

**U.S. INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

**Before the Honorable Doris Johnson Hines
Administrative Law Judge**

In The Matter Of

**CERTAIN SMART WEARABLE DEVICES,
SYSTEMS, AND COMPONENTS THEREOF**

Investigation No. 337-TA-1398

COMPLAINANTS' POST-HEARING RESPONSIVE BRIEF

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TABLE OF ABBREVIATIONS¹

Abbreviation	Term
Oura	Complainants Oura Ring, Inc. and Oura Health Oy
Ultrahuman	Respondents Ultrahuman Healthcare Pvt. Ltd., Ultrahuman Healthcare Ltd., and Ultrahuman Healthcare SP, LLC
RingConn	Respondents RingConn LLC and Shenzhen Ninenovo Technology Ltd.
Circular	Respondent Circular S.A.S. (terminated)
Private Parties	Collectively, Oura, Ultrahuman, and RingConn
Staff	Commission Investigative Staff
'178 patent or Asserted Patent	U.S. Patent No. 11,868,178
'179 patent	U.S. Patent No. 11,868,179
'429 patent	U.S. Patent No. 10,842,429
Respondents	Ultrahuman and RingConn
NOII	Notice of Institution of Investigation, 89 Fed. Reg. 27452–53 (Apr. 17, 2024)
Asserted Claims	Claims 1, 2, and 12-14 of U.S. Patent No. 11,868,178
SAC	Second Amended Complaint
DI	Domestic Industry
Oura DI Product(s)	Oura Ring and corresponding Oura application, including Oura Ring Gen. 3 and Oura Ring Gen. 4
Ultrahuman Accused Product	Ultrahuman Ring AIR and its corresponding Ultrahuman application
RPHB	Respondents' Pre-Hearing Brief
RIB	Respondents Initial Post-Hearing Brief
SIB	Staff Initial Post-Trial Brief
RingConn Accused Product	RingConn Smart Ring and its corresponding RingConn application, including RingConn Gen. 1 and Gen. 2
Respondents Accused Products	Ultrahuman Accused Product and RingConn Accused Product collectively
Products-at-Issue	Respondents Accused Products and Oura Domestic Industry Products
MAB	Oura's Medical Advisory Board
PCB	Printed Circuit Board
Tr.	Evidentiary Hearing Transcript

¹ All emphases in the brief are added unless stated otherwise.

TABLE OF ASSERTED CLAIMS

	'178 Patent
[1 Pre]	A finger-worn wearable ring device, comprising:
[1 a]	an external housing component defining an outer circumferential surface of the finger-worn wearable ring device;
[1 b-i]	an internal housing component defining an inner circumferential surface of the finger-worn wearable ring device,
[1 b-ii]	the internal housing component coupled with the external housing component
[1 b-iii]	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
[1 c-i]	a battery positioned within a cavity formed between the internal housing component and the external housing component,
[1 c-ii]	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
[1 c-iii]	wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device;
[1 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
[1 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.
2	The finger-worn wearable ring device of claim 1, wherein the first portion of the cavity of the finger-worn wearable ring device is non-overlapping with the second portion of the cavity of the finger-worn wearable ring device.
12	The finger-worn wearable ring device of claim 1, wherein the battery comprises a curved battery, wherein an arc of the curved battery approximates a corresponding arc of the external housing component
13	The finger-worn wearable ring device of claim 1, wherein the one or more sensors comprise a first light-emitting component configured to emit light associated with a first wavelength, and a second light-emitting component configured to emit light associated with a second wavelength different from the first wavelength.
14	The finger-worn wearable ring device of claim 13, wherein the first wavelength is associated with visible light, and wherein the second wavelength is associated with infrared light.

I. INTRODUCTION

Respondents have not satisfied their heavy burden of proving by clear and convincing evidence that any Asserted Claim is invalid. In fact, the prior art relied on by Respondents underscores the elegant and novel solution offered by the '178 patent. When the Asserted Claims were allowed during examination, the examiner noted that prior art did not “disclose the particularly claimed structure [of claim 1].” JX-0005.1336. The prior art relied on by Respondents in this Investigation is no more relevant than the prior art considered by the examiner, and is more akin to the clunky approach taken by the MIT researcher Asada.

The primary reference (Niwa) does not disclose internal and external housing components—and like Asada stacks its battery and electronics on top of the ring. Yet, without any supportive evidence other than conclusory expert opinion, Respondents argue that a general reference to “housing” means that there must also exist both an “internal housing component” and “external housing component.” But Respondents’ expert was unable to identify any such components in the figures of Niwa because Niwa discloses a unitary housing. In addition, Niwa also requires a “highly flat battery.” CX-1133 at ¶[0217] (“the battery 24 formed as *highly flat* is located right above the finger 2”). Respondents’ obviousness arguments fly in the face of this unequivocal teaching and are therefore legally insufficient.

Respondents’ secondary reference (Schröder) is an RFID external security unit with a replaceable “chip module” that is mounted above the ring (also like Asada). Respondents’ expert, Alarcon’s, response to this teaching was to ignore it—not consider the reference as a whole as the law requires. Schröder also does not require *any* battery because passive RFID devices can function without an internal power source. And while Schröder suggests a device may include an *optional* battery, Schröder does not specify the location, size, or shape of any such optional battery—other than to say it is connected to the *external* chip module. Respondents’ expert’s

interpretation of Schröder in this regard is purely an exercise of impermissible hindsight.

Finally, Respondents’ remaining references (Henderson, GMBPow, and Webster), grouped as “Curved Battery Art” that they combine with Niwa fall prey to the same problem as Schröder —Niwa’s express direction to use a “highly flat” battery. Regardless, as discussed in more detail below, none of the references relied on by Respondents anticipate or render obvious the “particularly claimed structure” of the ’178 patent. And ample unrebutted secondary considerations support a finding of nonobviousness. Thus, Respondents’ validity challenge should be rejected.

II. OVERVIEW OF THE ’178 PATENT

A. Patent Specification

The ’178 patent generally discloses wearable computing devices, such as smart rings, which monitor a user’s activity and biosignals to “improve lifestyles, ease access to technology and help monitor activity within the wearer’s body.” JX-0001 at 1:39–46. The ’178 patent discloses designs to neatly and elegantly house components such as curved battery and printed circuit board within the housing and allow the sensors to acquire data from the user.

Significant to the Asserted Claims, the ’178 patent discloses a design that includes an **outer housing component** coupled to an **inner housing component** to form a space for accommodating the battery, circuit board, sensors, and other components as shown below (JX-001 at 16:42-20:49):

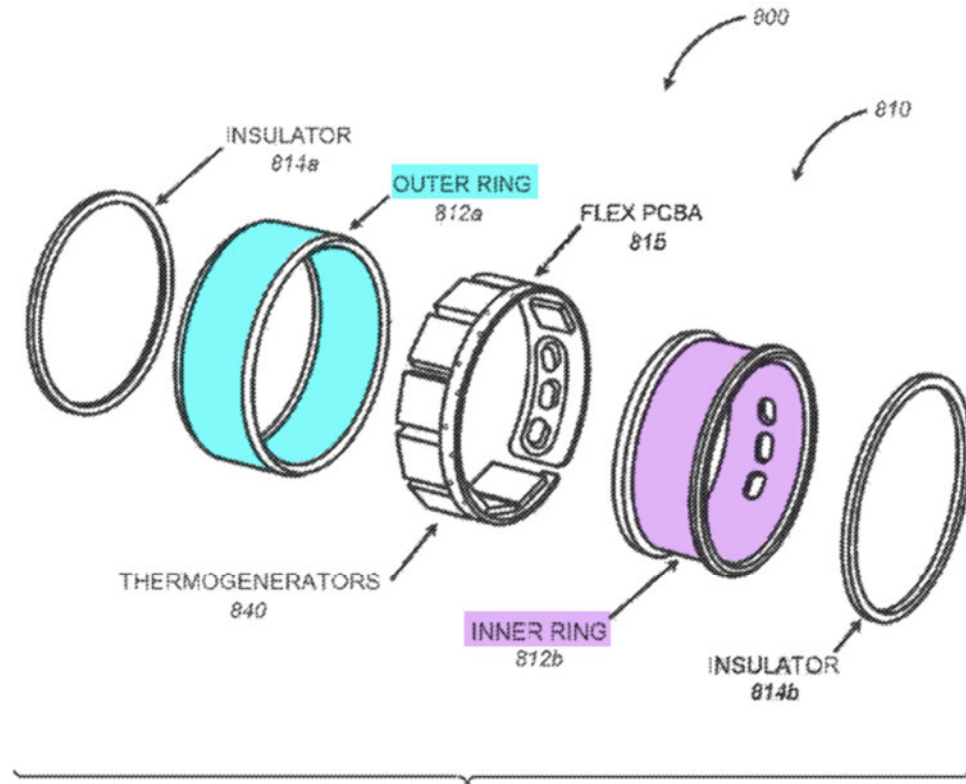


FIG. 8

Id. at Fig. 8 (highlighting added).

Figure 13 shows a cross section of one embodiment of the ring having a housing 1310 that includes an **external housing component 1312** and an **internal potting or encapsulant 1314**. *Id.* at 18:63–67. The **battery 1330** and **printed circuit board 1340** are positioned within space 1320. *Id.* at 19:6–10.

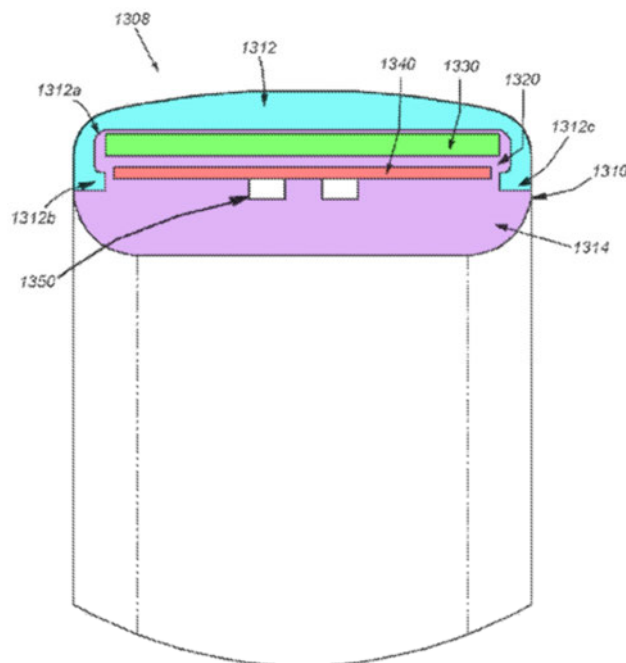


FIG. 13

Id. at Fig. 13.

B. Prosecution History

The '178 patent was subject to prioritized examination. JX-0005.1329. And following consideration of a host of references, including references related to finger-worn rings, the examiner allowed the claims, and issued the following reasons for allowance:

Allowable Subject Matter

Claims 1-18 are allowed.

The following is an examiner's statement of reasons for allowance: the prior art does not disclose nor suggest a finger-worn ring device with internal and external housing components, an inner circumferential cavity with a battery positioned and shaped to fit inside the cavity and including a circuit board disposed within the interior and exterior component and extending through a portion of the cavity. The closest prior art to Vescovi (US 20150277559) discloses a similar computing device but fails to disclose the particularly claimed structure.

JX-0005.1336 (Indicating that Vescovi, a ring-based reference, “fails to disclose the particularly claimed structure” of the ’178 patent).

III. STATE OF THE ART

As explained by Oura’s technical expert, Dr. Tajana Rosing, some of the early work related to smart rings was done by a Massachusetts Institute of Technology (MIT) group led by Professor Asada who had a conceptual idea to develop a smart ring. Tr. (Rosing) 1196:8-14.

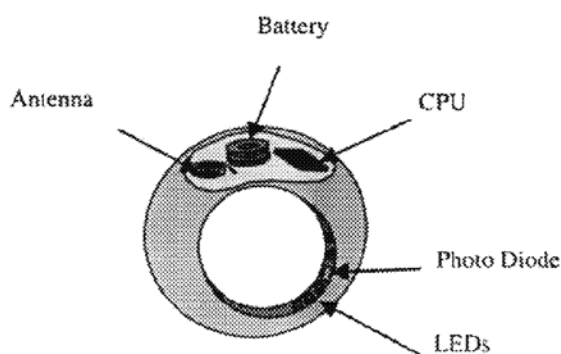
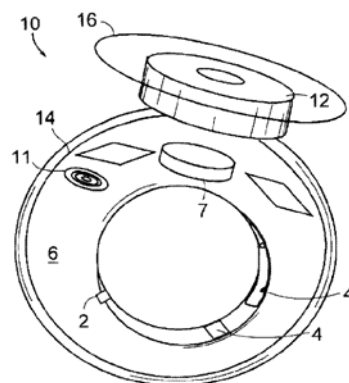


Fig. 1. Conceptual diagram of the ring sensor.

CX-1121.0002



CX-1134

But the actual rings that Asada built included a sandwich-like stacked PCB and coin cells all positioned on top of the ring:

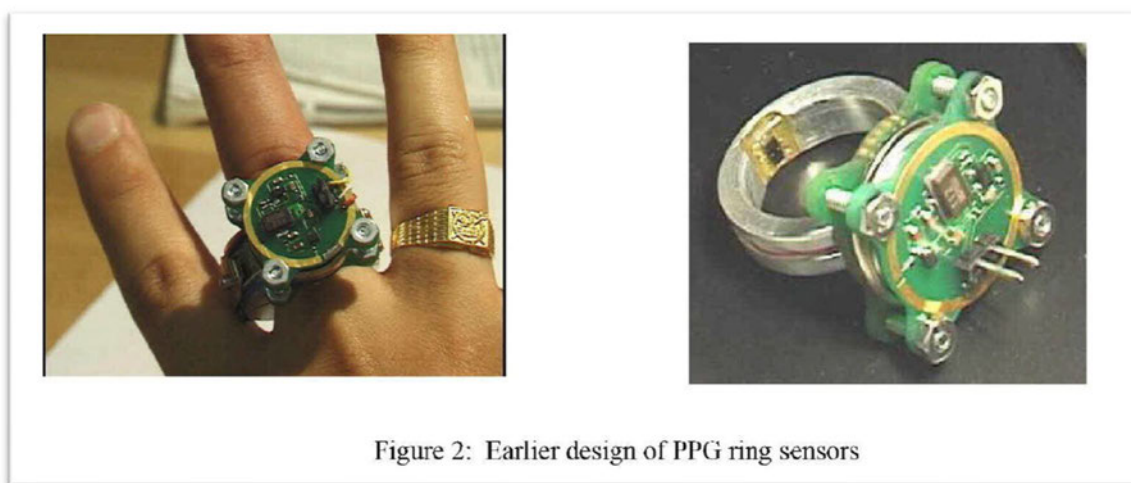
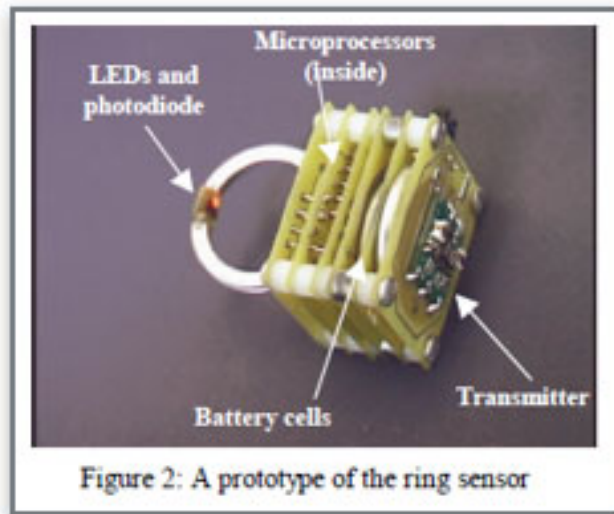


Figure 2: Earlier design of PPG ring sensors

CX-1123.0003



CX-1122.0002

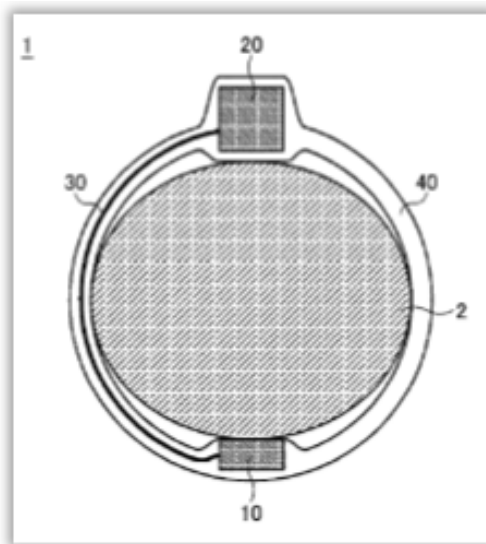
The positioning of the batteries and components on top of the ring in prior systems was purposeful. Tr. (Rosing) 1196:15-23 (“And there was a really good reason for this. This was done specifically because they needed long enough battery lifetime, which they could get only with these larger size coin cell shaped batteries. And also they needed to be able to fit a bunch of components.”); *id.* 1197:4-23. And as discussed below, Respondents’ prior art references follow the same path as the Asada prototype design and thus does not disclose or render obvious the Asserted Claims of the ’178 patent.

IV. OVERVIEW OF PRIOR ART RELIED ON BY REPONDENTS

A. Niwa

Niwa discloses a plethysmogram sensor. CX-1133, Abstract; Tr. (Rosing) 1198:16-1202:24. Plethysmograms direct light at an individual’s blood vessel and measure the light that is reflected from the vessel. CX-1133 at Fig. 1. The resultant measured light can be used to measure changes in heart rate over time. *Id.*, ¶[0118].

Niwa discloses one implementation of the sensor in a finger ring, as shown in Figs. 22-28. These figures show various aspects of “implementation example 2 of the invention.” *Id.* ¶[107-113]. Fig. 22 is shown below:

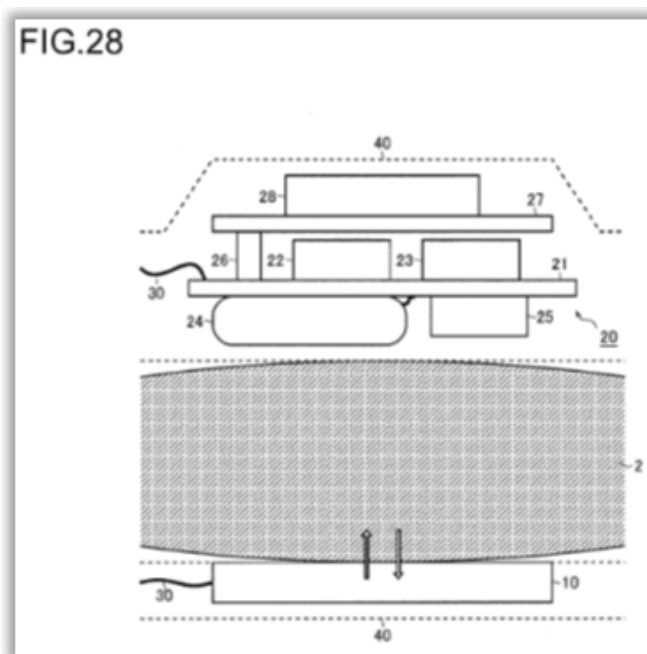


Id. at Fig. 22.

Like the Asada prototype design, Niwa discloses a unit 10 at the bottom of the finger that includes a light sensor 12 (shown in Fig. 27), and unit 20 protruding from the top of the ring that includes the battery and other circuitry. Tr. (Rosing) 1200:1-1201:10. Second unit 20 is used to supply power via cable 30 to first unit 10, which is used to measure the plethysmogram. CX-1133, ¶[0192] (“The first unit 10 is a unit to measure the plethysmogram . . .”), [0193] (“The second unit 20 is a unit to supply a power to the first unit 10 mainly.”); Tr. (Rosing) 1201:11-1202:24. Niwa states that “it is desirable to construct the thickness of the second unit 20 twice as large as the thickness of the first unit 10.” CX-1133, ¶[0199]. Niwa also teaches locating power supply unit 20 “as far as possible” from the first unit 10 to avoid noise in the first unit 10. *Id.*, ¶[0215].

Contrary to the ’178 patent and similar to the Asada prototypes, Niwa discloses a “stack layer construction” in which the substrates (21 and 27) are stacked on top of one another. *Id.*

¶[0077] (“the second unit comprises multiple substrates stacked vertically via a connector”). This is illustrated in Fig. 28 below:



The stack layer construction has the advantage that “the second unit 20 can be retrained not to protrude from the third joint of the finger 2.” *Id.* ¶[0219]. Also, unlike the ’178 patent, Niwa teaches using a “highly flat” battery 24 “located right above the finger 2 . . . to enhance an affinity of the plethysmogram sensor 1 when the pulse sensor 1 is worn on the finger . . .” *Id.*, ¶[0217].

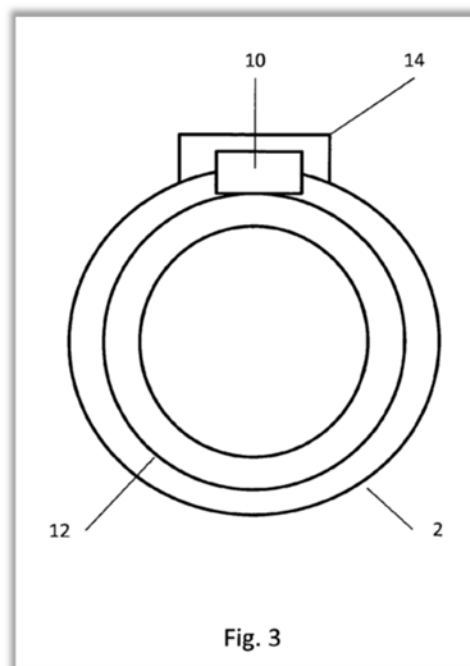
Niwa includes little to no detail of the construction of housing 40, other than showing it as a unitary structure. *Id.*, Fig. 22

B. Schröder

Schröder does not relate to monitoring health or fitness. Rather, Schröder describes an “external secure unit” for the purpose of authenticating a user. RX-0018, Abstract (“security-relevant data necessary for executing the application program in the communication device are stored in the external unit[.]”). Schröder attempts to improve upon existing “smart card” and RFID devices, which have poor range. *Id.*, 4:63-5:9. Schröder employs an antenna coil in the ring to

achieve this purpose. *Id.*, 5:12-13 (“For solving these problems, the invention therefore proposes integrating into the external secure unit 2, e.g., the finger ring 2, an antenna coil 8 . . .”).

Schröder’s disclosure of a ring structure is rudimentary, nonspecific, and completely lacks any tangible tie to the “particularly claimed structure” and disclosure of the ’178 patent. The only component shown in the figures is chip module 10, which protrudes beyond the surface of the ring housing, making it accessible via hinged cover 14. *Id.*, at Fig. 3; *Id.*, 9:1-3 (“The chip module 10 is arranged in particular replaceably in the finger-ring 2.”).



Id., at Fig. 3.

Significantly, none of the embodiments depicted in the figures of Schröder include a battery or a sensor because its focus is an improved antenna. *Id.*, 5:12-14. Schröder’s specification does suggest that a “further embodiment example” has a battery, which is “connected to” a chip module 10. *Id.*, 11:48-49. However, Schröder does not disclose that the chip module is mounted to a printed circuit board. Rather, Schröder discloses that the chip module 10 is connected to an antenna coil 8 that is located on the inlay 12. *Id.*, 8:57-58 (“The inlay 12 serves as a carrier for at

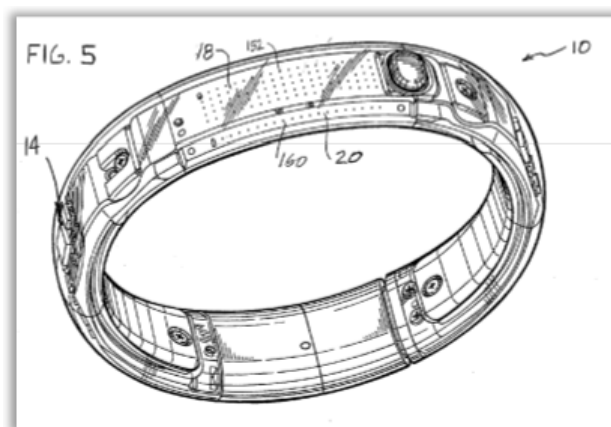
least one antenna coil 8.”); *id.*, 8:63-66 (“The chip module 10 is electroconductively connected by means of electroconductive contacts to the at least one antenna coil 8 which is located on inlay 12.”).

Schröder also discloses an embodiment using a “biometric sensor” for authentication purposes. *Id.*, 9:54-56 (“In a further embodiment example of the invention, the external secure unit 2 has a biometric sensor. This enables the user of the external secure unit 2 to authenticate himself.”). Like the battery, the biometric sensor is not depicted in any figure, but “can be arranged on the chip module 10 or it can be arranged in the finger-ring 2 separately from the chip module 10 e.g., on a separate circuit foil.” *Id.*, 9:60-62.

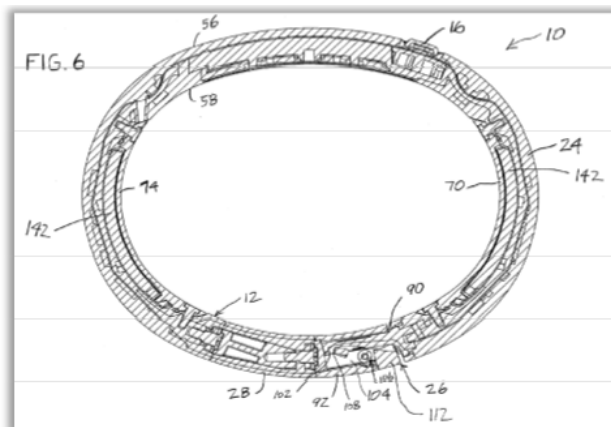
C. The combination of Henderson, GMBPow, and/or Webster that Respondents refer to as “Curved Battery Art”

1. Henderson

Henderson discloses a wearable device of a much larger form factor that is *not* constructed to be worn as a ring: “In addition, the wearable athletic device may be worn in a variety of locations on a user’s body including on a user’s chest (e.g., a chest strap), around a user’s wrist, around a user’s arm, on a user’s head, on a user’s ankle or thigh, and the like.” CX-1139, ¶[0045]. Henderson’s preferred embodiment is a wristband, as shown in Fig. 5 below:

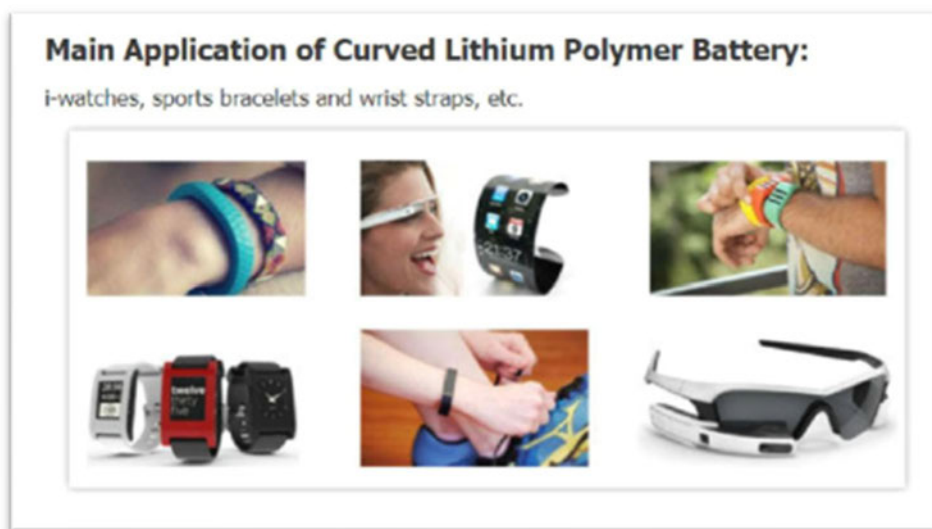


CX-1139 ¶[0055] (“As further shown in FIGS. 2-6, the wearable device assembly 10 is annular or generally circular in shape and, in this illustrative example, is configured for wearing around a user’s wrist.”). Henderson includes a pair of “rigid” batteries 142, as shown in Fig. 6 below:



2. GMBPower

GMBPower was a Chinese battery manufacturer that the inventors were aware of and visited around the time they were developing the Motiv ring. RX-0030; Tr. (von Badinski) 190:11-194:12. The batteries were rejected as too large and underpowered for the wearable ring the inventors had in mind. Tr. (von Badinski) 192:10-194:12. Indeed, the GMBPower advertised its batteries for large wearables such as watches, sports bracelets and wrist straps:



RX-0030.1

3. Webster

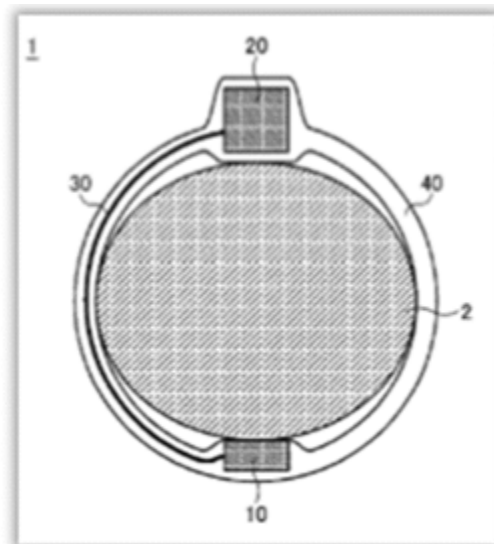
Webster discloses a flexible ring for insertion into the vagina, rather than a finger-worn ring, which is significantly larger than a finger-worn ring. *See* CX-1135 at 7:6-8 (“The elastic vaginal ring 100 is ideally between 1 inch and 4 inches for a mature human woman”); *id.* at 3:35-38 (“In one embodiment, the flexible circuit board arrangement 102 can be approximately six inches long and 0.2 inches wide adapted to be accommodated by a two inch diameter vaginal ring 100.”); Tr. (Rosing) 1213:1-4.

V. RESPONDENTS HAVE FAILED TO PROVE BY CLEAR AND CONVINCING EVIDENCE THAT ANY ASSERTED CLAIM IS INVALID

A. Niwa does not anticipate Asserted Claims 1, 2, 13, and 14.

1. Niwa does not disclose external and internal housing components of 1[a] and 1[b].

Niwa does not disclose or suggest external and internal housing components, as claimed. Tr. (Rosing) 1206:14-25. As noted above, the ’178 patent discloses and claims separate structures that form the internal and external housing components. *See e.g.* JX-0001 (’178 patent), Figs. 8 and 13. Niwa discloses a unitary, component-less housing 40, shown in Fig. 22 below, and fails to disclose any details as to how the housing is constructed.



CX-1133 at Fig. 22; Tr. (Rosing) 1206:14-1208:19. Niwa states that “[t]he finger ring type housing 40 contains the first unit 10, the second unit 20, and the cable 30.” CX-1133 at ¶¶[0195]. Niwa further states that the housing 40 “covers” the first unit 10 and second unit 20. *Id.* at ¶¶[0200-201]. No more details of the housing are provided.

Niwa does not disclose that the housing has any components, much less the internal and external components defining inner and outer circumferential surfaces, respectively, as claimed. These components are the “particularly claimed structure” that were the very elements the examiner found lacking in the prior art. *See* JX-0005.1336 (Examiner indicating that Vescovi, U.S. Pub. 2015/0277559, a ring based reference, “fails to disclose the particularly claimed structure” of the ’178 patent). Thus, Niwa plainly does not disclose internal and external housing components and cannot anticipate claim 1. *See Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989) (“The identical invention must be shown in as complete detail as is contained in the . . . claim.”).

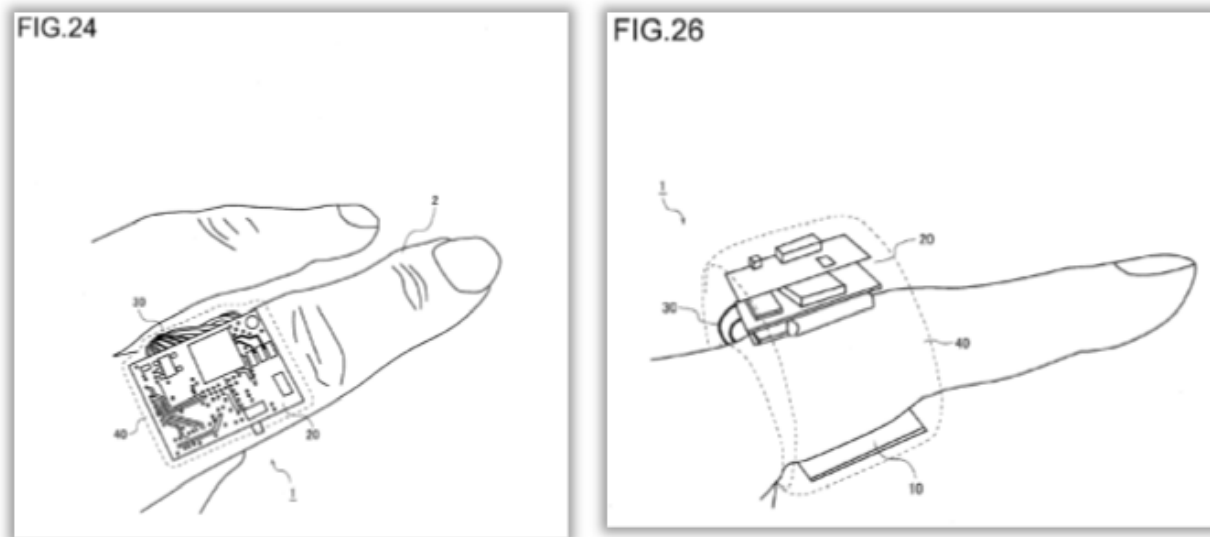
Respondents’ expert, Alarcon, admitted that Fig. 22 did not disclose internal and external housing components: “Well, again, in this Figure 22, I cannot identify the claimed internal or external housing component” Tr. (Alarcon) 1076:16-17. He justified this lack of disclosure in Niwa by stating that he was not relying on Fig. 22. Tr. (Alarcon) 1075:25 (“Because I don’t rely on this.”); *Id.* 1076:21-23 (“So I could perhaps discuss internal and external housing components generally, but not claimed with respect to this figure.”).² But Fig. 22 is the “construction example” of the only embodiment in Niwa that discloses a finger ring. CX-1133 at ¶[0107]. Alarcon’s

² Respondents’ Post Hearing Brief seems to abandon Alarcon’s opinion by changing course and relying on Fig. 22. *See* RIB at 23 and 25.

admission that Fig. 22 does not show internal and external housing components alone should defeat Respondents’ anticipation argument.

Despite Niwa stating that Figs. 22-28 all disclose the same “implementation example 2,” and Fig. 22 represented a “construction example,” Alarcon chose to rely on Fig. 26, which he claims discloses a “different shape” housing compared to Fig. 22. Tr. (Alarcon) 1081:11-12 (“I said, clearly, when you look at Figure 22, it’s showing a different shape than, say, for example, Figure 26.”), 1081:25-1082:2 (“And what’s disclosed in Figure 22 is a different shape than what is disclosed, let’s say, for example, in Figure 26.”).

But these “see through” figures in Niwa do not disclose *any* shape housing. Tr. (Rosing) 1206:18-1208:19. It is apparent from Niwa that Figs. 24-26 are the same embodiment as Fig. 22 with the same reference characters intended to show how the ring components are oriented on the finger, and not intended to show details of the housing 40:



As stated by Niwa: “Fig. 24 is a see through illustration to see the plethysmogram sensor 1 from the back side of the hand, . . . and Fig. 26 is a see through illustration to see the pleythsmogram sensor 1 from the side.” CX-1133, ¶[0206]; Tr. (Rosing) 1207:22-25 (“[Niwa]

very clearly tells us that Figure 24 is a see-through illustration, Figure 25 is a see-through illustration, and Figure 26 is a see-through illustration.”).

Even relying on this “see through illustration” that does not convey any information about housing 40 (which is invisible), Alarcon still cannot differentiate an internal and external housing component in Fig. 26:

- Q. So where does the internal housing component end and the external housing component begin in this figure?
- A. Um-hum. So you can take it one by one. Let’s take the external housing component. So that, we know it’s a housing. We know it has that -- that outer surface. And housings have a thickness. So it has some thickness to it. *It doesn’t indicate visually here the thickness of that housing*, but a person reading this, understanding that it’s a housing, understands housings have thickness. And because it’s a housing, has a wall that has some thickness. Likewise with the inner circumferential surface, again, it’s a housing, and I highlighted, back in Figure 26, the internal housing component.

Tr. (Alarcon) 1079:24-1080:11.

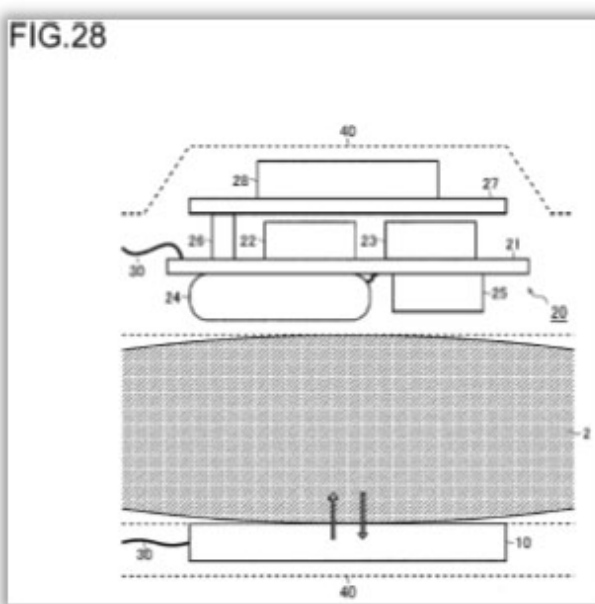
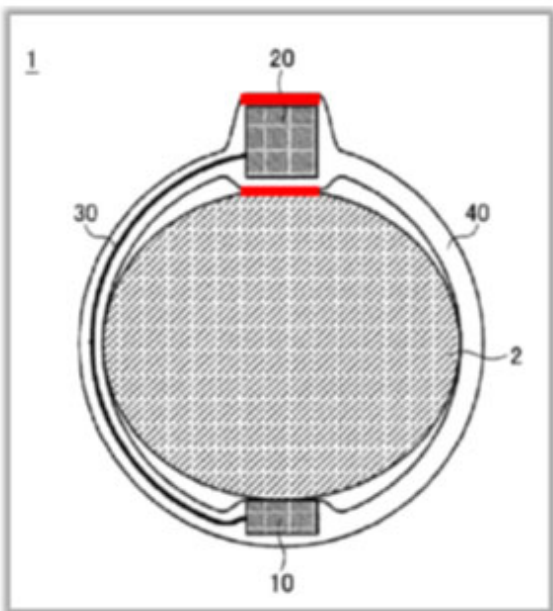
Simply put, Alarcon was unable to identify the “internal housing component” and “external housing component” in Niwa because they don’t exist. For the foregoing reasons, Niwa does not disclose elements 1[a] and 1[b] and therefore does not anticipate claim 1.

2. Niwa does not disclose element 1[c].

As noted above, Niwa does not disclose an “internal housing component” and “external housing component.” *See* Section V.A.1. Thus, Niwa cannot disclose limitation 1[c-i] of “a battery positioned within a cavity formed between the *internal housing component* and the *external housing component*[.]” JX-0001 at 44:57-59. But in addition to 1[c-i], Niwa also does not disclose or suggest limitation 1[c-ii] that a “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[.]” *Id.* at 44:57-63; Tr. (Rosing) 1208:20-1210:16. This arrangement is

shown in the '178 patent, where the battery is located in a cavity between an outer curved surface of the external housing component and an inner curved surface of the internal housing component. *See e.g.*, JX-0001 at Figs. 13, 15a, and 15b.

In contrast, as shown in Figs. 22 and 28 of Niwa below, the battery 24 is located between flat surfaces of housing 40. Tr. (Rosing) 1209:12-16 (“It is also clear to me that no part of Niwa battery is positioned between two circumferential surfaces. Specifically, Niwa actually tells us very clearly that battery is formed as highly flat and is located right above the finger. And he draws it in Figure 28, again, as very flat and as a part of this rectangular-type structure that sits on top of the finger. So it’s clear that Niwa’s battery is not positioned between circumferential surfaces.”); *Id.* 1210:5-6 (“you can see here that both lines are very straight and flat, just as a battery has to be highly flat[.]”); CX-1133 at ¶[0217] (“the battery 24 formed as highly flat is located right above the finger 2”).



CX-1133 at Figs. 22 and 28. Respondents’ expert admitted that these figures did not meet this claim limitation: “I am not relying on Figure 22 for circumferential surfaces, as I agree it has flats.

It does not disclose circumferential surfaces.” Tr. (Alarcon) 1075:5-7. Alarcon again, however, relied on “see through” Figure 26 for this limitation. *Id.* 1075:21-23 (“I’d feel more comfortable doing it with respect to one of the figures I relied on, like Figure. 26”); 1078:24-1079:4 (“So I would -- what I had in mind in thinking about it, Figures 27 and 28 were the other examples that I relied on. And I see now that they’re dotted lines, they’re not solid lines, but I think these also illustrate, in conjunction with Figure 26, my opinion.”). But as noted above, Figure 26 is the same embodiment as Figures 22, 27, and 28, therefore Mr. Alarcon’s admission applies to Figure 26 as well. Niwa nowhere disclose or suggests that the “see through” housing 40 of Figure 26 is of a different construction than Figs. 22 and 28. Tr. (Rosing) 1207:1-25.

3. Niwa does not disclose or suggest elements 1[d] and 1[e].

Claim elements 1[d] and 1[e] each recite details of the internal and external housing components with respect to the printed circuit board and the one or more sensors. JX-0001 at 44:66-45:1 (“a printed circuit board disposed between the *internal housing component* and the *external housing component*”), 45:5-8 (“one or more sensors . . . configured to acquire data from the user *through the internal housing component*.”). For the reasons stated above with respect to elements 1[a] and 1[b], Niwa also does not disclose these limitations. Tr. (Rosing) 1210:17-1211:5.

For the foregoing reasons, Niwa does not anticipate claim 1. *Id.* 1211:7-8.

B. Claims 1, 2, 13, and 14 are patentable over Niwa in view of Schröder.

1. A POSITA would not be motivated to combine Niwa and Schröder in the manner suggested by Respondents with a reasonable expectation of success.

Schröder is an RFID security device. RX-0018 at 18:45-46 (“The application on the finger-ring 2 simulates e.g., an RFID tag.”). Niwa is a health monitor. CX-1133 at ¶[0003] (“This disclosure relates to a plethysmogram sensor.”). Schröder’s focus is on an improved antenna. RX-0018 at 5:3-9 (“RFID rings or RFID tags with a conventional ring-shaped antenna can hardly be

employed, since the coupling position of the antennas is very unfavorable between an RFID finger-ring and an RFID reader”), *id.* at 5:10-19 (“Consequently, the above-mentioned problems with regard to range and coupling position are to be solved. For solving these problems, the invention therefore proposes integrating into the external secure unit 2, e.g., the finger-ring 2, an antenna coil 8 for a first frequency . . . as well as a chip module 10 which optionally also has an antenna coil for a second frequency”). Niwa’s goal is to improve the accuracy of a plethysmogram sensor. CX-1133 at ¶[0011] (“a purpose of this invention is to provide a plethysmogram sensor which can measure the plethysmogram with accuracy independent of the difference of the measurement state (i.e., measurement condition) or personal difference”). The structure, power requirements, and components needed for an RFID device are entirely different from a plethysmogram sensor. Respondents present no reason a POSITA would be motivated to look to an RFID device to modify a health monitor.

In fact, Niwa directly teaches away from the teachings of Schröder and the claimed invention in at least two major respects. First, Niwa recommends using a “highly flat” battery so that it “enhance[s] an affinity of the plethysmogram sensor 1 when the pulse sensor 1 is worn on the finger 2[.]” CX-1133 at ¶[0217]. Niwa also discloses an embodiment in FIG. 29 where the battery is located above the first substrate, but even then discloses “it is desirable to design the back side of the first substrate 21 as nothing is mounted to there (i.e., designed as flat). Same as the construction example in FIG. 28, this construction makes it is possible to enhance the affinity of the plethysmogram sensor 1 when the plethysmogram sensor 1 is worn on the finger 2, furthermore, the consciousness of the examinee for wearing the plethysmogram sensor 1 can be reduced.” *Id.* at ¶[0222]. These disclosures would have indicated to a POSITA that it was desirable to have the battery and other circuitry present in flat surfaces that contacted the wearer’s finger.

Respondents' expert, Alarcon, acknowledged the advantage of using a "highly flat" battery taught by Niwa. Tr. (Alarcon) 1082:16-22. A flat battery also has greater capacity than a curved battery. Tr. (Rosing) 1203:16-18 ("For the same volume, the flat battery generally will have a better energy density than the curved battery."). Respondents proposed combination places the battery of Niwa in the circular inlay 12 of Schröder—directly contrary to Niwa's stated desire of using a "highly flat" battery. Respondents give no reason a POSITA would ignore the teachings of Niwa to make this proposed modification.

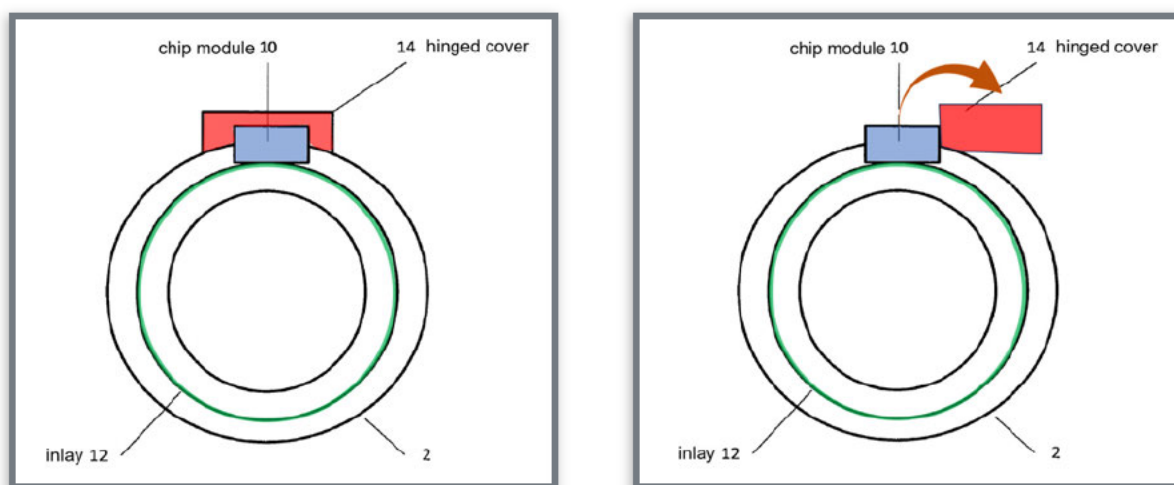
The "highly flat" battery also dovetails with the second reason Niwa teaches away from Schröder and the claimed invention—the use of stacked substrates to which the battery and other components of Niwa are attached. Niwa discloses the advantages of "stacking" the battery and other components on multiple substrates at the top of the ring:

In this way, according to an adoption of the *stack layer* construction formed with several substrates, *compared to mounting all circuit elements on one substrate*, each area of the first Substrate 21 and the second substrate 22 is decreased. 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. In addition, because the second unit 20 located at the back side of the finger 2 can be designed thicker than the first unit 10 located at the ball side of the finger 2, *it is possible to adopt the stack layer construction formed with several substrates without any problem*.

CX-1133 at ¶[0219]; Tr. (Rosing) 1205:6-19. Like the "highly flat" battery, Alarcon acknowledged Niwa's stated advantages of stacking. Tr. (Alarcon) 1083:16-1084:12.

Stacking is contrary to the proposed combination with Schröder and the claimed invention. A POSITA would not "stack" substrates and components within the paper-thin inlay 12 of Schroder. Tr. (Rosing) 1218:5-25 (Dr. Rosing noting that inlay is on the order of 10 to 100 microns (µm)); *Id.* 1220:13-1222:9. The only component that Schröder discloses within the inlay 12 is an unseen wire. *Id.* 1218:10-11 ("Inlay is actually super thin material. And all he [Schröder] places on top of that material is antenna."); RX-0018 at 8:57-58 ("The inlay 12 serves as a carrier for at

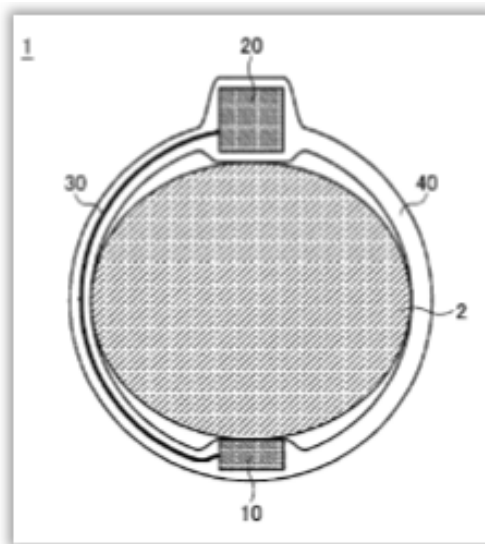
least one antenna coil 8.”). Components of a substantial size, like chip module 10, are mounted on the inlay and protrude out of the ring, as shown in Fig. 3. Tr. (Rosing) 1218:14-17 (“[Schröder] places a chip module on top of the ring for multiple reasons. One reason is that he wants the chip module to be replaceable. This is why he also has a hinge cover that is labeled in Figure 3 at Number 14.”); *Id.* 1219:13-24; RX-0018 at 8:60-63 (“The chip module 10 is protected against external influences by a cover 14. The cover 14 is e.g., a hinged cover or a cover that is connected e.g., by means of a thread to the finger-ring 2.”), 9:1-3 (“The chip module 10 is arranged in particular replaceably in the finger-ring 2.”).



RX-0018, Fig. 3 (modified); CDX-0005.38. Stacking components and battery within the inlay 12 (that is on the order of 10 to 100 μm (Tr. 1218:5-25)) would not be feasible, but even if it was, it would result in a ring so thick it would be unsuitable for any practical use. Tr. (Rosing) 1220:10-1223:24.

Schröder also does not disclose that inlay 12 is a printed circuit board. Yet Alarcon, without any evidence, claimed that “[t]he inlay is basically a circuit board. It’s a PCB.” Tr. (Alarcon) 1000:2. But Schröder separately refers to a printed circuit board in describing other elements. RX-0018 at 22:47-49 (“The NFC antenna can be realized for example as part of a circuit on *a circuit*

board e.g. of a GSM modem”). Schröder does not interchangeably refer to “inlay” as a “circuit board.” And on cross examination, Alarcon agreed: “I agree ‘inlay’ is not the same word as ‘circuit board’” Tr. (Alarcon) 1070:19-20. Nonetheless, Alarcon chalked up this discrepancy to potential translation issues in Schröder’s filing. *Id.* 1069:17-1070:3.³ But an “inlay” in Schröder is not a printed circuit board. Tr. (Rosing) 1218:10-11 (“Inlay is actually super thin material.”); RX-0018 at 12:28-29 (“The inlay 12 itself consists of a preferably flexible carrier material, e.g., PET, Kapton, etc.”). And Niwa already discloses the positioning of its stacked components above and below the ring, and therefore a POSITA would have no reason to first consider an “inlay” in Schröder to be a circuit board nor then see any reason to include an inlay from Schröder that carries an antenna into Niwa’s configuration. *See* CX-1133 at Fig. 22, elements 10 and 20.

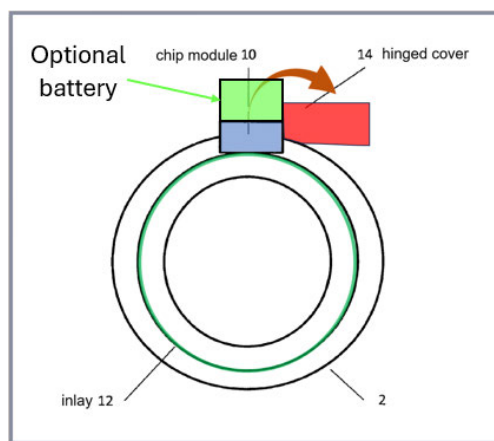


Id. at Fig. 22.

Schröder also teaches away from the claimed invention and the combination proposed by Respondents. The use of a battery is optional in Schröder as passive RFID devices do not require

³ Evidently, according to Alarcon, the only translation issue in Schröder just happens to impact the one element (i.e., “inlay”) that Alarcon desperately needs to be something different (“circuit board”).

a battery. Tr. (Rosing) 1217:12-1218:8; Tr. (Alarcon) 1087:1-7. Schröder’s only mention of a storage device states that it is “connected” to the chip module 10, which itself is located on top of the ring housing—not within inlay 12. RX-0018 at 11:46-50 (“In a further embodiment example, the external secure unit 2 has an energy storage device, e.g., an accumulator or a battery. The energy storage device is connected to the chip module 10 in order to supply the chip module 10 with energy outside an electromagnetic field of a reader.”). Schröder also discloses that its sensor is also connected to the external chip module. *Id.* at 9:58-60 (“The biometric sensor is connected suitably to the chip module 10.”). Schröder also teaches that locating chip module outside of inlay 12 on top of ring results in the advantage that the chip module is replaceable because it is accessible from the exterior surface of the ring. *Id.* 9:1-3 (“The chip module 10 is arranged in particular replaceably in the finger-ring 2.”); *Id.* at 8:60-63 (chip module 10 is protected from external influences by a cover 14). Thus, a POSITA would want the same “replaceability” for the battery “connected to” the chip module. Tr. (Rosing) 1224:13-1226:2; *Id.* 1225:10-14 (“I think this is the most logical place to put it, given that it needs to be connected to chip module, it needs to have high capacity, and you want this to be replaceable, so that you can replace both the chip module and the battery when needed”).



RX-0018 at Fig. 3 (modified); CDX-0005.44. Thus, Schröder teaches mounting components such

as chip module 10, battery, and sensors outside of the ring, not between internal and external housing components. Niwa likewise has a battery positioned above the ring. See CX-1133 at Fig. 22, elements 20. Respondents give no reason a POSITA would ignore these teachings.

In sum, a POSITA also would not have a reasonable expectation of success in combining Schröder with Niwa. Respondents propose modifying the “highly flat” battery and “stacked” components of Niwa with the ring halves with inlay 12 of Schröder. Neither reference provides a clue as to how that could be achieved without fundamentally changing the design of Niwa, which would be beyond the skills of a POSITA. It is also entirely unclear how this modification could be made while maintaining a ring having a thickness that would be practicable to wear. The only thing Niwa and Schröder have in common is they follow the teachings of Asada by locating components in a protrusion on top of the ring, not within external and internal housing components.

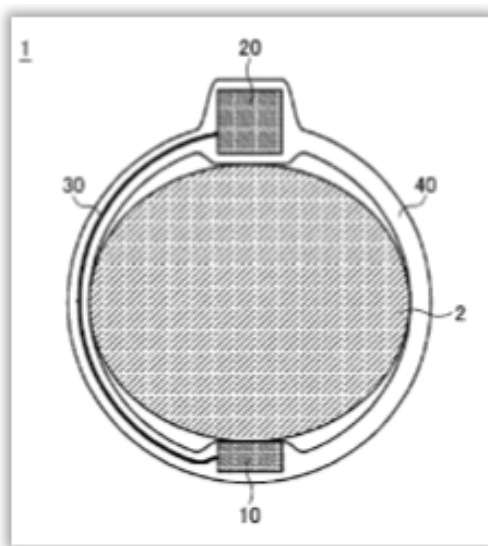
2. Niwa in view of Schröder does not disclose or suggest claim 1.

Even if combined, Schröder does not cure the deficiencies of Niwa noted above. Respondents propose applying the housing of Schröder to Niwa such that the combination would disclose internal and external housing components not disclosed by Niwa. But Schröder also does not disclose the external and internal housing components as claimed. Schröder discloses an inlay 12 used to carry an RFID antenna that would serve no purpose in the ring of Niwa. The resultant device would simply mount the stacked unit 20 of Niwa to the chip module 10 as taught by Schröder. Tr. (Rosing) 1220:13-1223:5. Thus, the combination would not include “a battery positioned within a cavity formed between the internal housing component and the external housing component” of claim 1.

Nor would the combination disclose “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” of claim 1. Tr. (Rosing)

1225:17-1226:2. No such battery is disclosed by either Niwa or Schröder. Schröder is silent with respect to the size, shape, and location of the battery, other than to say that it is connected to the external chip module 10. When confronted with this truth, Alarcon demonstrated a textbook case of impermissible hindsight when trying to explain where the battery was in Schröder by simply parroting the claim language: “I’m saying there in Figure 4 and 5 [of Schröder], by way of example, there is -- there would be a battery. And that battery would be configured to fit in the cavity that I identified as being formed by the elements -- by the internal housing component and external housing component.” Tr. (Alarcon) 1093:2-6; *Grain Processing Corp. v. Am. Maize-Prods.*, 840 F.2d 902, 907 (Fed. Cir. 1988) (“Care must be taken to avoid hindsight reconstruction by using the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit.”).

Similarly, the combination would not disclose or suggest “a printed circuit board disposed between the internal housing component and the external housing component” of claim 1. Niwa and Schröder both include a printed circuit board (“first unit 10” in Niwa and “chip module 10” in Schröder), each mounted in specific locations on the rings:



CX-1133 at Fig. 22

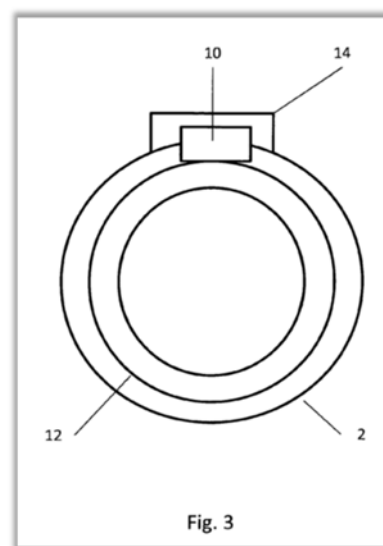


Fig. 3

RX-0018 at Fig. 3

Therefore, similar to the battery, a POSITA would place the “stacked” substrate arrangement of Niwa and mount it in similar fashion to the chip module 10—external (not between) the ring halves of Schröder.

C. Claim 12 is patentable over Niwa in view of the Curved Battery Art.

- 1. A POSITA would have no motivation to replace the “highly flat” battery of Niwa with a curved battery with a reasonable expectation of success.**

It is beyond dispute that Niwa expressly teaches the advantages of a “highly flat” battery and a “stacked” arrangement of substrates and components. CX-1133 at ¶[0217] (“according to this construction, the battery 24 formed as *highly flat* is located right above the finger 2, it is possible to enhance an affinity of the plethysmogram sensor 1 when the pulse sensor 1 is worn on the finger 2, furthermore, the consciousness of the examinee for wearing the plethysmogram sensor 1 can be reduce.”); *Id.* at ¶[0219] (“according to an adoption of the *stack layer* construction formed with several substrates, *compared to mounting all circuit elements on one substrate*, each area of the first Substrate 21 and the second substrate 22 is decreased. 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. In addition, because the second unit 20 located at the back side of the finger 2 can be designed thicker than the first unit 10 located at the ball side of the finger 2, *it is possible to adopt the stack layer construction formed with several substrates without any problem.*”).

Respondents and their expert make an obviousness argument directly contrary to these teachings, i.e., that it would be obvious to use a curved battery in Niwa. Respondents, however, offer no justification as to why a POSITA would ignore the teachings of Niwa and attempt to modify Niwa to use a curved battery “wherein arc of the curved battery approximates a corresponding arc of the external housing component.” Respondents proposed modification would

result in a fundamental redesign of Niwa contrary to its teachings and should be rejected. *See In re Ratti*, 270 F.2d 810, 813 (CCPA 1959) (A proposed obviousness combination cannot change the “basic principles under which [the prior art] was designed to operate.”); *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (finding no motivation to modify the prior art where doing so “would destroy the basic objective” of the prior art). Respondents also fail to explain why a POSITA would replace the flat battery of Niwa with a curved battery when flat batteries were known to have greater capacity, and Niwa’s housing was designed to accommodate a flat battery. Tr. (Rosing) 1203:16-18 (“For the same volume, the flat battery generally will have a better energy density than the curved battery.”); *id.* 1212:3-17 (“Niwa specifically wants battery to be highly flat. And that he very specifically locates it right above the finger and that he also specifically places two very flat substrates right on top of the finger. So he does this because it enhances affinity of the sensor and reduces consciousness of the examinee for wearing the ring. In addition, this highly flat battery has a better capacity. So there are many reasons why he would actually want to have a flat battery on top of the finger. So there is no real reason for Niwa to want to modify this flat battery. He has from his perspective solved the problem that he was after.”); *Id.* 1220:13-1221:10.

Neither the Respondents, nor the references themselves, explain how one would modify Niwa to use any of the batteries taught by these references. Niwa utilizes “flat” sections of its housing to accommodate unit 20 that contains “highly flat” battery 24. What would become of these components and housing in the modified Niwa remains a mystery. A POSITA would not know how to achieve the proposed modification given the contrary teachings of the references and would not have a reasonable expectation of success. Tr. (Rosing) 1220:13-1223:24, 1227:17-1228:9.

Thus, Respondents have failed to show claim 12 is obvious in view of any of the “curved battery” references. Additional reasons claim 12 is nonobvious are set forth below with respect to each reference.

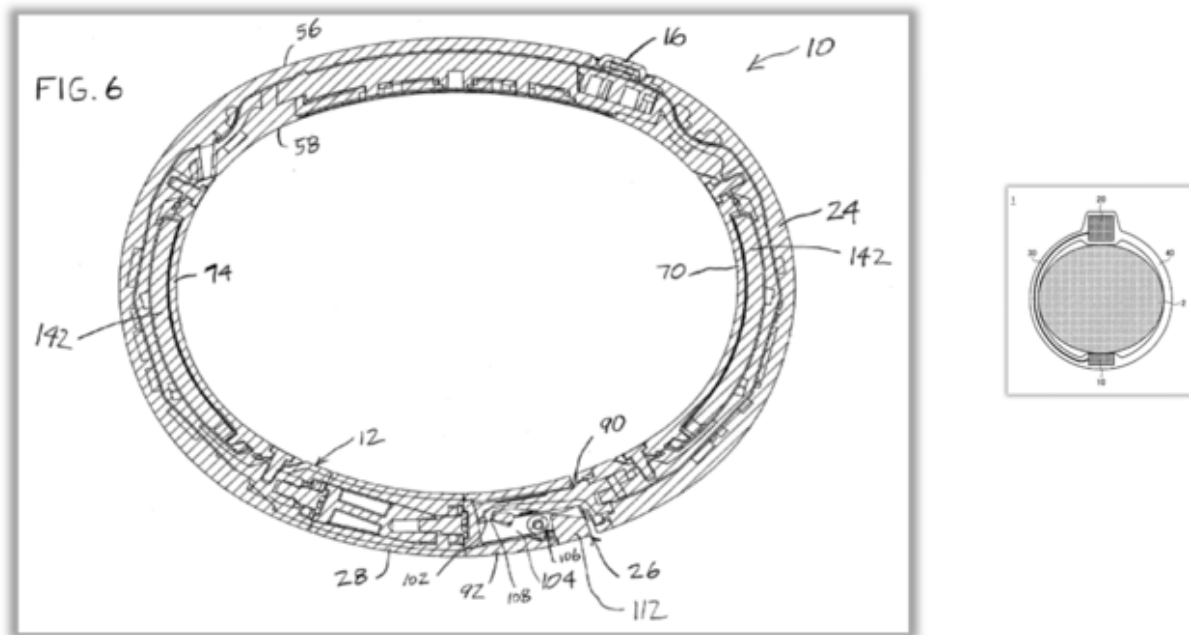
2. Claim 12 is patentable over Niwa in view of Henderson.

Henderson was considered by the examiner. JX-0005.1362. Nevertheless, Respondents rely on Henderson to meet the curved battery limitation. RIB at 60-61. But Henderson teaches a curved battery specifically designed for use in a wristband. CX-1139 ¶[0055] (“the wearable device assembly 10 . . . is configured for wearing around a user’s wrist.”). In fact, Henderson states his device can be used almost everywhere *but* on a finger: “the wearable athletic device may be worn in a variety of locations on a user’s body including on a user’s chest (e.g., a chest strap), around a user’s wrist, around a user’s arm, on a user’s head, on a user’s ankle or thigh, and the like.” *Id.*, ¶[0045].

Further complicating the matter is that Henderson discloses that batteries 142 are “rigid.” *Id.* at ¶[0078] (“It is appreciated that the rigid batteries 142 are mounted in the more rigid first segment 42 and rigid second segment 44 of the spine member 22.”). The batteries disclosed in Henderson are many times too large and rigid and would not curve to correspond to the arc of the housing component. Tr. (Rosing) 1214:6-17; CX-1139 at ¶[0073]-[0075], [0077]. On the contrary, Henderson describes increasing the size of the batteries to increase capacity: “The overall size of the batteries 142 and respective recessed compartments 50, 52 may vary such being larger to increase battery capacity and life of the device before requiring recharging.” CX-1139 ¶[0078].

Thus, even if combined, the combination of Niwa and Henderson does not disclose a finger ring having a curved battery because the pair of batteries in Henderson are completely unsuitable for the finger ring of Niwa. Tr. (Rosing) 1213:5-8, 1214:6-1215:1. Henderson offers no clue as to how or why one having ordinary skill in the art could or would adapt the batteries of Henderson

to the ring of Niwa, which is considerably smaller than the batteries 142 themselves:



CX-1139 at Fig. 6; CX-1133 at Fig. 22.

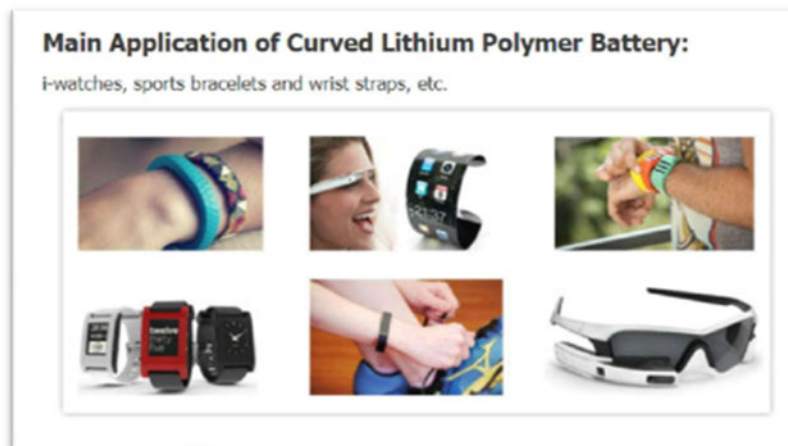
There is also no evidence that a POSITA would believe that the curved batteries of Henderson offer any improvement over the battery used in Niwa.

For the foregoing reasons, claim 12 is patentable over Niwa in view of Henderson.

3. Claim 12 is patentable over Niwa in view of GMBpower.

Both Complainants' expert and the inventor agreed that GMBpower's batteries were not suitable for a wearable finger ring. Tr. (von Badinski) 192:3-194:12; Tr. (Rosing) 1215:12-1216:14 ("So GMBPow, were I believe some of the smallest curved batteries in the market at the time of this patent. And you can see that the smallest of the ones they had is about 2 millimeters by 10 and by 20 millimeters. So effectively the size of two Cheerios stacked on top of each other, which is plenty big when you consider having to try to put inside of a ring. There is actually another problem here, and the problem has to do with the way these batteries are rated. So the battery's rated capacity is 25 milliamp hours, but this charge current . . . is rated at 0.2C. This actually means that

you can pull out of this battery only 5 milliamps”). They were too big and did not have sufficient capacity. *Id.* At the time, GMBPower batteries were designed to work on “watches, sports bracelets, and writs straps.”



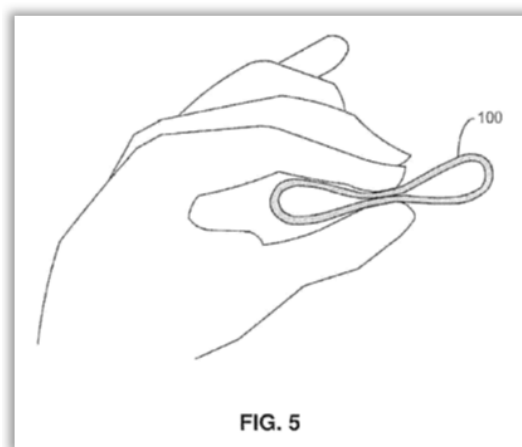
RX-0030.1. A POSITA, looking at the GMBPower batteries, would not have had a reasonable expectation that he or she could have used them in a ring form factor as even the smallest batteries were both too large, in terms of physical dimensions, and too small in terms of battery capacity (given the power requirements), for use in a finger-worn wearable device with sensors. Given that flat batteries generally had greater capacity, a POSITA would not look to the power-starved GMBPower batteries for use in Niwa. Tr. (Rosing) 1203:16-18 (“For the same volume, the flat battery generally will have a better energy density than the curved battery.”).

Additionally, under the guise of obviousness, Respondents’ attempt to retrace inventor’s own path, including relying on websites of manufacturers that the inventors visited. But “[t]he inventor’s own path itself never leads to a conclusion of obviousness; that is hindsight.” *Millennium Pharms., Inc. v. Sandoz Inc.*, 862 F.3d 1356, 1367 (Fed. Cir. 2017); *Mems Tech. Berhad v. Int’l. Trade Comm’n*, No. 2010-1018, 2011 WL 2214091, *16 (Fed. Cir. June 3, 2011) (rejecting accused infringer’s contention that how the invention was made showed it was obvious).

For the foregoing reasons, claim 12 is patentable over Niwa in view of GMBPower.

4. Claim 12 is patentable over Niwa in view of Webster.

Webster discloses a flexible ring for insertion into the vagina, rather than a finger-worn ring, which is significantly larger than a finger-worn ring. *See* CX-1135 at 7:6-8 (“The elastic vaginal ring 100 is ideally between 1 inch and 4 inches for a mature human woman”); *id.* at 3:35-38 (“In one embodiment, the flexible circuit board arrangement 102 can be approximately six inches long and 0.2 inches wide adapted to be accommodated by a two inch diameter vaginal ring 100.”).



Id. at Fig. 5.

Further, there is no disclosure, suggestion, or indication whatsoever (and Respondents have provided none) that the thin film lithium ion or zinc-manganese dioxide batteries disclosed in Webster would provide any advantage over the battery used in Niwa. There is no disclosure in Webster related to the size of the battery that would lead a POSITA to conclude it could be adapted to a finger-worn ring. Tr. (Rosing) 1213:1-4; 1215:3-10. A POSITA would not have a reasonable expectation of success that they could take a battery for use as a temperature sensor in a vagina and use it in a wearable ring. *Id.*

For the foregoing reasons, claim 12 is patentable over Niwa in view of Webster.

VI. SECONDARY CONSIDERATIONS

Secondary considerations support a finding of nonobviousness. “Objective indicia of nonobviousness must be considered in every case where present.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016). Evidence of such indicia “may often be the most probative and cogent evidence in the record.” *Id.* at 1052 (citation omitted). It can “guard against slipping into use of hindsight,” which is especially true here because Respondents’ obviousness case is pure hindsight. *Id.* (citation omitted).

A. There is a rebuttable presumption of nexus.

Oura DI Products are commercial embodiments and coextensive of the Asserted Claims. Tr. (Sarrafzadeh) 1277:17-20. Thus, Oura “is entitled to a rebuttal presumption of nexus between the asserted evidence of secondary considerations and a patent claim[.]” *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (citation omitted). Respondents have presented no credible evidence to rebut this presumption. Staff agrees. SIB at 61 (“Respondents have not offered sufficient evidence to rebut this presumption.”).

B. Oura Ring is a commercial success.

Oura DI Product is a commercial success. Tr. (Mulhern) 1254:14-1271:23; CDX-0007C.1-10; CX-0955C; CX-0956C; CX-0957C; CX-0969; CX-0972; CX-0967; CX-0974; CX-0588; CX-0973; CX-0970; CX-0971. Three categories of evidence support Oura Ring’s commercial success: (1) sales and growth; (2) contributions of the DI Product to company performance overall; and (3) performance of the Oura Ring relative to competition. *Id.*

Respondents don’t dispute that Oura Ring is commercially successful. Tr. (Alarcon) 1098:6-8 (“I’m not debating that Oura may be commercially successful.”); RIB at 64-66. Instead, they argue that “any alleged commercial success of the Oura Ring were due to factors unrelated to the subject matter claimed in the ’178 patent.” *Id.* They also argue that Motiv Ring’s supposed

failure undermines the nexus of Oura Ring success. *Id.* at 64-65. And because of the alleged Motiv “failure,” Oura Ring’s success is somehow derived from marketing prowess or unclaimed features. *Id.* at 65-66. Respondents are wrong.

First, Alarcon has no expertise in economics or marketing, and isn’t qualified to opine about commercial success. Indeed, the Court did not agree to qualify Alarcon as a marketing expert. *Cf.* Tr. (Alarcon) 795:17-18 (“We would like to offer Mr. Alarcon as an expert in product design and **marketing**”), 796:2-4 (“Mr. Alarcon will be accepted as a **technical expert** with respect to wearable devices and product design.”). Thus, Alarcon’s opinions on economics and marketing should be given no weight.

Second, Alarcon’s commercial success opinion is based on an unsupported analysis of the Motiv Ring. He admitted that he conducted **no** nexus analysis:

Q. Okay. Is the Motiv Ring covered by claim 1?

A. Again, I think you’re asking me to complete an analysis I have not completed. I believe certain structures are analogous to structures in claim 1, so it wouldn’t surprise me if it did embody it, but I have not completed that analysis.

Tr. (Alarcon) 1100:24-1101:4, 1098:20-22 (“I did not do an assessment of the Motiv product claim by claim, limitation. That’s not what I’m testifying to.”), 1100:9-12 (“I have not done an analysis of the claimed invention limitation-by-limitation for the Motiv ring. I’m not making that representation.”), 1100:17-23 (“Again, I have not done a limitation-by-limitation breakdown I have not done the step-by-step analysis”). Because Alarcon didn’t analyze the Motiv Ring, Respondents’ commercial success argument is unsupported.

Third, even if Alarcon had conducted a nexus analysis (which he did not), Respondents’ conclusion that Motiv Ring was not a commercial success was based on false numbers that were disproven at the hearing. Yet Respondents maintain their flawed argument. *Cf.* RPHB at 405-06 (“fact that Motiv . . . sold less than **1,000 rings** shows that there is no nexus”), RIB at 64 (“Motiv

Ring was not a commercial success by any metrics. (*See* Tr. (von Badinski) 197:16-20 (stating that Motiv only ***sold 80,000 rings***).” Indeed, Alarcon based the original 1,000 ring number (and his conclusion) on a guess by third-party Michael Strasser. Tr. (Alarcon) 1103:6-1104:19. But Strasser was fired before Motiv shipped its ring. Tr. (von Badinski) 200:2-203:15, 203:12-15 (“I know he was not CEO when we started shipping”). To Alarcon’s surprise, Motiv sold over 80,000 rings. Tr. (von Badinski) 197:16-198:2; Tr. (Alarcon) 1106:18-1109:17 (confirming he had no basis to dispute the documents). Confronted with the real number of rings (that’s 80 times more than he assumed), Alarcon conceded he needed to redo his homework:

Q. 80,000 versus less than a thousand and it wouldn’t change your opinion?

A. I said it wouldn’t necessarily. I would want to then ask other questions, such as did they recuperate their investment? Were they profitable? Those sort of things. I would want to know those things.

But 80,000 in the context of a consumer product is certainly more than a thousand, but it still as an isolated indicator may not necessarily be one way or another. But I would want to know other things, such as the ones I just mentioned.

Tr. (Alarcon) 1105:10-20, 1106:3-17. Aside from being factually wrong, Respondents’ focus on whether Motiv was a commercial success is irrelevant to whether Oura Ring is a commercial success. Tr. (Mulhern) 1263:15-19 (“[F]rom an economic perspective, the performance of the Motiv Ring in the marketplace is not particularly illuminating when answering the question or seeking to answer the question regarding the commercial success of the Oura Ring.”); SIB at 59 (“Evidence regarding Motiv’s commercial success is thus not relevant to the Commission’s obviousness analysis. But if it were relevant, the evidence shows that while Motiv encountered liquidity problems that led to its eventual acquisition by Oura, its product did enjoy commercial success, winning various awards, including an award for innovation at the 2017 Consumer Electronics Show, and amassing 80,000 preorders.”).

Fourth, Respondents’ suggestion that Oura Ring’s commercial success comes from

[REDACTED]. Tr. (Chapp) 135:23-137:21, *id.* 137:7-12 (“What’s listed here is the
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]). But even considering Oura Ring’s

new products.”). In line with this, the Oura Ring’s [REDACTED]
[REDACTED] the FY2022 introduction of Gen. 3 through the first half of 2024, while [REDACTED]
[REDACTED] during the same period. This proves that marketing alone cannot be the driving force

	FY 2022	FY 2023	Q1 – Q2 FY 2024
Total Revenue			
Gross Profit			
Sales & Marketing Expenses			
<i>As % of Total Revenue</i>			
<i>As % of Gross Profit</i>			

CDX-0007C.7; CX-0965; CX-0980; CX-0981

Further supporting the fact that marketing isn't artificially inflating sales, Oura's [REDACTED] [REDACTED] is consistent with other companies in the industry. Tr. (Mulhern) 1268:14-1270:21 (discussing chart below).

Oct. 2021 – Mar. 2024 (FY 2022 – Q2 FY 2024)				
	Oura		Fitness Trackers / Smartwatch Competitors	Companies in Oura's SIC Code
Minimum		[REDACTED]	6.0%	0.9%
Average		[REDACTED]	12.9%	11.0%
Maximum		[REDACTED]	37.9%	53.3%

CDX-0007C.9; CX-0959C; CX-0962; CX-0982; CX-0960C; CX-0963

Finally, the notion that Oura Ring's marketing of the Oura App diminishes any nexus to the Oura Ring (RPHB at 66) is also meritless because it ignores the contribution of the Oura Ring's form factor. Tr. (Mulhern) 1271:2-15. Indeed, the ring form factor is the foundation of the system that enables the data collection, which enables the functionality of the device and the App. Tr. (Chapp) 88:11-19, 93:22-95:2; Tr. (Sarrafzadeh) 254:20-24, 338:16-339:14; Tr. (Mulhern) 1271:2-20, 469:22-470:3.

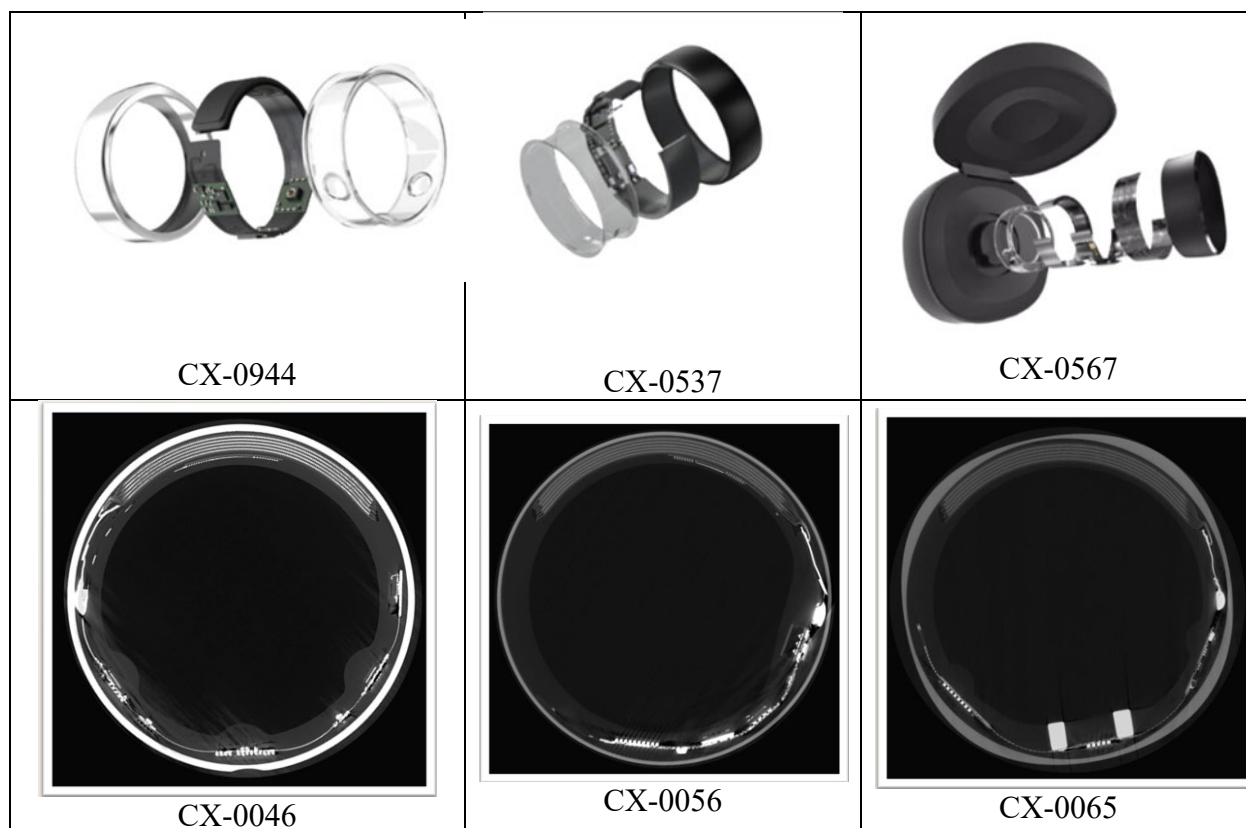
In sum, the Oura DI Product is a commercial embodiment of the Asserted Claims and a commercial success.

C. Respondents copied Oura Ring.

Wholesale copying of the claimed invention supports an inference of nonobviousness. *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1336 (Fed. Cir. 2016) (“[C]opying the claimed invention, rather than one within the public domain, is indicative of non-obviousness.”); *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1541 (Fed. Cir. 1983) (“An alleged infringer’s lauding of all the available prior art may, for example, in some cases have a hollow ring when played against its disregard of that art and its copying of the invention.”).

Both Respondents bought Oura Ring Gen. 3 products, tore them down, and copied Oura Ring’s structural design in their own products. This includes the use of potting material as the internal housing component, the layered curved battery configuration, the same battery vendor (for Ultrahuman), the same optical domes (for RingConn), and even Oura’s marketing materials as shown below. Tr. (Sarrafzadeh) 1279:1-1280:15.

Oura DI Product Gen. 3	Ultrahuman Accused Product	RingConn Accused Product
		
CX-0702	CX-0538	CX-0843



The similarities are not a mere coincidence. Both Respondents admitted that they purchased and tore down the Oura Ring while developing the Accused Products.

1. Ultrahuman's copying

Ultrahuman's CEO was an early adopter of the Oura Ring and bought a Gen. 1 product in 2015—years before he founded Ultrahuman in 2019. *Tr. (Kumar) 683:19-21, 686:15-24.* Kumar bought a Gen. 2 product in 2018. *Id. 685:16-24.* Ultrahuman bought another 5-10 Oura Rings for analysis. *Id. 692:19-693:8.* Ultrahuman's entire R&D team, including the hardware, software, and firmware teams, analyzed Oura Rings to learn their structure and design. *Id. 695:1-21, 698:3-24.* Ultrahuman also reviewed video teardowns of the Gen. 3 product. *Id. 696:12-698:2.*

Ultrahuman's extensive internal teardowns had the goal of “figur[ing] out everything” about the Oura Ring, including components and structure. *Id. 699:2-5* (“I think we would have figured out everything . . . like how large the battery is, what is the Rx coil, how does the PCB

look? But that would be like the overview of how devices are made.”). Ultrahuman’s only regret? Oura didn’t label its components to make the reverse engineering easier. *Id.* 699:8-17 (“[W]hat we also noticed was that everything was unlabeled, so it was very hard to figure out what is exactly inside. . . . Everybody in this world who builds hardware company would wish that every other company labels their components.”). After nabbing the Oura Ring’s structure and design, Ultrahuman quickly built a prototype using the same battery vendor as Oura Ring. *Id.* 691:11-19; CX-0027C (identifying Shenzhen Grepow Battery Co., Ltd. as the battery vendor).

Despite Ultrahuman’s Accused Product mirroring the Oura Ring Gen. 3 structure and components, Kumar argued that Ultrahuman was inspired by Lazy Co.’s Aina Ring—not the Oura Ring. *Tr.* (Kumar) 637:11-639:5. This fails the laugh test. The Aina Ring, like the prior art, had a large Superbowl-ring protrusion to package the components:

Oura DI Product Gen. 3	Ultrahuman Accused Product	Lazy Co.’s Aina Ring
		
CX-0702	CX-0538	CX-0945

If the Aina Ring was Ultrahuman’s starting point, where are the documents showing the design evolution from Superbowl ring to sleek Oura-like ring? *Tr.* (Sarrafzadeh) 1284:4-22 (“Going from that [Aina Ring] to Ultrahuman . . . is not a simple task. Even if there was such an evolution . . . you would need to document that. You need to show the evolution. The evolution is absolutely missing.”). There’s no evolution documentation because Ultrahuman simply copied the

Oura Ring. And unlike the Oura Ring, the Aina Ring had no health sensing. Tr. (Kumar) 637:22-638:2 (“[Lazy Co.] were actually not building a health device. They were building what’s called the Aina Ring, which was basically a device to control or basically do in some ways home automation. So you could use the Aina Ring to control the screen or the coffee machine or start your car, all of these things.”). Also, the Aina Ring had a large display on top of the ring. CX-0945. Finally, the Aina Ring had no external and internal housing components, no potting material, and no curved battery.

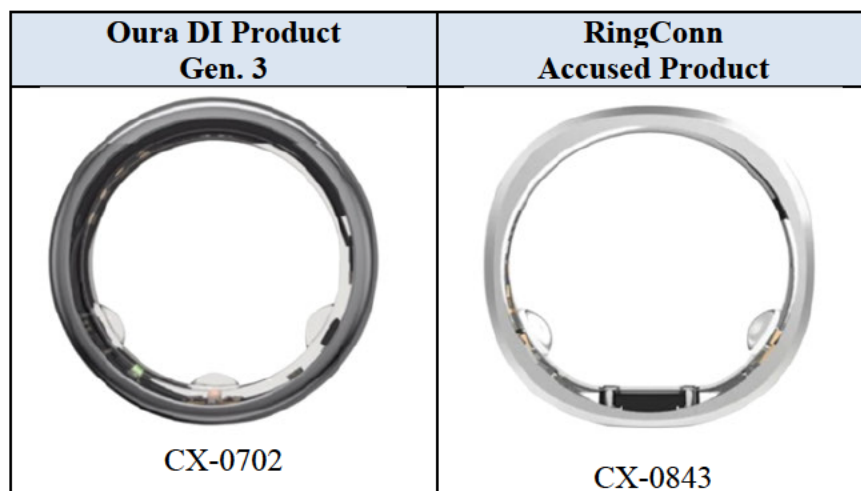
Simply put, Ultrahuman copied the Oura Ring. Ultrahuman also copied Oura Ring’s marketing materials that showed the ring’s structural design. Ultrahuman just changed Oura’s silver exterior to black and flipped the illustration from left to right:



Sensing the downside of copying marketing materials, Ultrahuman disavowed its own illustrations at the hearing. Tr. (Kumar) 673:21-24, 674:5-7 (describing the illustration as “100 percent inaccurate”), 708:25-709:3. But no amount of backpedaling erases the fact that Ultrahuman copied the Oura Ring.

2. RingConn’s copying

RingConn was no better. What took Oura nearly three years to develop with a large R&D

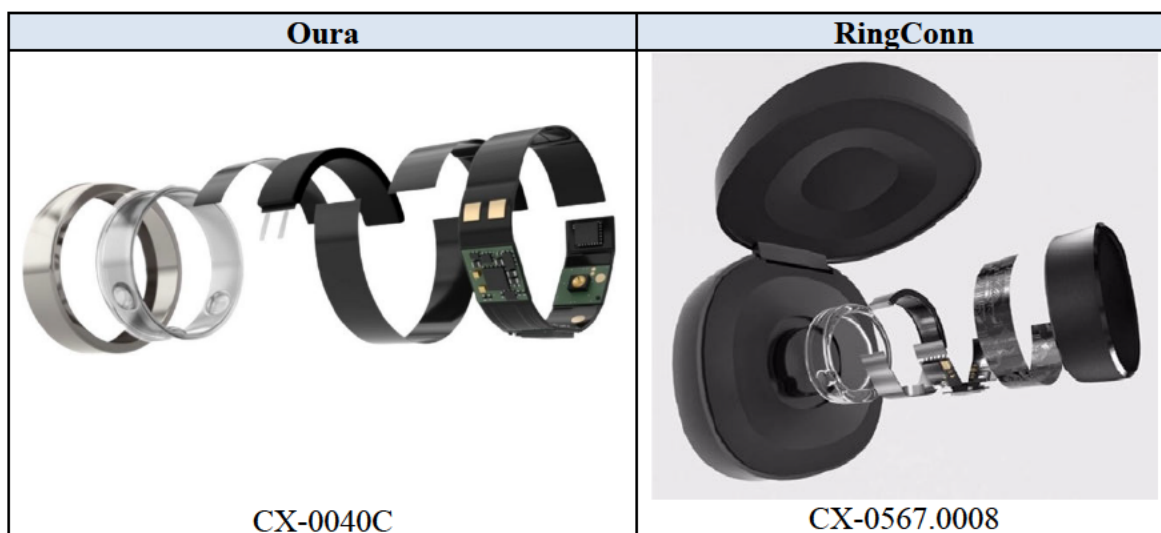


Tr. (Wang) 1160:17-21; Tr. (Wu) 761:5-16.

Tr. (Wang) 1161:13-16

Id. 1161:22-25. Like Ultrahuman,

RingConn also copied Oura's marketing materials:



Caught cheating, RingConn also tried to downplay its own marketing materials. Tr. (Wu) 759:22-23 (“This is a graphic used by our RingConn Marketing Department when they promote our Smart Ring products.”), 759:24-760:19. But again, RingConn copied the Oura Ring.

* * *

Respondents argue that there is “not one document from Respondents’ files showing actual copying” and that Sarrafzadeh identified only the similarities between the Accused Products and Oura Ring Gen. 3. RIB at 67. These points ignore the law. *Medtronic, Inc. v. Teleflex Innovations S.a.r.l.*, 70 F.4th 1331, 1340 (Fed. Cir. 2023) (“We have never held, however, that copying cannot be established through evidence of access to and substantial similarity with a patented product.”). Indeed, as the Federal Circuit explained:

Evidence of access and substantial similarity *is* evidence of copying. Medtronic’s argument is tantamount to requiring that copying can be proven only by direct evidence . . . rather than circumstantial evidence such as access and similarity. Our case law has never drawn any such distinction, nor would such a distinction be consistent with basic principles of evidence and inference. Circumstantial evidence is just that—evidence. It establishes that a given fact is more likely to be true than one would otherwise believe in the absence of the evidence. Nor is circumstantial evidence second-class to direct evidence: Circumstantial evidence is not only sufficient, but may also be more certain, satisfying and persuasive than direct evidence.

Id. (citations omitted; emphasis in original).

This is compelling evidence of copying.

Respondents also argue that because they “launched their accused products *before* the ’178 patent issued . . . [a]ny evidence of copying that predates the issuance of a patent is not relevant in the secondary considerations analysis.” RIB at 67 (citing *State Indus., Inc. v. A.O. Smith Corp.*,

751 F.2d 1226, 1236 (Fed. Cir. 1985). Respondents misunderstand the law. *State* dealt with willful infringement, which is irrelevant here. Copying a patent is infringement; copying a product that embodies the Asserted Claims is the focus of the relevant secondary considerations: “Copying ‘requires evidence of efforts to **replicate a specific product.**’” *Tokai Corp. v. Easton Enters., Inc.*, 2011 WL 308370, *9 (Fed. Cir. 2011). Here, the copying relates to the Oura Ring product.

In sum, the clear copying supports a finding of nonobviousness.

D. Industry Praise

The claimed inventions have been the subject of extensive industry praise. Tr. (Rosing) 1231:13-15; CDX-0005.56. Indeed, the Oura Ring has received the following awards:

- “Wearable of the Year” in 2022 by Wareable. CX-0618;
- One of “People’s Products Worth the Hype in 2021.” CX-0623 (“smart (and stylish!) device”);
- A GQ Fitness Award 2022. CX-0625 at CX-0625.0024 (“But the thing we came to appreciate most about the Oura is a little simpler: Unlike the competitors that rely on straps and bands—and invariably feel gross after a run on a hot day—the sleek metal of the Ours is a cinch to keep clean.”);
- Recipient of a Good Housekeeping’s 2023 Fitness Award. CX-0628 (“an easy way to get a better overview of your overall health and well-being, without wearing a bulky device that needs charging every day.”);
- Recipient of a Health Sleep Award 2022. CX-0629 (“At first glance, the Oura Ring looks just like a regular ring. Dr. Porter, who recommends Oura, says he uses it because it’s comfortable to sleep with and convenient.”);
- Recipient of Self Home Fitness Award, 2022. CX-0612 (“the Oura ring is perhaps the most stylish (and subtle) wearable we’ve seen.”);
- Recipient of Holistic Health Tracker Award and the 2024 Good Housekeeping Best Fitness Award. CX-0617 at CX-0617.0004 (“This discreet smart ring from Oura is now available in six stunning shades and has tiny built-in sensors to track personalized health metrics”);

Respondents don’t contest the high praise that Oura Ring has received. RIB at 66-68.

Instead, they argue that some of the awards predate the launch of Oura Ring Gen. 3. *Id.* at 66. But even discounting the four disputed awards (CX-0609, CX-0615, CX-0622, CX-0624), Oura Ring still has an enviable trophy case.

Respondents argue that some of the praise may relate to unclaimed features, such as Oura Ring's sleep tracking or accuracy. *Id.* at 66-67. But those functionalities are possible because the Oura Ring form factor is the foundation of all the data collected and processed. Tr. (Chapp) 88:11-19, 93:22-95:2; Tr. (Sarrafzadeh) 254:20-24, 338:16-339:14; Tr. (Mulhern) 1271:2-20, 469:22-470:3. Without the Oura Ring's structural design that captures data from a finger (instead of a wrist), none of the App's features or data accuracy are possible.

Finally, Respondents argue that Mulhern ignored negative press. RIB at 67 (citing RX-0389). The mere fact that Respondents identify just one piece of a "negative" press in Oura Ring's nine-year history actually confirms success and praise. Even the cited opinion piece was more a reflection of the author than the product. For example, the author complained that "while the charts about my heart rate and sleep patterns sure looked neat, I didn't feel more enlightened about my overall health." RX-0389.2. The author also complained that Oura sends "a free sizing kit . . . to measure your finger. Then you tell the company your size. When the ring arrives, you place it on a dock to charge it and synch it with a smartphone app." RX-0389.3-4. The fact that Oura Ring ensures a good fit and consumer must charge the product (like all electronic devices) isn't the knock that Respondents claim it to be.

Simply put, Oura Ring has received wide industry praise because it made a product unlike any other before it, further proving nonobviousness.

E. Failure of Others

Many others failed in achieving the results of the '178 patent. Tr. (Rosing) 1231:6-12. For example, the MIT group had the idea of combining a PPG sensor, accelerometer, signal processing,

and transmission capability within a ring, but couldn't create a housing that neatly packaged everything inside the ring:

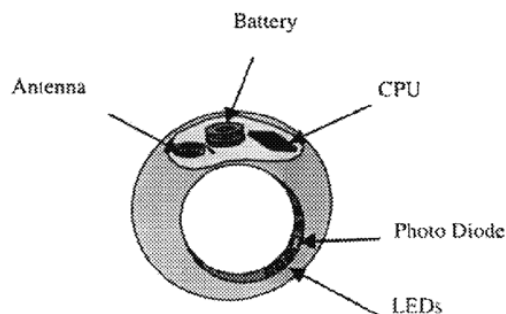


Fig. 1. Conceptual diagram of the ring sensor.

CX-1121.0002

Instead, they put all the components above the ring, Superbowl style:

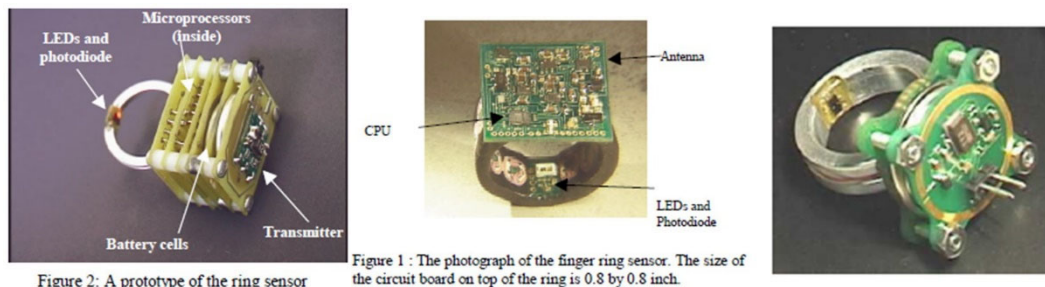


Figure 2: A prototype of the ring sensor

Figure 1 : The photograph of the finger ring sensor. The size of the circuit board on top of the ring is 0.8 by 0.8 inch.

Id.; CX-1122 at CX-1122.0002; CX-1127 at CX-1127.0001; CX-1121 at CX-1121.0274; CX-1123 at CX-1123.0003; CX-1133 at [0219].

It wasn't until the disclosure of the '178 patent and use of internal and external housing components to house the flexible PCB and curved battery that Oura, Motiv, and copycats made smart rings with all the components neatly hidden inside the ring. Tr. (Rosing) 1231:6-12. This also supports non-obviousness.

F. Long-Felt Unmet Need

Finally, the '178 patent met a long-felt, but unmet need. At the time of the invention in 2013, wearable electronics available were bulky, uncomfortable, distracting (e.g., with screens),

and interfered with daily life. Tr. (Rosing) 1228:10-1231:5; CDX0005.51-54; CX-0598.0003; CX-0603.0007; CX-599.0003; CX-596.0004; CX-598:0007; CX-0600.0011. There was a need for compact, wearable monitoring systems with continuous monitoring of health conditions and sleep. *Id.*

The Oura Ring filled those needs because it's unobtrusive enough to wear at all times, even when sleeping. CX-0598; CX-0599; CX-0603. It met those needs while being fashionable and attractive enough to avoid immediate identification as a fitness tracker. CX-0594; CX-0600. The Oura Ring met this need to be a "stealth" tracker. Tr. (Rosing) 1228:10-1231:5.

VII. RESPONDENTS SKIPPED PUBLIC INTEREST

Despite the extra burden that it would impose, Ultrahuman demanded that "the Commission delegate to the presiding ALJ the authority to collect evidence, hear argument, make factual findings, and issue a Recommended Determination on the public interest." EDIS No. 816981 at 2. After getting its wish (89 Fed. Reg. 27452, 27452–53 (Apr. 17, 2024)), Ultrahuman appears to have abandoned public interest.

At the outset of this Investigation, the ALJ had instructed the parties that "to the extent that the parties submit or exchange expert reports on public interest, they would be done simultaneously with the initial expert reports." CMC Tr. 16:7-18 (May 8, 2024). Oura submitted its position on public interest with an initial expert report; Respondents skipped it. Oura also discussed public interest in its Initial Post-Hearing Brief; Respondents skipped it again. SIB at 78 ("Respondents, however, failed to address the statutory public interest factors in their initial post-hearing brief."). Thus, to the extent that Respondents introduce untimely public-interest arguments in their responsive brief, they should receive little weight.

Regardless, the Staff provides a fulsome analysis, concluding that "[t]he evidence adduced at trial concerning the public interest is insufficient to preclude relief." *Id.* at 77-79.

VIII. CONCLUSION

For the foregoing reasons, Respondents have not carried their heavy burden of proving by clear and convincing evidence that any of the Asserted Claims are invalid based on anticipation or obviousness. Furthermore, secondary considerations weigh in favor of finding the '178 patent to be nonobvious.

Therefore, Oura requests that the ALJ issue a determination that (1) Respondents violated Section 337 by infringement of the Asserted Patent; (2) the Asserted Patent is valid; (3) both technical and economic prongs of the domestic industry are satisfied for the Asserted Patent; (4) limited exclusion orders and cease and desist orders should issue; (5) a bond should be imposed during the Presidential Review Period; and (6) there are no public interest issues that should preclude the issuance of the requested remedy.

Dated: January 17, 2025

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

The undersigned certifies that this brief complies with the word limitation set forth in the Ground Rule 14.3. The certified word count includes footnotes and excludes caption, table of contents or authorities, words in figures, the word count certificate, signature block, and the certificate of service.

Certified word count: 11,070

/s/ Janine A. Carlan
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Certain Smart Wearable Devices,
Systems, and Components Thereof

Inv. No.: 337-TA-1398

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing COMPLAINANTS' POST-HEARING
RESPONSIVE BRIEF was served upon the following as indicated below on January 17, 2025:

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Certain Smart Wearable Devices,
Systems, and Components Thereof

Inv. No.: 337-TA-1398

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing COMPLAINANTS' POST-HEARING
RESPONSIVE BRIEF was served upon the following as indicated below on January 22, 2025:

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