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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.

Case IPR2024-01071
Patent 8,905,541

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 8,905,541**

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LIST OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent 8,905,541
1002	Declaration of John Feland
1003	File History of U.S. Patent 8,905,541
1004	U.S. Patent Pub. 2005/0230596 (Howell-596)
1005	U.S. Provisional Patent Application 60/583,169
1006	U.S. Patent Pub. 2006/0023158 (Howell-158)
1007	JP S58-113913 (Hattori-913)
1008	U.S. Patent Pub. 2008/0273166 (Kokonaski-166)
1009	WO 2010/080999 (Kokonaski-999)
1010	U.S. Patent 2,915,598 (Brunton)
1011	Generic Standard on Printed Board Design IPC-2221A, IPC Association Connecting Electronics Industries (May 2003)
1012	EP 1785763 (Dudli)
1013	IT UD20010094 (Della)
1014	CV of John Feland
1015	Sandra Corns Pickel, <i>The Evolution of the Modern Spectacle Frame</i> , 136 Review of Optometry 9 (June 15, 1999) (Pickel)
1016	Federal Court Management Statistics (excerpt), <i>available at</i> https://www.uscourts.gov/sites/default/files/fcms_na_distprofile1231.2023_0.pdf

ANNOTATED INDEPENDENT CLAIMS

Claim 1

- 1[pre]** 1. A first device, comprising:
- 1[a]** a frame comprising a first temple and a second temple,
wherein the frame comprises a housing module coupled
to a structural member;
- 1[b]** a first lens and a second lens coupled to the frame; and
- 1[c]** an electronics module, wherein the electronics module is
located within the housing module;
- 1[d]** wherein the electronics module comprises at least any two
of: a power source; a controller; and a sensing
mechanism; and
- 1[e]** wherein an insulating layer is disposed between one or more
electronic components located within the electronics
module and the frame of the first device.

Claim 19

- 19[pre]** 19. A method of fabricating a device,
- 19[a]** wherein the device comprises
- 19[a][1]** a frame having a first temple and second temple; and
- 19[a][2]** a housing module comprising:
- 19[a][2][A]** a first end and a second end, wherein the first end
 comprises an opening; and
- 19[a][2][B]** a body disposed between the first and second end
 wherein the body comprises a cavity;
- 19[b]** wherein the method comprises inserting an electronics
 module into the opening of the first end of the housing
 module such that the electronics module is disposed in the
 cavity of the body of the housing module.

Petitioner Luxottica of America Inc. (“Luxottica” or “Petitioner”) requests *inter partes* review (“IPR”) of claims 1-19 of U.S. Patent No. 8,905,541 (“the ’541 patent,” Ex. 1001), which is purportedly owned by e-Vision Optics, LLC (“Patent Owner”).

I. INTRODUCTION

The challenged claims recite embedding electronics within a module and placing the module within a housing for eyewear. For example, claim 1 recites an “electronics module” located within a “housing module” of an eyewear frame.

Beyond that simple concept, the claims recite arranging generic, well-known components and materials in predictable locations. For example, the claims recite a frame, a temple, and lenses, which are long-known aspects of eyewear. The embedded electronics are a generic power source, a generic controller, and a generic sensing mechanism.

Some claims recite disposing an insulating layer at various locations between the electronic components and the frame. But long before the 2010 priority date, insulation was a well-known means to prevent circuits embedded in eyewear from leaking current and shorting. For example, Howell-158 explicitly discloses disposing an insulating layer between a metallic frame and electronic components embedded therein. Ex. 1006 ¶53.

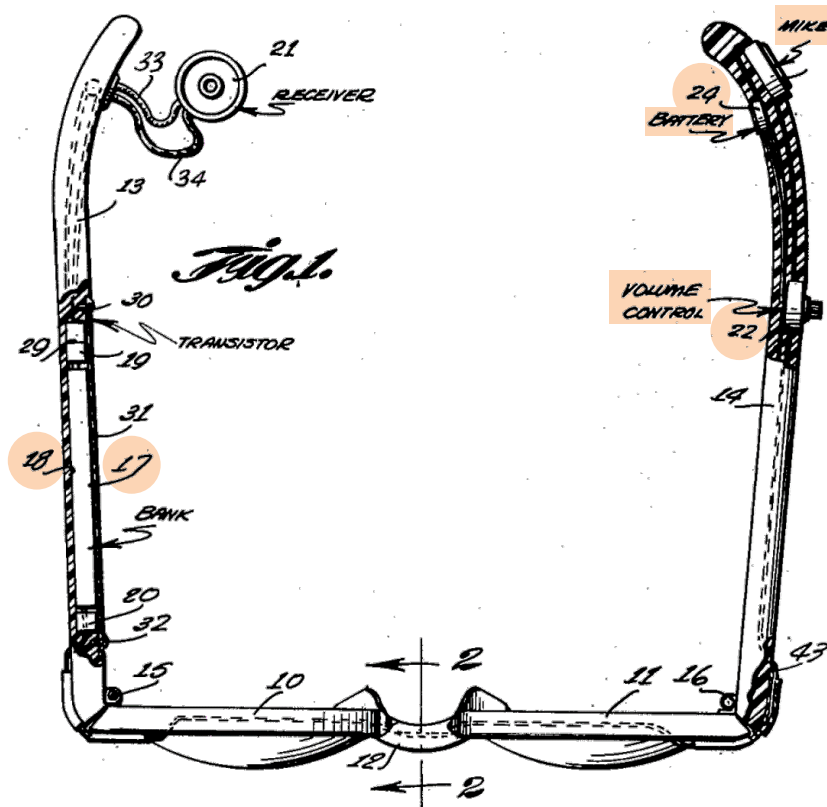
Some claims recite a touch sensitive capacitance switch. Before the 2010 priority date, capacitance switches were a desirable and well-known option for engaging electronics embedded within eyewear. For example, Howell-596 discloses a switch for engaging a UV detection system embedded within glasses, and that the switch can be activated by capacitance. Ex. 1004 ¶¶88, 191; Ex. 1005, 172 ¶57.

The prior art discloses all the limitations of the '541 patent's claims and renders all of those claims obvious. Claims 1-19 are unpatentable, and the Board should therefore cancel those claims.

II. THE PRIOR ART

By the mid-1900s, glasses had become a marketable springboard for delivering non-visual technologies to consumers. Some of those technologies utilized electronics, which were packaged into modules and embedded into temples.

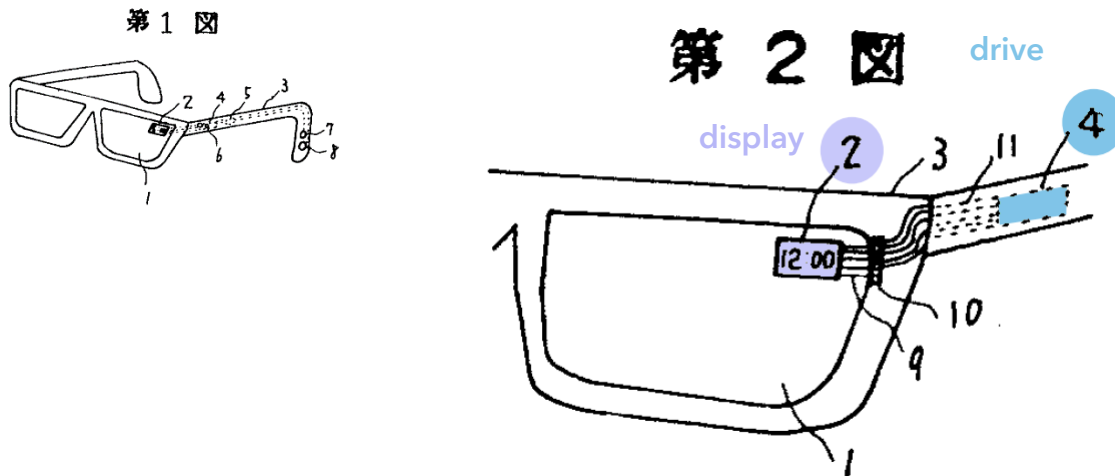
In 1954, Brunton applied for a patent on combining a hearing aid with glasses, with electronics for the hearing aid embedded in the temples:



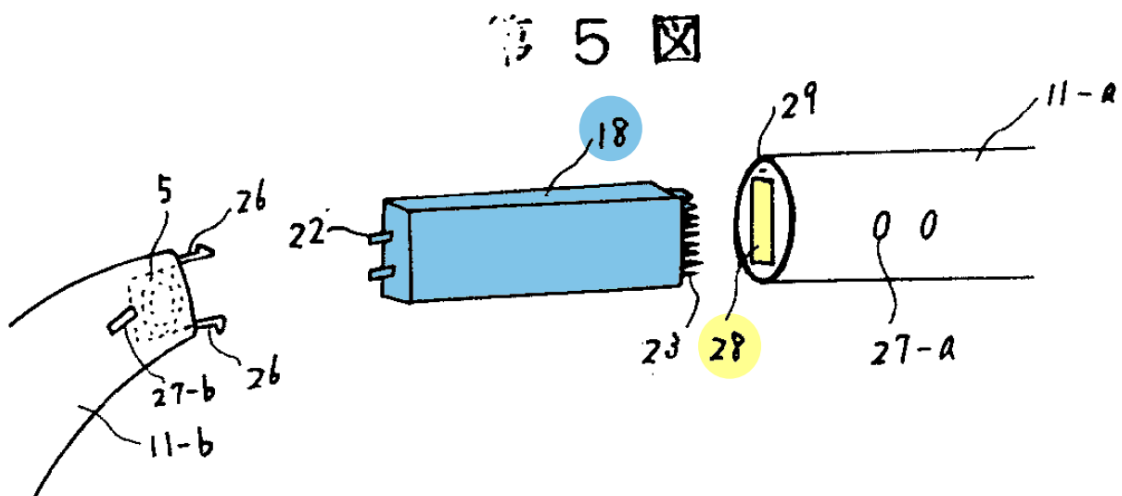
Ex. 1010.¹ Brunton employed a module to “contain[] the elements of a hearing aid, such as resistors, transistors, and capacitors.” *Id.*, 3:51-52. The module, termed unit 17, could “readily be removed from one frame and installed in another.” *Id.*, 3:55-56. The unit 17 was “positioned in a cavity 18 in the temple.” *Id.*, 3:39-40. Wires connected the hearing aid unit to other electronic components like a volume control 22, a microphone 23 and a battery 24. *Id.*, 3:41-44.

¹ Color mark-up appearing in the figures in this petition is added.

In 1983, Hattori-913 published and disclosed a pair of glasses that incorporate a drive 4 for a liquid crystal display 2:

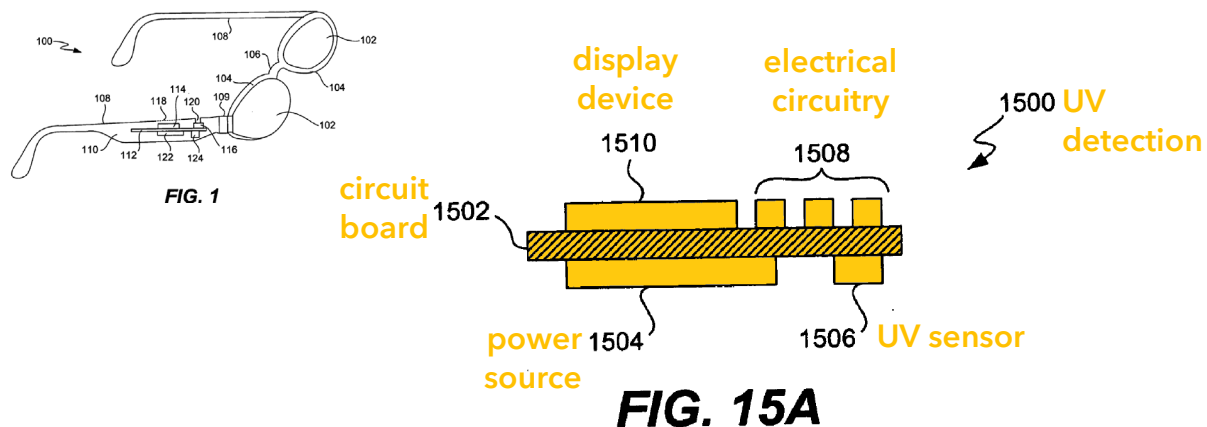


Ex. 1007, Figs. 1, 2. The drive 4 could be implemented with electronic components such as “capacitors and transistors” collected on an integrated circuit 18 and embedded within a hollow 28 in a temple:



Id., 68, Fig 5. Hattori-913’s device includes a switch to turn power on and off and control the display. *Id.*, 68 (e.g., reference numerals 6, 27a, 27b). The switch can be a touch switch. *Id.*

In 2005, Howell-596 published and disclosed eyewear that incorporates a UV detection system 1500:



Ex. 1004, Figs. 1, 15A, ¶184. The UV detection system “includes a power source 1504, an UV sensor 1506, electrical circuitry 1508 and a display device 1510 (e.g., LCD or LED).” *Id.* ¶¶184, 187, 194-95. The UV detection system also incorporates a touch sensitive capacitance switch. *Id.* ¶88; Ex. 1005, 172 ¶57.

Howell-596’s UV detection system is embedded into a “module housing 1700”:

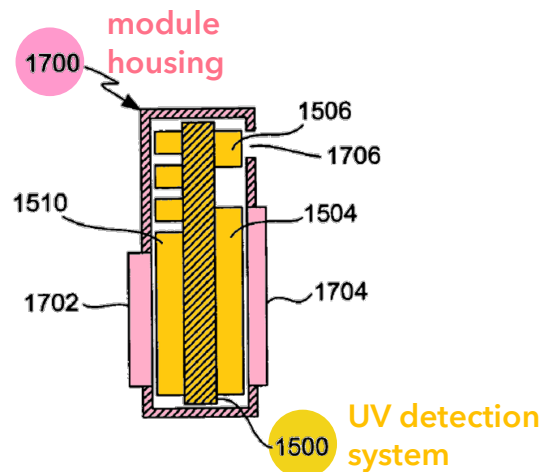


FIG. 17A

Ex. 1004, Fig. 17A, ¶¶184, 194-95. The resulting module is then inserted into a temple region of an eyewear housing 1720:

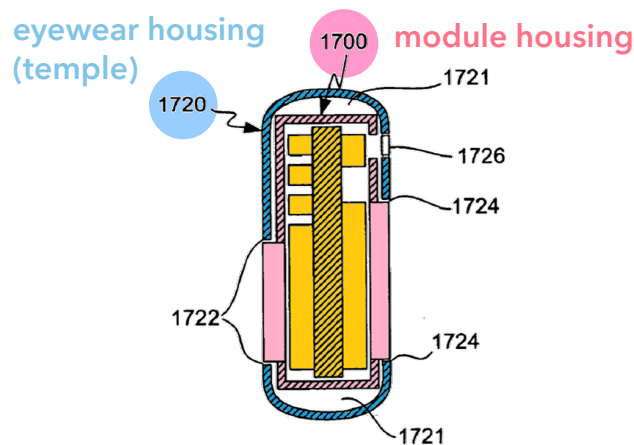
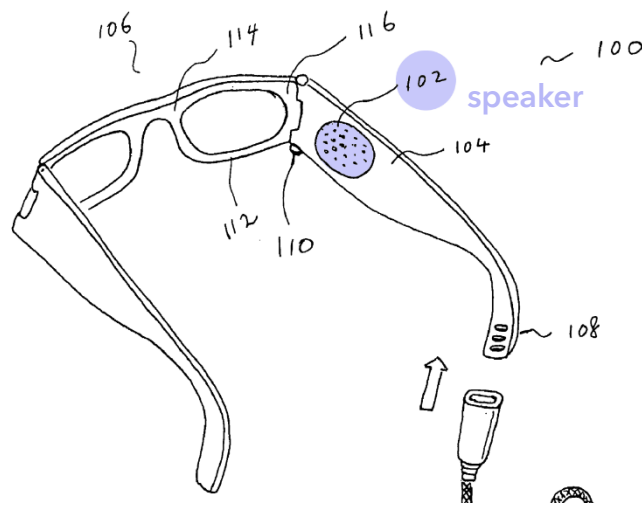


FIG. 17B

Id., Fig. 17B, ¶¶195-96.

In 2006, Howell-158 published and disclosed glasses that embed an electrical component such as speaker 102:



Ex. 1006, Fig. 1 (excerpt). The glasses include a “functional module” including electrical components. *Id.*, Claim 26. The functional module is “removably” provided within a cavity of the eyeglass frame. *Id.*, Claim 27. An insulating layer is disposed between the electrical components the frames. *Id.* ¶53.

In 2008, Kokonaski-166 published and disclosed an electronic module in the temple of eyeglass frames for controlling electro-active lenses. Ex. 1008, ¶¶3, 73-74, 80. Figure 6 shows the eyeglass frames with frame component pieces 602 and 603 housing an electronic module:

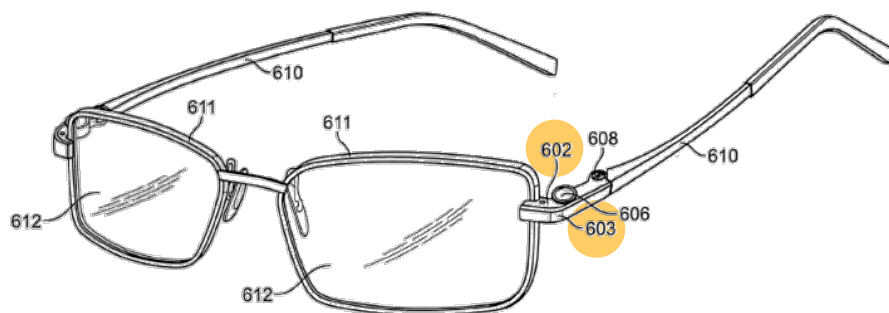
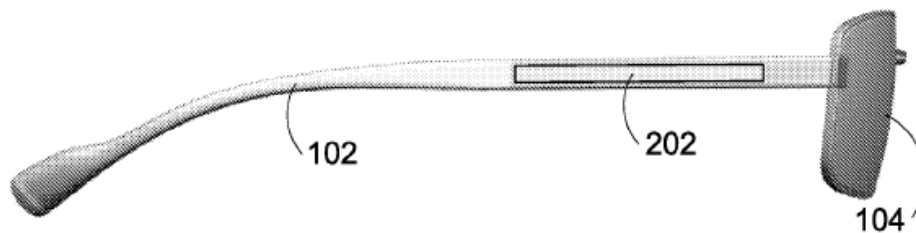


FIG. 6

Id., Fig. 6, ¶¶80; *id.*, Figs. 1A-1C, ¶¶73-74.

In January 2010, Kokonaski-999 was filed, and it published that July. Kokonaski-999 discloses an electronic module in the temple of eyeglass frames for controlling electro-active lenses. Ex. 1009, ¶¶33-36, 39-57. Figure 2 shows the eyeglass frames with the electronic module 202 in one of the temples:

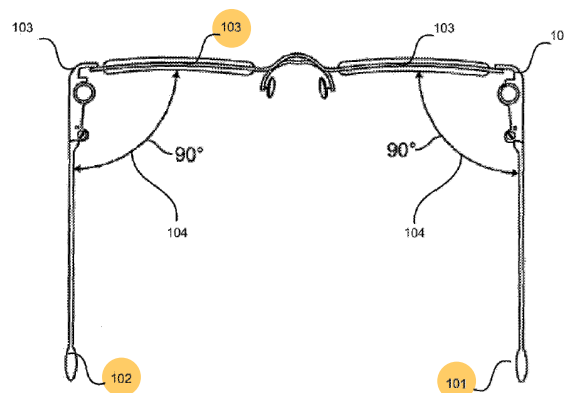


Id., Fig. 2, ¶33.

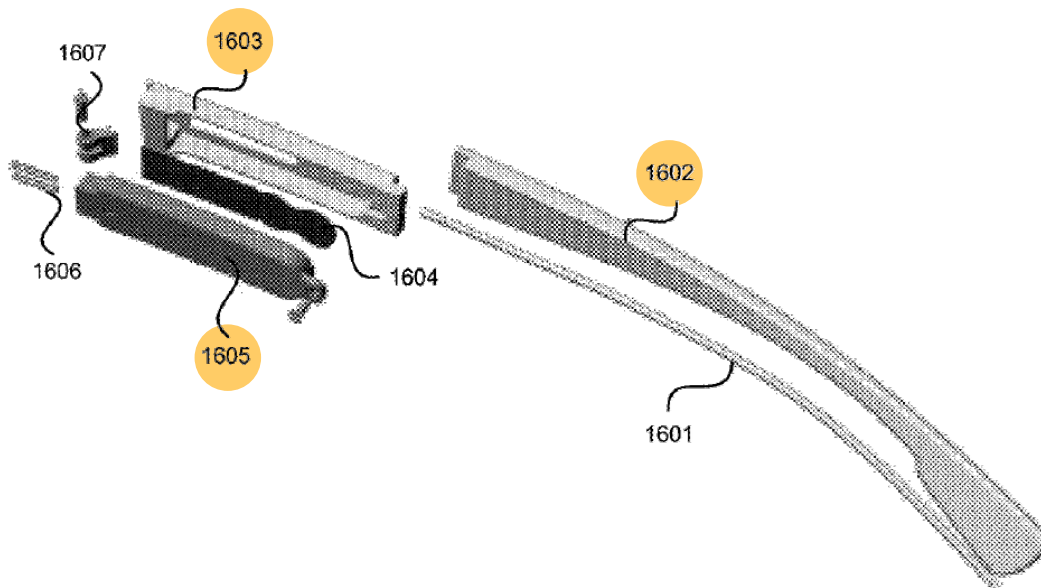
III. THE '541 PATENT

A. Overview

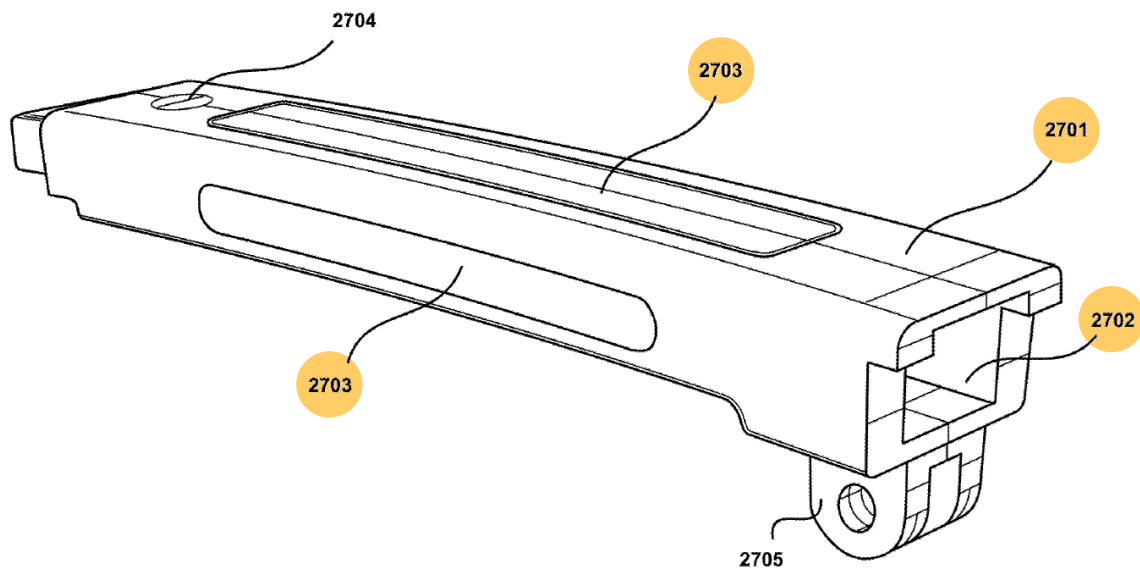
The '541 patent claims nothing more than well-known eyewear features and modules. Ex. 1002 ¶¶42-45. The '541 patent describes “spectacle frames” with temples 101/102 and lens housing 103:



Ex. 1001, Fig. 1, 5:24, 10:34-37. As shown in Figure 16, a portion of the temple 1602 may comprise a “housing module” 1603. *Id.*, 42:1-5, Fig. 16. A housing module refers to a component that may house electronics or an “electronics module” 1605. *Id.*, 42:1-5, 50:40-48. An electronics module refers electrical components within a housing or container. *Id.*, 7:45-51.



Id., Fig. 16. Figure 27 shows an exemplary housing module 2701 having an opening 2702 in one end in which the electronics module may be selectively inserted. *Id.*, Fig. 27, 70:26-28. Figure 27 shows portions 2703 of the electronics module extending into apertures of the housing module:



Id., Fig. 27, 70:31-37. The “electronics module may comprise a power source (such as a battery), a sensing mechanism (such as a capacitance switch, which may activate or deactivate the electronics) and/or a controller (such as a microprocessor).” *Id.*, 7:47-51. An insulating layer may be disposed between one or more electronic components located within the electronics module and the frame. *Id.*, 2:6-9.

B. The ’541 patent’s claims recite an “electronics module” within a “housing module” and generic components.

The challenged claims involve generic, well-known electronics like “a power source; a controller; and a sensing mechanism.” The claims otherwise involve generic, well-known components and materials like “a frame”; a “temple”; “a structural member”; a “lens”; “an opening”; “a cavity”; a “capacitive switch”; an “insulating layer,” and “conductive material.”

The claims recite collecting generic electronics into an “electronics module,” locating that module within a “housing module,” and arranging the generic components in predictable locations.

C. Prosecution History

During prosecution of the application leading to the '541 patent, the Examiner issued a single rejection based on one reference: Konokaski-166. Ex. 1003, 73-81. In response, the applicant added one limitation: to what is now claim 1, the applicant added an insulating layer disposed between one or more electronic components and the frame. *Id.*, 56. Applicant argued it was entitled to issuance because an “insulating layer between electronic components and frame” was not “necessarily present” in Kokonaski-166. *Id.*, 65-66. The Examiner allowed the claims for the “reasons set forth” in the applicant’s argument. *Id.*, 37. But prior art the Examiner did not discuss, including Howell-158, discloses the claimed “insulating material.” Ex. 1006 ¶¶53. Moreover, prior art the Examiner did not even consider, including Howell-596, renders obvious that claimed “insulating material.” Ex. 1004 ¶¶194-96. Thus, the claims were allowed under a mistaken premise.

IV. LEVEL OF ORDINARY SKILL

The '541 patent relates to electronic eyewear. Ex. 1001, Abstract; Ex. 1002 ¶¶42-45. Based on the relevant factors, *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995), a hypothetical person of ordinary skill in the art (“POSITA”) would have

had at least 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. Ex. 1002 ¶¶30-34. A POSITA would have also had at least 2 years of experience designing consumer electronics, such as eyewear with electronics. *Id.* Work experience could substitute for formal education and additional formal education could substitute for work experience. *Id.*

This Petition does not turn on this specific definition of the level of ordinary skill. The claims would be obvious from the perspective of a POSITA under any reasonable definition. *Id.*

V. CLAIM CONSTRUCTION

In October 2023, Patent Owner sued Petitioner for infringement of the '541 patent in *e-Vision Optics, LLC et al. v. Luxottica Group S.p.A. et al.*, No. 8:23-cv-02013 (C.D. Cal.) (“the Litigation”). Although the parties may propose constructions for certain terms in the Litigation for purposes of determining infringement, no claim terms require construction to resolve the obviousness challenges here. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). Nonetheless, the ordinary meaning of a term is assessed from the perspective of a POSITA, who is “deemed to read the claim term

not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). Accordingly, in its arguments below, Petitioner identifies passages from the specification demonstrating that the prior art discloses claim terms in the manner the ’541 patent uses them.

VI. STATEMENT OF RELIEF REQUESTED

A. Grounds

Petitioner requests that the Board cancel claims 1-19 of the ’541 patent as follows:

Ground	Reference(s)	Basis	Challenged Claims
1	Howell-596, Howell-158	Obviousness	1-19
2	Howell-596, Howell-158, Hattori-913	Obviousness	16-17
3	Howell-596	Obviousness	1-11, 13-19
4	Howell-596, Hattori-913	Obviousness	16-17
5	Kokonaski-166, Howell-158	Obviousness	1-9, 11, 13-19
6	Kokonaski-999, Howell-158	Obviousness	1-9, 11, 13-19

The Petition is supported by the expert declaration of John Feland. Ex. 1002.

B. Asserted References

The '541 patent's earliest possible priority date is no earlier than July 2, 2010. Ex. 1001. Petitioner does not concede the claims are entitled to that priority date, and reserves its right to show they are not so entitled. Nevertheless, the references herein are prior art under pre-AIA 35 U.S.C. §102 for the following reasons:

Ex.	Reference	Date	Art Type
1004	Howell-596	Published: Oct. 20, 2005	§102(b)
1006	Howell-158	Published: Feb. 2, 2006	§102(b)
1007	Hattori-913	Published: July 7, 1983	§102(b)
1008	Kokonaski-166	Published: Nov. 6, 2008	§102(b)
1009	Kokonaski-999	Filed: January 8, 2010	§102(e)

The references are analogous art because they are from the same field as the '541 patent, e.g., eyewear and/or consumer electronics. Ex. 1002 ¶25; Ex. 1001, Abstract, 1:33-36; *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1000 (Fed. Cir. 2016). They are also pertinent to a problem the inventor was focused on, e.g., incorporating electronics into eyewear. *Id.*

**VII. GROUND 1: HOWELL-596 AND HOWELL-158 RENDER CLAIMS 1-19
OBVIOUS**

A. Claim 1

**1. Preamble and 1[a]: frame comprising temples and a housing
module coupled to a structural member**

The preamble and element 1[a] recite: “A first device, comprising: a frame comprising a first temple and a second temple, wherein the frame comprises a housing module coupled to a structural member.”

Howell-596 discloses glasses 100 (first device) that include a frame comprising temples 108:

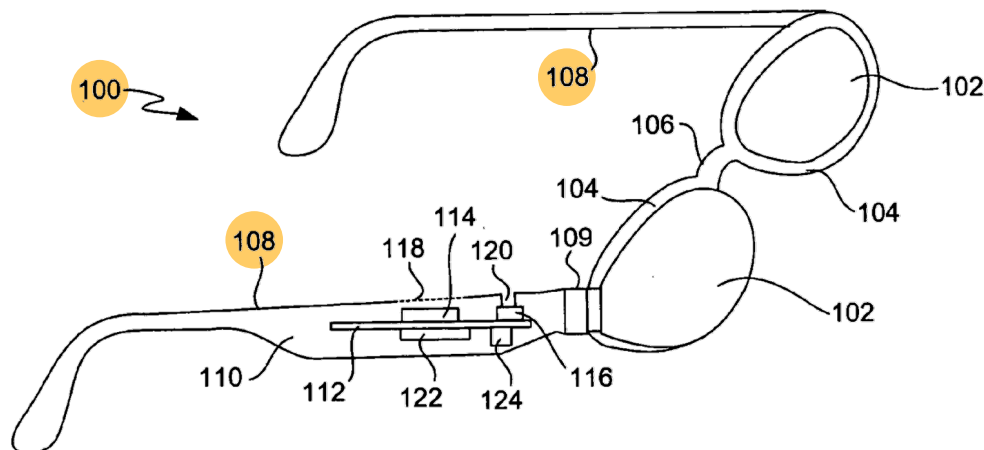
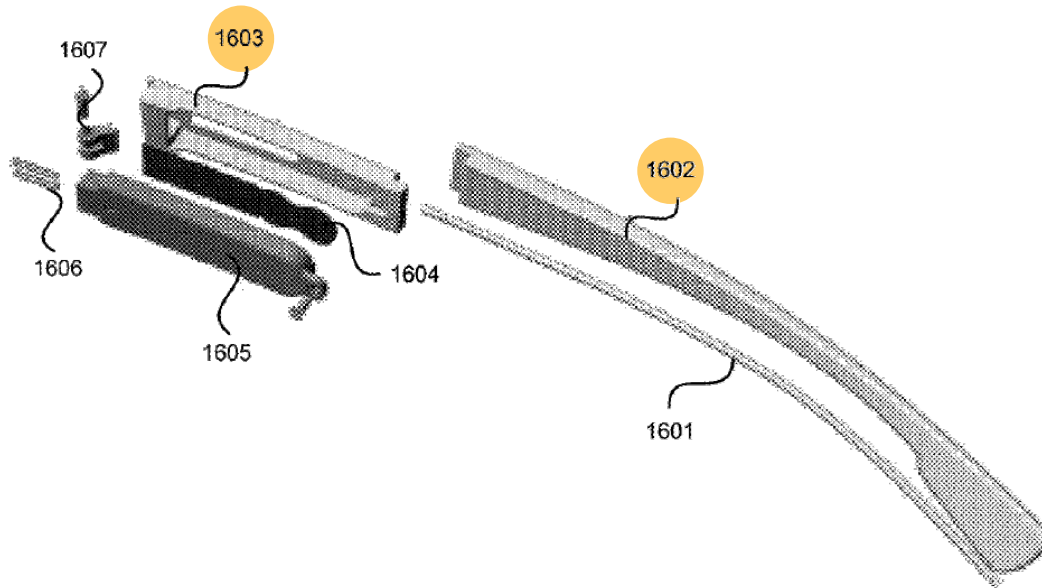


FIG. 1

Ex. 1004, Fig. 1, ¶73.

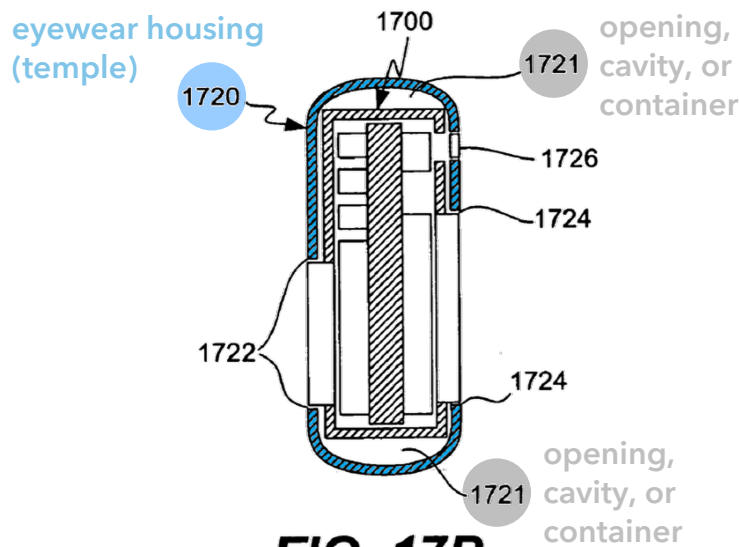
According to the '541 patent, “a ‘housing module’ may refer to a component that may house (e.g. contain, substantially contain, surround, surround a portion of, encircle, etc.) of [sic] the electronics (and/or an electronics module) of the electronic

spectacles.” Ex. 1001, 50:40-48. As shown in Figure 16, “the housing module 1603 may comprise a portion of the temple 1602.” *Id.*, 42:3-5.



Id., Fig. 16. The '541 patent states that a “‘structural member’ may refer to any portion of the frame.” *Id.* 55:63-66.

Howell-596 discloses such a housing module coupled to a structural member of the frame. Figure 17B shows a cross-section of eyewear housing 1720 at the temple, which “has an opening, cavity, or container 1721 for receiving the module housing 1700.” Ex. 1004 ¶196. Howell-596’s eyewear housing 1720 meets the claimed “housing module” because it contains an opening/cavity/container that contains module housing 1700.



Id., Fig. 17B, ¶¶194-96.

Howell-596's module housing 1700 is a housing for a module such as a UV detection system. *Id.* ¶195. Howell-596 elaborates that the temple of the eyeglass frame has an opening/cavity/container that holds the UV detection system:

Since the UV detection system is compact and modular, the end product need only have an opening, cavity or container to hold or encompass the UV detection system. As such, the end product can quickly be transformed into an end product capable of providing UV monitoring....

For example, in case in which the end product is an eyeglass frame, a temple of the eyeglass frame can have an opening, cavity or container to hold or encompass the UV detection system

Id. ¶183.

Howell-596's eyewear housing 1720 is coupled to the lens holder 104 (Fig. 1) of the eyeglass frame, which is a structural member of the eyeglass frame.

Accordingly, Howell-596 discloses a first device with a frame that has two temples and a housing module coupled to a structural member.

2. 1[b]: first and second lenses coupled to the frame

Claim element 1[b] recites: “a first lens and a second lens coupled to the frame.”

Howell-596's glasses have two lenses 102 coupled to the frame:

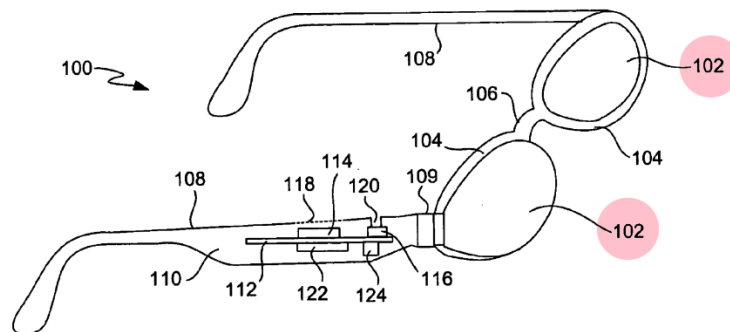


FIG. 1

Ex. 1004, Fig. 1, ¶73.

3. 1[c]-1[d]: electronics module located within the housing module and comprising at least two of a power source, controller, and sensing mechanism

Claim elements 1[c]-1[d] recite: “an electronics module, wherein the electronics module is located within the housing module; wherein the electronics module comprises at least any two of: a power source; a controller; and a sensing mechanism.”

According to the '541 patent, “an ‘electronics module’ may refer to a housing or container that comprises a plurality of electrical components.” Ex. 1001, 7:45-51.

An electronics module sits inside Howell-596’s eyewear housing 1720 (housing module):

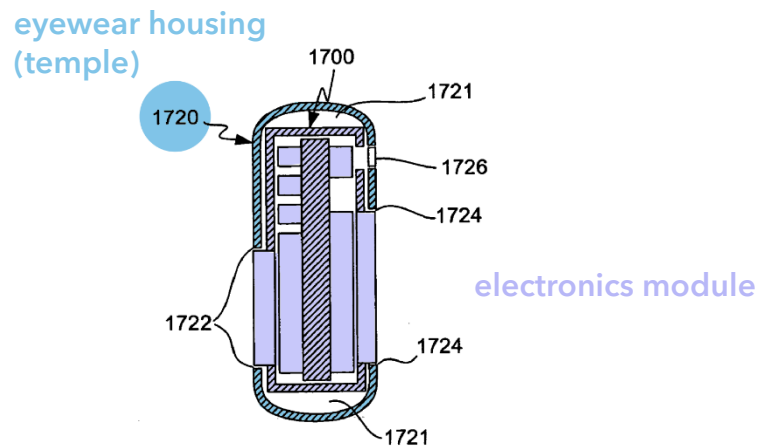
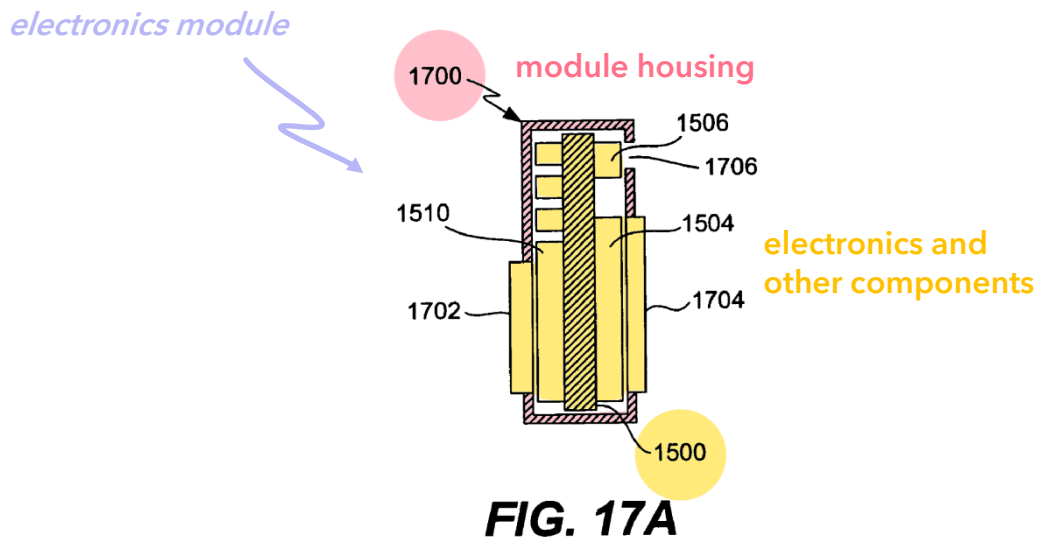
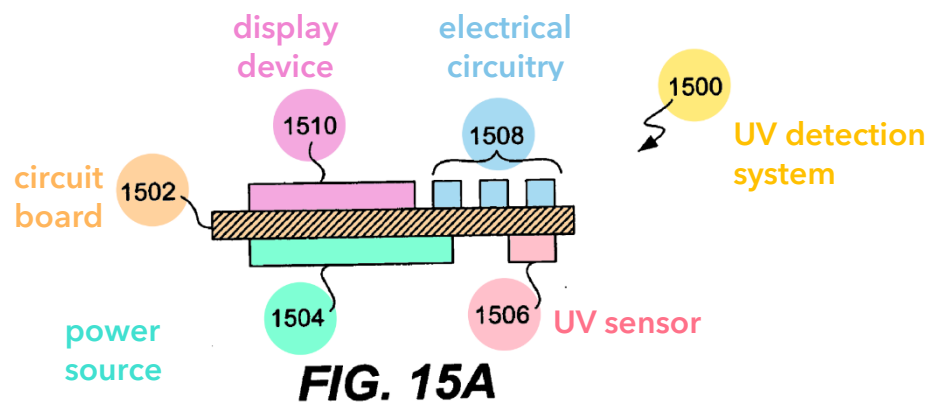


FIG. 17B

Ex. 1004, Fig. 17B, ¶¶195-96. The electronics module has a “module housing 1700” and electronics and other components inside the housing.



In an embodiment illustrated in figure 17A above and figure 15A below, the components make up a UV detection system 1500, which includes “various electrical components.” *Id.*, Fig. 17A, ¶¶184, 194-95.



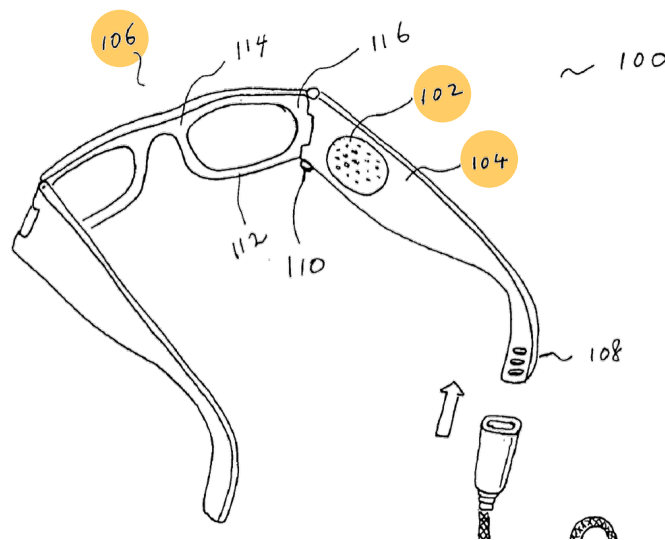
UV detection system 1500 “includes a power source 1504, an UV sensor 1506, electrical circuitry 1508 and a display device 1510 (e.g., LCD or LED).” *Id.* ¶¶184, 187, 194-95. Electrical circuitry 1508 may include “integrated circuits” that control the UV detection system. *Id.* ¶184, ¶192 (disclosing a “microcontroller” as the

integrated circuit); *see* Ex. 1002 ¶¶60. Thus, Howell-596 discloses elements 1[c] and 1[d]: an “electronics module” located within the housing module (eyewear housing 1720) and comprising “a power source; a controller; and a sensing mechanism.”

4. 1[e]: insulating layer between electronic component and frame

Claim element 1[e] recites: “wherein an insulating layer is disposed between one or more electronic components located within the electronics module and the frame of the first device.”

Like Howell-596, Howell-158 also discloses “approaches to embed an electrical component into a pair of glasses.” Ex. 1006 ¶¶51. For example, Howell-158 discloses glasses 106 (first device) that embed an electrical component such as speaker 102 in temple 104:



Id., Fig. 1, ¶¶8, 48-49, 106, 112, 170, Claim 26.

Howell-158 incorporates by reference Howell-596 and expressly instructs the POSITA to consider their “related” disclosures. *Id.* ¶3 (incorporating Howell-596’s U.S. patent app. no. 11/078,857). Howell-158 further instructs the POSITA that its disclosed eyeglasses should be used with a radiation detection system such as the UV radiation detection system disclosed by Howell-596. *Id.* ¶¶3, 18, 167.

Howell-158 further discloses an “insulating layer between the electrical components or circuit board and the metallic frames.” *Id.* ¶53. The glasses include this insulation to “prevent circuits from being shorted” and to “reduce leakage current” in glasses with metallic frames. *Id.* “One example of an insul[a]ting layer is a tape to encapsulate the electrical components.” *Id.* “The tape is non-conducting so as to provide insulation ...” *Id.* The “insulator material (e.g., dielectric tape) can cover the top and the bottom surfaces of the circuit board,” which “is then sandwiched between the faces” of the temple piece. *Id.* The “dielectric tape can be double-sided sticky tape, with one side sticking to the circuit board, and the other side sticking to the temple.” *Id.*

A POSITA would have been motivated to apply Howell-158’s insulating layer between the electronics and other components located within Howell-596’s electronics module and its frame for several reasons. Ex. 1002 ¶66. First, Howell-158 incorporates by reference Howell-596, so it expressly instructs the POSITA to combine the disclosures of the two references. Second, a POSITA would have been

motivated to add the insulating layer disclosed in Howell-158 to “prevent circuits from being shorted” and “reduce leakage current” in glasses with metallic frames, as expressly disclosed in Howell-158. Ex. 1006 ¶53; Ex. 1002 ¶66. Moreover, since long before the priority date, it had been standard practice to insulate electric components. Ex. 1002 ¶66. For example, a 2003 Generic Standard on Printed Board Design instructed that metal-cased components shall be “insulated from adjacent electrically conductive elements.” Ex. 1011, 57. The standard further instructed that “[f]iber or plastic insulators should be incorporated where adequate clearance from circuitry cannot be provided.” *Id.*, 64. Insulating layers like those disclosed in Howell-158 were well known long before the priority date in 2010. Ex. 1002 ¶66; Ex. 1011. Howell-158 identifies several ways to incorporate such well-known insulating layers between a circuit board and eyewear frames in glasses similar to those in Howell-596. Ex. 1006 ¶53. Thus, a POSITA would have had a reasonable expectation of success in applying Howell-158’s teachings to Howell-596. Ex. 1002 ¶67.

Howell-158 discloses only three materials for making its eyeglass frames that house electrical components: metal, plastics, and rubber. Ex. 1006 ¶¶51-54. A POSITA understood that metallic frames have several advantageous properties, including desirable malleability, strength, ductility, light weight, plate-ability, and corrosion resistance. Ex. 1002 ¶68. Further, a POSITA would recognize that there

are a limited number of identified materials for making Howell-158 and Howell-596's eyeglass frames such that selecting metallic frames for use would have been obvious. *Id.* ¶68; *see KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007); *ACCO Brands Corp. v. Fellowes, Inc.*, 813 F.3d 1361, 1367 (Fed. Cir. 2016) (holding each of a limited number of potential sensor arrangements was an obvious combination of prior-art elements).

Applying Howell-158's insulating layer represents nothing more than the simple addition of one known element (insulating layer) to another known element (temple containing electronics) to obtain predictable results (electrically insulating the electronics from the temple "to prevent circuits from being shorted or to reduce leakage current"). Ex. 1006 ¶53; Ex. 1002 ¶69; *see KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417 (2007). Similarly, the combination represents the use of a known technique (surrounding electrical components with an insulating layer) to improve similar glasses in the same way. Ex. 1006 ¶53; Ex. 1002 ¶69; *see KSR*, 550 U.S. at 417.

B. Claim 2

Claim 2 depends from claim 1 and further recites: "wherein the housing module comprises the insulating layer."

According to the '541 patent, “the housing module may comprise the insulating layer. That is, for example, the housing module (or a portion thereof) may comprise an insulating material.” Ex. 1001, 57:60-62.

Howell-158 discloses “sticking [insulating tape] to the temple” in the area where the electronics are located. Ex. 1006 ¶53. Accordingly, it would have been obvious to dispose an insulating layer in the housing module of Howell-596, therefore having a housing module that comprises the insulating layer. Ex. 1002 ¶72.

C. Claim 3

Claim 3 depends from claim 2 and further recites: “wherein the electronics module comprises a conductive material.”

The '541 patent describes that its electronics module comprises a housing ***and*** “a plurality of electrical components.” Ex. 1001, 7:45-47. As discussed for elements 1[c]-1[d], Howell-596’s electronics module includes “various electrical components,” including “electrical circuitry 1508,” that make up UV detection system 1500. *Supra* §VII.A.3; Ex. 1004 ¶184. Electrical circuitry is comprised of conductive material to allow a current to flow through the elements of the circuit. Ex. 1002 ¶75. For example, Howell-596 discloses a UV monitoring circuit 700 in which a transistor 708 can be a “semiconductor” and “conducts” to activate output

device 710. Ex. 1004 ¶96, Fig. 7A. Howell-596 thus discloses an electronics module comprising a conductive material. Ex. 1002 ¶75.

D. Claim 4

Claim 4 depends from claim 1 and recites “wherein the housing module comprises a conductive material; and wherein the insulating layer is disposed between at least a portion of the housing module and the electronics module.”

It would have been obvious to a POSITA to include a conductive material in Howell-596’s housing module. Ex. 1002 ¶77. Glasses with metal frames were well known before 2010 and were also disclosed in Howell-158. Ex. 1006 ¶¶52-53 (“In another embodiment, the glasses have metallic frames.”); Ex. 1002 ¶77. A POSITA would have been motivated to use metal frames for Howell-596’s frames based on desirable properties of metallic frames and to address aesthetic demands from eyewear users that prefer metal frames to other materials. Ex. 1002 ¶78. Further, using metal frames represents nothing more than choosing from a finite number of well-known options for frame material, with a reasonable expectation of success as indicated by the prevalence of metal glasses frames. *Id.* ¶79; Ex. 1006 ¶53. As discussed above, the housing module is the portion of the eyewear frame that houses the electronics module and, thus, the housing module in metal-framed eyewear would comprise a conductive material, i.e., the metal in the eyewear frame. *Supra* §VII.A.1; Ex. 1002 ¶80.

It would have been obvious in light of Howell-158 to dispose an insulating layer between the housing module comprising a conductive material and the electronics module disclosed in Howell-596. Ex. 1002 ¶81.

Howell-158 discloses:

For glasses with metallic frames, to prevent circuits from being shorted or to reduce leakage current, one embodiment provides an insulating layer between the electrical components or circuit board and the metallic frames. One example of an insulating layer is a tape to encapsulate the electrical components.

Ex. 1006 ¶53. It would have been obvious to a POSITA to encapsulate the electronics module of Howell-596 with an insulating layer before installing it into the housing module (eyewear housing 1720) defined by a metal frame, thus disposing an insulating layer between the eyewear housing 1720 and the electronics module. Ex. 1002 ¶81.

E. Claim 5

Claim 5 depends from claim 1 and further recites: “wherein the insulating layer comprises a portion of the electronics module.”

As discussed above for claim 4, it would have been obvious to a POSITA in light of Howell-158 to encapsulate the electronics module of Howell-596 with an insulating layer, e.g., an insulative tape. *Supra* §VII.D. In this configuration, the

insulating layer comprises at least a portion of the electronics module and renders the claim obvious.

Additionally, it would have also been obvious to adhere Howell-158's insulating layer to the electronics within Howell-596's electronics module, such that the insulating layer is part of the electronics module. For example, Howell-158 discloses "sticking [insulating tape] to the circuit board." *Supra* § VII.A.4; Ex. 1006 ¶53; Ex. 1002 ¶84. That combination represents nothing more than the simple addition of one known element (insulating layer) to another known element (electronics) to obtain predictable results (electrically insulating the electronics). Ex. 1002 ¶84; *see KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417 (2007).

F. Claim 6

Claim 6 depends from claim 5 and further recites: "wherein the housing module comprises a conductive material." Claim 6 would have been obvious to a POSITA for the same reasons discussed for claim 4. *Supra* §VII.D.

G. Claim 7

Claim 7 depends from claim 1 and further recites: "wherein the electronics module is removably coupled to the housing module."

Howell-596 discloses that its "module housing 1700 is contained by the eyewear housing 1720" and "can, for example, be held in position with respect to the eyewear housing 1720 by ... an interference fit." Ex. 1004 ¶196. One of skill

would understand an interference fit is a type of fastening where two parts are held together by friction that provides a removable connection between Howell-596's eyewear housing 1720 (housing module) and the UV detection system 1500 having module housing 1700 (electronics module). Ex. 1002 ¶87.

Alternatively, claim 7 would have been obvious in view of Howell-158. Ex. 1002 ¶88. Howell-158 discloses glasses whose “frame includes a cavity for receiving [a] functional module” that includes “electrical components.” Ex. 1006, Claim 26. The “functional module is *removably* provided within the cavity of the eyeglass frame.” *Id.*, Claim 27. It would have been obvious to a POSITA to apply Howell-158's removable coupling within Howell-596. Ex. 1002 ¶88. Howell-158 discloses benefits of removable modules, including enabling an eyeglass frame to “support different function or operations depending on the removable electronic device that is attached.” Ex. 1006 ¶86. The combination represents the use of a known technique (removably coupling an electronics module within an eyewear housing) to improve similar devices in the same way. Ex. 1002 ¶88.

H. Claim 8

Claim 8 depends from claim 7 and further recites: “wherein the electronics module is adapted to be removed and recoupled to the housing module.”

As discussed for claim 7, Howell-596 discloses that the electronics module can be removably placed in the housing module. *Supra* §VII.G. Furthermore,

Howell-596 touts its goal of “regulariz[ing] or standardiz[ing] the form factor for the UV detection system,” such that the opening/cavity/container of the eyewear housing can be regularized or standardized. Ex. 1004 ¶195; Ex. 1002 ¶90. This regularization/standardization of the dimensions of the UV detection system having module housing 1700 (electronics module) and dimensions of the eyewear housing (housing module) allows the UV detection system to be easily removable and swappable. Ex. 1002 ¶90. Moreover, it would have been understood by a POSITA that a removeable, self-contained module, like the one disclosed in Howell-596, should be recouple-able after removal. *Id.* This would allow, for example, removing the electronics module for maintenance and cleaning and then recoupling it to the housing module. *Id.*

I. Claim 9

Claim 9 depends from claim 1 and recites: “wherein the housing module comprises a first end, a second end, and a body disposed between the first end and the second end; wherein the first end comprises an opening; and wherein the electronics module is configured to be inserted into the opening.”

Howell-596 discloses:

The [modular] UV detection systems can be built on a single substrate that is designed to be inserted into an end product.... [I]n case in which the end product is an eyeglass frame, a temple of the eyeglass frame

can have an opening, cavity or container to hold or encompass the
[modular] UV detection system”

Ex. 1004 ¶183. As a container has one end, a second end, and an opening therebetween into which the modular UV detection system is inserted, Howell-596 discloses claim 9. Ex. 1002 ¶92.

J. Claim 10

Claim 10 depends from claim 9 and further recites: “wherein the electronics module is pressure fitted to the housing module.”

The ’541 patent states: “[T]he electronics module may be pressure fitted to the housing module. That is, for instance, the electronics module (or a component thereof) may expand into a section or portion of the housing module such that it locks into place (and may thereby be coupled to the housing module).” Ex. 1001, 60:63-61:5.

As discussed for claim 7, Howell-596 discloses its module housing 1700 “can, for example, be held in position with respect to the eyewear housing 1720 by ... an interference fit.” *Supra* §VII.G. One of skill would understand an interference fit would provide a pressure fitted connection. Ex. 1002 ¶95.

Moreover, Howell-596 Figures 17A and 17B show that windows 1702 and 1704 of the electronics module expand into corresponding openings 1722 and 1724 of eyewear housing 1720. Ex. 1004 ¶196, Fig. 17B. Figure 17B further shows that

such protrusions would restrict the electronics module's vertical movement within eyewear housing 1720. *Id.* ¶196 (the electronics module is “contained by the eyewear housing 1720”).

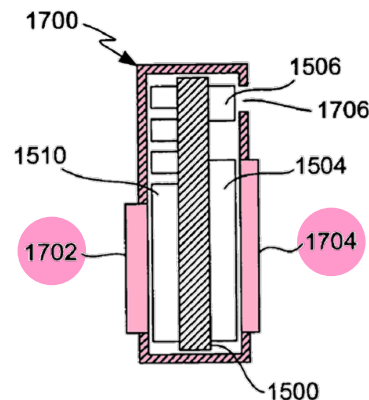


FIG. 17A

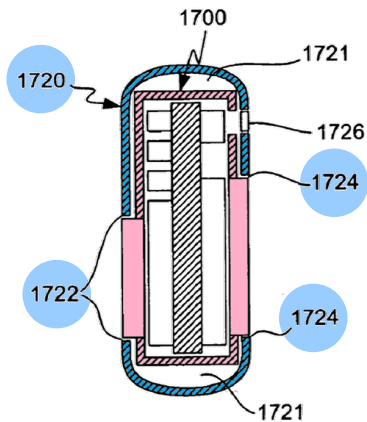


FIG. 17B

Id., Figs. 17A-17B. Therefore, Howell-596 discloses that its electronics module is pressure fitted to its eyewear housing 1720 (housing module). Ex. 1002 ¶96.

K. Claim 11

Claim 11 depends from claim 9 and further recites: “wherein the electronics module is located within the body of the housing module.”

As discussed for elements 1[c]-1[d] and claim 9, Figure 17B shows an electronics module sitting inside the body of Howell-596's eyewear housing. *Supra* §§ VII.A.3, VII.I.

L. Claim 12

Claim 12 depends from claim 1 and further recites: “wherein the structural member comprises a cavity in the first temple; and wherein the housing module is configured to be selectively placed within the cavity.”

For claim 12, Petitioner maps the disclosures of Howell-596 and Howell-158 in a slightly different way only for the limitations “housing module,” “structural member,” and “electronics module.” All other limitations are mapped as in §VII.A, *supra*.

Howell-596 discloses a UV detection system 1500 disposed within a module housing 1700 (housing module). Ex. 1004 ¶¶194-96, Figs. 17A-17B. Module housing 1700 qualifies as the claimed housing module including because it is “a housing for the UV detection system 1500” including its electrical circuitry. *Id.* ¶¶184, 194; *see* Ex. 1001, 50:40-48 (’541 patent stating “a ‘housing module’ may refer to a component that may house ... the electronics ... of the electronic spectacles”).

The module housing 1700 is coupled to a cavity 1721 in eyewear housing 1720 (structural member) at the temple. *Id.* ¶196, Fig. 17B. Eyewear housing 1720 (structural member) qualifies as the claimed structural member including because it is part of the frame. Ex. 1004 ¶196; Ex. 1001, 55:63-66 (’541 patent stating a “‘structural member’ may refer to any portion of the frame”).

Figure 17B shows that the module housing 1700 (housing module) is configured to be selectively placed within the cavity 1721 of the eyewear housing 1720 (structural member). *Id.* ¶196, Fig. 17B; Ex. 1002 ¶102.

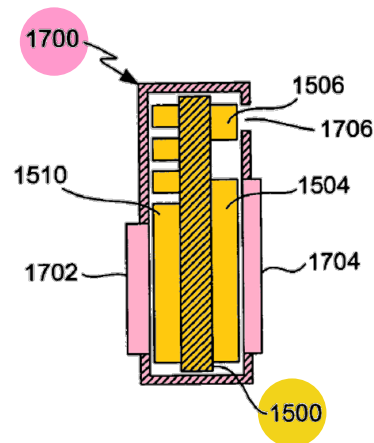


FIG. 17A

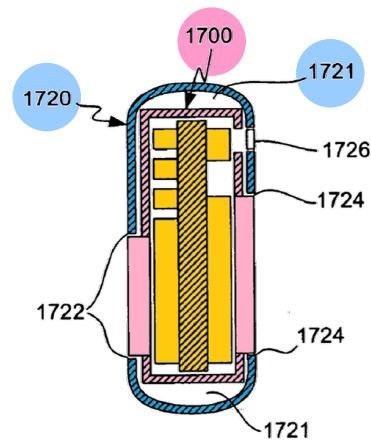


FIG. 17B

Ex. 1004, Figs. 17A-17B.

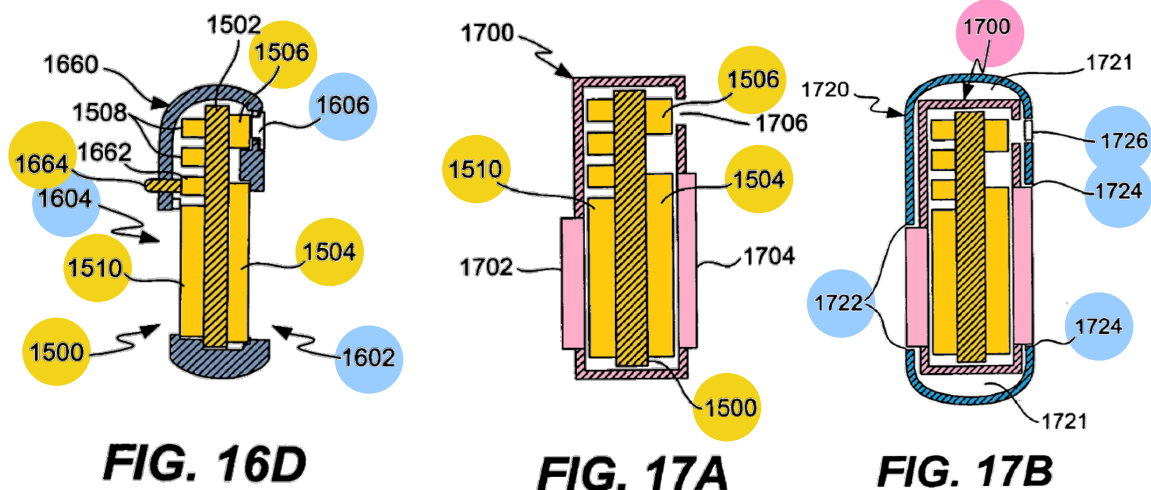
Howell-158 discloses an insulating layer (electronics module). Ex. 1006 ¶53. The insulating layer qualifies as the claimed electronics module including because it “encapsulate[s] the electrical components” to provide both insulation and “mechanical stiffness.” Ex. 1006 ¶53; Ex. 1001, 7:45-51 (’541 patent stating “an ‘electronics module’ may refer to a housing or container that comprises a plurality of electrical components”). Thus, claim 12 would have been obvious in view of Howell-596 and Howell-158. Ex. 1002 ¶103.

M. Claim 13

Claim 13 depends from claim 1 and further recites: “wherein the housing module further comprises an aperture disposed on an outer side of the housing module.”

According to the '541 patent, the “outer side” may refer to a side of the housing module that does not face toward a wearer’s head (e.g. the side that faces away from the wearer’s head).” Ex. 1001, 63:9-14.

Howell-596’s Figures 16D and 17B each show cross-sections of an eyewear housing. Ex. 1004, Figs. 16D, 17A-17B, ¶¶191, 194-96. Each eyewear housing is configured to contain the UV detection system 1500 shown in Figure 15A. *Id.* For example, as shown, each contains an optical filter 1606/1726 corresponding to UV sensor 1506, an opening 1602/1724 corresponding to power supply 1504, and an opening 1604/1722 corresponding to display device 1510. *Id.* Figure 16D shows how to incorporate a switch 1664, while Figure 17B shows how to incorporate a module housing 1700. *Id.* Howell-596 discloses that such features in embodiments are not mutually exclusive. *Id.* ¶239.



Id., Figs. 16D, 17A-17B, *see id.* ¶¶184, 191, 194-196 (discussing figures).

Howell-596’s Figures 16D and 17B each show a pair of openings 1602/1724 and 1604/1722 (apertures) through the eyewear housing. *Id.*, Figs. 16D, 17B, ¶¶191, 196. Figure 16D further shows a switch 1664 protruding through an aperture in the eyewear housing. *Id.*, Fig. 16D, ¶191.

Claim 13 recites that the aperture is disposed on “an outer side” of the housing module. There are a finite number of identified, predictable sides on the eyewear housing to dispose an aperture: the ends, the sides, the top, and the bottom. Ex. 1002 ¶108. Each such location is an obvious combination of prior-art elements. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007); *ACCO Brands Corp. v. Fellowes, Inc.*, 813 F.3d 1361, 1367 (Fed. Cir. 2016) (holding each of a limited number of potential sensor arrangements was an obvious combination of prior-art elements). Howell-596 discloses that switch 1664 “protrudes outside of the eyewear housing 1660 (or is otherwise accessible) so that a user can activate the switch (e.g., press

the button).” Ex. 1004, Fig. 16D, ¶191. Thus, Howell-596 motivates a POSITA to dispose the aperture for switch 1664 on an outer side of the housing module so the switch is “accessible” and to avoid contacting the wearer’s head to unintentionally engage the switch. *Id.*; Ex. 1002 ¶108. Moreover, switch 1664 and openings 1602/1724 and 1604/1722 are disposed on both vertical sides of the eyewear housing, so at least one opening is necessarily disposed on an outer side of the eyewear housing. Ex. 1004, Figs. 16D, 17B; Ex. 1002 ¶108.

N. Claims 14-15

Claim 14 depends from claim 13 and further recites: “wherein the sensing mechanism comprises a touch sensitive switch exposed substantially through the aperture.”

Claim 15 depends from claim 14 and further recites: “wherein the touch sensitive switch is a capacitance switch.”

Howell-596 discloses these limitations. Ex. 1002 ¶114. As discussed for claim 13, the electronics module includes a switch 1664 that “protrudes outside of the eyewear housing 1660 (or is otherwise accessible) so that a user can activate the switch (e.g., press the button).”



Howell-596 discloses that switch 1664 can be a touch sensitive capacitance switch. Ex. 1002 ¶112. Howell-596 incorporates by reference U.S. Provisional Patent Application No. 60/583,169 to Howell et al., and points to a specific section therein titled “Eyeglasses with User Input Capability.” Ex. 1004 ¶88. That identified section explains that the switch “can be activated depending on electrical forces 158” that in turn “depend[] on capacitive effect.” Ex. 1005, 172 ¶57. The identified section further discloses 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.* The identified section further discloses that the switch “can be placed at different position[s] on the glasses,” including the “top surface of the temple.” *Id.* ¶50. The top surface is an “outer side” of the temple because it “does not face toward a wearer’s head.” Ex. 1001, 63:9-14.

O. Claims 16-17

Claim 16 depends from claim 1 and further recites: “wherein the structural member comprises the first temple.”

Claim 17 depends from claim 16 and further recites: “wherein the first temple comprises a first portion and second portion, and wherein the housing module comprises the first portion of the first temple.”

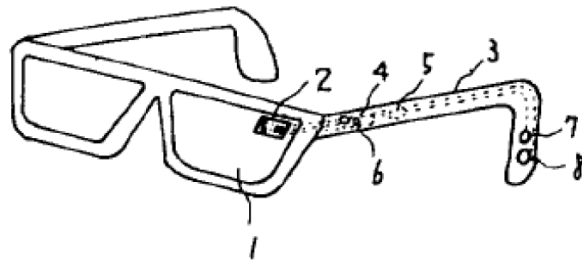
The ’541 patent states that a “‘structural member’ may refer to any portion of the frame” Ex. 1001, 55:63-66.

Howell-596’s eyewear housing may represent only “a portion” of a temple. Ex. 1004 ¶188. “Typically, the portion of the temple region [represented by the eyewear housing] is forward of the user’s ear (i.e., towards the lens holders) when the glasses are being worn.” *Id.* In that “typical” configuration, the first portion of the temple is its front portion, while the second portion of the temple is the back portion. *See id.*

Alternatively, POSITAs would have otherwise been long aware that that electronics are beneficially housed in one of two separable portions of a temple to facilitate incorporating and accessing the electronics as well as enhancing “multifunctionality.” *See* Ex. 1007, 68, Fig. 5. In fact, housing electronics in one of two separable portions of a temple would have been part of a POSITA’s

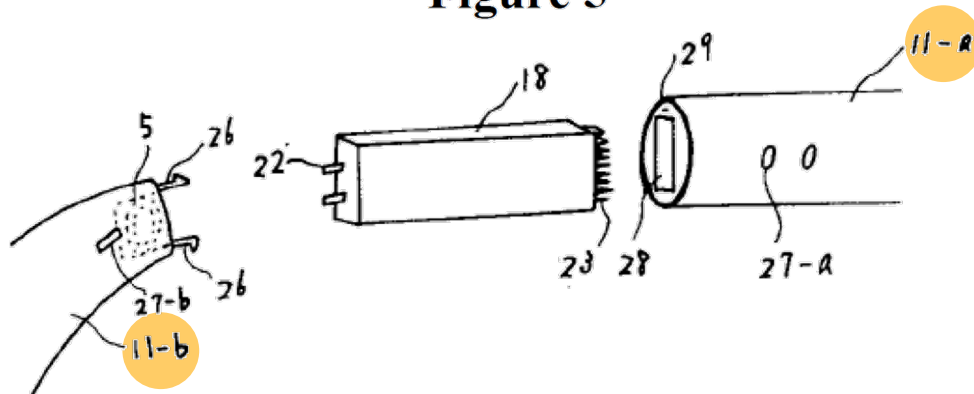
background knowledge because Hattori-913 discussed it in 1983. *Id.* Hattori-913 discloses eyeglasses comprising two temples:

Figure 1



Ex. 1007, 68, Fig. 1. Figure 5 of Hattori-913 shows a temple comprising two portions: frame 11-a and frame 11-b:

Figure 5



Id., 68, Fig. 5. Portion 11-a is the first portion and houses “electronic components 20 such as capacitors and transistors” within integrated circuit 18. *Id.* Portion 11-a is therefore a housing module comprising the first portion of a first temple. Portion 11-b is the second portion of the temple. *Id.* First portion 11-a is coupled to second portion 11-b by hooked portion 26. *Id.* In light of Hattori-913, a POSITA would

have identified that one of a limited number of well-known suitable choices for incorporating Howell-596's two-portion temple would be to dispose the portions as two separate and connectable pieces. Ex. 1002 ¶119.

P. Claim 18

Claim 18 depends from claim 1 and further recites: “wherein the housing module has a thickness that is less than or equal to approximately 0.7 mm.”

According to the '541 patent, “the ‘thickness’ of the housing module may refer to the dimension of one of the sides of the housing module in a direction that is perpendicular to the electronics module.” Ex. 1001, 66:12-15.

According to the '541 patent, “the term ‘approximately’ may refer to plus or minus 10 percent, inclusive.” *Id.*, 9:46-47.

Claim 18 adds nothing to claim 1 other than a range for the thickness of a side of the housing module. That range is the result of routine optimization, not invention. Ex. 1002 ¶122. A POSITA would have been motivated to have the thickness of the housing module be as thin as possible because space within eyewear is limited by ergonomic and aesthetic considerations. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456 (C.C.P.A. 1955). And “obviously a mere change in proportion would involve no more than mechanical skill and would not amount to invention.” *Powers-*

Kennedy Contracting Corp. v. Concrete Mixing & Conveying Co., 282 U.S. 175, 184-85 (1930). Accordingly, Howell-596 and Howell-158 render claim 18 obvious for the reasons discussed for claim 1. *Supra* §VII.A.

Alternatively, POSITAs would have been long aware that Howell-596's eyewear housing 1720 or Howell-158's temple (housing module) could have a thickness that is less than or equal to approximately 0.7 mm. This would have been part of a POSITA's background knowledge because, before the priority date, multiple references disclosed temples whose entire widths were less than approximately 0.7 mm thick. Ex. 1002 ¶123. For example, in 2007, Dudli explicitly disclosed a temple for spectacles "preferably with a thickness of 0.2 to 0.5 mm." Ex. 1012, Claim 2; *id.*, 1 (publication date May 16, 2007). As another example, in 2002, Della explicitly disclosed temples with a forward portion 13a having a thickness of "around 0.7 mm." Ex. 1013, p.9, Figs. 1-3; *id.*, p.1 (publication date November 22, 2002).

A POSITA would have been motivated to minimize housing module thickness to maintain design ergonomics and aesthetics of the electronic eyewear. Ex. 1002 ¶124. For example, Howell-596 discloses integrating components within eyewear such that "disturbance to design features of the eyewear can be reduced." Ex. 1004 ¶¶7, 68. Similarly, Kokonaski-166 emphasizes integrating electronic components into an electro-active frame in a "cosmetically pleasing manner." Ex. 1008,

Abstract. Kokonaski-166 further explains “it is becoming important to find ways to incorporate electronics into eyewear without harming the aesthetics and functionality of the eyewear. The challenge is to not limit the fashion design of the eyeglass frame or limit the materials which the eyeglass frame can be made of”

Id. ¶7. To that end, Kokonaski-166 “desires to avoid ... a thick temple or frame housing electronics that distracts from the aesthetic appearance of the eyeglass frames.” *Id.* ¶6.

Q. Claim 19

1. Preamble

The preamble recites: “A method of fabricating a device.”

As discussed for element 1[a], Howell-596 discloses glasses 100. *Supra* §VII.A.1. Howell-596 further discloses that its disclosure “can be implemented in numerous ways, including as a ... method.” Ex. 1004 ¶9.

2. 19[a][1]: device comprises a frame having first and second temples

Claim element 19[a][1] recites: “wherein the device comprises a frame having a first temple and second temple.” As discussed for element 1[a], Howell-596 discloses this limitation. *Supra* §VII.A.1.

3. **19[a][2][A]: device comprises a housing module that comprises first and second ends, wherein the first end comprises an opening**

Claim element 19[a][2][A] recites: wherein the device comprises “a housing module comprising: a first end and a second end, wherein the first end comprises an opening.” As discussed for claim 9, Howell-596 discloses this limitation. *Supra* §VII.I.

4. **19[a][2][B]: housing module comprises a body between first and second ends, wherein the body comprises a cavity**

Claim element 19[a][2][B] recites: wherein the device comprises a housing module comprising “a body disposed between the first and second end, wherein the body comprises a cavity.” As discussed for claim 9, Howell-596 discloses this limitation. *Supra* §VII.I.

5. **19[b]: inserting an electronics module into the opening of the first end of the housing module such that the electronics module is disposed in the cavity**

Claim element 19[b] recites: “wherein the method comprises inserting an electronics module into the opening of the first end of the housing module such that the electronics module is disposed in the cavity of the body of the housing module.” As discussed for claims 9 and 11, Howell-596 discloses this limitation. *Supra* §§ VII.I, VII.K.

**VIII. GROUND 2: HOWELL-596, HOWELL-158, AND HATTORI-913
RENDER CLAIMS 16-17 OBVIOUS**

Claims 16 and 17 both recite limitations that relate to coupling a housing module to a temple. Claim 17 further recites that the housing module comprises a first portion of the temple. In Ground 1, Petitioner relies on Howell-596's disclosure that its eyewear housing 1720 (housing module) may represent only a portion of a temple, which is typically the front portion. *Supra* §VII.O. In connection with Howell-596, Petitioner relies on Hattori-913 to form part of a POSITA's background knowledge. *Id.*

In Ground 2, Petitioner alternatively relies on Hattori-913 as an obviousness reference. Petitioner submits that the limitations of claims 16 and 17 would have been obvious to a POSITA in further view of Hattori-913, which expressly discloses those limitations. *See supra* §VII.O; Ex. 1002 ¶133.

A POSITA would have been motivated to combine Hattori-913's teachings with Howell-596 because they address the same goal of embedding electrical components in glasses. Ex. 1002 ¶134. Howell-596 is directed to "embed[ing] or partially embed[ing] electrical components" into glasses. Ex. 1004, ¶7. Hattori-913 describes "embodiment[s] of the incorporation" of electronics into glasses. Ex. 1007, 68, Figs. 4-5. Both Howell-596 and Hattori-913 also address a need to minimize the manufacturing burden of embedding electrical components. Ex. 1002 ¶134. Howell-596 identifies a need to "regularize or standardize the form factor" of

its electronics, such that the receiving portion of “eyewear housing can be regularized or standardized.” Ex. 1004 ¶195. Hattori-913’s embodiments addresses incorporating its electronic function “without any precision processing of frames at all.” Ex. 1007, 69.

A POSITA would have been motivated to incorporate Hattori-913’s two-portion temple because it provides an exemplary way to achieve Howell-596’s disclosed device that beneficially facilitates incorporating and accessing the electronics as well as enhancing “multifunctionality.” See Ex. 1007, 68, Fig. 5; Ex. 1002 ¶135. Howell-596 identifies that its electronics module is “placed into an opening, cavity or container of an eyewear housing, such as a temple region of the eyewear housing.” Ex. 1004 ¶195. Hattori-913’s two-portion temple provides an “example[] of incorporating” electronics that provides direct access to the opening of the eyewear housing at the coupling point of the frame portions. Ex. 1007, 68, Fig. 5; Ex. 1002 ¶135.

Applying Hattori-913’s two-portion temple to Howell-596’s glasses represents nothing more than the simple substitution of one known element (two-portion temple) for another known element (one-portion temple) to obtain predictable results (accessing electrical components at the coupling point of the two portions). Ex. 1007, 68, Fig. 5; Ex. 1002 ¶136; see *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417 (2007).

**IX. GROUND 3: HOWELL-596 RENDERS CLAIMS 1-11 AND 13-19
OBVIOUS**

A. Claim 1

1. Preamble and 1[a]: frame comprising temples and a housing module coupled to a structural member

As discussed for ground 1, Howell-596 discloses this limitation. *Supra* §VII.A.1.

2. 1[b]: first and second lenses coupled to the frame

As discussed for ground 1, Howell-596 discloses this limitation. *Supra* §VII.A.2.

3. 1[c]-1[d]: electronics module located within the housing module and comprising at least two of a power source, controller, and sensing mechanism

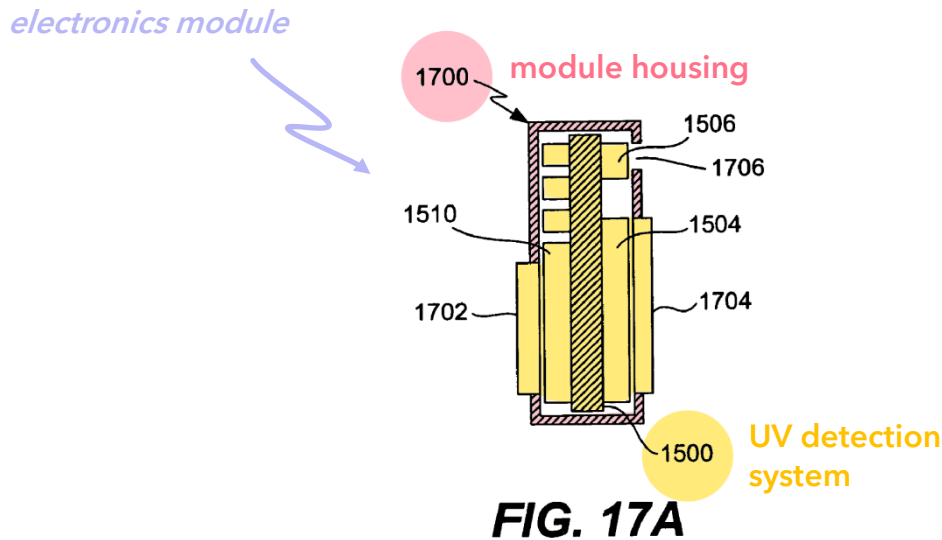
As discussed for ground 1, Howell-596 discloses this limitation. *Supra* §VII.A.3.

4. 1[e]: insulating layer between electronic component and frame

According to the '541 patent, “where an electronics module comprises an exterior wall ... that is made of ... an insulating material, the exterior wall may be considered as the insulating layer disposed between the electronic components (that are disposed within the electronics module) and the frame.” Ex. 1001, 58:50-55.

As discussed for ground 1, Howell-596’s electronics module has a “module housing 1700” that houses the UV detection system 1500. *Supra* §VII.A.3; Ex. 1004

¶194. UV detection system 1500 is built on a substrate that “can be a printed circuit board” and includes electrical circuitry such as “integrated circuits.” Ex. 1004 ¶184.



Ex. 1004, Fig. 17A, ¶¶194-95.

It would have been obvious for a POSITA to select an insulating material for module housing 1700. Ex. 1002 ¶143. Howell-596 instructs that “module housing 1700 protects the module” including UV detection system 1500. Ex. 1004 ¶195. A POSITA would have understood that protecting the UV detection system’s “printed circuit board” having “integrated circuits” would advantageously include insulating those electric components. Ex. 1002 ¶143. For example, a 2003 Generic Standard on Printed Board Design instructed that metal-cased components shall be “insulated from adjacent electrically conductive elements.” Ex. 1011, 57. The standard further instructed that “[f]iber or plastic insulators should be incorporated where adequate clearance from circuitry cannot be provided.” *Id.*, 64.

Moreover, selecting an insulating material for module housing 1700 is the result of simple design choice, not invention. Ex. 1002 ¶144. For example, plastic is one of a finite number of identified, predictable materials for Howell-596’s module housing 1700. *Id.* Before the priority date, plastic was commonly used for insulation, including in eyewear frames that house electronics. *Id.*; Ex. 1011, 64 (“plastic insulators should be incorporated where adequate clearance from circuitry cannot be provided”); Ex. 1006 ¶51 (discussing “embed[ding] an electrical component into a pair of glasses” that are “made of plastic (e.g., plastic frames)”). Thus, a POSITA would have had a reasonable expectation of success in using plastic for Howell-596’s module housing 1700. Ex. 1002 ¶144. The use of plastic instead of another material is “obviously a matter of mere mechanical judgment, and not of invention.” *See Hicks v. Kelsey*, 85 U.S. 670, 673 (1873).

B. Claim 2

According to the ’541 patent, “the housing module may comprise the insulating layer. That is, for example, the housing module (or a portion thereof) may comprise an insulating material.” Ex. 1001, 57:60-62.

As shown in Figure 17B of Howell-596, eyewear housing 1720 (housing module) contains module housing 1700 (insulating layer) such that a portion of the eyewear housing 1720 comprises module housing 1700:

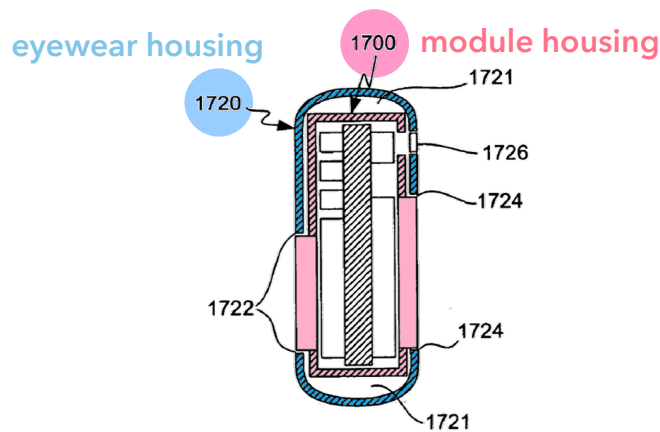


FIG. 17B

Ex. 1004, Fig. 17B, ¶196. Thus, Howell-596 renders this limitation obvious. Ex. 1002 ¶147.

C. Claim 3

As discussed for ground 1, Howell-596 discloses this limitation. *Supra* §VII.C.

D. Claim 4

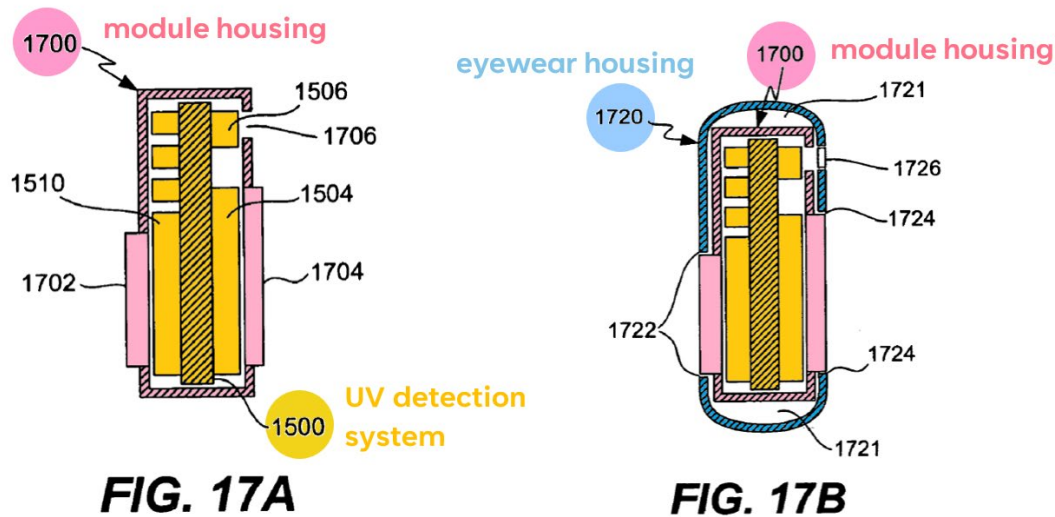
1. 4[a]: housing module comprises conductive material

As discussed for ground 1, Howell-596 renders this limitation obvious. *Supra* §VII.D.

2. 4[b]: insulating layer between a portion of the housing module and the electronics module

As shown in Figures 17A and 17B of Howell-596, module housing 1700 (insulating layer) is disposed between at least a portion of eyewear housing 1720

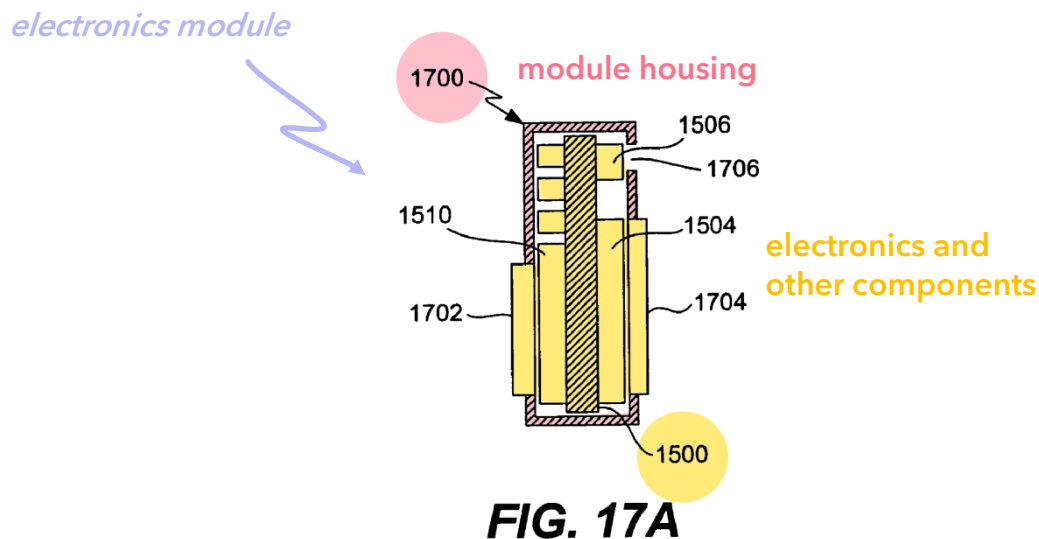
(housing module) and at least the portion of Howell-596's electronics module comprising UV detection system 1500:



Ex. 1004, Figs. 17A-17B, ¶¶194-96. Thus, Howell-596 renders this limitation obvious. Ex. 1002 ¶151.

E. Claim 5

As discussed for elements 1[c]-1[d] and shown in Figure 17A of Howell-596, module housing 1700 (insulating layer) is a portion of the electronics module. *Supra* §§ VII.A.3, IX.A.3.



Ex. 1004, Fig. 17A, ¶¶194-96. Thus, Howell-596 renders this limitation obvious.

Ex. 1002 ¶153.

F. Claim 6

Claim 6 would have been obvious to a POSITA for the same reasons discussed for element 4[a]. *Supra* §§ VII.D, IX.D.1.

G. Claims 7-11, 13-19

As discussed for ground 1, Howell-596 discloses or renders obvious claims 7-11 and 13-19. *Supra* §§ VII.G-VII.K, VII.M-VII.Q.

X. GROUND 4: HOWELL-596 AND HATTORI-913 RENDER CLAIMS 16-17 OBVIOUS

For the same reasons discussed for ground 2, the limitations of claims 16 and 17 would have been obvious to a POSITA in view of Howell-596 and Hattori-913. *See supra* §VIII.

**XI. GROUND 5: KOKONASKI-166 AND HOWELL-158 RENDER CLAIMS
1-9, 11, AND 13-19 OBVIOUS**

A. Claim 1

1. **Preamble and 1[a]: frame comprising temples and a housing
module coupled to a structural member**

Kokonaski-166 discloses electronic eyeglass frames with two temples:

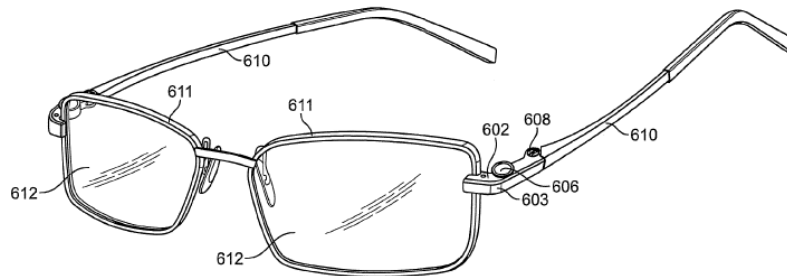
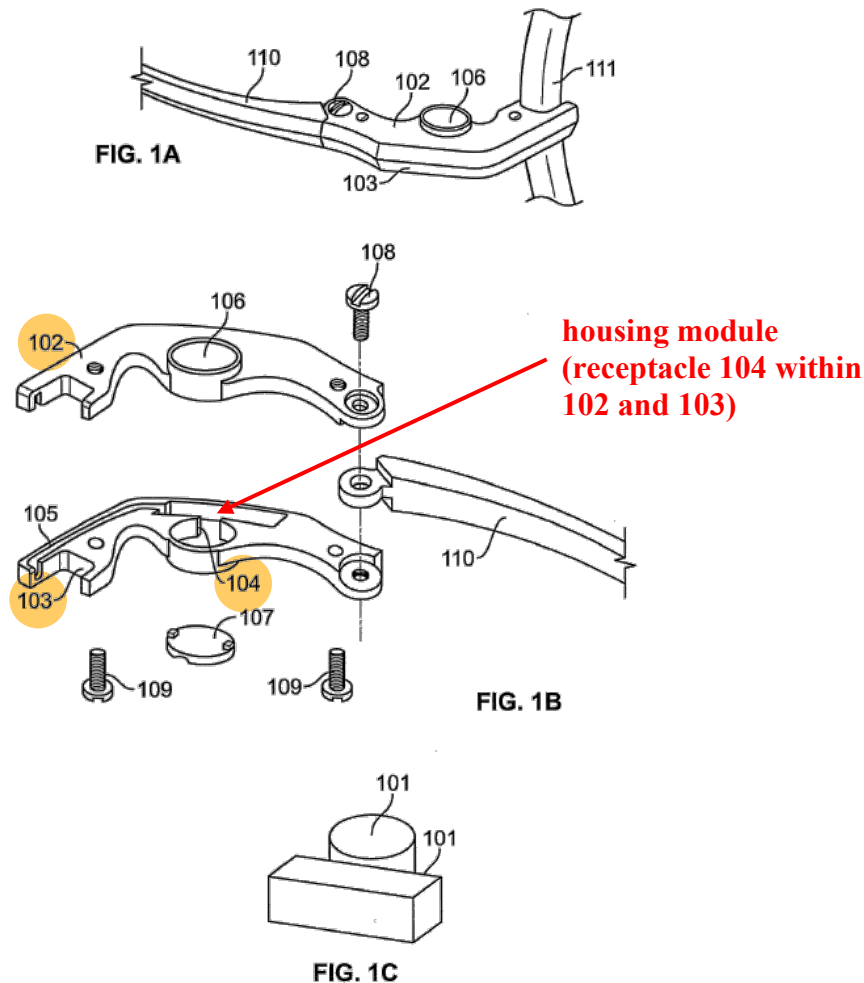


FIG. 6

Ex. 1008, Fig. 6; ¶¶3, 80. Figures 1A-1C show “a universal frame housing that comprises an electronic module” in the frame of Kokonaski-166’s eyewear:



Id., Figs. 1A-1C, ¶¶20-22, 73-74. “The module 101 is shown housed between an upper electro-active lens frame component piece 102 and a lower electro-active lens frame component piece 103 that contains a receptacle 104 for the module 101.” *Id.* ¶74.

Receptacle 104 is a housing module coupled to component pieces 102/103, which are structural members. Kokonaski-166 thus discloses a “first device, comprising: a first temple and a second temple, wherein the frame comprises a housing module coupled to a structural member.” Ex. 1002 ¶157.

2. **1[b]: first and second lenses coupled to the frame**

As shown, for example, in Figure 6 below, Kokonaski-166’s eyewear has a “first lens and second lens coupled to the frame,” and discloses this limitation.

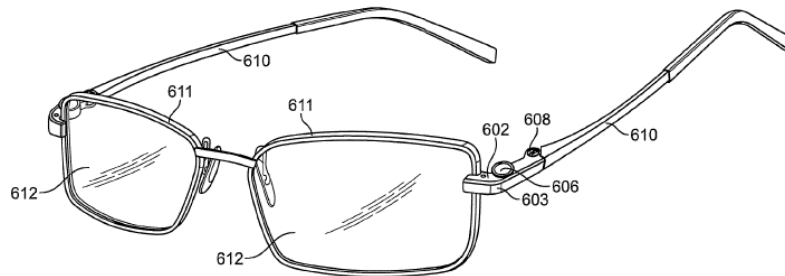
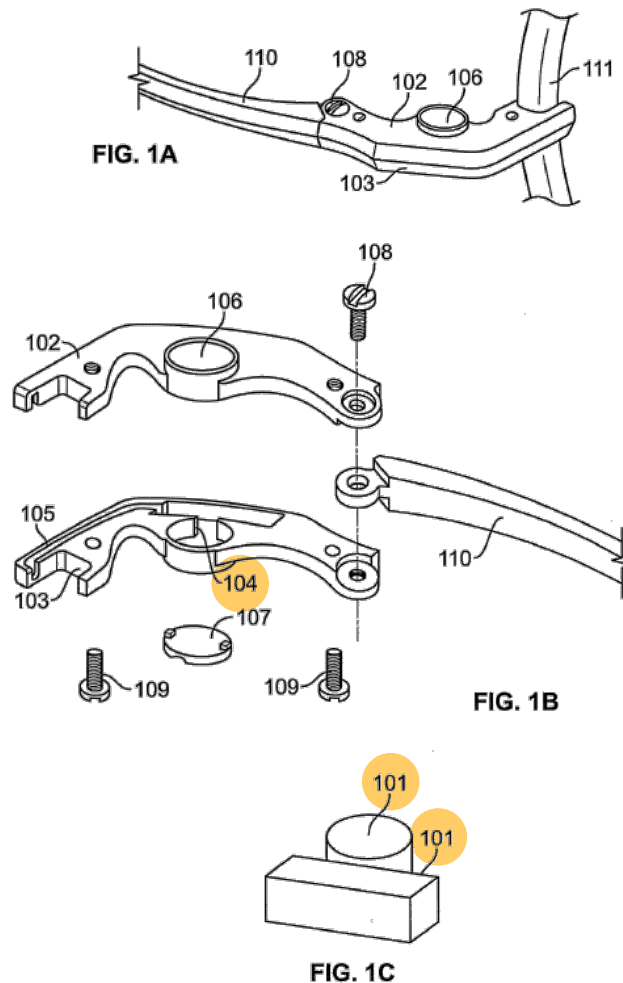


FIG. 6

Ex. 1008, Fig. 6, ¶80; Ex. 1002 ¶158.

3. **1[c]-1[d]: electronics module located within the housing module and comprising at least two of a power source, controller, and sensing mechanism**

Kokonaski-166 discloses an electronic module 101 that contains a plurality of electronic components, including “both a power source and a drive circuit,” a “sensing mechanism,” and “an antenna, a receiver, a transmitter, a transceiver, a sensor, a range finder, a micro-processor, and a controller.” Ex. 1008 ¶¶12, 73, 98. Figures 1A-1C show “a universal frame housing that comprises the electronic module”:



Id., Figs. 1A-1C, ¶¶20-22, 74. The electronics module 101 is disposed in the housing module 104, as shown above. *Supra* §XI.A.1. Thus, Kokonaski-166 discloses these limitations.

4. 1[e]: insulating layer between electronic component and frame

Kokonaski discloses an electronic module in both Figures 1 and 10. Ex. 1008 ¶¶76, 87, Figs. 10-11. For each, Kokonaski-166 discloses using a seal to “to prevent water from contacting the electronic” components while within a universal frame component. *Id.* ¶¶76, 87. Referencing Figure 10, Kokonaski-166 discloses that its

electronic module may be sealed with silicone, which is insulative. *Id.* ¶87; Ex. 1002 ¶¶161-162. It would have been obvious to a POSITA to apply that insulation to electronic module 101 in Figure 1. Ex. 1002 ¶161. For example, for both Figures 1 and 10, the seal for the electronic module is directed to the same goal “to prevent water from contacting the electronic” components while within a universal frame component. Ex. 1008 ¶¶76, 87.

Once the electronic module is disposed within the housing module, the insulating layer of silicone would be disposed between the electronic module and the housing module and, thus, between the electronic components within the electronics module and the frame. Ex. 1002 ¶162. Kokonaski-166 discloses this limitation.

Additionally, as discussed above, Howell-158 discloses disposing an “insulating layer between the electrical components or circuit board and []metallic frames.” Ex. 1006 ¶53; *see supra* §VII.A.4. Kokonaski-166 discloses that its “frame can be made of zyle, metal, or any combination thereof.” Ex. 1008 ¶84. For the same reasons described above for Ground 1, a POSITA would have been motivated to dispose an insulating layer between the electronics module and housing module in the metal frame of Kokonaski-166 and would have had a reasonable expectation of success in applying Howell-158’s teachings. *Supra* §VII.A.4; Ex. 1002 ¶163.

Claim 1 is thus obvious over Kokonaski-166 in light of Howell-158.

B. Claim 2

Claim 2 depends from claim 1 and further recites: “wherein the housing module comprises the insulating layer.”

Kokonaski-166’s frame containing the electronic modules “can be made of zyle, metal, or any combination thereof.” Ex. 1008 ¶84. A POSITA would know that zyle—or plastic—is an insulative material. Ex. 1002 ¶164. Kokonaski-166 thus discloses this limitation.

As another alternative, Howell-158 discloses disposing its insulating layer within the frame, with one side of the insulating layer “sticking to the temple.” *Supra* §§ VII.A.4, VII.B; Ex. 1006 ¶53.

Thus, Claim 2 would have been obvious.

C. Claim 3

Claim 3 depends from claim 2 and further recites: “wherein the electronics module comprises a conductive material.”

As discussed for elements 1[c]-1[d], Kokonaski-166’s electronic module includes “electrical components,” including, for example, “a drive circuit[.]” *Supra* §XI.A.3; Ex. 1008 ¶73. Electrical circuitry requires a conductor to allow a current to flow through the elements of the circuit. Ex. 1002 ¶166. Kokonaski-166 thus discloses an electronics module comprising a conductive material. Claim 3 is thus obvious.

D. Claim 4

Claim 4 depends from Claim 1 and further recites: “wherein the housing module comprises a conductive material; and wherein the insulating layer is disposed between at least a portion of the housing module and the electronics module.” As discussed above for Claim 2, Kokonaski-166 discloses that its eyewear frame can be made of metal, which means that its housing module would be made of metal, which is conductive. *Supra* §XI.B.

As discussed for element 1[e], Kokonaski-166 in combination with Howell-158 disclose disposing an insulative layer between at least a portion of the housing and electronics modules. *Supra* §XI.A.4. Claim 4 is thus obvious.

E. Claim 5

Claim 5 depends from Claim 1 and further recites: “wherein the insulating layer comprises a portion of the electronics module.”

As discussed for Claim 4, Kokonaski-166 discloses an electronic module sealed with silicone. *Supra* §XI.D. It would be obvious to a POSITA that the silicone seal can form part of the electronic module. Ex. 1002 ¶169.

Alternatively, because Howell-158 discloses that its insulating layer can have “one side sticking to the circuit board,” it would have been obvious to adhere Howell-158’s insulating layer to Kokonaski-166’s circuitry, such that the insulating

layer is part of the electronics module. *Supra* §§ VII.A.4, VII.E; Ex. 1006 ¶53; Ex. 1002 ¶170.

F. Claim 6

Claim 6 depends from Claim 5 and further recites: “wherein the housing module comprises a conductive material.” As discussed for Claim 4, Kokonaski-166 discloses metal frames, which include housing 1110. *Supra* §XI.D.

G. Claims 7 and 8

Claim 7 depends from Claim 1 and further recites: “wherein the electronics module is removably coupled to the housing module.” Claim 8 depends from claim 7 and further recites: “wherein the electronics module is adapted to be removed and recoupled to the housing module.”

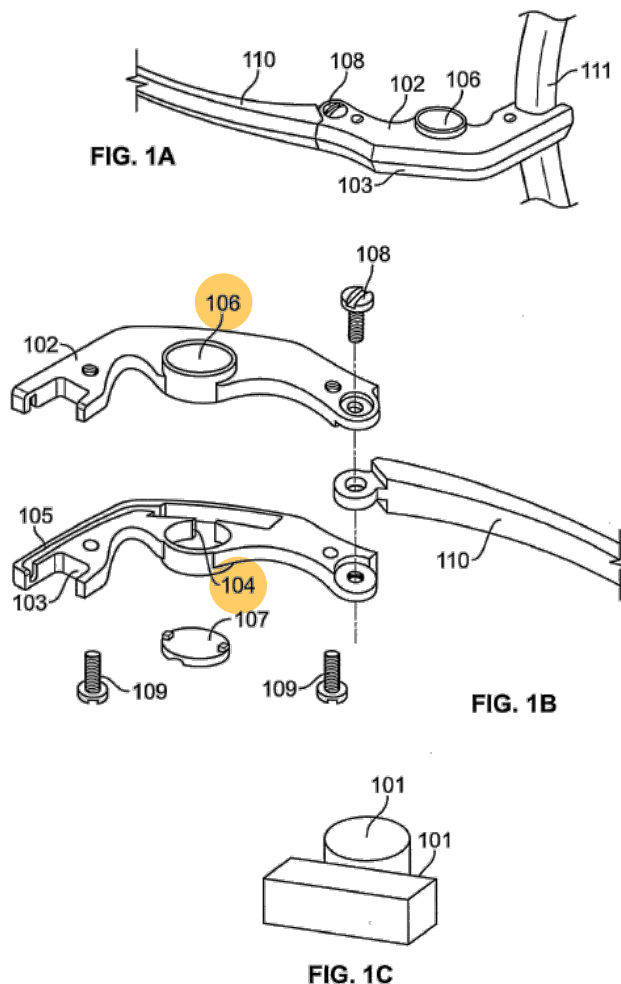
Kokonaski-166 discloses, for example, that “in the event of a malfunction of one or more of the electronic components housed within the module, the module can be replaced without having to repurchase a complete pair of new electronic eyewear” Ex. 1008 ¶98. Kokonaski-166’s electronic module is thus removably coupled to a housing module and can be recoupled. Ex. 1002 ¶172. Claims 7 and 8 are thus obvious.

H. Claims 9 and 11

Claim 9 depends from Claim 1 and recites “wherein the housing module comprises a first end, a second end, and a body disposed between the first end and

the second end; wherein the first end comprises an opening; and wherein the electronics module is configured to be inserted into the opening.” Claim 11 depends from claim 9 and further recites: “wherein the electronics module is located within the body of the housing module.”

Kokonaski-166 discloses the limitations of claims 9 and 11. Ex. 1002 ¶174. For example, Figures 1A-1C show Kokonaski-166’s housing module, which is comprised of a first end at the bottom of receptacle 104, a second end 106, and a body (receptacle 104) therebetween:



See Ex. 1008, Figs. 1A-1C, ¶¶20-22, 74. Kokonaski-166 also discloses that the electronics module 101 is housed in the body (receptacle 104): “The module 101 is shown housed between an upper electro-active lens frame component piece 102 and a lower electro-active lens frame component piece 103 that contains a receptacle 104 for the module 101.” *Id.* ¶74. Kokonaski-166 thus discloses claims 9 and 11. Ex. 1002 ¶¶174-175.

I. Claim 13

Claim 13 depends from Claim 1 and further recites: “wherein the housing module further comprises an aperture disposed on an outer side of the housing module.” Kokonaski-166’s Figures 10-11 show a universal electronic frame component 1100 comprising a housing 1110 for holding electronic module 1000:

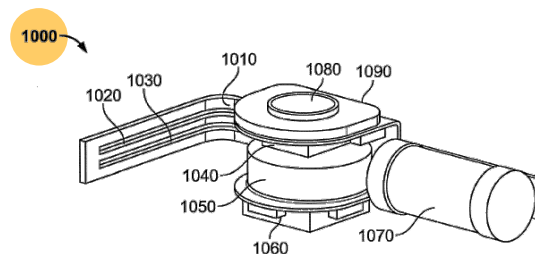


FIG. 10

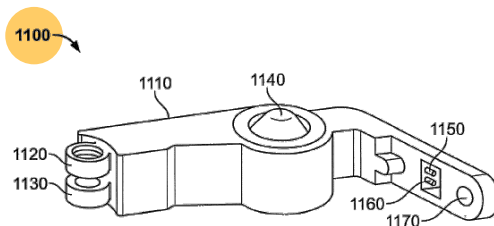


FIG. 11

Ex. 1008, Fig. 10-11, ¶¶87-88. “The top of housing 1110 has an aperture to allow a manual switch 1140 to extend outward so as to be accessed by the wearer.” *Id.* ¶88. The “top” of the housing is an “outer side” because it does not face toward the wearer’s head. *Id.*, Fig. 11; *id.*, Fig. 6. Kokonaski-166 thus discloses claim 13.

J. Claims 14-15

Claim 14 depends from Claim 13 and further recites: “wherein the sensing mechanism comprises a touch sensitive switch exposed substantially through the aperture.” Claim 15 depends from Claim 14 and further recites: “wherein the touch sensitive switch is a capacitance switch.”

In Figure 11, Kokonaski-166 discloses a switch 1140 exposed substantially through the top of the housing 1110:

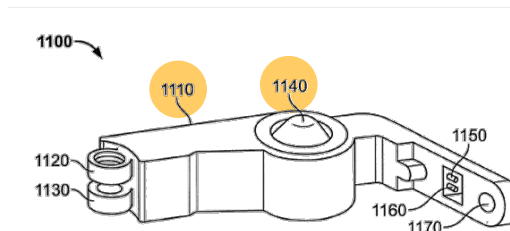


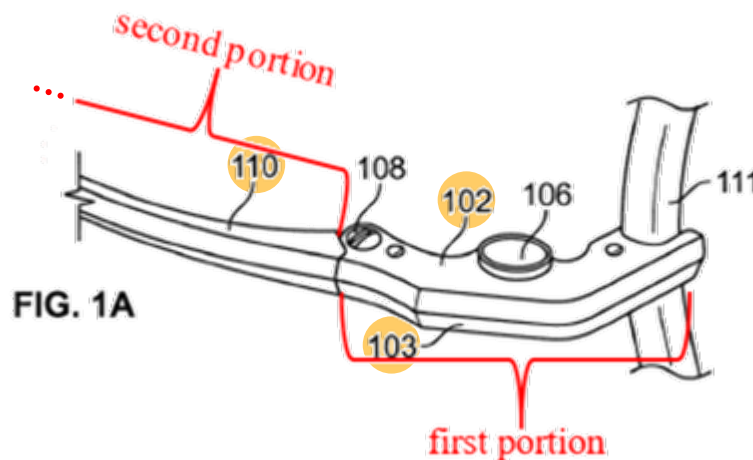
FIG. 11

Ex. 1008, Fig. 11. Kokonaski-166 further discloses that the switch can be a “photo-detector, motion detector, [or] capacitive touch sensor.” *Id.* ¶98. Thus, Kokonaski-166 discloses that its sensor can comprise a switch exposed through its frame aperture, where the switch can be a capacitance switch. Ex. 1002 ¶178. Kokonaski-166 thus discloses Claims 14 and 15.

K. Claims 16-17

Claim 16 depends from Claim 1 and further recites: “wherein the structural member comprises the first temple.” Claim 17 depends from Claim 16 and further recites: “wherein the first temple comprises a first portion and second portion, and wherein the housing module comprises the first portion of the first temple.”

As shown in Figure 1A, Kokonaski-166 discloses an electronic frame piece 102 and 103 (first portion) and a temple piece 110 (second portion):



See Ex. 1008, Fig. 1A, ¶74. The housing module, which houses an electronic module, is located within the electronic frame piece 102 and 103 and connected to the temple piece 110 to form a full temple (first temple). *Id.* The full temple is part of the frame of Kokonaski-166’s eyewear. *Id.*, Fig. 1A, ¶¶73-74. Kokonaski-166 thus discloses Claims 16 and 17. Ex. 1002 ¶179.

L. Claim 18

Claim 18 depends from claim 1 and further recites: “wherein the housing module has a thickness that is less than or equal to approximately 0.7 mm.”

As discussed in Ground 1, Claim 18 adds nothing to Claim 1 other than a range for the thickness of a side of the housing module is the result of routine optimization, not invention. *Supra* §VII.P.

Alternatively, POSITAs would have been long aware that Koknaski-166’s electronic frame piece or Howell-158’s temple (housing module) could have a thickness that is less than or equal to approximately 0.7 mm. Ex. 1002 ¶181. As discussed in Ground 1, this would have been part of a POSITA’s background knowledge because, before the priority date, multiple references disclosed temples whose entire widths were less than approximately 0.7 mm thick. *Supra* §VII.P.

M. Claim 19

1. Preamble

The preamble recites: “A method of fabricating a device.”

Kokonaski-166 discloses methods of fabricating electronic eyeglass frames. Ex. 1002 ¶182. For example, Kokonaski-166 discloses that its electronic module can be “preferably placed in a cavity” and “molded therein to form an electronic frame component[.]” Ex. 1008 ¶76.

2. **19[a][1]: device comprises a frame having first and second temples**

Claim element 19[a][1] recites: “wherein the device comprises a frame having a first temple and second temple.” As discussed for element 1[a], this limitation is obvious over Kokonaski-166. *Supra* §XI.A.1.

3. **19[a][2]: device comprises a housing module that comprises first and second ends, wherein the first end comprises an opening; housing module comprises a body between first and second ends, wherein the body comprises a cavity**

Claim element 19[a][2] recites: wherein the device comprises “a housing module comprising: a first end and a second end, wherein the first end comprises an opening; and a body disposed between the first and second end, wherein the body comprises a cavity.” As discussed for Claim 9, this limitation is obvious over Kokonaski-166. *Supra* §XI.H.

4. **19[b]: inserting an electronics module into the opening of the first end of the housing module such that the electronics module is disposed in the cavity**

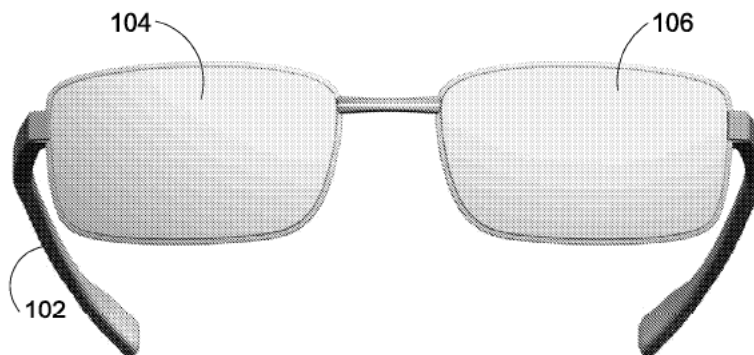
Claim element 19[b] recites: “wherein the method comprises inserting an electronics module into the opening of the first end of the housing module such that the electronics module is disposed in the cavity of the body of the housing module.” As discussed for Claims 9 and 11, this limitation is obvious over Kokonaski-166. *Supra* §XI.H.

**XII. GROUND 6: KOKONASKI-999 AND HOWELL-158 RENDER CLAIMS
1-9, 11, AND 13-19 OBVIOUS**

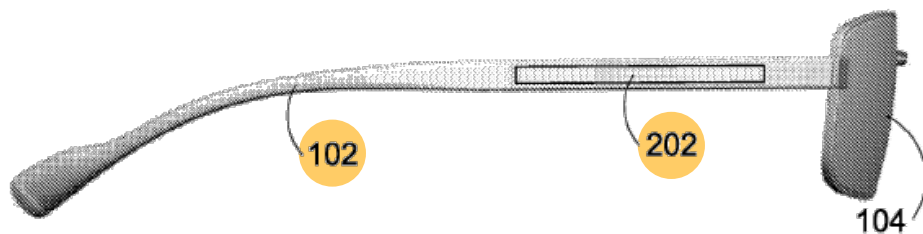
A. Claim 1

**1. Preamble and 1[a]: frame comprising temples and a housing
module coupled to a structural member**

Kokonaski-999 discloses electro-active spectacle frames with two temples:



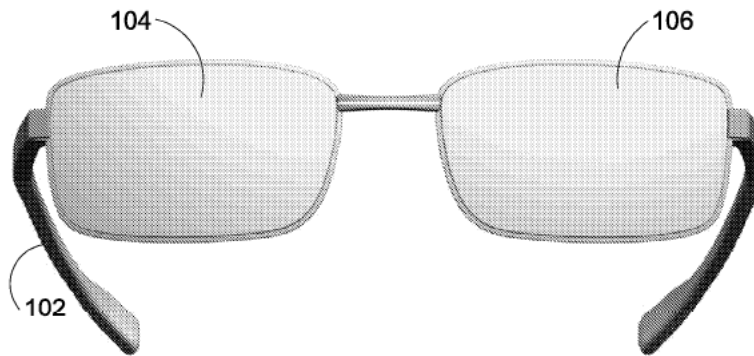
Ex. 1009, Fig. 1, ¶26; *id.* ¶¶23-25, 27-36, Figs. 2, 7-13. Figure 2 shows an electronic module 202 that “can be positioned within the frame 102 (e.g., in an area or cavity of the frame 102)”:



Id., Fig. 2, ¶33; *id.* ¶41; Ex. 1002 ¶186. The cavity within frame 102 is a housing member coupled to a structural member of frame 102.

2. **1[b]: first and second lenses coupled to the frame**

As shown, for example, in Figure 1 below, Kokonaski-999’s eyewear has a “first lens and second lens coupled to the frame,” and discloses this limitation.



Ex. 1009, Fig. 1, ¶26; Ex. 1002 ¶187.

3. **1[c]-1[d]: electronics module located within the housing module and comprising at least two of a power source, controller, and sensing mechanism**

Kokonaski-999 discloses an electronic module 202 that contains a plurality of electronic components. Ex. 1009 ¶¶32, 39, 47, 49-50. Electronic module 202 comprises a housing 502 that “can contain the electrical components of the electronic module 202 – e.g., a processor, memory, power source, and/or a gyroscope/accelerometer.” *Id.* ¶39. Kokonaski-999 also discloses that “electronic module 202 can contain ... a press button switch, a capacitive switch (e.g., comprising a capacitive sense pad), a toggle switch or other manual switch.” *Id.* ¶47; *id.* ¶¶49-50. As discussed for element 1[a], electronic module 202 is disposed in a

cavity (housing module) in frame 102. *Supra* §XII.A.1. Thus, Kokonaski-999 discloses these limitations. Ex. 1002 ¶188.

4. 1[e]: insulating layer between electronic component and frame

Kokonaski-999 describes an electronic module 202 housed within a cavity of frame 102. *Supra* §XII.A.1.

Kokonaski-999 discloses frame 102 having “one or more conductive portions.” Ex. 1009 ¶32. Kokonaski-999 also discloses “conductive links embedded within any portion of the frame[.]” *Id.* ¶¶24, 32. This includes the temple, or any portion of the frame housing the electronic module 202. *Id.* ¶¶32-33.

As discussed in Ground 1, Howell-158 discloses disposing an “insulating layer between the electrical components or circuit board and []metallic frames.” Ex. 1006 ¶53; *see supra* §VII.A.4. Like Kokonaski-999, Howell-158 discloses “approaches to embed an electrical component into a pair of glasses.” Ex. 1006 ¶51. For the reasons described above for Ground 1, a POSITA would have been motivated to dispose an insulating layer between the electronics module and housing module in the metal frame of Kokonaski-999 to prevent circuits from being shorted and reduce leakage current with a reasonable expectation of success in applying Howell-158’s teachings. Ex. 1002 ¶191; *supra* §VII.A.4.

Claim 1 is thus obvious over Kokonaski-999 in light of Howell-158.

B. Claim 2

Claim 2 depends from claim 1 and further recites: “wherein the housing module comprises the insulating layer.”

Howell-158 discloses disposing its insulating layer within the frame, with one side of the insulating layer “sticking to the temple.” *Supra* §§ VII.A.4, VII.B; Ex. 1006 ¶53.

Thus, Claim 2 would have been obvious.

C. Claim 3

Claim 3 depends from claim 2 and further recites: “wherein the electronics module comprises a conductive material.”

As discussed for elements 1[c]-1[d], Kokonaski-999’s electronic module 202 includes a plurality of “electrical components.” *Supra* §XII.A.3; Ex. 1009 ¶¶32, 39, 47, 49-50. Electrical circuitry requires a conductor. Ex. 1002 ¶193. Kokonaski-999 thus discloses an electronics module comprising a conductive material. Claim 3 is thus obvious.

D. Claim 4

Claim 4 depends from Claim 1 and further recites: “wherein the housing module comprises a conductive material; and wherein the insulating layer is disposed between at least a portion of the housing module and the electronics module.”

Kokonaski-999 discloses “one or more conductive portions of the frame 102.” Ex. 1009, ¶32. Kokonaski-999 also discloses “conductive links embedded within any portion of the frame[.]” Ex. 1009 ¶¶24, 32. This includes the temple, or any portion of the frame housing the electronic module 202. *Id.* ¶32.

As discussed for element 1[e], Kokonaski-999 in combination with Howell-158 disclose disposing an insulative layer between at least a portion of the housing and electronics modules. *Supra* §XII.A.4.

Claim 4 is thus obvious. Ex. 1002 ¶195.

E. Claim 5

Claim 5 depends from claim 1 and further recites: “wherein the insulating layer comprises a portion of the electronics module.”

Because Howell-158 discloses that its insulating layer can have “one side sticking to the circuit board,” it would have been obvious to adhere Howell-158’s insulating layer to Kokonaski-999’s electrical components, such that the insulating layer is part of the electronics module. *Supra* §§ VII.A.4, VII.E; Ex. 1006 ¶53; Ex. 1002 ¶196. Claim 5 is thus obvious.

F. Claim 6

Claim 6 depends from claim 5 and further recites: “wherein the housing module comprises a conductive material.” As discussed for Claim 4, Kokonaski-999 discloses that frame 102 has conductive portions and embedding conductive

links within the frame 102, which includes the portion housing electronic module 202. *Supra* §XII.D. In addition, it would have been obvious to apply Howell-158’s teaching of metal frames to Kokonaski-999’s electro-active spectacles. *Id.*; Ex. 1002 ¶198. Claim 6 is thus obvious.

G. Claims 7 and 8

Claim 7 depends from Claim 1 and further recites: “wherein the electronics module is removably coupled to the housing module.” Claim 8 depends from claim 7 and further recites: “wherein the electronics module is adapted to be removed and recoupled to the housing module.”

Kokonaski-999 discloses that “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. 1009 ¶33; *id.* ¶¶23, 41, Figs. 2, 5, 7, 9. Claims 7 and 8 are thus obvious. Ex. 1002 ¶199.

H. Claims 9 and 11

Claim 9 depends from Claim 1 and recites “wherein the housing module comprises a first end, a second end, and a body disposed between the first end and the second end; wherein the first end comprises an opening; and wherein the electronics module is configured to be inserted into the opening.” Claim 11 depends from claim 9 and further recites: “wherein the electronics module is located within the body of the housing module.”

Kokonaski-999 discloses the limitations of Claims 9 and 11. For example, as discussed for element 1[a], Kokonaski-999 discloses a frame 102 that includes a front temple with “an area or cavity” (housing module) that houses electronic module 202. *Supra* §XII.A.1. The cavity thus comprises first and second ends at either side along its vertical axis, and a body disposed between the ends such that an electronic module can be placed inside. Kokonaski-999 also discloses that electronic module 202 can be “inserted into the temple of the frame 102.” Ex. 1009 ¶33. It would have been obvious to a POSITA that the electronic module 202 should be inserted via an opening at one of the ends (the first end) to allow electronics module 202 to be inserted into the temple of frame 102. Ex. 1002 ¶201. Claims 9 and 11 are thus obvious.

I. Claim 13

Claim 13 depends from claim 1 and further recites: “wherein the housing module further comprises an aperture disposed on an outer side of the housing module.”

As discussed for element 1[a], electronic module 202 is disposed in a cavity (housing module) in frame 102. *Supra* §XII.A.1. Kokonaski-999 further discloses that “[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.” Ex. 1009 ¶47. Thus, the portion of the frame 102 housing the electronic module 202 comprises an

aperture such that the switch located on the surface of the electronic module 202 is exposed or accessible to a user. Ex. 1002 ¶202. Claim 13 is thus obvious.

J. Claims 14-15

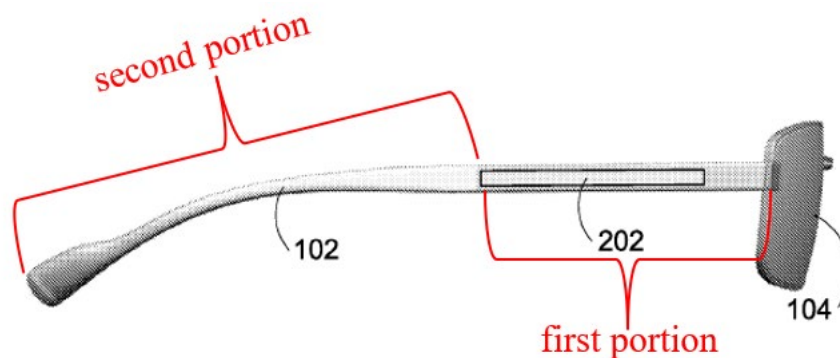
Claim 14 depends from claim 13 and further recites: “wherein the sensing mechanism comprises a touch sensitive switch exposed substantially through the aperture.” Claim 15 depends from claim 14 and further recites: “wherein the touch sensitive switch is a capacitance switch.”

Kokonaski-999 discloses that “the electronic module 202 can include a switch or device to enable a user to interact with the electronic module 202.” Ex. 1009 ¶47. “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.” *Id.* Kokonaski-999 further discloses that “[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.* As discussed for Claim 13, this means that the housing module contains an aperture for the switch. *Supra* §XII.I. Thus, Kokonaski-999 discloses that its capacitive sense pad (sensing mechanism) comprises a switch exposed through its frame aperture, where the switch can be a capacitance switch. Kokonaski-999 thus discloses Claims 14 and 15. Ex. 1002 ¶205.

K. Claims 16-17

Claim 16 depends from claim 1 and further recites: “wherein the structural member comprises the first temple.” Claim 17 depends from claim 16 and further recites: “wherein the first temple comprises a first portion and second portion, and wherein the housing module comprises the first portion of the first temple.”

As shown in Figure 1, Kokonask-999 also discloses that the electronic module 202 is housed within a front temple (first portion) of the frame of electro-active spectacles 100, which is coupled to the remainder of the temple (second portion):



Ex. 1009, Fig. 2, ¶33; *id.*, Fig. 3, ¶37; *supra* §XII.A.1. Claims 16 and 17 are thus obvious. Ex. 1002 ¶206.

L. Claim 18

Claim 18 depends from claim 1 and further recites: “wherein the housing module has a thickness that is less than or equal to approximately 0.7 mm.”

As discussed in Ground 1, Claim 18 adds nothing to Claim 1 other than a range for the thickness of a side of the housing module is the result of routine optimization, not invention. *Supra* §VII.P.

Alternatively, POSITAs would have been long aware that Koknaski-999's cavity within a temple of frame 102 (housing module) should have a thickness that is less than or equal to approximately 0.7 mm. Ex. 1002 ¶208. As discussed in Ground 1, this would have been part of a POSITA's background knowledge because, before the priority date, multiple references disclosed temples whose entire widths were less than approximately 0.7 mm thick. *Supra* §VII.P.

M. Claim 19

1. Preamble

The preamble recites: “A method of fabricating a device.”

Kokonaski-999 discloses methods of fabricating electronic eyeglass frames. Ex. 1002 ¶209. For example, Kokonaski-999 discloses that “[t]he electronic module 202 can be positioned within the frame 102 (e.g., in an area or cavity of the frame 102 The electronic module 202, when inserted into the temple of the frame 102, can be flush with the other portions of the frame 102.” Ex. 1009 ¶33. Kokonaski-999 also describes steps for making the electronic eyeglass frames. *See, e.g., id.* ¶32 (“[The electrical] components can be grouped together[.]”); Fig. 8, ¶68 (“[T]he frame 700 can be assembled by connecting the upper conducting member 712, the

insulating member 715 and the lower conducting member 714 to the upper rim portion 702 and the lower rim portion 704.”).

2. **19[a][1]: device comprises a frame having first and second temples**

Claim element 19[a][1] recites: “wherein the device comprises a frame having a first temple and second temple.” As discussed for element 1[a], Kokonaski-999 discloses this limitation. *Supra* §XII.A.1.

3. **19[a][2]: device comprises a housing module that comprises first and second ends, wherein the first end comprises an opening; housing module comprises a body between first and second ends, wherein the body comprises a cavity**

Claim element 19[a][2] recites: wherein the device comprises “a housing module comprising: a first end and a second end, wherein the first end comprises an opening; and a body disposed between the first and second end, wherein the body comprises a cavity.” As discussed for claim 9, Kokonaski-999 discloses and renders obvious this limitation. *Supra* §XII.H.

4. **19[b]: inserting an electronics module into the opening of the first end of the housing module such that the electronics module is disposed in the cavity**

Claim element 19[b] recites: “wherein the method comprises inserting an electronics module into the opening of the first end of the housing module such that the electronics module is disposed in the cavity of the body of the housing module.”

As discussed for Claims 9 and 11, this limitation is obvious over Kokonaski-999.
Supra §XII.H.

XIII. SECONDARY CONSIDERATIONS

Secondary considerations should be considered but do not control the obviousness conclusion. *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988). Where, as here, a strong *prima facie* obviousness showing exists, even relevant secondary considerations supported by substantial evidence may not dislodge the obviousness conclusion. *Leapfrog Enters. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007). Petitioner is aware of no evidence supporting a claim for secondary considerations.

XIV. DISCRETIONARY DENIAL UNDER §314(A) IS NOT APPROPRIATE

The Board should decline to exercise its discretion under §314(a). Efficiency, fairness, and the merits support institution despite the existence of co-pending litigation. *Apple v. Fintiv*, IPR2020-00019, Paper 11 (P.T.A.B. Mar. 20, 2020) (“*Fintiv*”). Each *Fintiv* factor is discussed below.

A. Factor 1: Potential Stay

Petitioner will move to stay the Litigation pending resolution of this IPR. The CDCA grants motions to stay pending IPR where, as here, “there is more work ahead of the parties and the Court than behind”; the stay “will simplify the issues in question and the trial of the case”; and there is no undue prejudice. *Polaris*

PowerLED Techs., LLC v. LG Elecs., Inc., No. SACV-20-00125-JVS(DFMx), 2020 WL 6064964, at *2-*3 (C.D. Cal. Aug. 26, 2020). The Court routinely grants such a stay even before an IPR is instituted. *See, e.g., Mediatek, Inc. v. NXP Semiconductors N.V.*, No. CV-21-04969-GW(AFMx), 2022 WL 17185976 (C.D. Cal. June 21, 2022); *MicroPairing Techs. LLC v. Am. Honda Motor Co., Inc.*, No. CV-21-04034-JVS(KESx), 2022 WL 17219084 (C.D. Cal. June 24, 2022); *Hyper Ice, Inc. v. MerchSource, LLC*, No. 8:21-CV-01133-JVS(ADSx), 2022 WL 18542423 (C.D. Cal. March 7, 2022). Accordingly, the likelihood of a stay is high, and this factor weighs against discretionary denial.

B. Factor 2: Proximity of Trial to FWD

The Litigation’s trial is currently scheduled for July 21, 2025. A final written decision in this proceeding would be expected within five months of that date—in December 2025. Furthermore, the Litigation is in its early stages, and, as statistics discussed below suggest, the court may well postpone trial, due to a stay or otherwise. The Director’s June 2022 memorandum counsels against relying on scheduled trial dates. Memo² 8.

In 2023, over 17,000 new cases were filed in the Central District, resulting in 622 new cases per authorized judgeship, *not accounting for vacancies*. Ex. 1016. In

² https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

2023, the median time to trial for civil cases in the Central District was 29.7 months from filing. *Id.* Applying that median time to the Litigation, which was filed at the end of October 2023, would put trial in April 2026—four months *after* the expected final written decision in this case. Accordingly, this factor favors institution or is at worst neutral. *Fusion Orthopedics, LLC v. Extremity Med., LLC*, IPR2023-00894, Paper 15 at 30 (P.T.A.B. Nov. 17, 2023); *Samsung Elecs. Co. v. DoDots Licensing Sols. LLC*, IPR2023-00621, Paper 9 at 11 (P.T.A.B. Oct. 11, 2023).

C. Factor 3: Investment in Parallel Proceeding

Patent Owner filed its complaint on Oct. 26, 2023, and Petitioner filed a Motion to Dismiss on Jan. 22, 2024. Aside from the pleadings, the parties have invested very little in the Litigation. Fact discovery remains in its infancy, as no depositions have been taken. The parties have not proposed claim constructions or submitted claim construction briefs. No expert reports have been served. Accordingly, the “remaining investment” outweighs any investments made and this factor weighs against discretionary denial. *Samsung Elecs. Am. Inc. v. Snik LLC*, IPR2020-01428, Paper 10 at 11 (P.T.A.B. Mar. 9, 2021); *Huawei Techs. Co. v. WSOU Invs., LLC*, IPR2021-00226, Paper 10 at 13-14 (P.T.A.B. June 10, 2021).

D. Factor 4: Overlapping Issues

Petitioner hereby stipulates that, if the Board institutes review, Petitioner will not pursue in the Litigation invalidity of the '541 patent based on any ground

Petitioner raised or reasonably could have raised in this petition. This stipulation resolves *Fintiv* factor 4 strongly in favor of institution. *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 18–19 (Dec. 1, 2020) (precedential as to § II.A). The Director’s June 2022 memorandum states that, when a petitioner so stipulates, “the PTAB will not discretionarily deny institution” due to parallel litigation. Memo³ 8.

E. Factor 5: The Parties

The parties are the same, but due to the likelihood of a stay, the Litigation is unlikely to go to trial before a final written decision. This factor is neutral. *Google LLC v. Jawbone Innovations, LLC*, IPR2022-00630, Paper 10 at 14 (PTAB Sept. 13, 2022) (note: Paper 10 is captioned with Samsung as petitioner).

F. Factor 6: Other Circumstances

The PTO did not substantively discuss the prior art cited here other than Kokonaski-166. The PTO did not substantively discuss Kokonaski-166 in further view of Howell-158. Nor has any of the prior art cited here been considered by a court or jury. The petition’s merits are particularly strong, which favors institution. *Fintiv*, IPR2020-00019, Paper 11 at 18.

Accordingly, the *Fintiv* analysis favors institution.

³ https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

XV. DISCRETIONARY DENIAL UNDER §325(D) IS NOT APPROPRIATE

The Office has not previously substantively addressed “the same or substantially the same prior art or arguments.” 35 U.S.C. §325(d). Here, the PTO has never evaluated the ’541 patent against the combinations of prior art asserted.

Advanced Bionics Prong 1; Becton, Dickinson Factors (a), (b), and (d). Neither Howell-596 or Hattori-913 were ever before the examiner. Ex. 1003. Moreover, while the applicant disclosed Howell-158 and Kokonaski-999, the PTO examiner never relied on those references or discussed them. “As clarified in the Notice of Proposed Rule Making,” the Board has explained, “mere prior citation of prior art in an IDS will not automatically satisfy the first prong of the analytical framework set forth in *Advanced Bionics*.” *JUUL Labs, Inc. v. NJOY, LLC*, IPR2024-00160, Paper 10 at 11–12 (PTAB May 24, 2024) (citing 89 FR 28693, 28702 (Apr. 19, 2024)).

Importantly, the examiner did not include Howell-158 or Howell-596 in discussion of Kokonaski-166. After issuing a first office action rejecting applicant’s claims over Kokonaski-166, the examiner allowed amended claims based on applicant’s argument that the claimed “insulating layer between electronic components and frame” was not “necessarily present” in Kokonaski-166. Ex. 1003, 76-81 (office action); *id.*, 65-66 (reply to office action); *id.*, 37 (notice of allowance). But Howell-158 explicitly discloses that purportedly missing limitation. For

example, Howell-158 discloses an “insulating layer between the electrical components or circuit board and the metallic frames.” Ex. 1006 ¶53; *supra* §VII.A.4. Moreover, Howell-596 renders the purportedly missing limitation obvious. For example, Howell-596 discloses a “module housing 1700” that “protects the module” which contains electronics such as a “printed circuit board” having “integrated circuits.” Ex. 1004 ¶¶184, 195; *supra* §IX.A.4.

At a minimum, Howell-158 and Howell-596 thus represent new, noncumulative prior art. *Oticon Medical AB v. Cochlear Limited*, IPR2019-00975, Paper 15 at 20 (October 16, 2019) (precedential as to §§ II.B, II.C). Grounds 1–4 in this petition rely on Howell-158 or Howell-596 for the insulating layer between electronic components and frame, and thus none of those grounds has ever been before the PTO.

Hattori-913 also represents new, noncumulative prior art. Hattori-913 was never before the examiner, and the examiner allowed claim 17 reciting a two-portion temple as disclosed in Hattori-913. *See supra* §VII.O.

Kokonaski-999 also represents new, noncumulative prior art. The examiner did not discuss Kokonaski-999, which is a separate and distinct disclosure from Kokonaski-166, including having a separate and distinct specification, drawings, and claims. *Compare* Ex. 1008 *with* Ex. 1009.

The first prong of *Advanced Bionics* is therefore unmet, and the Board “need not address the second part.” *JUUL*, Paper 10 at 13; *Quasar Sci. LLC v. Colt Int’l Clothing, Inc.*, IPR2023-00611, Paper 10 at 12 (PTAB Oct. 10, 2023) (even where some petition references were listed in IDS, the asserted art was “not ‘the same prior art’” presented in original examination where petition relied on additional references the Office had not considered).

Advanced Bionics Prong 2; Becton, Dickinson Factors (c), (e), and (f). The applicant listed Howell-158 and Kokonaski-999 in a 4-page IDS with over 75 references. Ex. 1003, 475-78 (IDS). The examiner did not consider Howell-596 or Hattori-913 and never discussed Howell-158 or Kokonaski-999. Ex. 1003. *Becton, Dickinson* factor (c) thus weighs heavily against denial.

The examiner allowed the claims based on applicant’s argument that an “insulating layer between electronic components and frame” was not “necessarily present” in Kokonaski-166. Ex. 1003, 65-66 (reply to office action); *id.*, 37 (notice of allowance). But Howell-158 explicitly discloses, and Howell-596 renders obvious, that purportedly missing limitation. Ex. 1006 ¶53; Ex. 1004 ¶¶184, 195; *supra* §§ VII.A.4, IX.A.4. Accordingly, as shown in Grounds 1–4, the examiner erred in concluding the claims were patentable. *Quasar*, Paper 10 at 14 (when examiner did not address prior art apart from initialing IDS, “petitioner may show

material error by showing that the Office failed to reject the claims over the asserted art”).

In providing reasons for allowance, the examiner cited only to the “reasons set forth” in the applicant’s argument. Ex. 1003, 37. The examiner thus failed to appreciate the teachings of Howell-596, Howell-158, Hattori-913, or Kokonaski-999, which applicant’s argument did not discuss. *Id.*, 65-66. Likewise, the examiner did not have the benefit of Mr. Feland’s expert testimony.

In short, the grounds presented here are not cumulative of the grounds substantively addressed during examination. The Board should not deny institution under § 325(d). *Oticon*, Paper 15 at 20; *Quasar*, Paper 10 at 14.

XVI. MANDATORY NOTICES, GROUNDS FOR STANDING, AND FEE PAYMENT

A. Real Parties-In-Interest (37 C.F.R. §42.8(b)(1))

Luxottica of America Inc. and Luxottica Group S.p.A. are the real parties in interest for Petitioner. The parent company of each party identified above is EssilorLuxottica S.A.

B. Related Matters (37 C.F.R. §42.8(b)(2))

The parties are currently engaged in district court litigation in *e-Vision Optics, LLC et al. v. Luxottica Group S.p.A. et al.*, No. 8:23-cv-02013 (C.D. Cal.). The ’541 patent is asserted in the Litigation.

Patent Owner also asserted the ’541 patent in the following cases:

e-Vision, LLC v. Seiko Epson Corp. et al., No. 8:23-cv-01858 (C.D. Cal.);

e-Vision, LLC et al. v. Lenovo Group Ltd. et al., No. 8:23-cv-01860 (C.D. Cal.).

C. Lead and Backup Counsel (37 C.F.R. §42.8(b)(3))

Petitioner provides the following designation of counsel, all of whom are included in Customer No. 20,995 identified in Petitioner's Power of Attorney.

Lead Counsel	Back-up Counsel
Ali S. Razai (Reg. No. 60,771) 2AZR@knobbe.com Knobbe, Martens, Olson, & Bear, LLP <u>Postal and Hand-Delivery Address:</u> 2040 Main St., 14 th Floor Irvine, CA 92614 Telephone: 949-760-0404 Facsimile: 949-760-9502	Joseph F. Jennings (Reg. No. 40,664) 2JFJ@knobbe.com Justin J. Gillett (Reg. No. 71,099) 2JJG@knobbe.com Knobbe, Martens, Olson, & Bear, LLP <u>Postal and Hand-Delivery Address:</u> 2040 Main St., 14 th Floor Irvine, CA 92614 Telephone: 949-760-0404 Facsimile: 949-760-9502 Jacob L. Peterson (Reg. No. 65,096) 2JUP@knobbe.com Knobbe, Martens, Olson, & Bear, LLP <u>Postal and Hand-Delivery Address:</u> 925 4th Ave. Ste. 2500 Seattle, WA 98104 Telephone: (206) 405-2000 Facsimile: (206) 405-2001

D. Service Information (37 C.F.R. §42.8(b)(4))

Please direct all correspondence to lead counsel and back-up counsel at the addresses shown above. Petitioner also consents to electronic service by email to luxotticalPR-541@knobbe.com.

E. Standing

The '541 patent is available for IPR, and no bar or estoppel applies. PO filed the Litigation in October 2023 and served the complaint subsequently.

The Office may charge any fees due to Deposit Account 11-1410.

XVII. CONCLUSION

Petitioner respectfully requests that the Board institute IPR and cancel all claims of the '541 patent.

Dated: June 20, 2024

By: /Ali S. Razai/

Ali S. Razai (Reg. No. 60,771)

KNOBBE, MARTENS, OLSON & BEAR, LLP

Attorney for Petitioner Luxottica of America Inc.

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. §42.24(d), the undersigned certifies that this PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,905,541 contains 13,892 words according to the word-processing program used to prepare this paper. The foregoing word count complies with the 14,000-word type-volume limit specified by 37 C.F.R. § 42.24(a)(1).

Dated: June 20, 2024

By: /Ali S. Razai /
Ali S. Razai (Reg. No. 60,771)
KNOBBE, MARTENS, OLSON & BEAR, LLP

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the date below copies of this PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,905,541, PETITIONER’S POWER OF ATTORNEY, and EXHIBITS 1001-1016, are being served by FedEx on the Patent Owner at the correspondence address of record for the subject patent as follows:

Cooley LLP
ATTN: IP Docketing Department
1299 Pennsylvania Avenue, NW Suite 700
Washington, DC 20004

A courtesy copy is being sent by email on this day to Patent Owner’s counsel of record in the Litigation as follows:

Christopher C. Campbell
ccampbell@kslaw.com
King & Spalding LLP
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