in each direction would have been within the skill of the art at the time and required simple optimization to establish the stability to secure the electronics module in the temple and provide the needed durability for the eyeglasses.

191. Therefore, it would have been obvious to a POSITA when considering the specification and illustrations in Delorenzo that the bifurcated connector 30 extends at least 2 cm into the opening in the temple's back portion (temple 15) and at least 2 cm into the temple's front portion (temple tip 13). As a result, claims 10 and 11 both would have been obvious over Delorenzo.

XI. KOKONASKI-999 AND KOKONASKI-579 RENDER OBVIOUS CLAIMS 15-19

A. Claim 15

1. Preamble and Limitation 15[a]: “providing a capacitive touch switch”

192. The preamble of claim 15 and limitation 15[a] recite:

15. A first method, comprising:
providing a capacitive touch switch.

193. Kokonaski-999 describes a method which includes providing a capacitive touch switch. For instance, according to Kokonaski-999, “the electronic module 202 can include a switch or device to enable a user to interact with the

electronic module 202. The switch or device can be a press button switch, a capacitive switch (e.g., comprising a capacitive sense pad), a toggle switch or other manual switch.” Ex. 1004, ¶[0047]; *id.*, pp. 36-37 (claims 24 and 28 reciting an electronic module with a capacitive switch and a user touching a capacitive switch.) Therefore, Kokonaski-999 discloses providing a capacitive touch switch.

2. Limitation 15[b]: “disposing a plurality of electronic components on the capacitive switch”

194. According to the ’174 patent, “[a]s used in this context ‘disposing the electronic components’ may comprise any suitable manner of coupling the electronic components to the capacitive touch switch.” Ex. 1001, 23:55-57. The ’174 patent also provides that “disposed” encompasses direct and indirect connections between the electronic components and the capacitive switch. *Id.*, 23:60-24:1 (“Such indirect connections through one or more other electronic components (such as electrical connectors) may also be considered as being ‘disposed’ on the capacitive touch switch, as used in this context.”); *id.*, 24:54-56 (“This may comprise any suitable technique for electrically coupling the components” to the capacitive touch switch.)

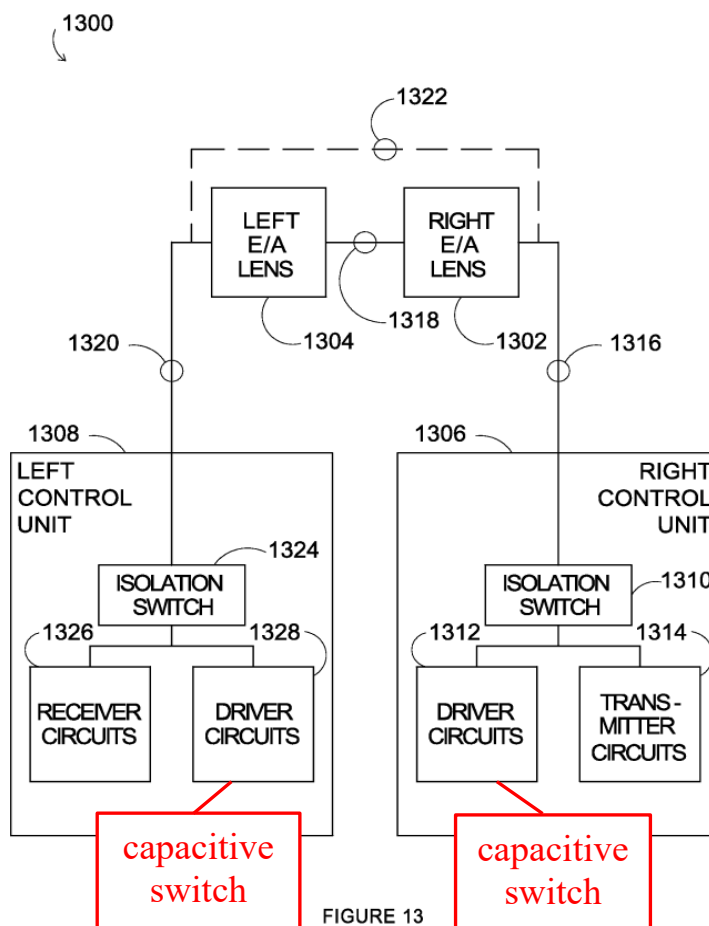
195. As a result, Kokonaski-999 describes disposing a plurality of electronic components on the capacitive switch by disclosing its electronic components are directly or indirectly connected to the capacitive switch as part of Kokonaski-999’s electronic module.

196. Kokonaski-999 provides that its electronic module “contain[s] all or a portion of the electronic components that govern operation” of the electro-active lenses, such as the power source, processor, memory, and sensors (for instance, a gyroscope or accelerometer). Ex. 1004, ¶[0039]. Kokonaski-999 further provides that its electronic module includes the capacitive switch, providing a “mechanism by which a user can interact with the electronic module to adjust operation of the electro-active spectacles.” *Id.*, ¶[0047]. According to Kokonaski-999, the capacitive switch allows a user to control functions within the electronic module, such as activating or deactivating the electro-active lenses, overriding or initiating automatic operation of the electro-active lenses, and selecting a mode of operation or prescription correction for a user. *Id.* Kokonaski-999’s operation modes may include a standby mode or active mode, where the active mode allows the sensors, like a tilt sensor or rangefinder, in the electronic module to operate. *Id.*, ¶¶[0049]-[0050]; *id.*, ¶¶[0051]-[0052] (further describing a manual mode, on mode, and off mode).

197. It would have been understood by a POSITA that Kokonaski-999’s capacitive switch controls these functions within Kokonaski-999’s electronic module because the capacitive switch is directly or indirectly coupled to the other electronic components in the electronic module. In one example, Kokonaski-999’s capacitive touch switch is directly or indirectly coupled to the battery in the

electronic module for receiving power from the battery, coupled to the processor for sending and receiving information about the modes of operation, and coupled to the sensors (for instance, tilt sensor or rangefinder) for placing the sensors in standby or active mode.

198. Kokonaski-999 discloses and illustrates with respect to Figure 13 below that Kokonaski-999's capacitive switch is directly or indirectly connected to other electronic components in the electronic module.



Id., Fig. 13. This figure provides a block diagram illustrating left and right control units (1306 and 1308) in the electro-active spectacles, where each control unit is an

electronic module. Ex. 1004, ¶[0094]. According to Kokonaski-999, the driver circuits 1312 “generate a driver signal for operating (e.g., activating) the right electro-active lens 1302.” *Id.*, ¶[0095]. The capacitive switch in Kokonaski-999 permits a user to “activate or deactivate the associated electro-active lens or lenses,” as I explained previously. *Id.*, ¶[0047]. As a result, the capacitive switch is directly or indirectly connected to the driver circuits for generating the signal for “operating (e.g., activating)” Kokonaski-999’s electro-active lens. *See id.*, ¶¶[0047], [0095]. The driver circuits are additionally directly or indirectly connected to the transmitter circuits, isolation switches, and receiver circuits in the electronic modules, as illustrated in Figure 13, which means the capacitive switch is also directly or indirectly connected to these circuits. *See id.*, ¶¶[0094]-[0104]. Moreover, Kokonaski-999 provides that the transmitter circuits 1314 may transmit a synchronization signal responsive to “manual command issued by the user,” including user input via the capacitive switch. *Id.*, ¶[0104]; *id.*, ¶¶[0047]-[0052].

199. To the extent Kokonaski-999 does not disclose disposing a plurality of electronic components on the capacitive switch, a POSITA would have found it obvious to do so as it would have been readily known in the art. *See, e.g.*, Ex. 1013, ¶¶[0086]-[0087] (describing attaching processing device with electrical components “directly to the sensing PCB”); Ex. 1014, ¶[0020] (disclosing “integrated touch sensor assemblies that include a touch sensor and electronic components directly

mounted on the touch sensor.”); Ex. 1010, 3:20–23, 3:43–47, 3:54–57, Figs. 1(a)-1(b).

200. Therefore, Kokonaski-999 discloses disposing a plurality of electronic components on the capacitive switch.

3. Limitation 15[c]: “coupling the capacitive touch switch to a partial enclosure to constrain the capacitive touch switch”

201. According to the ’174 patent, an enclosure may be an electronics module or the temple of the eyeglasses:

In some embodiments, in the first method as described above, the enclosure may comprise an electronics module. In some embodiments, the enclosure may comprise a temple of an eyeglass frame.

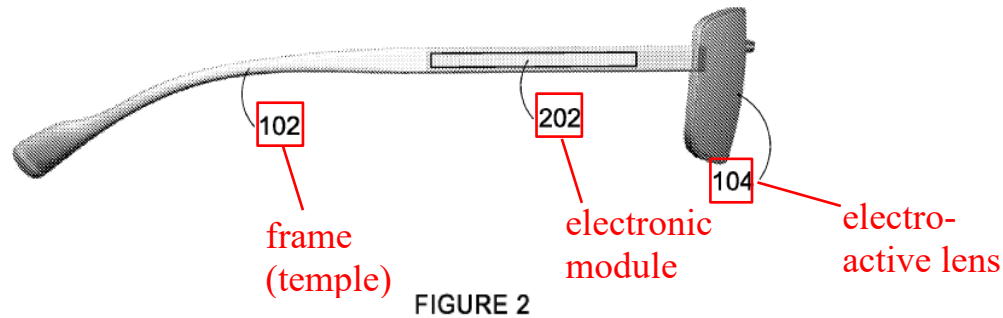
Ex. 1001, 26:3-6. With respect to the electronics module, the ’174 patent explains that the partial enclosure may be “an electronics module outer casing” and it may “substantially surround the electronic components that are disposed on a surface of the capacitive touch switch.” *Id.*, 23:26-29, 24:18-19; *see id.*, 31:20-24. The ’174 patent also explains that a partial enclosure, for example, “may surround the portions of the electronic components that are not covered by the capacitive touch switch.” *Id.*, 23:46-48. As another example, the outer casing may have “one or more openings that allow external components to interact with the components disposed within the enclosure. This may enable electrical connections to be made to the components therein.” *Id.*, 23:49-54.

202. Kokonaski-999 discloses limitation 15[c]. According to Kokonaski-999, its electronic module is a partial enclosure because the electronic module substantially surrounds the electronic components. For instance, the electronic module has a housing to constrain the electronic components, such as the capacitive switch. Ex. 1004, ¶[0039] (describing housing 502 that “can contain the electrical components of the electronic module 202”).

203. The electronic module is a *partial* enclosure because it surrounds the portions of the electronic components not covered by the capacitive switch. Kokonaki-999 discloses that the “capacitive switch can be located on a surface of the electronic module 202 that is exposed or accessible.” *Id.*, ¶[0047]. Thus, a POSITA would understand that the capacitive switch covers the electronic components coupled to it and the electronic module surrounds the remaining electronic components. Kokonaski-999’s electronic module is also considered a *partial* enclosure because it includes one or more openings (e.g., openings for the first contacts 504) that allow external components to interact with the components within the enclosure.

204. In addition, Kokonaski-999 provides that its capacitive switch may be coupled to the surface of the electronic module, and can be accordingly constrained by the electronic module and the temple (frame): “A capacitive switch can be located on a surface of the electronic module 202 that is exposed or accessible when

positioned in the frame 102.” *Id.*, ¶[0047]. Kokonaski-999’s electronic module with capacitive switch coupled thereto are accordingly constrained in temple cavity 202 as illustrated in Figure 2 below:



Id., Fig. 2; *id.*, ¶[0033].

205. Kokonaski-999 further describes that the eyeglass temple provides a partial enclosure for the capacitive switch: “Alternatively, or in addition thereto, capacitive sense pads can be deposited or built into the frame 102 that can be coupled to the electronic module 202.” *Id.*, ¶[0047]. The capacitive touch switch or sense pads in Kokonaski-999 are accordingly enclosed in the eyeglasses’ temple and constrain the capacitive touch switch or sense pads.

206. Similar to Kokonaski-999, Kokonaski-579 describes an electronic module with a capacitive switch coupled to the electronic module to constrain the capacitive switch. *See* Ex. 1012, pp. 10-11. Kokonaski-579 illustrates in Figures 17-21 Kokonaski-579’s electronic module and capacitive switch being located and constrained in the eyeglass temple at various instances. Figures 17 and 21 below illustrate, for instance, the electronic module as it is inserted in the temple:

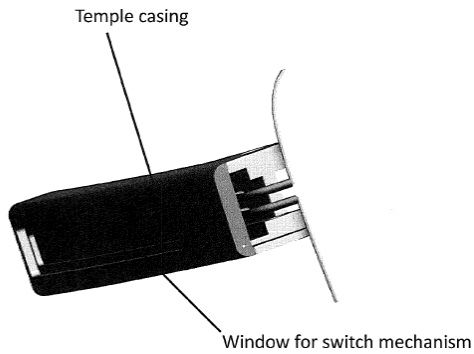


Fig. 17

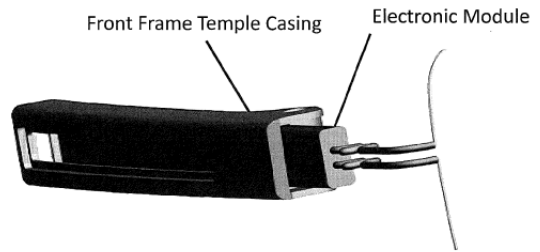


Fig. 21

Id., Figs. 17, 21; *id.*, p. 10 (describing the “window in the side of the temple casing to provide for a switching mechanism” and that a preferred embodiment of the switching mechanism is a capacitive switch). Kokonaski-579 illustrates in Figure 18 the capacitive switch coupled to the electronic module and “extending from the window in the temple casing.”

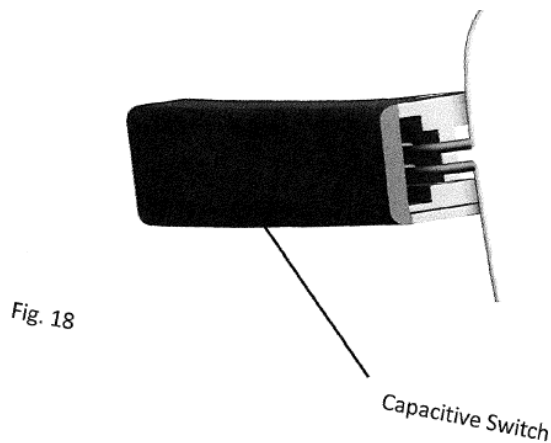
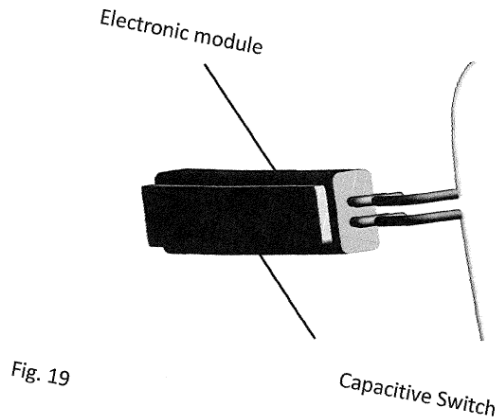


Fig. 18

Id., Fig. 18; *id.*, p. 10. Kokonaski-579 illustrates in Figure 19 the capacitive switch coupled to the electronic module with the temple casing removed:



Id., Fig. 19. Kokonaski-999 and Kokonaski-579 accordingly disclose “coupling the capacitive touch switch to a partial enclosure to constrain the capacitive touch switch.”

207. Therefore, claim 15 would have been obvious to a POSITA over Kokonaski-999 and Kokonaski-579.

B. Claim 16

208. Claim 16 depends from claim 15 and recites that the method further comprises: “the step of disposing the enclosure substantially within a temple of an eyeglass frame.”

209. Kokonaski-999 and Kokonaski-579 disclose this limitation. For instance, Kokonaski-999 provides that “the electronic module 202 can be positioned anywhere on the frame 102 (e.g., in any portion of the frame 102 having an area or cavity designed to accept insertion of the electronic module 202).” Ex. 1004, ¶[0041]; *id.*, Fig. 2. In addition, Kokonaski-579 describes disposing its electronic module within the temple casing as illustrated in Figure 21 below.

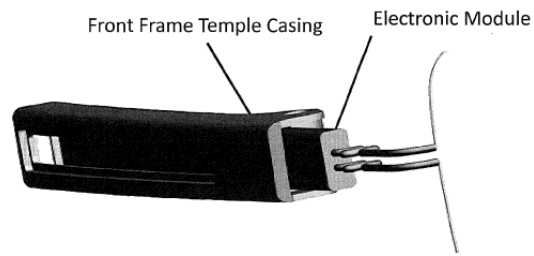


Fig. 21

Ex. 1012, Fig. 21. Therefore, claim 16 would have been obvious to a POSITA over Kokonaski-999 and Kokonaski-579.

C. Claim 17

210. Claim 17 depends from claim 16 and recites:

17. The first method of claim 16,

wherein the eyeglass frame comprises electro-active eye glass frames;

wherein the eyeglass frame comprises a first conductive path; and

wherein the first method further comprises the step of electrically coupling at least one of the electronic components to the first conductive path.

211. Kokonaski-999 and Kokonaski-579 disclose this limitation. For instance, Kokonaski-999 describes electro-active spectacles with conducting members that provide connectivity between the electronics module 202 and the

electrical leads in the lenses along a “connectivity path.” Ex. 1004, ¶[0067]; *supra* Section VII (Ground 4). Like Kokonaski-999, Kokonaski-579 describes electro-active spectacles having conducting wires that extend from the electronic module to the lens frames. *See* Ex. 1012, Figs. 8-10. Therefore, claim 17 would have been obvious to a POSITA over Kokonaski-999 and Kokonaski-579.

D. Claim 18

212. Claim 18 depends from claim 15 and recites: “further comprising the step of applying a conformal coating to the plurality of electronic components.” According to the ’174 patent, “conformal coating” encompasses “any coating that is designed to substantially protect or enclose the electrical connections of the plurality of electronic components,” where the coating may include “brushed, spray, or dip applied acrylic, silicone, or epoxy” coatings. Ex. 1001, 26:18-24, 3:50-52.

213. Kokonaski-579 discloses this limitation. For instance, Kokonaski-579 provides that:

The electronic module is preferably potted or covered in water resistant materials such as polymeric potting compounds or epoxy. Materials for potting electronic circuits are well known in the art and often used in PDAs, cell phone, and other hand held devices.

Ex. 1012, pp. 9-10. Therefore, claim 18 would have been obvious to a POSITA over Kokonaski-579 and Kokonaski-999.

E. Claim 19

214. Claim 19 depends from claim 15 and recites “wherein the capacitive touch switch and the enclosure are configured to be pressure fitted.”

215. To the extent Kokonaski-999 and Kokonaski-579 do not disclose a capacitive touch switch and enclosure that are configured to be pressure fitted, a POSITA would have found this obvious in view of a POSITA’s knowledge. A POSITA would have understood that pressure fitting was a desirable and well-known option to couple a capacitive switch to an electronic module. For instance, Nishikawa discloses positioning a touch panel in the recessed portion of a casing such that the touch panel is “tightly contacted to and housed within the recessed portion.” Ex. 1018, ¶[0069]. Prest similarly discloses an “input device” with a touch pad assembly that may be held within the channel of a media device via “press fit mechanisms.” Ex. 1017, ¶[088]. A POSITA would have been motivated to use such press fit mechanisms to couple the capacitive switch disclosed in Kokonaski-999 and Kokonaski-579 with the disclosed electronic module to securely couple the capacitive touch switch and the enclosure. A POSITA would have been further motivated because doing so would provide an easy and reliable manner for the switch and associated electronics to be removed and serviced or replaced. Therefore, claim 19 would have been obvious to a POSITA over Kokonaski-579 and Kokonaski-999.

**XII. HOWELL-596, EICHELBERGER, AND/OR SIKONOWIZ RENDER
OBVIOUS CLAIMS 15-16 AND 18**

A. Claim 15

1. Preamble and Limitations 1[a]-1[b]: “providing a capacitive touch switch” and “disposing a plurality of electronic components on the capacitive switch”

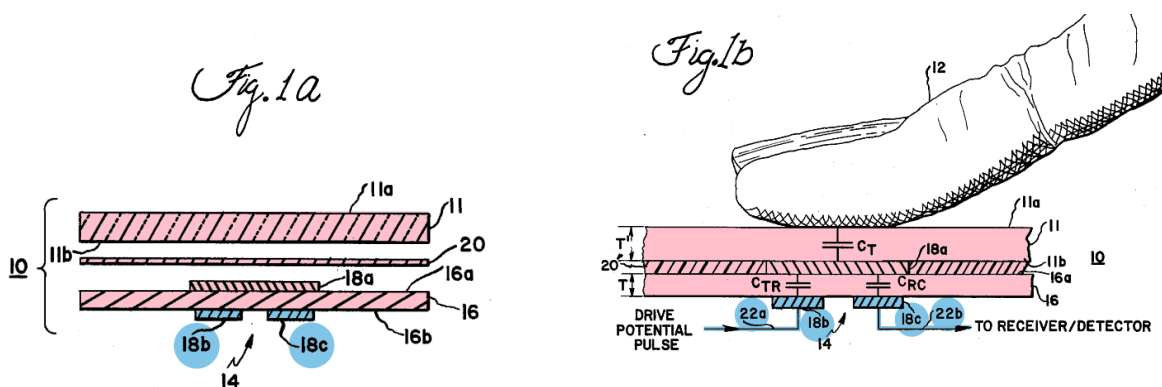
216. The preamble of claim 15 and limitations 15[a]-15[b] recite:

15. A first method, comprising:

providing a capacitive touch switch;

disposing a plurality of electronic components on the capacitive switch.

217. Eichelberger discloses and illustrates with respect to Figures 1(a)-1(b) providing a capacitive touch switch and disposing a plurality of electronic components on the capacitive switch:



Ex. 1010, Figs. 1(a)-1(b). Eichelberger’s capacitive touch switch includes a double-sided printed circuit board 16 with electrodes 18b and 18c fabricated on the double-sided printed circuit board 16. *Id.*, 3:20–23, 3:43–47, 3:54–57. Therefore,

Eichelberger discloses providing a capacitive touch and disposing a plurality of electronic components on a capacitive touch switch.

2. **Limitation 15[c]: “coupling the capacitive touch switch to a partial enclosure to constrain the capacitive touch switch”**

218. According to the '174 patent, an enclosure may be an electronics module or the temple of the eyeglasses:

In some embodiments, in the first method as described above, the enclosure may comprise an electronics module. In some embodiments, the enclosure may comprise a temple of an eyeglass frame.

Ex. 1001, 26:3-6; *see id.*, 23:43-54, 24:18-19, 31:20-24.

219. Howell-596 discloses limitation 15[c]. Howell-596 describes incorporating electronic components on a switch and coupling that switch to a partial enclosure to constrain it. For instance, Howell-596 discloses and illustrates with respect to Figure 16D below a method of making a UV detection module by coupling a switch 1664 with a substrate (such as, printed circuit board (PCB)) and electrical circuitry 1508:

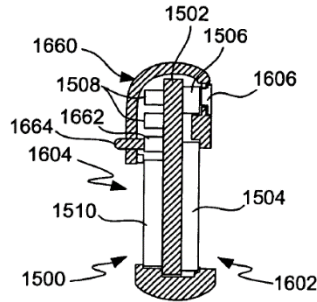


FIG. 16D

Ex. 1015, Fig. 16D; *id.*, ¶¶[0181], [0188]-[0191]. In addition, Howell-596 discloses and illustrates with respect to Figure 17B below that Howell-596’s UV detection system is partially enclosed by a module housing 1700 to constrain it:

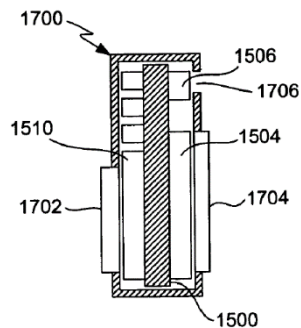


FIG. 17A

Id., Fig. 17; *id.*, ¶¶[00194]-[0196] According to Howell-596, such alternative embodiments are not mutually exclusive. *Id.* ¶[0239].

220. Howell-596 provides multiple different types of switches that may be used. *Id.*, ¶[0193]. Howell-596, for instance, incorporates U.S. Provisional Patent Application No. 60/583,169 and identifies to a specific section therein that is titled “Eyeglasses with User Input Capability.” *Id.*, ¶[0088]. According to that section, the switch “can be activated depending on electrical forces 158” which in turn

“depend[] on capacitive effect.” Ex. 1019, 172 ¶57. The section moreover provides that, “[b]y 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.” *Id.*

221. A POSITA would have been motivated to combine Howell-596 with Eichelberger because Howell-596 describes using a capacitive touch switch for controlling the UV detection system in its glasses. Furthermore, incorporating Eichelberger’s capacitive touch switch into Howell-596’s glasses would have involved nothing more than identifying a long-known example of the genus of switches (capacitive touch switches) which Howell-596 discloses and uses as a specific example according to its fundamental purpose of detecting capacitance levels to trigger a changed functionality. This incorporation would involve using Eichelberger’s capacitive touch switch in the same way Howell-596 contemplates using a capacitive touch switch, leading to the predictable result of using capacitance to control UV detection electronics in Howell-596 ’s glasses and giving a POSITA a reasonable expectation of success in the combination.

222. Therefore, claim 15 would have been obvious to a POSITA over Howell-596 and Eichelberger.

B. Claim 16

223. Claim 16 depends from claim 15 and recites that the method further comprises: “the step of disposing the enclosure substantially within a temple of an

eyeglass frame.” Howell-596 disclose this limitation. For example, Howell-596 illustrates in Figure 17B that the module housing 1700 (with internal electrical components) “is contained by the eyewear housing 1720”:

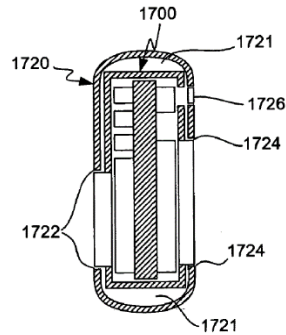


FIG. 17B

Ex. 1015, Fig. 17B, ¶[0196] (“The eyewear housing 1720 has an opening, cavity or container 1721 for receiving the module housing 1700.”). Therefore, claim 16 would have been obvious to a POSITA over Howell-596 and Eichelberger.

C. Claim 18

224. Claim 18 depends from claim 15 and recites: “comprising the step of applying a conformal coating to the plurality of electronic components.”

225. Sikonowiz published in 1981 and is a treatise on designing and manufacturing printed circuit boards. According to Sikonowiz, applying a conformal coating was a well-known step of final PCB assembly by 1981. Ex. 1016, 135–37. Sikonowiz provides that the “purpose of a conformal coating is to cover a printed-circuit assembly and protect it from environmental hazards such as moisture, dirt, and chemicals.” *Id.*, 135–36.

226. Sikonowiz confirms that, to the extent that Howell-596 does not disclose a conformal coating, applying such a conformal coating to Howell-596's PCB would have been obvious because Sikonowiz discloses conformal coating as a well-known step in the assembly of PCBs for protecting against moisture and contaminants. Sikonowiz provides express motivation to apply a conformal coating to a PCB like Howell-596's to prevent moisture and contaminants from impacting the PCB's electronics. A POSITA also would have had a reasonable expectation of success in applying Sikonowiz's conformal coating teachings to Howell-596 given that conformal coatings were commonplace with PCBs as far back as the 1980s. Such applying a conformal coating as Sikonowiz discloses would represent using a known technique (conformal coating) with a known device ready for improvement (uncoated PCB), which would provide a predictable result because decades of experience would have informed a POSITA that the coated PCB would accomplish its intended function with the expected benefit of keeping moisture and contaminants from interfering with the electronics.

227. Therefore, claim 18 would have been obvious to a POSITA over Howell-596 and Eichelberger.

XIII. SECONDARY CONSIDERATIONS

228. I am not aware of any secondary considerations of non-obviousness that would support non-obviousness of the '174 patent. I am not aware of any products sold by Patent Owner in the United States that would be covered by the '174 patent. Given that the eyewear claimed in the '174 patent are not new, and were invented long before the earliest priority date of the '174 patent, I am not aware of any longfelt need in the industry, unexpected results, skepticism of the invention, or teaching away from the invention. I am also not aware of any praise for the alleged inventions or copying of the alleged inventions by other companies. If Patent Owner identifies any alleged evidence of secondary considerations in the future, I reserve the right to respond to that information.

XIV. CONCLUSION

For the foregoing reasons, it is my opinion that the claims of the '174 patent are anticipated by and/or would have been obvious in view of the prior art discussed above and the knowledge of one of ordinary skill in the art at the time of the alleged invention.

I reserve the right to supplement my opinions in the future to respond to any arguments or positions that the patent owner may raise, taking account of new information as it becomes available to me.

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

Dated: 20 Jun 2024

By: 
John Feland, Ph.D.