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UNITED STATES 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**

RESPONDENTS' INITIAL POST-HEARING BRIEF

[redacted]

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(d) Limitation 1[b-ii]: "the internal housing component coupled with the external housing component," 32

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(h) Limitation 1[c-iii]: "wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device;" 38

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(a) Claim 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." 45

(b) Claim 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." 46

(c) Claim 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." 46

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TABLE OF ABBREVIATIONS

Abbreviation	Full Name
PCB	Printed Circuit Board
POSA	Person of Ordinary Skill in the Art
PHB	Pre-Hearing Brief
GR	Order No. 2, Notice of Ground Rules
Tr.	Evidentiary Hearing Transcript

[redacted]

I. INTRODUCTION

Respondents established the invalidity of the Asserted Claims by clear and convincing evidence, and Complainants seek to salvage validity by ignoring the express disclosures of the prior art and highlighting nonexistent claim limitations.

Niwa. There is no dispute that Niwa discloses a finger-wearable smart ring, nor that Niwa discloses a housing that encloses electronic components, including a battery, printed circuit board, and light-emitting sensors for acquiring user data. Indeed, the dispute here is narrow—whether Niwa's housing can be said to have "internal" and "external" components, and whether Niwa discloses that its battery is between "inner" and "outer" circumferential surfaces. As Respondents firmly established during the evidentiary hearing, Niwa discloses both requirements and thus anticipates claims 1, 2, 13, and 14. *See infra* Section V.A.

Niwa in view of Schröder. There is no dispute that Schröder discloses a finger-wearable smart ring or a housing that encloses space containing electronic components. Nor is it disputed that Schröder discloses a two-piece process for building the ring housing, where an "internal" and "external" housing component are joined together to form an internal recess, within which the ring's electronic components are placed:

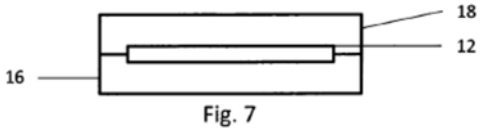

Fig. 7

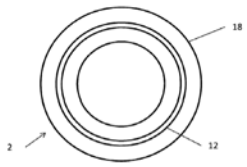

Fig. 4

As with Niwa, the dispute is thus narrow: whether there would be a reason to use Schröder's explicit teaching of a two-piece housing to supplement Niwa. The evidence again compels an affirmative answer—Niwa and Schröder are both finger-wearable smart rings. Schröder describes how a POSA would manufacture a finger-wearable smart ring. And Schröder

describes several advantages of its two-piece housing design, including that it allows for the smart ring to be opened such that damaged or defective electronic components can be replaced and that it is built to be continuously worn on the body. Thus, as much as Niwa does not disclose "internal" and "external" housing components, Schröder discloses this limitation, and a POSA would be strongly motivated to combine these references. *See infra* Section V.B.1.

Niwa in view of the Curved Battery Art. Dependent claim 12 adds a curved battery with an arc approximating an arc of the external housing component. But there is no dispute that curved batteries long existed in the art, nor that GMBPow, Webster, and Henderson (the "Curved Battery Art") each disclose curved batteries available before the critical date. In fact, Complainants do not dispute that GMBPow tracks the battery description listed in the '178 Patent's specification. Complainants' argument instead boils down to the notion that a POSA would not be motivated to use a curved battery with a curved ring. But that defies common sense. Indeed, rather than explicitly grapple with this obvious logic, Complainants focus on unclaimed voltage and size requirements and the notion that skilled artisans would be unable to use routine mechanical skill to deploy the curved batteries of GMBPow, Webster, or Henderson with Niwa's ring. None of Complainants' arguments have merit, and Niwa in view of each of these references renders claim 12 obvious. *See infra* Section V.B.2.

On secondary considerations, Complainants have not met their burden of establishing a nexus, and the evidence of record refutes the existence of any secondary consideration. At bottom, Complainants' arguments cannot unseat Respondents' strong showing of *prima facie* obviousness. *See infra* Section V.B.3.

For these reasons, claims 1, 2, 12, 13, and 14 are invalid.

[redacted]

II. BACKGROUND

A. The Parties

Ouraring, Inc. and Ōura Health Oy (collectively, "Oura") are Complainants in this Investigation. Ouraring, Inc. is a Delaware corporation and is principally located in San Francisco, California. Ōura Health Oy is a Finnish company principally located in Finland. Ouraring, Inc. is a wholly owned subsidiary of Ōura Health Oy. Oura developed none of the technology described in the '178 Patent, acquiring it instead from a now-defunct company called Motiv.

Ultrahuman Healthcare Pvt. Ltd, Ultrahuman Healthcare SP LLC, Ultrahuman Healthcare Ltd. (collectively, "Ultrahuman Respondents" or "Ultrahuman"), Shenzhen Ninenovo Technology Limited, and RingConn LLC (collectively, "RingConn Respondents" or "RingConn") are Respondents in this Investigation.

B. Procedural History

On March 13, 2024, Complainants sued RingConn and Ultrahuman for alleged infringement of the '178 and '179 Patents by importing and selling the RingConn and Ultrahuman Accused Products, respectively. On April 12, 2024, this Investigation was instituted. On July 19, 2024, Complainants dropped the '179 Patent, and on November 25, 2024, Complainants dropped claims 17 and 18 from the '178 Patent. The ALJ construed certain claim terms on October 23, 2024. (JX-0011.005, 0014, 0017.) The ALJ held an evidentiary hearing from December 11-17, 2024 and the initial determination target date is April 18, 2025. The Commission is scheduled to issue a final determination by August 18, 2025.

III. LEGAL STANDARDS

A. Anticipation

"A claim is anticipated when the four corners of a single, prior art document describe every element of the claimed invention, either expressly or inherently, such that a person of ordinary skill

[redacted]

in the art could practice the invention without undue experimentation." *Spansion, Inc. v. Int'l Trade Comm'n*, 629 F.3d 1331, 1356 (Fed. Cir. 2010). A prior art reference need not explicitly disclose the claimed feature if it is within the knowledge of a person of ordinary skill in the art. *In re Graves*, 69 F.3d 1147, 1152 (Fed. Cir. 1995) (citing *In re LeGrice*, 301 F.2d 929, 936 (C.C.P.A. 1962) (holding that a reference anticipates when "a skilled artisan could take its teachings in combination with his own knowledge of the particular art and be in possession of the invention").

B. Obviousness

A patent is obvious when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a).

The analysis focuses on the four *Graham* factors: (1) the scope and content of the prior art, (2) the level of skill in the art, (3) the differences between the claimed invention and the prior art, and (4) secondary considerations of non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966); *see KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 399 (2007). Obviousness is determined through the lens of a person of ordinary skill in the art ("POSA"). 35 U.S.C. § 103. A POSA is "a person of ordinary creativity, not an automaton." *KSR*, 550 U.S. at 416.

There must be "an apparent reason to combine known elements in the fashion claimed by the patent at issue." *Id*. at 418. A motivation may be found "in the nature of the problem to be solved, which is particularly relevant with simpler mechanical technologies." *Tokai Corp. v. Easton Enters., Inc.*, 632 F.3d 1358, 1371 (Fed. Cir. 2011). Doing so is often "a matter of common sense." *See, e.g.*, *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1243-45 (Fed. Cir. 2010).

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Upon a *prima facie* showing of obviousness, the burden flips to the patentee to prove non-obviousness through so-called "secondary considerations" including commercial success, long felt-need, copying, and the failure of others. *KSR*, 550 U.S. at 399. But secondary considerations "simply cannot overcome a strong *prima facie* case of obviousness." *Wyers*, 616 F.3d at 1246.

Further, the patentee bears the burden of proving the existence of a nexus between the secondary considerations and "features of [the claimed] invention that were not disclosed in" the prior art. *Asyst Techs., Inc. v. Emtrak, Inc.*, 544 F.3d 1310, 1316 (Fed. Cir. 2008). "[N]onpatented features and features known in the prior art" cannot provide the nexus. *Ethicon Endo-Surgery, Inc. v. Covidien LP*, 812 F.3d 1023, 1034 (Fed. Cir. 2016).

IV. TECHNICAL OVERVIEW

A. The '178 Patent

The '178 Patent claims a simple ring comprising a housing, with an "internal" and "external" component that, when coupled together, have a cavity between them. Within the cavity is a battery that is shaped and sized to fit the cavity's dimensions, a printed circuit board positioned in a portion of the cavity not occupied by the battery, and sensors for acquiring user data:

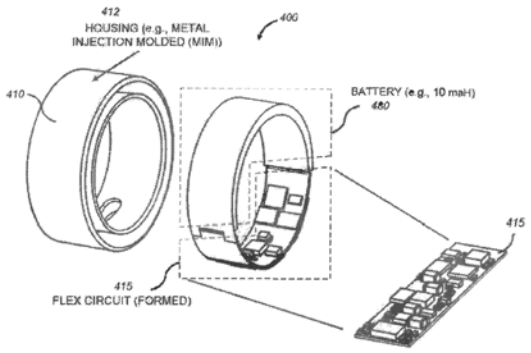

FIG. 4

(JX-0001 at Fig. 4.)

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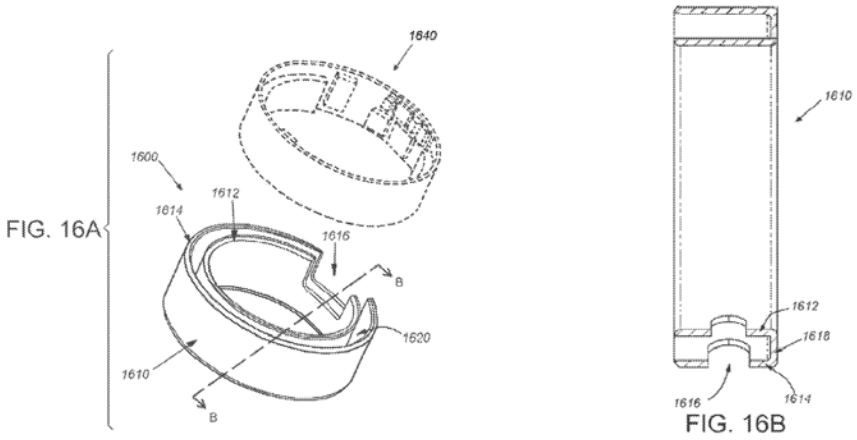
Complainants argue that so-called "unitary" housing embodiments—particularly the one described in Figure 16 of the '178 Patent—are not covered by the claims. (Tr. (Sarrafzadeh) 383:17-387:19.) In Complainants' view, even though the housing of Figure 16 comprises inner wall 1612 and outer wall 1614—and those two components are "directly connected by a floor 1618," (JX-0001 at 20:67-21:1)—this embodiment is unclaimed because inner wall 1612 and outer wall 1614 are not described as existing as separate structures that are subsequently coupled together.



(*Id*. at Figs. 16A, 16B.)

But "coupled to" has been construed as "connected with," tracking the language the specification uses when describing the function of floor 1618. (JX-0011.005.) Further, the claims do not include a negative limitation excluding embodiments where the internal housing component and external housing component are manufactured in unison with the component that connects them. Instead, the housing components need only be structures that enclose space. (JX-0011.0014.)

B. State of the Art

Rings and other wearable devices with batteries and electronic components were common prior to the '178 Patent's priority date. Many rings were available in the prior art and would have been considered by a POSA prior to the priority date, including Niwa, Schröder, Asada, and

[redacted]

Wissmar. (Tr. (Alarcon) 969:25-971:17.) The level of skill here is also high as it combines multiple years of academic and industry experience, (JX-0011.0004-0005), thus increasing the likelihood of invalidity, particularly for obviousness. *See Praxair Distrib., Inc. v. Mallinckrodt Hospital Prods. IP Ltd.*, 890 F.3d 1024, 1037 (Fed. Cir. 2018).

While many of the prior art rings were specifically directed to tracking a user's biometric data, such as Niwa, Alarcon testified that a POSA would also consider a variety of other rings as well, such as the one disclosed in Schröder, even if they disclose embodiments directed to security applications. (Tr. 998:7-14.) While Rosing disagreed, (Tr. 1216:25-1217:5, 1220:10-15), her opinion is contradicted by what POSAs were doing prior to and after the priority date. For example, Motiv, the original assignee of this patent family, was purchased in 2020 by Proxy, a company known for its digital identity signal technology that gave users touchless access through secured doors, elevators, turnstiles and check-ins. (Tr. (Chapp) 122:8-20; RX-0385C.1.) Indeed, the '178 Patent itself discloses embodiments that "are adaptable to interoperate with a variety of networked devices including…***security systems***[.]"[1] (JX-0001 at 43:65-44:3.)

Ultrahuman's development story mirrors this pattern. Kumar testified that when he and his team set out to design their first Ultrahuman Ring, they acquired an Indian company called Lazy Co. which at the time was "actually not building a health device." (Tr. 637:19-23.) Instead, Lazy Co. was building the Aina Ring, which controlled various devices like a user's coffee machine and could remotely start a user's car. (*Id*. at 637:23-638:2.) Kumar explained that Ultrahuman built upon the foundation of this non-health-tracking ring when developing its health-directed ring product. (*Id*. at 638:8-11.)

[1] All emphasis added unless otherwise stated.

[redacted]

A POSA would have also looked to other types of wearable devices. (*See* Tr. (Alarcon) 970:7-19, 1009:18-1010:7.) As Kumar explained, his team considered wrist-worn devices like Whoop, Fitbit, and Apple Watch analogous. (Tr. 639:14-21.) Each one included batteries, sensors, and printed circuit boards. Many also included curved batteries. (Tr. (Alarcon) 971:24-973:7, (Strasser) 590:7-591:4.) While Rosing discounts them based on their larger form factor, (Tr. 1212:20-1213:8), a POSA would have known how to shrink the battery for the appropriate use-case.

1. Niwa

U.S. Patent App. Pub. No. 2012/0016245 to Niwa ("Niwa") titled "Plethysmogram sensor," was published on January 19, 2012. (CX-1133.) As Oura admits, (CX-1129.146), Niwa is prior art to the '178 Patent under at least 35 U.S.C. § 102(a)(2). Niwa was not cited or considered by the examiner during prosecution.

Niwa discloses a finger-worn pulse sensor. (CX-1133 at [0206]; Tr. (Alarcon) 974:18-24, 976:19-23.) There is no dispute Niwa has a housing. (CX-1133 at [0191]; (Tr. (Alarcon) 977:2-9; CX-1129.147; Tr. (Rosing) 1209:7.)

The housing 40 houses a first unit 10 (which contains the light sensor) and a second unit 20 (which contains the battery). (CX-1133 at [0029], [0207], [0210], [0213], [0214].) Niwa's ring "includes...a finger ring type housing to contain the first unit and the second unit, wherein the first unit is contained within the finger ring type housing...and the second unit is contained within the finger ring type housing[.]" (*Id*. at [0029], [0192], [0193]; Tr. (Rosing) 1244:20-23.) These components are shown, for example, in Figure 22, below:

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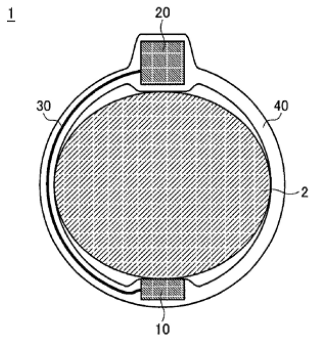
FIG.22



(CX-1133 at Fig. 22.)

Niwa also states that "FIG. 24 to FIG. 26 are perspective diagrams illustrating a situation where the pulse sensor 1 of the implementation example 2 is worn on a third joint of the finger respectively. In addition, FIG. 24 is a see-through illustration to see the plethysmogram sensor 1 from the back side of the hand, FIG. 25 is a see through illustration to see the plethysmogram sensor 1 from the palm side of the hand, and FIG. 26 is a see-through illustration to see the plethysmogram sensor 1 from the side." (*Id*. at [0206].)

FIG.24

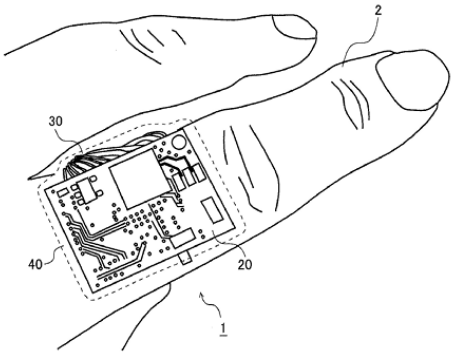


FIG.25

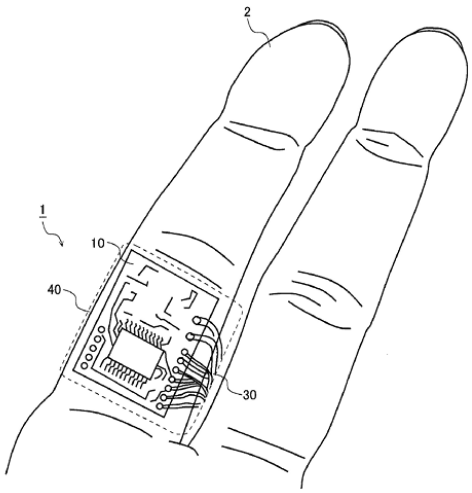


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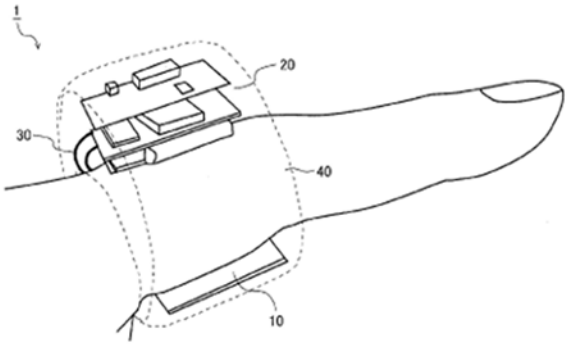
FIG.26



(*Id.* at Figs. 24-26.)

Niwa sought to improve the wearability and comfort of the ring for a user: "to not let the examinee have a consciousness for wearing the plethysmogram sensor 1 (i.e., not let the examinee have an uncomfortable feeling), it is desirable to restrain the largeness of the first unit 10 and the second unit 20 not to protrude from the third joint of the finger 2." (*Id*. at [0206], [0214], [0219].)

Figures 27 and 28 show see-through cross sectional views of the ring, with the wearer's finger labeled 2 extending from left to right. The "bulge" in the housing 40 resulting from unit 20 could be reduced if the size of unit 20 was reduced as Niwa describes. (Tr. (Rosing) 1240:3-23, 1245:11-20, 1246:1-8; *see* RDX-0012-2.) As described by Niwa, reducing the size of unit 20 would allow the housing 40 to be flattened as well, to a point where it is aligned with the remainder of the housing and unit 20 no longer protruded. (*See* Tr. (Rosing) 1240:3-23, 1245:11-1246:8.)

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FIG.27

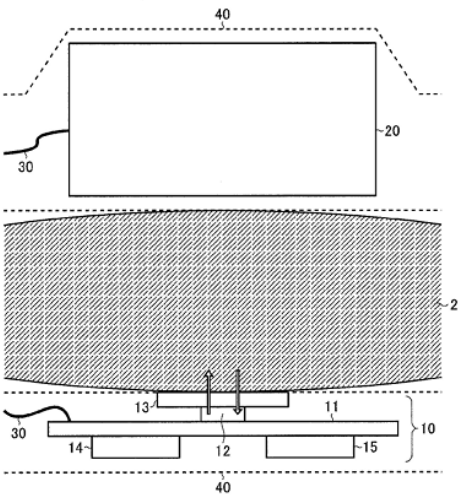
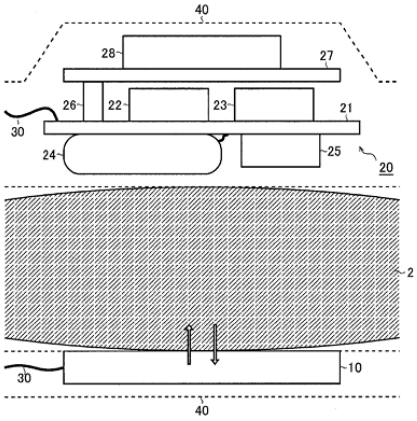


FIG.28



(CX-1133.)

2. Schröder

U.S. Patent No. 10,303,867 to Schröder ("Schröder") was filed on January 25, 2016 as the U.S. national stage application of International Patent Application PCT/EP2014/001693 filed June 18, 2014, which claims priority to foreign application DE 102013012339, filed July 25, 2013. (RX-0018; RX-0025.) Schröder is prior art to the '178 Patent under 35 U.S.C. § 102(a)(2). (Tr. (Alarcon) 998:2-6.) There is no dispute that Schröder is prior art and claimed priority to the German reference. (*Id.* at 997:25-998:6.)

Schröder discloses "a finger-ring 2" and a "smartphone as a communication device 4," that connects to the finger-ring 2. (RX-0018 at 3:57-59.) "The finger-ring 2 is worn by a user e.g. permanently on the finger." (*Id*. at 3:61-62; *see* Tr. (Alarcon) 971:7-8.)

[redacted]

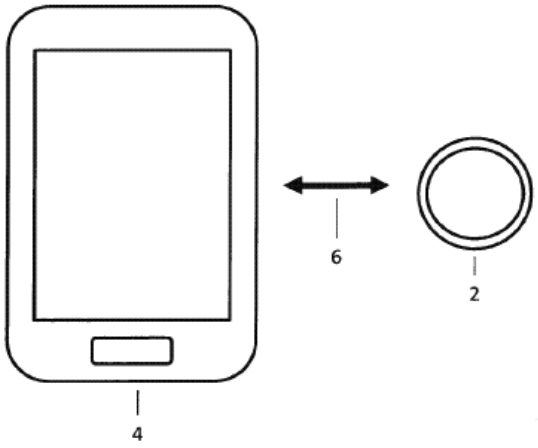


Fig. 1

(RX-0018)

Schröder shows that "there are a number of different construction variants for a ring housing with a recess to house electrical components." (Tr. (Alarcon) 1002:9-11.) "The finger-ring 2 consists of two ring halves 16 and 18. The two ring halves 16 and 18 respectively have a recess into which the inlay 12 is inserted." (RX-0018 at 12:7-9.) "The 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." (*Id*. 12:62-65.) Two views of Schroder's ring are shown below. Figure 4 is longitudinal and Figure 5 is a cross section:

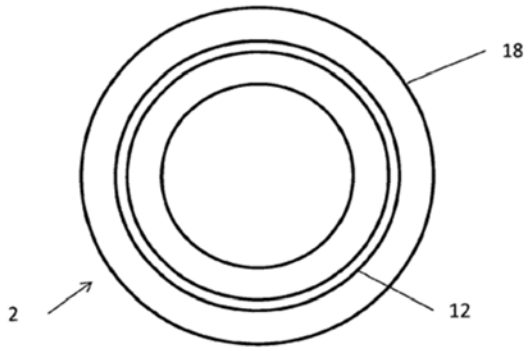


Fig. 4

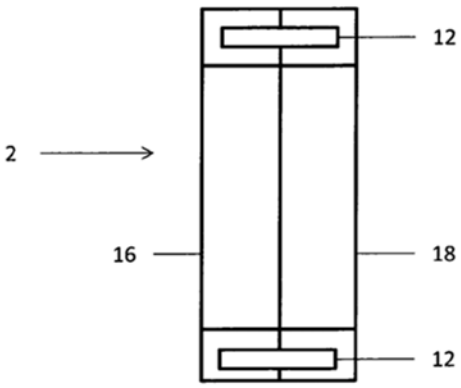


Fig. 5

(*Id*.)

[redacted]

Schröder discloses different constructions of the two ring halves as shown in Figures 6-10, including L-shaped profiles, U-shaped profiles, and even profiles (*Id*. at 12:43-55).

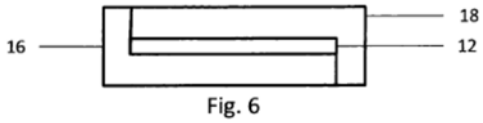


Fig. 6

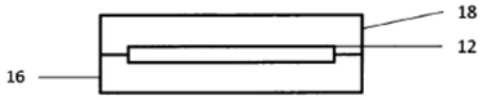


Fig. 7

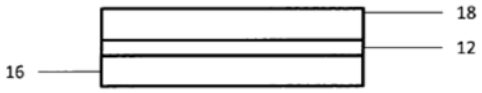


Fig. 9

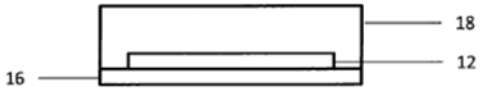


Fig. 8

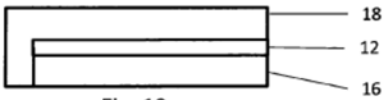


Fig. 10

(*Id*.)

Alarcon also explained that "housings are quite common and Schröder provides several examples, quite common examples of constructing a housing" and that "it would have been within the ordinary skill of a mechanical engineer to construct a housing in this manner." (Tr. 1001:25-1002:4.) Rosing agreed that Schröder discloses how to build housing components. (Tr. 1250:4-7 ("Schröder does talk about how to build housing for his application.").) Indeed, Schröder describes that its ring can be manufactured from a variety of materials and that there are advantages to manufacturing the ring in different dimensions so as to accommodate the components. (RX-0018 at 12:56-13:5.)

3. Curved Battery Art

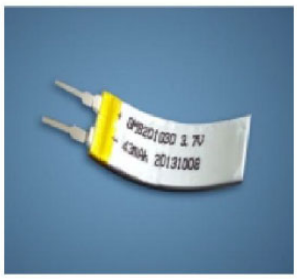
GMBPow. GMBPow, a battery manufacturer, offered for sale a curved lithium polymer battery before the earliest claimed priority date of the '178 Patent. (RX-0030.) Alarcon testified that he had "firsthand experience with GMBPow" in January 2013. (Tr. 1005:20-25.) Motiv inventors Curt von Badinski and Michael Strasser were also familiar with GMBPow. Indeed, they visited GMB's facilities in China during Motiv's search for battery suppliers in 2014. (Tr. (von

[redacted]

Badinski) 234:6-15, (Strasser) 595:11-18, 597:16-18.) Thus, the GMBPow website and the curved batteries GMBPow offered for sale, as corroborated by the website and witness testimony, are prior art at least under 35 U.S.C. § 102(a)(1).

Curved batteries were so well known in the art prior to November 2013 that vendors offered a variety of sizes and shapes to satisfy any reasonable customer requirement. (RX-0030.1.) RX-0030, a print out of the GMBPow website from October 21, 2013, shows that the Curved LiPo201030 battery was available for sale before the earliest claimed priority date of the '178 Patent.

Curved LiPo201030



Item:	Curved 201030 Lithium Polymber Battery
Brief:	Curved lithium polymer batteries can be made at clients requirement, and it is one of our hit products, Bendable, rechargeable, thin, light, and with long shelf life

SPECIFICATIONS | **How Made?**

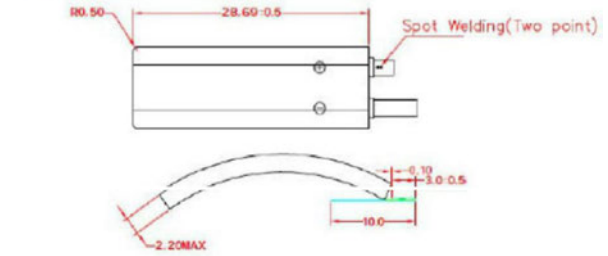
Curved lithium polymer batteries 201030 3.6V 43mAh, can be made at clients requested quantity: 300K per day.

Lithium Polymer MarkynCurved™ Lipo201030Features:

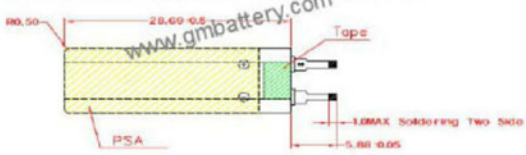
Capacity: 43mAh;
Radian: see the data sheet;
Width: 10mm ;
Thickness: 2.0mm
Length: 30mm

[redacted]

Battery shape:



The First Step: a)The Al-Band is wrapped in Ni-band and two points spot welding



www.gmbattery.com

Specifications:

TYPE	Thickness	Width	length	Rated Capacity	Nominal Voltage	Charge current	Charge time	Discharge current
	(mm)	(mm)	(mm)	(mAh)	(V)	(mA)	(H)	(mA)
201021	2.0	10	21	25	3.7	0.2C	5~8H	0.2C
201024	2.0	10	24	28	3.7	0.2C	5~8H	0.2C
201030	2.0	10	30	41	3.7	0.2C	5~8H	0.2C
202580	2.0	25	80	270	3.7	0.2C	5~8H	0.2C
205080	2.0	50	80	550	3.7	0.2C	5~8H	0.2C
252090	2.5	20	90	260	3.7	0.2C	5~8H	0.2C
252270	2.5	22	70	320	3.7	0.2C	5~8H	0.2C
254045	2.5	40	45	300	3.7	0.2C	5~8H	0.2C
233045	2.3	30	45	200	3.7	0.2C	5~8H	0.2C
233070	2.3	30	70	370	3.7	0.2C	5~8H	0.2C
242269	2.5	22	60	340	3.7	0.2C	5~8H	0.2C
251343	2.5	13	43	85	3.7	0.2C	5~8H	0.2C

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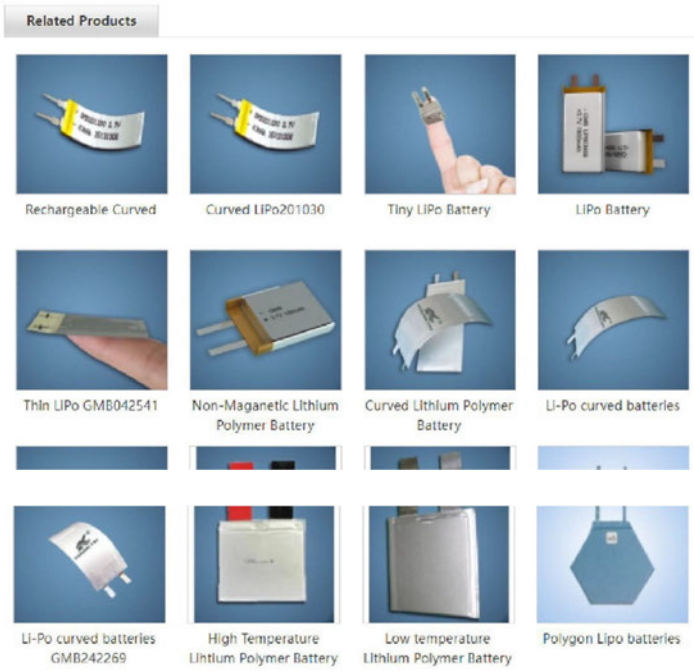
(RX-0030.1-2)

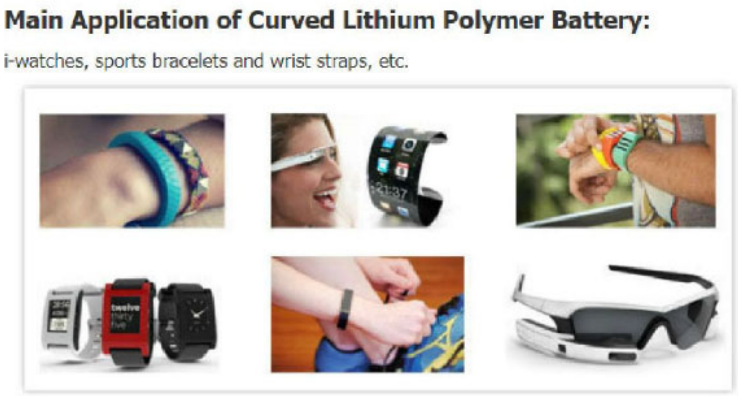
GMBPow also offered various other related batteries for sale such as:

[redacted]



(*Id.* at 2-3.)

GMBPow further stated that the main applications for curved batteries are wearable devices. (*Id.* at 1.)



(RX-0030.1.)

GMBPow's exemplary battery specifications track the battery dimensions described in the '178 Patent's specification. (*Compare* RX-0030.1 *with* JX-0001 at 17:1-18, Fig. 4.) Indeed, GMBPow lists curved batteries with widths, thicknesses, and lengths suitable for finger-worn rings, and even the smallest GMBPow battery has a "rated capacity" of at least 25 mAH, (*see*

[redacted]

RX-0030.2), far exceeding the exemplary battery capacity of "10 mAH" described in Figure 4 of the '178 Patent. In fact, the Curved LiPo201030 model discussed at the hearing has a capacity of 43mAh.

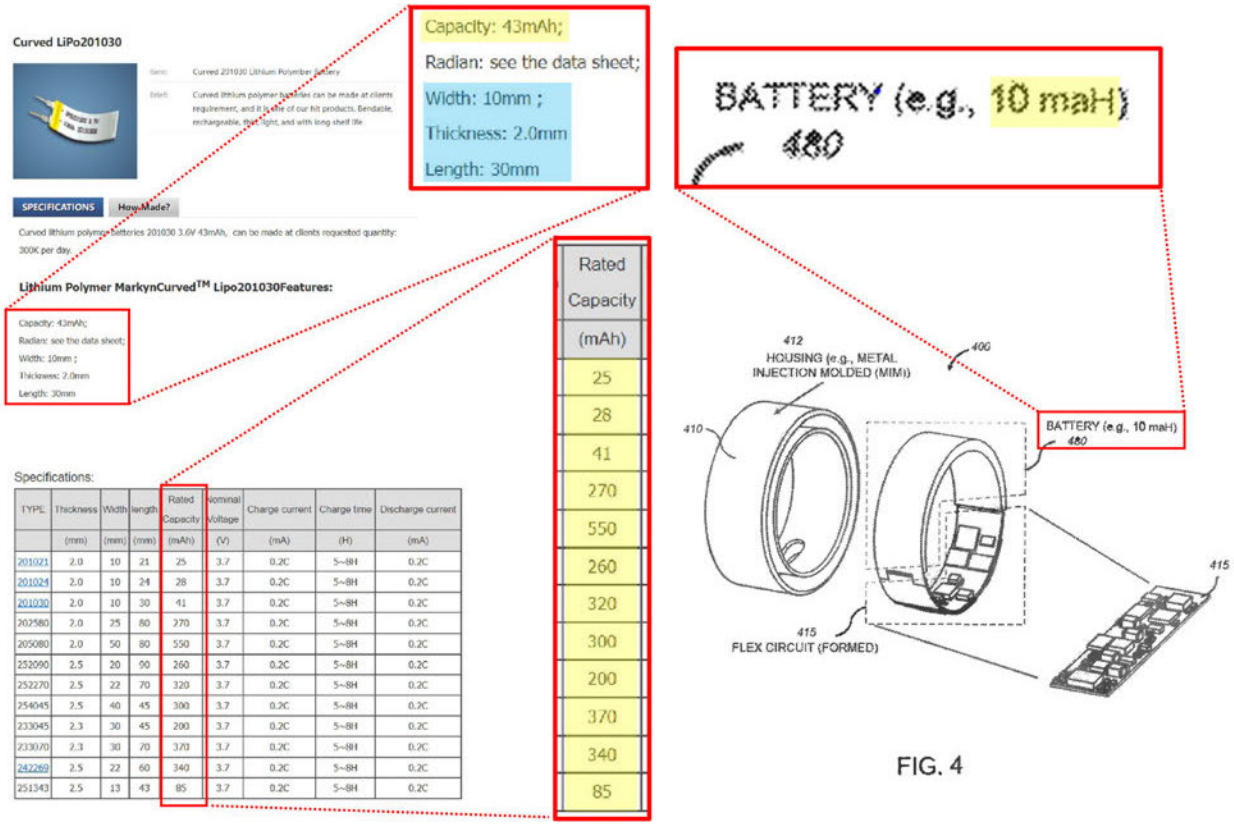


FIG. 4

(RX-0030.2 (annotated), JX-0001 (annotated).)

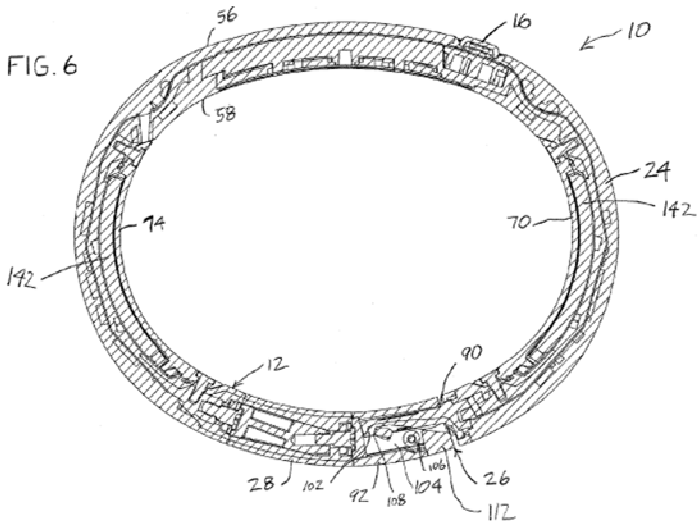
Henderson. US 2013/0226486 to Henderson was filed on January 18, 2013 by Nike Inc. and published on August 29, 2013. (CX-1139.) Therefore, Henderson is prior art to the '178 Patent—as Oura admits, (CX-1129.33)—under at least 35 U.S.C. §§ 102(a)(1) and 102(a)(2).

Henderson is directed to a ring-shaped activity monitoring device with a curved battery that measures various biometric data. Henderson discloses that its "batteries 142 have a curvilinear or curved configuration" that "are generally flush with the inner surface 32 of the spine member 22," which is curved. (CX-1139 at [0077]; *see* Tr. (Alarcon) 1009:4-11.) Henderson also discloses

[redacted]

that "the device may include one or more functional batteries of a curved profile," and discloses how to make curved batteries. (CX-1139 at [0125].)

Henderson discloses curved batteries, as noted above and as shown below in Figure 6, (*id.*), and as admitted by Oura.



(CX-1129.34.)

A POSA would have understood that the Nike+ FuelBand is the embodiment of Henderson, which was filed by Nike. The Nike+ FuelBand was a product that had curved batteries and was released prior to 2013, as evidenced by a 2012 YouTube teardown, depicted below.

(RX-0032 at 3:18, 3:56.)

[redacted]

Notably, the batteries in the fuel band are curved and do not reside in flat sections of the wrist-wearable device—they were placed in the curved portions of the Nike+ FuelBand's housing. Figure 6 of Henderson depicts the same layout. Both the Nike+ FuelBand and Henderson show the POSA's knowledge of curved batteries.

Webster. U.S. 8,715,204 to Webster was filed on July 14, 2011 and published as US 2012/0016258 on January 19, 2012. (CX-1135.) Therefore, Webster is prior art to the '178 Patent under 35 U.S.C. §§ 102(a)(1) and 102(a)(2), which Oura admits. (CX-1129.23.)

Webster is directed to a vaginal ring sensor with a curved battery that transmits biometric information from the user back to a user device. (CX-1135 at 1:40-61, 5:8-12, Figs. 1-3; Tr. (Alarcon) 1008:13-17.) Specifically, Webster discloses electronics powered by a battery that "can, in one embodiment, be a thin film lithium ion or zinc-manganese dioxide chemistry battery that can be bent or curved." (CX-1135 at 5:8-12; Tr. (Alarcon) 1008:13-17.) Further, the battery 212 in Webster is positioned in a different portion of the device than the printed circuit board 102. (CX-1135 at Figure 2A.)

Figures 1, 2A, 2B, and 5 of Webster are shown below:

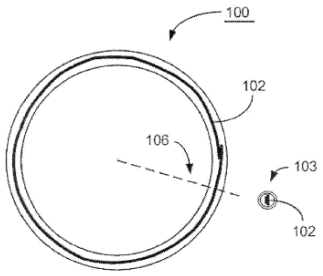


FIG. 1

[redacted]

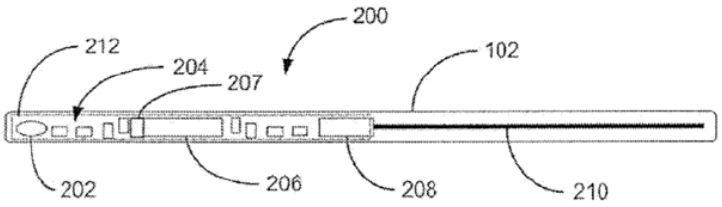


FIG. 2A

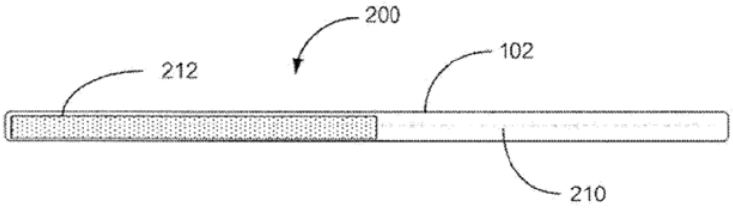


FIG. 2B

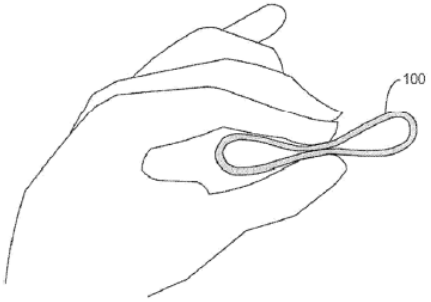


FIG. 5

(CX-1135.)

Although Webster is implanted into a user, it is still a ring device that acquires data from a user while contacting the user. Indeed, Alarcon testified that "it is just another example in this broad category of devices that take biological data, they are wearable, there are batteries. A lot of similarities. So they would have been appropriately similar." (Tr. 1009:18-1010:7.)

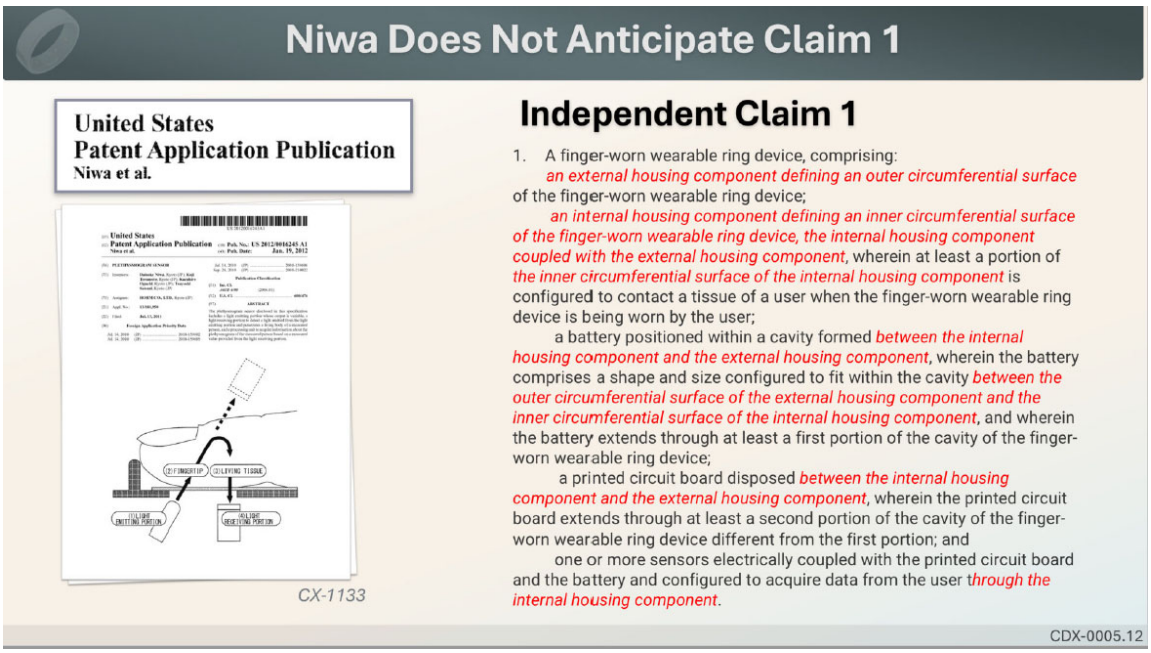
[redacted]

V. THE ASSERTED CLAIMS ARE INVALID OVER THE PRIOR ART

A. Niwa Anticipates Asserted Claims 1, 2, 13, and 14

1. Claim 1

As Oura's expert Rosing testified, two primary issues remain with respect to whether Niwa anticipates claim 1: whether it discloses an internal and external housing component. (*See* Tr. 1206:16-19) The limitations Rosing opines are not met by Niwa (highlighted in red) all relate to the internal and external housing components:



(CDX-0005.12 (Rosing Direct Slides).)

In its PHB, Staff acknowledged these issues, stating "Respondents are not expected to show that Niwa discloses inner and outer housing components." (Staff PHB at 74.) The testimony, from each side's expert, showed that Niwa discloses the internal and external housing component limitations. Thus, Niwa discloses every limitation of claim 1 and therefore anticipates the claim.

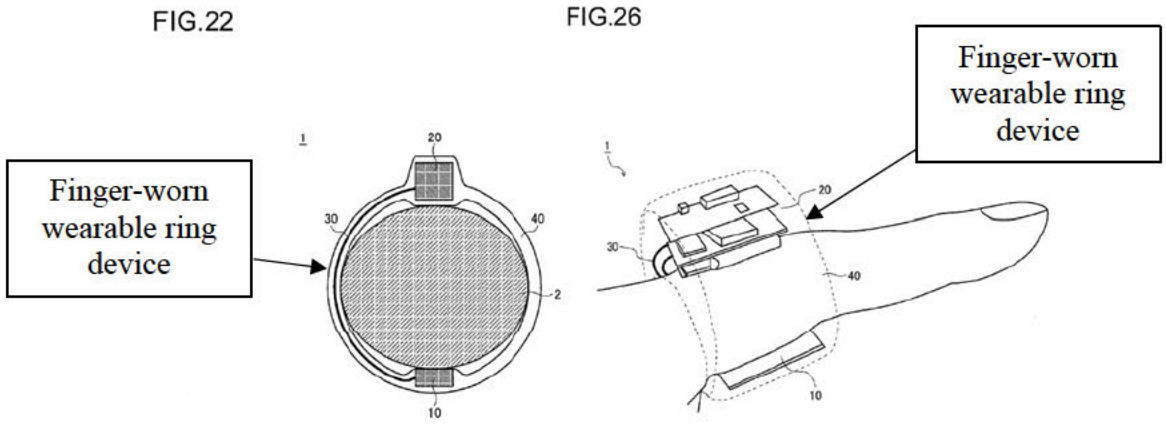
[redacted]

(a) Limitation 1[pre]: "[a] finger-worn wearable ring device, comprising:"

There is no dispute that Niwa discloses the preamble, which the parties agree is limiting. (*See* JX-0011.0005.)

Oura admits that Niwa discloses a finger-worn wearable ring device, and Oura's expert Rosing proffered no testimony rebutting this. (CX-1129.146-147; Tr. (Alarcon) 975:25-976:3; Tr. (Rosing) 1198:8-11; *see* CDX-0005.12 (1[pre] not highlighted in red).)

Niwa explicitly discloses "a finger ring construction to be worn on a third joint of a finger[.]" (CX-1133 at [0028]; *see* Tr. (Alarcon) 976:6-23; RDX-0001C-116.) Niwa relatedly discloses a "pulse sensor 1" worn on a user's finger. (CX-1133 at [0206], Figs. 22, 26; *see also*, *id*. at [0028-0029].)



(*Id.* (annotated).)

Niwa thus discloses this limitation. (Tr. (Alarcon) 976:24-977:1.)

(b) Limitation 1[a]: "an external housing component defining an outer circumferential surface of the finger-worn wearable ring device;"

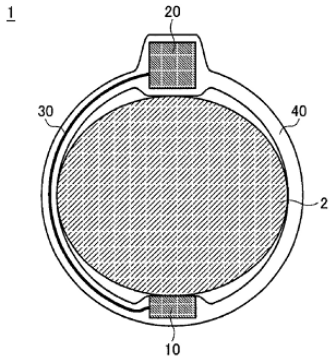
There are two primary disputes with respect to this term: whether the outer wall of Niwa's housing 40 is an "external housing component" as claimed and whether it is circumferential. Rosing takes the extreme position that while Niwa has a *housing* it does not contain an *external*

[redacted]

housing component. (Tr. 1206:16-19.) This position is belied by the reference itself and the '178 Patent. Further, her opinion that it is not circumferential reads out specific teachings in Niwa and thus should be rejected.

First, Alarcon testified that Niwa discloses a housing which Oura and Rosing admit. (Tr. 977:2-9; CX-1129.147; *see* Tr. (Rosing) 1209:7 ("Niwa [] says it has [a] housing"); *id*. 1233:12-14, 1233:20-1234:1.)

FIG.22

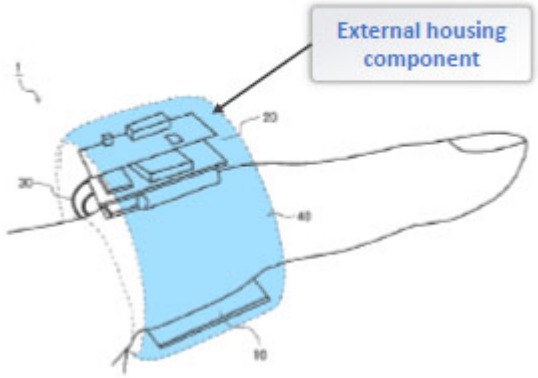


(CX-1133.)

Second, Alarcon testified that Niwa discloses an external housing component. (Tr. 977:10-15; *see* CX-1133 at Fig. 26.) As described in detail below, the finger ring type housing 40 has an external housing component or outer wall (in blue below) defining an outer circumferential surface.

[redacted]

FIG.26



(RDX-001C-119.)

Figure 26 shows that the housing 40 includes inner and outer surfaces. Specifically, the housing 40 has an external housing component that defines an outer circumferential surface. (CX-1133 at [0204]; RDX-001C-119-120.) A POSA would understand that Niwa's external housing component is a structure that encloses space. (*See* JX-0011.0014.) In particular, Niwa's external housing component is a structure that encloses the interior space of the ring. As seen in Figures 22 and 26, Niwa's finger ring device "includes...a finger ring type housing ***to contain the first unit and the second unit***, wherein the first unit is ***contained within*** the finger ring type housing...and the second unit is ***contained within*** the finger ring type housing[.]" (CX-1133 at [0029], [0192]-[0193].) Indeed, each Figure in Niwa shows that the components are enclosed ***within*** the space defined by housing 40. (*See* Tr. (Rosing) 1233:12-14, 1233:20-1234:1, 1244:20-23.) Additional example Figures are reproduced below:

[redacted]

FIG.22

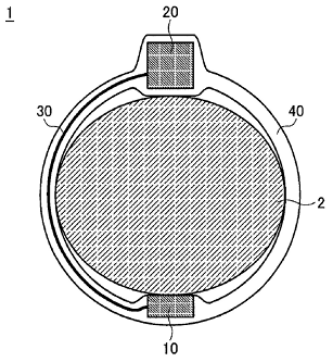
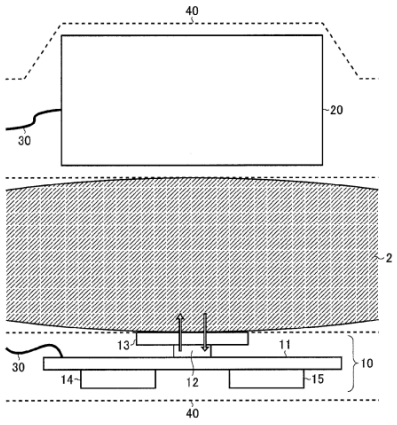


FIG.27



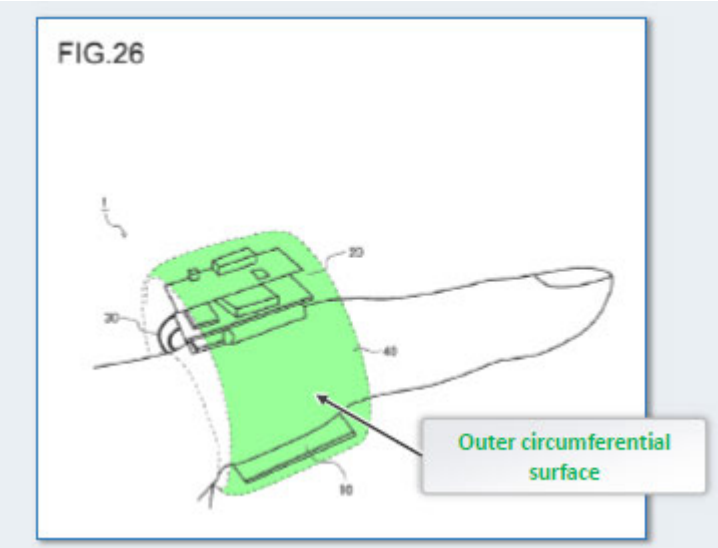
(CX-1133.)

Rosing opined that Niwa does not "tell us anything" about "how the housing is actually designed." (Tr. 1206:19-25.) But the claims do not require a specific method of manufacture. And Respondents are not required to show that the prior art uses the same precise language as used by the '178 claims to prove anticipation. *Adasa Inc. v. Avery Dennison Corp.*, 55 F.4th 900, 910 (Fed. Cir. 2022) ("[T]he [prior art] reference need not disclose the elements in the very same terms used by the patent."). Despite admitting Niwa discloses a housing, and that the housing is above and below components contained in unit 20, Rosing initially concluded that Niwa's components are ***not contained within*** the housing. (Tr. 1238:1-13, 1239:11-22, 1242:13-25.) While she ultimately relented on that unsupportable position, (*id*. 1244:20-23), she offered no explanation as to why what Alarcon identified in Niwa as the external housing component does not meet the claim language other than *ipse dixit*.

Further, Niwa's external housing component is like those described in Figures 4 and 16 of the '178 Patent. (*See* JX-0001 at 20:67-21:1.) For the same reason those Figures have internal and external housing components (walls 1612 and 1614) connected by a floor, so too does Niwa. (*See* Section IV.A, *supra*.)

[redacted]

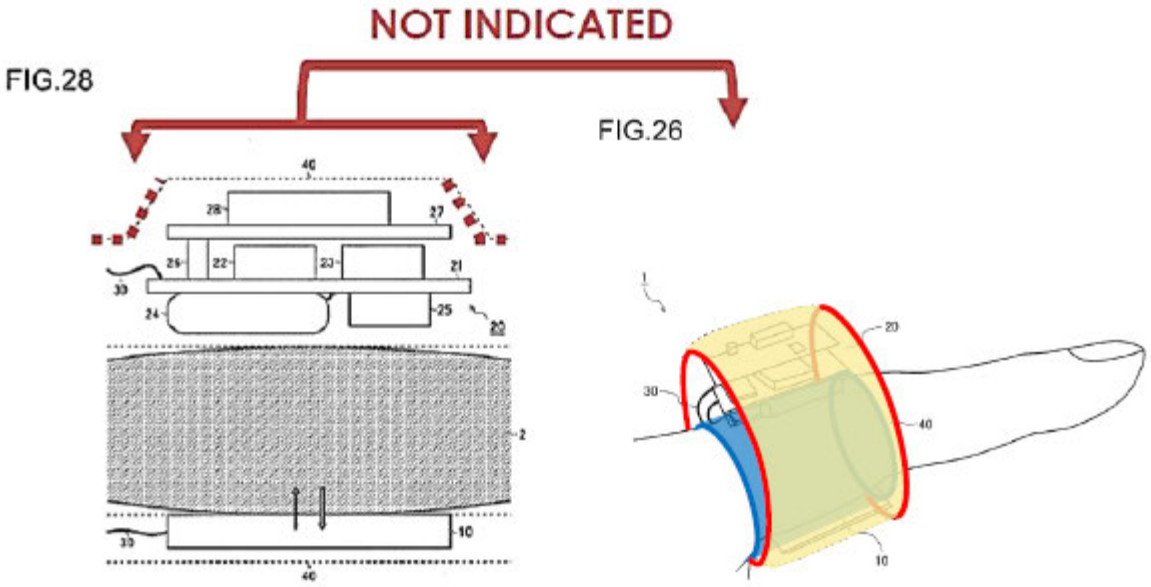
Third, Niwa's external housing component defines an outer circumferential surface, as shown by how the ring "goes around the user's finger[]" in Figure 26. (Tr. (Alarcon) 977:19-978:1.) Moreover, as seen from the area shaded green in Figure 26 below, the shape of the ring's outermost surface is circumferential under the plain and ordinary meaning. (*See* JX-0011.0017.)



(RDX-0001C-120.)

Oura and Rosing do not argue that the green surface in Figure 26 is not circumferential. Instead, they argue that because Figure 26 is merely a "see-through" illustration, only Figures 22, 27, and 28 should be considered in an invalidity analysis. Rosing further opined that because the "shoulders" in Figures 28 (Rosing's red dashed lines on Figure 28 below) and 22 are not shown in Figure 26, Figure 26 cannot be an accurate embodiment of Niwa. (Tr. 1234:4-23 ("Figure 26 fails to indicate the presence of the shoulders...of the raised portion of the ring surface."), 1241:21-1242:2.)

[redacted]



(RDX-0012-3 (Rosing's annotations).)

Rosing's opinion is flawed for multiple reasons. Every figure in the prior art must be considered in an invalidity analysis, and it is improper to limit the teaching of a reference to a single embodiment. *See Arthrocare Corp. v. Smith & Nephew, Inc.*, 406 F.3d 1365, 1372 (Fed. Cir. 2005) (holding that "it was error for the district court to limit the disclosure of the prior art reference to a preferred embodiment"). Further, POSAs can use the teachings of figures and drawings "without referring to the surrounding description [] if the prior art features are clearly disclosed by the drawing." *PlaSmart, Inc. v. Kappos*, 482 Fed. App'x 568, 572-573 (Fed. Cir. 2012). Rosing's opinion should be given little weight because she ignores the totality of Niwa, and instead selectively relies on a portion of it in her results-driven analysis.

On top of that, while Figures 22, 27, and 28 include Rosing's "shoulders," the shoulders do not preclude a determination that the external housing component is circumferential. Niwa specifically discloses reducing the shoulders such that the protrusion is reduced. (Tr. (Rosing)

[redacted]

1240:3-23, 1245:11-20, 1246:1-8; *see* RDX-0012-2.) Niwa states that "the largeness of the second unit 20 can be restrained not to protrude from the third joint of the finger 2" and that "it is desirable" to do so. (CX-1133 at [0206], [0214].) Rosing admitted on cross examination that unit 20 exists within housing 40 as depicted in both Figures 26 and Figures 27-28 and underneath the "shoulders." (Tr. 1244:20-23.) As described by Niwa, a POSA would understand that reducing the size of unit 20 would allow the housing 40 to be flattened as well, to a point where it is aligned with the remainder of the housing and unit 20 no longer protruded. (Tr. (Rosing) 1240:3-23, 1245:11-1246:8.) Thus, Figures 27-28—in addition to Figure 26—also disclose an external housing component that defines a circumferential surface.

Furthermore, Rosing takes contradictory positions with respect to the meaning of dashed lines in the figures. Rosing opines that the dashed lines in Figures 26 and 28 have different purposes. (Tr. 1235:17-1236:14.) Indeed, she claims that Figure 26 does not show Niwa's housing because it is a "see-through" illustration with dashed lines, yet points to the dashed lines in Figure 28 to indicate the presence of "shoulders" in Niwa. Rosing takes the extreme position that in Figure 26 there is no external housing component and a POSA would interpret the figure as leaving the electronic components exposed. In addition to having no support in Niwa's specification, that strained interpretation also defies basic logic—a POSA would not leave electronics exposed to the elements.

Alternatively, while Niwa discloses that the protrusion could be reduced thereby creating an entirely circumferential external surface, a POSA would also recognize another option: extending the housing to meet the top of the protrusion, thereby creating a consistent circumferential shape. And while Rosing takes issue with the size of Niwa's ring, (*see* Tr. 1205:20-1206:13), the claims of the '178 Patent do not recite any size limitations. Such unclaimed limitation

cannot be used to distinguish the claims to defeat anticipation. *See In re Qapsule Techs., Inc.*, 759 F. App'x 975, 981 (Fed. Cir. 2019) (holding "[u]nclaimed limitations cannot distinguish the claims").

Even if Niwa's housing disclosure somehow excludes Figure 26—it does not—an embodiment that contains an outer circumferential surface is disclosed in Figures 22, 27, and 28 because Niwa's specification specifically describes reducing the protrusion. *In re Graves*, 69 F.3d 1147, 1152 (Fed. Cir. 1995).

(c) Limitation 1[b-i]: "an internal housing component defining an inner circumferential surface of the finger-worn wearable ring device,

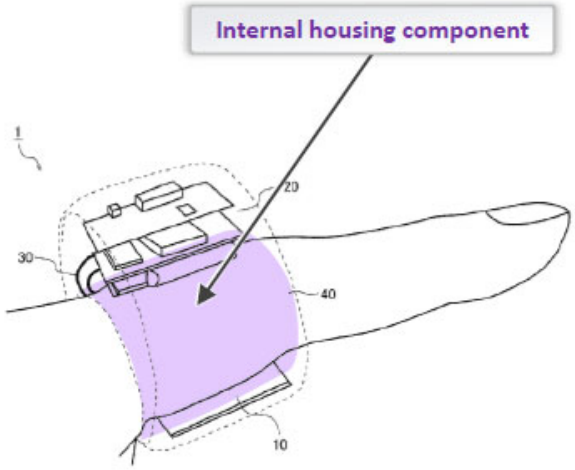
The only dispute with respect to this term is whether the portion of Niwa's housing identified by Alarcon is an internal housing component. There is no dispute that it is "circumferential."

Niwa discloses this limitation for several reasons. ***First***, Niwa discloses a housing as Rosing admits. (Tr. 1209:7; *see* Tr. (Alarcon) 977:2-9; CX-1129.147; Section V.A.1.(b), *supra*.)

Second, Alarcon testified that Niwa discloses an internal housing component. (Tr. 978:11-15; *see* CX-1133 at Fig. 26.) A POSA would understand that Niwa's housing has an inner wall, which is a structure that encloses space. (*See* JX-0011.0014.) As described in detail below, the finger ring type housing 40 includes inner and outer walls, where the inner wall is "in contact with the flesh" and defines an inner circumferential surface that is the internal housing component (shown in purple below). (Tr. (Alarcon) 978:14-15.)

[redacted]

FIG.26

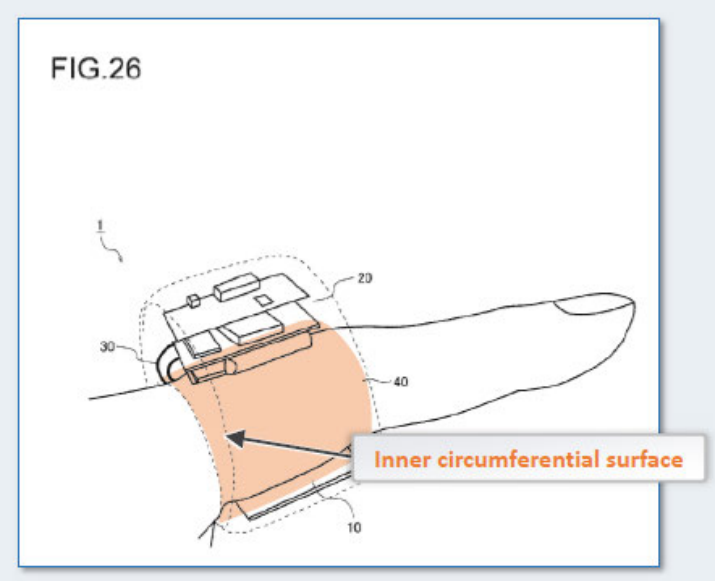


(RDX-0001C-122.)

As described above with respect to limitation 1[a], Niwa's internal housing component encloses space for the same reasons its external housing component encloses space: Niwa's figures show that the ring's internal space is contained between the two walls of the housing 40.

Third, Alarcon testified that Niwa's ring has an inner circumferential surface, illustrated by how the surface touching the skin in Figure 26 "goes around the finger of the user and it is, indeed, circumferential." (Tr. 978:17-22.) Moreover, as seen from the area shaded orange in Figure 26 below, the shape of the ring's innermost surface is circumferential under the term's plain and ordinary meaning. (*See* JX-0011.0017.)

[redacted]



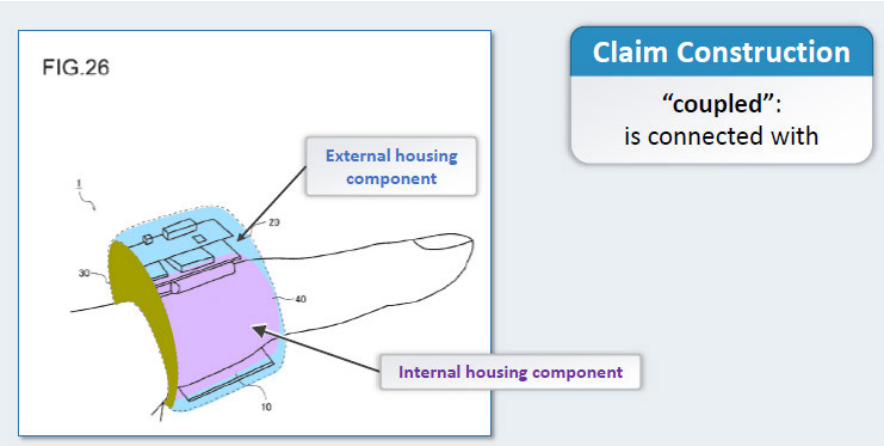
(RDX-0001C-123.)

Rosing did not offer any testimony that the portion shown in orange above is not circumferential. Instead, Rosing simply offers *ipse dixit* testimony that the internal housing component identified by Alarcon in Niwa does not meet the claim language. In its PHB, Oura argues that Niwa does not disclose *both* an internal and external housing component because Niwa discloses a "unitary" structure, *i.e.*, a ring with a *single* housing component. (Complainants' PHB at 178.) Notably, Rosing did not offer such an opinion, instead simply opining that because Niwa does not detail *how* to construct the housing it therefore does not specify any internal and external housing components. (Tr. 1206:16-24, 1207:18-19.) That argument fails for the reasons described above with respect to the external housing component. (Section V.A.1.(b), *supra*.) Regardless, there is nothing in the claims or specification that excludes unitary rings—all the claims require is two enclosing structures, which Niwa discloses. Indeed, Figures 4, 6, and 16 in the '178 Patent are directed to "unitary" rings with two enclosing structures that serve as the internal and external housing components. Thus, Niwa's inner wall is an internal housing component for the same reasons as those in Figures 4 and 16 of the '178 Patent. (*See* Section V.A.1.(b), *supra*.)

[redacted]

(d) Limitation 1[b-ii]: "the internal housing component coupled with the external housing component,"

Alarcon applied the ALJ's construction of the term "coupled," which means "connected with," in forming his opinion as to limitation 1[b-ii]. (Tr. 979:18-22; *see* JX-0011.) Niwa discloses this limitation because the internal housing component is connected to the external housing component by Niwa's side walls (shown in green below). (Tr. 979:9-17, 979:24-980:1.)



(RDX-0001C-125; *see* CX-1133 at [0029], [0111], [0204].)

Oura waived any argument on this issue beyond the internal and housing components as discussed above. (GR 11.2.) Further, Rosing did not opine on the "coupled" aspect of this limitation, so that is not in dispute either.

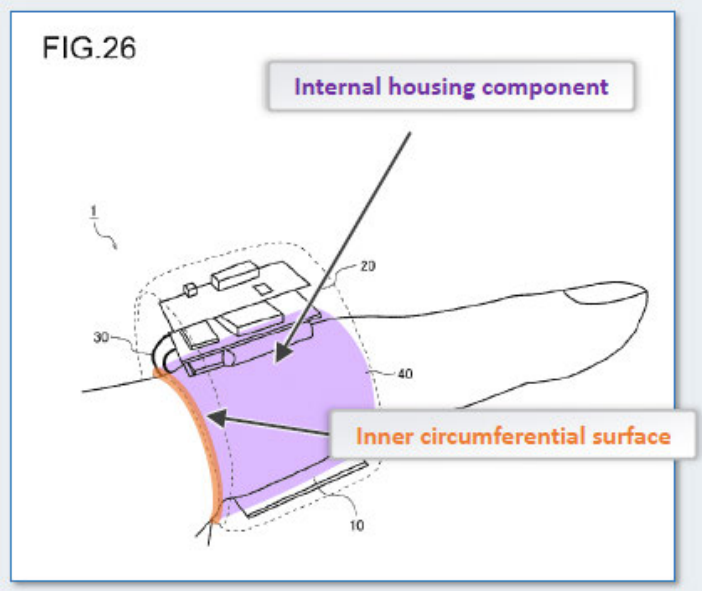
(e) Limitation 1[b-iii]: "wherein at least a portion of the inner circumferential surface of the internal housing component is configured to contact a tissue of a user when the finger-worn wearable ring device is being worn by the user;"

The only dispute as to this term is with respect to the "inner circumferential surface of the internal housing component" portion of the limitation. As with limitation 1[b-i], Niwa discloses that portion of this limitation. Further, Rosing proffered no testimony about the remaining portion. (*See* Tr. 1198:8-11; CDX-0005.12 ("configured to contact a tissue of a user" portion of limitation

[redacted]

1[b-ii] not highlighted in red), CDX-0005.18 (same).) Thus, any further contention is waived. (GR 11.2.)

As Alarcon explained, Niwa discloses limitation 1[b-iii]. (*See* Tr. 980:10-24.) Specifically, Niwa discloses that "when the finger ring type housing 40 is ***worn on the third joint of the third joint of the finger 2***" and "according to equipping the first unit 10 ***disposed at the ball side of the finger (i.e., palm side) which is fleshy*** and ***whose fit feeling is fine***, the stable measurement of the plethysmogram can be performed." (CX-1133 at [0192]; *see* Tr. (Alarcon) 980:16-20.) Alarcon identifies the inner circumferential surface (shown in orange) and the internal housing component (shown in purple), which are coextensive, in his annotation of Figure 26 below.



(RDX-0001-127; Tr. 980:21-24, 981:8-13.)

Niwa's inner circumferential surface of Niwa's internal housing component contacts the tissue of the user when worn by the user to facilitate data collection. This is consistent with the purpose of Niwa which is to use sensors to collect biometric data from a user. (*See* CX-1133 at [0011-0012].) Niwa thus discloses this limitation.

[redacted]

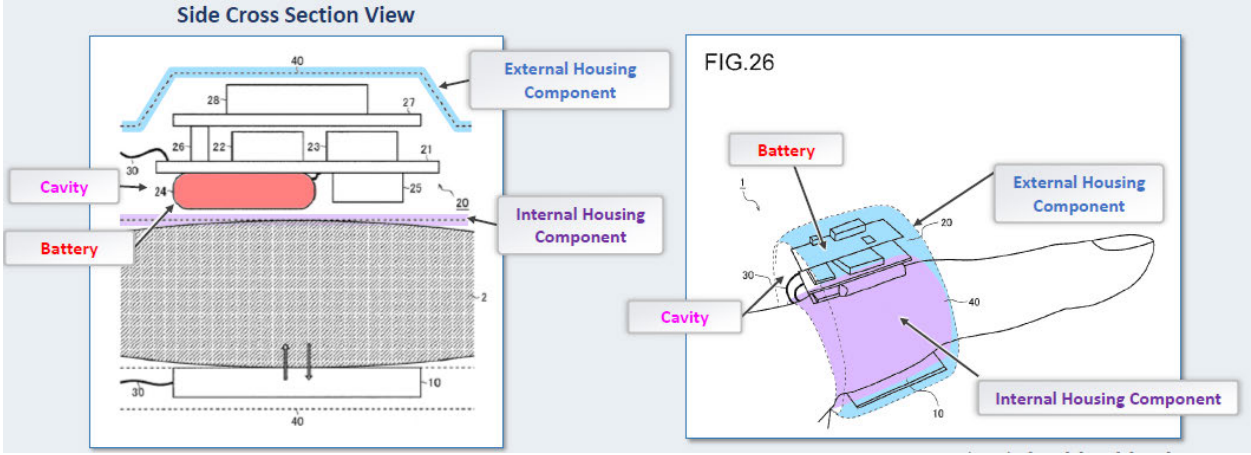
(f) Limitation 1[c-i]: "a battery positioned within a cavity formed between the internal housing component and the external housing component[.]"

Oura does not contend in its PHB that Niwa does not disclose limitation 1[c-i] for any reason besides the alleged lack of internal and external components. (Complainants' PHB at 181.) Rosing testified that this limitation is not met for the "obvious reason" that "Niwa does not have [an] internal or external housing component." (Tr. 1209:3-6.) Thus, any further contention is waived. (GR 11.2.)[2]

Rosing admitted that the battery is "within a housing" in Niwa. (*See* Tr. 1244:20-23.) Niwa discloses this limitation because unit 20, which contains battery 24, is located *between* the internal and external housing components. (Tr. (Alarcon) 982:7-16; RDX-0001C-130.) Alarcon, using Figures 26 and 28 shown below, "identif[ied] the [internal and external housing] components, the cavity that is formed between those components, and...there is indeed a battery that's labeled 24 that is positioned within that cavity[.]" (Tr. 981:24-982:20.) Figure 26 shows that Niwa's battery is positioned in a cavity, which is the "hollow space" formed between the external housing component and the internal housing component.

[2] Oura also admits that Niwa discloses a battery, and Rosing proffered no testimony rebutting this. (CX-1129.155-156; Tr. (Alarcon) 981:15-18.)

[redacted]



(RDX-0001-130.)

The external housing component and internal housing component identified by Alarcon meet the claims. (*See* Section V.A.1.(b)-(e), *supra*.)

Niwa thus discloses this limitation. (Tr. (Alarcon) 982:22-24.) And to the extent Niwa discloses an internal and external housing component, Oura has conceded that this limitation is met by Niwa.

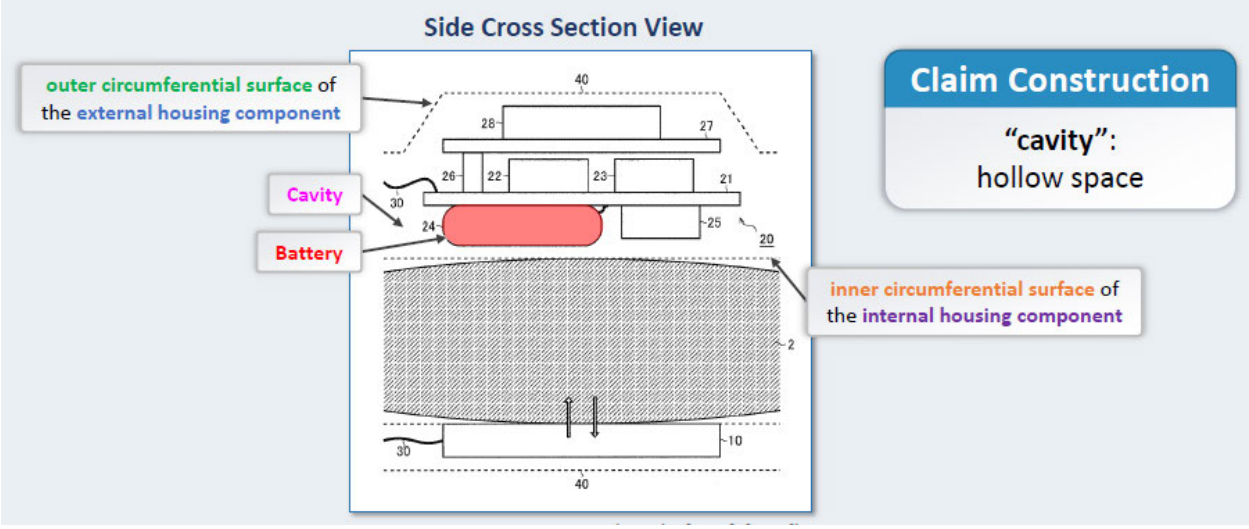
(g) Limitation 1[c-ii]: "wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and"

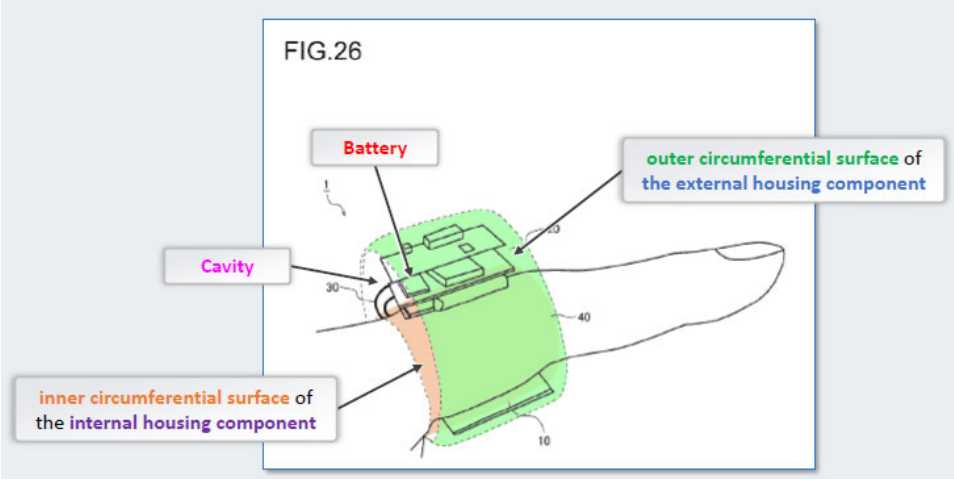
Rosing contests only the "between" the circumferential surfaces portion of this limitation and therefore concedes that Niwa discloses the remainder. (*See* Tr. 1198:8-11; CDX-0005.12 ("battery comprises a shape and size configured to fit within the cavity" portion of limitation 1[c-ii] not highlighted in red), CDX-0005.21 (same).) Oura admits Niwa discloses a battery. (Section V.A.1.(f), *supra*.) Thus, the only dispute is whether Niwa discloses a battery between circumferential surfaces. Niwa discloses this limitation. (Tr. (Alarcon) 984:19-21.)

Niwa discloses a battery that comprises a shape and size configured to fit within the cavity between the outer circumferential surface and inner circumferential surface of the external and

[redacted]

internal housing components. Alarcon, using Figures 26 and 28 shown below, identified the outer circumferential surface of the external housing component and the inner circumferential surface of internal housing component to demonstrate that "Niwa discloses a cavity between those" surfaces. (*Id*. 983:9-19, 984:2-10.) Applying the Court's claim construction, Alarcon opined that "the battery, 24...does, indeed, comprise a shape and size configured to fit within the cavity." (*Id*. at 983:19-24, 984:14-17.) The battery is "tucked under one of the circuit boards[,]" as shown in Alarcon's annotation of Figure 28 below. (*Id*. at 984:13-14.)





(RDX-0001C-132 (Fig. 28 annotation), 133.)

Rosing's opinion that Figures 22, 27 and 28 are limited to a battery between a flat portion of the ring is contradicted by Niwa's express disclosure. Niwa states that "the largeness of the second unit 20 can be restrained not to protrude from the third joint of the finger 2." (CX-1133 at [0214]; *see id*. at [0206] ("[I]t is desirable to restrain the largeness of the first unit 10 and the second unit 20 not to protrude from the third joint of the finger 2.").) A POSA would understand the protrusion of unit 20 could be reduced to achieve a circumferential surface. (*See* Section V.A.1.(b), *supra*.)

Furthermore, Oura and Rosing contend that Niwa does not disclose this limitation because Niwa's battery is disclosed between *flat* surfaces and thus is not between circumferential surfaces. (Tr. 1209:12-20; Complainants' PHB at 182.) Oura's contention that the inner surface between the battery and the finger must be flat to "enhance the affinity of the plethysmogram sensor 1" contradicts the explicit disclosure of Niwa in Figure 26. As explained above, Figure 26 discloses the second unit 20 (which contains a battery) in a hollow space between circumferential surfaces—the orange and green regions shown above in RDX-0001C-132-133. Rosing's opinion that Figure 26 should not be considered is unreliable and contrary to the law that states prior art references are considered for the totality of what they disclose. (Section V.A.1.(b), *supra*.)

Even if Niwa's housing disclosure somehow excludes Figure 26—it does not—an embodiment that contains an outer circumferential surface is inherently disclosed in Figures 22, 27, and 28 because Niwa's specification specifically describes reducing the protrusion. A prior art reference need not explicitly disclose the claimed feature if it is within the knowledge of a person of ordinary skill in the art. *In re Graves*, 69 F.3d at 1152.

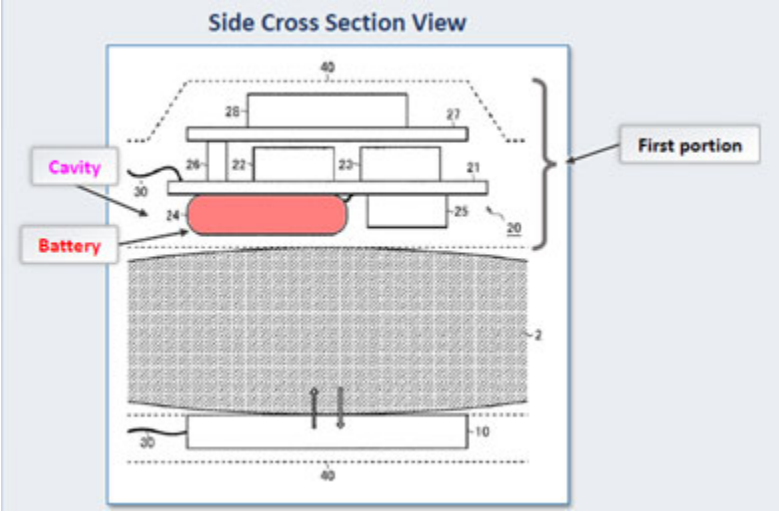
[redacted]

Niwa thus discloses this limitation. And to the extent Niwa discloses an internal and external housing component with circumferential surfaces, Oura has likewise conceded that this limitation is met by Niwa.

(h) Limitation 1[c-iii]: "wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device;"

Oura fails to describe in its PHB any contention that Niwa fails to disclose limitation 1[c-iii] beyond the reasons described regarding limitation 1[c-ii]. (Complainants' PHB at 181). Rosing did not offer an opinion that Niwa does not disclose this limitation. (Tr. 1198:8-11 CDX-0005.12 (limitation 1[c-iii] not highlighted in red), CDX-0005.21 (limitation 1[c-iii] not identified as not anticipated by Niwa).). Thus, any further contention is waived. (GR 11.2.)

Oura admits Niwa discloses a battery. Further, Niwa discloses a battery that extends through at least the first portion of the cavity. Niwa discloses "The ***second unit 20***...includes...***the battery 24***" and other related electronics. (CX-1133 at [0213].) Alarcon, using Figure 28 shown below, identifies the area of the first portion of the cavity as the portion located on top of the finger. The battery is housed in the second unit 20, which is the first portion as the cavity. Thus, the battery extends through the first portion of the cavity. (*See* Tr. (Alarcon) 985:3-986:12.)



[redacted]

(*See* RDX-0001C-135 (text from specification removed).)

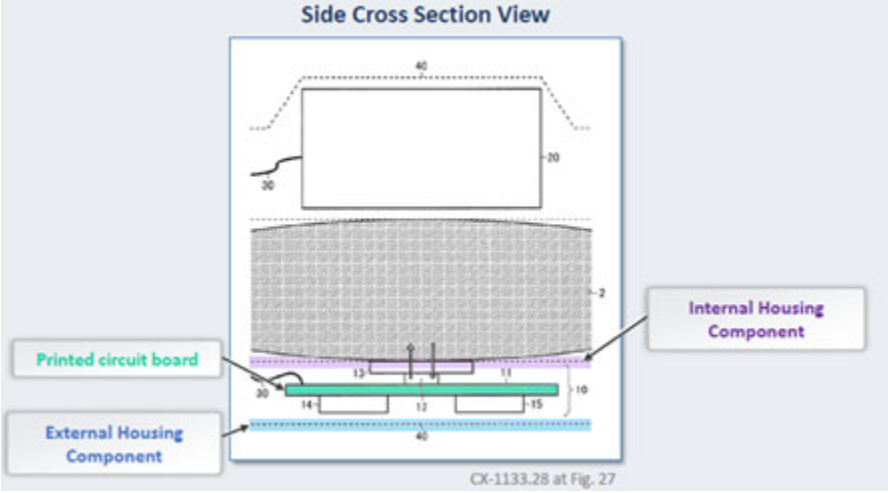
(i) Limitation 1[d-i]: "a printed circuit board disposed between the internal housing component and the external housing component,"

Oura fails to describe in its PHB any contention that Niwa fails to disclose element 1[d-i]. Thus, any such contention is waived. (GR 11.2.) Further, there is no dispute that Niwa discloses a PCB. (Tr. (Rosing) 1198:8-11 CDX-0005.12 (PCB portion of limitation 1[d-i] not highlighted in red), CDX-0005.24 (same); CX-1129.164; Tr. (Alarcon) 986:13-16).

To the extent Oura did not waive on this issue, the only dispute is whether Niwa's PCB is disposed *between* the internal and external housing components. Oura's only argument that this limitation is not met is its argument that Niwa does not disclose internal and external housing components. Those components are present as described above. (*See* Section V.A.1.(b)-(e), *supra*.)

Alarcon testified that Figure 27 shows "the details of what's within first unit 10," including the components highlighted in Figure 27 below. (Tr. 987:1-15.) As Alarcon testified, the PCB is thus *between* the internal and external housing components. The substrate 11 in unit 10 is the printed circuit board. (*Id*. at 987:13-15.) Niwa's substrate 11 discloses the claimed PCB because Niwa describes components and circuits that are "mounted" onto the surface of a "substrate." (CX-1133 at [0068-69], [0207].) "And, indeed, [the PCB] is disposed between what I show as the internal housing component and external housing component." (Tr. (Alarcon) 987:11-13.) The PCB is located on the "fleshy portion on the underside of your finger." (*Id*. 987:22-988:2.)

[redacted]



(RDX-0001C-138 (text from specification removed).)

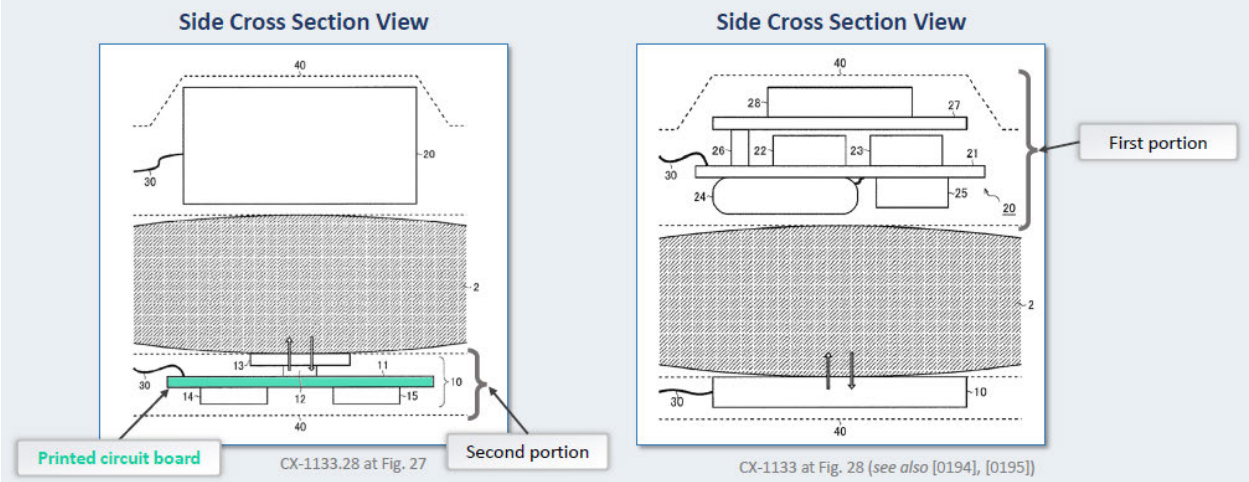
Niwa thus discloses this limitation. (Tr. (Alarcon) 988:4-6.) And to the extent Niwa discloses an internal and external housing component, Oura has likewise conceded that this limitation is met by Niwa.

(j) Limitation 1[d-ii]: "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"

Oura fails to raise or describe in its PHB any contention regarding Niwa's disclosure of limitation 1[d-ii]. Thus, any such contention is waived. (GR 11.2.) Further, Rosing offered no testimony that this term is not met by Niwa. (*See* Tr. 1198:8-11; CDX-0005.12 (limitation 1[d-ii] not highlighted in red), CDX-0005.24 (limitation 1[d-ii] not identified as not anticipated by Niwa).)

As Alarcon testified, Niwa discloses this limitation because the printed circuit board is "located in the second portion [of the cavity] that is below the fleshy portion of the finger[,]" separate from the first portion of the cavity that is "on top of the finger[.]" (Tr. 988:19-24.)

[redacted]



(RDX-0001C-140.)

As shown in the image above and as testified to by Alarcon, the second portion is the first unit 10 and the first portion is the second unit 20. Additionally, the first and second portions of the cavity are connected: "The cable 30 is contained within the finger ring type housing 40 to connect the first unit 10 with the second unit 20 electrically." (CX-1133 at [0194-0195]; Tr. (Alarcon) 989:3-9; 989:14-21.)

The battery 24 is in the second unit 20 and the PCB 11 is in the first unit 10, which are in different portions of the same cavity. (*See* Tr. (Alarcon) 988:19-24.) Figures 24 and 25 also show a bundle of wires 30 connecting the first unit 10 and second unit 20. (Tr. (Alarcon) 989:24-990:2, 990:8-14 ("And indeed you can see [units 10 and 20] are connected by a bundle of wires, 30. That flows through the cavity and that's what electrically connects those first and second units.").) This is shown in the images below:

[redacted]

FIG.24

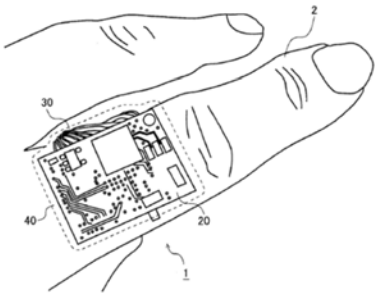
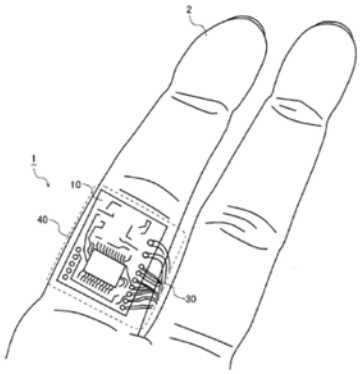


FIG.25



(CX-1133.)

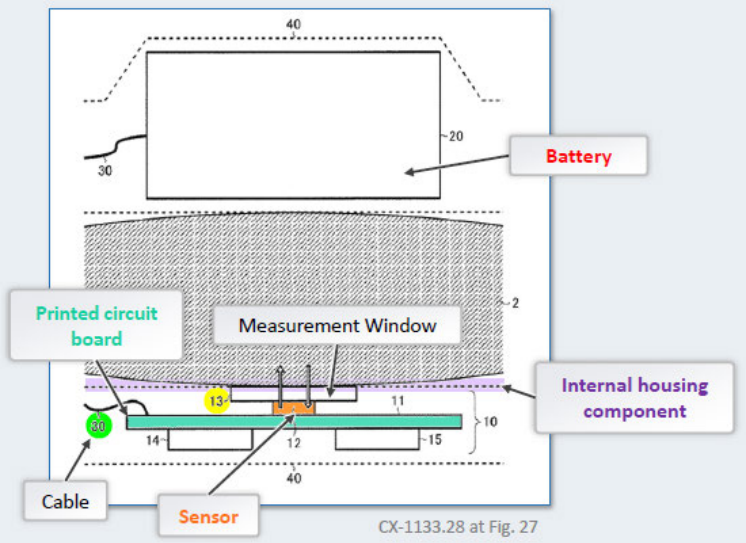
A POSA would have understood that the cavity formed between the internal and external housing components includes the space occupied by wires 30. (Tr. (Alarcon) 989:24-990:2, 990:8-20.) Therefore, first unit 10 and second unit 20 are in different portions of the same cavity because the cavity is continuous starting from the first unit 10 and ending at the second unit 20. Thus, there is no dispute Niwa discloses this limitation.

(k) Limitation 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."

The only dispute here is whether Niwa discloses an internal housing component, which it does. (*See* Section V.A.1.(b), *supra*.) Rosing proffered no testimony about the remaining portion. (*See* Tr. 1198:8-11; CDX-0005.12 ("one or more sensors electrically coupled to the...battery" portion of limitation 1[e] not highlighted in red), CDX-0005.24 (same).) On top of that, Oura admits that Niwa discloses a sensor and one or more LEDs. (CX-1129.166-168; Tr. (Alarcon) 990:22-991:1.) Sarrafzadeh also testified that using LEDs to acquire data from a user has been known since the 1970s. (*See* Tr. 253:2-9.) Thus, any further contention is waived. (GR 11.2.)

[redacted]

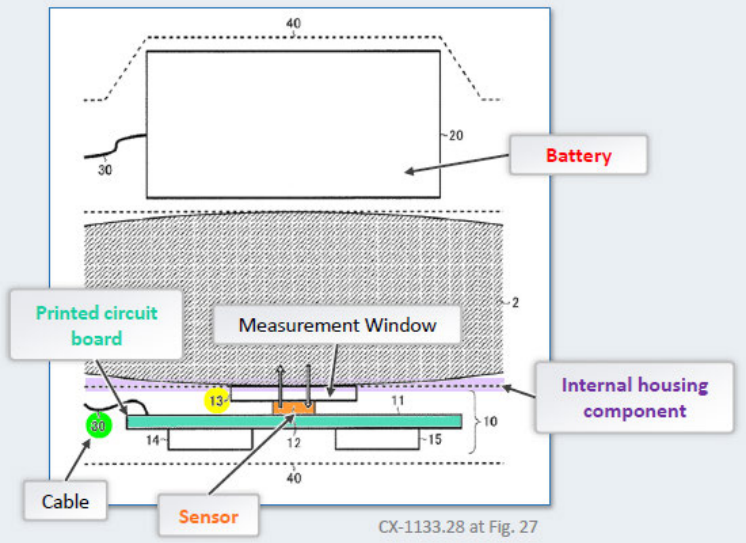
Niwa discloses one or more sensors that acquire data from a user through the internal housing component. Specifically, Niwa discloses a plethysmogram sensor, including light emitting portions and light receiving portions to acquire information from a user. (CX-1133 at [0027]; *see id*. at [0012], [0192], [0210], [0208]; Tr. (Alarcon) 991:14-19.) Alarcon identified in Figure 27 a measurement window 13 through the internal housing component (in purple) and the light sensor 12 immediately below—further showing that the light sensor acquires data from the user's finger through the internal housing component. (Tr. 992:18-23.)



(RDX-0001C-143.)

Niwa's sensors are electrically coupled to the PCB. (CX-1133 at [0208]; Tr. (Alarcon) 991:20-23 ("[T]he light sensor is indeed mounted on the printed circuit board."). Alarcon identifies the light sensor and the PCB in Figure 27, below.

[redacted]



(RDX-0001C-143.)

A POSA would have understood that because the light sensor 12 is "equipped to the surface" of PCB 11 that the light sensor 12 is electrically coupled to the PCB 11. (CX-1133 at [0208].)

Niwa discloses that the battery 24 is electrically coupled to the light sensor 12. (CX-1133 at [0208]; Tr. (Alarcon) 992:1-4.) As Alarcon testified, cable 30 "provides the electrical power between the—from the battery up in unit 20 down to the printed circuit board within unit 10." (Tr. 992:5-8.) A POSA would have understood that the light sensor 12 is electrically coupled with the battery 24 as it would need power to function. (*See* CX-1133 at [0194].)

2. Dependent Claims 2, 13, and 14

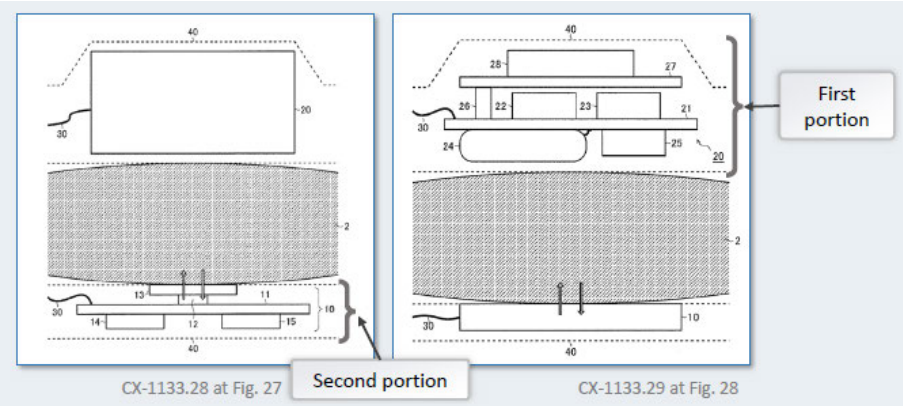
Rosing and Oura offer no reason that Niwa does not anticipate claims 2, 13, and 14 beyond the reasons set forth for claim 1. (*See* CDX-0005-27; Complainants' PHB at 183-84.) Any further contention has thus been waived by Oura. (GR 11.2.) For the reasons described below, Niwa also anticipates claims 2, 13, and 14.

[redacted]

(a) Claim 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."

Niwa describes that the second unit 20 is at the top of the finger and the first unit 10 is at the bottom, which are "located differently for minimizing the noise." (Tr. (Alarcon) 993:21-994:8.) According to Niwa, locating these components away from each other reduces electrical noise or interference. (CX-1133 at [0193]; *see id.* at [0192].)

Niwa's Figures 27 and 28 show a battery 24 in a first portion of the cavity in second unit 20 and substrate 11 extending through a second portion of the cavity in first unit 10. (*Id*. at [0193], [0217], [0207], [0213].) Niwa's substrate is a PCB. (*See supra* V.A.1.(i).) Thus, the second portion of the cavity with the PCB and the first portion of the cavity with the battery are non-overlapping. (Tr. (Alarcon) 994:8-16.)



(RDX-0001C-145.)

Niwa thus discloses Claim 2.

[redacted]

(b) Claim 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."

Niwa Figure 3 "describes a number of different LEDs emitting different wavelengths[.]" (Tr. (Alarcon) 995:3-11; CX-1133 at [0120], [0147].) The light sensor 12 includes light emitting portions (*e.g.*, LED1 to LED8) configured to output wave lengths λ1 to λ8, which are values ***different*** from one another (i.e., from a ***visible light*** region to a ***near-infrared*** region). (CX-1133 at Figure 8, [0147], [0155], [0161], [0170].) Thus, Figures 3 and 8 "describe[] a number of different LEDs emitting different wavelengths[,]" ranging from visible light to infrared light. (Tr. (Alarcon) 995:3-11.) Niwa discloses multiple wavelengths. (*Id*. at 995:12-18.)

Niwa thus discloses Claim 13.

(c) Claim 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."

Niwa discloses a first light-emitting component that emits visible light, and a second light-emitting component that emits near-infrared light. (Tr. (Alarcon) 996:3-7.) The "output wave lengths" from Niwa's LEDs range "from a visible light region to near-infrared region." (CX-1133 at [0147].) And Niwa's first unit 10's light-emitting portion can include "LED1 to LED8" with "output wave lengths λ1 to λ8…different from one another." (*Id*.) A POSA would have understood that first wavelength λ1 from first light-emitting component (LED1) is associated with visible light. A POSA would have understood that near-infrared is part of the infrared spectrum. As a result, "the first wavelength is associated with visible light. And the second wavelength is associated with infrared light." (Tr. (Alarcon) 995:23-996:11.)

Niwa thus discloses Claim 14.

[redacted]

B. Obviousness

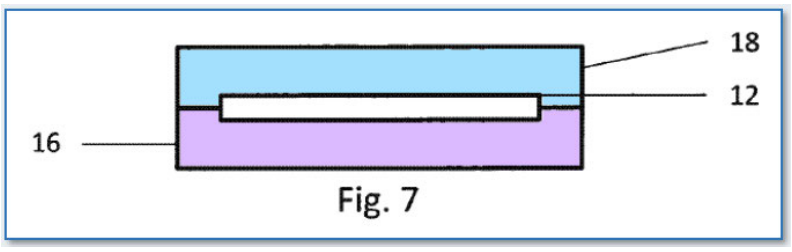
Respondents' obviousness burden is "more easily carried" because the USPTO did not consider Niwa, Schröder, GMBPow, or Webster and thus none of Respondents' combinations. *SIBIA Neuroscis., Inc. v. Caudus Pharm. Corp.*, 225 F.3d 1349, 1355-56 (Fed. Cir. 2000). Respondents' "production of new prior art...eliminate[s], or at least reduce[s], the element of deference due [to] the PTO, thereby partially, if not wholly, discharging" Respondents' burden. *Am. Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1360 (Fed. Cir. 1984). Further, given the high level of skill in the art and routine mechanical skill needed to construct the '178 Patent's simple ring, "[the claims are] likely the product not of innovation but of ordinary skill and common sense." *Praxair*, 890 F.3d at 1037 (citing *KSR*, 550 U.S. at 421).

1. Niwa in View of Schröder Renders Claims 1, 2, 13, and 14 Obvious.

Complainants only dispute housing elements 1[a] and 1[b], battery element 1[c], and sensor element 1[e]. All other arguments regarding Schröder are waived. (GR 11.2.) Thus, because the combination of Niwa and Schröder render claim 1 obvious, dependent claims 2, 13, and 14 are likewise obvious given that Niwa alone discloses this subject matter. *See infra* Section V.A.2.

(a) Limitations 1[a] and 1[b-i]-1[b-iii]

Modifying Niwa to include these limitations would have been obvious in view of Schröder. Alarcon testified that Schröder's ring had an external housing component, shown below as 18 (blue) in Figure 7. (Tr. 997:19-22, 998:20-999:5, 999:13-19; RDX-0001C-162.)



(RX-0018.)

[redacted]

Schröder Figure 7 shows "different cross sections through a finger-ring 2, consisting of ring-shaped components 16, 18 of the finger-ring 2 and of an inlay 12." (RX-0018 at 12:43-45.) Alarcon further testified that 18 and 16 of Figure 7 "are the external housing component and the internal housing component respectively." (Tr. 998:17-24.) Specifically, component 18 is an external housing component because it is a structure that encloses space. (*Id.* at 998:20-999:5.) Therefore, it is clear that Schröder discloses an external housing component.

Schröder Figure 4 shows that the housing components define circumferential surfaces. As shown below, component 18 is entirely round, which Alarcon testified is circumferential. (*See* Tr. 997:15-18; 1000:8-15.)

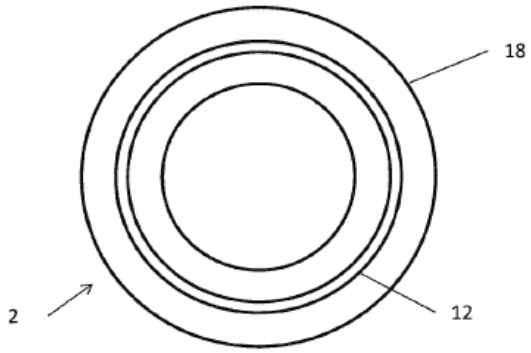


Fig. 4

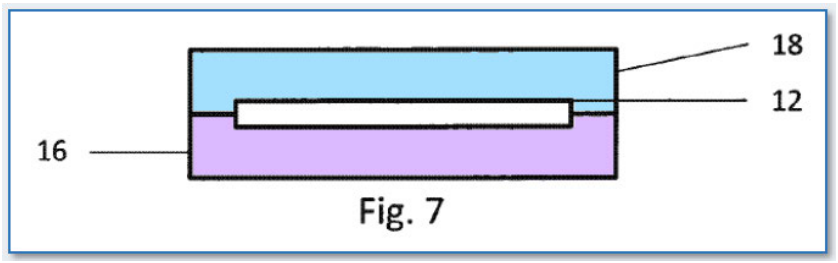
(RX-0018.)

For the same reasons component 18 is an "external housing component," component 16 is an internal housing component. (Tr. (Alarcon) 998:20-999:5 (explaining that component 16 encloses space).) Further, Schröder component 16 also defines a circumferential surface for the same reasons Schröder component 18 does. (*See* Tr. (Alarcon) 997:15-18; 1000:8-15.)

As Alarcon testified, there are only a finite number of ways to construct finger type housing, and it would have been obvious to try the finger type housing as having separate and distinct internal and external components that are connected. (*See* Tr. 1001:22-1002:4.) This

[redacted]

construction was within a POSA's knowledge, as evidenced by at least Schröder. (*Id.*; *see* RX-0018 at Figs. 6-10.) Indeed, Alarcon confirmed that, with respect to Figure 7, the internal housing component 16 and the external housing component 18 are connected. (Tr. 999:20-22.)

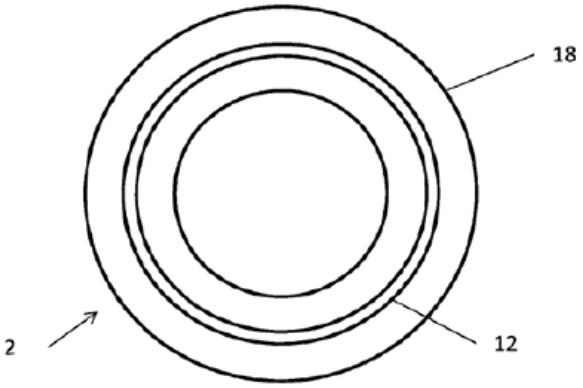


(RX-0018.)

Like Niwa, Schröder also discloses a finger-worn wearable ring device configured to contact the tissue of a user. Schröder discloses that "[t]he finger-ring 2 is worn by a user, e.g., permanently on the finger." (RX-0018 at 3:61-62; Tr. (Alarcon) 999:9-12.)

(b) Limitations 1[c-i]-1[c-iii]

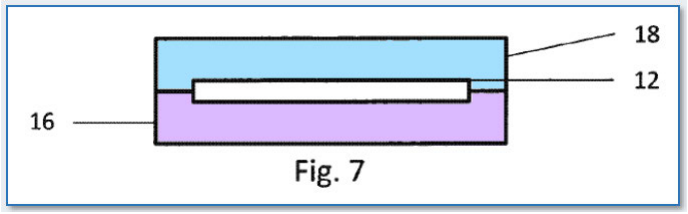
Alarcon confirmed that Schröder "describes having a battery." (Tr. 1000:7-8.) Alarcon also testified that Figure 4 of Schröder shows a cavity formed by the internal and external housing components, in which the battery would reside. (*Id.* at 1000:8-15; RDX-0001C-104; RX-0018 at Fig. 4.)



(RX-0018.)

[redacted]

There is no dispute that Schröder discloses a battery. (Tr. (Rosing) 1224:13-15 ("So Schröder actually discloses in only one place an optional battery that's connected to chip module 10").) And while Rosing opined that a POSA would have placed the battery on top of the chip module or with the chip module, (*id.* 1225:25-1226:2), Schröder also discloses that the battery can reside ***within*** the curved recess shown in Figures 4-10 and would be connected to the chip module 10 that resides ***within*** the recess between components 16 and 18. (Tr. (Alarcon) 1000:7-1001:11.) As Alarcon testified, the figures in Schröder describe electronic components—what Schröder refers to as an inlay—"that go[] inside of the hollow space" that Alarcon testified Schröder refers to as a "recess." (Tr. 1067:10-1068:12.) Referring to Figure 7, Alarcon testified that the battery and the rest of the electronic components would be inserted into the cavity that is "created by what's labeled 16 and 18 on Figure 7"—the internal and external housing components. (*Id.* at 1068:6-12, 1000:7-15.)



(RX-0018.)

Rosing admitted that Schröder's inlay fits within a cavity: "this inlay then perfectly fits ***inside*** of a ring housing. So there is no reason to have any space, ***other than the space that inlay fits into***." (Tr. 1218:23-25.) To the extent Rosing opines that Schröder does not disclose a cavity because the inlay fills the hollow space entirely, that position is inconsistent with Sarrafzadeh's cavity in the Accused Products which he traced around the components and opined fully occupy the cavity. (Tr. (Sarrafzadeh) 314:14-24; *see id.* 396:23-398:2 (Sarrafzadeh discussing

gerrymandered CT images of accused products at RDX-0009-29.) Thus, to the extent the Accused Products have a cavity as Sarrafzadeh opined, Schröder discloses a cavity for the same reasons.

And because the internal and external housing components in Schröder define circumferential surfaces as described in Sections V.B.1.(a)(i)-(ii) *supra*, the battery would be in a portion of the cavity between the circumferential surfaces of the housing components. (Tr. (Alarcon) 1000:7-15.)

Rosing opined that Schröder's inlay and Niwa's stacked construction are incompatible because Schröder's inlay "is very thin" and "only has an antenna deposited on it." (Tr. 1220:23-25.) And while Rosing tried to limit Schröder to one application with a narrow RF coil on the inlay only, she ignores the express disclosure within Schröder that the inlay "can have at least one chip module 10" that is connected to a battery and could work with "at least one further electronic device" such as "a display." (RX-0018 at 12:62-65, 11:46-50; *see id.* at 12:4-9, 8:58-59; Tr. (Alarcon) 1087:11-19.) As Alarcon testified to with respect to Figure 4 of Schröder, "there is a cavity formed all the way around by the internal housing component and the external housing component, and that is where...the PCB would reside, as well as the battery[.]" (Tr. 1000:10-15.)

Rosing's testimony that Schröder teaches "plac[ing] the battery also on top of the chip module or with the chip module" ignores that a POSA would also look to Niwa's disclosure which placed the battery and the PCB in separate portions of the ring. (Tr. 1225:25-1226:2.) Further, there is nothing in Schröder that requires the battery to be placed on top of the chip module as Rosing opined. (*See* Tr. (Alarcon) 1090:1-17.) And while Rosing testified that Schröder "wants a very lightweight ring...that is thin enough to just hold this very simple inlay," (Tr. 1222:20-23), as described above in Section IV.B.1, Rosing failed to appreciate that Niwa expressly describes modifying its design to increase wearability and comfort by reducing the protrusion of its

[redacted]

electronic components. Therefore, a POSA would readily look to the disclosure in Niwa and Schröder to achieve a more compact design if desired. Regardless, there is no requirement in the claims to have a ring of any specific size or compactness: as long as the battery is in a cavity.

(c) Limitations 1[d-i]-1[d-ii]

Oura waived opportunity to argue that Claim 1[d] is not obvious under Niwa in view of Schröder because they did not address the issue in their PHB or at the hearing. (GR 11.2.) Indeed, Rosing did not offer any testimony about limitation 1[d]. (*See* CDX-0005.42-45 (skipping limitation 1[d]).)

Schröder explains that "[t]he 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." (RX-0018 at 12:61-65; *see* 12:28-32.)

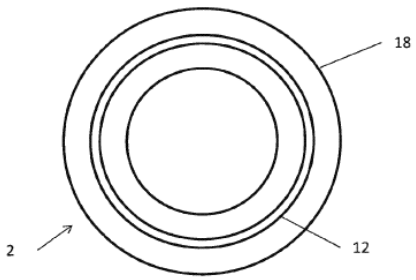


Fig. 4

(RX-0018.)

Alarcon explained that the inlay 12 is essentially a printed circuit board. (Tr. 999:23-1000:2.) He also opined that when Schröder discusses the inlay, "it is pointing to the region where the printed circuit board goes." (*Id.* at 1000:3-4.) Alarcon thus concluded, as depicted in Figure 4 above, that there is a cavity formed around the entirety of the internal/external housing components, which is where the printed circuit board would reside and extend through a second portion different from the first. (*Id.* at 1003:6-15.)

[redacted]

(d) Limitation 1[e]

The only dispute for limitation 1[e] is the internal housing component portion of this limitation. (*See* CDX-0005.45.) Indeed, Rosing admits that Schröder discloses a biometric sensor that uses "infrared diodes and infrared sensors...to authenticate individual[s]." (Tr. 1226:10-19.) Rosing testified about how Schröder's sensors "capture vein images of the ring finger," (*id.* 1226:13-18), which Schröder describes as being used to authenticate a user. (RX-0018 at 9:54-10:4.)

Rosing also testified that Schröder fails to disclose where the sensors are within Schröder. (Tr. 1227:2-3.) But Schröder discloses that the biometric sensor "can be arranged on the chip module 10 or it can be arranged in the finger ring separately from the chip module 10." (RX-0018 at 9:60-62.) In both instances, as shown in Figures 4-10, the biometric sensor would be on the inlay, which is between the internal and external housing components. Therefore, the only way the sensors can acquire data is *through* Schröder's internal housing component. Even accepting Rosing's testimony that Niwa fails to disclose housing components, Schröder discloses housing components (and sensors) and Niwa undoubtedly discloses using a PPG to collect data through a housing. Thus, to the extent not already disclosed by Niwa alone, a POSA would understand that Niwa could be modified in view of Schröder to use sensors to collect data through the internal housing component.

(e) There is Strong Motivation to Combine Niwa and Schröder.

As Alarcon testified, Niwa and Schröder "are both finger-worn devices for sensing, detecting user activity and/or physiologic parameters." (Tr. 998:7-11.) They both teach similar improvements over similar ring devices (e.g., biometric sensing) with similar components and technology. (*Id.*; RDX-0001C-162.) Therefore, a POSA would consider them to be analogous art in both scope and content. (Tr. 998:7-14.)

Schröder provides several examples of constructing a housing (*e.g.*, Figures 7 and 8 above), which actually "provide[] some illustrative ways of manufacturing what is disclosed in Niwa." (*Id.* (Alarcon) 1001:22-1002:8.) Further, a POSA would have had a reasonable expectation of success in doing so because each relates to the same well-known technologies of wearable biometric sensing devices having similar structural components, including inner and outer housing components, a cavity, and electronic components within the cavity. Further, Schröder teaches the advantages of using an openable, two-component housing design, (RX-0018 at 2:60-65, 12:4-9, 66-67)—advantages that would be applicable to Niwa and would encourage a POSA to implemental Schröder's teachings.

Rosing chose to focus on the discrete minutia of Niwa and Schröder—such as PPG sensing, stacked substrates, and Schröder's inlay—to conclude that Niwa and Schröder were "very different applications." (Tr. 1220:10-25.) However, when viewed in its entirety, Schröder simply teaches how to build a ring housing—and Rosing agrees. (*Id.* at 1250:4-7 ("Schröder does talk about how to build housing for his application.").) Rosing also recognized that both Niwa and Schröder reference continuous measurements, further showing their similarities. (Tr. 1248:4-1249:18 (quoting CX-1133 at [0011], [0197], RX-0018 at 2:60-65).) Indeed, Schröder discloses using a "biometric sensor" that has "at least one infrared diode" and "at least one infrared sensor" for vein recognition technology. (RX-0018 at 9:62-10:1.)

The references must be considered in their entirety, not cherry-picked for irrelevant differences. This is consistent with the law, which requires considering references "as a whole." *See In re Suong-Hyu Hyon*, 679 F.3d 1363, 1367 (Fed. Cir. 2012) (holding motivation to combine was supported by substantial evidence when considering the prior art references as a whole).

[redacted]

It would have been both logical and obvious to combine the teachings of Schröder with respect to external and internal housing components with Niwa, especially since the motivation to combine may be found "in the nature of the problem to be solved, which is particularly relevant with simpler mechanical technologies." *Tokai., Inc.*, 632 F.3d at 1371. Rosing tacitly recognized the simplicity of the technology when questioned about the specifications of Niwa, Schröder, and the '178 Patent. Indeed, she acknowledged that Niwa and Schröder reference continuous wear and continuous measurements and that Schröder further teaches how to build a housing. (Tr. 1247:23-1249:19, 1250:4-7 (discussing CX-1133 (Niwa) at [0011], [0197], RX-0018 (Schröder) 2:60-67; RDX-0012-5.) At the same time, Rosing also agreed that the '178 Patent references continuous use and measurements, as disclosed in JX-0001 at 1:50-55 ("The wearable computing device can be worn for extended periods of time and can take many measurements[.]"). Therefore, a POSA would readily use the teachings in Schröder with Niwa to render claim 1 obvious because wearable devices for continued use and measure were well-known in the art. (*See* Tr. (Alarcon) 1001:14-1003:3.)

2. Niwa in View of the Battery Art Renders Claim 12 Obvious.

Niwa discloses a battery. (CX-1133 at [0213]; Tr. (Alarcon) 1003:19-21; CX-1129.155-56.) The witnesses also agree that curved batteries existed in the art before the critical date. (*See* Tr. (Rosing) 1246:10-12; (von Badinski) 188:4-8; (Alarcon) 972:24-973:11; (Strasser) 590:7-591:4.) This art includes GMBPow, Henderson, and Webster—each of which would have been obvious to combine with Niwa. (*See, e.g.*, Tr. (Alarcon) 1008:6-8, 23-25, 1010:23-25.)

Indeed, using a curved battery is nothing more than ordinary mechanical skill. (*Id.* (Alarcon) 1007:2-25.) Doing so would maximize battery capacity while fitting inside of the housing and would be particularly useful in the event a POSA desired to reduce Niwa's protrusion to make the ring more wearable as Niwa teaches. (*Id.*; CX-1133 at [0197], [0206].) There thus was

[redacted]

a strong motivation to combine Niwa with the battery references, including as described by named inventor Strasser.

Complainants' presented the testimony of Curt von Badinski in an attempt to dispute the obviousness of using curved batteries in curved rings. Von Badinski was a conflicted and biased witnesses, and his testimony should not be credited. Indeed, his outlier contract with Oura includes non-standard terms that tainted his testimony, undermined his credibility, and ensures he remains beholden to Oura:

- Section 4(a)(iii) of the contract obligates him to not criticize, disparage, or speak negatively of Oura; "impair[]" Oura's reputation; or criticize Oura's products when speaking publicly. (RX-0295C.2.) This provision is alone fatal to his objectivity.
- After Oura's CLO rebuffed his $2m request, von Badinski agreed to receive [redacted] plus [redacted] for his individual participation. (RX-0238C.8, RX-0295C.7 (Exhibit A).) But von Badinski does not get his [redacted] right away. Instead, he gets [redacted]. (RX-0295C.7.)
- Von Badinski also gets a "pro rata" pittance if Oura decides he breached and terminates the contract for cause. (RX-0295C.4 (Section 7(a).) Oura can decide von Badinski breached for many reasons, many of which are left to Oura's sole subjective interpretation. (Tr. (von Badinski) 209:22-210:17, 210:23-212:6; *see* RX-0295C.1 (Section 1).) There is also very little he can do if Oura terminates because he agreed to cost-prohibitive, loser-pays arbitration. (*Id.* 212:7-20; *see* RX-0295C.5 (Section 8).) This one-sided arrangement creates undue financial influence over von Badinski, ensuring that he would not offer testimony contrary to Oura's

litigation positions lest he risk Oura clawing back the lion's share of his financial incentive.

Further, money turned von Badinski from one of Oura's harshest critics into an Oura cheerleader. Von Badinski carried a grudge against Oura for nearly a decade. When Oura reached out about assisting them in this litigation, he responded with a multi-page document complaining about Oura and its alleged theft of Motiv's intellectual property. (RX-0238C; *see* Tr. 218:1-19 (explaining that von Badinski twice considered suing Oura for IP theft).) While von Badinski attempted to walk these statements back, (Tr. 214:4-217:25, 220:1-221:4), he was listed first in the founders' correspondence with Oura, (*id.* 221:5-14; RX-0238C.7), and his equivocation was likely influenced by his contract, particularly the non-disparagement clause, (RX-0295C.2).

(a) GMBPow

GMBPow discloses a curved battery that a POSA would be motivated to combine with Niwa. (Tr. (Alarcon) 1008:6-8.) Rosing does not dispute that GMBPow discloses a curved battery. She instead offered two reason why a POSA would not consider GMBPow: (1) GMBPow batteries are too big to fit inside a ring and (2) the batteries would provide insufficient power. (Tr. 1215:12-1216:7.) Neither is credible.

First, the claims do not limit the size of the ring or its cavity. The ring need only be finger-worn, and the battery need only be sized and shaped to fit with the cavity—even a "super-bowl" ring would meet the claims. This "unclaimed and undisclosed feature...cannot be the basis for finding [the '178 Patent] to be non-obvious over the prior art." *Smith & Nephew, Inc. v. Rea*, 721 F.3d 1371, 1381 (Fed. Cir. 2013).

Rosing's opinion is also belied by the references and the '178 Patent itself. While no battery dimensions are claimed, the GMBPow battery falls within the parameters in the specification. For example, the specification describes that the battery "can be in an approximate range of 12

[redacted]

millimeters to 24 millimeters" in a non-limiting example, which Alarcon testified would provide 75 millimeters in total circumference. (Tr. 1003:22-1004:18; JX-0001 at 17:1-18; RDX-0001C-153.) As Alarcon testified, GMBPow's arc length is 30 millimeters, which fits well within the 75 millimeter circumference tolerance set by the '178 Patent. (Tr. 1004:19-25; RX-0030.1.)

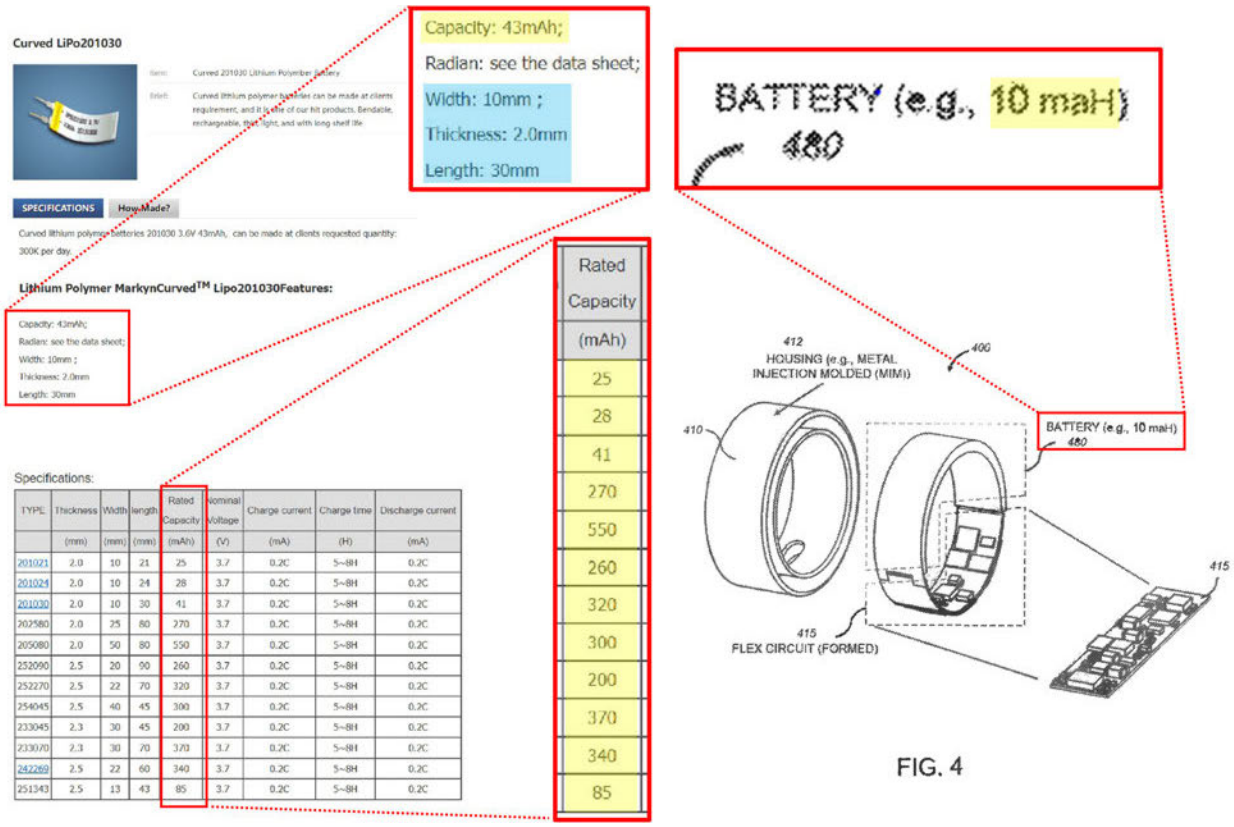


FIG. 4

(RX-0030.2 (annotated), JX-0001 (annotated).)

Any minor deviation from those unclaimed dimensions cannot save the claims from obviousness. *See Tyco Healthcare Grp. LP v. Mut. Pharm. Co.*, 642 F.3d 1370, 1373-74 (Fed. Cir. 2011) (affirming summary judgment that patent to a drug composition was obvious where the only difference in the claimed invention and the prior art was dosage amount, the prior art disclosing a 15mg dosage and the claimed invention claiming dosages of 6mg to 8mg). This is particularly true because GMBPow states that its curved battery "can be made at client['s] requirement," (RX-0030.1), which Strasser testified meant that the company could tweak the product depending on

[redacted]

the use-case (Tr. 596:22-597:3). Indeed, Strasser testified that he obtained samples of curved batteries from GMBPow made to his requested specifications. (*Id.* at 595:22-597:15; RX-0236; RX-0237.)

Alarcon concurs. The specification of the '178 Patent states that "the width…along the direction of finger…is widely variable" and can be changed to accommodate the components in the ring. (JX-0001 at 17:9-18; Tr. (Alarcon) 1005:1-16.) In a non-limiting example, the '178 Patent defines the width in the range of "approximately 3 mm to 8 mm." (JX-0001 at 17:9-18; Tr. (Alarcon) 1005:1-16.) The GMBPow battery has a width of 10 millimeters, only 2 millimeters wider. (JX-0001 at 17:14-18.) That would be well-within the range of what a POSA would consider acceptable based on his first-hand experience with GMBPow in January 2013. (Tr. (Alarcon) 1005:17-1006:3.) Strasser also confirmed that GMBPow "shows exactly what we needed" despite being "slightly too wide." (Tr. 598:1-21.) GMBPow was "right there on the top of one of" their selected vendors. (*Id.*)

Second, the claims recite no battery power requirements. Rosing nevertheless argues that GMBPow's battery would not work because of the alleged power demands of Bluetooth. (Tr. 1215:19-1216:7.) But Bluetooth is not claimed, nor must the battery meet some unspecified Bluetooth power consumption standard.

Rosing also misunderstands GMBPow, highlighting her lack of experience designing or implementing batteries for wearable consumer devices. The Curved LiPo201030 has a capacity of "43mAh," and even the smallest model has a "rated capacity" of 25 mAH. (RX-0030.2.) This far exceeds the battery capacity of "10 mAH" described in Figure 4 of the '178 Patent. Alarcon explained that curved batteries existing before the critical date were within "the range of current needed." (Tr. 1007:17-22.) He also explained the difference between *nominal* and *surge* power

demands, the latter of which being implemented during Bluetooth usage: "[b]atteries had nominal current capabilities, but they also had surge current capabilities to handle surge beyond what's shown in the rated kind of nominal steady state capability." (Tr. 1007:17-25.) Further, Strasser testified that he received samples from GMBPow that were made to his specifications, including a battery capacity of 8 milliamps. (Tr. 596:22-597:5.)

(b) Henderson

Henderson discloses a curved battery that a POSA would be also motivated to use with Niwa. (Tr. (Alarcon) 1010:23-25.) As Alarcon testified—and Oura did not dispute—Henderson discloses batteries that "have a curvilinear or curved configuration" and that the "batteries define curved planar surfaces." (Tr. 1009:4-11; CX-1139 at [0077].) Further, the "overall size of the batteries and their respective recessed compartments may vary such being larger to increase battery capacity and life of the device before requiring recharging." (Tr. (Alarcon) 1009:4-11; CX-1139 at [0078].) Henderson also discloses lithium polymer batteries, which the specification contemplates. (Tr. (Alarcon) 1009:12-13; CX-1139 at [0122].)

Here too Rosing relies on non-existent size limitations, contending that Henderson teaches a wrist-worn device with a "fairly large form factor." (Tr. 1214:6-17.). But there is no size claimed and thus this cannot be used to distinguish the art. Alarcon also testified that a POSA would consider all different types of wearables, including wrist-worn devices, (Tr. 1010:2-7), which is consistent with the '178 Patent's disclosure. (JX-0001 at 8:66-9:7 (describing other wearables "in the form of a wrist band, bracelet, necklace, earring, or any other type of wearable accessory").)

Strasser also refutes Rosing's opinion that a POSA would not have thought to shrink Henderson's battery to fit into a ring form factor. He identified the Nike+ FuelBand—which practices Henderson—as a similar product and that "overall the concept of how you form a ring–a battery into a curved shape was established. So now it's a matter of taking the same thing and

making it smaller." (Tr. 590:12-591:4.) Indeed, a POSA is "a person of ordinary creativity, not an automaton." *KSR*, 550 U.S. at 421; *In re Sovish*, 769 F.2d 738, 742-43 (Fed. Cir. 1985) (rejecting an argument against obviousness that "presume[d] stupidity rather than skill"). Therefore, a person of ordinary creativity looking to improve Niwa would have been strongly motivated to apply routine mechanical skill to create an implementation of Henderson's curved battery that is configured to fit within Niwa's cavity.

(c) Webster

Webster discloses a curved battery that a POSA would be also motivated to use with Niwa. (Tr. (Alarcon) 1008:23-25.) Alarcon testified that Webster discloses a "thin-film lithium ion or zinc-manganese dioxide chemistry battery that can be bent or curved." (Tr. 1008:13-17; CX-1135 at 5:8-12, Fig. 1.)

While there is no dispute that Webster discloses a curved battery, Rosing discounts Webster because it is a vaginal ring with a battery she contends is too large to deploy in a finger-worn ring. But as explained *supra*, the claims do not impose size limitations on the ring or its battery. Alarcon thus testified that although Webster is not finger-worn, its battery is still within the category of products that would have been considered by a POSA. (Tr. 1009:18-1010:7.) Indeed, he testified that Webster falls within the "broad category of devices that take biological data" that are also wearable and contain batteries. (*Id.*) And as with Henderson, a POSA would be strongly motivated to apply routine mechanical skill to deploy an implementation of Webster's curved battery configured to fit within Niwa's cavity.

(d) There is a Strong Motivation to Combine Niwa with Curved Battery Art.

A POSA looking to improve upon Niwa's battery would have been highly motivated to use the curved battery art in Niwa's ring housing.

[redacted]

Alarcon testified that a POSA would have been motivated to combine Niwa with GMBPow because they go "hand-in-glove"—meaning when a POSA looks at the size and shape of Niwa, they would have been motivated to use a curved battery to fit within the ring. (Tr. 1006:24-1007:8.) Indeed, an aim of Niwa is to reduce the size of any battery protrusion to make the ring less conspicuous. (CX-1133 at [0214], [0206].) Niwa itself thus provides the motivation to use curved batteries, which when employed eliminate the need for any sort of battery protrusion. Moreover, a curved battery "would have been more compatible" because it allows one to "fit more battery, more layers of anode and cathode, if you continue along the arc. So you can essentially store more energy throughout by having a curved battery. The curved batteries would not disrupt wearability in that they would not force an unintended shape—change in shape or necessitate it." (*Id.* at 1007:10-16.) All of this would have been within a POSA's capability and ordinary mechanical skill. (*Id.* at 1007:23-25); *see Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380 (Fed. Cir. 2023) (explaining "universal motivations known in a particular field to improve technology provide a motivation to combine prior art references even absent any hint of suggestion in the references themselves").

As explained *supra*, Rosing's criticisms of the battery art's size/capacity (GMBPow), form factor (Henderson) and use (Webster) are irrelevant because, as both Alarcon and the inventors testified, that art was specifically considered when determining what type of battery would fit into a ring device. And the '178 Specification describes many different types of wearables. (JX-0001 at 8:66-9:7.) Strasser and his fellow inventors actually considered GMBPow's battery and obtained samples made to their exact specifications (both size and capacity). (Tr. 595:22-597:15; RX-0236; RX-0237.) Strasser also explained in detail about how he and his fellow inventors looked to other non-ring devices, like the Nike+ FuelBand (Henderson), to ultimately find the battery

manufacturer for their Motiv Ring, which practices the '178 Patent. (Tr. 589:16-18, 590:7-591:4.) It was simply "a matter of taking the same thing and making it smaller." (*Id.* at 590:12-591:4.) And Alarcon confirmed that Webster's vaginal ring falls into the broad category of wearable devices that acquire biological data from a user and are battery-powered. (Tr. 1009:18-1010:7.)

Indeed, the '178 Patent is non-limiting in the type of battery that could be used, stating that the battery "can be ***any type of battery***, such as a rechargeable battery. The battery can be a thin, ***flexible*** lithium ceramic chemistry battery. In another example, the battery can be ***a circular formed lithium polymer or lithium ion battery***." (JX-0001 at 15:12-21 (emphasis added); Tr. (Alarcon) 1003:22-1004:7; RDX-0001C-153.) The specification goes on to describe that the battery could be "integrated directly with the flexible PCB" or "onto the housing to reduce the volume of space taken up by battery packaging." (*Id.*) The use and selection of a curved battery was so obvious that the '178 Patent does not disclose how to make such a battery—it did not need to. The curved battery was not the alleged invention. The inventors simply went out and gave existing curved battery manufacturers their specifications and the batteries were made. (Tr. (Strasser) 595:11-597:3.)

Taking all of this into consideration, and for the same reasons as in Section V.B.1.(e), it would have been both logical and obvious to combine any of the curved batteries with Niwa, especially since the motivation to combine may be found "in the nature of the problem to be solved, which is particularly relevant with simpler mechanical technologies." *Tokai*, 632 F.3d at 1371. Moreover, a motivation to combine exists "when a known technique has been used to improve one device, and a [POSA] would recognize that it would improve similar devices in the same way." *Intel Corp.*, 61 F.4th at 1380-81. Here, as explained above, it was a "known technique" to use curved batteries for wearable devices and recognized that curved batteries could be shrunk to fit

[redacted]

the specification requirements of ring devices. (Tr. (Strasser) 590:7-591:4, 596:22-597:3, (Alarcon) 1006:24-1007:25, 1008:19-22, 1010:23-25.)

3. Secondary Considerations

Complainants assert that the following secondary considerations weigh in their favor: (1) commercial success; (2) industry praise; (3) copying; (4) long-felt need; and (5) failure of others. (Tr. (Oura Opening) 36:22-37:1.) But Oura failed to establish the requisite nexus, and the evidence refutes each alleged secondary consideration.

(a) Commercial success

As Alarcon testified, any alleged commercial success of the Oura Ring were due to factors unrelated to the subject matter claimed in the '178 Patent. (Tr. 1014:7-1015:2.) This is demonstrated by the failure of the Motiv ring and Oura's aggressive marketing of unclaimed features of the Oura Rings.

(i) The Motiv Ring's Failure Undermines the Nexus of any Alleged Success of Oura's Rings and the Claims.

Motiv Inc., the applicant of the '178 Patent's grandparent patent that was acquired by Proxy and then by Oura, sold a ring incorporating technology disclosed and claimed in the '178 Patent. (*See* RX-0275 ('034 patent).) The Motiv Ring had an internal housing component defining an inner circumferential surface and an outer housing defining an outer circumferential surface. (Tr. (Alarcon) 1011:11-1012:24; *see* RX-0035C.) It also included a battery, printed circuit board, and sensors for collecting biometric data from a user. (Tr. (Strasser) 587:9-588:1.)

The Motiv Ring was not a commercial success by any metric. (*See* Tr. (von Badinski) 197:16-20 (stating that Motiv only sold 80,000 rings). As von Badinski and Alarcon testified, Motiv failed commercially, burning through cash because sales could not sustain the company. (Tr. (Alarcon) 1013:19-1014:2, (von Badinski) 224:2-225:22.) Motiv was eventually liquidated and

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[redacted]

had its assets sold to Proxy, Inc. for [redacted]. (Tr. (von Badinski) 225:19-22; RX-0385.2 (Motiv-Proxy Asset Purchase Agreement).) Alarcon explained that the Motiv ring's lack of success demonstrates that any commercial success of the Oura Ring is not attributable to the subject matter claimed in the '178 Patent, but rather to other external factors, such as marketing. (Tr. 1014:7-25.)

Mulhern, Oura's rebuttal expert on commercial success, merely concluded that even though the Motiv Ring and Oura Ring contain the technology, they "can have very different marketplace experiences, depending on [a] variety of factors." (Tr. 1263:3-19.) But Mulhern did not conduct an independent analysis of Motiv's marketplace performance because it would not have been "illuminating" to do so, nor did she ask for any information about the Motiv Ring. (*Id.* at 1263:20-23.) Her testimony should thus not be credited.

(ii) Oura's Success Derives from Unclaimed Features.

There is no nexus between Oura's aggressive marketing tactics and the claimed invention. *See Ormco Corp. v. Align Tech., Inc.,* 463 F.3d 1299, 1312 (Fed. Cir. 2006) ("[I]f the commercial success is due to an unclaimed feature of the device, the commercial success is irrelevant.") Indeed, Oura's marketing prowess—not the claimed invention—accounts for any alleged success of the Oura Gen 3 and Gen 4 rings compared to the failure of the Motiv ring. Indeed, the evidence showed that in 2021, Oura spent [redacted]. (CX-0042C.6 ([redacted]); Tr. (Chapp) 135:9-21.) And through 2023, marketing remains a key aspect of Oura's business plan and no testimony was elicited that Oura's R&D spend has drastically increased. (*See generally* RX-0036C; CX-0042C.6, 15 ([redacted]).) For example, [redacted]. (*Id.*)

[redacted]

Mulhern did not dispute these numbers but instead attempted to downplay them testifying that Oura's marketing spending as a share of revenue has been declining and that Oura's marketing spend was typical. (Tr. 1266:13-19, 1267:21-23, 1268:7-10; *see* CDX-0007C.8.) But Oura is an extreme outlier: only 3.2% of companies spend more than 20% of revenue on marketing and over 80% spend less than 10% on marketing (with over half spending less than 5% of revenue on marketing). (CX-0979.2.) Indeed, while Mulhern tried to normalize Oura's spend, the only company to spend over 14% of revenue on marketing is fashion brand Hugo Boss AG—far less than the [redacted] spent by Oura. (*Compare* CDX-0007C.9, CX-0959C.)

Further, Alarcon testified that much of Oura's marketing focus has little to do with the technology claimed in the '178 Patent. (Tr. 1014:7-1015:2.) Oura's 2023 marketing goals, for example, were directed to mobile app features, not the claimed ring components. (RX-0036C.9-10 (identifying goals including advancing women's health, adding social media-like features to the app, adding compatibility with Apple Watch).) Indeed, Alarcon testified that Oura employed an aggressive marketing strategy to paint the Oura Ring as an "experience" with unclaimed app features, which is what contributes to any alleged commercial success by Oura. (*See* Tr. 1014:14-1015:2; *see* RX-0036C.4.)

(b) Industry Praise

While Rosing testified that Oura received "quite a bit of industry praise," she did not even attempt to tie the praise to the claimed invention. (CDX-0005.56; Tr. 1231:13-15, 23-25.) Worse, several awards listed pre-date the release of Oura's Gen. 3 ring, which released in October 2021. (Tr. (Chapp) 92:2-6.) Indeed, CX-0609 (2018), CX-0615 (2019), CX-0622 (2020), and CX-0624 (2021) all predate the release of Gen. 3.

The rest of the awards relate to features not claimed by the '178 Patent. (CX-0630.2 (sleep score); CX-0625.23 (readiness score); CX-0612.22 (sleep and recovery); CX-0618.2 ("accurate

tracking, valuable insights, and a brilliant app"); CX-0629.10 (sleep score); CX-0802.2 (fertility); CX-0628.39 (sleep tracking feature); CX-0640.5 (sleep tracking).) There can be no nexus when the praise relates to features that are not claimed. *See In re Ethicon, Inc.*, 844 F.3d 1344, 1352 (Fed. Cir. 2017) (affirming that industry praise related to unclaimed features did not establish nexus).

Lastly, Mulhern failed to account for negative press, customer reviews, and critiques of the Oura Ring in her analysis. (Tr. 1274:3-13; RX-0389 (calling the Gen. 3 a "missed opportunity" and "too flawed to recommend").) This too warrants discounting her opinion.

(c) No Evidence of Copying

Sarrafzadeh testified that Respondents copied Oura because the accused products "look very similar" and because Respondents performed competitive analysis on the Oura Ring. (*See* Tr. 1279:1-12, 1282:9-1283:11.) But he identified not one document from Respondents' files showing actual copying. (Tr. 1293:7-1295:1.) His entire copying opinions amounted to nothing more than a comparison of features that he found identical while ignoring all the features that are different. (*See* Tr. 1279:1-1282:8, 1288:3-1291:12 (discussing differences between the RingConn accused product and Oura's Gen. 3 Ring).) Moreover, as Alarcon and Respondents' own internal representatives testified, Respondents each independently developed their own product. (Tr. 1015:8-1016:7.) In fact, both RingConn and Ultrahuman launched their accused products ***before*** the '178 Patent issued. (Tr. (Sarrafzadeh) 1285:25-1286:20.) Any evidence of copying that predates the issuance of a patent is not relevant in the secondary considerations analysis. *Cf. State Indus., Inc. v. A.O. Smith Corp.*, 751 F.2d 1226, 1236 (Fed. Cir. 1985) (no willful infringement where infringer designed and put its product on the market before the asserted patent was issued.). Indeed, there was no evidence presented that the accused products changed as a result of the teardown competitive analysis by the Respondents. (Tr. (Alarcon) 1015:17-1016:7; Tr. (Sarrafzadeh) 1293:7-1295:1.)

[redacted]

Ultrahuman. There is no evidence that Ultrahuman copied any Oura Rings that allegedly embody the '178 Patent. As an initial matter, Kumar testified that he did not learn about the '178 Patent until Ultrahuman was sued. (Tr. (Kumar) 687:4-8, 687:24-688:3, (Sarrafzadeh) 1287:4-8.) Thus, Ultrahuman could not have copied the '178 Patent in designing the Ultrahuman Ring Air. Kumar also testified that [redacted] was performed on the [redacted] (Tr. 684:25-685:20, 694:13-19.) Kumar testified that [redacted]. (*Id.* 694:13-19.) Therefore, this shows that [redacted]. (Tr. (Alarcon) 1016:4-5.) And again, [redacted]. (*Id*. 1015:17-20, (Sarrafzadeh) 1293:7-1295:1.)

RingConn. Min Wang, RingConn's VP of hardware development, began working on Smart Rings "around 2014 to 2015." (Tr. (Wang) 1147:19-21.) Wang published this work in 2017 at the IEEE Biomedical Circuits and Systems Conference in Italy. (*Id.* 1147:25-1148:9; RX-0219.) This paper showed RingConn's "Smart Ring system prototype" as "a black ring worn by the subject [on] its index finger," and "the circuit board of our Smart Ring" on the right-hand side. (*Id.* 1148:10-15.)

[redacted]

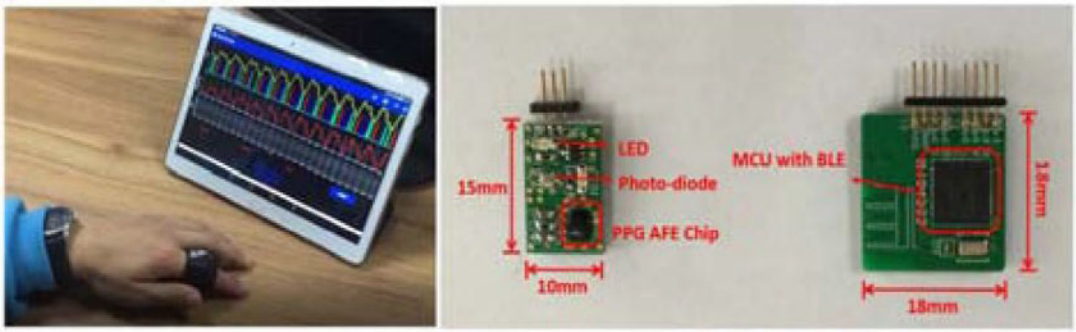

Figure 2. Practical implementation

(RX-0219.1.)

Many years after that development, RingConn examined an Oura Ring, however, "th[at] ring was destroyed in that process," and RingConn "couldn't gather a lot of information," but determined that the "wireless charging feature from the Oura Ring [wa]s not good." (Tr. (Wu) 761:7-16.) RingConn rejected the wireless charging design and instead used physical charging contacts, which RingConn determined was more "efficient." (*Id.* 761:17-762:1.) RingConn's ring are "unique" because they "have the smallest hardware out there and [the] battery charging...can be as long as 12 days." (*Id.* 762:2-15.) RingConn also has software that "monitor[s] apnea during sleep," which is "a feature that has not been seen in any other products." (*Id.*)

(d) No Long-felt but Unmet Need

Rosing testified that there was a need for a more comfortable smart wearable, despite identifying Asada and Niwa as finger-worn wearable ring devices that sense biological markers and/or activities as already existing in the prior art. (Tr. 1229:1-1230:8; CDX-0005.51-52.) Rosing also explained that there was a need for "long battery lifetime in wearables." (Tr. 1230:12-14; CDX-0005.53.)

But none of the asserted claims of the '178 Patent is directed to a "more comfortable" smart wearable that "could also be worn around the clock." (*See* JX-0001 at Asserted Claims; Tr.

[redacted]

(Rosing) 1229:16-20.) And the same is true for the alleged need for "long battery lifetime in wearables"—this is not required by the claims of the '178 Patent. (*See* JX-0001 at Asserted Claims; Tr. (Rosing) 1230:13-14.) Thus, there is no nexus for Rosing's asserted long-felt but unmet need.

(e) Failure of others

The device claimed in the '178 Patent was already disclosed in the prior art. (Tr. (Alarcon) 1016:8-17.) Alarcon provided Niwa as just one example of a reference that has priority over the '178 and would therefore not be proper to say that others failed. (*Id.*) While the Motiv ring might have been a commercial failure, creating the ring itself was a matter of routine technical skill.

Rosing argued that others have tried and failed because Niwa "puts a very large rectangular protrusion on top of a finger." (Tr. 1231:6-12.) But the claims include no size limitations on the dimensions of the ring—notwithstanding Oura's reference to Superbowl rings. Moreover, Niwa discloses a device that houses internal electronic components within a finger-worn device. Niwa also acquires and transmits data; it also expressly discloses that the ring could be made more compact. (CX-1133 at [0197], [0206].)

VI. CONCLUSION

For these reasons, the '178 Patent is invalid.

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WORD COUNT CERTIFICATE

The undersigned certifies that Respondents' Initial Post-Hearing Brief complies with the word limitation set forth in Ground Rule 1.7. The certified word count includes footnotes and excludes the caption, tables of content and authorities, words in figures, the word count certificate, signature block, and the certificate of service.

Certified word count: 14,852

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