

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.;
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner

v.

OURARING, INC.
Patent Owner.

Case No. IPR2025-00147
U.S. Patent No. 11,188,124

PETITIONER'S NOTICE OF APPEAL

Pursuant to 37 C.F.R. § 90.2(a) and 35 U.S.C. § 142, Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (together, “Samsung” or “Petitioner”) hereby give notice that they appeal the Patent Trial and Appeal Board’s (“Board’s”) Final Written Decision, entered on July 10, 2026 (Paper No. 44) in the above-captioned *inter partes* review of United States Patent No. 11,188,124 (“the ’124 Patent”) to the United States Court of Appeals for the Federal Circuit, including all underlying orders, decisions, rulings, and opinions that are adverse to Petitioner.

For the limited purpose of providing the Director with the information requested in 37 C.F.R. § 90.2(a)(3)(ii), Petitioner’s issues on appeal may include, but are not limited to: (1) the Board’s determinations and applications of any express or implied constructions for the claim terms at issue to the prior art of record; (2) the Board’s determination of patentability of claims 1, 2, 4, 5, 8–11, 14, 16, 18, and 19 of the ’124 Patent under 35 U.S.C. § 103 in view of Mestas and Schröder; (3) the Board’s determination of patentability of claims 3, 6, 12, 13, 15, 17, and 20 of the ’124 Patent under 35 U.S.C. § 103 in view of Mestas, Schröder, and Yuen; (4) the Board’s determination of patentability of claims 1–6, and 8–20 of the ’124 Patent under 35 U.S.C. § 103 in view of Yuen, Schröder, and Mestas; (5) the Board’s treatment of arguments relating to objective indicia of non-obviousness; (6) the Board’s characterization of Petitioner’s expert’s

testimony regarding the state of the art, including of batteries; (7) the Board's legal errors in undertaking its obviousness analyses and application of the claim language to the prior art of record; (8) the Board's findings that conflict with the evidence of record and are not supported by substantial evidence; and (9) findings or determinations supporting or related to the aforementioned issues as well as all other issues decided adversely to Petitioner in any orders, decisions, rulings, phone conference decisions, and/or opinions.

Simultaneously with this submission, Petitioner is mailing a true and correct copy of this Notice of Appeal to the Director of the United States Patent and Trademark Office, and filing a true and correct copy of the same, along with the required docketing fee, with the Clerk of the United States Court of Appeals for the Federal Circuit.

Respectfully submitted,

/s/ William M. Fink

William M. Fink (Reg. No. 72,332)

CERTIFICATE OF SERVICE

In accordance with 37 C.F.R. § 90.2(a)(1) and § 104.2, I hereby certify that on July 22, 2026, in addition to being filed electronically through the Board's P-TACTS System, a true and correct copy of the foregoing PETITIONER'S NOTICE OF APPEAL was served by express overnight mail on the Director of the United States Patent and Trademark office, at the following address:

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
P.O. Box 1450
Alexandria, Virginia 22313-1450

CERTIFICATE OF SERVICE

I hereby certify that on July 22, 2026, a true and correct copy of the foregoing PETITIONER'S NOTICE OF APPEAL, along with a copy of the Final Written Decision, was filed electronically with the Clerk's Office of the United States Court of Appeals for the Federal Circuit, at the following address:

United States Court of Appeals for the Federal Circuit
717 Madison Place, N.W., Suite 401
Washington DC 20005

CERTIFICATE OF SERVICE

I hereby certify that on July 22, 2026, I caused a true and correct copy of the foregoing PETITIONER'S NOTICE OF APPEAL to be served electronically on counsel for Patent Owner at the following addresses:

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Dated: July 22, 2026

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FINAL WRITTEN DECISION

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD., and
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner,

v.

OURARING, INC.,
Patent Owner.

IPR2025-00147
Patent 11,188,124 B2

Before LINDA E. HORNER, NEIL T. POWELL, and
MICHAEL A. VALEK, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 328(a)
Granting Patent Owner's Motions to Seal
37 C.F.R. §§ 42.14, 42.54

I. INTRODUCTION

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, “Petitioner”) filed a Petition (Paper 3, “Pet.”), seeking *inter partes* review of claims 1–6 and 8–20 of U.S. Patent No. 11,188,124 B2 (Ex. 1001, “the ’124 patent”). Ouraring, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 10. We instituted trial on challenged claims 1–6 and 8–20 on all of the grounds in the Petition. Paper 11, 35 (“Dec.”).

Patent Owner subsequently filed its Response to the Petition (Paper 20, “Resp.” (sealed); Paper 21, “Resp.” (redacted)), Petitioner filed its Reply (Paper 24, “Reply” (redacted); Paper 25, “Reply” (sealed)), and Patent Owner filed its Sur-reply (Paper 30, “Sur-reply” (redacted); Paper 31, “Sur-reply” (sealed)). We held a hearing on May 13, 2026, and a transcript is of record. Paper 41 (redacted) (“Tr.”); Paper 43 (sealed) (“Confidential Tr.”).

After considering the parties’ arguments and evidence, we find that Petitioner has not shown that challenged claims 1–6 and 8–20 are unpatentable. *See* 35 U.S.C. § 326(e). Our reasoning is explained below.

II. BACKGROUND

A. Real Parties in Interest

Petitioner identifies Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. as the real parties-in-interest. Pet. 1. Patent Owner identifies Oura Health Oy and Ouraring, Inc. as the real parties-in-interest. Paper 4, 1 (Patent Owner’s Mandatory Notices).

B. Related Matters

The parties identify the following related matter involving the '124 patent: *Ouraring Inc. v. RingConn, LLC*, No. 1:24-cv-01020 (D. Del.). Pet. 1; Paper 4, 1.

Petitioner identifies that it has challenged the following additional patents, “all directed to wearable electronic devices.” Pet. 1.

U.S. Patent No.	Case No(s).
9,582,034	IPR2024-00928
10,139,859	IPR2024-01077
10,281,953	IPR2024-01078 IPR2024-01079
10,842,429	IPR2024-01080
10,893,833	IPR2024-00929
11,599,147	IPR2024-00930
11,868,178 ¹	PGR2024-00030
11,868,179	PGR2024-00031
11,874,701	PGR2024-00038
11,874,702	PGR2024-00039

The Board denied institution in IPR2024-00929, IPR2024-00930, IPR2024-01079, IPR2024-01080, PGR2024-00031, and PGR2024-00038

¹ The '178 patent was also challenged by RingConn LLC in PGR2025-00018 and IPR2025-00412 and by Ultrahuman Healthcare Pvt. Ltd. *et al.* in IPR2025-00411. The Acting Director discretionarily denied these petitions on June 25, 2025.

due to statutory disclaimer by the Patent Owner of all the challenged claims. The Board instituted and issued final written decisions on the remaining petitions: IPR2024-00928, IPR2024-01077, IPR2024-01078, PGR2024-00030, and PGR2024-00039. Petitioner also notes that the '124 patent belongs to the same family as the '034, '859, '953, '147, '178, '179, '701, and '702 patents. *Id.*

C. The '124 Patent

The '124 patent is titled “Wearable Computing Device” and was issued November 30, 2021, based on an application filed September 4, 2020, that asserts the benefit of a series of provisional and nonprovisional applications, the earliest of which was filed November 29, 2013. Ex. 1001, codes (22), (45), (54), (60).

The '124 patent discloses a wearable computing device (“WCD”) in the shape of a ring that can be worn on the finger of a user for extended periods of time, take measurements, and perform various functions. Ex. 1001, 1:39–44.

Figures 1A and 1B of the '124 patent are reproduced below.

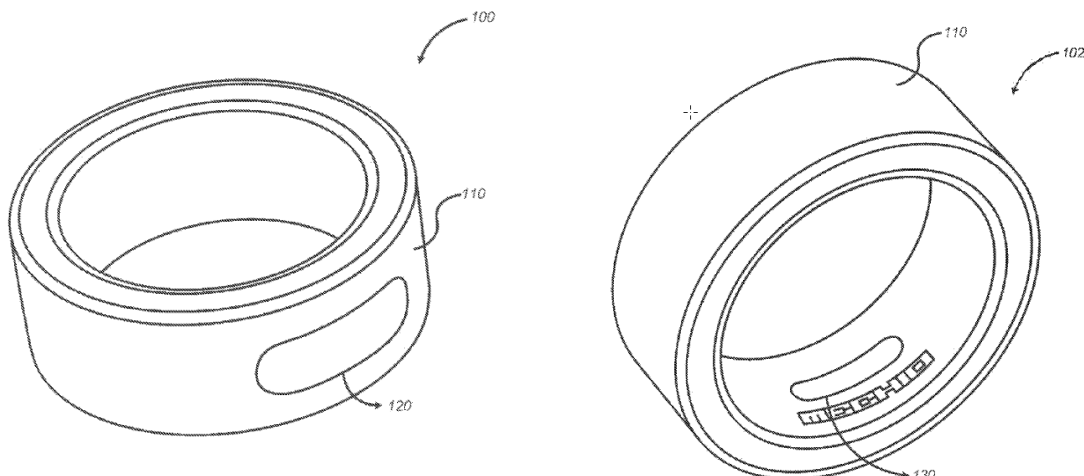


FIG. 1A

FIG. 1B

Figures 1A and 1B are perspective views of WCD 110. Ex. 1001, 4:63–64, 6:47–50. “[T]he WCD 110 can include the exterior window 120 on its exterior wall for input/output data transmission and reception, battery recharge, or status indication. The WCD 110 can also include the interior window 130 on its interior wall for various monitoring or sensing activities.” *Id.* at 7:14–19.

Figure 4 of the '124 patent is reproduced below.

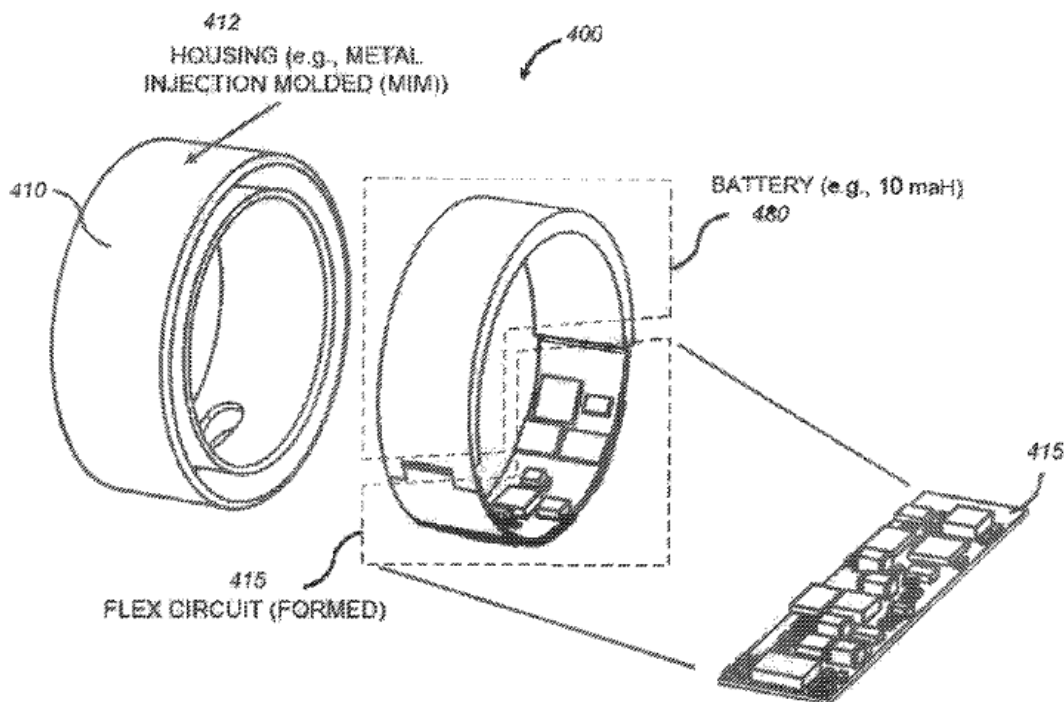


FIG. 4

Figure 4 is an exploded view of WCD 410 illustrating battery 480 and flexible printed circuit board (PCB) 415, which are configured to fit inside the U-shape of ring housing 412 of the WCD. Ex. 1001, 5:4–6, 12:61–64, 13:19–21.

Figure 11 of the '124 Patent is reproduced below.

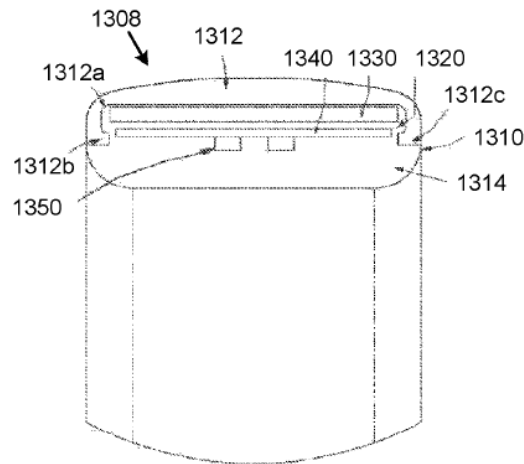


FIG. 11

Figure 11 is a cross section of WCD 1300. Ex. 1001, 15:60. WCD 1300 includes housing 1310 that includes external housing 1312 and internal potting or encapsulant 1314. *Id.* at 15:62–64. External housing 1312 includes internal surface 1312a that has a generally C-shaped cross section. *Id.* at 15:64–66. External housing 1312 includes flanges 1312b–c that extend toward each other, beyond portions of internal surface 1312a to define partially enclosed internal space 1320. *Id.* at 15:67–16:3. WCD 1300 can include battery 1330, PCB 1340, and components 1350, which can be at least partially or completely disposed within partially enclosed internal space 1320. *Id.* at 16:3–7. Internal potting 1314 can extend between flanges 1312b–c and seal partially enclosed internal space 1320, such that the components are encapsulated by internal potting 1314. *Id.* at 16:7–10.

D. Challenged Claims

Petitioner challenges claims 1–6 and 8–20 of the '124 Patent, of which claims 1 and 14 are independent. Claim 1 is illustrative and is

reproduced below with the same bracketed annotations the Petition includes to identify particular limitations.

1[pre]. A wearable computing device configured to be worn around a finger of a wearer, comprising:

[a] an external housing having an outer surface, an interior surface and sidewalls, wherein the interior surface and the sidewalls are characterized by approximately a C-shaped cross section and define an interior space, and wherein the interior space is configured to retain a plurality of components;

wherein the plurality of components comprises:

[b] a curved rechargeable battery disposed within the interior space of the housing, wherein the rechargeable battery is curved to conform to the interior surface;

[c] a printed circuit board disposed within the interior space configured to approximately conform to the interior surface;

[d] one or more sensors disposed upon the printed circuit board, wherein the one or more sensors are selected from a group consisting of: an accelerometer, a gyroscope, and a motion sensor, wherein the one or more sensors are configured to sense physical perturbations and to output sensed data;

[e] a memory disposed upon the printed circuit board, the memory configured to store one or more executable instructions;

[f] a short-range communication module disposed upon the printed circuit board, the short-range communications module configured to communicate a first set of data to a client computing device via a first communications protocol;

[g] a first temperature sensor configured to provide first temperature data associated with a temperature of a wearer of the wearable computing device;

[h] a processor disposed upon the printed circuit board and coupled to the battery, the one or more sensors, the memory, the short-range communication module, and the first temperature sensor, wherein the processor is configured to receive the sensed data, is configured to perform the one or more executable instructions in

response to the sensed data, and is configured to direct the short-range communication module to output data to the client computing device;
and

[i] a potting material disposed in the interior space encapsulating the plurality of components, wherein the potting material forms an interior wall of the wearable computing device, wherein the potting material is substantially transparent to light selected from a group consisting of: visible light, infrared light, and ultraviolet light.

Ex. 1001, 33:39–34:19.

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1, 2, 4, 5, 8–11, 14, 16, 18, 19	103	Mestas ² , Schröder ³
2	3, 6, 12, 13, 15, 17, 20	103	Mestas, Schröder, Yuen ⁴
3	1–6, 8–20	103	Yuen, Schröder, Mestas ⁵

² Ex. 1010, US 2014/0244009 A1, published August 28, 2014 (“Mestas”). Petitioner asserts that Mestas qualifies as prior art under 35 U.S.C. § 102(a)(2) based on its provisional filing date of February 22, 2013. Pet. 9–10.

³ Ex. 1007, US 10,303,867 B2, issued May 28, 2019 (“Schröder”). Petitioner asserts that Schröder qualifies as prior art under 35 U.S.C. § 102(a)(2) based on its foreign priority date of July 25, 2013. Pet. 13.

⁴ Ex. 1006, US 8,954,135 B2, issued February 10, 2015 (“Yuen”). Petitioner asserts that Yuen qualifies as prior art under 35 U.S.C. § 102(a)(2) based on its filing date of June 24, 2013. Pet. 16.

⁵ Patent Owner does not dispute that the references relied upon by Petitioner are prior art to the ’124 patent.

In support of these grounds, Petitioner relies on Declarations from Dr. Brian Anthony submitted with the Petition (Ex. 1002) and Reply (Ex. 1369). Petitioner also cites to a Declaration from Dr. Brian Anthony and a Declaration from Mr. Michael A. M. Davies submitted in related proceedings. Ex. 1079 (Anthony Reply Declaration from IPR2024-01078); Ex. 1080 (Davies Reply Declaration from IPR2024-01079). Patent Owner relies on the Declarations of Dr. Patrick Mercier (Ex. 2018) and Mr. Andrew T. Clarke, CFA (Ex. 2019).

III. ANALYSIS OF THE ASSERTED GROUNDS

A. Legal Standards

Petitioner's asserted grounds of unpatentability are based on obviousness under 35 U.S.C. § 103. Section 103 forbids issuance of a patent when:

the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.

35 U.S.C. § 103 (2024); *see also* *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art at the relevant time would have had:

at least a four-year degree in electrical engineering, mechanical engineering, biomedical engineering, optical engineering, or related field of study, or equivalent experience, and at least two years’ experience in academia or industry studying or developing physiological monitoring devices such as non-invasive biosensors.

Pet. 8 (citing Ex. 1002 ¶ 29). Petitioner also contends that a person of ordinary skill would have been “familiar with, e.g., sensor system design, including inertial and other motion sensor system design, and signal processing” and that “[a] higher level of education or skill might make up for less experience, and vice versa.” *Id.*

Patent Owner agrees with Petitioner’s proposed definition of a person of ordinary skill in the art. Resp. 25.

We adopt this uncontested definition of the level of ordinary skill in the art. This definition is supported by the record and consistent with the disclosure in the '124 patent and the references cited in the Petition.

C. Claim Construction

In an *inter partes* review, claim terms:

shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

37 C.F.R. § 42.100(b).

Petitioner submits that no term requires express construction to resolve this Petition. Pet. 9 (citing Ex. 1002 ¶ 163).

Patent Owner seeks to have us construe the claim term “wearable computing device configured to be worn around a finger of a wearer,” as recited in the preamble of independent claims 1 and 14. Resp. 25–31. Specifically, Patent Owner asserts that a person having ordinary skill in the art in November 2013 “would understand the term to refer to a finger-worn ring wearable computer device.” *Id.* at 25. Patent Owner seeks to have this term construed in light of “Petitioner’s attempt to broaden the term to encompass disclosures like Yuen’s ‘toe band.’” *Id.* at 30.

We need not reach the issue of whether the preamble is limiting for purposes of determining patentability of the challenged claims. Even were we to agree with Patent Owner that the preamble is limiting and the claims are limited to a finger-worn ring wearable computer device, Petitioner has relied on Schröder in each ground to disclose a “wearable computing device

configured to be worn around a finger of a wearer.” Pet. 22 (Ground 1), 45 (Ground 2, relying on Yuen for adding the functionality of light sources with a photodetector, temperature sensors, and varying the sampling frequency of sensor data acquisition), 56 (Ground 3). We agree with Petitioner that Schröder discloses such a device. Thus, no explicit claim construction is necessary for this decision.

D. References Relied Upon

i. Mestas

Mestas discloses a physical activity monitoring method and system. Ex. 1010, code (57).

Figure 1 is reproduced below.

FIG. 1



Figure 1 shows a person utilizing an athletic performance monitoring and feedback system 1. Ex. 1010 ¶¶ 9, 148. System 1 includes wearable device 10 for monitoring the user’s activity. Device 10 includes a sensor such as an accelerometer. *Id.* ¶ 148.

Figure 6 is reproduced below.

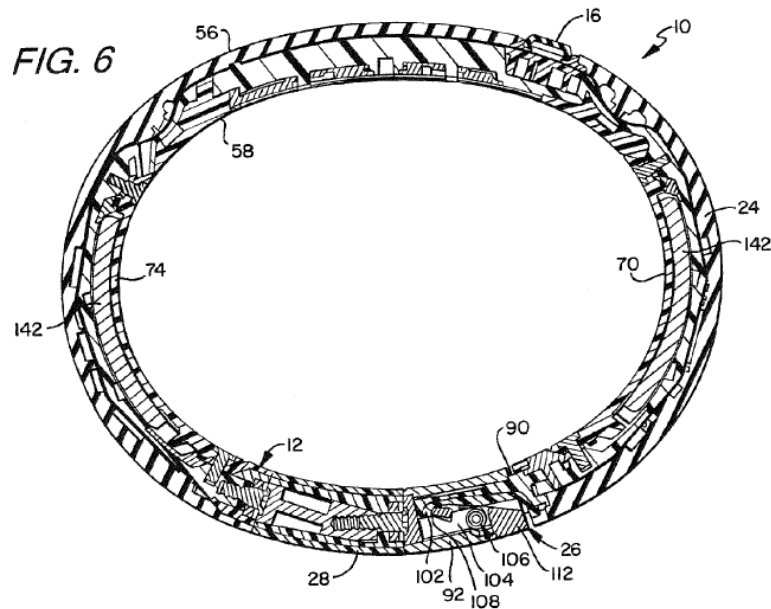
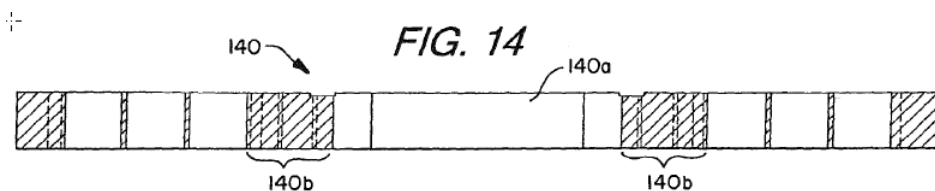


Figure 6 is a cross-section of wearable device 10 including housing 12 in the form of a wearable band such as a wristband. Ex. 1010 ¶¶ 15, 150, 151. Device 10 includes a controller, input button 16, a display, and an indicator system. *Id.* ¶ 150. Housing 12 includes an inner spine member having compartments for power supplies, outer encasement member 24, and fastening mechanism 26. *Id.* ¶ 151. The controller includes batteries 142, which “have a curvilinear or curved configuration.” *Id.* ¶¶ 163, 168. The batteries are contained in a metal enclosure formed by magnesium thixo-molded members 55 and metal battery caps 70, 74. *Id.* ¶ 154, 174, Fig. 7A.

Figures 14, 15, and 16 are reproduced below.



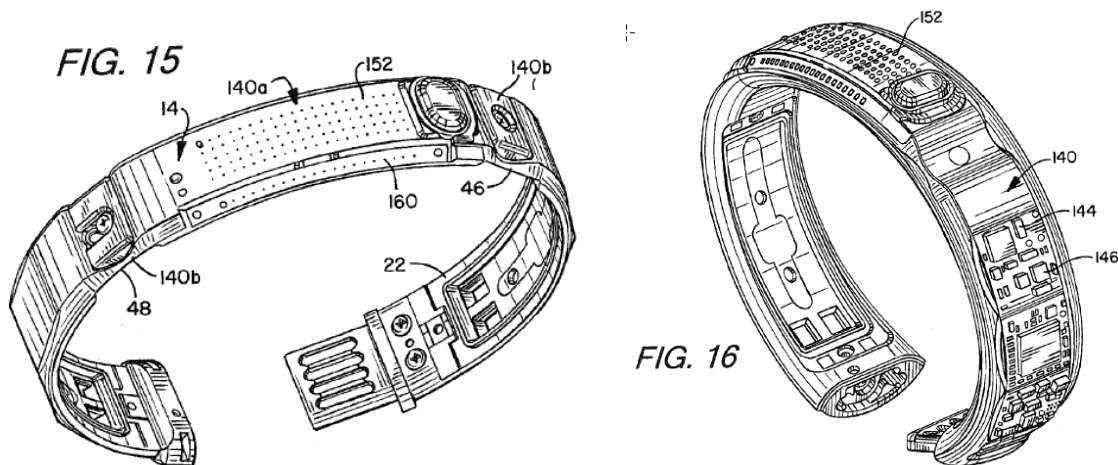


Figure 14 shows flexible PCB member 140, and Figures 15 and 16 show PCB member 140 wrapped around and mounted to spine member 22. Ex. 1010 ¶¶ 25, 26, 164. PCB member 140 is part of controller 14 and supports various components of the controller, including antenna assembly 144, sensor assembly 146, processing units, data storage memory components, and connectors. *Id.* ¶¶ 163, 165.

ii. Schröder

Schröder discloses an external secure unit comprising a memory, a processor, and an interface for sending and receiving data to and from a communication device, such as a smartphone. Ex. 1007, code (57), 1:5–11, 1:42–47, 1:64–67. The external secure unit stores security-relevant data necessary for executing an application program in the communication device. *Id.* at code (57), 1:56–61. A “finger-ring” can be employed as an external secure unit. *Id.* at 1:61–64.

Schröder's Figures 1 and 2 are reproduced below.

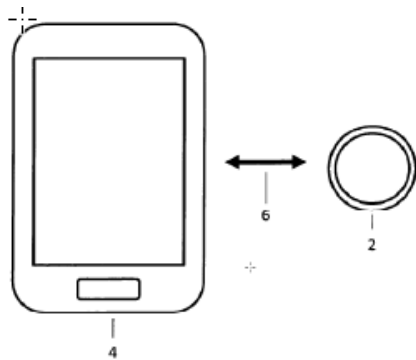


Fig. 1

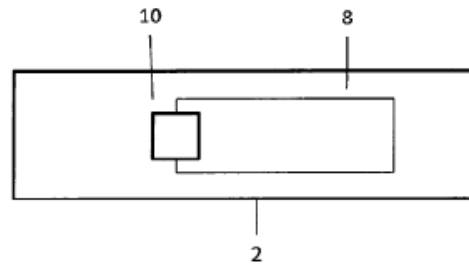


Fig. 2

Figure 1 shows finger-ring 2 as an exemplary external secure unit and smartphone 4 as a communication device, and Figure 2 shows a cross section through finger-ring 2. Ex. 1007, 3:39–44, 3:57–59, 4:58–60.

Schröder discloses a method for authentication by means of finger-ring 2 and smartphone 4. Ex. 1007, 3:59–61. According to Schröder, “[f]inger-ring 2 is worn by a user e.g. permanently on the finger,” which is advantageous as an external secure unit because the ring “cannot be taken away or employed without authorization or get lost.” *Id.* at 3:61–62, 4:16–18. Finger-ring 2 and smartphone 4 are interconnected via contactless communication connection 6, e.g., an NFC (near field communication) connection. *Id.* at 3:64–66, 4:18–22. All security-relevant data necessary for executing applications on smartphone 4, such as email, Facebook, and banking, are stored only on finger-ring 2, not on the smartphone. *Id.* at 4:3–5, 4:10–15.

Schröder's Figure 2 is reproduced below.

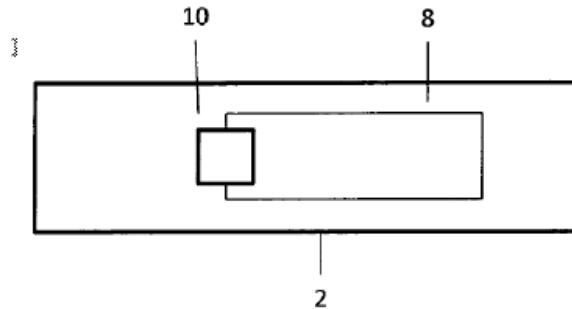


Fig. 2

Figure 2 shows a cross section through finger-ring 2 as an example of an external secure unit. *Id.* at 4:58–60. “In the finger-ring 2 are located an antenna coil 8 and a chip or chip module 10, which are schematically indicated” and used to communicate with an NFC reader, such as an RFID (radio frequency identification) reader. *Id.* at 4:60–62, 5:12–18, 5:49–53.

Schröder's Figure 3 is reproduced below.

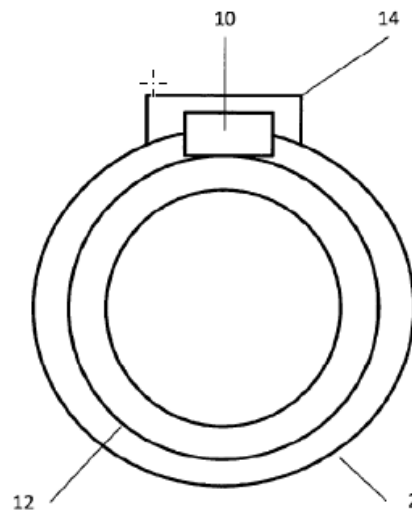


Fig. 3

Figure 3 shows a cross section through an external secure unit in the form of finger-ring 2 with a replaceable chip module 10. Ex. 1007, 3:45–46,

8:54–56. Inlay 12 is inside finger-ring 2 and serves as a carrier for antenna coil 8. *Id.* at 8:56–58. As shown in Figure 3, chip module 10 is inserted into a recess of finger-ring 2. *Id.* at 8:58–59. Chip module 10 is protected by cover 14, which has a hinged or threaded connection to the finger-ring 2. *Id.* at 8:60–63. Chip module 10 is electroconductively connected to antenna coil 8 on inlay 12. *Id.* at 8:63–66. “Advantageously, the chip module 10 is located in a module holder, in order that the contacts of the chip module 10 are properly interconnected to the contacts of a corresponding antenna coil 8.” *Id.* at 9:4–7. According to Schröder, the chip module 10 in Figure 3 is “arranged in particular replaceably,” but “[a]lternatively, the chip module 10 can . . . be firmly connected to the finger-ring 2.” *Id.* at 9:1–4; *see also id.* at 9:13–15 (“Alternatively, it is possible to connect the chip module 10 permanently to the contacts of the inlay 12, e.g. by soldering, crimping, gluing, etc.”).

In a “further embodiment example,” Schröder describes external secure unit 2 as having “an energy storage device, e.g., an accumulator or a battery” that is “connected to the chip module 10.” Ex. 1007, 11:46–67.

Schröder also discloses “possible construction variants” of a finger-ring 2 in reference to Figures 4 to 10. Ex. 1001, 12:1–3. Schröder’s Figures 4 and 5 are reproduced below.

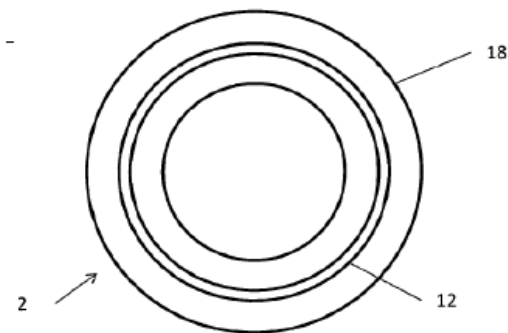


Fig. 4

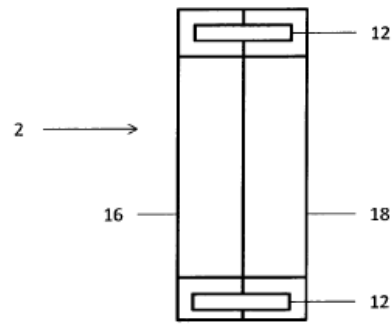


Fig. 5

Figure 4 shows a longitudinal cross-section through finger-ring 2 as an exemplary external unit, and Figure 5 shows a cross-section of the finger-ring of Figure 4. Ex. 1007, 3:46–50, 12:4–7. Figure 4 shows one half 18 of finger-ring 2, and Figure 5 shows two ring halves 16 and 18. *Id.* at 12:5–8. As shown in Figures 4 and 5, ring halves 16 and 18 have a recess into which inlay 12 is inserted. *Id.* at 12:8–9. Components 16 and 18 of finger-ring 2 are interconnected in such a way that the connection can be undone in order to insert or exchange inlay 12. *Id.* at 12:20–26. Inlay 12 consists of a flexible carrier material, with antenna coil 8 and chip module 10 connected to each other on the inlay. *Id.* at 12:28–32.

Schröder's Figures 6 to 10 are reproduced below.

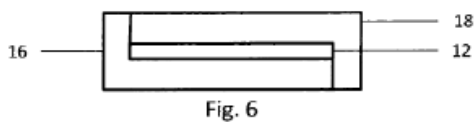


Fig. 6

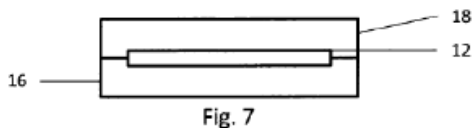


Fig. 7

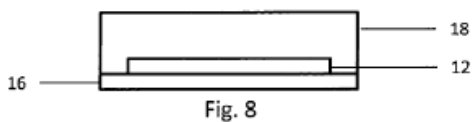


Fig. 8



Fig. 9

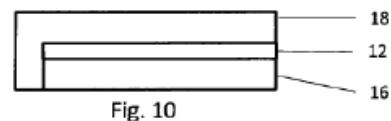


Fig. 10

Figures 6 to 10 show different cross sections through a finger-ring, which along with Figures 4 and 5, show “possible construction variants of external secure unit 2 in the form of finger-ring 2.” Ex. 1007, 12:1–3; *see also id.* at 3:51–52, 12:43–45 (describing Figures 6–10). In Figures 6 to 10, finger-ring 2 has ring-shaped components 16 and 18, with inlay 12 arranged between the components. *Id.* at 12:43–55.

According to Schröder, “inlay 12 can have at least one chip module 10 with at least one antenna coil 8, with at least one further electronic device, e.g. a display, optionally being arranged on the inlay 12.” Ex. 1007, 12:61–65.

iii. Yuen

Yuen discloses a portable biometric monitoring device having a physical size and shape adapted to couple to the user’s body. Ex. 1006, codes (54), (57). The device includes a housing, a band to secure the monitoring device to the user’s body, and a physiological sensor within the housing. *Id.* at code (57). The sensor generates data representative of a physiological condition, such as the user’s heart rate. *Id.*

Figure 3 is reproduced below.

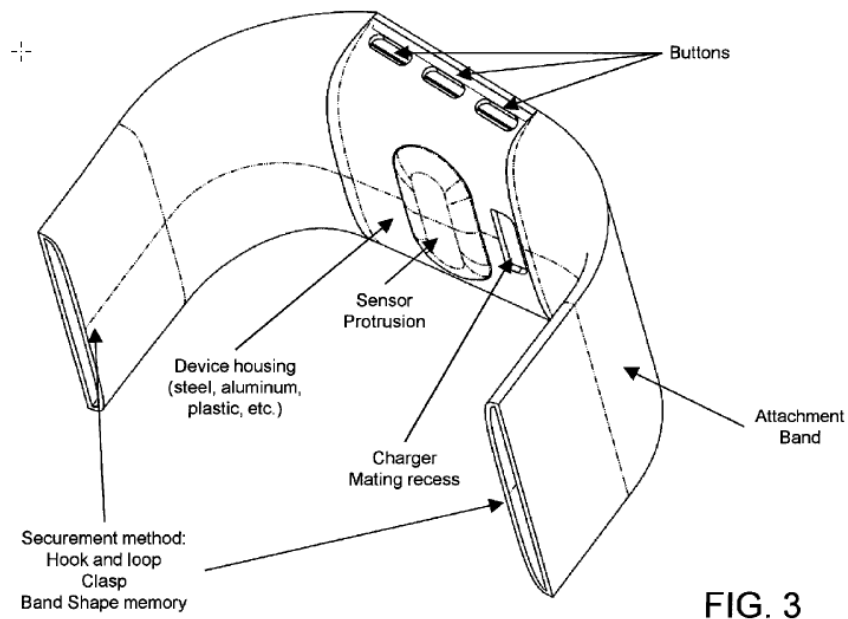


Figure 3 shows a portable biometric monitoring device, including an attachment band, a device housing, a sensor protrusion, and a recess for mating a charger and/or data transmission cable. Ex. 1006, 2:18–22, Fig. 3. According to Yuen, the protrusion firmly maintains the sensor in contact with the skin of the user. *Id.* at 2:22–25.

Figure 5 shows the sensor protrusion and is reproduced below.

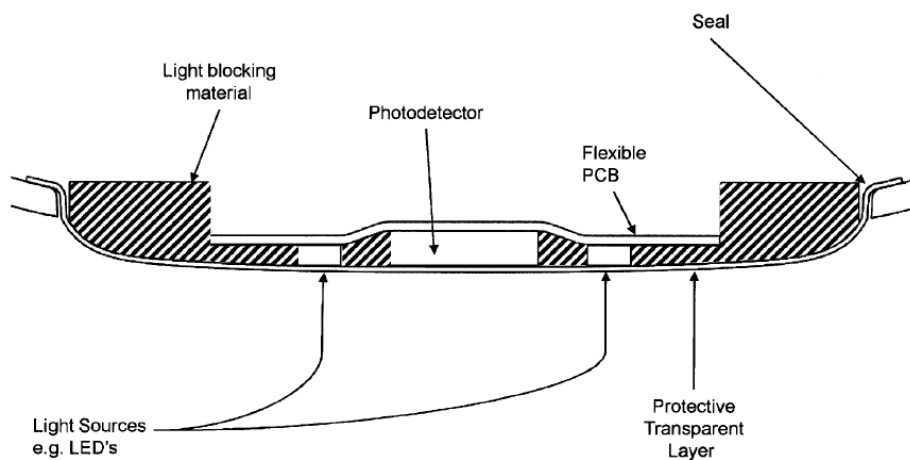


Figure 5 shows a cross section of a sensor protrusion of a portable biometric monitoring device, including light sources and a photodetector mounted on a flexible PCB. Ex. 1006, 2:29–39.

Yuen also discloses embodiments where the sensor does not protrude as it does in Figures 3 and 5. One such example is shown in Figure 7, which is reproduced below.

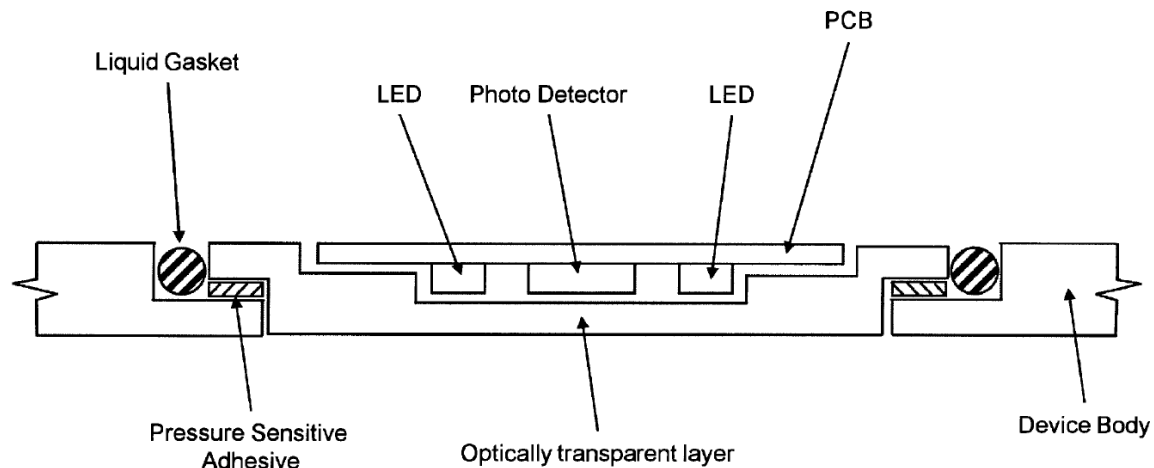


FIG. 7

Figure 7 shows a cross section of a photoplethysmography (PPG) sensor that sits flush to the surface of and does not protrude from the device body of the biometric monitoring device. Ex. 1006, 2:52–56, 14:59–66. The PPG sensor includes a gasket and/or a pressure sensitive adhesive to resist, inhibit, and/or prevent liquid from entering the body of the device. *Id.* at 2:52–56.

Yuen discloses that a user may wear the biometric monitoring device “on their wrist or ankle (or arm or leg)” and further discloses that “[t]he biometric monitoring device . . . may also be integrated and worn in a necklace, chest band, bra, patch, glasses, earring, or toe band.” Ex. 1006, 24:4–6, 24:35–37.

E. Ground 1: Obviousness over Mestas in view of Schröder

Petitioner contends claims 1, 2, 4, 5, 8–11, 14, 16, 18, and 19 would have been obvious over Mestas in view of Schröder. *See* Pet. 18–44.

Patent Owner contests Petitioner’s motivation to combine these references and the proposed combination. Resp. 16–18, 31–42. Patent Owner also contends that, even if combined, Mestas in view of Schröder does not disclose or suggest the external housing limitation (element 1[a]/14[a]), the curved rechargeable battery limitation (element 1[b]/14[b]), the printed circuit board limitation (element 1[c]/14[c]), and the potting material limitation (element 1[i]/14[i]) of independent claims 1 and 14. *Id.* at 43–62. Patent Owner also contends that the combination of Mestas and Schröder does not enable the claimed invention. *Id.* at 70–72.

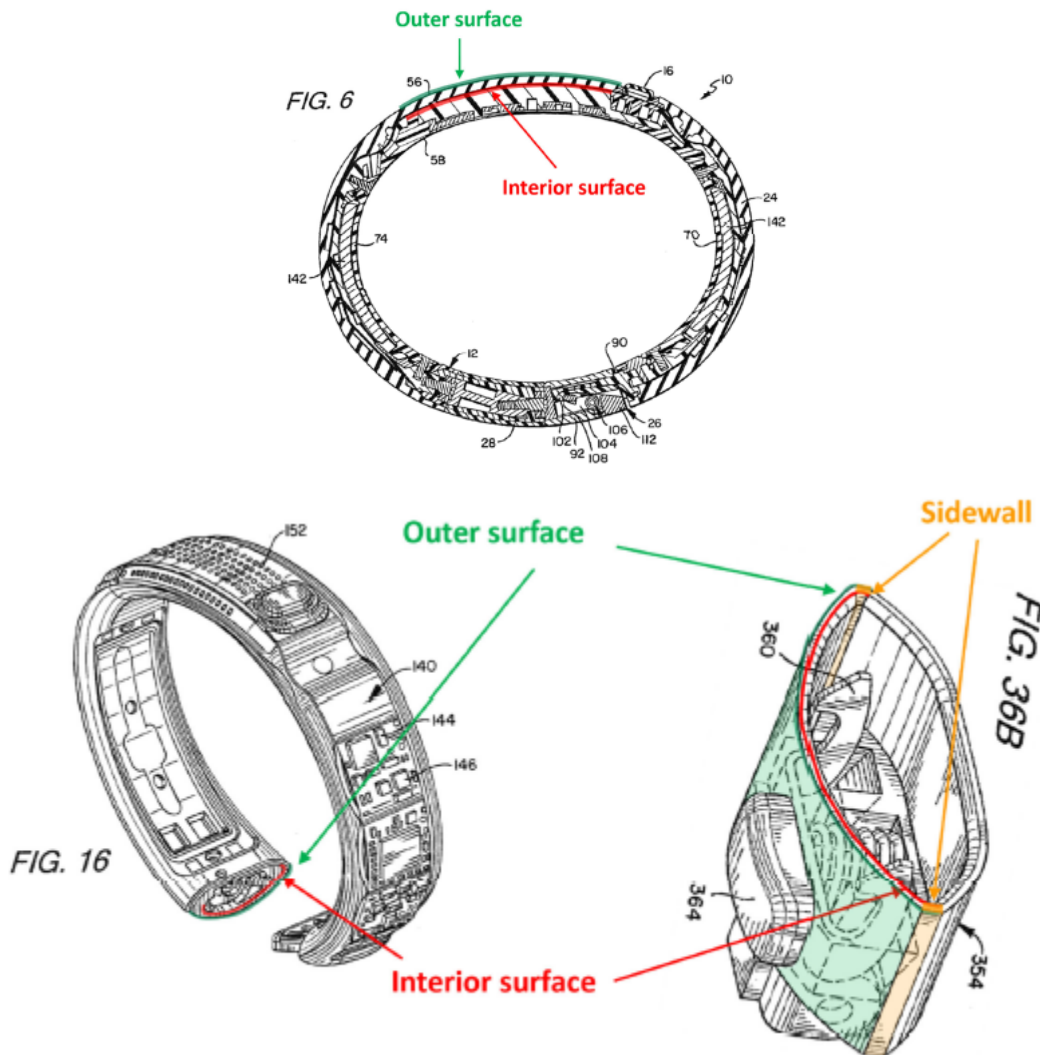
Patent Owner relies on these same arguments to rebut Petitioner’s assertions of unpatentability of dependent claims 2, 4, 5, 8–11, 16, 18, and 19. *Id.* at 69. Patent Owner also raises additional arguments for claims 8, 10, and 14. *Id.* at 62–69. We address Petitioner’s challenges below.

i. Claims 1 and 14

1. Petitioner’s Mapping of the Claimed External Housing to Mestas (element 1[a]/14[a])

By way of background, we discuss below Petitioner’s mapping of the “external housing” of claims 1 and 14 to Mestas. Petitioner asserts that Mestas teaches the claimed “external housing” having “an outer surface,” and “interior surface,” and “sidewalls” where the interior surface and sidewalls (claim 1) or the external housing (claim 14) is characterized by approximately a C-shaped cross section to define an “interior space” that “is

configured to store a plurality of components.” Pet. 22–25. To illustrate its position, Petitioner presents annotated versions of Mestas’s Figures 6, 16, and 36B, reproduced below. *Id.* at 24–25.



Mestas’s Figure 6 shows a schematic cross-sectional view of a wearable device assembly, Figure 16 shows a perspective view of a spine member having certain components of the device attached thereto, and Figure 36B is a view of an alternative embodiment of a latch mechanism (i.e., receiver member 354) of the device. Ex. 1010 ¶¶ 15, 26, 45, 196. Petitioner highlights and labels the portions of these figures to map them to an “outer

surface,” an “interior surface,” and a “sidewall” of claim elements 1[a] and 14[a]. Pet. 23–25.

Petitioner contends, with reference to these annotated Figures, that a person having ordinary skill in the art would have understood that the outer portion of Mestas’s outer encasement member 24 enumerated in Figure 6 corresponds to the claimed external housing, and the generally rounded outer surface 56 of outer encasement member 24 (marked in green in the annotated Figures reproduced above) corresponds to the claimed exterior wall of the device. Pet. 23 (citing Ex. 1002 ¶ 188). Petitioner further contends that Mestas’s outer encasement member 24 has an interior surface (marked in red in the annotated Figures reproduced above). *Id.*

Petitioner also asserts that “[a]t least under Oura’s application of the ’124 Patent claims in the *RingConn* litigation (Ex-1015 at 3-4), Mestas teaches that the device’s external housing—as well as its interior surface and sidewalls—are characterized by approximately a C-shaped cross-section.” Pet. 24 (citing Ex. 1010 ¶¶ 152, 157, Figs. 16, 36B; Ex. 1002 ¶¶ 189–90). Petitioner submits that a person having ordinary skill in the art would have understood that “the outer portion of the encasement member—in particular its interior surface and sidewalls—define an ‘interior space’ that stores the controller and other electronic components.” *Id.* at 25 (citing Ex. 1010 ¶ 141, Figs. 16, 36B; Ex. 1002 ¶¶ 191–92). With this mapping in mind, we now turn to Petitioner’s showing as to other elements of claims 1 and 14.

2. *Whether Mestas and Schröder Teach a Curved Rechargeable Battery (Element 1[b]/14[b])*

Petitioner asserts that Mestas teaches batteries having a “curvilinear or curved configuration.” Pet. 26 (citing Ex. 1010 ¶¶ 157, 168, 201, Fig. 6)

(emphasis omitted). To illustrate its position, Petitioner presents an annotated version of Mestas's Figure 6, reproduced below. *Id.*

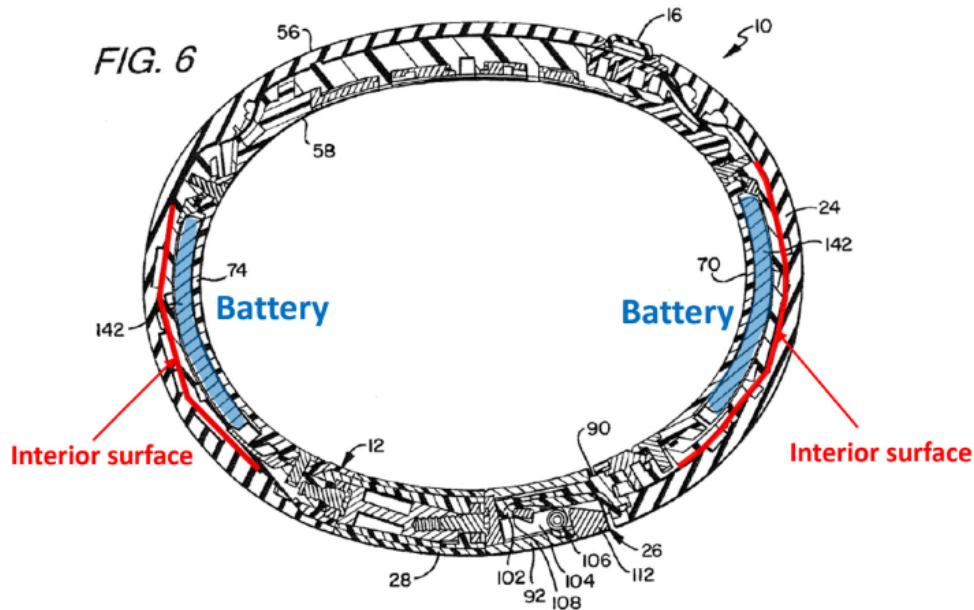


Figure 6 of Mestas, reproduced above, is a schematic cross-sectional view of a wearable device assembly. Ex. 1010 ¶ 15. Figure 6 has been annotated by Petitioner to show the “Battery” (highlighted in blue) and the “interior surface” of the external housing (marked in red). Petitioner contends that “[t]he curved batteries are disposed within the interior space of the housing and are curved to conform to the device’s interior surface.” Pet. 26 (citing Ex. 1010 ¶ 163). Petitioner asserts that a person having ordinary skill in the art would have found implementing the rechargeable batteries of Mestas in the Schröder finger-ring form factor desirable and feasible, given the advancements in flexible battery miniaturization. *Id.* (citing Ex. 1002 ¶¶ 195–97); *see also id.* at 19 (citing Ex. 1002 ¶¶ 167–68).

Specifically, Petitioner asserts that “Mestas’s technology is inherently adaptable to diverse wear locations, including a smaller form like a finger ring” and “Schröder teaches that all the electronic components can be

arranged inside a ring form factor, which would have informed a [person having ordinary skill in the art] Mestas’s device could be adapted to such a form factor.” Pet. 18–19 (citing Ex. 1002 ¶ 166; Ex. 1007, 3:61–63, Figs. 1, 4; Ex. 1010 ¶¶ 143, 151, 162). Petitioner also asserts that “Schröder’s ‘finger ring’ form factor would ensure a tighter fit than a device worn, e.g., on the user’s arm or wrist, reducing motion artifacts, providing better shielding against ambient light, and permitting higher quality reading from device sensors (e.g., accelerometer, heart rate, temperature).” *Id.* at 19–20 (citing Ex. 1002 ¶ 169). Petitioner submits that a person having ordinary skill in the art would have been motivated to place Mestas’s device on the finger “to improve traction and prevent slippage” given Mestas’s teaching of a ribbed interior surface. *Id.* at 20 (citing Ex. 1002 ¶ 169; Ex. 1010 ¶ 152).

Patent Owner argues that a person having ordinary skill in the art would not view Mestas’s wrist-worn wearable athletic device and Schröder’s external secure unit finger-ring for authentication and secure transactions “as ‘the same type of devices’ to be simply merged.” Resp. 31–32 (citing Ex. 2018 ¶ 127). Specifically, Patent Owner submits that “Mestas emphasizes the need for larger form factors to accommodate more power and components (EX1010, ¶¶154, 203), contrary to the miniaturization required for Schröder’s ring.” *Id.* at 32 (citing Ex. 2018 ¶ 128). Patent Owner further argues that one would not look outside Mestas for a solution to slippage because Mestas already provides a solution using ribbing. *Id.* (citing Ex. 1010 ¶ 169; Ex. 2018 ¶ 124). Importantly, Patent Owner provides evidence that “[a]dapting Mestas’s components designed for a wristband into Schröder’s rudimentary ring structure presents major technical challenges,” including “non-trivial scaling” of Mestas’s battery and PCB

given the “minimal internal space” provided in Schröder’s ring for a thin inlay and given that Schröder provides “no teachings as to how to arrange such components on inlay 12.” *Id.* at 33 (citing Ex. 2018 ¶¶ 88–98, 130; Ex. 1007, 8:57–58, 12:28–32; Ex. 2122, 101). Specifically, as to the curved rechargeable battery, Patent Owner submits that “battery design was beyond the skill of the ordinary person” and that “the miniaturization process . . . could take ‘years.’” *Id.* at 34 (citing Ex. 2021, 315:18–19, 455:6–8). Patent Owner further contends curved batteries of an appropriate size and specification were not commercially available in 2013. *Id.* at 35–37 (citing Ex. 2018 ¶¶ 87–102; Ex. 2024, 182:3–12, 187:3–4, 187:8–9, 187:23–25, 188:8–190:3).

In reply, Petitioner argues that “curved and scalable batteries *were* known, available, and suitable for ring-sized devices in 2013.” Reply 3 (citing Ex. 1369 ¶¶ 7–14; Ex. 1079 ¶ 47; Ex. 2022⁶, 138:7–143:1). Petitioner asserts that Dr. Anthony provided examples in his declaration of appropriately sized batteries that were available in 2013. *Id.* (citing Ex. 1369 ¶¶ 7–11; Ex. 1002 ¶ 96; Ex. 2021 [*sic* 1021], 12–13). Specifically, Petitioner proffers that Dr. Anthony pointed to pictures of curved batteries from a GMB Power website that were feasible for use in small wearable devices such as smart rings. *Id.* at 3–4 (citing Ex. 1002 ¶ 96).

We are not persuaded by Petitioner’s arguments and find that Patent Owner has the better position for several reasons. First, the record supports Patent Owner’s argument that Mestas’s batteries are much too large to fit within a ring form factor, and “would have to be reduced in size on the

⁶ There is no Exhibit 2022 in the record of this case.

magnitude of 5-10x from its current size to fit in a ring of Schröder.”
Resp. 38 (citing Dr. Anthony’s cross-examination testimony at Ex. 2021, 313:12).

Second, Petitioner relies on evidence in the Reply that Petitioner failed to specifically identify in the Petition. *Compare* Reply 3–5 (citing Ex. 1369 ¶¶ 7–14; Ex. 1079 ¶¶ 47, 71; Ex. 2022, 138:7–143:1; Ex. 1002 ¶¶ 96, 337; Ex. 2021, 12–13, 307:7–17; Ex. 2020, 212:6–214:13; Ex. 1081, 130:18–131:14; Ex. 1010 ¶ 168), 9 (referring back to Section § II.B.2) *with* Pet. 25–26 (citing Ex. 1002 ¶¶ 193–99; Ex. 1010 ¶¶ 157, 163, 168, 201, Fig. 6). More specifically, while the portion of Dr. Anthony’s Declaration cited in the Petition (*see* Pet. 25–26 (citing Ex. 1002 ¶¶ 193–99)) mentions the Technology Background Section V of his Declaration (Ex. 1002 ¶¶ 42–147), neither Petitioner nor Dr. Anthony sufficiently explains what evidence supports his opinion that it was feasible to incorporate batteries or battery-like devices into finger-rings, or how a person of ordinary skill in the art would have miniaturized a curved battery for incorporation into Schröder’s ring. Ex. 1002 ¶ 196 (describing that rechargeable batteries powering wearable electronic devices were “well-known by 2013” and “had also undergone significant advances in terms of miniaturization and energy density [that] made it feasible to incorporate batteries or battery-like devices such as supercapacitors into smaller form factors, such as finger rings, without sacrificing functionality” such as “lithium-polymer (Li-Po) batteries and solid-state batteries.”). Moreover, some of Petitioner’s citations in the Reply appear to be incorrect as there is no Exhibit 2022 of record in this case, as noted above. These issues undermine the strength of Petitioner’s showing by making it difficult to follow its reasoning, much less identify

where in the record that reasoning finds support. *See DeSilva v. DiLeonardi*, 181 F.3d 865, 866–67 (7th Cir. 1999) (“A brief must make all arguments accessible to the judges, rather than ask them to play archaeologist with the record.”); *United States v. Dunkel*, 927 F.2d 955, 956 (7th Cir. 1991) (“Judges are not like pigs, hunting for truffles buried in briefs.”).

Third, even considering Petitioner’s new Reply arguments and evidence, we are not persuaded that Petitioner has sufficiently shown a person of ordinary skill in the art would have had a reasonable expectation of success incorporating Mestas’s curved battery within Schröder’s ring. Specifically, we do not find adequate support for Dr. Anthony’s testimony that it would have been feasible to incorporate batteries or battery-like devices into finger-rings without sacrificing functionality. Ex. 1002 ¶ 196.

We discuss Petitioner’s evidence below.

Dr. Anthony opines in the Technology Background section of his Declaration that miniaturization of batteries for wearable devices was well-known. *See* Ex. 1002 ¶¶ 93–98. Dr. Anthony explains that Ribeiro (Ex. 1016) “notes that ‘[r]esearch in batteries has an exponential increase in the last decade,’ including in the microelectronic industry.” Ex. 1002 ¶ 93 (citing Ex. 1016, 2233). Dr. Anthony states that “lithium-polymer (Li-Po) batteries and solid-state batteries were two natural choices for compact wearable devices due to their thin profiles, lightweight construction, and enhanced energy capacity.” *Id.* Dr. Anthony explains that Lee (Ex. 1019) describes thin lithium-ion batteries that have “robust mechanical flexibility” and can be bent to a radius of less than 6 mm. Ex. 1002 ¶ 98 (citing Ex. 1019, 2415). Dr. Anthony reports that these characteristics of Li-Po and solid-state batteries “enabled their integration into irregular and constrained

spaces, such as the curved inner cavity of a finger ring.” *Id.* According to Dr. Anthony, Li-Po batteries “provided sufficient power for devices with multiple sensors, wireless communication modules, and microcontrollers, even in miniaturized applications like finger rings” (*id.* ¶ 94), and solid-state batteries were “well-developed by 2013” and were “well-suited for compact, durable wearables” because they have thinner designs and a lower risk of leakage or thermal instability as compared to liquid electrolyte batteries, and can be “incredibly small” (*id.* ¶ 97). Dr. Anthony identifies some examples of devices integrating Li-Po batteries including Ketabdar’s finger-ring (Ex. 1017) and Dieffenderfer’s smart bandages (Ex. 1018). Ex. 1002 ¶¶ 94–95 (citing Ex. 1017, 503, Fig. 1; Ex. 1018, 14), 98 (citing Ex. 1017, Fig. 1).

Dr. Anthony also states in his declaration that the GMB Power webpage demonstrates that it was feasible to make the proposed combination:

A printout of a website from October 21, 2013 further shows that small, curved Li-Po batteries were available for sale before the effective filing date of the ’124 Patent. Ex-1021 (GMB).¹ As the printout states, GMB, the “biggest manufacturer of curved & ultra-thin batteries,” could make these batteries at the client’s request. Ex-1021, 0005 (GMB). The website included specifications and pictures of the various curved batteries, demonstrating their feasibility for use in small wearable devices such as smart finger rings. *See id.*, 0006-07 (GMB). In fact, the website expressly notes that the main application of the curved Li-Po batteries are wearable devices. *Id.*, 0005.

Ex. 1002 ¶ 96; *see also id.* ¶ 196 (“As I explained in the Technology Background section (*see* Section V), rechargeable batteries powering wearable electronic devices were not only well-known by 2013 but had also

undergone significant advancements in terms of miniaturization and energy density.”).

Dr. Mercier, Patent Owner’s expert, criticizes Dr. Anthony’s declaration testimony as “fail[ing] to account for various considerations such as battery packaging and power constraints that would lead a [person having ordinary skill in the art] away from considering batteries such as GMBPow that are adapted for larger devices.” Ex. 2018 ¶ 94. Dr. Mercier notes that the inventor’s testimony at the ITC that the GMBPow battery’s packaging and housing shells would make the device too wide and thick and not suitable for a finger-worn ring is consistent with his experience with batteries. Ex. 2018 ¶¶ 95–96 (citing Ex. 2024, 190:11–192:25 (ITC hearing transcript); Ex. 1021, 6 (specifications for GMBPow batteries)) (explaining that flexible or curved batteries include flexible packaging materials such as aluminum laminated films that house the electrodes and electrolyte that, when added to a battery such as GMBPow and placed within a housing, would result in a device with dimensions not suitable for a finger-worn ring). Dr. Mercier also faults Dr. Anthony for failing to account for any power requirements of the modified finger-ring device and the capacity of the proposed GMBPow battery. Ex. 2018 ¶ 97 (noting that Dr. Anthony “is silent on the power requirements” of sensors such as accelerometers and gyroscopes, Bluetooth communication modules, and temperature sensors and “whether the GMBPow battery would have been able to meet the power demands of these components”).

In addition to pointing out failings in Dr. Anthony’s testimony, Dr. Mercier opines that “the GMBPow battery alone could not meet such demands.” Ex. 2018 ¶ 98. He further notes that the inventor of the ’124

patent testified before the ITC that the discharge rate of such batteries was unsuitable for the health monitoring ring. *Id.* (citing Ex. 2024, 193:1–194:13). He notes that the inventors tackled the engineering challenges of configuring a battery to fit within a finger-ring by subsidizing a battery manufacturing plan and experimenting with various battery technologies. *Id.* ¶ 99 (citing Ex. 2024, 193:3–197:11).

We have considered the Technology Background section of Dr. Anthony’s Declaration and the references cited therein. While Ribeiro and Lee discuss progress made in developing flexible batteries, Petitioner does not point to any disclosures in those references that indicate the availability of a curved battery that was suitable to fit into the housing of a finger-ring and powerful enough to perform the functions of the claimed invention. Ribeiro describes a flexible thin-film lithium battery, but Ribeiro’s “battery total thickness is about 4,9 μm plus the 127 μm from Kapton[®] substrate” plus a few micrometers for a protective layer, which Petitioner has not shown is suitable to fit into a finger-ring housing such as that shown in Schröder and sufficient to meet the power requirements for the proposed combination of references. Ex. 1016, 2234. Although Lee describes a lithium-ion battery which “was very thin (~ 300 μm thickness), and had robust mechanical flexibility (could be bent up to a radius of <6 mm) and high energy-density (~ 108 mA h g^{-1}),” Lee also discloses that the battery had some issues because “direct coating of electrode slurry onto plain paper led to the occasional internal-shortening of the device due to the leakage of the electrode material through a large-sized hole in the paper.” Ex. 1019, 2415. Lee states that “an additional lamination process was required,” but does not discuss any additional results of this process. *Id.*

We have also considered Petitioner's GMB Power evidence and find that it is not sufficient to establish that a battery existed in 2013 that was small enough to fit into a finger-ring, such as disclosed in Schröder, and having the power capacity to power the components disclosed in Mestas and claimed. The smallest Curved LiPo battery on the GMB Power webpage has a thickness of 2.0 mm, a width of 10 mm, a length of 21 mm, a rated capacity of 25 mAh, a nominal voltage of 3.7 V, and a charge current and a discharge current of 0.2C mA, and is too large to fit into a ring. Ex. 1021, 6; Ex. 2024, 38 (192:10–25) (ITC hearing transcript providing inventor testimony that the GMB Power batteries were 4 mm wider than the battery used in the Ouraring and would have been “unwieldy” to use in a ring).

Furthermore, the ITC considered the same information on the GMB Power webpage in Exhibit 1021 and determined that a person having ordinary skill in the art would not have had a reasonable expectation of success to use the GMB Pow batteries in finger-rings. Ex. 2122, 93. The ITC decision notes, and we agree, that the GMB Power webpage advertises that the main application of the curved lithium polymer battery is in “i-watches, sports bracelets and wrist straps”—all of which are designed for wrist-worn accessories, are larger in size, and accommodate larger batteries than finger-worn wrist devices. Ex. 2122, 92–93; Ex. 1021, 5. This further undermines Petitioner's argument that it would have been obvious to adapt such batteries to fit the size and power requirements of a much smaller, finger-ring device.

Although Ketabdar and Dieffenderfer describe devices using miniature batteries, neither device is a finger-ring that includes a curved battery within the housing of the ring. Ex. 1017; Ex. 1018. As noted by Patent Owner (Resp. 16–17), Petitioner relies on Ketabdar's Figure 1 which

is an aspirational design concept that the authors did not build. *See* Ex. 1017, 502–03. Instead, the authors built a finger-ring with the battery mounted on the outside of the ring housing, which does not render Patent Owner’s battery obvious. *Compare* Ex. 1017, 502 (Fig. 1) *with id.* at 503 (Fig. 2). Likewise, Dieffenderfer does not support a finding that a suitable curved battery was available because Dieffenderfer’s “smart bandage” is a large device akin to a wrist-worn device instead of a finger-ring. Ex. 1018, 14 (Figs. 3–4); Resp. 17.

We credit Dr. Mercier’s testimony over Dr. Anthony’s and agree that Dr. Anthony’s testimony fails to account for the constraints of a substantially smaller form factor in Schröder’s finger-ring as compared to Mestas’s wrist device. Ex. 2018 ¶ 140. Although large curved batteries suitable for use in a wrist band or other larger wearable device, such as shown in Mestas, were known at the time of the ’124 patent, we also have evidence that prior art “finger ring wearables up to the ’124 patent had used ‘coin’ type batteries.” Resp. 40 (citing Ex. 2018 ¶ 140). We credit Dr. Mercier’s testimony that a person having ordinary skill in the art would have looked to a coin type battery for the necessary power requirements of Schröder’s device. Ex. 2018 ¶ 141. Indeed, this testimony is consistent with the other art of record that consistently shows the use of flat batteries in finger-ring devices, often stacked above and protruding from the general ring shape of the device. *See, e.g.*, Ex. 1005 (Niwa), Figs. 22, 28; Ex. 2025 (Asada ’701 patent), Fig. 4; Ex. 1035 (Rhee), Figs. 7-1, 8-1, 8-2; Ex. 1037 (Asada article), Fig. 9; Ex. 1034 (Asada ’199 patent), Fig. 2; Ex. 1028 (Kimura patent), Fig. 24; Ex. 2018 ¶¶ 74–84. In fact, Oura’s first-generation ring design, released in 2015, used a Superbowl ring type design, with the

battery and other components mounted on top of the ring. Ex. 2034; Ex. 2018 ¶ 85. We also agree with Dr. Mercier that Dr. Anthony’s testimony lacks evidence or a technical analysis of the power requirements for the various sensors he suggests including in a wearable device and the capacity of the proposed GMBPow battery. *See, e.g.*, Ex. 1002 ¶¶ 94, 210, 214–17; Ex. 2018 ¶ 97.

Moreover, Dr. Anthony does not address the issues with the batteries that are identified in the references he discusses. For example, Dr. Anthony does not address Lee’s disclosure that “direct coating of electrode slurry onto plain paper led to the occasional internal-shortening of the device due to the leakage of the electrode material through a large-sized hole in the paper.” Ex. 1019, 2415. In contrast, Dr. Mercier discusses the pitfalls the skilled artisan faced in developing finger-ring devices. *See, e.g.*, Ex. 2018 ¶¶ 77–79 (discussing the issues Rhee’s and Asada’s large rings), 83 (identifying power requirements as a design constraint). For example, Dr. Mercier explains that “flexible or curved batteries include flexible packaging materials such as aluminum laminated films that house the electrodes and electrolyte” such that “once the battery packaging is added to a battery such as GMBPow and then placed within a housing (e.g., external housing shell and internal potting), the resulting device would have dimensions that are not suitable for a finger-worn ring.” *Id.* ¶ 96 (citing Ex. 2026).

Based on these findings, Petitioner has not met its burden to show by a preponderance of the evidence that a person having ordinary skill in the art would have been led to modify the Mestas wearable device to a finger-ring form factor like Schröder’s by placing a curved battery between the internal and external housing components in light of the teachings in Mestas.

3. *Whether Mestas and Schröder Teach a Potting Material Disposed in the Interior Space Encapsulating the Plurality of Components (Element 1[i]/14[i])*

Petitioner asserts that Mestas's device comprises a potting material disposed in the interior space because the inner and outer portions of Mestas's device may be manufactured in separate processes using injection molding, and a person of ordinary skill in the art would have understood that similar materials can be used for molding and for potting. Pet. 32 (citing Ex. 1010 ¶¶ 173, 399, Figs. 40–42; Ex. 1002 ¶ 225, Figs. 6, 16, 36B). Petitioner contends a person of ordinary skill in the art would have understood that Mestas teaches that the potting material may be transparent because Mestas discloses that the “outer encasement member 24 may further be considered generally transparent,” and “potting could be made transparent to visible, infrared, or ultraviolet light.” *Id.* at 34 (citing Ex. 1010 ¶ 157; Ex. 1002 ¶ 226).

To illustrate its position, Petitioner presents an annotated version of Mestas's Figure 6, reproduced below. Pet. 33.

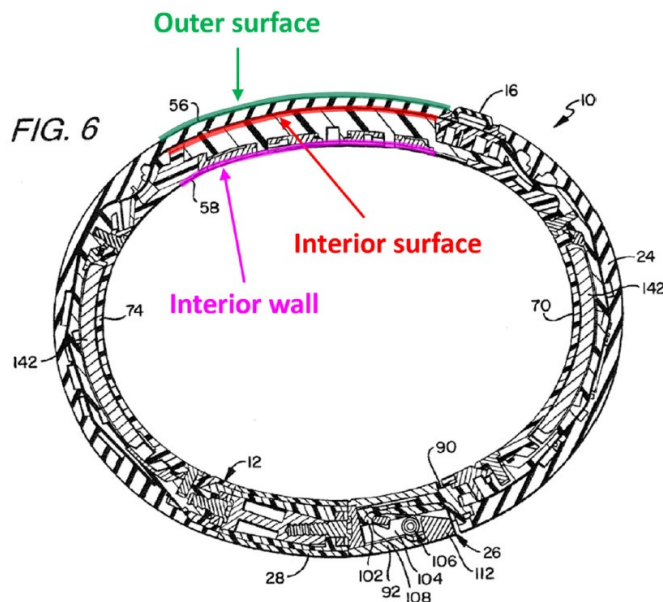
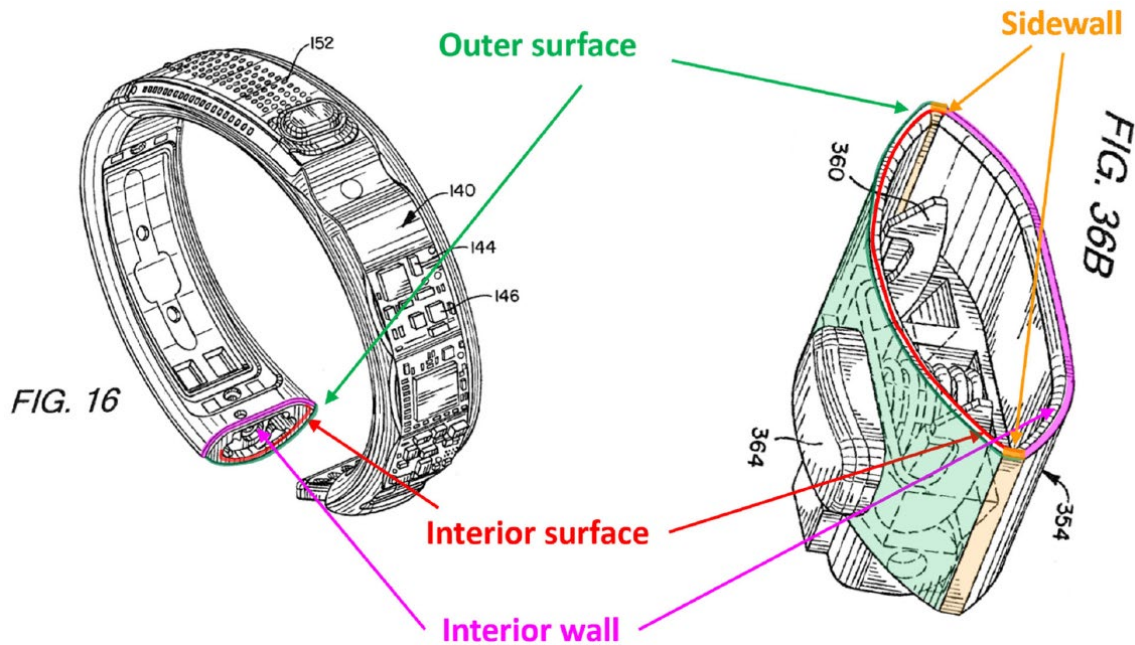


Figure 6 of Mestas, reproduced above, has been annotated by Petitioner to show the “Outer surface” (marked in green), the “Interior surface” of the external housing (marked in red), and the “Interior wall” (marked in pink). Pet. 33.

Petitioner also presents annotated versions of Mestas’s Figures 16 and 36B, reproduced below. Pet. 33.



Figures 16 and 36B of Mestas, reproduced above, have been annotated by Petitioner to show the “Outer surface” (marked in green), the “Interior surface” of the external housing (marked in red), and the “Interior wall” (marked in pink). Pet. 33. Figure 36B also includes a label for the “Sidewall” (marked in orange). *Id.*

Relying on Petitioner’s annotated versions of Mesta’s Figures 6, 16, and 36B, Patent Owner argues that transparent epoxy deposited in place of the interior wall (receiver member 354) of Mesta’s external housing “would not ‘encapsulate[] the plurality of components’ in the interior space.” Resp. 61. Patent Owner explains that Petitioner “define[s] the interior space

as the area from the inner surface of the external housing to the outer surface of spine member 22 which is proximate to the controller 14, and display 30.” *Id.* (citing Ex. 2018 ¶ 205). Given Petitioner’s identification of these structures, Patent Owner contends “[e]poxy deposited to form the interior wall of Mestas at element 354 cannot encapsulate [the] components” because “[s]pine member 22 separates the interior space and element 354.” *Id.* at 61–62 (citing Ex. 2018 ¶ 205). Moreover, Patent Owner contends “[s]pine member 22 cannot serve as the interior wall because it is not substantially transparent.” *Id.* at 62.

Relying on Figure 6 of Mestas, Petitioner responds that outer encasement member 24 and its interior surface and beveled edges can be formed using injection molding and define an “interior space” in which the components are placed. Reply 7. Petitioner argues that given these teachings, a person of ordinary skill in the art would have understood “that the inner portion of Mestas can include potting material that forms an interior wall,” and the interior wall “can be ‘molded onto the spine member 22.’” *Id.* According to Petitioner, “because the potting material is molded directly onto spine member 22, the interior wall conforms to and encapsulates the spine member’s geometry—including the battery recesses—and also encapsulates the components housed within it.” *Id.* at 8.

Patent Owner responds that “potting deposited in the region between Mestas’s outer housing member and the spine member is not a part of the interior wall” because Mestas describes depositing potting to form the spine member (before components are added), depositing potting from the spine member to the inner portion, and depositing potting from the spine member to the outer portion as three separate steps, rather than “the deposition of

potting between the components and the outer housing that also forms an interior wall.” Sur-reply 6.

We are not persuaded by Petitioner’s arguments and find that Patent Owner has the better position because Petitioner has not shown how transparent potting material alleged to be disposed in the “interior space” of Mestas’s device would encapsulate the battery, which is one of the “components” recited in claims 1 and 14. Petitioner contends that Mestas discloses or suggests that outer encasement member 24 can be made from transparent potting material that is molded onto spine 22 and that this material extends around the full circumference encapsulating the spine and its components (Pet. 32–35 (citing Ex. 1010 ¶¶ 157, 173, 399, Figs. 40–42, Ex. 1002 ¶¶ 224–232; Reply 8); however, Petitioner does not address caps 72 and 74, which cover batteries 142 in recesses 50 and 52. Ex. 1010 ¶¶ 154, 168, Figs. 2, 6.

Mestas describes that recessed compartments 50, 52 are initially formed from cast metal members, die cast metal members, or metal injected molded members, and metal caps 72, 74 are provided to create metal enclosures for the batteries 142. Ex. 1010 ¶¶ 154 (“It is desirable to form a metal enclosure for the battery or batteries 142”), 168; *see also* Tr. 52:11 (Petitioner’s counsel acknowledging that Mestas’s battery caps are not made of potting material). Mestas further describes that inner surfaces 58 of outer encasement member 24 have openings 68, 70 covered by caps 72, 74 that are secured over openings 68, 70 by fasteners where caps 72, 74 are formed from metal materials to cooperate with metal battery compartments 50, 52 to provide a metal enclosure for the power supplies. Ex. 1010 ¶ 157.

Specifically, Mestas describes the process for forming spine 22 initially includes forming battery compartments by magnesium thixo-molding members 55 and then overmolding spine 22 around thixo-molded members 55 where a certain amount of injected material extends over an internal surface of members 55. *Id.* ¶ 174. Then, spine member 22 with the attached components may be inserted into a mold and an inner diameter portion of the device is overmolded. *Id.* ¶ 176. Mestas explains that “the molds are designed such that openings are provided in the inner portion of the housing 12 that are in communication with the recessed compartments 50, 52 *that will receive the batteries.*” *Id.* (emphasis added). Thus, were Mestas to use potting material in this molding step to encapsulate spine 22, it would not encapsulate the batteries. The cross-section markings in Figure 6 of Mestas confirm this understanding, as they clearly show metal caps 70 [sic 72], 74 as the interior-most portion of the device adjacent to batteries 142 and as being formed of a different material from the portion of the device that Petitioner has marked at the interior wall (in pink).

Petitioner contends in the Reply that “PO’s expert agrees that the components can extend beyond the ‘interior space’ as long as they are covered by the material that forms the ‘interior wall’ and are thus protected from the environment.” Reply 8 (citing Ex. 1368, 65:7–66:22). Even were that true, Mestas’s batteries 142 are not covered by the material that forms its interior wall, instead the batteries are covered by the magnesium thixo-molding members 55 and metal caps 72, 74. That is, even in Petitioner’s proposed combination where the interior wall is made of potting material, the batteries are not *encapsulated* by that wall.

Petitioner also asserts that to the extent Mestas does not fully teach a transparent potting material disposed in the interior space, “Schröder teaches that potting material could be used to fill the interior space and form the interior wall of the device” because Schröder describes manufacturing a finger-ring using an injection-molding process in which the chip module 10 and antenna coil are overmolded with a suitable injection-molding material, such as PET. Pet. 34 (citing Ex. 1002 ¶¶ 227–28; Ex. 1007, 14:35–46, 15:14–15). Petitioner argues that a skilled artisan “would have understood that Schröder’s ‘molding material’ is a ‘potting material’ that encapsulates the components in the interior space and forms an interior wall of the device” because Schröder’s “injection-molding process results in ‘a ring-shaped body in whose interior the chip module 10 . . . and any further electronic devices are arranged.’” *Id.* (citing Ex. 1007, 14:46–49; Ex. 1002 ¶ 227). Petitioner contends a person of ordinary skill in the art would have understood that Schröder teaches that the potting material may be transparent because PET is transparent to visible light and “Schröder’s operation of the IR diode and sensor for vein mapping requires the potting be transparent to at least infrared light.” *Id.* at 34–35 (citing Ex. 1007, 9:65–10:9, 15:14–15; Ex. 1002 ¶¶ 228–32).

Petitioner has not explained persuasively in its Petition why a person of ordinary skill in the art would have modified Mestas to encapsulate batteries 142 with potting material instead of disposing them in a metal enclosure as taught by Mestas. Petitioner’s counsel surmised at the oral hearing, that because Mestas shows caps 70, 72 attached by screws, the caps “appear to be removable so that you could remove and replace the batteries.” Tr. 52:17–22. Petitioner’s proposed modification of Mestas to encapsulate

the batteries in potting material would eliminate this feature of Mestas. Petitioner's reasoning for this modification does not discuss the tradeoff that the modification would eliminate the removability of the batteries, or adequately explain why a person having ordinary skill in the art would adopt the non-removable configuration disclosed, for example, in Schröder's Figures 4 and 5, as opposed to the embodiment shown in Schröder's Figure 3, in which the chip module is removable. Ex. 1007, 8:54–56 (describing finger-ring 2 shown in Figure 3 has “a replaceable chip module 10”). *See* Tr. 53:11–17 (acknowledging that Dr. Anthony does not address this particular trade-off in his analysis).

Dr. Anthony's testimony, which relies on a general desire for miniaturization is not, without more, a sufficient articulation of reasoning with a rational underpinning to support a conclusion of obviousness.

Further, this alternative theory relies on us finding that Schröder's chip module 10 disposed within the ring halves of the Figure 4 embodiment includes a battery, or that it would have been obvious to put a rechargeable curved battery within these ring halves. As discussed above, Petitioner has not met its burden to show that it would have been obvious to place a rechargeable curved battery within these ring halves. *See* Section III.E.i.2.

Based on these findings, Petitioner has not met its burden to show by a preponderance of the evidence that Mestas and Schröder teach that a substantially transparent potting material encapsulates the battery.

4. Objective indicia of non-obviousness

Because Petitioner has not met its burden to show obviousness of the challenged claims by a preponderance of the evidence, we need not and do

not reach the evidence of non-obviousness offered by Patent Owner.
Resp. 92–114.

5. Conclusion as to Claims 1 and 14

Considering the totality of the evidence regarding claims 1 and 14, we determine that Petitioner has not established, by a preponderance of the evidence, that these claims would have been obvious over Mestas in view of Schröder. Petitioner's showing proposes a modification of Mestas's device to Schröder's finger-ring form factor that is premised on assertions that we do not find persuasive. For instance, Petitioner's challenge is based on its assertions that a person of ordinary skill in the art would have had a reasonable expectation of success adapting Mestas's curved battery to fit within the housing of Schröder's finger-ring given the progress in miniaturization and curved and scalable batteries were known, available, and suitable for use in such a device. While Petitioner has presented evidence of the state of the battery art at the time of the invention, Patent Owner's arguments to the contrary and supporting testimony of Dr. Mercier show that Petitioner did not persuasively explain that it was feasible at the time of the invention to incorporate batteries or battery-like devices into finger-rings, or how a person of ordinary skill in the art would have miniaturized a curved battery for incorporation into Schröder's ring in a manner that meets the energy requirements of the components. Moreover, Petitioner did not persuasively show that Mestas and Schröder teach that a substantially transparent potting material encapsulates the battery. Accordingly, we conclude that the claimed subject matter would not have been obvious to a person having ordinary skill in the art.

ii. Claims 2, 4, 5, 8–11, 16, 18, and 19

Claims 2, 4, 5, and 8–11 depend from and incorporate all of the limitations of claim 1, and claims 16, 18, and 19 depend from and incorporate all of the limitations of claim 14. Ex. 1001, 34:20–37:13. Petitioner presents evidence of unpatentability for these challenged dependent claims based on Mestas in view of Schröder. Pet. 35–44. Because these challenges similarly rely on assertions that a person of ordinary skill in the art would have successfully modified Mestas’s device to Schröder’s finger-ring form factor and Mestas and Schröder teach that a substantially transparent potting material encapsulates the battery, we likewise find that Petitioner has failed to meet its burden to show that claims 2, 4, 5, 8–11, 16, 18, and 19 are unpatentable over Mestas in view of Schröder.

F. Ground 2: Obviousness over Mestas, Schröder, and Yuen

Petitioner contends that dependent claims 3, 6, 12, 13, 15, 17, and 20 would have been obvious over Mestas in view of Schröder and further in view of Yuen. Pet. 44–56. Claims 3, 6, 12, and 13 depend from claim 1, and claims 15, 17, and 20 depend from claim 14. Ex. 1001, 34:27–37:21. Petitioner relies on the same deficient showing that a person of ordinary skill in the art would have successfully modified Mestas’s device to Schröder’s finger-ring form factor and Mestas and Schröder teach that a substantially transparent potting material encapsulates the battery of claims 1 and 14, from which these challenged claims depend, in its challenge based on Mestas, Schröder, and Yuen. *See* Pet. 44–56 (relying on Yuen for the features of dependent claims 3, 6, 12, 13, 15, 17, and 20). For the reasons discussed above in our analysis of Ground 1, we likewise find that Petitioner

has failed to meet its burden to show that claims 3, 6, 12, 13, 15, 17, and 20 are unpatentable over Mestas in view of Schröder and further in view of Yuen.

G. Ground 3: Obviousness over Yuen, Schröder, and Mestas

Petitioner contends claims 1–6 and 8–20 would have been obvious over Yuen in view of Schröder and Mestas. *See* Pet. 56–85. Patent Owner contests Petitioner’s motivation to combine these references and the proposed combination, including modifying Yuen’s device to Schröder’s finger-ring form factor. Resp. 78–79. Patent Owner also contends that, even if combined, Yuen in view of Schröder and Mestas does not disclose or suggest the external housing limitation (element 1[a]/14[a]), the curved rechargeable battery limitation (element 1[b]/14[b]), the printed circuit board limitation (element 1[c]/14[c]), the sensor limitation (1[d]/14[d]), the temperature sensor limitation (1[g]/14[g]), and the potting material limitation (element 1[i]/14[i]) of independent claims 1 and 14. *Id.* at 79–91. Patent Owner also contends that the combination of Yuen, Schröder, and Mestas does not enable the claimed invention. *Id.* at 91.

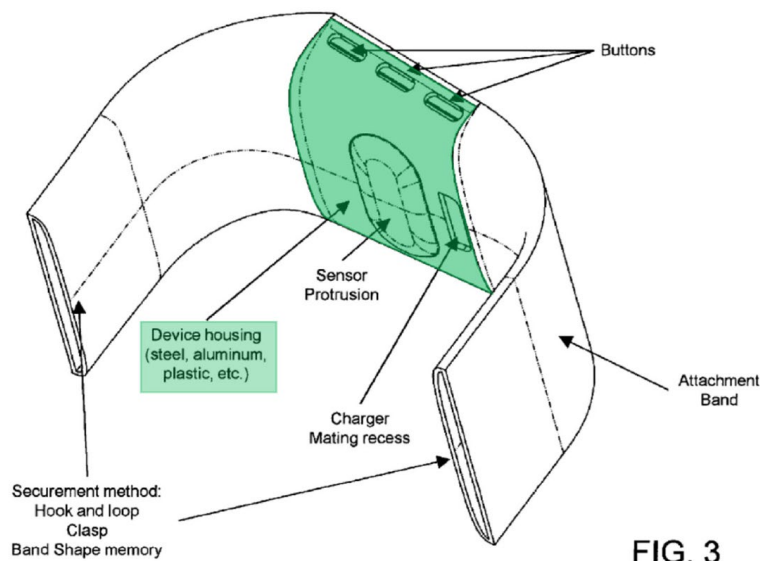
Patent Owner relies on these same arguments to rebut Petitioner’s assertions of unpatentability of claims 2–6, 8–13, and 15–20. Resp. 91. Patent Owner also raises additional arguments for claims 8 and 10. *Id.* We begin with Petitioner’s challenge to claims 1 and 14 below.

i. Claims 1 and 14

1. Petitioner's Mapping of Yuen, Schröder, and Mestas to the claimed external housing (Element 1[a]/14[a])

By way of background, we discuss below Petitioner's mapping of the "external housing" of claims 1 and 14 to Yuen. Petitioner asserts that Yuen teaches the claimed "external housing" having "an outer surface" and "an interior surface" and "sidewalls" where the interior surface and sidewalls (claim 1) or the external housing (claim 14) is characterized by approximately a C-shaped cross section to define an "interior space" that "is configured to store a plurality of components." Pet. 60–63. To illustrate its position, Petitioner presents annotated versions of Yuen's Figures 3 and 4. *Id.* Petitioner highlights and labels the portions of these figures to map them to an "outer surface," an "interior surface," and a "sidewall" of claim elements 1[a] and 14[a]. *Id.*

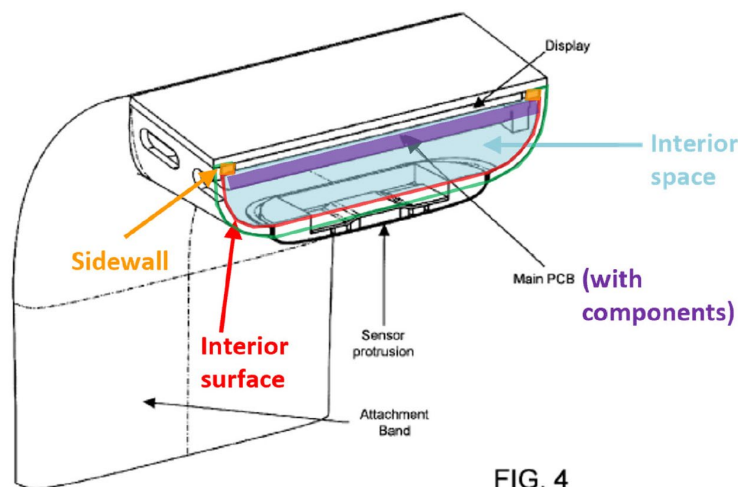
Yuen's Figure 3 is reproduced below with Petitioner's annotations. Pet. 61.



Annotated Figure 3, reproduced above, shows a view of the skin-facing portion of a portable biometric monitoring device with a sensor protrusion and recess for mating a charger and/or data transmission cable. Ex. 1006, 2:18–22. Petitioner highlights the device housing in green. Pet. 61.

According to Petitioner, Yuen’s housing is “made of ‘a metal material (for example, steel, stainless steel, aluminum, magnesium, or titanium).’” *Id.* at 60–61 (citing Ex. 1006, 14:33–37, Fig. 3).

Yuen’s Figure 4, reproduced below with Petitioner’s annotations (Pet. 62–63), shows “a cross-sectional view (through the electronics package) of an exemplary portable biometric monitoring device.” Ex. 1006, 2:26–28.



With reference to the annotated version of Figure 4 reproduced above, Petitioner contends the device housing shown in Figure 4 has an outer surface (marked in green), an interior surface (marked in red), and sidewalls (marked in orange). Pet. 61. Petitioner asserts that the interior surface and sidewalls define an interior space (marked in blue) which houses Yuen’s electronic components (marked in purple), including a PCB. *Id.* at 61–62. Notably, Petitioner identifies Yuen’s “Main PCB” (marked in purple) that is

disposed within the area Petitioner identifies as the claimed interior space (marked in blue) as being the recited PCB “(with components”), and Yuen’s sensor protrusion lies outside of the area Petitioner identifies as the claimed interior space (marked in blue). With this mapping in mind, we now turn to Petitioner’s showing as to other elements of claims 1 and 14.

2. Whether Yuen, Schröder, and Mestas Teach a Curved Rechargeable Battery Disposed within the Interior Space of the Housing (Element 1[b]/14[b])

Petitioner contends “Yuen-Schröder-Mestas teaches Elements 1[b]/14[b],” and “Mestas teaches this limitation, as discussed at Ground 1.” Pet. 63 (citing Ex. 1002 ¶¶ 331–32); *see also* Reply 18. Specifically, Petitioner contends that a person having ordinary skill in the art would have been motivated “to combine Yuen’s device with Schröder’s ‘finger-ring’” and “incorporate Schröder’s wireless inductive charging to replace Yuen’s wired charging” and further modify Yuen’s modified finger-ring device to implement a rigid-flex PCB and a curved battery, as taught by Mestas. Pet. 56–59.

Patent Owner argues that for the same reasons discussed above for Ground 1, “Yuen-Mestas-Schröder does not teach elements 1[b] and 14[b].” Resp. 82.

For the same reasons discussed above for Ground 1 (Section III.E.i.2), we determine Petitioner has not met its burden to show by a preponderance of the evidence that a person having ordinary skill in the art would have had a reasonable expectation of success to modify the Yuen wearable device to a finger-ring form factor that includes a curved battery within the device housing.

3. *Whether Yuen, Schröder, and Mestas Teach a Potting Material Disposed in the Interior Space Encapsulating the Plurality of Components (Element 1[i]/14[i])*

Petitioner asserts that Yuen's device comprises a potting material disposed in the interior space encapsulating the plurality of components. Pet. 70–72 (citing Ex. 1002 ¶ 355–62; Ex. 1006, 2:44–45, 11:29–36, Fig. 7). To illustrate its position, Petitioner presents an annotated version of Yuen's Figure 7 (reproduced below). *Id.*

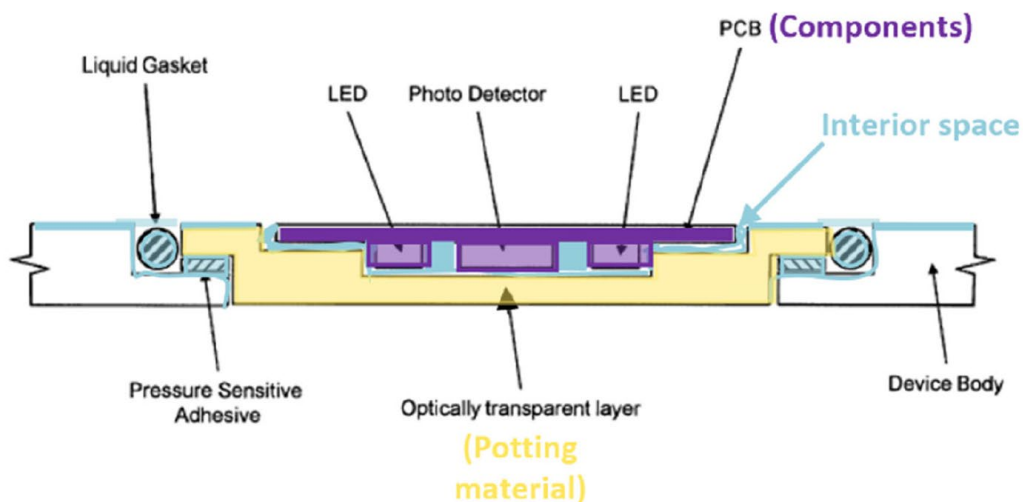


FIG. 7

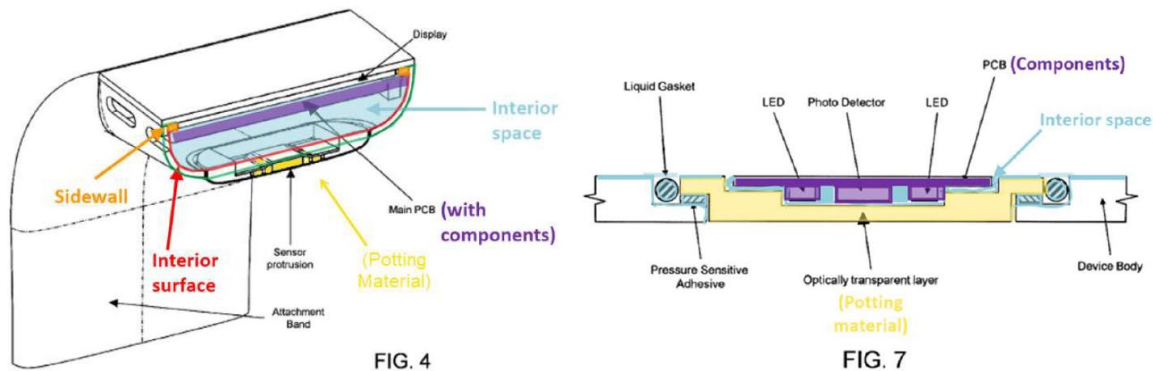
Figure 7 of Yuen is a cross-sectional view of an embodiment of a PPG sensor that does not include a protrusion. Ex. 1006, 2:52–54. Figure 7 has been annotated by Petitioner to show the PCB, LEDs, and Photo Detector (collectively, labeled as “Components” in purple); the Liquid Gasket, Pressure Sensitive Adhesive, and surfaces of the Device Body (collectively, labeled as “Interior space” in blue); and the Optically transparent layer (labeled as “Potting material” in yellow). Pet. 71. Using these annotations, Petitioner contends Yuen teaches the optically transparent layer (yellow) “encapsulates the plurality of components (purple) in the interior space of the device (blue)” and “may be formed through in-mold labeling or ‘IML.’”

Id. (quoting Ex. 1006, 2:52–54). Petitioner asserts that the optically transparent layer “may be created by ‘a double-shot or two step molding process wherein optically opaque material is injected and optically transparent material is injected.’” *Id.* at 71–72 (quoting Ex. 1006, 11:33–36). Petitioner argues that a person of ordinary skill in the art would have understood that Yuen’s optically transparent layer is a coating made of “potting material” encapsulating the components in the device’s interior space because it is formed by injection from moldable material and fills the interior space, and similar materials can be used for molding and for potting. *Id.* at 72 (citing Ex. 1002 ¶ 358; Ex. 1006, 11:33–36). Petitioner argues further that a skilled artisan would have understood that the potting forms the interior wall of Yuen’s device. *Id.* (citing Ex. 1006, Fig. 7).

Relying on Petitioner’s annotated versions of Yuen’s Figures 3, 4, and 7 reproduced above, Patent Owner argues Petitioner has not shown that the Yuen-Schröder-Mestas combination teaches potting material that forms the interior wall of the device because Petitioner alleges that the potting material forms the external housing recited in claim elements 1[a] and 14[a]. Resp. 88–90. According to Patent Owner, Petitioner maps the interior wall of Yuen’s device to the same element as the exterior housing’s interior surface, but “[t]hese are two distinct elements located on opposite sides of the ’124 Patent’s wearable finger ring device.” *Id.* at 90. More specifically, Patent Owner contends Petitioner maps “Yuen’s external housing as the claimed external housing” (*id.* at 88) and “maps the potting material of the optical sensor as the interior surface” (*id.* at 90).

Relying on annotated versions of Yuen’s Figures 4 and 7 (reproduced below), Petitioner responds that “the Petition did not map the exterior

housing's interior surface to the same element as the interior wall" because it "identifies the potting material forming the interior wall as the material surrounding th[e] optically transparent layer—not the housing's interior surface." Reply 20–21.

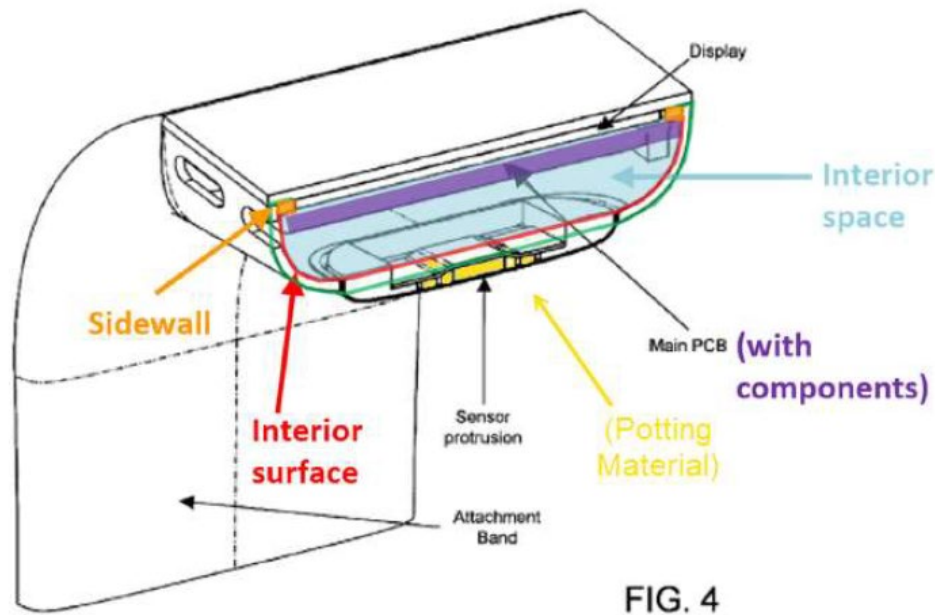


Petitioner argues that annotated Figures 4 and 7 show that “the interior surface and the interior wall formed by potting material are adjacent but distinct structures” (Reply 21) and Yuen discloses that the “optically transparent layer” “is distinct from the housing itself, formed through ‘in-mold labeling’ or a ‘two-step molding process,’” and “serves as transparent potting material” (*id.* at 20 (citing Ex. 1006, 2:44–45, 11:33–36)).

Relying on Petitioner’s annotated versions of Yuen’s Figures 4 and 7 reproduced above, Patent Owner responds that Petitioner’s arguments fail because “(1) the interior space between the interior surface of the external housing (red) and the interior wall (light yellow) is not C-shaped, (2) the external housing would be internal, and (3) the plurality of components would be outside the interior space.” Sur-reply 14.

We agree with Patent Owner and find that Petitioner has not met its burden to show that Yuen discloses this element of claims 1 and 14. First, Petitioner has not shown by a preponderance of the evidence that Yuen’s Figure 4 teaches a transparent potting material disposed in the interior space

that encapsulates the device's components. As shown below in Petitioner's annotated Figure 4, Petitioner relies on a portion of the sensor protrusion for the potting material (highlighted in light yellow) and relies on the main PCB (highlighted in purple and labeled "with components") as the components of the device.



Given these labels, Figure 4 does not show that the main PCB is encapsulated in the potting material at least because there is an interior surface and interior space that separates them.

Second, Petitioner has not met its burden because Petitioner has not shown by a preponderance of the evidence that Yuen's Figure 7 embodiment discloses potting material disposed in the interior space, where the interior space is defined by the external housing's C-shaped interior surface and sidewalls.

The embodiments shown in Figures 4 and 7 of Yuen are distinct. Yuen states that "[i]n one specific embodiment, the biometric monitoring device includes a protrusion on the skin or interior side of the device. (See,

FIGS. 2-11).” Ex. 1006, 13:39–43. Yuen’s Figure 4 illustrates this embodiment, including a structure labeled “Sensor protrusion,” in what Yuen describes as “a cross-sectional view (through the electronics package) of an exemplary portable biometric monitoring device” (*id.* at 2:26–28). In contrast, Yuen discloses that “FIG. 7 illustrates another cross-sectional view of a PPG sensor, *wherein in this embodiment, the PPG sensor does not include a protrusion*” (*id.* at 2:52–56 (emphasis added)).

Because this is Petitioner’s first reference to the Figure 7 embodiment in the Petition, Petitioner has not clearly mapped the other claim elements purported to be disclosed in Yuen to this embodiment. Instead, Petitioner relies on annotations to the embodiment in Figure 4 and descriptions of an alternative embodiment in Yuen’s Figure 6 to show the claimed “external housing” with an outer surface, an interior surface, and sidewalls characterized by approximately a C-shaped cross section and defining an interior space, the printed circuit board disposed within the interior space, and the one or more sensors disposed upon the printed circuit board. See Section III.G.i.1, 3. Petitioner now turns to a different, protrusion-less embodiment to meet the potting material limitation of the claims. Petitioner picks and chooses from among the various embodiments to create the claimed device without explaining why a person having ordinary skill in the art would have arrived at this combination based on Yuen.

Based on these findings, we determine Petitioner has not met its burden to show by a preponderance of the evidence that Yuen teaches a transparent potting material disposed in the interior space of the device that encapsulates the components.

4. Conclusion as to Claims 1 and 14

Considering the totality of the evidence regarding claims 1 and 14, we determine that Petitioner has not established, by a preponderance of the evidence, that these claims would have been obvious over Yuen in view of Schröder and Mestas. Petitioner's showing proposes a modification of Yuen's device to Schröder's finger-ring form factor with Mestas's curved battery that is premised on assertions that we do not find persuasive. For instance, Petitioner's challenge is based on assertions that a person of ordinary skill in the art would have had a reasonable expectation of success adapting Mestas's curved battery to fit within the housing of Schröder's finger-ring given the progress in miniaturization and curved and scalable batteries were known, available, and suitable for use in such a device. While Petitioner has presented some supporting evidence, Patent Owner's arguments to the contrary and supporting testimony of Dr. Mercier show that Petitioner did not persuasively explain that it was feasible to incorporate batteries or battery-like devices into finger-rings, or how a person of ordinary skill in the art would have miniaturized a curved battery for incorporation into Schröder's ring. Moreover, Petitioner did not persuasively show that Yuen's device comprises a substantially transparent potting material disposed in the interior space that encapsulates the components. Accordingly, we conclude that the claimed subject matter would not have been obvious to a person having ordinary skill in the art.

ii. Claims 2–6, 8–13, and 15–20

Claims 2–6 and 8–13 depend from and incorporate all of the limitations of claim 1, and claims 15–20 depend from and incorporate all of

the limitations of claim 14. Ex. 1001, 34:20–53, 34:58–35:37, 36:24–37:21. Petitioner presents evidence of unpatentability for these challenged dependent claims based on Yuen in view of Schröder and Mestas. Pet. 72–85. Petitioner’s showing of unpatentability for these dependent claims relies on the evidence and arguments that we determined above failed to show unpatentability of claims 1 and 14. Thus, for the same reasons, we conclude that Petitioner has not shown that the claimed subject matter of dependent claims 2–6, 8–13, and 15–20 would have been obvious to a person having ordinary skill in the art.

IV. MOTIONS TO SEAL

The Board previously granted Patent Owner’s motion for entry of a Stipulated Protective Order. Papers 17, 18. Pursuant to this Stipulated Protective Order, Patent Owner requests to seal designated information in its Patent Owner Response (Paper 20) and certain confidential versions of exhibits to the same (Exs. 2019, 2024, 2034, 2063, 2111, 2112, and 2169), the confidential Transcript from the Deposition of Michael Davies (Ex. 2135), the Patent Owner Sur-Reply (Paper 31), and the confidential version of its demonstratives (Exhibit 2178). Papers 19, 22, 29, 38.

These papers and exhibits contain information designated by Patent Owner under the Stipulated Protective Order as containing “Outside Attorney’s Eyes Only—Protective Order Material.” Specifically, Patent Owner submits that the designated material includes Patent Owner’s sensitive and confidential business information, including Patent Owner’s financial, business, and technical information. Paper 19, 2–3; Paper 22, 2; Paper 29, 2; Paper 38, 2.

A party may move to seal confidential information including, e.g., trade secret or other confidential research, development, or commercial information. 37 C.F.R. § 42.54(a)(7). It is the movant's burden to show good cause for sealing such information, and we balance the party's asserted need for confidentiality with the strong public interest in open proceedings. *Argentum Pharms. LLC v. Alcon Research, Ltd.*, IPR2017-01053, Paper 27 at 4 (PTAB Jan. 19, 2018) (informative). Patent Owner provides a sufficient explanation and has shown good cause for sealing the designated portions of Exhibits 2019, 2024, 2034, 2063, 2111, 2112, 2135, 2169, and 2178 and the related portions of Patent Owner's Response and Patent Owner's Sur-Reply. Moreover, Patent Owner provides a public version of each Paper (Papers 21 and 30) and of each Exhibit with redactions limited to Patent Owner's business confidential information so the record may remain clear and reasonably open. Accordingly, the confidential versions of Exhibits 2019, 2024, 2034, 2063, 2111, 2112, 2135, 2169, and 2178, Patent Owner's Response (Paper 20) and Patent Owner's Sur-reply (Paper 31) are sealed.

For these same reasons, we likewise seal the confidential version of Petitioner's Reply Brief (Paper 25), which Petitioner filed under seal accompanied by a public version (Paper 24). This Reply Brief refers to Patent Owner's business confidential information. *See* Paper 25, 24–29 (responding to Patent Owner's evidence of commercial success).

V. CONCLUSION

Petitioner has not shown, by a preponderance of the evidence, that claims 1–6 and 8–20 of the '124 patent are unpatentable.

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 2, 4, 5, 8– 11, 14, 16, 18, 19	103	Mestas, Schröder		1, 2, 4, 5, 8– 11, 14, 16, 18, 19
3, 6, 12, 13, 15, 17, 20	103	Mestas, Schröder, Yuen		3, 6, 12, 13, 15, 17, 20
1–6, 8–20	103	Yuen, Schröder, Mestas		1–6, 8–20
Overall Outcome				1–6, 8–20

VI. ORDER

Accordingly, it is:

ORDERED that Petitioner has not shown that claims 1–6 and 8–20 of U.S. Patent 11,188,124 B2 are unpatentable;

FURTHER ORDERED that the confidential versions of Papers 20, 25 and 31 and Exhibits 2019, 2024, 2034, 2063, 2111, 2112, 2135, 2169, and 2178 are sealed; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to this proceeding seeking judicial review of our Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2025-00147
Patent 11,188,124 B2

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