

OURA



Patent Owner's Demonstratives

Samsung Electronics et al. v. Ouraring

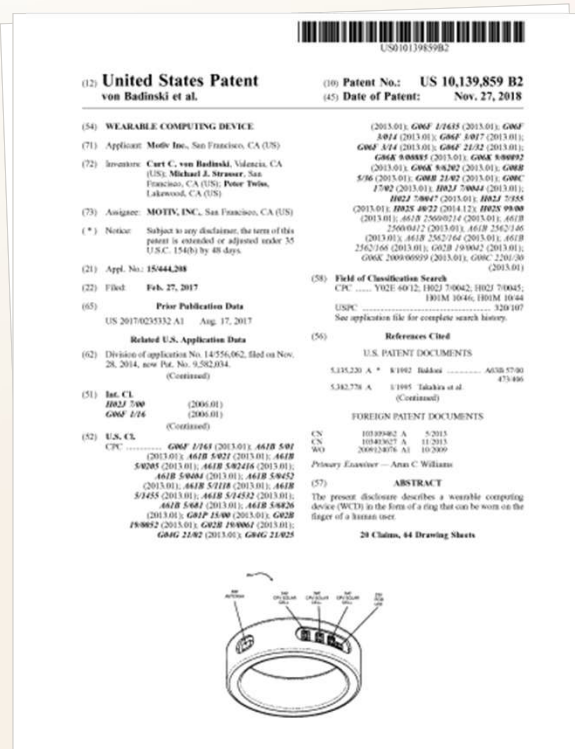
IPR2024-01077, IPR2024-01078

October 29, 2025

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

1

Overview of the '859 Patent



- **Title:**
Wearable Computing Device
- **Priority Date:**
November 29, 2013
- **Challenged Claims:**
1-11, 13-20

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

2

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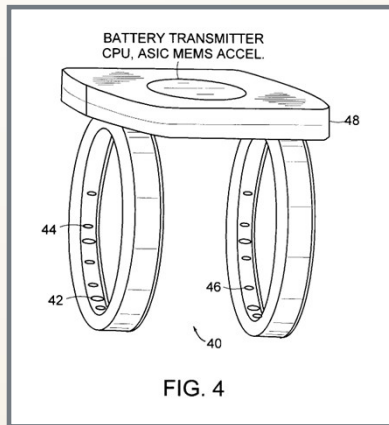
Development of Wearable Rings

IPR2024-01077, IPR2024-01078

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

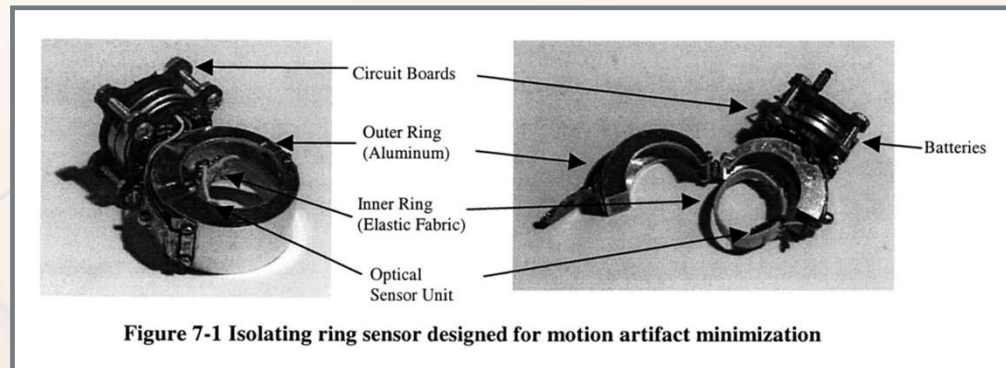
3

Development of Wearable Rings

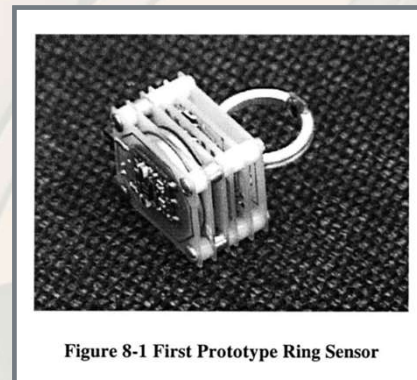


Ex. 2025, Fig. 4

- No housing components
- Flat, coin-type batteries
- Printed circuit boards and battery located *outside* the ring



Ex 1035, Figs. 7-1, 8-1.



Paper 20 at 9

Development of Wearable Rings

Wearable Technology



Mobile Monitoring with Wearable Photoplethysmographic Biosensors

H. HARRY ASADA,
PHILIP SHAULIS,
ANDREW REINER,
EDMUND RHEE, AND
REGINALD C. HUTCHINSON

Wearable biosensors (WBS) will permit continuous cardiovascular (CV) monitoring in a number of novel settings. Benefits may be realized in the diagnosis and treatment of a number of major diseases. WBS, in conjunction with appropriate alarm algorithms, can increase surveillance capabilities for CV catastrophe for high-risk subjects. WBS could also play a role in the treatment of chronic diseases, by providing information that enables precise titration of therapy or detecting lapses in patient compliance.

WBS could play an important role in the wireless surveillance of people during hazardous operations (military, fire-fighting, etc.), or such sensors could be deployed during a mass civilian casualty occurrence. Given that CV physiologic parameters make up the "vital signs" that are the most important information in emergency medical situations, WBS might enable a wireless monitoring system for large numbers of at-risk subjects. This same approach may also have utility in monitoring the waiting room of today's overcrowded emergency departments. For hospital inpatients who require CV monitoring, current biosensor technology typically tether patients in a tangle of cables, whereas wearable CV sensors could increase inpatient comfort and may even reduce the risk of tripping and falling, a perennial problem for hospital patients who are ill, medicated, and in an unfamiliar setting.

On a daily basis, wearable CV sensors could detect a missed dose of medication by sensing untreated elevated blood pressure and could trigger an automated reminder for the patient to take the medication. Moreover, it is important for doctors to titrate the treatment of high blood pressure, since both insufficient therapy as well as excessive therapy (leading to abnormally low blood pressures) increase mortality. However, healthcare providers have only intermittent values of blood pressure on which to base therapy decisions; it is possible that continuous blood pressure monitoring would permit enhanced titration of therapy and reductions in mortality. Similarly, WBS would be able to log the physiologic signature of a patient's exercise efforts (manifested as changes in heart rate and blood pressure), permitting the patient and healthcare provider to assess compliance with a regimen proven to improve health outcomes. For patients with chronic cardiovascular disease, such as heart failure, home monitoring employing WBS may detect exacerbations in very early (and

often easily treated) stages, long before the patient progresses to more dangerous levels that necessitate an emergency room visit and costly hospital admission.

In this article we will address both technical and clinical issues of WBS. First, design concepts of a WBS will be presented, with emphasis on the ring sensor developed by the author's group at MIT. The ring sensor is an ambulatory, telemetric, continuous health-monitoring device. This WBS combines miniaturized data acquisition features with advanced photoplethysmographic (PPG) techniques to acquire data related to the patient's cardiovascular state using a method that is far superior to existing fingertip PPG sensors [1]. In particular, the ring sensor is capable of reliably monitoring a patient's heart rate, oxygen saturation, and heart rate variability. Technical issues, including motion artifact, interference with blood circulation, and battery power issues, will be addressed, and effective engineering solutions to alleviate these problems will be presented. Second, based on the ring sensor technology the clinical potentials of WBS monitoring will be addressed.

WBS System Paradigm

For novel healthcare applications to employ WBS technology, several system criteria must be met. The WBS hardware solution must be adequate to make reliable physiologic measurements during activities of daily living or even more demanding circumstances such as fitness training or military battle. There must exist data processing and decision-making algorithms for the waveform data. These algorithms must prompt some action that improves health outcomes. Finally, the systems must be cost effective when compared with less expensive, lower technology alternatives.

WBS Design Paradigm

The monitoring environments for out-of-hospital, wearable devices demand a new paradigm in noninvasive sensor design. There are several design requirements central to such devices. Compactness, stability of signal, motion and other disturbance rejection, durability, data storage and transmission, and low power consumption comprise the major design considerations. Additionally, since WBS devices are to be worn without direct doctor supervision, it is imperative that they are simple to use and comfortable to wear for long periods of time. A challenge unique to wearable sensor design is the

28 IEEE ENGINEERING IN MEDICINE AND BIOLOGY MAGAZINE

OCTOBER/NOVEMBER 2000

MAY/JUNE 2002

Petitioner Samsung Ex-1037, 0001

Ex. 1037

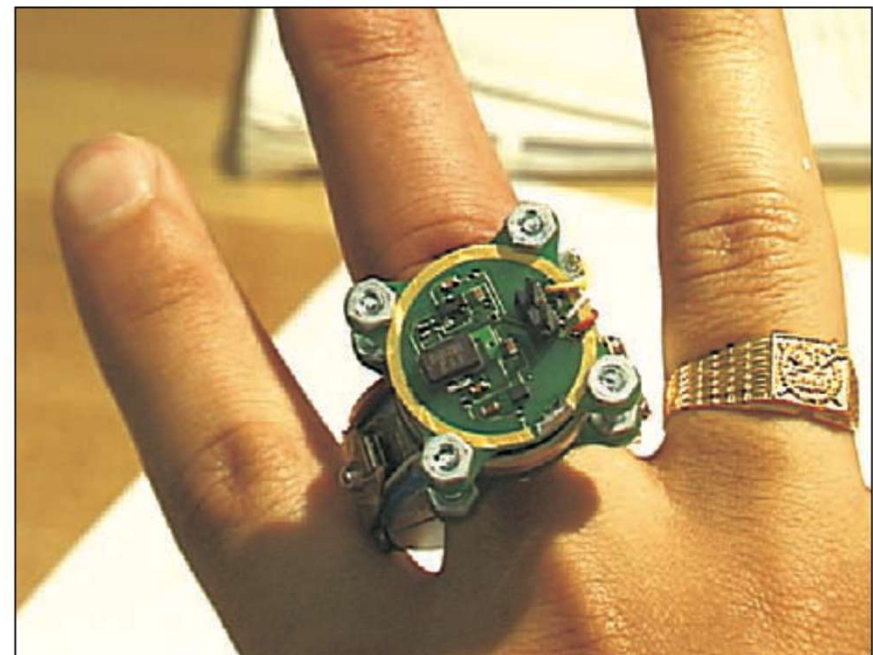


Fig. 9. First prototype ring sensor with RF transmitter powered by a coin-size cell battery.

Ex. 1037, at 7

Paper 18 at 9-10

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

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Development of Wearable Rings

- A. [I]n the 2012-2013 timeframe...I was aware of smart ring designs, including...the designs by Professor Harry Asada at MIT, in part because that's where I went to grad school, and I met with him there....

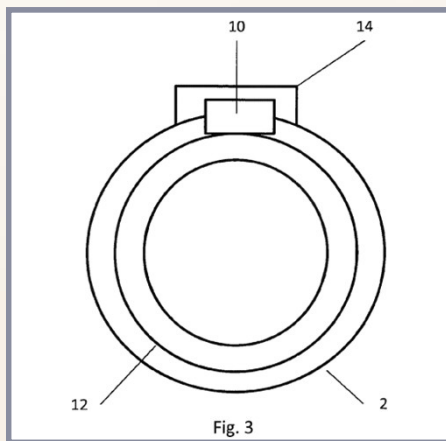
And I very quickly concluded that the most logical way to build such a device was to follow the prior art, including Professor Asada's and the other art that I found in the literature on this topic, and place the battery at the top of the device....

[W]hat I can say is that a POSITA who was...exactly in this space at the time of invention had considered various different ways of building a smart ring, and I concluded, at the time, that I wasn't able to make it sufficiently small.

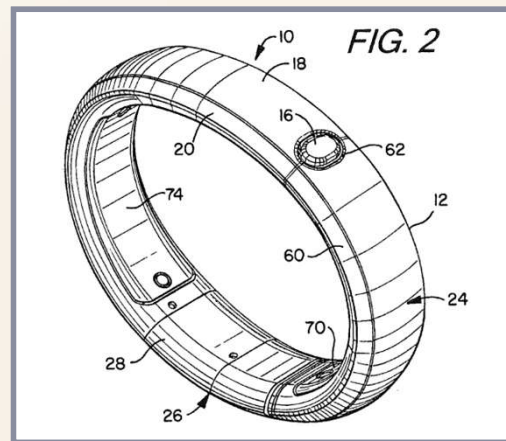
Ex. 1081, 35:9-37:10, Ex. 2018, ¶¶ 75-76, 85; Paper 18 at 13



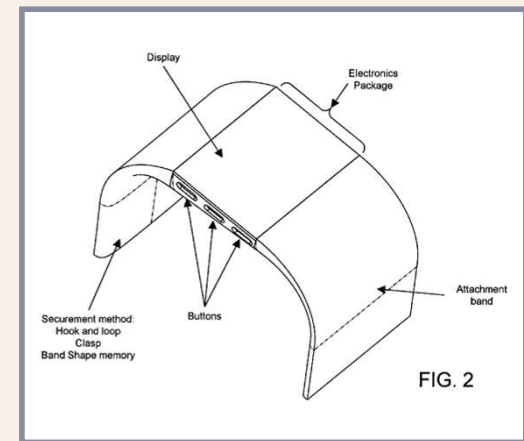
Development of Wearable Devices



Ex. 1007 (Schröder), Fig. 3



Ex. 1010 (Mestas), Fig. 2



Ex. 1006 (Yuen), Fig. 2

Level of Skill of POSITA

Proposed by Petitioner:

1. At least four-year degree in electrical engineering, biomedical engineering, optical engineering, or related field of study, or equivalent experience; and

2. At least two years' experience in academia or industry studying or developing physiological monitoring devices such as non-invasive biosensors. A person of ordinary skill in the art would have also been familiar with, for example, sensor system design and signal processing.

Paper 3 at 7



The '859 Patent: Summary of Grounds

1	Yuen/Mestas (Claims 1, 11, 13-20)
2	Schröder/Mestas (Claims 1, 11, 13-20)

Paper 31 at i-viii

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

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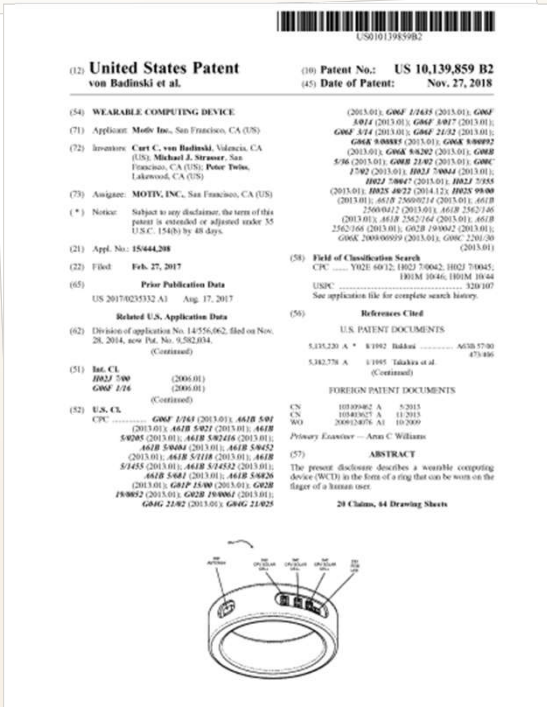
Deficiencies of Ground 1: Yuen + Mestas

IPR2024-01077

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

10

Yuen and Mestas Do Not Render Claim 1 Obvious



Ex. 1001
Paper 18 at 28

- | | |
|-----------|---|
| 1[pre] | A system, comprising: |
| 1[a][i] | a wearable ring computing device, |
| 1[a][ii] | the ring computing device including a housing, the housing having an interior bounding member and an exterior bounding member, |
| 1[a][iii] | the interior bounding member and the exterior bounding member being configured for being coupled together to form a waterproof cavity there between; |
| 1[b] | a curved battery positioned within the cavity, the curved battery having an arc approximating a corresponding arc of the ring housing; |
| 1[c][i] | a sensor module, the sensor module positioned within the cavity and proximate the battery, |
| 1[c][ii] | the sensor module comprising one or more sensors, |
| 1[c][iii] | the one or more sensors comprising one or more of a pedometer, an accelerometer, a gyroscope, a heart rate sensor, a pulse oximeter, a sleep monitor, an internal measurement unit, a thermometer, a Galvanic skin response sensor, and an electrocardiogram, |
| 1[c][iv] | the one or more sensors being configured to sense a change in a condition of a wearer of the ring; |
| 1[d] | a flexible printed circuit board positioned within the cavity proximate one or both of the curved battery and the sensor module, the flexible printed circuit board portion comprising: |
| 1[e] | a processor, the processor configured for determining one or more of a number of steps taken, a quality of sleep, a heart rate, blood pressure, and body temperature of a user of the ring computing device; and |
| 1[f] | a memory, associated with the processor for storing data; and |
| 1[g] | a semiconducting light element disposed at least partially within the housing. |

Yuen

United States Patent
Yuen et al.(19) Patent No.: **US 8,954,135 B2**
(41) Date of Patent: **Feb. 10, 2015****PORTABLE BIOMETRIC MONITORING DEVICES AND METHODS OF OPERATING SAME**(71) Applicant: **Fitbit, Inc.**, San Francisco, CA (US)(72) Inventors: **Shihua Guo**, San Jose, CA (US); **Mark Michael Mortimer**, San Francisco, CA (US); **Andrew Cole**, Ashby, Oakland, CA (US); **Eric Nathan Friedman**, San Francisco, CA (US); **James Park**, Berkeley, CA (US)(73) Assignee: **Fitbit, Inc.**, San Francisco, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **13/924,704**(22) Filed: **Jun. 24, 2013**

(45) Prior Publication Data

US 2014/0101493 A1 Apr. 17, 2014

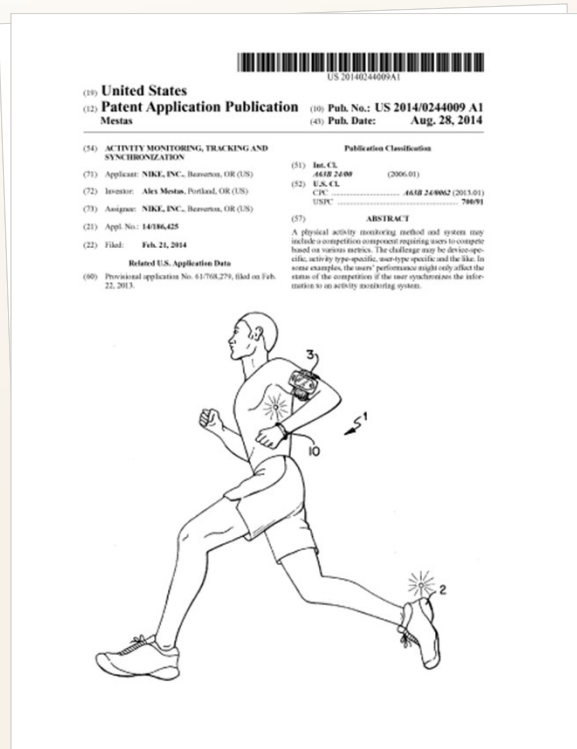
Related U.S. Application Data

(60) Provisional application No. 61/642,041, filed on Jan. 22, 2012; provisional application No. 61/752,826, filed on Jan. 13, 2013.

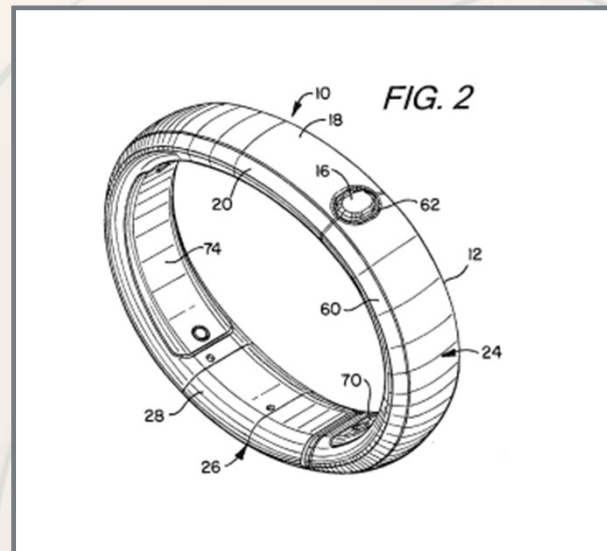
(51) Int. Cl.

A61B 5/00**A61B 5/02****A61B 5/04****A61B 5/06****A61B 5/08****A61B 5/09****A61B 5/10****A61B 5/11****A61B 5/12****A61B 5/13****A61B 5/14****A61B 5/15****A61B 5/16****A61B 5/17****A61B 5/18****A61B 5/19****A61B 5/20****A61B 5/21****A61B 5/22****A61B 5/23****A61B 5/24****A61B 5/25****A61B 5/26****A61B 5/27****A61B 5/28****A61B 5/29****A61B 5/30****A61B 5/31****A61B 5/32****A61B 5/33****A61B 5/34****A61B 5/35****A61B 5/36****A61B 5/37****A61B 5/38****A61B 5/39****A61B 5/40****A61B 5/41****A61B 5/42****A61B 5/43****A61B 5/44****A61B 5/45****A61B 5/46****A61B 5/47****A61B 5/48****A61B 5/49****A61B 5/50****A61B 5/51****A61B 5/52****A61B 5/53****A61B 5/54****A61B 5/55****A61B 5/56****A61B 5/57****A61B 5/58****A61B 5/59****A61B 5/60****A61B 5/61****A61B 5/62****A61B 5/63****A61B 5/64****A61B 5/65****A61B 5/66****A61B 5/67****A61B 5/68****A61B 5/69****A61B 5/70****A61B 5/71****A61B 5/72****A61B 5/73****A61B 5/74****A61B 5/75****A61B 5/76****A61B 5/77****A61B 5/78****A61B 5/79****A61B 5/80****A61B 5/81****A61B 5/82****A61B 5/83****A61B 5/84****A61B 5/85****A61B 5/86****A61B 5/87****A61B 5/88****A61B 5/89****A61B 5/90****A61B 5/91****A61B 5/92****A61B 5/93****A61B 5/94****A61B 5/95****A61B 5/96****A61B 5/97****A61B 5/98****A61B 5/99****A61B 5/00****A61B 5/01****A61B 5/02****A61B 5/03****A61B 5/04****A61B 5/05****A61B 5/06****A61B 5/07****A61B 5/08****A61B 5/09****A61B 5/10****A61B 5/11****A61B 5/12****A61B 5/13****A61B 5/14****A61B 5/15****A61B 5/16****A61B 5/17****A61B 5/18****A61B 5/19****A61B 5/20****A61B 5/21****A61B 5/22****A61B 5/23****A61B 5/24****A61B 5/25****A61B 5/26****A61B 5/27****A61B 5/28****A61B 5/29****A61B 5/30****A61B 5/31****A61B 5/32****A61B 5/33****A61B 5/34****A61B 5/35****A61B 5/36****A61B 5/37****A61B 5/38****A61B 5/39****A61B 5/40****A61B 5/41****A61B 5/42****A61B 5/43****A61B 5/44****A61B 5/45****A61B 5/46****A61B 5/47****A61B 5/48****A61B 5/49****A61B 5/50****A61B 5/51****A61B 5/52****A61B 5/53****A61B 5/54****A61B 5/55****A61B 5/56****A61B 5/57****A61B 5/58****A61B 5/59****A61B 5/60****A61B 5/61****A61B 5/62****A61B 5/63****A61B 5/64****A61B 5/65****A61B 5/66****A61B 5/67****A61B 5/68****A61B 5/69****A61B 5/70****A61B 5/71****A61B 5/72****A61B 5/73****A61B 5/74****A61B 5/75****A61B 5/76****A61B 5/77****A61B 5/78****A61B 5/79****A61B 5/80****A61B 5/81****A61B 5/82****A61B 5/83****A61B 5/84****A61B 5/85****A61B 5/86****A61B 5/87****A61B 5/88****A61B 5/89****A61B 5/90****A61B 5/91****A61B 5/92****A61B 5/93****A61B 5/94****A61B 5/95****A61B 5/96****A61B 5/97****A61B 5/98****A61B 5/99****A61B 5/00****A61B 5/01****A61B 5/02****A61B 5/03****A61B 5/04****A61B 5/05****A61B 5/06****A61B 5/07****A61B 5/08****A61B 5/09****A61B 5/10****A61B 5/11****A61B 5/12****A61B 5/13****A61B 5/14****A61B 5/15****A61B 5/16****A61B 5/17****A61B 5/18****A61B 5/19****A61B 5/20****A61B 5/21****A61B 5/22****A61B 5/23****A61B 5/24****A61B 5/25****A61B 5/26****A61B 5/27****A61B 5/28****A61B 5/29****A61B 5/30****A61B 5/31****A61B 5/32****A61B 5/33****A61B 5/34****A61B 5/35****A61B 5/36****A61B 5/37****A61B 5/38****A61B 5/39****A61B 5/40****A61B 5/41****A61B 5/42****A61B 5/43****A61B 5/44****A61B 5/45****A61B 5/46****A61B 5/47****A61B 5/48****A61B 5/49****A61B 5/50****A61B 5/51****A61B 5/52****A61B 5/53****A61B 5/54****A61B 5/55****A61B 5/56****A61B 5/57****A61B 5/58****A61B 5/59****A61B 5/60****A61B 5/61****A61B 5/62****A61B 5/63****A61B 5/64****A61B 5/65****A61B 5/66**

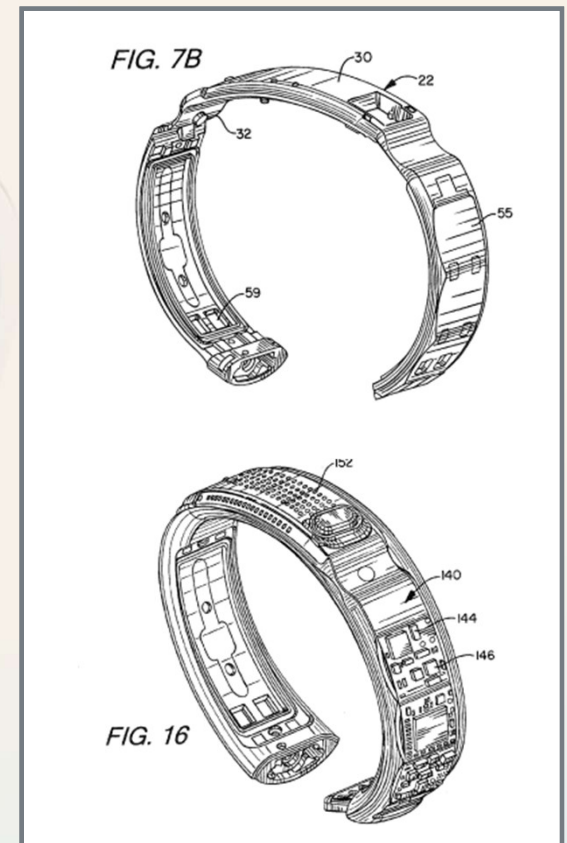
Mestas



Ex. 1010
 Paper 18 at 17, Paper 37 at 7

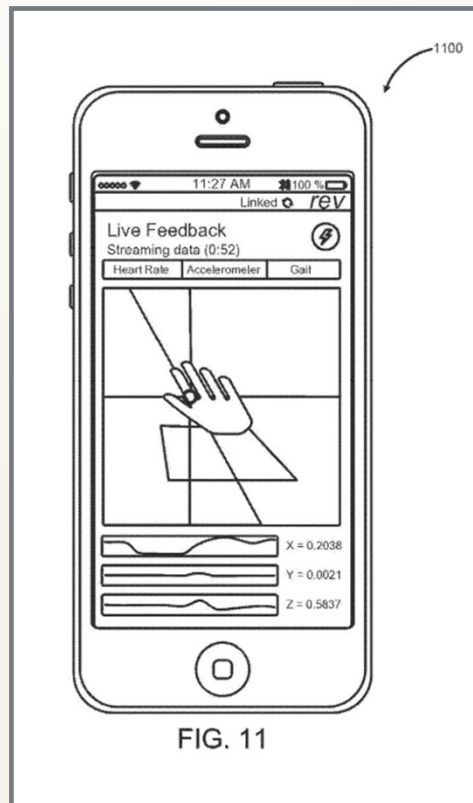


Ex. 1010, Figs. 2, (showing unitary housing enclosing spine member) 7B, Fig 16, (showing spine member)



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

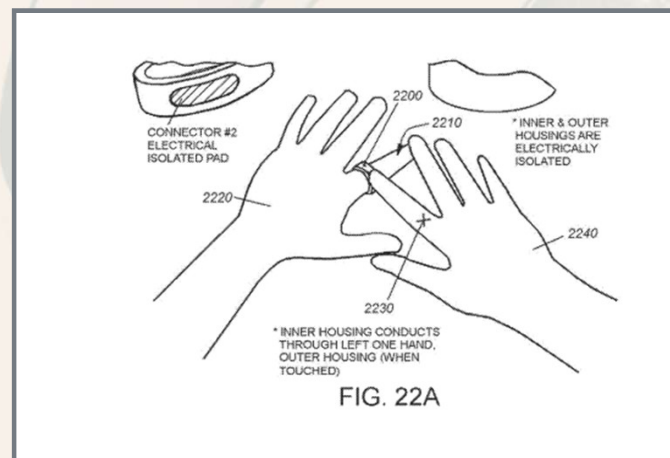
The '859 Patent Claims Finger Worn Rings



(57)

ABSTRACT

The present disclosure describes a wearable computing device (WCD) in the form of a ring that can be worn on the finger of a human user.



Ex. 1001, Figs. 11, 22A, 22B, 23A, 25, 38.; Paper 18, 20-22.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

14

The '859 Patent Claims Finger Worn Rings

RING BASED NAVIGATION AID DESCRIPTION: GPS ON MOBILE DEVICE RELAYS MAGNETIC HEADING INFORMATION OVER BLUETOOTH TO RING WHICH GIVES FEEDBACK TO USER, USING LED & MAGNETOMETER

CORRECT DIRECTION

2335

POINTING TO RIGHT OF CORRECT COURSE

2345

2325

RING INDICATES RED

2330

RING INDICATES GREEN

2300

2340

RING INDICATES BLUE

2320

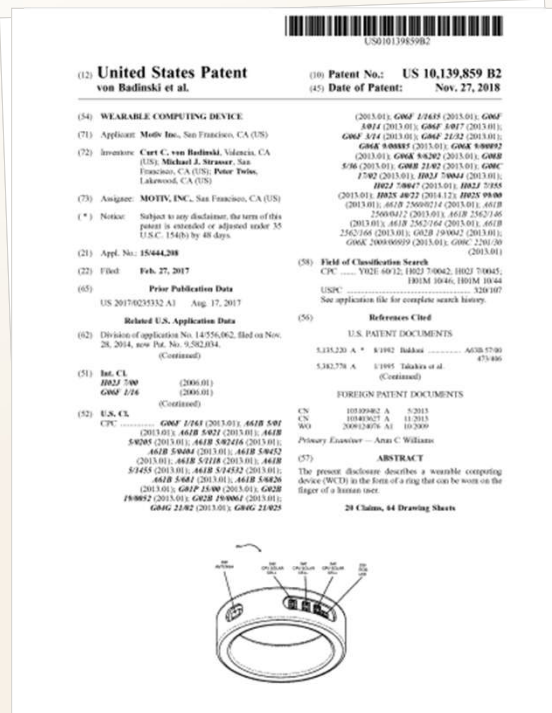
FIG. 23A

FIG. 25

Ex. 1001, Figs. 11, 22A, 22B, 23A, 25, 38.; Paper 18, 20-22.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

The '859 Patent Claims Finger Worn Rings



Although the WCD of the present disclosure is depicted as a ring that can be worn on the finger of a user, other shapes, designs, and form factors can be utilized for the WCD. For example, the WCD can be in the form of a wrist band, bracelet, necklace, earring, or any other type of wearable accessory. In this regard, references to the finger of a user in the present application can be considered to apply to other portions of a human body depending on the form of the WCD, such as wrist, neck, ear, etc.

options. The functions and structure of the device lend themselves to both a ring version and a wrist-worn version.

Ex. 1001, 8:53-61; 43:47-48.; Paper 18, 20-23.

The '859 Patent Claims Finger Worn Rings

[0022] FIG. 1 shows one exemplary embodiment of the rechargeable wrist watch system 1 according to the invention. As shown in FIG. 1, the rechargeable wrist watch system 1 includes a rechargeable wrist watch 100 and a wrist watch charging device 200.

Ex. 2004, Para. 22; Paper 18, 23.

(57)

ABSTRACT

A device configured to be worn around the wrist of a user and operable to charge an electrical device is provided. The device includes a cover and a band. The band is adapted to be worn around a wrist of a user. The cover may be adapted to mount onto the band. The band having a storage space configured for holding electrical components operable to store and discharge electrical power, such as a battery. The device further includes an output operable to connect the battery to an electrical device so as to charge the electrical device.

Ex. 2005, Abstract; Paper 18, 23.

Ex. 1004, 447-473; Paper 18, 20-24.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

17

The '859 Patent Claims Finger Worn Rings

UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	DATE OF ISSUE	INVENTOR	ATTORNEY	EXAMINER
13/444,280	10/17/2014	LEE, JUNG	LEE, JUNG	LEE, JUNG

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Application filed on or after May 29, 2000)

The Patent Term Adjustment is 48 days. Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571) 272-7902. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571) 272-4200.

APPLICANT(s) (Please use PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Carl C. von Rodder, Yokoska, CA;
Mats Inc., San Francisco, CA;
Michael J. Srinivas, San Francisco, CA;
Peter Timm, Lakewood, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

10/17/2014

Petitioner Samsung Ex-1004, 0514

1. (Currently Amended) A system, comprising:

a wearable ring computing device, the ring computing device including a housing, the housing having an interior bounding member and an exterior bounding member, the interior bounding member and the exterior bounding member being configured for being coupled together to form a waterproof cavity there between;

Raghunath is not directed to a wearable computing device, in a first instance, and is certainly not directed to a wearable computing device that is configured as a ring. As such Raghunath neither discloses a ring, nor discloses a ring having the claimed components, including a curved battery, a sensory module, and a flexible printed circuit board. Further,

Ajagbe is not directed to a wearable computing device, in a first instance, and is certainly not directed to a wearable computing device that is configured as a ring. Rather, Ajagbe is directed to a bracelet that serves as an energy store, such as for charging a cell phone. As such Ajagbe neither discloses a ring, nor discloses a ring having the claimed components, including a curved battery, a sensory module, and a flexible printed circuit board.

Ex. 1004, at 472-473, 478.; Paper 18, 20-24.

The '859 Patent Claims Finger Worn Rings

1. (Currently Amended) A system, comprising:

a wearable ring computing device, the ring computing device including a housing, the housing having an interior bounding member and an exterior bounding member, the interior bounding member and the exterior bounding member being configured for being coupled together to form a waterproof cavity there between;

A: So the intrinsic evidence of the specification of this patent, which effectively with the exception of this one introductory part describing the state of the art, describes all the embodiments as finger-worn rings. And then the prosecution history specifically added claim language to include ring language. And read in light of that specification, a person of ordinary skill would understand that to be a finger-worn ring.

Ex. 1085, 29:6-14; Ex. 2018, ¶¶ 56-64; Ex. 1004, at 472-473, 478; Paper 18, 19-28; Paper 23, 2-3.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

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The '859 Patent Describes Two Separate Embodiments—The Finger Worn Ring Embodiment is Claimed

- The specification describes two separate embodiments: a wrist-worn and finger-worn embodiment.
- The Claims were amended to add the limitation “ring” in response to a rejection based on wrist-worn devices.
- All Claims issued with the “ring” limitation. The wrist-worn embodiment is not claimed.

Paper 18, 23-28; Paper 37, 1-2.

Although the column 8 disclosure quoted above tends to broaden the scope of the invention beyond a finger ring, it is unclear whether that disclosure supports construing the term “ring” more broadly than a finger ring. The column 43 disclosure quoted above tends to show that a ring and a wrist-worn device are distinct embodiments.

Paper 8, 24.

1. (Currently Amended) A system, comprising:

a wearable ring computing device, the ring computing device including a housing, the housing having an interior bounding member and an exterior bounding member, the interior bounding member and the exterior bounding member being configured for being coupled together to form a waterproof cavity there between;

Ex. 1004, 478.

Ring: a circlet, usually of precious metal worn especially on the finger.

Ex. 2117, 4

Yuen's passing reference to a "toe band" does not disclose a Finger Ring—Neither does Mestas

35 The biometric monitoring device of the present inventions
may also be integrated and worn in a necklace, chest band,
bra, patch, glasses, earring, or toe band. The device may be
built in such a way that the sensor package/portion of the
biometric monitoring device is removable and can be worn in
40 any number of ways including, but not limited to, those listed
above.

Ex-1006 (Yuen), 24:35-41; Paper 18, 31-32.

9 Toe band, you know, if this is something going
10 over a single large toe -- I don't know about you, but my
11 toe is larger than any of my fingers -- my large toe, I
12 should say.
13 But, again, this could be describing something
14 that goes around multiple toes at once. So, again, this is
15 the one kind of throwaway description of other embodiments
16 or other possible locations, and simply no additional
17 detail beyond this is given in Yuen.

Exhibit 1081, 162:9-17; Paper 37, 3.

¹band \ˈbænd\ *n* [in senses 1 & 2, fr. ME *band*, *bond* something that constricts, fr. ON *band*; akin to OE *bindan* to bind; in other senses, fr. ME *bande* strip, fr. MF, fr. VL **binda*, of Gmc origin; akin to OHG *binia* fillet; akin to OE *bindan* to bind, *bind* fetter — more at BIND] (12c) 1 : something that confines or constricts while allowing a degree of movement 2 : something that binds or restrains legally, morally, or spiritually 3 : a strip serving to join or hold things together; as a

Exhibit 2117; Paper 18, 27; Paper 37, 3.

[0143] In addition, the wearable athletic device may be worn in a variety of locations on a user's body including on a user's chest (e.g., a chest strap), around a user's wrist, around a user's arm, on a user's head, on a user's ankle or thigh, and the like.

Exhibit 1010 (Mestas), 0143; Paper 18, 30.

Petitioner contends that a POSA "would have understood that Yuen's 'toe band' is a wearable ring device." Pet. 18. Petitioner does not present an alternative argument that a finger ring would have been obvious in view of Yuen and Mestas.

Paper 8, 26; Paper 18, 28.

Yuen's passing reference to a "toe band" does not enable a Finger Ring —Neither does Mestas

- Yuen and Mestas's form factor 5-10 times too large
- Yuen's electronics package is flat and planar
- Power requirements are incompatible
- Mestas's spine member is incompatible with Yuen

12 **Would a POSITA understand that the toe**
 13 **band layout of components would be different than**
 14 **illustrated in Figures 2 through 13?**

15 MR. KAPPOS: Object to form.

16 A. Again, I wasn't opining exclusively around
 17 Yuen. But a POSITA applying Yuen by itself would
 18 design it appropriately to encircle the person's
 19 toe with appropriate layout and structure that
 20 could very well look like a ring.

21 **Q. Okay. And again, talking about Yuen by**
 22 **itself, whatever that appropriate layout and**
 1 **structure is, it's not explicitly shown in Yuen,**
 2 **is it?**

3 A. It's not explicitly shown in Yuen, which
 4 is one of the reasons that a POSITA looking to
 5 understand it – in more detail how to do it would
 6 be motivated to combine the teachings of Mestas in
 7 realizing that ring structure.

Exhibit 2022 (Dr. Anthony), 50:21-51:7; Paper 18, 32.

Q. Doctor, I'm talking about the battery of Figure 6. How much smaller would you have to make it too have it fit in the ring? ... How big a scaling factor would you be comfortable that would require to—that would be required to fit that in a ring?

A. **Some place between 5 and 10** – with that not having calculated it.

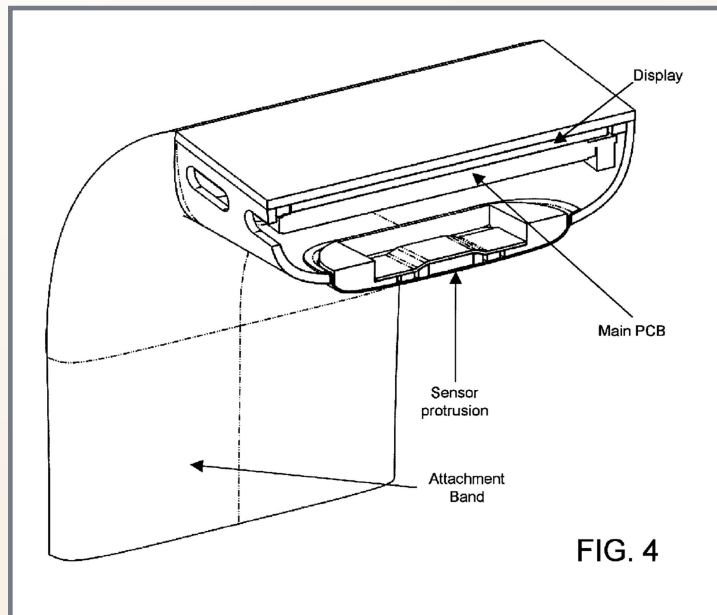
Q. Have you in your work on this case attempted to find whether there was a battery available in 2013 that was appropriate to fit in Schröder as you've proposed?

A. **I did not find it necessary to do that, no.**

Ex. 2021 at 312:16-313:12; 321:5-10

Paper 18, 32-38, 54-56; Paper 37, 1

Yuen + Mestas does not render obvious limitation 1[a], 11[b][i], 14[a]



- 1[pre] A system, comprising:
- 1[a][i] a wearable ring computing device,
- 1[a][iii] the ring computing device including a housing, the housing having an interior bounding member and an exterior bounding member,
- 1[a][iii] the interior bounding member and the exterior bounding member being configured for being coupled together to form a waterproof cavity there between;
- 1[b] a curved battery positioned within the cavity, the curved battery having an arc approximating a corresponding arc of the ring housing;
- ...
- 11[pre] A wearable ring computing device the ring computing device comprising:
- 11[b][i] a housing, the housing having an interior bounding member and an exterior bounding member, the interior bounding member and the exterior bounding member being configured for being coupled together to form a waterproof cavity there between;
- ...
- 14[[pre] A ring computing device, comprising:
- 14[a] an interior bounding member, the interior bounding member being defined by a planar surface member having a pair of opposed circumferential portions, the opposed circumferential portions being raised above a first portion of the planar surface member

Paper 18, 41-44, Paper 37, 3-6
Ex. 1006, Fig. 4;

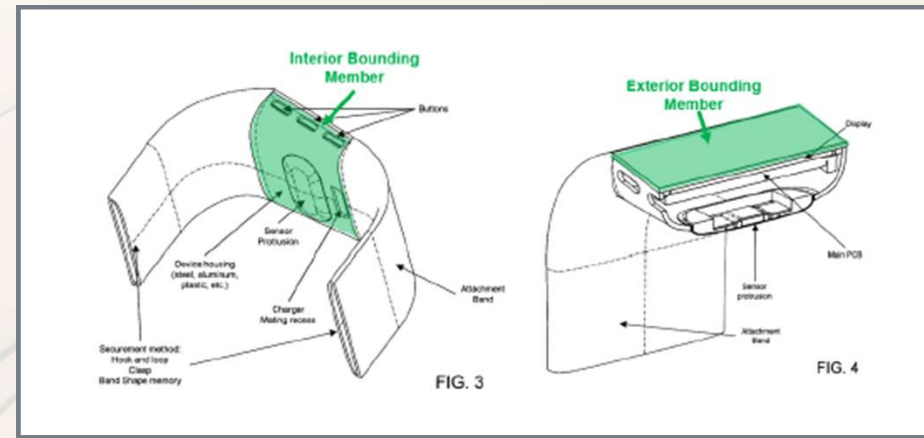
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

24

Yuen + Mestas does not render obvious limitation 1[a], 11[b][i], 14[a]

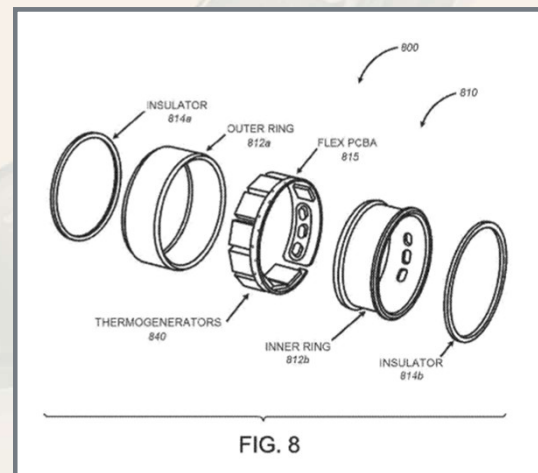
- Yuen's skin side and environmental side do not teach, distinct coupled, and concentric interior and exterior bounding members to form a waterproof cavity.
- Yuen's electronic module housing sits atop the Yuen device. It is not a ring housing.
- Petitioner never suggests modifying Yuen's housing into a ring housing or modifying Yuen's housing with Mestas. Rather Petitioner, argues a POSITA would curve the flat module on top of Yuen into a curved module on top of Yuen.

Paper 18, 41-44; Reply at 9, Paper 37, 3-6



Paper 1, 20, Paper 18, 43

Ex. 1006, Figs. 3, 4 (modified by Petitioner);



Ex. 1001, Fig. 8

Petitioner's definitions of "ring":

An "encircling band"

An "object[] in the form of a circle whose center is not filled"

"a circle which goes round something"

Petitioner argues "rings, which **circle** a neck, toe or wrist, fall under 'ring's' plain meaning.

Ex. 1365, 3 Ex. 1366, 3, Ex. 1367, 3, Paper 23, 4

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

25

Yuen + Mestas does not render obvious limitation 1[b], 11[c], 14[b]

- Yuen's electronic framework would need to be completely redesigned.
- Mestas's batteries are 5-10 times too large for a ring sized device. The ITC ruled that replacing flat batteries with curved batteries would lower performance.
- If a POSITA looked to Mestas because of issues implementing curved, why would a POSITA pick and chose only the portions of Mestas's battery system that comply with the '859 Patent?

1[a]	a wearable ring computing device, the ring computing device including a housing, the housing having an interior bounding member and an exterior bounding member, the interior bounding member and the exterior bounding member being configured for being coupled together to form a waterproof cavity there between;
1[b]	a curved battery positioned within the cavity, the curved battery having an arc approximating a corresponding arc of the ring housing;
...	
11[b]	a housing, the housing having an interior bounding member and an exterior bounding member, the interior bounding member and the exterior bounding member being configured for being coupled together to form a waterproof cavity there between;
11[c]	a curved battery positioned within the cavity;
...	
14[a]	an interior bounding member, the interior bounding member being defined by a planar surface member having a pair of opposed circumferential portions, the opposed circumferential portions being raised above a first portion of the planar surface member
14[b]	a curved rechargeable battery, the rechargeable battery being configured for being wirelessly recharged;

Paper 18, 44-48, Paper 37, 6-9, Paper 23, 9; Ex. 2122, 96.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

26

Yuen + Mestas does not render obvious limitation 1[b], 11[c], 14[b]

3 **Q. So in Figure 4, the main PCB is shown.**

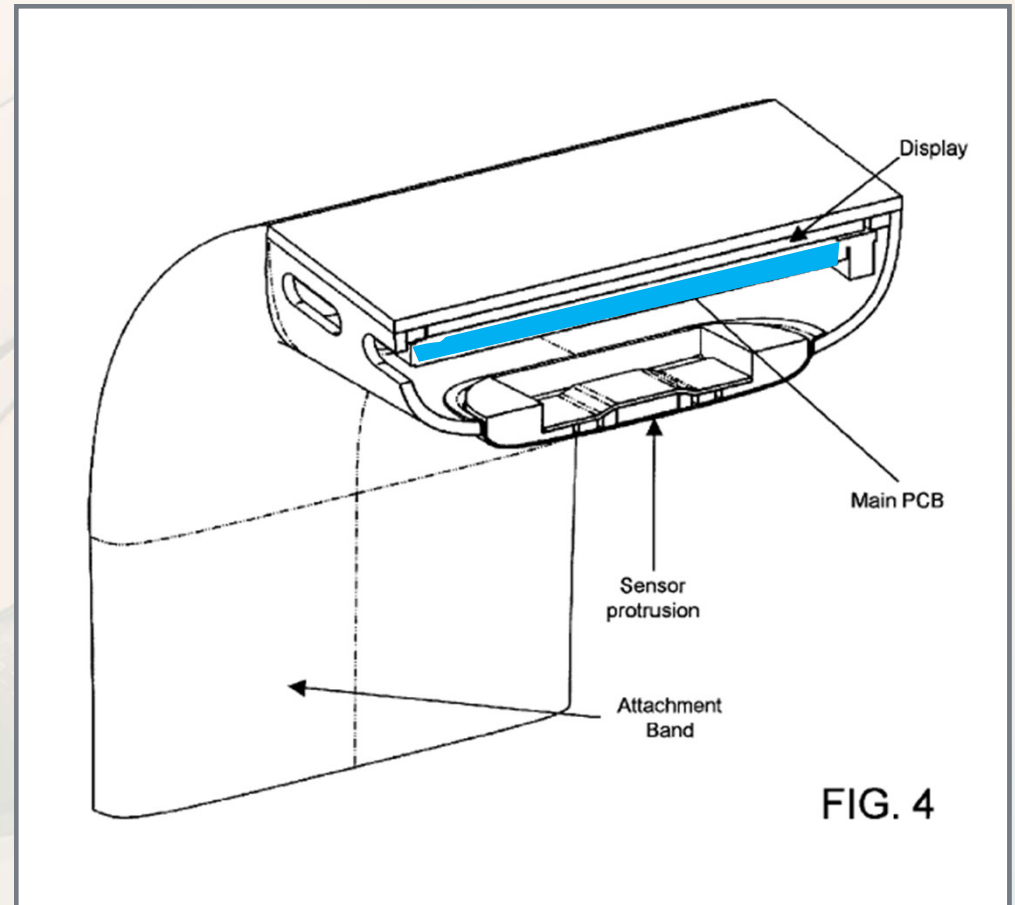
4 **Correct? Of Yuen?**

5 A. In Figure 4, there's a section pointed to
6 the main PCB.

7 **Q. And that's shown as a flat component.**

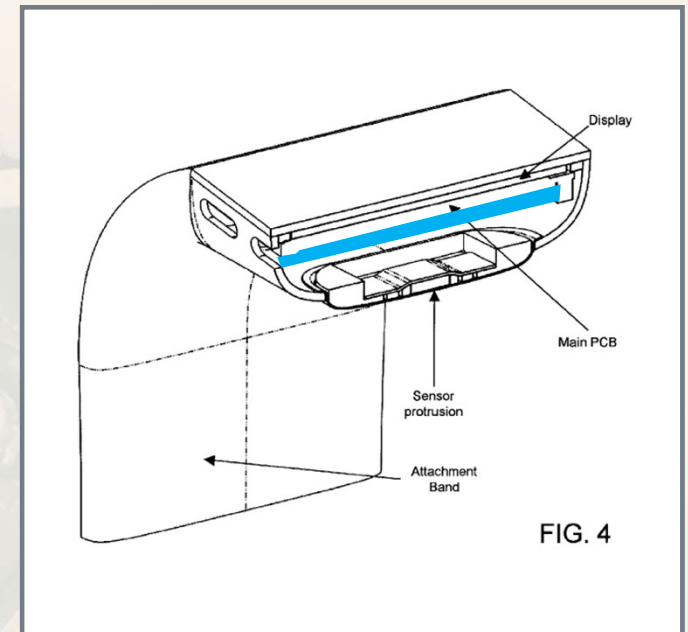
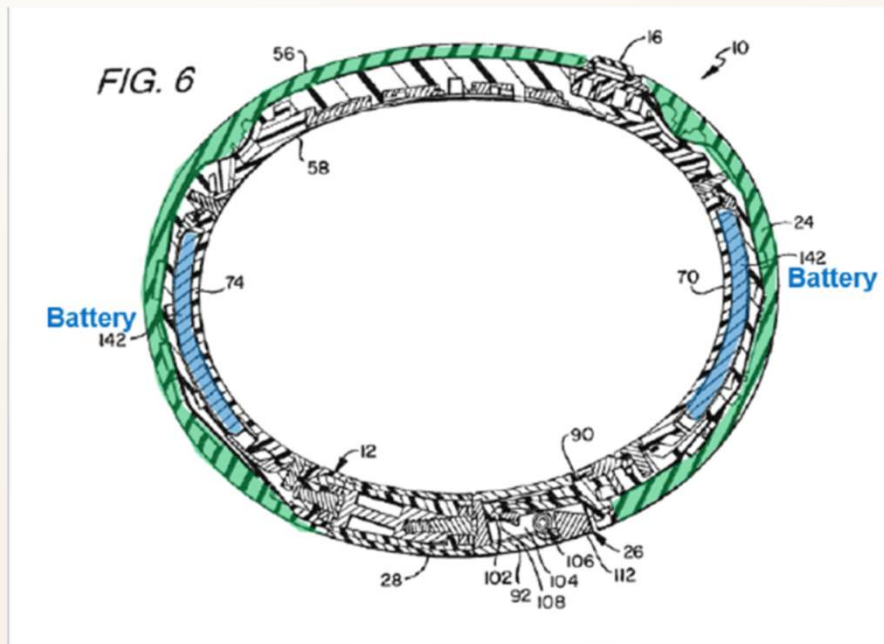
8 **Correct?**

9 A. In Figure 4, it appears to be a flat
0 section.



- Yuen's electronic framework would need to be completely redesigned.

Yuen + Mestas does not render obvious limitation 1[b], 11[c], 14[b]



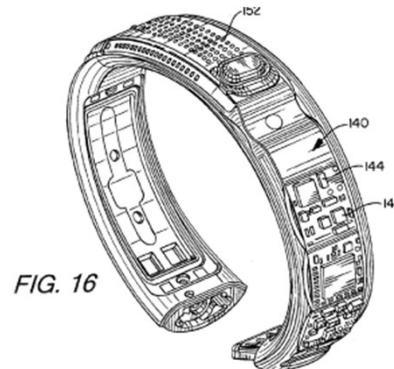
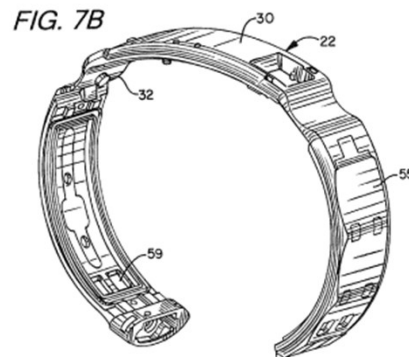
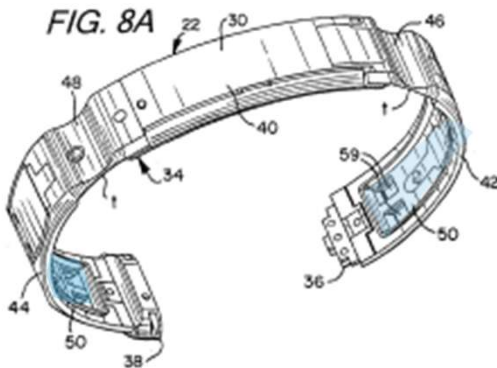
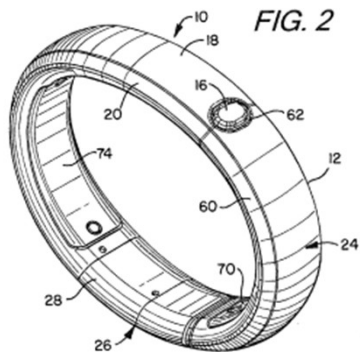
I agree with Oura that respondents' obviousness argument is directly contrary to Niwa's teachings of "a highly flat battery" and a stacked configuration. Oura Reply at 25–26. Respondents provide no reason why one of skill would ignore Niwa's teachings and modify it to include a curved battery and non-stacked components. Niwa itself, therefore, provides strong evidence

Paper 18, 44-48, Paper 37, 6-9, Paper 3 at 24; Ex 2122, 96

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

28

Mestas's battery design teaches away from the '859 patent



- Mestas has a battery cavity for batteries formed by battery recess 59 and outer housing cap 74.
- The battery cavity and PCB cavity are separated by Mestas's spine member.
- A POSITA adopting Mestas's battery solution into a ring design would create a ring where:
 - The battery is not designed to arc approximate to the ring housing arc, (shown in figure 2) but an internal spine member's battery recess.
 - The battery is not proximate to the PCB
 - The battery and other components do not share a cavity

Paper 37, 6-9.

Ex. 1010, para 153; Figs. 2, (battery cover 74 sealing off battery cavity 59), 7B, 8A, Fig 16 (circuit board in separate cavity)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

29

A POSITA Would Not Combine Yuen With Mestas to Arrive at a Finger-Worn Device

Neither Yuen or Mestas suggests a finger-worn ring device.

Neither reference provides guidance on constructing a finger sized device as claimed. Yuen provides no guidance for its toe band device

Scaling Yuen and Mestas 5-10 times smaller would be a significant deterrent to a POSITA

Cherry picking sub-components from each reference to reconstruct the '859 Patent is impermissible hindsight.

OURA



Deficiencies of Ground 2: Schröder + Mestas

IPR2024-01077

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

31



A POSITA Would Not Combine Schröder With Mestas

Devices have different functions (physiological vs. security)

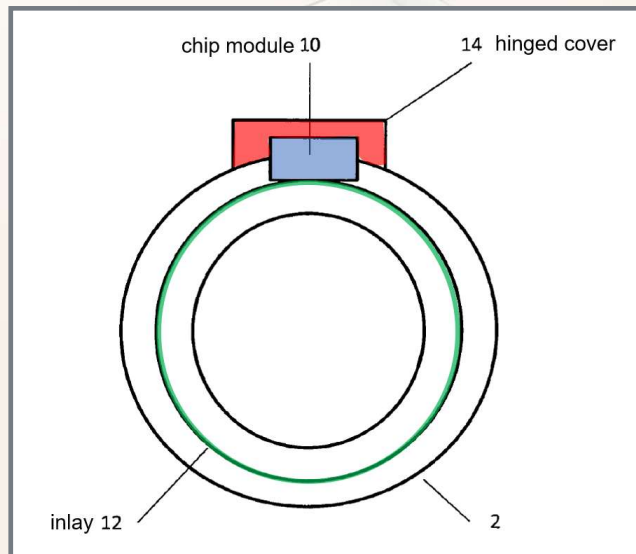
Devices include different components and different power requirements

Mestas' device is worn on the wrist. Mestas only considers deploying the device on large parts of the body. (chest, arm, head, ankle, or thigh)

Mestas' components cannot fit in Schröder's inlay

Schröder Fails To Disclose Limitations 1[b], 11[c], 14[b]

- Schröder's chip module is located *outside* and above the ring so it can be replaced



Ex 1007, Fig. 3
Paper 18 at 61-64.

FIG. 3 shows a cross section through an external secure unit 2 in the form of a finger-ring 2 with a replaceable chip module 10. In the interior of the finger-ring 2 is arranged an

Ex. 1007 at 8:54-56

finger-ring 2 is arbitrary. The chip module 10 is protected against external influences by a cover 14. The cover 14 is e.g. a hinged cover or a cover that is connected e.g. by means of a thread to the finger-ring 2. The chip module 10 is

Ex. 1007 at 8:60-63

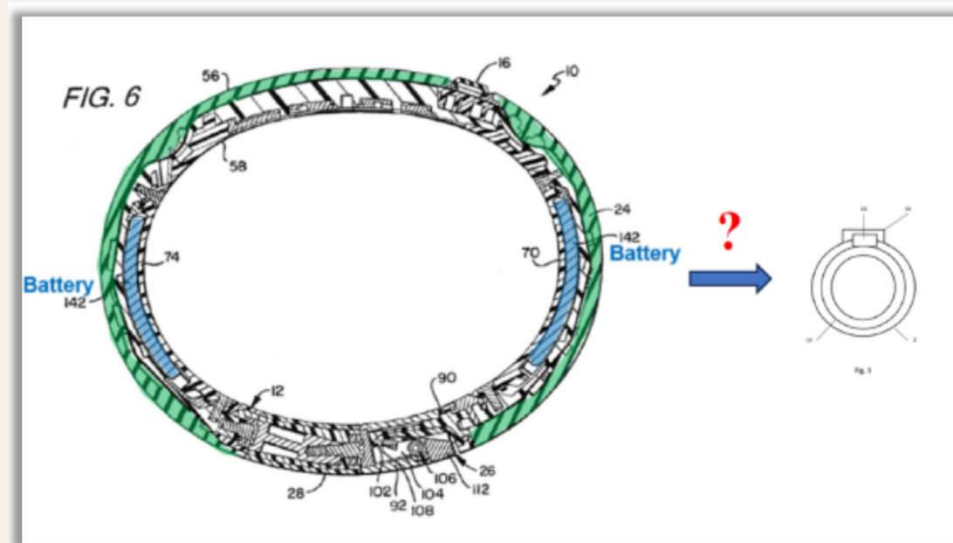
A POSITA Would Not Combine Schröder With Mestas

Q. Doctor, I'm talking about the battery of Figure 6. How much smaller would you have to make it too have it fit in the ring? ... How big a scaling factor would you be comfortable that would require to—that would be required to fit that in a ring?

A. Some place between 5 and 10 – with that not having calculated it.

Q. Have you in your work on this case attempted to find whether there was a battery available in 2013 that was appropriate to fit in Schröder as you've proposed?

A. I did not find it necessary to do that, no.



Ex. 1010, FIG. 6

Paper 18 at 56-60

Ex. 2021 at 312:16-313:12; 321:5-10

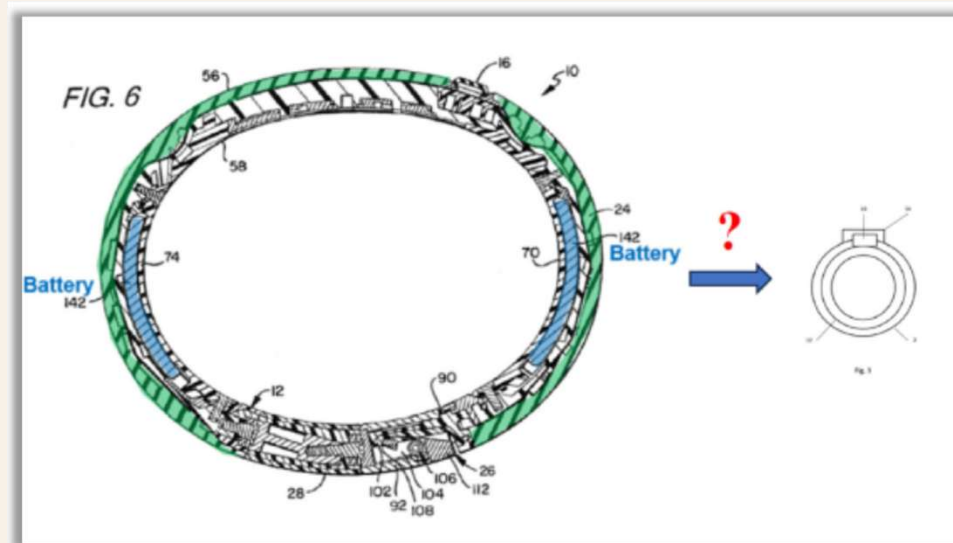
A POSITA Would Not Combine Schröder With Mestas

Q. In 2013 when you were working on this ring design, were you aware of any off-the-shelf curved batteries that would work for a ring form factor that you were designing?

A. There were curved cells, but I – to my recollection, there weren't any that would be drop-linked for our application.

Q. Could a curved cell for a wrist wearable work for a ring form factor?

A. If the ring was very, very, very big, but for our application, the sizes of the other wearables that were out there were nowhere near where we needed them to be. Capacity was great, but the size was just massive. There was no way it would work.



Ex. 1010, FIG. 6
Paper 18 at 34-35, 56-60
Ex. 2024, 188:4-17

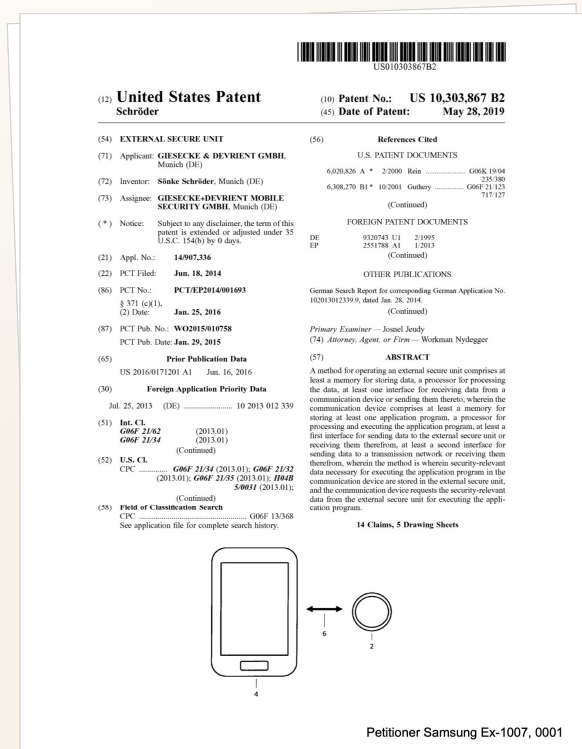
A POSITA Would Not Combine Schröder With Mestas

181. The power requirements of Schröder and Mestas would also be different, given that Mestas is constantly monitoring health conditions and Schröder only takes vein pattern images in a security validation event. Given the typically low power requirements of Schröder's intended RFID and NFC applications, and its description of the battery as optional, a POSITA would not be motivated to combine the references, or have a reasonable expectation of success in doing so. Indeed, as

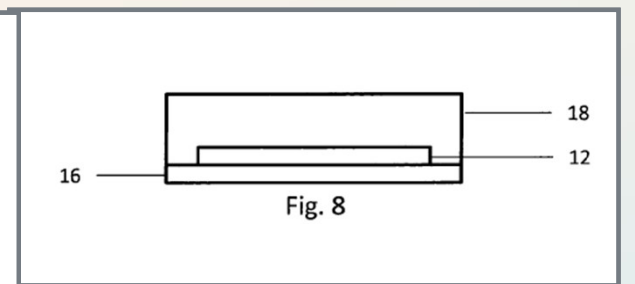
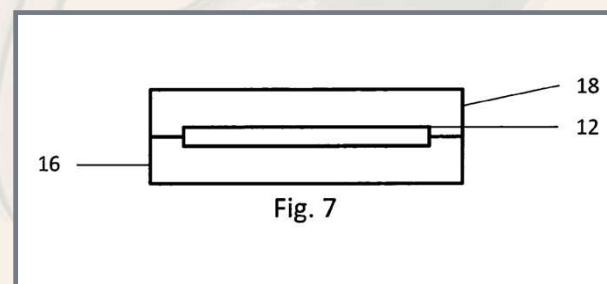
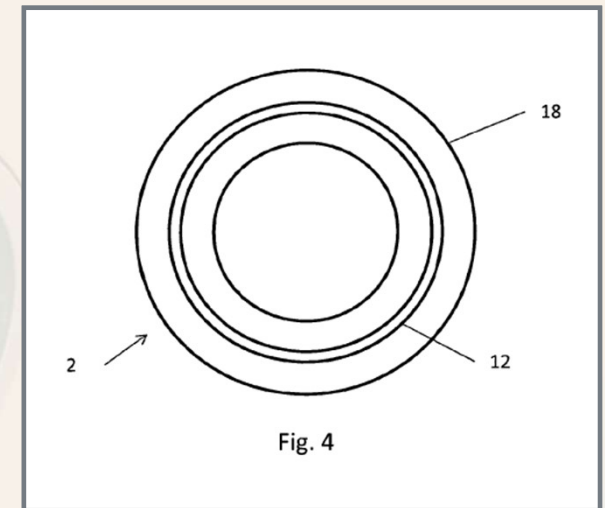
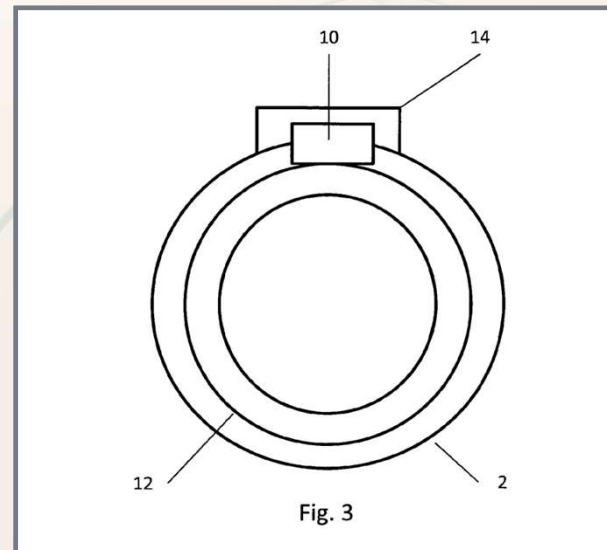
182. Dr. Anthony also neglects to address the fact that unlike coin or button cells, flexible or curved batteries include flexible packaging materials such as aluminum laminated films that house the electrodes and electrolyte. Ex. 2026. Thus even if the battery itself could be miniaturized—and there is no evidence in the record that such miniaturized batteries with the required power requirements existed—a curved cell would have required a POSITA to separately address the issue of battery packaging that also requires real estate which is already limited when designing a finger-worn wearable ring device.

Ex. 2018, (Dr. Mercier) at ¶¶ 181-182

Schröder's Ring Halves are Not Interior/Exterior Bounding Members



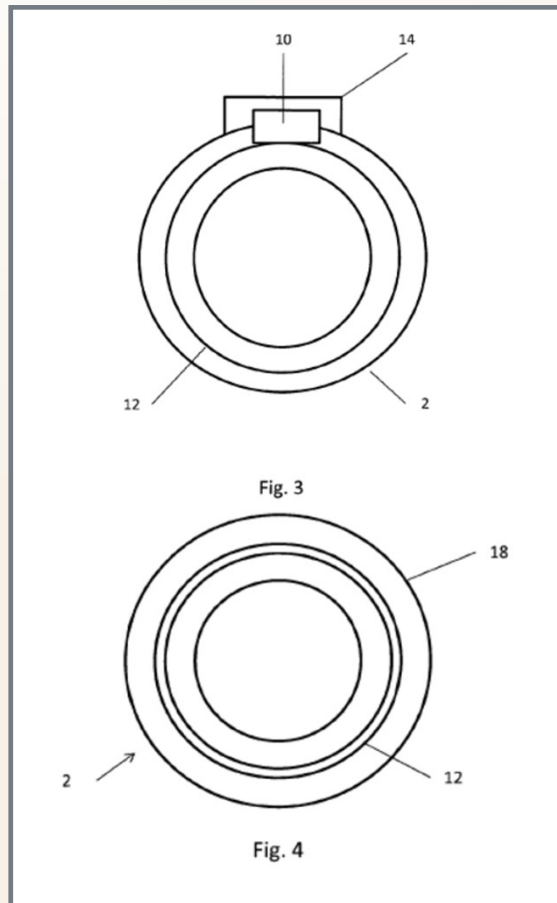
Ex. 1007
Paper 18 at 61-63
Paper 37 at 10-16



Ex. 1007, Figs. 3, 4, 7, and 8

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

The ITC Made Certain Findings Regarding Schröder



Ex. 1007, Figs. 3, 4

While Niwa and Schröder are both directed to ring-based devices, respondents have not shown by clear and convincing evidence that one of ordinary skill in the art would combine them to arrive at the invention of claim 1. *PharmaStem Therapeutics*, 491 F.3d at 1360 (an obviousness defense requires “clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process”).

First, Schröder’s design, while disclosing separate housing components, only contemplates the inclusion of an inlay between them. Schröder at 8:54–57 (regarding Fig. 3), 12:4–9 (regarding Fig. 4). Dr. Rosing credibly testified that one of skill would understand that the thickness of Schröder’s inlay is on the order of 100 microns. Rosing Tr. at 1218:18–25. This stands in stark contrast to the battery in Niwa’s sensor, which is between two and five mm, or at least 20 times the thickness of the inlay. See Niwa at [0201]. Respondents provide no logical reason why one of skill would modify Niwa’s ring to accommodate Schröder’s 100-micron inlay, when Niwa’s components take up a much larger volume.

Ex. 2122, 101

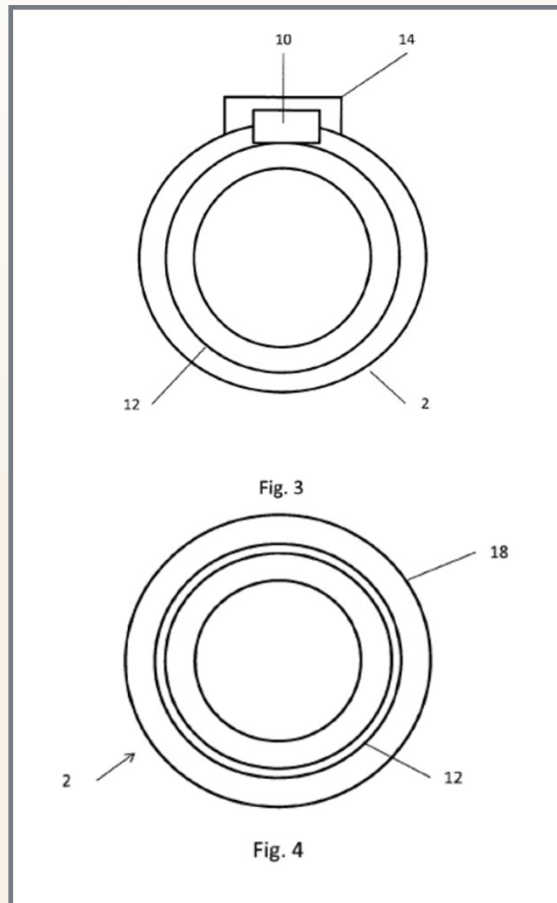
-1077 Paper 37, 9-12

-1078 Paper 38, 4, 9-10

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

38

The ITC Made Certain Findings Regarding Schröder



Ex. 1007, Figs. 3, 4

Respondents argue that Schröder “shows a cavity formed by the internal and external housing components, in which the battery would reside.” Resp. Br. at 49, *citing* Alarcon Tr. at 1000:8–15, RDX-0001C-104; and Schröder at Fig. 4. Schröder, however, does not in fact disclose that the battery would be in the cavity of Fig. 4. Schröder discusses the possibility of a battery (although it does not show it) when addressing Fig. 3 but not when addressing the embodiment shown in Fig. 4. Schröder at 11:46–67. In Fig. 3, the chip module 10 is disposed above and outside of the inlay 12. While Schröder explains that the battery is “connected to the chip module 10” and that it may be used “to increase the range of the antenna coil 8” or “to operate alternative communication channels” and “electronic components,” there is no disclosure in Schröder that the battery is disposed in the inlay embodiment of Fig. 4. While respondents contend that “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,” Resp. Br. at 50 (emphasis removed), *citing* Alarcon Tr. at 1000:7–1001:11, there is, simply, no such disclosure in Schröder. Read in context, the evidence supports that one of skill would understand that Schröder’s battery would be placed adjacent to the chip module 10 of Fig. 3.

Ex. 2122, 114-115

-1077 Paper 37, 9-12

-1078 Paper 38, 4, 9-10

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

39

Schröder Fails To Disclose Limitations 1[b], 11[c], 14[b]


 US 10,303,867 B2

(12) United States Patent
Schröder

(10) Patent No.: US 10,303,867 B2
(45) Date of Patent: May 28, 2019

(54) EXTERNAL SECURE UNIT
(71) Applicant: GIESECKE & DEVRIENT GMBH
 Munich (DE)
(72) Inventor: Steike Schröder, Munich (DE)
(73) Assignee: GIESECKE-DEVRIENT MOBILE SECURITY GMBH, Munich (DE)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 14/907,336
(22) PCT Filed: Jun. 18, 2014
(86) PCT No.: PCT/EP2014/001693
 § 371 (c)(1).
(2) Date: Jan. 25, 2016
(87) PCT Pub. No.: WO2015/010758
 PCT Pub. Date: Jan. 29, 2015

(65) Prior Publication Data
 US 2016/0171201 A1 Jan. 16, 2016

(30) Foreign Application Priority Data
 Jul. 25, 2013 (DE) 10 2013 012 339

(51) Int. Cl.
G06F 21/62 (2013.01)
G06F 21/34 (2013.01)
 (Continued)

(52) U.S. Cl.
 CPC **G06F 21/34** (2013.01); **G06F 21/32** (2013.01); **G06F 21/05** (2013.01); **H04B 5/001** (2013.01);
 (Continued)

(58) Field of Classification Search
 CPC G06F 13/368
 See application file for complete search history.

(56) References Cited
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 (Continued)

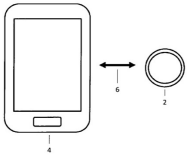
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 (Continued)

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 (Continued)

Primary Examiner—Joanell Jeady
(74) Attorney, Agent, or Firm—Woodman Nydegger

ABSTRACT
 A method for operating an external secure unit comprises at least a memory for storing data, a processor for processing the data, at least one interface for receiving data from a communication device or sending them thereto, wherein the communication device comprises at least a memory for storing at least one application program, a processor for processing and executing the application program, at least a first interface for sending data to the external secure unit or receiving them therefrom, at least a second interface for sending data to a transmission network or receiving them therefrom, wherein the method is wherein security-relevant data necessary for executing the application program in the communication device are stored in the external secure unit, and the communication device requests the security-relevant data from the external secure unit for executing the application program.

14 Claims, 5 Drawing Sheets



Petitioner Samsung Ex-1007, 0001

Ex. 1007, 11:46-50
Paper 18 at 61-64.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

40

Schröder and Mestas Fail To Disclose Limitations 1[b], 11[c], 14[b]

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

OURARING, INC.,
Patent Owner.

IPR2024-01077

U.S. Patent No. 10,139,859

DECLARATION OF DR. PATRICK MERCIER

Patent Owner Oura Ex. 2018. 1

181. The power requirements of Schröder and Mestas would also be different, given that Mestas is constantly monitoring health conditions and Schröder only takes vein pattern images in a security validation event. Given the typically low power requirements of Schröder's intended RFID and NFC applications, and its description of the battery as optional, a POSITA would not be motivated to combine the references, or have a reasonable expectation of success in doing so. Indeed, as

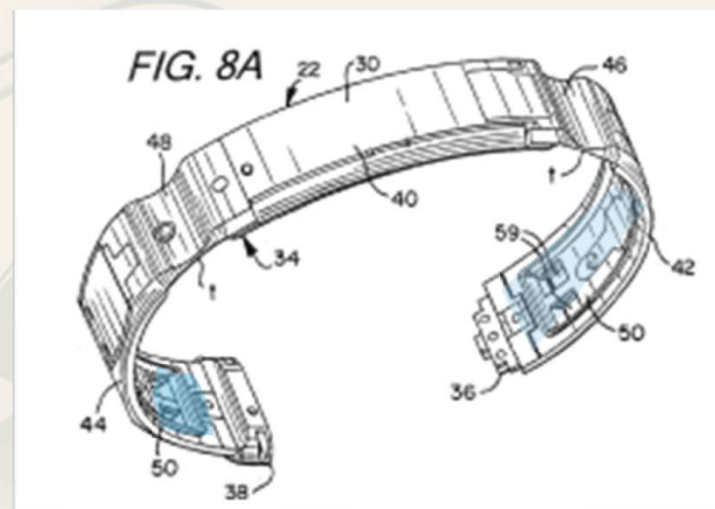
Ex. 2018, ¶ 181
Paper 18 at 61-64

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

41

Petitioner Proposes Adopting Mestas's Battery Design

Schröder-Mestas teaches Elements 1[B] and 11[C]. Ex-1002 ¶222. Schröder-Mestas teaches a curved battery with an arc corresponding to the ring housing and positioned within the cavity of the ring housing. *Id.* Schröder and Mestas each disclose a battery. Ex-1007, 11:46-50, 11:58-61 (powering a display); Ex-1010 ¶143. As explained above in Section XII.A.2.d (Ground 1, Elements 1[B] and 11[C]), Mestas's Figure 6 (below) shows "batteries 142 [blue] have a curvilinear or curved configuration." Ex-1010 ¶¶157, 168. It would have been obvious, in view of Mestas, that this shape allows the batteries to be positioned in recessed compartments 50, 52 without increasing the wearable device's thickness and to allow for an elongated battery without stressing the battery or the housing. Ex-1010 ¶168; Ex-1002 ¶222.



Ex-1010, Fig. 8A, Paper 1, 56-67

Paper 1, 56

Ex-1010, Fig. 8A, 15 (showing 50, 52)

Petitioner Proposes Adopting Mestas's Battery Design

OUTSIDE ATTORNEYS' EYES ONLY - PROTECTIVE ORDER MATERIAL
U.S. Patent No. 10,139,859
Petitioner's Reply

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

OURARING INC.
Patent Owner.

Case No. IPR2024-01077
U.S. Patent No. 10,139,859

PETITIONER'S REPLY IN SUPPORT OF
INTER PARTES REVIEW
OF U.S. PATENT NO. 10,139,859

A POSITA would have been motivated to implement Mestas's curved battery *teaching*, appropriately sized, into Schröder to avoid increasing the ring's thickness or straining the battery or housing. Pet., 53-54.

Paper 23, 18

Schröder Fails To Disclose Limitations 1[b], 11[c], 14[b]

Q. Have you in your work on this case attempted to find whether there was a battery available in 2013 that was appropriate to fit in Schröder as you've proposed?

A. I did not find it necessary to do that, no.

Ex. 2021, 321:5-10
Paper 18. 32-35, 61-64

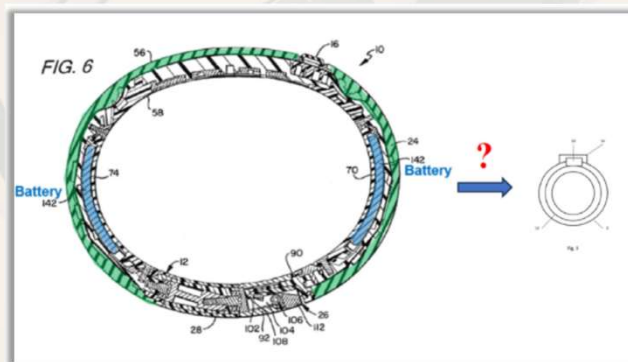
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

44

Schröder Fails To Disclose Limitations 1[b], 11[c], 14[b]

Q. Doctor, I'm talking about the battery of Figure 6. How much smaller would you have to make it too have it fit in the ring? ... How big a scaling factor would you be comfortable that would require to—that would be required to fit that in a ring?

A. Some place between 5 and 10 – with that not having calculated it.



Ex. 2021, 313:12
Paper 18, 32-35, 61-64.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

45

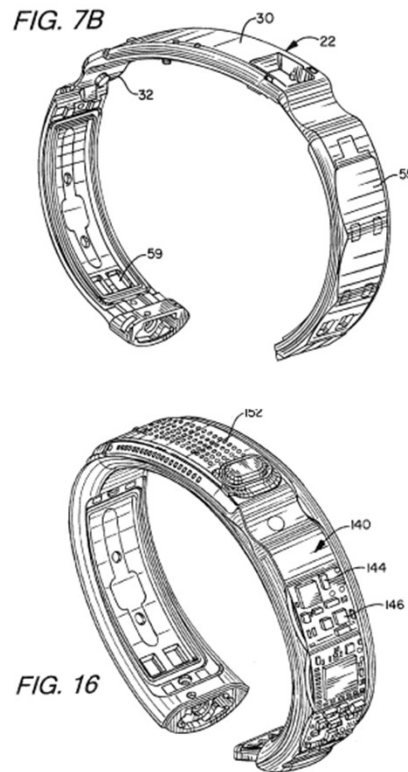
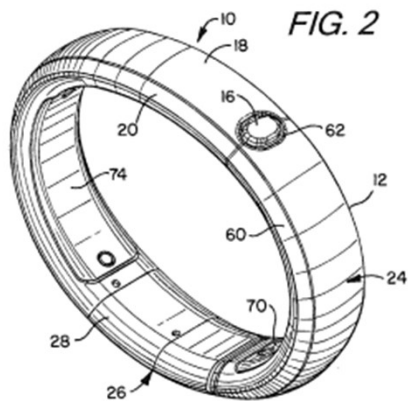
Schröder Fails To Disclose Limitations 1[b], 11[c], 14[b]

181. The power requirements of Schröder and Mestas would also be different, given that Mestas is constantly monitoring health conditions and Schröder only takes vein pattern images in a security validation event. Given the typically low power requirements of Schröder's intended RFID and NFC applications, and its description of the battery as optional, a POSITA would not be motivated to combine the references, or have a reasonable expectation of success in doing so. Indeed, as

182. Dr. Anthony also neglects to address the fact that unlike coin or button cells, flexible or curved batteries include flexible packaging materials such as aluminum laminated films that house the electrodes and electrolyte. Ex. 2026. Thus even if the battery itself could be miniaturized—and there is no evidence in the record that such miniaturized batteries with the required power requirements existed—a curved cell would have required a POSITA to separately address the issue of battery packaging that also requires real estate which is already limited when designing a finger-worn wearable ring device.

Ex. 2018, (Dr. Mercier) at ¶¶ 181-182

Mestas's battery design teaches away from the '859 patent



- Mestas has a battery cavity for batteries formed by battery recess 59 and outer housing cap 74.
- The battery cavity and PCB cavity are separated by Mestas's spine member.
- A POSITA adopting Mestas's battery solution into a ring design would create a ring where:
 - The battery is not designed to arc approximate to the ring housing arc, (shown in figure 2) but an internal spine member's battery recess.
 - The battery is not proximate to the PCB
 - The battery and other components do not share a cavity

Ex. 1010, Figs. 2, (battery cover 74 sealing off battery cavity 59), 7B, Fig 16 (circuit board in separate cavity)

Paper 37, 6-9,

POSITA Would Apply Teachings Of Prior Art

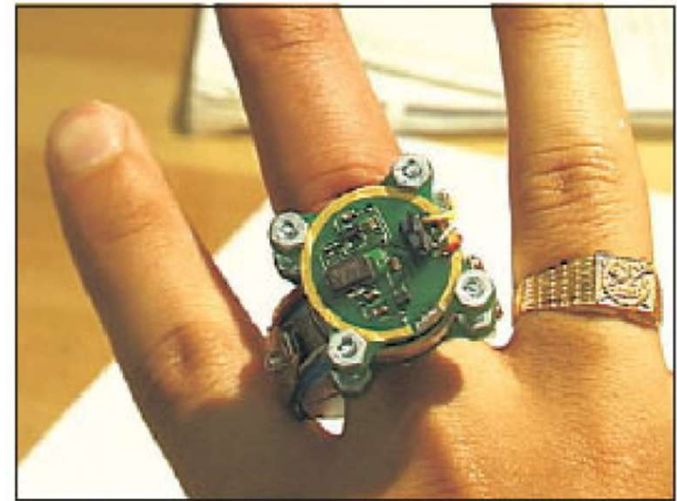
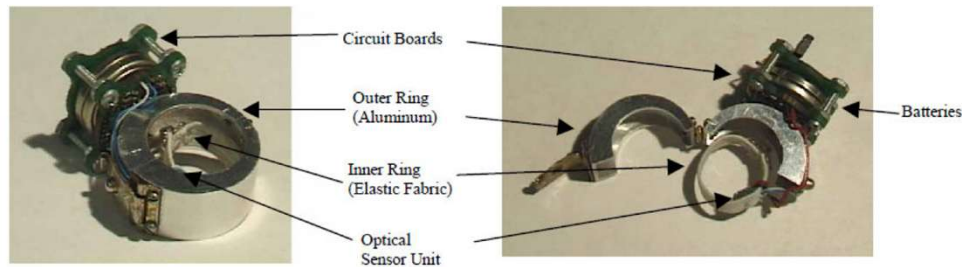


Fig. 9. First prototype ring sensor with RF transmitter powered by a coin-size cell battery.

Ex-1002, para. 43, 71; Ex-1032; Ex-1037; Paper 37 at 12-16

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

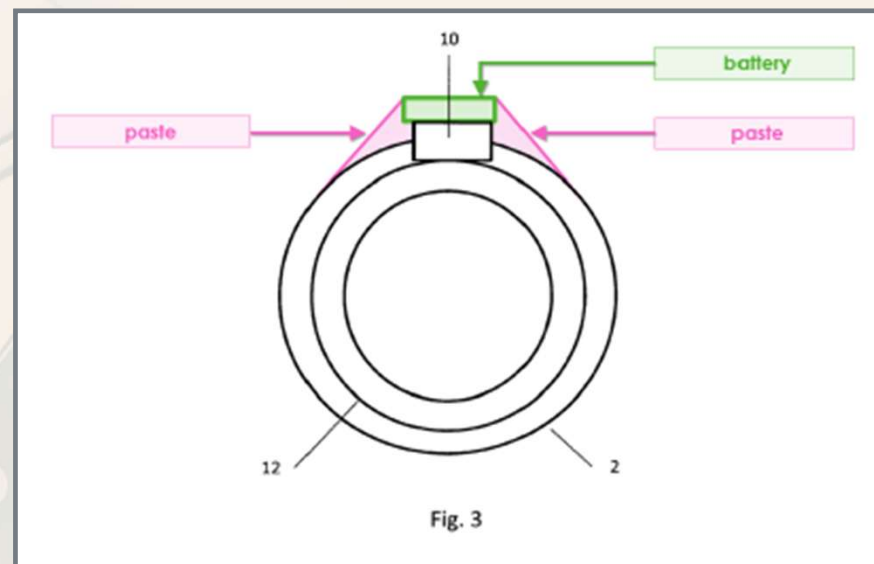
48

POSITA Would Apply Teachings Of Prior Art

- A. And in the 2012-2013 time frame, as I was beginning to launch the center, we were looking at all sorts of different types of wearable device form factors. I was aware of smart ring designs, including, you know, the designs by Professor Harry Asada at MIT, in part because that's where I went to grad school, and I met with him there.

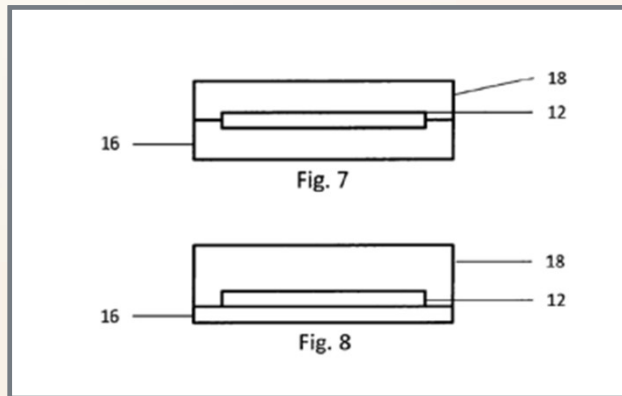
And when I was trying to look at different types of wearables I could potentially make within my center, I had considered designing a wearable smart ring, and I had done some exploration on what would need to go into, you know, the design of such a ring to make it small and comfortable and so on for a user to wear.

And I very quickly concluded that the most logical way to build such a device was to follow the prior art, including Professor Asada's and the other art that I found in the literature on this topic, and place the battery at the top of the device, as all the other prior art did, simply because there's just not enough room in kind of the body, if you will, of the ring that goes around the sides and the bottom of the finger, while making the user comfortable.

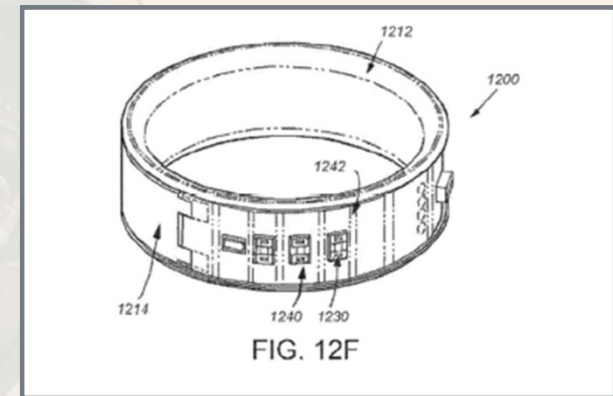


Ex. 1081 at 35:16-36:12
Paper 37 at 12-16

Schröder and Mestas Fails To Disclose Limitations 1[c]/11[d], 1[d]/11[e], and 14[d]



Ex. 1007, Figs. 7, 8
Paper 18, 64-73; Paper 37, 16-17



Ex. 1001, Fig. 12.

Schröder and Mestas Fails To Disclose Limitations 1[c]/11[d], 1[d]/11[e], and 14[d]

Q. Where does the rectangle tell them to put the battery relative to the printed circuit board relative to the antenna coil relative to the sensors, relative to any communication module, relative to any power regulation circuitry? Where does the rectangle tell the POSITA where to put all that stuff and how to arrange it?

* * *

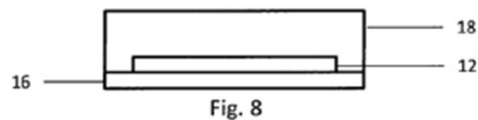
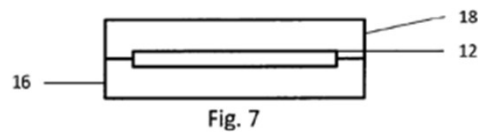
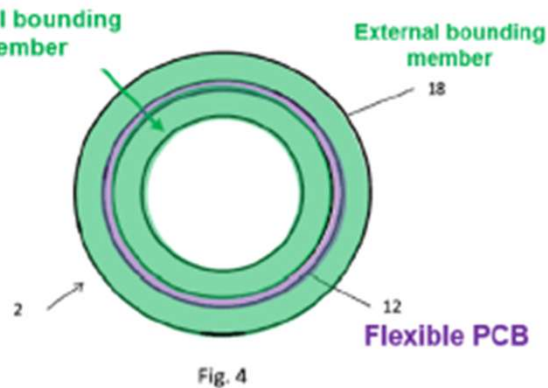
A. Right. And as I was going through my declaration pointing out it's Schröder with the knowledge of a POSITA, and I subsequently started to describe the various arrangements of components inside of that cavity. So knowledge of POSITA in addition to what's disclosed in Schröder gives them the guidance in how to arrange this.

Q. So Schröder doesn't tell them, but the knowledge of the POSITA fills in all those blanks?

A. Yes. And I described that in the subsequent parts of my declaration, for example, on pages 120, 121, 122, 123 and beyond.

*Ex. 2020 at 208:5-209:15
Paper 18, 64-73; Paper 37, 16-17*

Schröder and Mestas Fails To Disclose Limitations 1[c]/11[d], 1[d]/11[e], and 14[d]



Ex. 1007, Figs. 7, 8
Paper 18, 64-73; Paper 37, 16-17

227. Schröder-Mestas teaches Elements 1[D]/11[E]. Schröder-Mestas's computing ring includes a flexible printed circuit board within the cavity proximate to the sensor module. Schröder's finger ring has "a recess into which the inlay 12 is inserted." Ex-1007, 12:8-9. Inlay 12 consists of "flexible carrier material" like PET and Kapton, which are commonly understood to be printed circuit board materials. *Id.*, 12:28-29. For example, as I described above in Section V.B.4, Kapton is commonly used for flexible PCBs because of their thermal stability, mechanical flexibility, and electrical insulation properties. Moreover, their properties allow them to conform or adapt to various shapes and endure bending and flexing during assembly while maintaining its analog or digital circuit functionality. *See also* Ex-

Ex. 1002, ¶ 227,
Paper 18, 64-73; Paper 37, 16-17

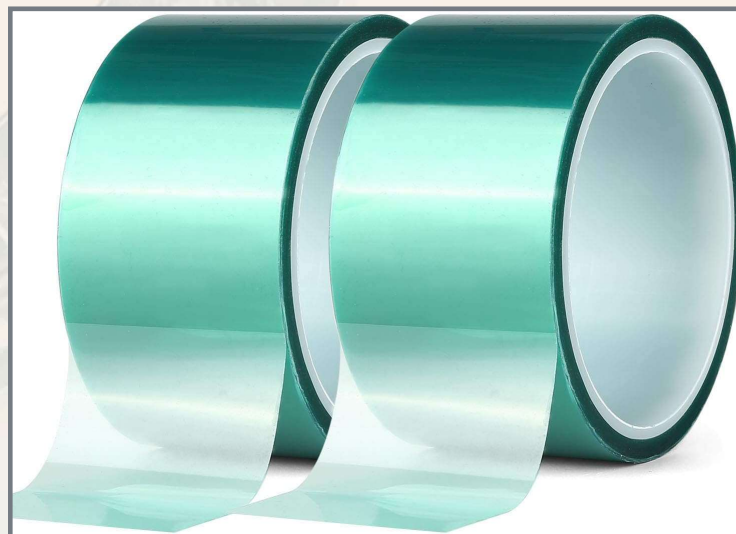
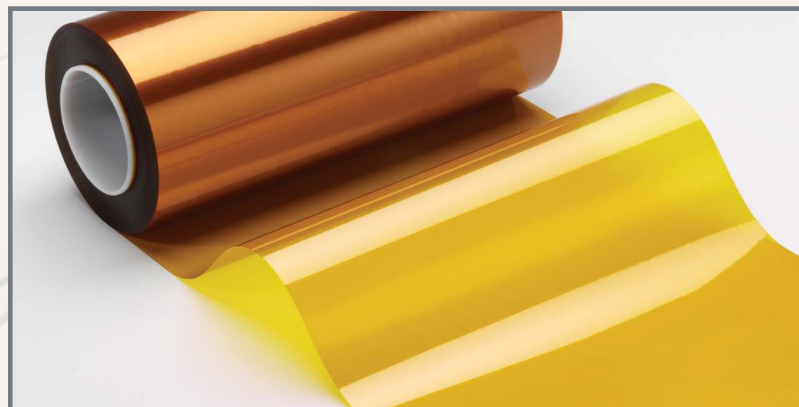
Schröder and Mestas Fails To Disclose Limitations 1[c]/11[d], 1[d]/11[e], and 14[d]

Q. PET, Kapton, et cetera, are carrier materials that would have been understood as materials that are used for a printed circuit board, correct?

A. They could be, but not necessarily so. Printed -- flexible printed circuit boards often use polyimide and other materials as well. But despite that, you know, there's things like Kapton tape that I've used in my own work that I don't use for printed circuit boards but just as thin, you know, substrates on which to place for items or stick things together, for example.

Q. Okay. But you don't disagree that PET and Kapton are materials that could be used for printed circuit boards, correct?

A. That's right. They could be used.



*Ex. 1081, 80:22-81:10
Paper 18, 64-73; Paper 37, 16-17*

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

53

OURA



IPR2024-01078

Samsung Electronics et al. v. Ouraring

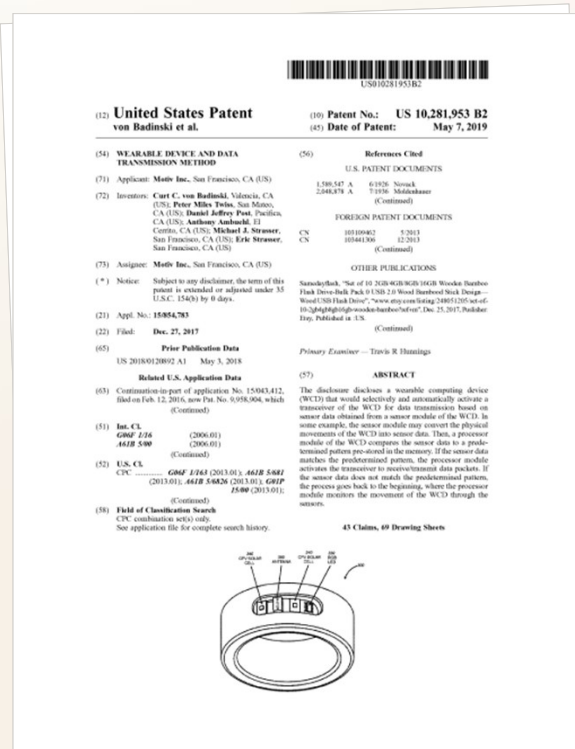
IPR2024-01077, IPR2024-01078

October 29, 2025

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

54

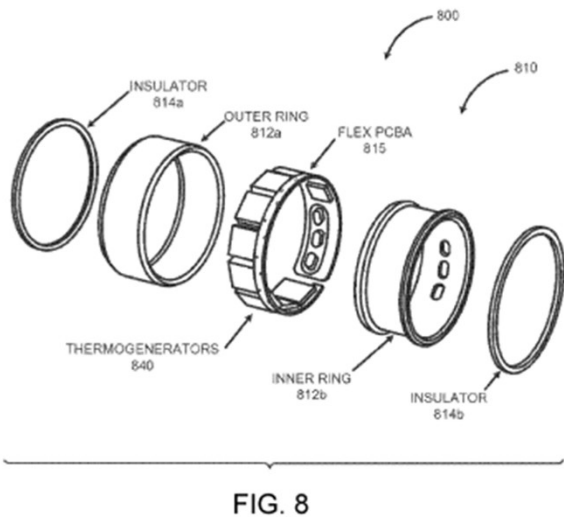
Overview of the '953 Patent



Ex. 1001

- **Title:**
Wearable Device And Data Transmission Method
- **Priority Date:**
November 29, 2013
- **Challenged Claims:**
1-6, 11-15, 38-43

The '953 Patent Claim 1



Ex. 1001

- 1[pre] A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:
- 1[a] *an exterior enclosure structure for receiving the printed circuit board and for being coupled with the interior enclosure portion to form a housing of the wearable computing device;*
 - 1[b] *an exterior enclosure structure for receiving the printed circuit board and for being coupled with the interior enclosure portion to form a housing of the wearable computing device;*
 - 1[c] *a curved, rechargeable battery, disposed proximate the exterior enclosure, the rechargeable battery configured for being wirelessly charged;*
 - 1[d] *a flexible printed circuit board disposed proximate the curved battery, the flexible printed circuit board comprising:*
 - 1[e] *a plurality of components, the plurality of components disposed on the flexible printed circuit board, the plurality of components comprising an electromagnetic induction or RF charging mechanism, a microprocessor, a sensor module, a light emitting diode, and a transceiver;*
 - 1[f] *wherein at least one of the interior enclosure portion and the exterior enclosure structure defines one or more windows that facilitates at least one of data acquisition, data transmission, electromagnetic radiation acquisition, and electromagnetic transmission.*



The '953 Patent: Summary of Grounds

1	Mestas/Asami (Claims 1-6, 11-14)
2	Mestas/Schröder (Claims 1-6, 11, 14-15, 38-39, 41-43)
3	Schröder/Mestas(Claims 1-6, 11, 14-15, 38-39, 41-43)
4	Schröder/Mestas/Asami (Claims 11-15)
5	Schröder/Mestas/Wissmar (Claims 40-43)

OURA



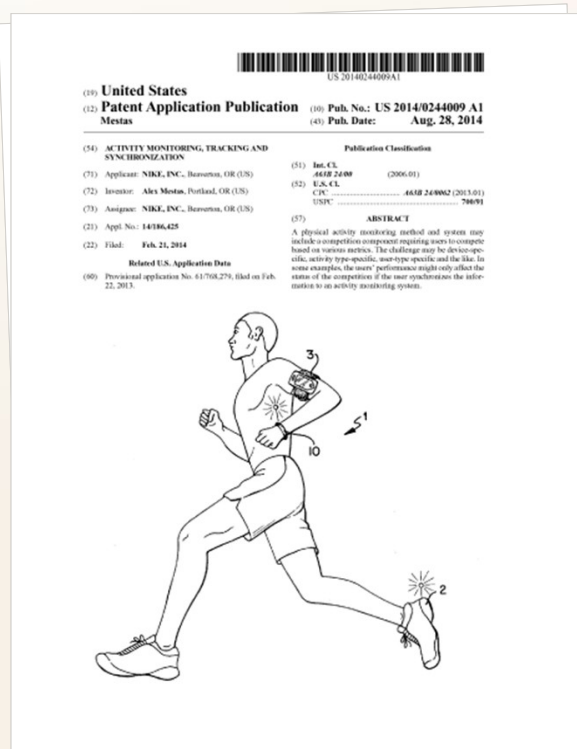
Deficiencies of Ground 1: Mestas/Asami

IPR2024-01078

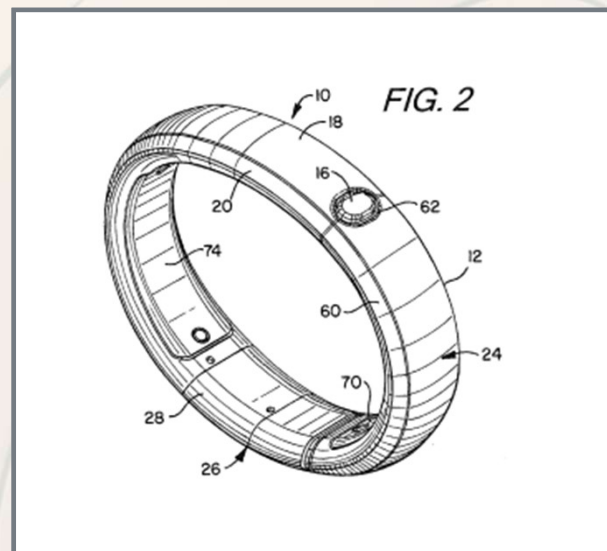
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

58

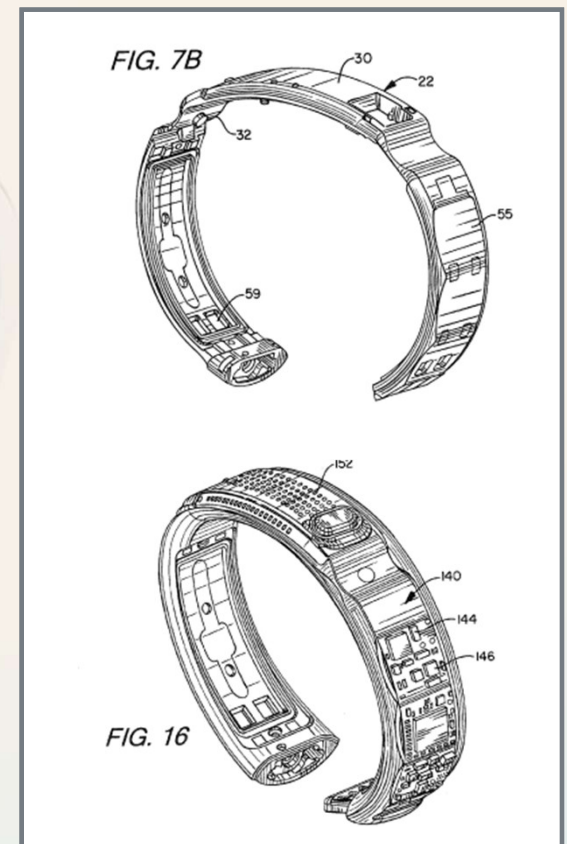
Mestas



Ex. 1010
Paper 19 at 18, Paper 38 at 2



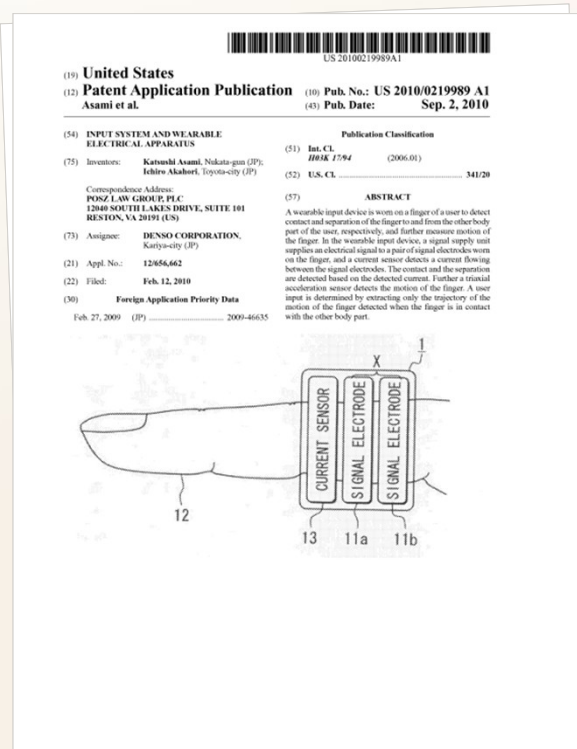
Ex. 1010, Figs. 2, (showing unitary housing enclosing spine member) 7B, Fig 16, (showing spine member)



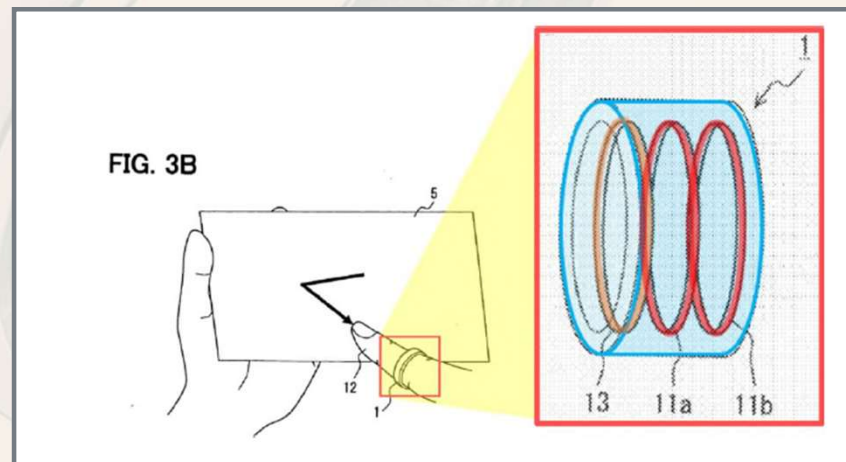
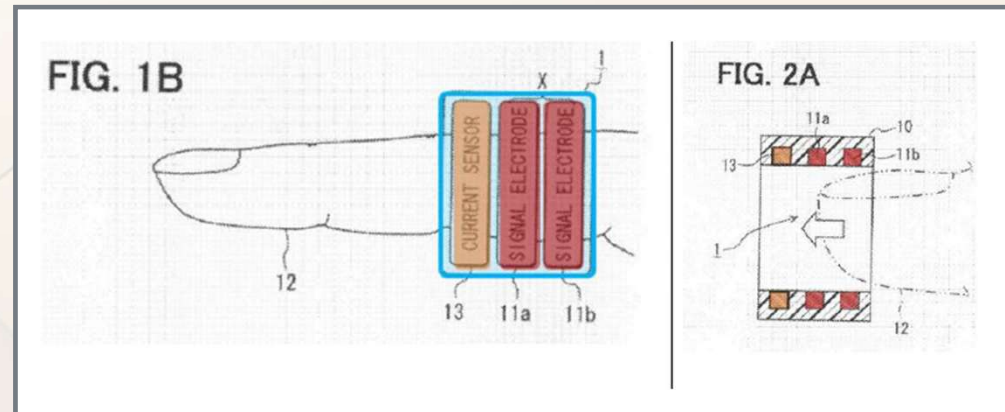
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

59

Asami



Ex. 1014
Paper 19, 19-21



Ex. 1014, Figs., 1B, 2A, 3B

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

A POSITA Would Not Combine Mestas with Asami

Devices have different functions (physiological vs. human-computer interface)

Devices include different components and different power requirements, no motivation to combine references into a ring device.

Mestas' device is worn on the wrist. Mestas only considers deploying the device on large parts of the body. (chest, arm, head, ankle, or thigh)

Mestas' components cannot fit in Asami's Device or any Ring Device and Petitioner did not explain how a POSITA would redesign Mestas

Paper 19 at 22-27, 43-45; Paper 38 at 5-6

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

61

A POSITA Would Not Combine Mestas with Asami

A POSITA would have been motivated to combine the functionality of Mestas's athletic monitoring device with Asami's finger-ring because a POSITA would have found it beneficial to implement Mestas's device in a more compact form that is not intrusive or obtrusive and is easier for the user to remember to wear.

Paper 3 at 19

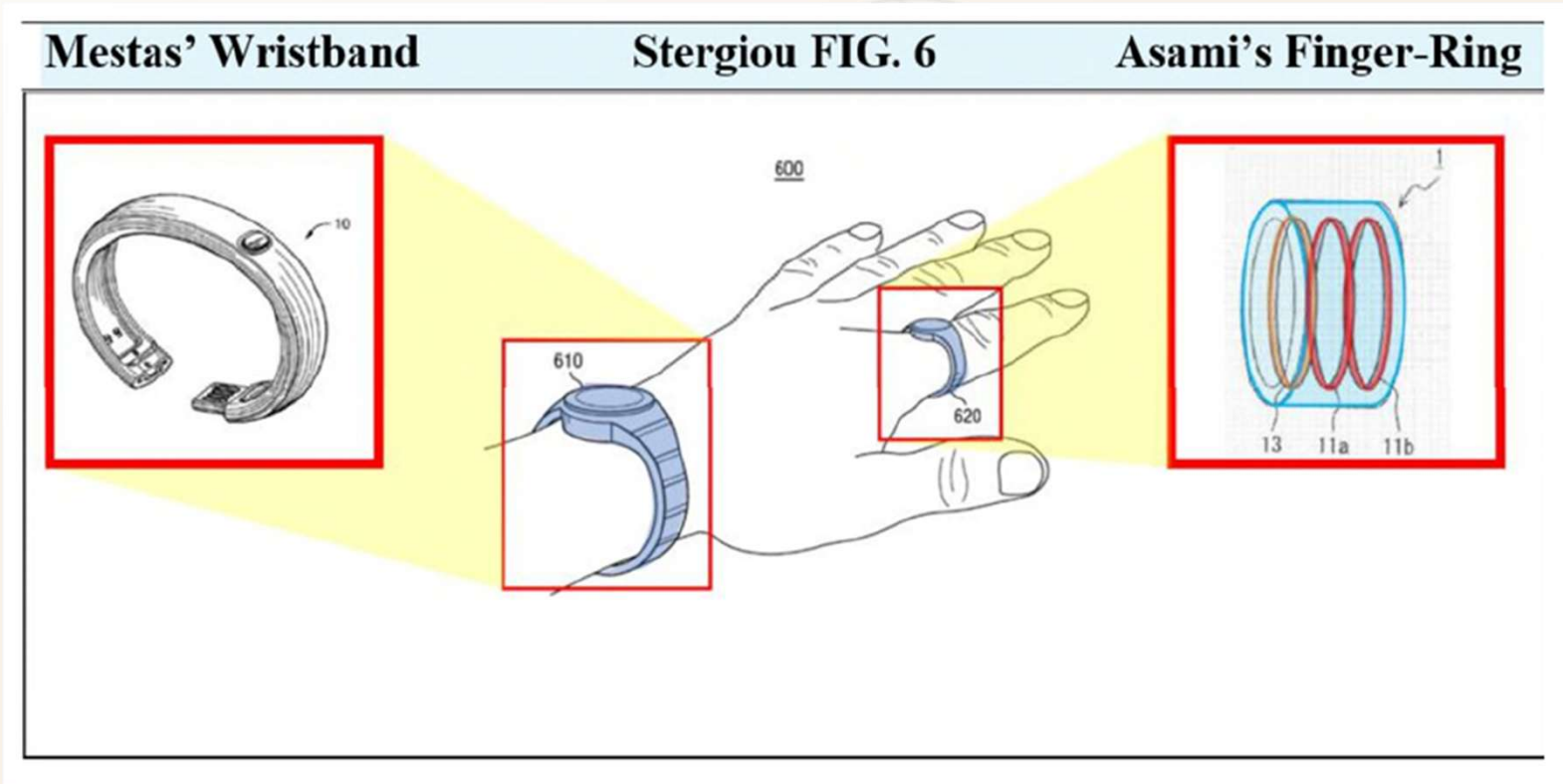
Wearable devices are an emerging technology with many applications for the wearer. They can improve lifestyles, ease access to technology and help monitor activity within the wearer's body. However, bulky wearable devices can be intrusive or interfere with a person's daily life. As one strives to design a small and compact wearable device, the power capacity is limited due to its small size. In this regard, the wearable device may require a charging operation frequently which causes greater inconvenience for a wearer.

Ex. 1001, 1:31-32; Paper 19 at 24.

This invention overcomes the disadvantages of the prior art by providing a wearable computing device (WCD) in the shape of a ring. The wearable computing device can be worn for extended periods of time and can take many measurements and perform various functions because of its form factor and position on the finger of a user.

Ex. 1001, 2:40-45; Paper 19 at 24.

A POSITA Would Not Combine Mestas with Asami

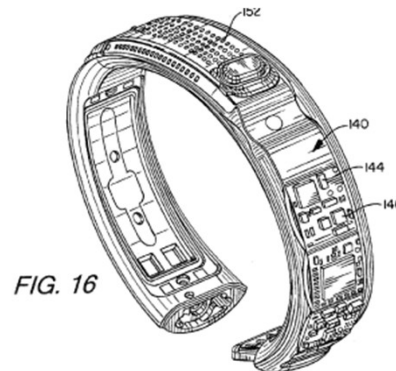
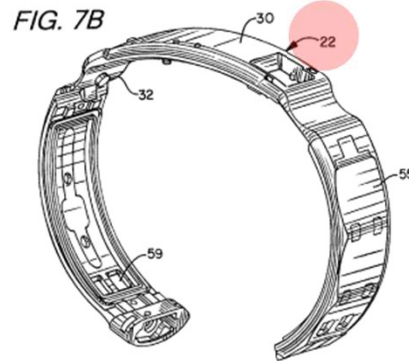
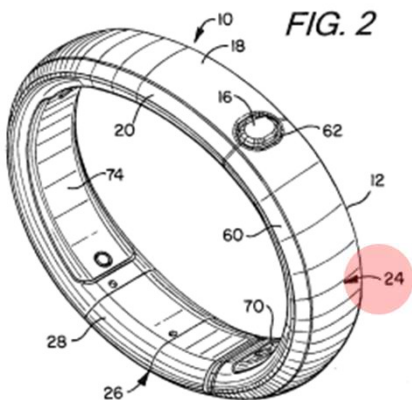


Ex. 1010; Ex 1014; Ex. 2012; Ex. 2018, ¶ 96; Paper 19, 25

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

63

Mestas's design teaches away from the '953 patent (1[a], 1[b])

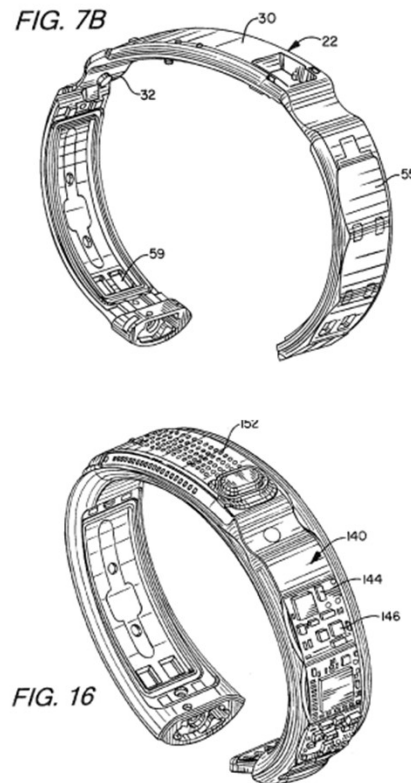
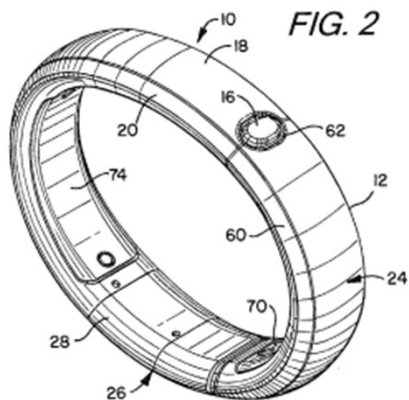


- Petitioner only cites to Mestas for this element and points to inner and outer portions of encasement member 24 as the inner and outer portions of the claims
- Mestas does not teach two distinct “interior enclosure portion” and “exterior enclosure structure” coupled together to form the housing.

Ex. 1010, Figs. 2, (Exterior housing), 7B, 16 (spine member 22)

Paper 3, 22-25; Paper 19, 30-32,

Mestas's design teaches away from the '953 patent (1[c], 38[c])

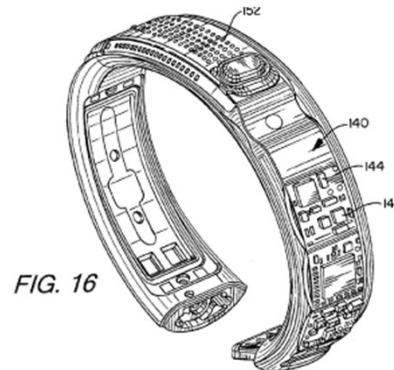
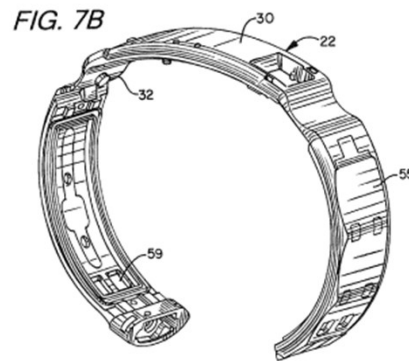
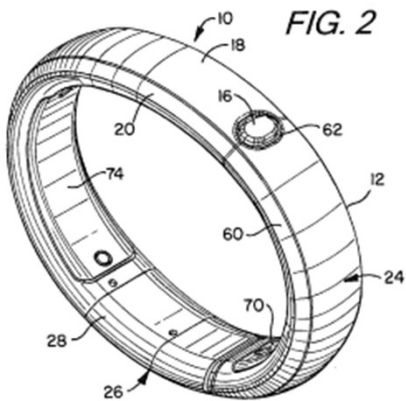


Ex. 1010, Figs. 2, (battery cover 74 sealing off battery cavity 59), 7B, Fig 16 (circuit board in separate cavity)

- Petitioner only cites to Mestas for this element
- Mestas has a battery cavity for batteries formed by battery recess 59 and outer housing cap 74.
- The battery cavity and PCB cavity are separated by Mestas's spine member.
- Mestas's battery solution miniaturized into a ring design would create a ring where:
 - The battery is not proximate the exterior enclosure- it is separated from the exterior enclosure by spine member 22
 - The battery is not proximate to the PCB- it is separated from the PCB by spine member 22

Paper 3, 25-26 Paper 19, 32-34, Paper 38, 1-4

Mestas's design teaches away from the '953 patent (1[d], 38[b])



Ex. 1010, Figs. 2, (Exterior housing), 7B, 16 (spine member 22)

- Petitioner only cites to Mestas for this element. Petitioner maps the interior portion of housing 24 as the interior enclosure portion of the claims.
- The battery cavity and PCB cavity are separated by Mestas's spine member.
- Mestas's PCB solution miniaturized into a ring design would create a ring where:
 - The PCB is not proximate to the battery- it is separated by spine member 22.
 - The PCB is not enclosed by Petitioner's mapped interior enclosure portion- the exterior portion of the exterior housing encloses Mestas's PCB. (Claim element 1.a)

Paper 3, 25-26 Paper 19, 35-38, Paper 38, 1-4

OURA



Deficiencies of Ground 2/3: Mestas/Schröder, Schröder/Mestas

IPR2024-01078

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

67



POSITA would not combine Mestas/Schröder, Schröder/Mestas

A POSITA would not combine Mestas with Schröder and would instead follow prior art teachings

Mestas's batteries are 5–10X too large, Petitioner's cannot identify a 2013 battery that would work, or explain miniaturization

Schröder's chip module sits above the ring, Schröder's inlay is not a PCB, Schröder's ring halves are not interior/exterior enclosure structures

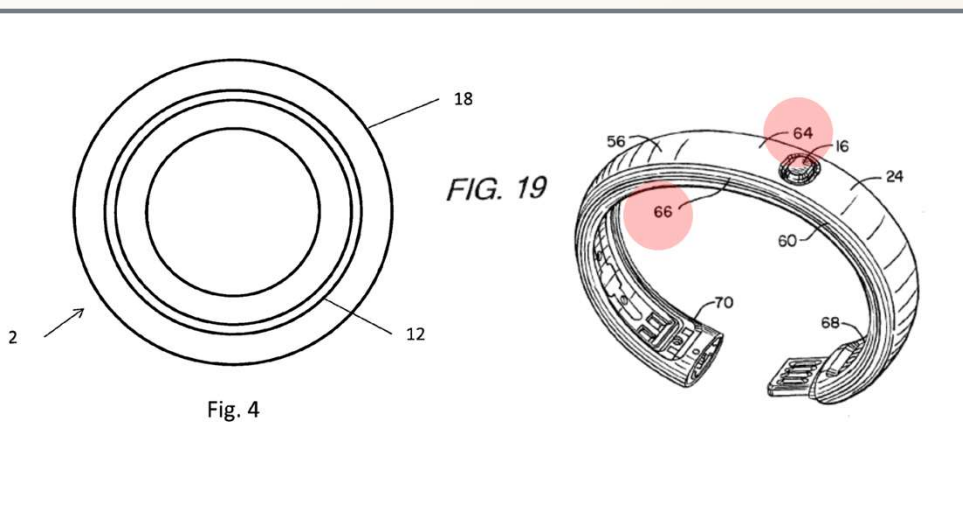
Mestas teaches away from a '953 ring: battery and PCB separated by spine, not proximate, and not in a shared cavity

Paper 3 at 25–26, 65, 73; Paper 19 at 26–27, 32–38, 49–51, 54–57, 60–64, 67–69, 72–73; Paper 38 at 1–14.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

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Claim 38[f]: No “transparent interior enclosure portion” taught or suggested



The finger-ring 2 consists for this purpose of at least two components. A first component consists of metal and a second component consists of plastic. The first component consists e.g. of silver, gold, titanium, steel. Optionally, the first component has e.g. a precious stone arranged therein. Preferably, the first component forms an arc element of more than 180 degrees of the finger-ring 2. The second component consists e.g. of PET, PVC, carbon. The second component

- Mestas teaches a unitary outer encasement surrounding an internal spine member, Schröder teaches ring halves.
- Schröder states some partial arc of the ring halves could be made from PET, which can be transparent, but states that large arcs of the ring halves are made of metal.
- Mestas discloses regions 64, 66 can be transparent not an entire interior enclosure portion.
- There is no disclosure or motivation in the combined Mestas–Schröder teachings to make the entire interior enclosure portion transparent to facilitate a Mestas-derived physiological monitoring system.
- Schröder’s potential need for optical access for a vein sensor does not translate to making the entire interior enclosure portion of a combined Mestas–Schröder ring transparent.

Ex. 1007, Fig. 4., 15:8–15; EX-1010

Paper 19 at 30–38, 41–42, 54–57, 67–69

OURA



Deficiencies of Ground 4: Schröder/Mestas/Asami

IPR2024-01078

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

70

A POSITA Would Not Combine Schröder with Mestas and Asami

Mestas has more advanced gesture recognition, and sensors. A POSITA would not look to Asami to resolve issues.

Devices include different components and different power requirements, no motivation to combine references into a ring device.

Schröder already had difficult fitting components. Adding in Asami and Mestas components is not workable.

OURA



Deficiencies of Ground 5: Schröder/Mestas/Wissmar

IPR2024-01078

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

72

A POSITA Would Not Combine Schröder with Mestas and Wissmar

Wissmar discloses epoxy as a conformal coating, not as a structural interior enclosure member”

Devices include different components and different power requirements, no motivation to combine references into a ring device.

Schröder already had difficult fitting components. Adding in Wissmar and Mestas components is not workable.

Paper 19 at 77-79, Paper 38 at 14-15

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

73

Wissmar's conformal coating is not the structural potting of Claim 40

2 Q. And I think the question that I'm asking
3 is -- is a little bit different, which is could one of
4 skill in the art use epoxy that performs both the
5 function of a conformal coating and also an enclosure?
6 A. Well, I -- I wouldn't call it -- it wouldn't
7 make sense to call it both things at the same time.
8 Either it's a conformal coating, or it's an enclosure.
9 And, yes, you can use epoxy to build either one of
10 those two things, but the conformal coating would be
11 something thin, and then presumably you'd have
12 something else acting as the enclosure, or you make
13 that epoxy really thick and mechanically rigid and
14 sound and so on, and then it becomes a housing.
15 So you can use an epoxy to build either one,
16 but I wouldn't call them the same thing, if that makes
17 sense.

Ex-1085, 101:2-17, Paper 19 at 77-79, Paper 38 at 14-15

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

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OURA



Secondary Considerations

IPR2024-01077

IPR2024-01078



Objective Indicia of Obviousness

Commercial Success

Long-Felt Need

Paper 18 at 77-98

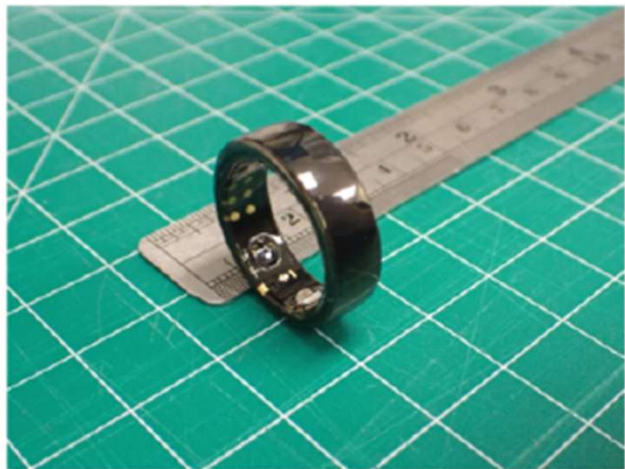
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

76



Nexus

Oura Ring Gen. 3 and 4 practice the Asserted Claims of the '859 and '953 Patents

Oura Ring Gen. 3	Oura Ring Gen. 4
 A photograph of an Oura Ring Gen. 3, a dark-colored ring with a circular sensor on the inside, resting on a green grid surface next to a wooden ruler.	 A photograph of an Oura Ring Gen. 4, a dark-colored ring with a circular sensor on the inside, shown from a top-down perspective.
Ex-2029	Ex-2030

Paper 18 at 77-89; Ex 2018, para 216-246

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Paper 19 at 81-101; Ex. 2018, para 323-348

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Nexus

Oura argues that it is entitled to a presumption of nexus because the products it relies on, its Gen. 3 and Gen. 4, are commercial embodiments and coextensive with the asserted claims. Oura Br. at 31. As detailed above with respect to technical domestic industry, the evidence supports that Gen. 3 and Gen. 4 embody the asserted claims. See also Sarrafzadeh Tr. at 1277:17–20.

*Ex. 2122, 108-110
Paper 37 at 17-20*

Respondents also contend that Oura’s marketing focus has little to do with the technology claimed in the ’178 patent and is directed instead to “mobile app features, not the claimed ring components.” Resp. Br. at 66, *citing* RX-0036C.9–10. That document, however, and those pages in particular, focus on the ring itself and identify one of Oura’s 2023 goals as solidifying “Oura as the gold standard of the wearable industry, as new competitors emerge.” The evidence cited by respondents does not show that Oura’s marketing focus was on unpatented features.

As for whether Oura’s app is responsible for the success of the product, as respondents contend, the evidence supports that success of Gen. 3 and Gen. 4 is tied to the “unique characteristics of the claimed invention.” See *Fox Factory*, 944 F.3d at 1373–74. As Mr. Chapp

testified, for Oura, “[i]t starts off with the ring” and how to “take something that looks really complex and make it look really simple.” Chapp Tr. at 88:2–8 and 89:3–9. This was confirmed by inventor Strasser who stressed the importance of the ring form factor with the technology inside. Strasser Tr. at 573:5–7 and 576:2–12. The evidence supports that “the ring form factor is the foundation of the system that enables the data collection, that then in turn enables the functionality of the device.” Mulhern Tr. at 1271:2–15. Thus, while the app may be part of the user’s experience with the Gen. 3 and Gen. 4, and may be the focus of some of Oura’s marketing efforts, the evidence supports that the driver of the experience is the ring itself.



Commercial Success

A. There are two products that comprise Oura Ring Gen 3, two debiting products. If by Gen 3 Ouraring you mean Oura Ring Heritage and Oura Ring Gen 3 Horizon together, then, **yes, there was some commercial success**, but the emphasis on "some."

* * *

Q. So would you agree with me that Oura Ring Gen 4 had some commercial success?

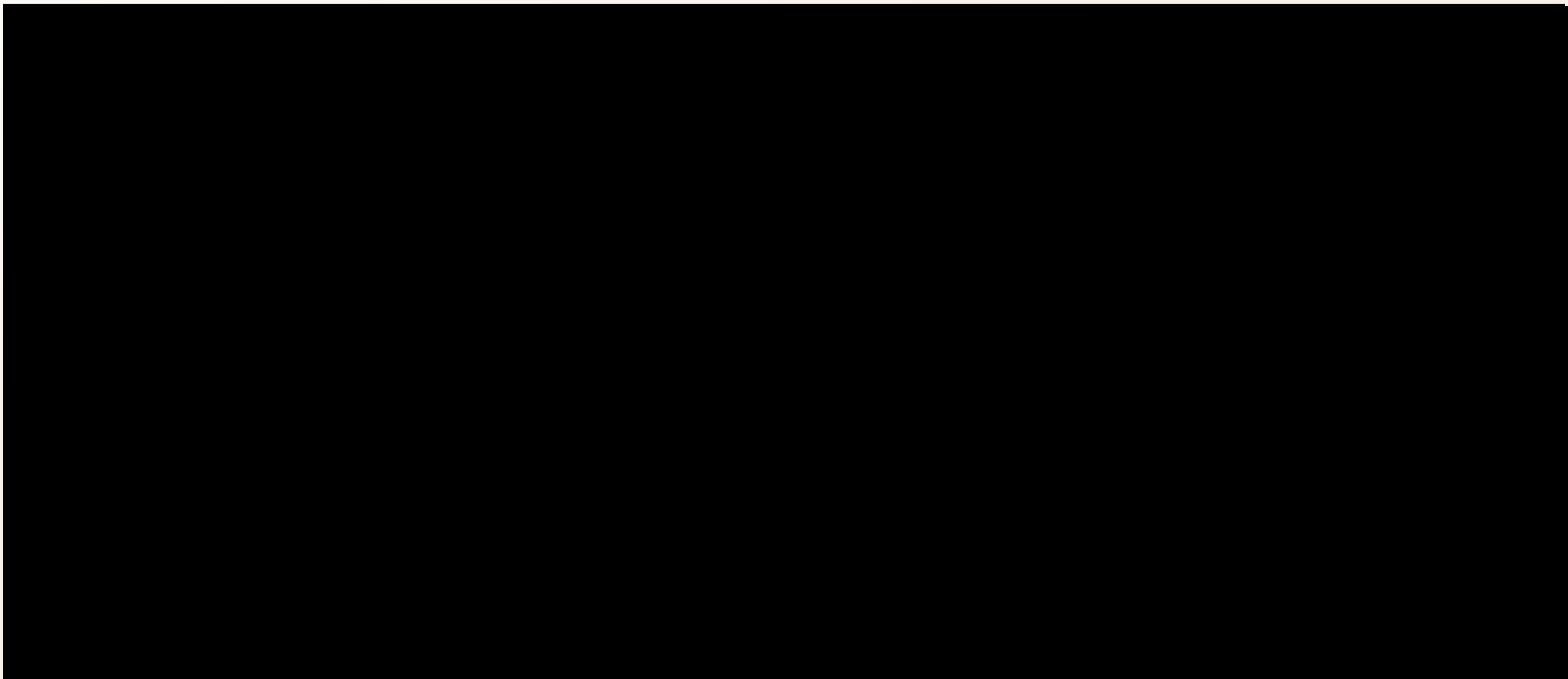
A. **I would be unsurprised if it had at least some commercial success.** But, again, the fact that the sales conflate the data for different products means that it's difficult or impossible to tell the extent that it had.

Ex. 2135, 15:13-17, 18:11-19

Paper 37 at 21



Commercial Success

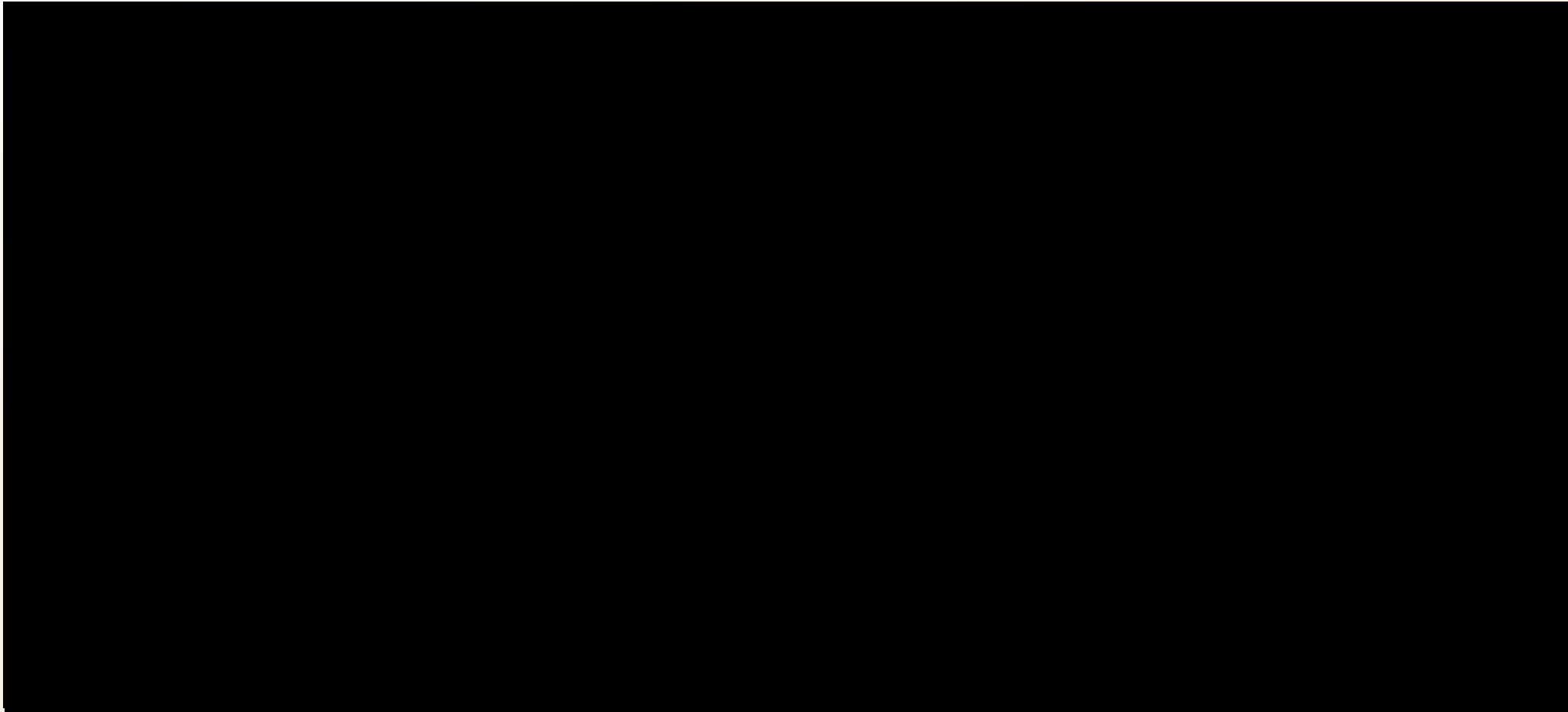


DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

80



Commercial Success



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

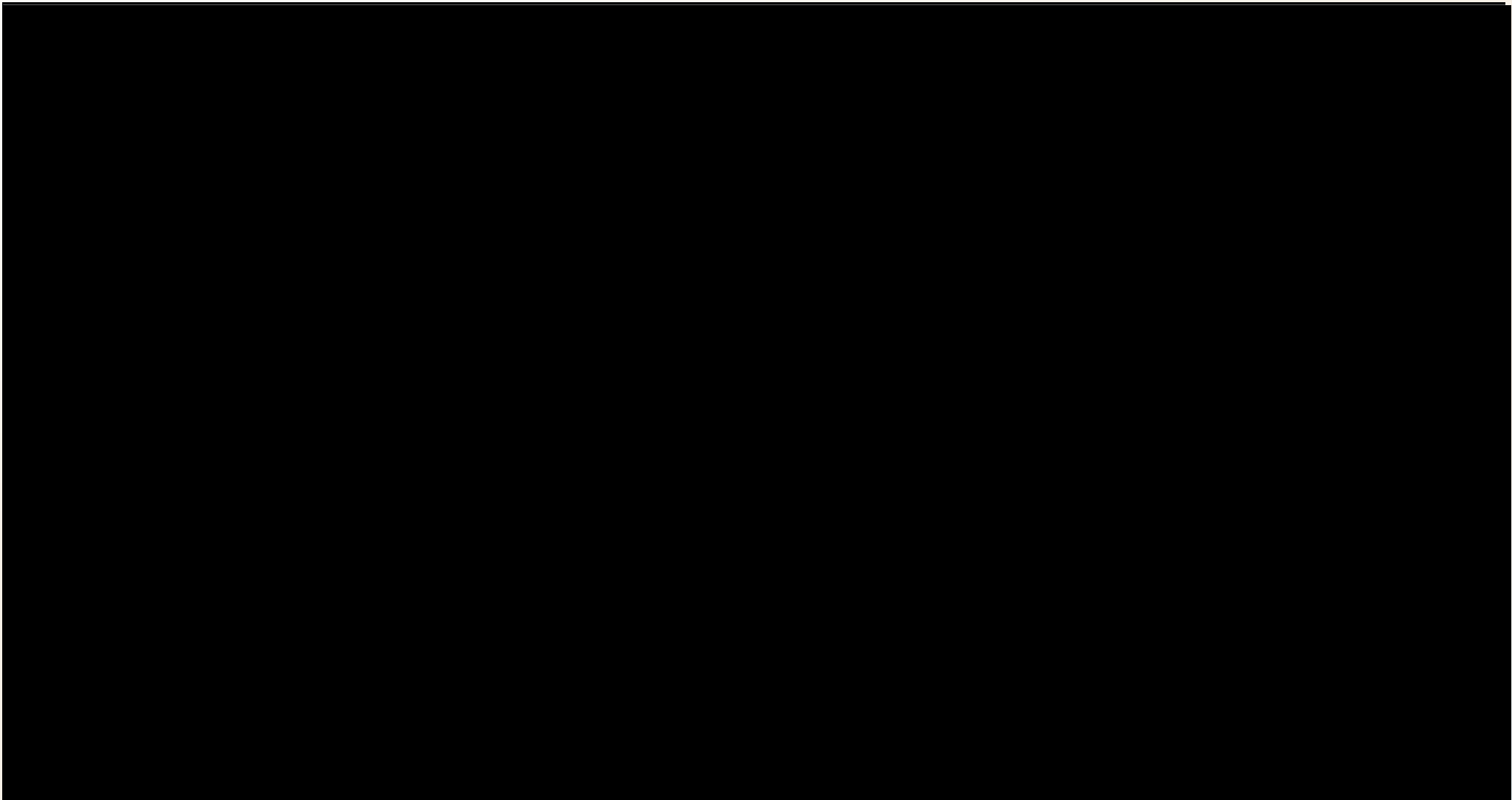
81



Commercial Success

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

82



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE



Commercial Success

Oura argues that the Gen. 3 and Gen. 4 have been commercially successful. *See* Oura Reply at 31–36. The Staff agrees that this commercial success indicates non-obviousness. Staff Br. at 59.

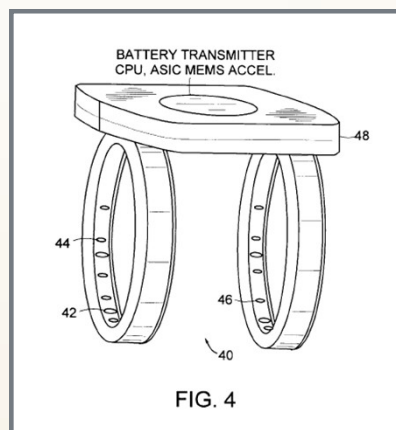
Respondents contend that any alleged commercial success of Gen. 3 and Gen. 4 is due to factors unrelated to the '178 patent claims, which they contend is demonstrated by the failure of the Motiv Ring. Resp. Reply at 64–65.

66. But as explained previously, Oura's marketing expenses are [REDACTED] similar companies and the ratio of marketing expenses to revenues has been steadily decreasing over time. In addition, the evidence supports that revenues from sales of Oura products embodying the claims grew from approximately [REDACTED] in 2022 to [REDACTED] in 2023, and then to [REDACTED] in the first two quarters of 2024. Mulhern Tr. at 1258:7–20; CX-0723C; CX-0581C; CX-0955C, and CX-0958C. As. Ms. Mulhern testified, Oura exhibited a similar growth rate with respect to Oura's membership subscribers, increasing from [REDACTED] in September 2022 to [REDACTED] in September 2023, and then [REDACTED] in March 2024. Mulhern Tr. at 1259:4–9; CX-0042C; and CX-0573C.

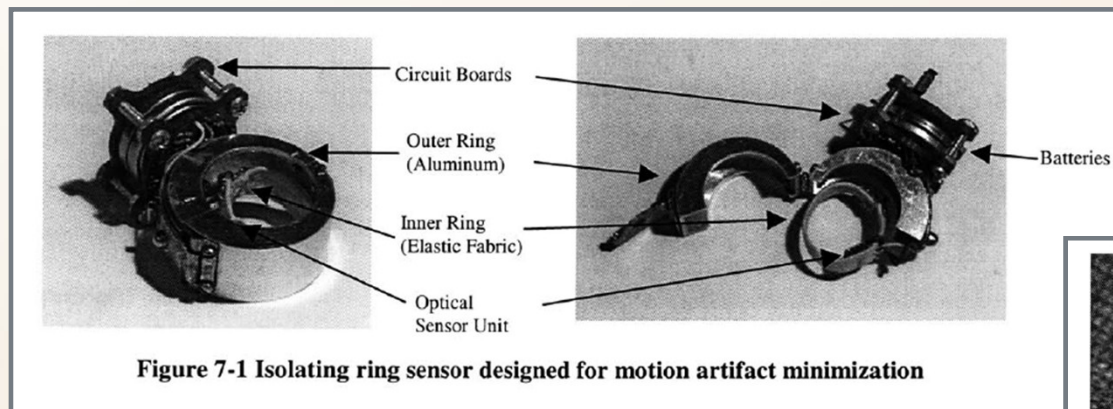
This factor weighs in favor of a determination of non-obviousness for the asserted claims.

*Ex. 2122, 110-112
Paper 37 at 20-28*

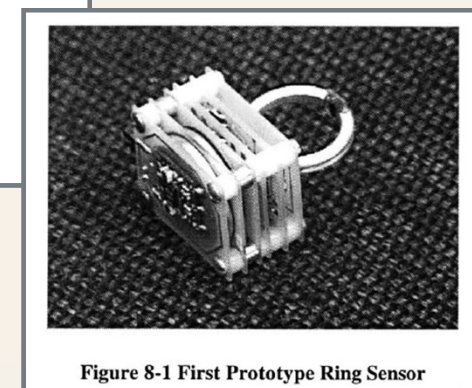
A Long-Felt Need Existed for Finger-Worn Ring Health Trackers



Ex. 2025, Fig. 4



Ex 1035, Figs. 7-1, 8-1.



Ex. 1005

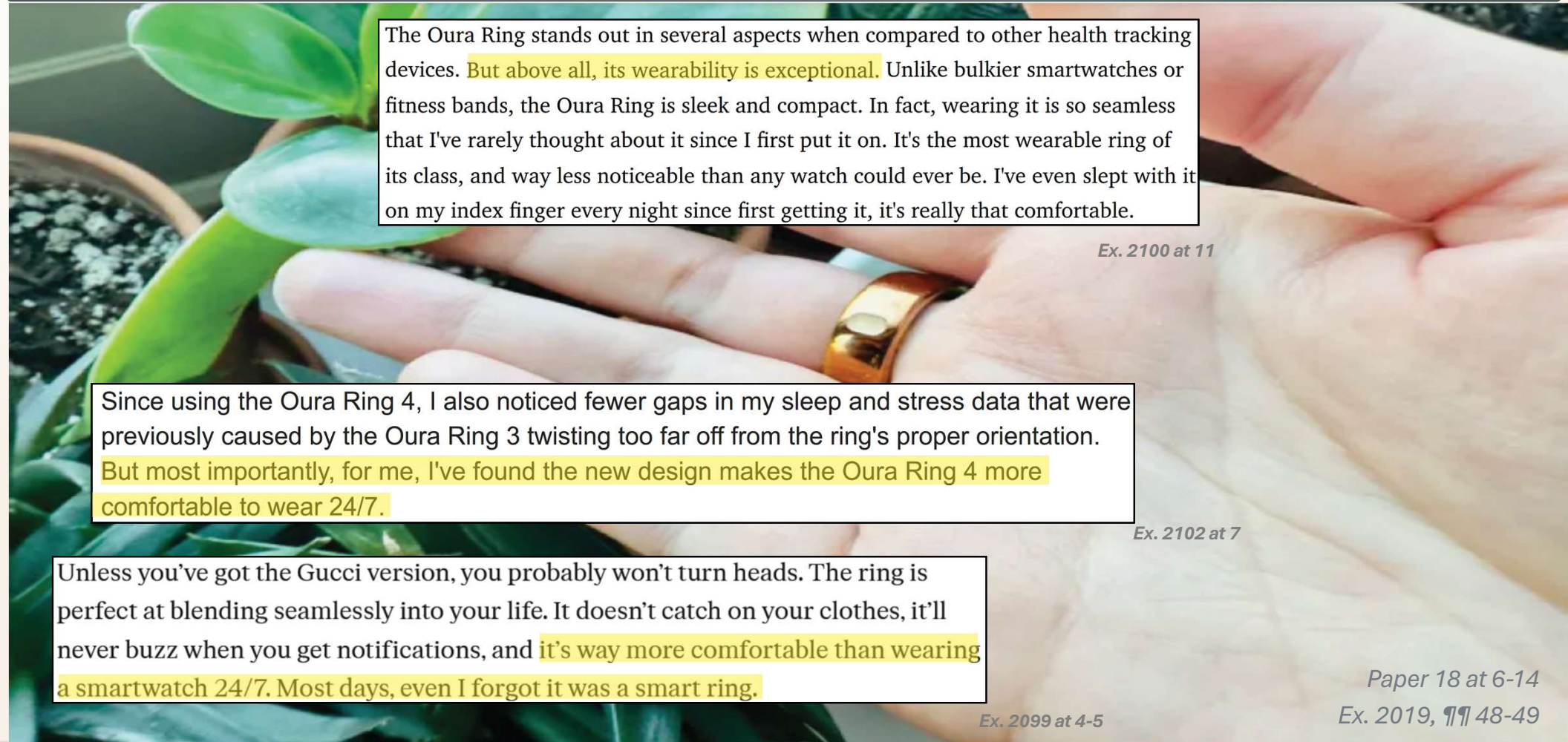
- Prior smart rings were bulky, located electronics and batteries on the back of the hand, etc.
- There was a need for a smart wearable that was more comfortable than prior wearables and could be worn around the clock.

Paper 18 at 6-14

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

85

Oura Ring Satisfied Need for Round-the-Clock Monitoring



The Oura Ring stands out in several aspects when compared to other health tracking devices. But above all, its wearability is exceptional. Unlike bulkier smartwatches or fitness bands, the Oura Ring is sleek and compact. In fact, wearing it is so seamless that I've rarely thought about it since I first put it on. It's the most wearable ring of its class, and way less noticeable than any watch could ever be. I've even slept with it on my index finger every night since first getting it, it's really that comfortable.

Ex. 2100 at 11

Since using the Oura Ring 4, I also noticed fewer gaps in my sleep and stress data that were previously caused by the Oura Ring 3 twisting too far off from the ring's proper orientation. But most importantly, for me, I've found the new design makes the Oura Ring 4 more comfortable to wear 24/7.

Ex. 2102 at 7

Unless you've got the Gucci version, you probably won't turn heads. The ring is perfect at blending seamlessly into your life. It doesn't catch on your clothes, it'll never buzz when you get notifications, and it's way more comfortable than wearing a smartwatch 24/7. Most days, even I forgot it was a smart ring.

Ex. 2099 at 4-5

Paper 18 at 6-14
Ex. 2019, ¶¶ 48-49

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

86

Oura Ring Satisfied Need for Long Battery Life in Wearables

The Oura Ring 4 is hands-down the greatest smart ring for fitness tracking that money can buy. Between the comfortable fit, discreet functionality, nearly a week of battery life and a comprehensive Oura app experience, the Oura Ring 4 is a great alternative to a smartwatch or activity band. Although the monthly membership fee may deter some, the ever-growing collection of health and wellness features more than proves its worth.

Ex. 2102 at 1

Oura recently revealed the Oura Ring 4, the successor to its popular Oura Ring 3 which debuted in 2021. The new generation comes with smart sensing technology for a more accurate, thinner, less obtrusive, and longer wear with fewer gaps in data capture.

Ex. 2074 at 3

Paper 18 at 6-14, 96-98

Ex. 2019, ¶¶ 18, 24, 49

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

87



Long Felt Need

The record evidence demonstrates a long-felt but unresolved need for a compact, comfortable ring that could provide continuous health monitoring, and that others failed to provide such a wearable monitoring system. *See, e.g.,* CX-0598.0003 (“I don’t always want to wear a watch. . . . However, the [Oura] ring can do its thing without being a bother.”); CX-0603.0007 (“[T]he Oura Ring is sleek and compact. . . . It’s the most wearable ring of its class, and way less noticeable than any watch could ever be. I’ve even slept with it on my index finger every night since first getting it, it’s really that comfortable.”); CX-0599.0003 (“The biggest reason I wear an Oura Ring is for sleep tracking. . . . That’s where a smart ring comes in – it’s far less intrusive to wear to bed than a smartwatch, and once you get used to it, you pretty much forget it’s there.”).

This factor weighs in favor of a determination of non-obviousness of the asserted claims.

*Ex. 2122, 116
Paper 37 at 20-28*

OURA

***Certain Smart Wearables Devices, Systems, and
Components Thereof***

337-TA-1398

(ITC Aug. 21, 2025)

IPR2024-01077

IPR2024-01078

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

89

The ITC Adjudicated in Favor of Oura on a Similar Challenge

e. Conclusion

Accounting for the objective indicia discussed below, respondents have not shown by clear and convincing evidence that the combination of Niwa and Schröder renders obvious claim 1 or dependent claims 2, 13, and 14.

I considered and weighed the objective indicia of non-obviousness before reaching all conclusions in the above obviousness analysis, and I discuss these objective indicia below. *Apple Inc. v. Samsung*, 839 F.3d at 1038. If Oura had submitted no evidence of objective indicia, I would still find that the asserted claims were not proved obvious.

Ex. 2122, 107

As detailed above with respect to technical domestic industry, the evidence supports that Gen. 3 and Gen. 4 embody the asserted claims. See also Sarrafzadeh Tr. at 1277:17–20.

Ex. 2122, 108

2. Commercial Success

Oura argues that the Gen. 3 and Gen. 4 have been commercially successful. See Oura Reply at 31–36. The Staff agrees that this commercial success indicates non-obviousness. Staff Br. at 59. This factor weighs in favor of a determination of non-obviousness for the asserted claims.

4. Industry Praise

Oura argues that industry praise supports non-obviousness of the asserted '178 patent claims. Oura Br. at 42–43. The Staff agrees. Staff Br. at 61. The evidence demonstrates industry praise, supporting non-obviousness.

Ex. 2122, 111–112, 114

- Respondents at the ITC relied on the similar evidence such as Schröder, Mestas, Yuen, Wissmar
- The Respondents' arguments centered on Schröder in combination of other references including "curved battery" references like Mestas, supported by testimony similar to Dr. Anthony's
- The Commission affirmed the ALJ's findings, the Presidential Review period is complete and the USTR took no action.

Ex. 2122, 81–116, Ex. 2123, 1–3,
Ex. 2124, 29 Ex. 2126, 168–400,
Ex. 2129, 1–61, Ex-2136
-1077 Paper 37, -1078 Paper 38

5. Failure of Others

Oura argues that others failed in achieving the results of the asserted '178 patent claims.

This factor weighs in favor of a determination of non-obviousness of the asserted claims.

6. Long-Felt But Unmet Need

Oura argues that the asserted '178 patent claims met a long-felt but unmet need for "compact, wearable monitoring systems with continuous monitoring of health conditions and sleep." Oura Reply at 44–45.

This factor weighs in favor of a determination of non-obviousness of the asserted claims.

Ex. 2122, 114, 116

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

90

The Claims of the '178, '859 and '953 Patents are Substantially Similar

What is claimed is:

1. A finger-worn wearable ring device, comprising:
 - an external housing component defining an outer circumferential surface of the finger-worn wearable ring device;
 - an internal housing component defining an inner circumferential surface of the finger-worn wearable ring device, the internal housing component coupled with the external housing component, 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;
 - a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device;
 - a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion; and
 - 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.

US 11,868,178

What is claimed is:

1. A system, comprising:
 - a wearable ring computing device, the ring computing device including a housing, the housing having an interior bounding member and an exterior bounding member, the interior bounding member and the exterior bounding member being configured for being coupled together to form a waterproof cavity there between;
 - a curved battery positioned within the cavity, the curved battery having an arc approximating a corresponding arc of the ring housing;
 - a sensor module, the sensor module positioned within the cavity and proximate the battery, the sensor module comprising one or more sensors, the one or more sensors comprising one or more of a pedometer, an accelerometer, a gyroscope, a heart rate sensor, a pulse oximeter, a sleep monitor, an internal measurement unit, a thermometer, a Galvanic skin response sensor, and an electrocardiogram, the one or more sensors being configured to sense a change in a condition of a wearer of the ring;
 - a flexible printed circuit board positioned within the cavity proximate one or both of the curved battery and the sensor module, the flexible printed circuit board portion comprising:
 - a processor, the processor configured for determining one or more of a number of steps taken, a quality of sleep, a heart rate, blood pressure, and body temperature of a user of the ring computing device; and
 - a memory, associated with the processor for storing data; and
 - a semiconducting light element disposed at least partially within the housing.

US 10,139,859

What is claimed is:

1. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:
 - an interior enclosure portion for enclosing a printed circuit board, the printed circuit board including a plurality of components of the wearable computing device;
 - an exterior enclosure structure for receiving the printed circuit board and for being coupled with the interior enclosure portion to form a housing of the wearable computing device;
 - a curved, rechargeable battery, disposed proximate the exterior enclosure, the rechargeable battery configured for being wirelessly charged;
 - a flexible printed circuit board disposed proximate the curved battery, the flexible printed circuit board comprising:
 - a plurality of components, the plurality of components disposed on the flexible printed circuit board, the plurality of components comprising an electromagnetic induction or RF charging mechanism, a microprocessor, a sensor module, a light emitting diode, and a transceiver;
 - wherein at least one of the interior enclosure portion and the exterior enclosure structure defines one or more windows that facilitates at least one of data acquisition, data transmission, electromagnetic radiation acquisition, and electromagnetic transmission.

US 10,281,953

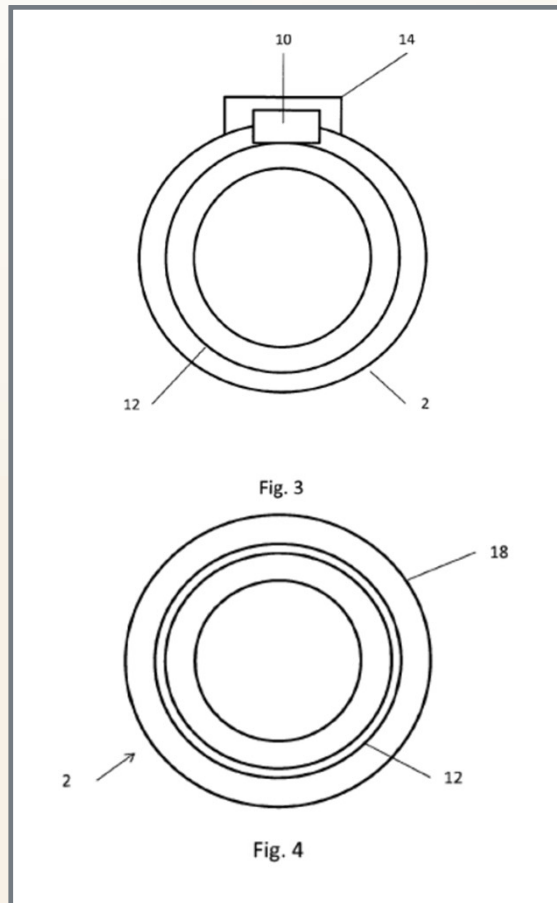
-01077, Paper 37, 9

-01078, Paper 38, 8

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

91

The ITC Made Certain Findings Regarding Schröder



Ex. 1007, Figs. 3, 4

While Niwa and Schröder are both directed to ring-based devices, respondents have not shown by clear and convincing evidence that one of ordinary skill in the art would combine them to arrive at the invention of claim 1. *PharmaStem Therapeutics*, 491 F.3d at 1360 (an obviousness defense requires “clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process”).

First, Schröder’s design, while disclosing separate housing components, only contemplates the inclusion of an inlay between them. Schröder at 8:54–57 (regarding Fig. 3), 12:4–9 (regarding Fig. 4). Dr. Rosing credibly testified that one of skill would understand that the thickness of Schröder’s inlay is on the order of 100 microns. Rosing Tr. at 1218:18–25. This stands in stark contrast to the battery in Niwa’s sensor, which is between two and five mm, or at least 20 times the thickness of the inlay. See Niwa at [0201]. Respondents provide no logical reason why one of skill would modify Niwa’s ring to accommodate Schröder’s 100-micron inlay, when Niwa’s components take up a much larger volume.

Ex. 2122, 101

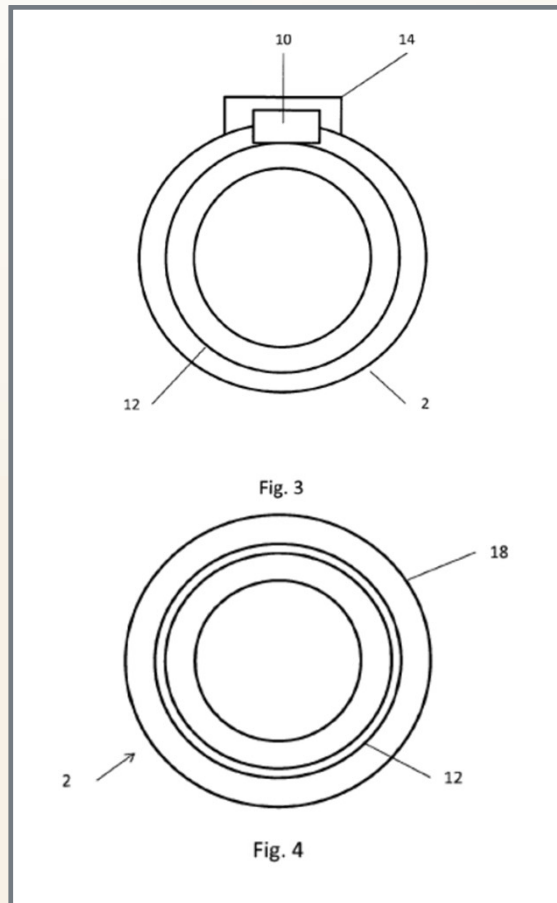
-1077 Paper 37, 9-12

-1078 Paper 38, 4, 9-10

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

92

The ITC Made Certain Findings Regarding Schröder



Ex. 1007, Figs. 3, 4

Respondents argue that Schröder “shows a cavity formed by the internal and external housing components, in which the battery would reside.” Resp. Br. at 49, *citing* Alarcon Tr. at 1000:8–15, RDX-0001C-104; and Schröder at Fig. 4. Schröder, however, does not in fact disclose that the battery would be in the cavity of Fig. 4. Schröder discusses the possibility of a battery (although it does not show it) when addressing Fig. 3 but not when addressing the embodiment shown in Fig. 4. Schröder at 11:46–67. In Fig. 3, the chip module 10 is disposed above and outside of the inlay 12. While Schröder explains that the battery is “connected to the chip module 10” and that it may be used “to increase the range of the antenna coil 8” or “to operate alternative communication channels” and “electronic components,” there is no disclosure in Schröder that the battery is disposed in the inlay embodiment of Fig. 4. While respondents contend that “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,” Resp. Br. at 50 (emphasis removed), *citing* Alarcon Tr. at 1000:7–1001:11, there is, simply, no such disclosure in Schröder. Read in context, the evidence supports that one of skill would understand that Schröder’s battery would be placed adjacent to the chip module 10 of Fig. 3.

Ex. 2122, 114-115

-1077 Paper 37, 9-12

-1078 Paper 38, 4, 9-10

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

93

The ITC Rejected Arguments that a POSITA would ignore the flat battery teachings of the art and use a wristband's curved battery

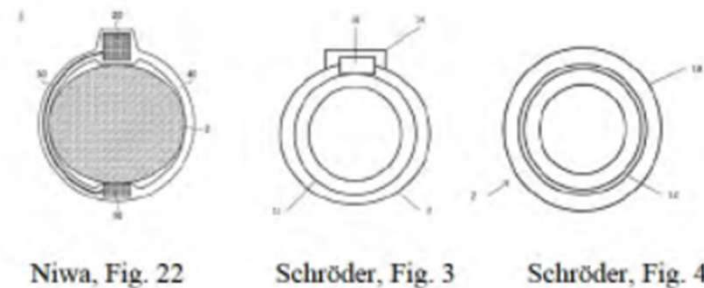
Respondents rely on the testimony of Mr. Alarcon to the effect that one of skill would have wanted a battery to fit the “size and shape” of Niwa’s ring, and “would have been motivated to find a curved battery to fit within that shape.” Alarcon Tr. at 1007:2–8. Niwa, however, teaches away from incorporating components in the curved portion of the ring, explaining that by using both sides of the first substrate 21 efficiently, “the area of the first substrate 21 can be reduced. Therefore, the largeness of the second unit 20 can be restrained not to protrude from the third joint of the finger 2. Furthermore, a consciousness of the examinee for wearing the plethysmogram sensor 1 can be reduced.” Niwa at [0214].

I agree with Oura that respondents’ obviousness argument is directly contrary to Niwa’s teachings of “a highly flat battery” and a stacked configuration. Oura Reply at 25–26. Respondents provide no reason why one of skill would ignore Niwa’s teachings and modify it to include a curved battery and non-stacked components.

Ex. 2122, 90-91

This reasoning, however, is belied by Schröder itself, which only addresses a battery with respect to Fig. 3. Schröder at 11:45–67 (discussing battery in reference to embodiment of Fig. 3, where chip module 10 is disposed above the finger rather than on the inlay). That embodiment includes a compartment disposed on top of the ring, similar to the embodiment of Niwa’s Fig. 22, as shown below.

Ex. 2122, 106



Ex. 2122, 106 -1077 Paper 37, 9-12
-1078 Paper 38, 4, 9-10

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

94