

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.

PGR2024-00030
Patent 11,868,178 B2

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

HORNER, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 328(a)
Granting Parties' 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 post-grant review of claims 1–18 of U.S. Patent No. 11,868,178 B2 (Ex. 1001, “the ’178 patent”). With the Preliminary Response, Patent Owner filed a statutory disclaimer of claim 11 of the ’178 patent. Prelim. Resp. 66; Ex. 2015. We instituted trial on the remaining challenged claims 1–10 and 12–18 on all of the grounds in the Petition. Paper 9, 29 (“Dec.”).

Ouraring, Inc. (“Patent Owner”) subsequently filed its Response to the Petition (Paper 19, “Resp.” (redacted); Paper 20, “Resp.” (sealed)), Petitioner filed its Reply (Paper 31, “Reply” (redacted); Paper 30, “Reply” (sealed)) and Patent Owner filed its Sur-reply (Paper 38, “Sur-reply” (redacted); Paper 39, “Sur-reply” (sealed)). We held a hearing on September 11, 2025, and a transcript is of record. Paper 53 (redacted) (“Tr.”); Paper 52 (sealed) (“Confidential Tr.”).

After considering the parties’ arguments and evidence, we find that Petitioner has shown by a preponderance of the evidence that challenged claims 17 and 18 of the ’178 patent are unpatentable, and Petitioner has not shown by a preponderance of the evidence that challenged claims 1–10 and 12–16 of the ’178 patent 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 6, 1 (Patent Owner's Mandatory Notices).

B. Related Matters

The parties identify the following matters involving the '178 patent:

- *Certain Smart Wearable Devices, Systems, and Components Thereof*, Inv. No. 337-TA-1398 (Int'l Trade Comm'n);
- *Certain Smart Wearable Devices, Systems, and Components Thereof*, Inv. No. 337-TA-3858 (Int'l Trade Comm'n);
- *Oura Health Oy v. Ultrahuman Healthcare Pvt. Ltd.*, No. 2:23-cv-396 (E.D. Tex.);
- *Samsung Electronics Co., Ltd. v. Oura Health Oy*, No. 3:24-cv-03245 (N.D. Cal.);
- *Ouraring Inc. v. Zepp Health Corp.*, No. 2:25-cv-01126 (E.D. Tex.);
- *Ouraring Inc. v. Reebok International Limited et al.*, No. 2:25-cv-01127 (E.D. Tex.);
- *Ouraring Inc. v. Samsung Electronics America, Inc.*, No. 2:25-cv-01067 (E.D. Tex.).

Pet. 1; Paper 6, 1; Paper 56, 1.

Petitioner also notes that it challenged five related patents: U.S. Patent Nos. 11,868,178 (PGR2024-00030), 11,868,179 (PGR2024-00031), 11,599,147 (IPR2024-00930), 9,582,034 (IPR2024-00928), and 10,893,833 (IPR2024-00929). Pet. 2. Petitioner and Patent Owner note that the '178 patent belongs to the same family as the '034, '147, and '179 patents. *Id.*; Paper 6, 1. Since the filing of this Petition, Petitioner also has challenged the

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following additional patents with related subject matter: U.S. Patent Nos. 10,139,859 (IPR2024-01077), 10,281,953 (IPR2024-01078), 10,281,953 (IPR2024-01079), 10,842,429 (IPR2024-01080), 11,188,124 (IPR2025-00147), 11,874,701 (PGR2024-00038), and 11,847,702 (PGR2024-00039).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.

C. The '178 Patent

The '178 patent is titled “Wearable Computing Device” and was issued January 9, 2024, based on an application filed May 24, 2023, 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 '178 patent discloses a wearable computing device (“WCD”) in the shape of a ring. Ex. 1001, 1:50–52. The Abstract describes a smart ring including a curved housing having a U-shape interior storing components including a curved battery approximately conforming to the curved housing and a semi-flexible printed circuit board (“PCB”) approximately conforming

¹ The Board denied institution in IPR2024-00929, IPR2024-00930, IPR2024-01079, IPR2024-01080, PGR2024-00031, and PGR2024-00038 due to statutory disclaimer by the Patent Owner of all the challenged claims. The Board instituted the remaining six petitions: IPR2024-00928, IPR2024-01077, IPR2024-01078, IPR2025-00147, PGR2024-00030, and PGR2024-00039.

to the curved housing, with various devices mounted on the PCB. *Id.* at code (57).

Figure 4 of the '178 patent is reproduced below.

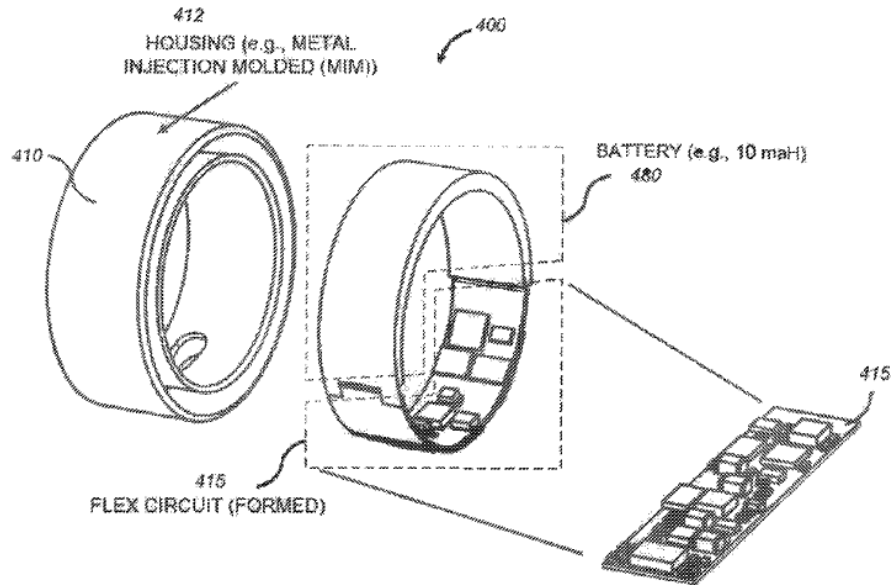


FIG. 4

Figure 4 is an exploded view of WCD 410 illustrating battery 480 and flexible PCB 415, which are configured to fit inside the U-shape of ring housing 412 of the WCD. Ex. 1001, 5:28–30, 15:64–67, 16:22–24. Figures 7 and 8 of the '178 patent are reproduced below.

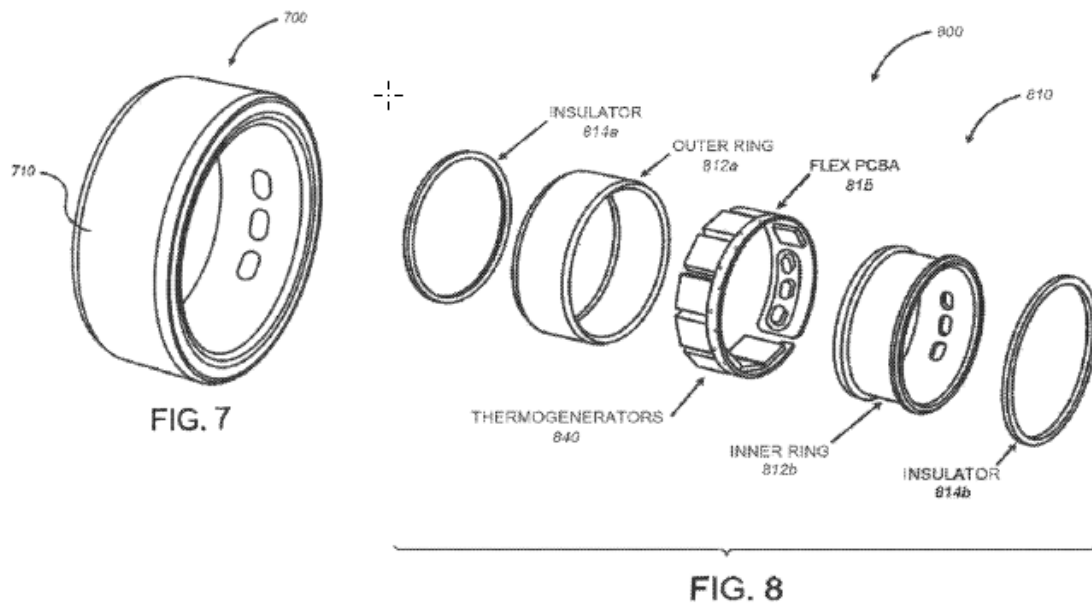


Figure 7 is a perspective view of a WCD, and Figure 8 is an exploded view of the WCD of Figure 7. Ex. 1001, 5:36–40, 14:65–67. Figures 7 and 8 illustrate a design of the housing for the WCD, where the ring includes outer ring 812a, inner ring 812b, and insulators 814a and 814b. *Id.* at 14:67–15:5. Also shown in Figure 8 are flexible PCBA 815 and thermogenerators 840. *Id.* at Fig. 8. According to the '178 patent, a thermoelectric generator charges a battery of the WCD by the difference between a wearer's body temperature and the ambient temperature. *Id.* at 14:61–65, 15:4–11.

D. Challenged Claims

Petitioner challenges all 18 claims of the '178 patent, of which only claim 1 is independent. Claims 1–10 and 12–18 are the challenged claims that remain in the '178 patent after Patent Owner's statutory disclaimer. Ex. 2015. Claim 1 is reproduced below with the same bracketed annotations the Petition includes to identify particular limitations.

1. A finger-worn wearable ring device, comprising:

[a] an external housing component defining an outer circumferential surface of the finger-worn wearable ring device;

[b(i)] an internal housing component defining an inner circumferential surface of the finger-worn wearable ring device, the internal housing component coupled with the external housing component, [(ii)] wherein at least a portion of the inner circumferential surface of the internal housing component is configured to contact a tissue of a user when the finger-worn wearable ring device is being worn by the user;

[c] a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device;

[d] a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion; and

[e] one or more sensors electrically coupled with the printed circuit board and the battery and configured to acquire data from the user through the internal housing component.

Ex. 1001, 44:45–45:8.

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:²

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1–3, 17, 18	103	Schröder ³
2	1–3, 13–16	103	Schröder, Niwa ⁴
3	3, 12	103	Schröder, Mestas ⁵
4	1, 4–10, 13–16	103	Schröder, Yuen ⁶
5	1–3, 13–18	103	Niwa
6	1–3, 13–18	103	Niwa, Schröder
7	12	103	Niwa, Mestas
8	12	103	Niwa, Schröder, Mestas
9	4–10	103	Niwa, Yuen
10	4–10	103	Niwa, Schröder, Yuen
11	17, 18	112(d)	Improper dependence

² Disclaimed claim 11 is omitted from the table.

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. 9–10.

⁴ Ex. 1005, US 2012/0016245 A1, published January 19, 2012 (“Niwa”). Petitioner asserts that Niwa qualifies as prior art under 35 U.S.C. §§ 102(a)(1) and 102(a)(2). Pet. 11.

⁵ 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. 13.

⁶ 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. 15.

In support of these grounds, Petitioner relies on declarations from Dr. Brian Anthony submitted with the Petition (Ex. 1002) and Reply (Ex. 1079) and a declaration from Mr. Michael A. M. Davies (Ex. 1080) submitted with the Reply. Patent Owner⁷ 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

All but one of 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

⁷ Patent Owner does not dispute that the references relied upon by Petitioner are prior art to the '178 patent.

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 ¶¶ 18–22). Petitioner also contends that a person of ordinary skill would have been “familiar with, for example, 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. 26.

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 ’178 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. 8 (citing Ex. 1002 ¶¶ 15–17).

Patent Owner indicates that in the related ITC proceeding involving the ’178 patent, the Administrative Law Judge (ALJ) adopted three constructions agreed-upon by the parties in that proceeding⁸ and also construed two disputed terms.⁹ Resp. 26–27 (citing Ex. 2016, 5, 6, 14). Patent Owner agrees with Petitioner, however, that no terms need to be construed to decide the issues raised in the Petition. *Id.* at 27.

We reviewed the constructions adopted by the ITC. Ex. 2016, 5, 6, 14.

⁸ In the ITC proceeding, the ALJ adopted the parties’ agreed-upon constructions that: (1) the preamble of claim 1 [a finger-worn wearable ring device] is limiting; (2) [positioned/configured to fit] within a “cavity” is [positioned/configured to fit] within a “hollow space”; and (3) [the internal housing component] “coupled with” [the external housing component] is [the internal housing component] “connected with” [the external housing component]. Ex. 2016, 5.

⁹ In the ITC proceeding, the ALJ construed the claims such that: (1) the internal and external housing components of claims 1, 12, and 17 enclose space and do not necessarily exclude potting material; and (2) “circumferential,” as recited in claims 1, 17, and 18, does not require a closed shape. Ex. 2016, 14, 17.

These constructions are not germane to the issues we need to decide to resolve this proceeding. Thus, we agree that no explicit claim construction is necessary for this decision. To the extent the parties' arguments raise any implicit issues of claim construction, we address those issues within the context in which they are raised in our analysis below.

D. References Relied Upon

i. 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.

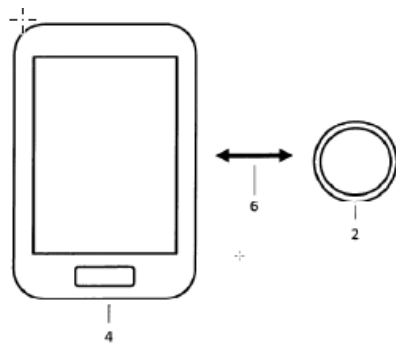


Fig. 1

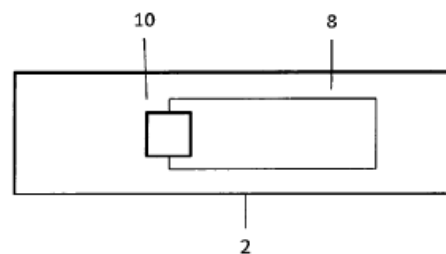


Fig. 2

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, reproduced above, 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.

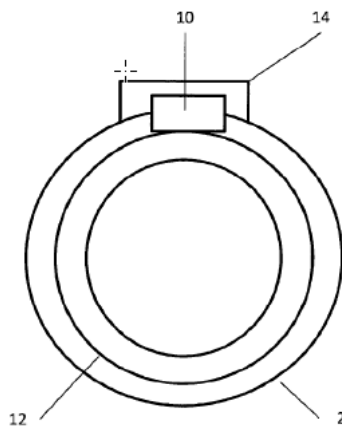


Fig. 3

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.

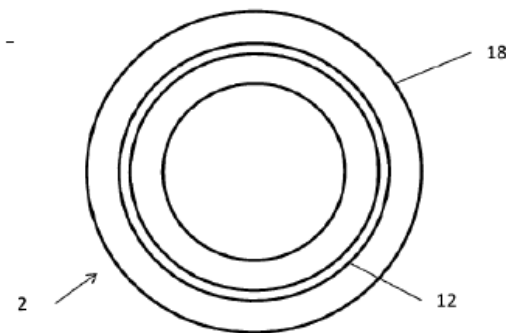


Fig. 4

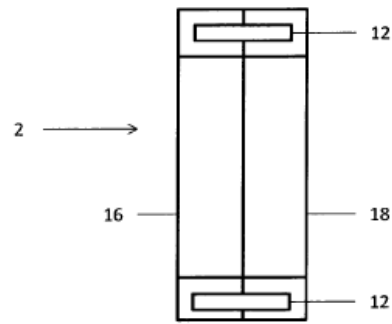


Fig. 5

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.

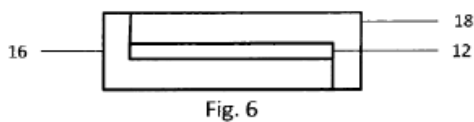


Fig. 6

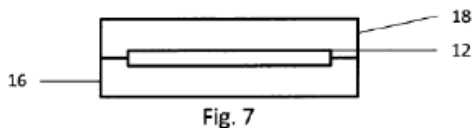


Fig. 7

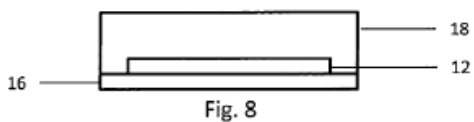


Fig. 8



Fig. 9

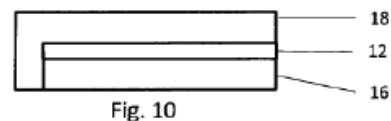


Fig. 10

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.

ii. Niwa

Niwa discloses a plethysmogram (PPG) sensor within a housing in the form of a finger-ring. Ex. 1005, code (54), ¶ 191, Fig. 22.

Figure 22 is reproduced below.

FIG.22

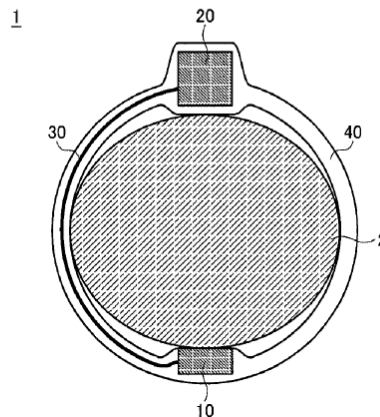


Figure 22 is a cross-section diagram of PPG sensor 1 to measure a plethysmogram at the third joint of finger 2, where PPG sensor 1 includes

first unit 10, second unit 20, cable 30, and finger-ring type housing 40. *Id.* ¶ 191. First unit 10 is a unit to measure the plethysmogram and is to be set to the ball side of finger 2 (i.e., palm side) when housing 40 is worn on finger 2 because the ball side is fleshy to provide stable measurement of the plethysmogram. *Id.* ¶ 192. Second unit 20 is a unit to supply power to first unit 10 and is set to the back side of finger 2 so that any noise from second unit 20 for first unit 10 can be minimized. *Id.* ¶¶ 193, 215. Cable 130 electrically connects first unit 10 with second unit 20. *Id.* ¶ 194.

Niwa describes that the thickness of first unit 10 is 1 mm to 5 mm and the thickness of second unit 20 is 4 mm to 20 mm. Ex. 1005 ¶ 199. Niwa describes that it is desirable to construct second unit 20 to be twice as thick as first unit 10 to enhance flexibility for the design (e.g., circuit mounting or package mounting in second unit 20), to make it more difficult to turn sensor 1 around on finger 2 so that the first unit 10 is maintained on the ball side of finger 2, and to provide a visual cue to the wearer of the correct orientation of first unit 10 and second unit 20. *Id.* ¶¶ 199, 202, 203.

Figures 27 and 28 are reproduced below.

FIG.27

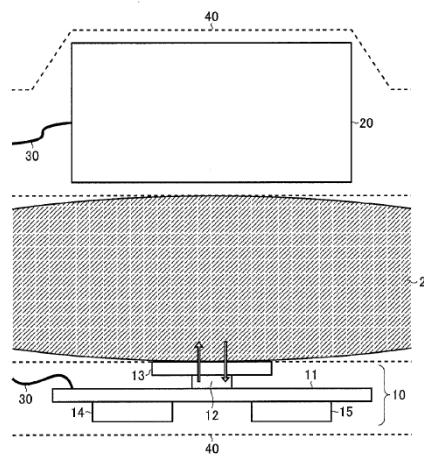


FIG.28

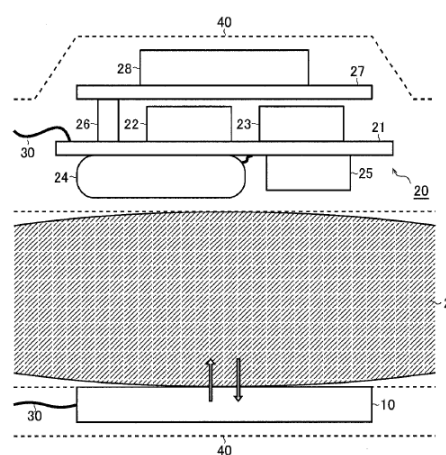


Figure 27 shows a cross-section diagram of first unit 10, which includes substrate 11, light sensor 12, measurement window 13, amplifier circuit 14, and processing circuit 15. Ex. 1005 ¶ 207. Figure 28 shows a cross-section diagram of second unit 20, which includes first substrate 21, power source circuit 22, memory 23, battery 24, charging circuit 25, connector 26, second substrate 27, and wireless communication circuit 28. *Id.* ¶ 213. Niwa describes that power source circuit 22 and memory 23 are equipped to the surface of first substrate 21 directly, and battery 24 and charging circuit 25 are equipped to the back side of substrate 21 directly. *Id.* ¶ 214. Cable 30 establishes an electrical connection between the surface and back side of first substrate 21 by means of a through hole and a via hole. *Id.* Niwa teaches benefits of this configuration:

In this way, by means of utilizing both side[s] of the first substrate 21 efficiently, the area of the first substrate 21 can be reduced. Therefore, the largeness of the second unit 20 can be restrained not to protrude from the third joint of the finger 2. Furthermore, a consciousness of the examinee for wearing the plethysmogram sensor 1 can be reduced.

Id.; *see also id.* ¶ 219 (describing that the stack layer construction of first substrate 21 and second substrate 22, compared to mounting all circuit elements on one substrate, allows each area of first substrate 21 and second substrate 22 to be decreased to achieve the benefits described above).

Niwa describes that battery 24 is “formed as highly flat” and is “located right above the finger 2” so that “it is possible to enhance an affinity of the plethysmogram sensor 1 when the pulse sensor 1 is worn on the finger 2” and “the consciousness of the examinee for wearing the plethysmogram sensor 1 can be reduced.” Ex. 1005 ¶ 217. Niwa describes that the thickness of battery 24 is 2 mm to 5 mm. *Id.* ¶ 201.

iii. *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.

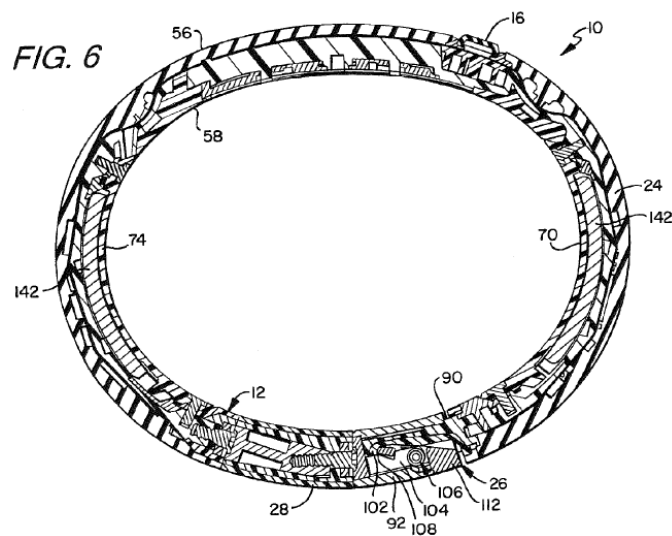


Figure 6 is a cross-section of wearable device 10 including housing 12 in the form of a wearable band such as a wristband. Ex. 1010 ¶¶ 15, 150, 151. Device 10 includes a controller, input button 16, a display, and an indicator system. *Id.* ¶ 150. Housing 12 includes an inner spine member having compartments 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.

Figures 14, 15, and 16 are reproduced below.

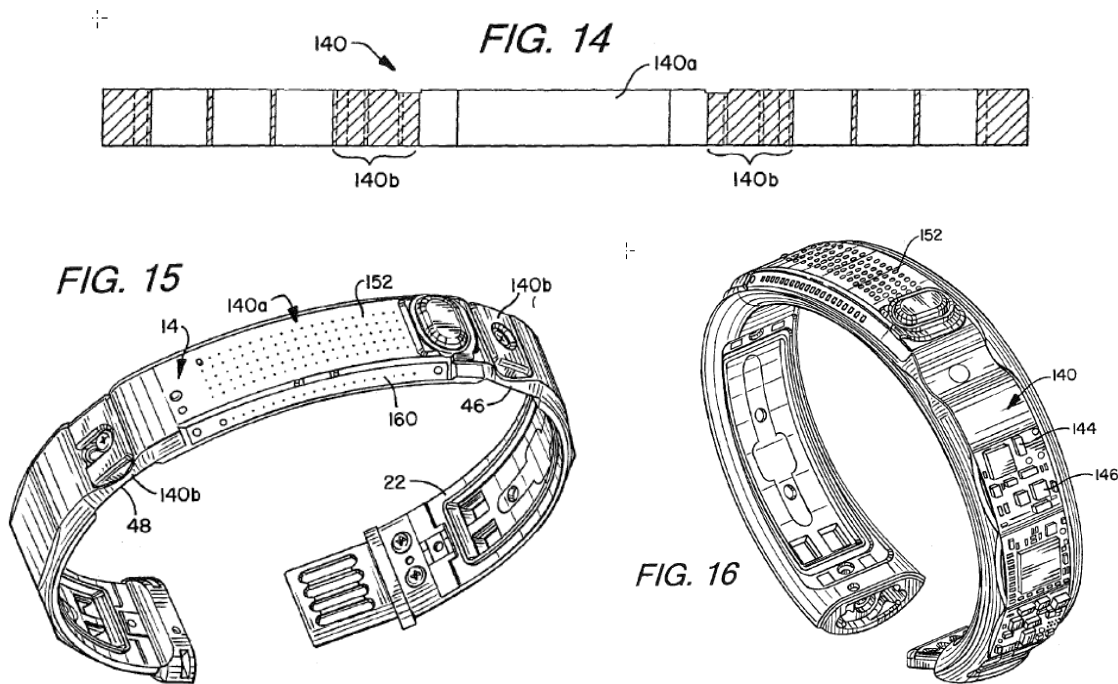


Figure 14 shows flexible PCB member 140, and Figures 15 and 16 show PCB member 140 wrapped around and mounted to spine member 22. Ex. 1010 ¶¶ 25, 26, 164. PCB member 140 is part of controller 14 and supports various components of the controller, including antenna assembly 144, sensor assembly 146, processing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

iv. *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.

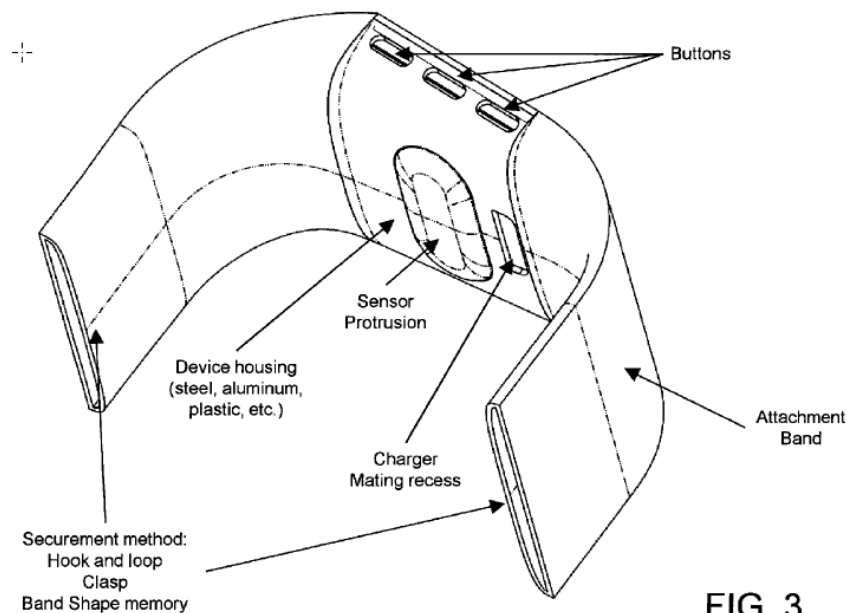


Figure 3 shows a portable biometric monitoring device, including an attachment band, a device housing, a sensor protrusion, and a recess for mating a charger and/or data transmission cable. Ex. 1006, 2:18–22, Fig. 3. According to Yuen, the protrusion firmly maintains the sensor in contact with the skin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

Figure 5 is reproduced below.

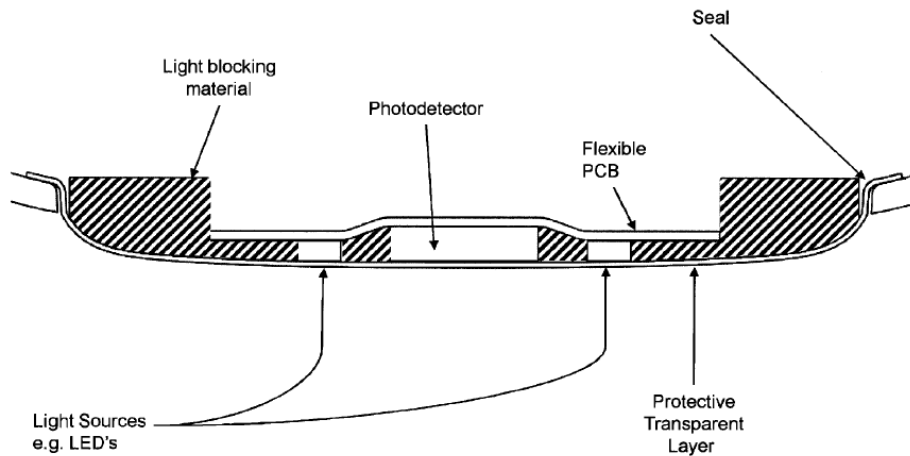


FIG. 5

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 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.

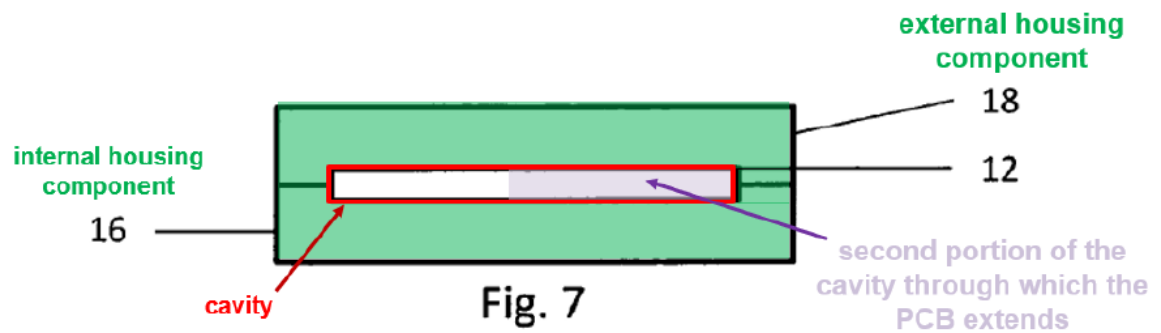
E. Ground 1: Obviousness over Schröder

Petitioner contends claims 1–3, 17, and 18 would have been obvious over Schröder. *See* Pet. 18–32. As explained below, Petitioner has not shown by a preponderance of the evidence that these claims would have been obvious over the asserted reference.

i. Claim 1

Petitioner asserts that Schröder renders obvious “a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion” that houses the battery. Pet. 24–25 (addressing limitation 1[d]). Specifically, Petitioner identifies inlay 12 as the claimed PCB and asserts that this inlay “extends through a second portion of the cavity different than the first portion (where the battery is located).” *Id.* at 24. Petitioner reasons that because “two solid components cannot simultaneously occupy the same space . . . a portion occupied by any other component is different from the portion where the other resides.” *Id.* at 25.

Petitioner submits that it would have been obvious that the PCB extends through a “portion of the cavity” that is “necessarily different” from the “portion of the cavity” occupied by the battery. *Id.* (citing Ex. 1002 ¶¶ 172–176). Then, relying on Dr. Anthony’s testimony, Petitioner offers the annotated version of Schröder’s Figure 7 reproduced below to illustrate its position that “a POSITA would have understood that Schröder’s PCB (not pictured) extends through at least a second portion of a cavity (Schröder’s ‘recess,’ light purple below) that is between inner and outer housing components (green) but does not extend through the entire cavity of ‘finger-ring’ 2 to allow space for other electrical components, e.g., the battery.” *Id.* (citing Ex. 1002 ¶ 176).



As we noted in our Institution Decision, “the [purple] highlighting Petitioner adds to Figure 7 to visually depict the ‘second portion of the cavity through which PCB extends’ seems arbitrary and is not directly supported by the text or drawings of Schröder.” Paper 9 at 24. This is particularly so because Schröder describes inlay 12 as consisting of a “carrier,” “carrier material,” or “carrier foil,” not as a cavity. *See, e.g.*, Ex. 1007, 8:57–58, 12:28–32, 13:23–25. It is this carrier that Petitioner maps to the recited PCB. Pet. 24. On the full record, we agree with Patent Owner and Dr. Mercier that “Schröder’s inlay 12 is shown to occupy the entire space between ring halves 16 and 18.” Resp. 48 (citing Ex. 2018 ¶ 118). That is, contrary to Petitioner’s annotations, Schröder’s Figure 7 depicts inlay 12, i.e., the alleged PCB, as occupying the entire space between the housing components 16, 18.

This understanding of the position of inlay 12 is further supported by Schröder’s description of how the electronic components are applied to the carrier foil, i.e., inlay 12. Specifically, Schröder describes that the electronic components are all inserted in depressions in the carrier foil of inlay 12. Ex. 1007, 13:16–14:34. For instance, Schröder describes that “at least one chip module 10 and at least one antenna coil 8 and optionally further electronic devices, e.g. a further antenna coil 8 or a display,” may be applied to a carrier foil. *Id.* at 13:23–25. Schröder explains that “[a]dvantageously, a

depression is manufactured in the carrier foil, e.g. by milling, lasering, etching, before the chip module 10, the antenna coil 8 and optional further electronic devices are inserted into the depression.” *Id.* at 13:27–31.

Schröder further explains that “[t]he depression has the purpose that the devices to be inserted into the depression should not protrude beyond the carrier foil if possible, so that an even surface is present on the carrier foil to facilitate a later processing of the carrier foil with inserted devices.” *Id.* at 13:31–35.

Schröder describes that in this later processing step “the ring blanks are punched out of the carrier foil” after insertion of the devices in the depressions on the carrier foil. *Id.* at 13:62–64. Schröder states that “[i]t is essential to the invention that independently of the length of the respectively singled ring blank the length of the region in the carrier foil with the chip module 10, the antenna coil 8 and any further electronic devices stays the same for each ring blank or each later finger-ring 2.” *Id.* at 14:4–8. After the ring blank is prepared and singled to a desired length, the ring blank is wound or rolled up to obtain the form of a finger-ring 2 and then laminated under pressure and heat in a mold to form a firm bond. *Id.* at 14:14–20.

Thus, if, as asserted by Petitioner for limitation 1[c], Schröder suggests placing a battery between ring components 16, 18, then Schröder would also suggest placing that battery in a depression in inlay 12. This further undermines Petitioner’s theory that Schröder teaches or suggests a PCB positioned along only one half of the space between the ring halves, as shown above in Petitioner’s annotated Figure 7.

We do not credit Dr. Anthony’s testimony, which is based on the arbitrary shading in Figure 7 (*see* Ex. 1002 ¶ 174), that Schröder teaches or

suggests limitation 1[d] because it (1) is inconsistent with Petitioner's reasoning for limitation 1[c], and (2) it is based on an admitted misreading of the embodiment of Schröder's Figure 5 (*see* Ex. 1002 ¶ 175). As to the first item, Dr. Anthony states that "a POSITA would have been motivated to place a battery in a part of the cavity that is far from a PCB holding other electrical components because that configuration allows for better thermal management." Ex. 1002, para. 175. The problem with this statement is that Petitioner relies on Schröder's teaching that inlay 12, i.e., the alleged PCB, could include "other electrical components," such as a battery to support its position that Schröder suggests placing a battery between the ring halves. *See, e.g.*, Pet. Reply 2 (pointing to Dr. Mercier's depo testimony that inlay 12 with "other components" is inserted between ring halves); *id.* at 3 (relying on Schröder's teaching about placing components in depressions on inlay 12). So, Petitioner earlier asserts for the battery limitation 1[c] that Schröder teaches or suggests putting a battery on inlay 12 inside the ring halves, but then for limitation 1[d], Dr. Anthony testifies that a POSITA would place the battery "far" away from the inlay 12 (i.e., the alleged PCB). These positions are inconsistent.

As to the second item, our concern regarding Petitioner's inconsistent positions is exacerbated by Dr. Anthony's initial misunderstanding of Schröder's Figure 5 embodiment. In his direct testimony, Dr. Anthony submits that a person of ordinary skill in the art would position the battery in one portion of the cavity and the PCB in a different portion of the cavity, offering the annotated version of Schröder's Figure 5 reproduced below to illustrate Petitioner's position *See* Ex. 1002 ¶ 175.

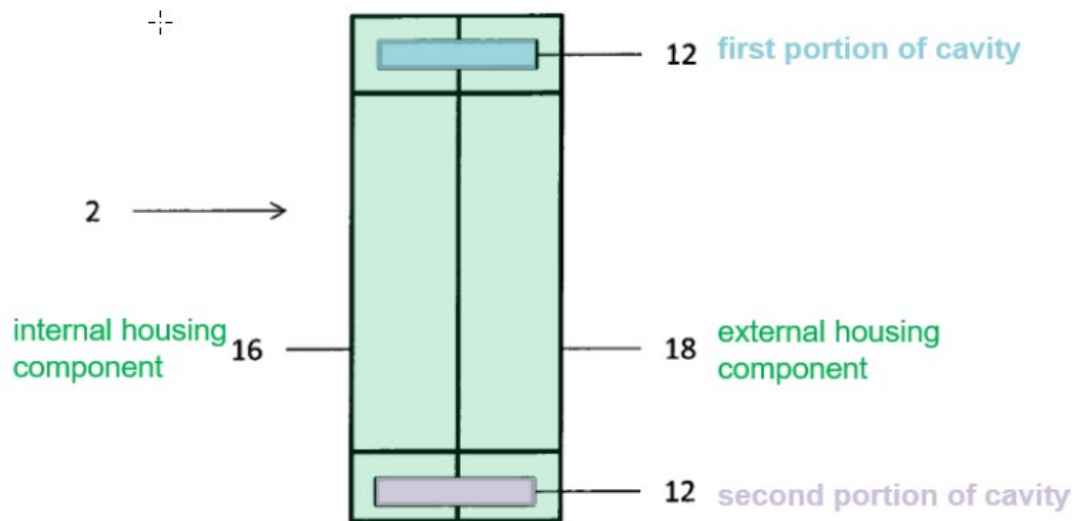


Fig. 5

The figure reproduced above is Schröder's Figure 5 that has been labeled by Dr. Anthony to identify a "first portion of cavity" colored in light blue, a "second portion of cavity" colored in light purple, "internal housing component" 16, and "external housing component" 18. But on cross-examination, Dr. Anthony admitted that he had mislabeled his annotations of Schröder's Figures 4 and 5 in his declaration, including his incorrect description of ring half 16 in Figure 5 as an "internal housing component" and ring half 18 as an "external housing component." Ex. 2020, 30:15–34:3, 37:20–39:17, 48:19–49:2.

Petitioner, in an attempt to rectify the incorrect annotations applied to Schröder's Figure 5 in the Petition, presents a modified Figure 5' in its Reply, reproduced below.

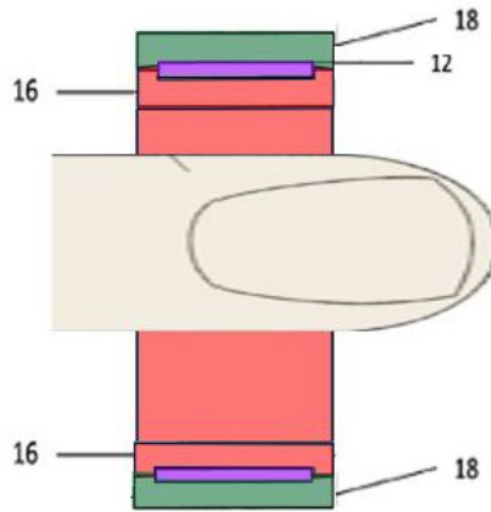


Fig. 5'

The modified Figure 5' shown above depicts the configuration of the cross-section in Schröder's Figure 7 embodiment, but modified to illustrate a view similar to the different embodiment in Schröder's Figure 5. Pet. Reply 5–6. According to Petitioner, this modified Figure 5' depicts an internal housing component 16 colored in red, an external housing component 18 colored in green, and an inlay 12 colored in purple. *Id.* at 5.

The problem with this modified Figure 5' is that Petitioner has materially changed its position from the Petition by moving the alleged location of the PCB so that it now fills the entire space between the ring halves (see dark purple shading above), instead of through just a portion of it as depicted by the purple highlighting in the annotated version of Figure 7 in the Petition. *Compare* Pet. 25 (Fig. 7), *with* Pet. Reply 6 (modified Fig. 5'); *compare* Ex. 1002 ¶ 174, *with* Ex. 1079 ¶ 32. Also in Petitioner's Figure 5', inlay 12, which Petitioner continues to assert is the claimed printed circuit board, is now depicted as extending through *both* the top and bottom cross sections, whereas Dr. Anthony's previously testified that a person having

ordinary skill would have been motivated to place the battery in the “first portion of the cavity” (the top cross-section portion shown in light blue shading) such that the PCB would only extend through the “second portion of the cavity” (the bottom cross-section portion shown in light purple shading). *Compare* Ex. 1002 ¶ 175 (original annotated Figure 5), *with* Pet. Reply 6 and Ex. 1079 ¶ 32 (modified Fig. 5’).

For these reasons, we agree with Patent Owner that Petitioner has changed its theory in its Reply. PO Sur-reply 13. This change undermines the credibility of Petitioner’s position.¹⁰ While we do not disagree with Petitioner’s assertion that “two solid components cannot simultaneously occupy the same space” (*see* Pet. 25), it does not follow from that fact alone that all of Schröder’s electrical components, e.g., the inlay and a battery, must occupy and be entirely contained within the space between the ring halves. Indeed, Schröder depicts an embodiment with a chip module that extends above the inlay and outside the upper ring half. *See* Ex. 1007, Fig. 3 (chip module 10). Moreover, even the Figure 7 embodiment Petitioner relies upon depicts the inlay as occupying a relatively small cavity within the ring halves, and Schröder acknowledges that if electronic devices are added to that inlay, they may not fit. *See* Ex. 1007, 13:31–35 (stating that devices “should not protrude beyond the carrier foil *if possible*”) (emphasis added); *see also id.* at 14:9–13 (describing using a paste to compensate for steps or shoulders that may arise through chip module 10). Accordingly, we agree with Dr. Mercier that Petitioner’s argument “falsely presumes” that the

¹⁰ To the extent Dr. Anthony’s testimony has similarly changed between his original and supplemental declarations, we do not credit that testimony. *Compare* Ex. 1002 ¶ 175, *with* Ex. 1079 ¶ 32.

battery is between the ring halves in Schröder, and we credit his testimony pointing out the deficiencies in Petitioner’s showing for limitation 1[d] (Ex. 2018 ¶¶ 101–103, 116–119) over Dr. Anthony’s competing testimony.

Further, Petitioner has not met its burden to show that Schröder’s inlay 12 is a PCB. Relying on testimony from Dr. Anthony, Petitioner asserts that Schröder’s inlay 12 serves as a flexible carrier made of “common PCB materials” such as PET and Kapton. Pet. 24 (citing Ex. 1002 ¶ 171; Ex. 1007, 8:54–57, 12:28–29; 12:61–65). Petitioner then asserts that “a [person having ordinary skill in the art] would have understood that Schröder’s inlay corresponds to the claimed PCB disposed between the internal and external housings.” *Id.* (citing Ex. 1002 ¶ 171).¹¹

Dr. Anthony did not provide a clear explanation of a person of ordinary skill in the art’s understanding of a PCB in his direct testimony. During cross-examination, however, Dr. Anthony agreed that a Wikipedia article cited in his declaration and describing a PCB as a “laminated sandwich structure of conductive and insulating layers” was an accurate description of a PCB:

Q. So is the first sentence of this Wiki page, in your mind, an accurate description of a printed circuit board?

A. So, the first sentence, “A printed circuit board (PCB)[] also called a printed wiring board, []is a laminated sandwich structure of conductive and insulating layers, each with a pattern of traces, planes, and other features (similar to wires on a flat surface) etched from one or more sheets of copper laminated onto or between sheet layers of nonconductive substrate.”

¹¹ Petitioner does not assert or present evidence to show that it would have been obvious to a person having ordinary skill in the art to construct inlay 12 as a printed circuit board.

And so your question again was?

Q. Is that a fair definition of printed circuit board in your mind?

A. It's a fair description of the general process for circuit boards, layers of conductive traces.

Ex. 2020, 73:17–74:11; *see also id.* at 76:14–20 (testifying that the '178 patent's usage of "PCB" is consistent with the definition from the Wikipedia article); *see also* Ex. 1002 ¶ 32 n.1 (citing the Wikipedia article).

Patent Owner argues that Dr. Anthony's testimony "fails to provide any analysis as to how the inlay 12 of Schröder meets [the Wikipedia] definition." Resp. 51. Patent Owner further asserts that "there is no support for Petitioner's contention that a mere inlay is a PCB." *Id.* at 50 (citing Ex. 2018 ¶ 120; Ex. 2104 (describing five components and fourteen manufacturing steps for PCBs)). Dr. Mercier agrees with the Wikipedia definition, and opines that Schröder's description of inlay 12 "does not include the described features (laminated sandwich structure of conductive and insulating layers, pattern of traces etched on sheet layers of copper, between sheet layers of nonconductive substrate)." Ex. 2018 ¶ 122.

Responding to Patent Owner's arguments, Petitioner replies that Schröder's inlay 12 may be made of "flexible carrier material," such as "Kapton," which is a polyimide foil used for flexible printed circuits, similar to the flexible polyimide material disclosed in the '178 patent. Reply 6 (citing Ex. 1007, 12:28–29; Ex. 2023, 9; Ex. 1081, 80:17–81:10; Ex. 1001, 18:38–40). Petitioner also asserts that Schröder discloses its foils "are manufactured by 'milling, lasering, etching,' and components are attached to specific foil layers, allowing for multilayer carrier foil composite." *Id.* (citing Ex. 1007, 13:23–51). Petitioner also asserts that Patent Owner's

expert Dr. Mercier acknowledged that Schröder teaches multiple layers and a wiring pattern and that Schröder’s carrier foil may have depressions for inserting electronic devices. Reply 6 n.3 (citing Ex. 1081, 106:17–108:9); *id.* at 7 (citing Ex. 1081, 105:9–108:9).

We are not persuaded by Petitioner’s arguments and find that Patent Owner has the better position. Although Schröder describes some aspects that are similar to those of a printed circuit board, Petitioner has not sufficiently demonstrated that a person having ordinary skill in the art would understand Schröder’s inlay 12 or carrier foil to be a “printed circuit board,” as recited in claim 1. As an initial matter, while Schröder refers to a “circuit board” in another context, it never refers to the carrier foil or inlay in its finger-ring embodiment as such. *See* Ex. 1007, 22:48–49; Ex. 2018 ¶ 122; *see also* Ex. 1079 ¶ 33 (Dr. Anthony acknowledging that Schröder’s only reference to a “circuit board” is “unrelated to Schröder’s finger-ring teachings”). Instead, Schröder describes features of that inlay, explaining that “[t]he carrier foil itself consists of a flexible plastic material, e.g., PET or Kapton” and “antenna coil 8 can for example be printed on the carrier foil by means of a conductive paste” and “a depression is manufactured in the carrier foil, e.g., by milling, lasering, etching, before the chip module 10, the antenna coil 8 and optional further electronic devices are inserted into the depression.” *Id.* at 13:26–31, 13:35–37. Schröder further describes that “[a]t least one further foil can be applied to the carrier foil or the ring blank on at least one side” to produce a “multilayer foil component” that can be “interconnected” by means of “glue or lamination.” *Id.* at 13:48–51. Based on this description, Schröder’s inlay 12 may include a printed conductive

antenna coil 8, multiple layers of the carrier foil, and components inserted into depressions on the carrier foil.

Schröder, however, does not describe how, if at all, the components are connected on its carrier foil. This aspect is important in PCB construction. For instance, the Wikipedia description of a PCB recites “a laminated sandwich structure of conductive and insulating layers, each with a pattern of traces, planes, and other features (similar to wires on a flat surface) etched from one or more sheets of copper laminated onto or between sheet layers of nonconductive substrate.”¹² Ex. 2020, 73:17–74:11. Petitioner fails to identify in Schröder any copper or other conducting layer from which traces, for example, are etched.¹³

Further, the evidence provided by Patent Owner as to PCB manufacture evinces many specific structural features of a PCB that are missing from Schröder’s disclosure and Petitioner’s showing. Ex. 2014. For instance, this document describes PCBs “are created by placing a thin layer of conductive material onto an insulating board, called the substrate material. Tiny electronic components are then put onto the substrate and

¹² In his Reply Declaration, Dr. Anthony states that he “merely referenced the Wikipedia article for ‘PCB’ to confirm what this well-known acronym stood for. This reference was not a formal adoption of what I believe is a ‘printed circuit board.’” Ex. 1079 ¶ 29. He does not, however, identify anything he believes is inaccurate in the description in that article. *See id.* ¶¶ 30–33 (urging instead that Schröder’s inlay is a PCB under the Wikipedia definition). Accordingly, we credit Dr. Mercier’s testimony that the Wikipedia article accurately reflects an ordinarily-skilled artisan’s understanding of a PCB in 2013. Ex. 2018 ¶ 122.

¹³ Petitioner’s and Patent Owner’s counsel agreed at the hearing that inlay 12 made from Kapton, for instance, is an insulating layer. Paper 53, 65:2–4, 76:6–9.

connected to these circuits through soldering.” *Id.* at 2. The document further describes the “key parts” of a PCB as including a substrate, a prepreg, metal foil, coatings, bonding film, and vias and via fills. *Id.* at 2–3. The document also describes fourteen steps to manufacture a PCB, including etching the board to “eliminate[] exposed copper while keeping just the needed copper traces intact.” *Id.* at 3–4 (step five).

Although Schröder describes that “a depression is manufactured in the carrier foil, e.g. by milling, lasering, etching before the chip module 10, the antenna coil 8 and optional further electronic devices are inserted into the depression,” (Ex. 1007, 13:27–31), Petitioner has not explained how such step creates traces to electrically connect the electronic devices. The only conductive portion identified by Petitioner is antenna coils 8, which are printed with conductive paste. Petitioner does not show where Schröder describes how chip module 10, for instance, is electrically connected to any other components, and Petitioner does not adequately demonstrate how a person having ordinary skill in the art would understand Schröder’s description to include such connections.

Further, we disagree with Petitioner’s assertion that Dr. Mercier acknowledged that Schröder teaches a wiring pattern. Reply 6 n.3 (citing Ex. 1081, 106:17–108:9). We do not see where in the cited testimony Dr. Mercier discusses a wiring pattern. Instead, he testifies that although Schröder says that the antenna coil 8 can be printed on the carrier foil by means of conductive paste, he did not “see reference to printing of other devices onto the carrier foil.” Ex. 1081, 106:17–20. Further, we credit Dr. Mercier’s testimony that the fact that “the inlay materials are ‘common PCB materials’ does not support the conclusion that inlay 12 is a printed

circuit board” and that Schröder’s description of inlay 12 does not include many features of a PCB, such as conductive layers sandwiched with insulating layers and patterns of traces etched on copper layers (Ex. 2018 ¶¶ 120–122) over the competing testimony from Dr. Anthony (Ex. 1079 ¶¶ 30–33), which as we noted above was not sufficiently explained in Dr. Anthony’s original testimony and is not supported by the teachings in Schröder or the other evidence of record. Thus, we find that Petitioner has not met its burden to demonstrate that Schröder’s inlay 12 is a PCB.

For these reasons, we find that Petitioner has not met its burden to show by a preponderance of the evidence that claim 1 of the ’178 patent is unpatentable over Schröder.

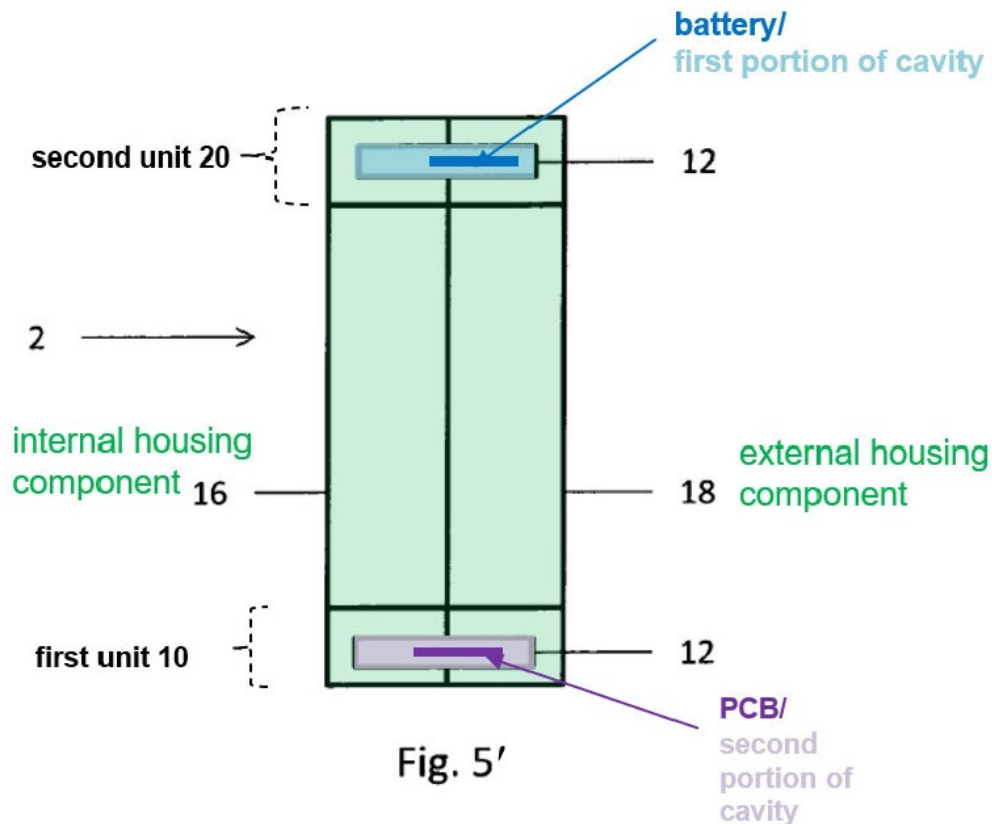
ii. Claims 2, 3, 17, and 18

Claims 2, 3, 17, and 18 depend from claim 1. Ex. 1001, 45:9–18, 46:46–61. Petitioner’s showing is based on the same deficient showing for claim 1. For instance, for the challenge to dependent claim 2, Petitioner refers to the sections of the claim 1 analysis for Ground 1 addressing elements 1[c] and 1[d] as evidence that Schröder teaches that the battery is located in a first portion of the cavity and the PCB is located in a different portion of the cavity. Pet. 27–28. Similarly, for the challenges to dependent claims 3, 17, and 18, Petitioner relies on the analysis provided for elements 1[c] and 1[d] in the challenge to claim 1. *Id.* at 28 (referring to Sections XIII.A.1.e–f); *id.* at 29 (same). For the same reasons discussed above as to the challenge to claim 1, we also find that Petitioner has not met its burden to show by a preponderance of the evidence that claims 2, 3, 17, and 18 of the ’178 patent are unpatentable over Schröder.

F. Ground 2: Obviousness over Schröder and Niwa

i. Claim 1

Petitioner’s assertion of obviousness of claim 1 over Schröder and Niwa relies on some of the same deficient showings in the first Ground. Specifically, Petitioner asserts that it would have been obvious to modify Schröder in view of Niwa to position “the battery and PCB in their respective portions of the cavity that are separate from each other.” Pet. 37. As before, Petitioner offers a “[m]odified Figure 5,” reproduced below, to illustrate the combination, showing Schröder’s finger-ring with the battery in the first portion and the PCB in the second portion. Pet. 38; Ex. 1002 ¶ 207.



Petitioner’s figure above depicts ring half 16 labeled as “internal housing component,” ring half 18 labeled as “external housing component,”

inlay 12 labeled a “cavity” between internal and external housing components 16 and 18, a battery disposed in a first portion of the cavity colored in blue at the top of the figure, and a PCB disposed in a second portion of the cavity colored in purple at the bottom of the figure. As discussed above, Dr. Anthony has since admitted that Petitioner’s modified figure mislabels the internal and external housing components. Ex. 2020, 30:15–34:3, 37:20–39:17, 48:19–49:2.

In the Reply, Petitioner relies on the same arguments presented for Ground 1, arguing that “as previously explained ring halves 16 and 18 correspond to the internal and external housings in Figures 7 and 8.” Pet. Reply 7. Thus, we understand this statement to mean that Petitioner has again shifted from relying on the modified Figure 5 in the Petition to relying on the new Figure 5’ in the Reply. Pet. Reply 6. For the same reasons discussed above for Ground 1, the inconsistencies between its position in the Petition and its new position in the Reply, coupled with Dr. Anthony’s initial misunderstanding of the embodiment in Figure 5 of Schröder, results in Petitioner failing to show by a preponderance of the evidence that claim 1 of the ’178 patent is unpatentable over Schröder and Niwa.

ii. Claims 2, 3, and 13–16

Claims 2, 3, and 13–16 depend from claim 1. Ex. 1001, 45:9–18, 46:25–45. Petitioner’s showing for these dependent claims is based on the same deficient showing for claim 1. Pet. 38–48. For the same reasons discussed above as to the challenge to claim 1, we also find that Petitioner has not met its burden to show by a preponderance of the evidence that

claims 2, 3, and 13–16 of the ’178 patent are unpatentable over Schröder and Niwa.

G. Ground 3: Obviousness over Schröder and Mestas

i. Claim 3

Claim 3 depends from claim 1 and recites, “wherein the first portion of the cavity of the finger-worn wearable ring device is at least partially overlapping with the second portion of the cavity of the finger-worn wearable ring device.” Ex. 1001, 45:14–18. Petitioner asserts that Mestas teaches a wearable biometric sensing device having a cavity, and a battery and PCB arranged in overlapping portions of the cavity. Pet. 49–50 (citing Ex. 1010 ¶¶ 150, 151, 154, 157, 164, 168, 177, Figs. 4, 6). Petitioner submits that a person of ordinary skill “would have been motivated to have the first and second portions of [Schröder’s] cavity at least partially overlap, as taught by Mestas, to reduce the risk of electrical components losing mechanical or electrical connection to the other and to allow other parts of the ring to be thinner for the wearer’s comfort.” Pet. 50 (citing Ex. 1007, 3:9–11; Ex. 1010 ¶¶ 164, 168, 177, 206; Ex. 1002 ¶¶ 240–241).

Given that Dr. Anthony’s testimony as to the locations of the first portion and the second portion of Schröder’s cavity is unclear, as explained above, the proposed modification of these portions with the teachings of Mestas is equally unclear. We also agree with Patent Owner that Dr. Anthony’s proposed combination of Schröder and Mestas is not supported with adequate reasoning.

The record supports Patent Owner’s argument that Mestas’s batteries are much too large to fit within a ring form factor, and “Mestas’s batteries,

layout, and other components . . . would have to be scaled down 5 to 10 times to be appropriately sized for a finger worn ring.” Resp. 64 (internal quotation marks omitted) (citing Dr. Anthony’s cross-examination testimony at Ex. 2021, 313:12). Moreover, we do not credit Dr. Anthony’s testimony that miniaturization of the battery would have been “trivial to implement.” Ex. 1002 ¶ 242. Dr. Anthony admitted on cross-examination that it would not have been within the level of skill of a person having ordinary skill in the art to design a smaller version of Mestas’s battery, and that such a person would need to procure a battery of the appropriate size and specifications for implementation in a finger-ring from a battery manufacturer. Ex. 2021, 315:9–318:9. Yet Dr. Anthony had not ascertained, for purposes of his testimony, whether there was a battery available in 2013 that was appropriate to fit within the inlay space of the modified version of Schröder’s finger-ring that he and Petitioner allege would have been obvious to one of skill in the art at that time. *Id.* at 321:5–10.

Further, we credit Dr. Mercier’s testimony that Dr. Anthony’s testimony fails to consider the differences in power requirements between Mestas and Schröder or to account for the constraints of such a substantially smaller form factor in Schröder’s finger-ring as compared to Mestas’s wrist device. Ex. 2018 ¶¶ 159–160. 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 ’178 patent, we also have evidence that prior art “finger ring wearables up to the ’178 patent had used ‘coin’ type batteries.” *Id.* at 66 (citing Ex. 2018 ¶ 161). We credit Dr. Mercier’s testimony that a person having ordinary skill in the art would look to a coin type battery for the necessary power requirements of Schröder’s device.

Ex. 2018 ¶ 161. 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), Fig. 24; Ex. 2018 ¶¶ 61–70. 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 ¶ 71.

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 Schröder's finger-ring to place a curved battery between the internal and external housing components in light of the teachings in Mestas. Thus, Petitioner has not met its burden to show by a preponderance of the evidence that dependent claim 3 of the '178 patent is unpatentable over Schröder and Mestas.

ii. Claim 12

Claim 12 depends from claim 1 and recites, “wherein the battery comprises a curved battery, wherein an arc of the curved battery approximates a corresponding arc of the external housing component.” Ex. 1001, 46:21–24. Petitioner asserts that Mestas discloses curved batteries. Pet. 53 (citing Ex. 1010 ¶¶ 157, 168). Petitioner submits that a person having ordinary skill would have been motivated to implement Mestas's curved battery in Schröder's finger-ring because “a curved battery allows a larger battery to conform to a ring's circular shape without stressing the battery or

ring housing.” *Id.* at 50 (citing Ex. 1002 ¶ 241); *id.* at 53–54 (citing Ex. 1010 ¶ 168; Ex. 1002 ¶ 248). This proposed modification of Schröder’s finger-ring with the curved batteries of Mestas does not cure the deficiencies in the challenge to claim 1 based on Schröder. Further, as explained above in our analysis of the challenge to claim 3 (Section III.G.i), 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 Schröder’s finger-ring to place a curved battery between the internal and external housing components in light of the teachings in Mestas. Thus, Petitioner has not met its burden to show by a preponderance of the evidence that dependent claim 12 of the ’178 patent is unpatentable over Schröder and Mestas.

H. Ground 4: Obviousness over Schröder and Yuen

i. Claim 1

Petitioner relies on the same analysis as to limitation 1[d] as presented for Ground 1 in support of its challenge to claim 1 for Ground 4. Pet. 58 (citing to analysis of limitation 1[d] from Ground 1 in § XIII.A.1.f.). Petitioner submits that a person of ordinary skill in the art “would understand that [Yuen’s flexible PCB] could be applied to Schröder’s inlay, which extends through a second portion of the cavity different from the first portion. *Id.* at 58–59. Thus, in Ground 4, Petitioner again relies on Schröder alone for the position of the claimed first and second portions, as set forth for Ground 1. For the reasons discussed above, Petitioner’s showing in Ground 1 is deficient. Accordingly, Petitioner has not shown by a preponderance of the evidence that claim 1 of the ’178 patent is unpatentable over Schröder and Yuen.

ii. Claims 4–10 and 13–16

Claims 4–10 and 13–16 depend from claim 1. Ex. 1001, 45:19–46:12, 46:25–45. Petitioner’s showing for these dependent claims is based on the same deficient showing for claim 1. Pet. 59–73. For the same reasons discussed above as to the challenge to claim 1, we also find that Petitioner has not met its burden to show by a preponderance of the evidence that claims 4–10 and 13–16 of the ’178 patent are unpatentable over Schröder and Yuen.

I. Ground 5: Obviousness over Niwa

i. Claim 1

Petitioner asserts that “Niwa’s ring has an external housing component that defines an outer circumferential surface.” Pet. 77 (citing Ex. 1002 ¶¶ 313–315). Specifically, Petitioner submits that “[a]s shown in Figure[s] 22 and 26 below, the outside of finger ring housing 40 that is exposed to the environment is the ‘external housing component’ (green) of Niwa’s finger ring 40.” *Id.* (citing Ex. 1002 ¶ 314).

FIG.22

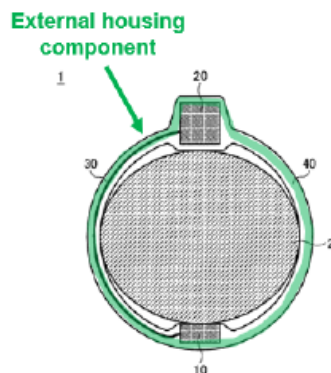
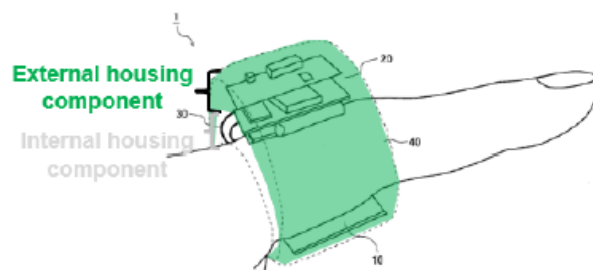


FIG.26



The figures shown above highlight in green an outer portion of Niwa's finger-ring housing 40 that Petitioner asserts is the external housing component. Pet. 77.

Petitioner also asserts that "Niwa's finger ring has an internal housing component defining the inner circumferential surface of the ring and is coupled with the external housing component." Pet. 78 (citing Ex. 1002 ¶ 319). Specifically, Petitioner identifies internal housing component as the inner portion of the ring housing 40 that surrounds "the ball side of the finger 2 (i.e., palm side) when the finger ring type housing 40 is worn." *Id.* at 78. Petitioner depicts this internal housing component (green) with reference to annotated Figures 22 and 26 of Niwa, shown below.

FIG.22

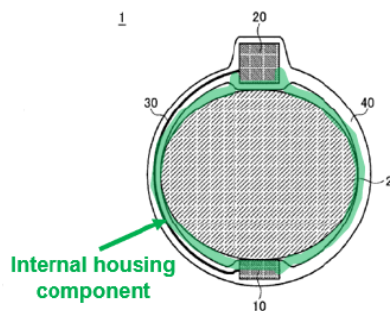
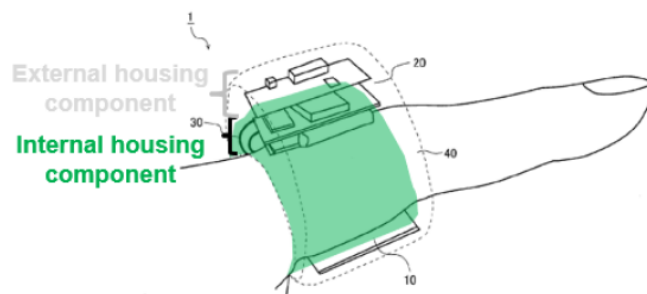


FIG.26



The figures shown above highlight in green an inner portion of Niwa's finger-ring housing 40 that Petitioner asserts is the internal housing component. Pet. 79. Petitioner asserts that "[a] POSITA would have understood that the internal and external housing components could together form a housing or be coupled together, depending on the specific design requirements." *Id.* (citing Ex. 1002 ¶ 320).

Patent Owner argues that “Niwa discloses a unitary, component-less housing 40 . . . and fails to disclose how the housing is constructed.” Resp. 78 (citing Ex. 1005, Fig. 23, Ex. 2018 ¶ 182).

We agree with Patent Owner and Dr. Mercier that Niwa does not explicitly describe how housing 40 is constructed, and it depicts a unitary housing 40 in its Figures. *See, e.g.*, Ex. 1005, Fig. 23; Ex. 2018 ¶ 182. In fact, Dr. Anthony agreed that Niwa is silent as to how its housing is constructed. Ex. 2020, 251:11-15.

We also note that the Administrative Law Judge (ALJ) in the related ITC proceeding declined to adopt a position similar to the one presented by Petitioner that Niwa’s unitary housing 40 has an internal housing component and an external housing component. Specifically, the ALJ found a rebuttable presumption that the claimed internal and external housing components are separate because claim 1 lists the elements as separate components. Ex. 2122, 85. The ALJ also determined that the rebuttable presumption is supported by other claim language requiring that the internal and external housing components are coupled to each other and by the Specification of the ’178 patent, which shows and discusses individual components of the housing as separate when a housing with separate components is disclosed and shows a U-shaped housing in Figure 4 and a housing with an integral inner wall and outer wall in Figure 16 when a unitary housing is disclosed. *Id.* (citing Ex. 1001, 16:43–20:49 (Figs. 12–15), 16:22–42 (Fig. 4), and 20:51–65 (Fig. 16)). We see no reason to deviate from that finding on the record before us here.

Indeed, we agree with Patent Owner that Petitioner’s assertion that portions of unitary housing 40 are “components” effectively reads the

recitation of multiple “component[s]” and “coupled with” out of the claims. Resp. 79 (citing Ex. 2018 ¶¶ 183–185). *See Regeneron Pharms., Inc. v. Mylan Pharms. Inc.*, 130 F.4th 1372, 1379 (Fed. Cir. 2025) (“where a claim lists elements separately, the clear implication of the claim language is that those elements are distinct components of the patented invention.”) (citing *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1255 (Fed. Cir. 2010)); *Bd. of Regents of the Univ. of Tex. Sys. v. BENQ Am. Corp.*, 533 F.3d 1362, 1371 (Fed. Cir. 2008) (“Different claim terms are presumed to have different meanings.”).

Dr. Anthony’s testimony, which is based on his understanding that the claims do not recite “how [the] housing is constructed,” is based on a misreading of the claim language. Ex. 1079 ¶ 65. This testimony is also not consistent with the definitional language in the Specification of the ’178 patent, which states that “[t]he term ‘coupled’ as used herein means connected directly to or connected through one or more intervening components or circuits.” Ex. 1001, 9:8–10.

Further, Petitioner fails to include an explanation as to why it would have been obvious to a person having ordinary skill in the art to modify Niwa to form housing 40 with internal and external housing components coupled together. Resp. 79. Petitioner includes only a statement that a person of ordinary skill would have understood that the internal and external housing components “could together form a housing or be coupled together, depending on the specific design requirements.” Pet. 79 (citing Ex. 1002 ¶ 320). The Petition does not articulate reasoning to explain why a person having ordinary skill would have been led to modify the unitary housing 40 of Niwa to use the claimed internal and external housing components.

Although Dr. Anthony’s declaration discusses “design requirements, including considerations for durability, maintenance, and performance optimization,” he fails to tie these general considerations to a specific reason to modify Niwa’s unitary housing to one constructed from distinct internal and external housing components as recited in claim 1. Ex. 1002 ¶ 320. Rather, this portion of Dr. Anthony’s declaration mentions generally “various assembly techniques that might be used.” *Id.* A discussion of various options that could be used without an explanation of a reason to modify Niwa’s housing in the manner claimed is insufficient to meet Petitioner’s burden to show obviousness in view of Niwa.

For this reason, Petitioner has not met its burden to show by a preponderance of the evidence that claim 1 of the ’178 patent is unpatentable over Niwa.

ii. Claims 2, 3, and 13–18

Claims 2, 3, and 13–18 depend from claim 1. Ex. 1001, 45:9–18, 46:25–61. Petitioner’s showing of unpatentability for these dependent claims is based on the same inadequately supported proposition that Niwa discloses the claimed internal and external housing components. Pet. 88–93. For the same reasons discussed above as to the challenge to claim 1, we also find that Petitioner has not met its burden to show by a preponderance of the evidence that claims 2, 3, and 13–18 of the ’178 patent are unpatentable over Niwa.

J. Ground 6: Obviousness over Niwa and Schröder

i. Claim 1

Petitioner submits that the combination of Niwa and Schröder teach a finger-ring with an external housing component (element 1[a]) and an internal housing component (element 1[b]). Pet. 77–81. Specifically, as to element 1[a], Petitioner asserts that “Schröder’s ‘finger-ring’ consists of ‘two ring halves 16 and 18’ with a recess where ‘inlay 12 is inserted.’” Pet. 78 (citing Ex. 1007, 12:7–9). The cited portion of Schröder describes, “FIG. 5 shows a cross section, corresponding to FIG. 4, of the finger-ring 2. The finger-ring 2 consists of two ring halves 16 and 18.” Ex. 1007, 12:7–9. Petitioner then presents an annotated version of Figure 4 of Schröder, reproduced below. Pet. 78.

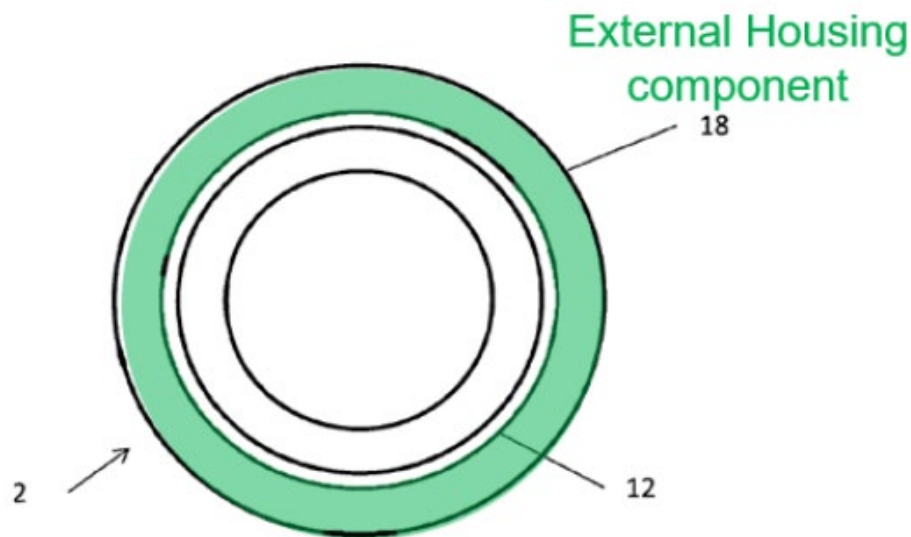


Fig. 4

Figure 4, reproduced above, has been annotated by Petitioner to depict ring half 18 colored in green and labeled “external housing component.”

Petitioner states that “ring half 18 is the claimed external housing component

(green) that defines an outer circumferential surface of the finger-worn wearable ring device because it is the side of Schröder's 'finger-ring' that is exposed to the outside environment and provides an enclosing structure to inlay 12." Pet. 78 (citing Ex. 1002 ¶ 316).

As to element 1[b], Petitioner again relies on Figures 4 and 5 of Schröder for the internal housing component. Pet. 79 (citing Ex. 1007, 12:7–9). Petitioner presents an annotated version of Figure 4 of Schröder, reproduced below. Pet. 79–80.

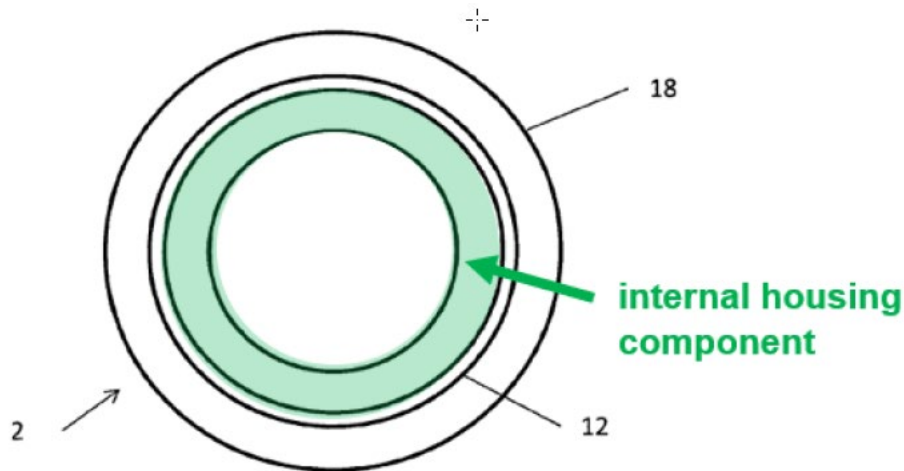


Fig. 4

Figure 4, reproduced above, has been annotated by Petitioner to depict an inner portion of finger-ring 2 colored in green and labeled "internal housing component." Petitioner states that "ring half 16 (green) is the internal housing component defining an inner circumferential surface of the finger-worn wearable ring device because it is the inside ring that contacts the user's skin when the 'finger-ring' is worn." Pet. 79–80 (citing Ex. 1002 ¶¶ 321–322).

Petitioner also presents an annotated version of Schröder's Figure 5 in an attempt to depict "Schröder's internal housing component . . . coupled

with the external housing component.” Pet. 80–81 (citing Ex. 1002 ¶¶ 321–323).

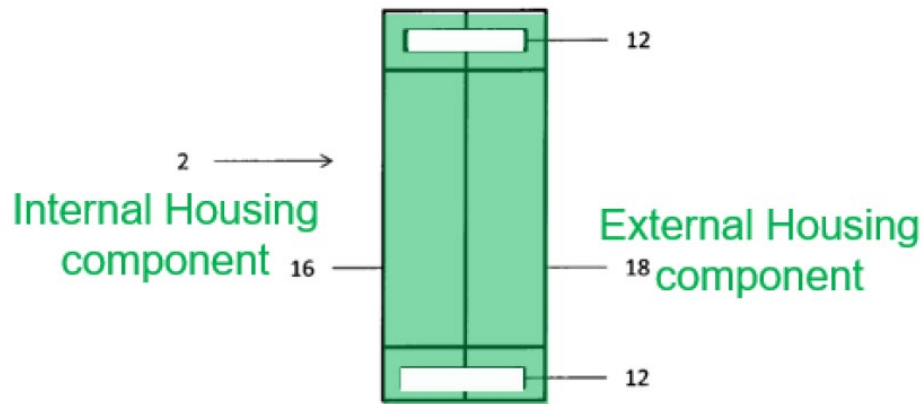


Fig. 5

Figure 5, reproduced above, depicts a cross section, corresponding to Figure 4, of Schröder’s finger-ring 2 and has been annotated by Petitioner to show ring-half 16 colored in green and labeled “Internal Housing component,” and ring-half 18 colored in green and labeled “External Housing component.” Ex. 1007, 12:7–9.

Patent Owner argues Petitioner has not shown how the claimed invention would have been obvious because Figure 5 of Schröder defines “top and bottom ringhalves 16 and 18 that are joined in the middle of the ring (like a bagel), not inner and outer surfaces.” Resp. 84 (citing Ex. 2018 ¶ 197).

Petitioner does not respond to this argument in its Reply. *See, e.g.*, Pet. Reply 14–17 (addressing Ground 6). Dr. Anthony does not address this argument in his supplemental declaration. Ex. 1079 ¶¶ 66–69 (addressing Ground 6).

As discussed above in our analysis of Ground 1, Petitioner’s reliance on the embodiment in Schröder’s Figures 4 and 5 is misplaced because ring

halves 16 and 18 in those figures do not correspond to the recited internal and external housing components. That is, we agree with Patent Owner that Figure 4 shows a longitudinal cross-section of finger-ring 2 with inlay 12 inserted into only one ring half 18 (i.e., a bottom half), and Figure 5 depicts a cross section through the finger-ring of Figure 4, depicting both top ring half 16 and bottom ring half 18. Ex. 1007, 12:4–10. In this embodiment, there is no internal housing component, e.g., an inner ring half, “defining an inner circumferential surface of the finger-worn wearable ring device” and no external housing component, e.g., an outer ring half, “defining an outer circumferential surface of the finger-worn wearable ring device.” Ex. 1001, 44:46–50. Instead, both ring halves 16 and 18 have the same inner and outer circumferential surfaces. *Id.*, Figs. 4, 5. Thus, in the embodiment of Figures 4 and 5 of Schröder, ring half 16 is not an internal housing component and ring half 18 is not an external housing component.

During cross-examination, Dr. Anthony admitted to mistakenly mislabeling Figures 4 and 5 in his declaration, including his incorrect inclusion of internal housing component 16 in annotated Figure 4, and his incorrect description of ring half 16 in Figure 5 as an internal housing component and ring half 18 as an external housing component. Ex. 2020, 30:15–34:3, 37:20–39:17, 48:19–49:2.

For these reasons, Petitioner has not met its burden to show by a preponderance of the evidence that claim 1 of the ’178 patent is unpatentable over Niwa and Schröder.

ii. Claims 2, 3, and 13–18

Claims 2, 3, and 13–18 depend from claim 1. Ex. 1001, 45:9–18, 46:25–61. Petitioner’s showing of unpatentability for dependent claims 2, 3, and 13–16 is based on the same incorrect interpretation of Schröder’s Figures 4 and 5 as depicting the claimed internal and external housing components noted above for claim 1. Pet. 88 (addressing claims 2, 3, and 13–16). For the same reasons discussed above as to the challenge to claim 1, we also find that Petitioner has not met its burden to show by a preponderance of the evidence that claims 2, 3, and 13–16 of the ’178 patent are unpatentable over Niwa and Schröder.

The challenges to claims 17 and 18 refer to different embodiments of Schröder than relied on in the challenge to claim 1. *Id.* at 91–94 (referring to annotated Figures 7 and 8). Petitioner does not explain, however, the shift from the embodiment of Figures 4 and 5 for its challenge to the limitations incorporated from independent claim 1 to Schröder’s different embodiments in Figures 7 and 8 for the additional limitations recited in dependent claims 17 and 18. This aspect of the Petition is unclear. For these reasons, we find that Petitioner has not met its burden to show by a preponderance of the evidence that claims 17 and 18 of the ’178 patent are unpatentable over Niwa and Schröder.

K. Ground 7: Obviousness over Niwa and Mestas

Claim 12 depends from claim 1. Ex. 1001, 46:21–24. Petitioner’s showing of unpatentability for this dependent claim is based on the same inadequately supported proposition that Niwa discloses the claimed internal and external housing components. Pet. 94–97 (relying on Mestas only for its

teaching of a curved battery). For the same reasons discussed above in Ground 5, we also find that Petitioner has not met its burden to show by a preponderance of the evidence that claim 12 of the '178 patent is unpatentable over Niwa and Mestas.

L. Ground 8: Obviousness over Niwa, Schröder, and Mestas

Claim 12 depends from claim 1. Ex. 1001, 46:21–24. Petitioner's showing of unpatentability for this dependent claim is based on the same incorrect interpretation of Schröder's Figures 4 and 5 as depicting the claimed internal and external housing components. Pet. 94–97 (relying on Mestas only for its teaching of a curved battery). For the same reasons discussed above for Ground 6, we also find that Petitioner has not met its burden to show by a preponderance of the evidence that claim 12 of the '178 patent is unpatentable over Niwa, Schröder, and Mestas.

M. Ground 9: Obviousness over Niwa and Yuen

Claims 4–10 depend from claim 1. Ex. 1001, 45:19–46:12. Petitioner's showing of unpatentability for these dependent claims is based on the same inadequately supported proposition that Niwa discloses the claimed internal and external housing components. Pet. 97–106 (relying on Yuen to teach details of battery charging and sensor operational parameters and measurement periodicity). For the same reasons discussed above as to the challenge to claim 1 for Ground 5, we also find that Petitioner has not met its burden to show by a preponderance of the evidence that claims 4–10 of the '178 patent are unpatentable over Niwa and Yuen.

N. Ground 10: Obviousness over Niwa, Schröder, and Yuen

Claims 4–10 depend from claim 1. Ex. 1001, 45:19–46:12.

Petitioner’s showing of unpatentability for these dependent claims is based on the same incorrect interpretation of Schröder’s Figures 4 and 5 as depicting the claimed internal and external housing components. Pet. 97–106 (relying on Yuen to teach details of battery charging and sensor operational parameters and measurement periodicity). For the same reasons discussed above for Ground 6, we also find that Petitioner has not met its burden to show by a preponderance of the evidence that claims 4–10 of the ’178 patent are unpatentable over Niwa, Schröder, and Yuen.

O. Objective Indicia Evidence

Because Petitioner has not met its burden to show obviousness of the challenged claims by a preponderance of the evidence, we do not reach the evidence of non-obviousness offered by Patent Owner. Resp. 88–115.

P. Ground 11: Improper dependent form

i. Claims 17 and 18

Petitioner asserts that claims 17 and 18 do not further limit claim 1 and are, thus, unpatentable under 35 U.S.C. § 112(d). Pet. 108–109. Specifically, Petitioner submits that claim 1 requires the claimed battery to be “completely encompassed by the cavity.” *Id.* at 108. Petitioner contends that claim 17, as corrected¹⁴, which recites “the cavity configured to at least

¹⁴ Claim 17 was corrected by a Certificate of Correction issued on May 21, 2024 to read “the cavity” instead of “a cavity.” Ex. 1004, 1363.

partially surround the battery” improperly broadens the scope of claim 1. *Id.* at 109 (quoting Ex. 1001, 46:48–49). Patent Owner did not respond to this ground in its Response. Resp., *passim*.

Claim 1 recites “a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component.” Ex. 1001, 44:57–63. We agree with Petitioner that the proper reading of claim 1 requires the battery to be completely encompassed by the cavity. This understanding is consistent with the ’178 patent, which shows the battery completely encompassed in the cavity formed between the internal and external housing components. *See, e.g.*, Ex. 1001, Figs. 1A, 1B, 1C, 4, 6–8, 13, 14A. Petitioner is correct that dependent claim 17 fails to further limit claim 1 because claim 17 requires the cavity to only “at least partially surround the battery.” *Id.* at 46:48–49. Thus, we find that claim 17 is unpatentable under 35 U.S.C. § 112(d). We likewise agree with Petitioner that “[b]ecause Claim 18 depends on Claim 17, it too violates §112(d).” Pet. 109.

IV. MOTIONS TO SEAL

The Board previously granted Patent Owner’s motion for entry of a Stipulated Protective Order. Papers 16, 17. 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, 2107, 2108, 2109, 2110, 2111, and 2112), Patent Owner Sur-Reply (Paper 39) and the confidential

version of Exhibit 2118, and the confidential version of its demonstratives (Exhibit 2119). Papers 18, 37, 46. Petitioner likewise requests to seal designated information in its Petitioner Reply (Paper 30) and certain confidential versions of exhibits to the same (Exs. 1079, 1080, 1081, and 1083). Paper 29.

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 and Petitioner submit that the designated material includes Patent Owner’s sensitive and confidential business information, e.g., confidential Patent Owner financial information. Paper 18, 2–4; Paper 29, 2–3; Paper 37, 2; Paper 46, 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). The parties provide a sufficient explanation and have shown good cause for sealing the designated portions of Exhibits 1079, 1080, 1081, 1083, 2019, 2024, 2034, 2063, 2107, 2108, 2109, 2110, 2111, 2112, 2118, and 2119 and the related portions of Patent Owner’s Response, Petitioner’s Reply, Patent Owner’s Sur-Reply. Moreover, the parties provide a public version of each Paper (Papers 19, 31, and 38) and of each Exhibit with redactions limited to the Patent Owner business confidential information so the record may remain clear and

reasonably open. Accordingly, the confidential versions of Exhibits 1079, 1080, 1081, 1083, 2019, 2024, 2034, 2063, 2107, 2108, 2109, 2110, 2111, 2112, 2118, and 2119, Patent Owner’s Response (Paper 20), Petitioner’s Reply (Paper 30), and Patent Owner’s Sur-reply (Paper 39) are sealed. We likewise seal the confidential version of Petitioner’s demonstratives, which were filed as Exhibit 1339 and contain information from the sealed Papers and Exhibits discussed above.

V. CONCLUSION

Petitioner has not shown, by a preponderance of the evidence, that claims 1–10 and 12–16 of the ’178 patent are unpatentable. Petitioner has shown, by a preponderance of the evidence, that claims 17 and 18 of the ’178 patent are unpatentable.¹⁵

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–3, 17, 18	103	Schröder		1–3, 17, 18
1–3, 13–16	103	Schröder, Niwa		1–3, 13–16
3, 12	103	Schröder, Mestas		3, 12

¹⁵ We have considered the parties’ briefing and accompanying papers regarding the prior proceeding before the ITC involving the ’178 patent. Papers 51, 54; Exs. 2122–2134. To the extent the issues here overlap with those previously considered in the ITC proceeding, we discern no difference between our findings and conclusions herein and those reached by the ITC. *See* Ex. 2122, 81–112 (finding that neither anticipation nor obviousness of claims 1, 2, and 12–14 had been shown). Regarding claims 17 and 18 and Ground 11, it does not appear that these claims or any similar improper dependency arguments were considered in the ITC proceeding. *See id.* at 2 (“Oura continues to assert claims 1, 2, and 12–14 of the ’178 patent.”).

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 4–10, 13–16	103	Schröder, Yuen		1, 4–10, 13–16
1–3, 13–18	103	Niwa		1–3, 13–18
1–3, 13–18	103	Niwa, Schröder		1–3, 13–18
12	103	Niwa, Mestas		12
12	103	Niwa, Schröder, Mestas		12
4–10	103	Niwa, Yuen		4–10
4–10	103	Niwa, Schröder, Yuen		4–10
17, 18	112	Improper dependent form	17, 18	
Overall Outcome			17, 18 ¹⁶	1–10, 12–16

¹⁶ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this Decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. §§ 42.8(a)(3), 42.8(b)(2).

VI. ORDER

Accordingly, it is:

ORDERED that Petitioner has shown that claims 17 and 18 of U.S. Patent 11,868,178 B2 are unpatentable;

ORDERED that Petitioner has not shown that claims 1–10 and 12–16 of U.S. Patent 11,868,178 B2 are unpatentable;

ORDERED that Papers 20, 30, and 39 and the confidential versions of Exhibits 1079, 1080, 1081, 1083, 1339, 2019, 2024, 2034, 2063, 2107, 2108, 2109, 2110, 2111, 2112, 2118, and 2119 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.

PGR2024-00030
Patent 11,868,178 B2

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