

**Samsung Electronics Co., Ltd.;  
Samsung Electronics America, Inc.,  
v.  
Ouraring, Inc.,**

**Petitioner's Presentation For IPR2024-01077, IPR2024-01078  
U.S. Patent Nos. 10,139,859; 10,281,953  
October 29, 2025**

# Overview

- Alleged invention
- Overview of the prior art
- Coupled members with a waterproof cavity of a Wearable Ring Computing Device
- Curved Batteries
- Flexible PCB
- Sensor(s) and Electronic components
- Window and Potting
- Motivations
- Secondary indicia of non-obviousness

Demonstrative Exhibit Not Evidence

# Overview

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Demonstrative Exhibit Not Evidence

# 859, 953 patents: Wearable computing device

(12) **United States Patent**  
von Badinski et al.

(10) Patent No.: **US 10,139,859 B2**  
(45) Date of Patent: **Nov. 27, 2018**

(54) **WEARABLE COMPUTING DEVICE**

(71) Applicant: **Motiv Inc.**, San Francisco, CA (US)

(72) Inventors: **Curt C. von Badinski**, Valencia, CA (US); **Michael J. Strasser**, San Francisco, CA (US); **Peter Twiss**, Lakeswood, CA (US)

(73) Assignee: **MOTIV, 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 48 days.

(21) Appl. No.: **15/444,208**

(22) Filed: **Feb. 27, 2017**

(65) **Prior Publication Data**  
US 2017/0235332 A1 Aug. 17, 2017

**Related U.S. Application Data**

(62) Division of application No. 14/556,062, filed on Nov. 28, 2014, now Pat. No. 9,582,034. (Continued)

(51) **Int. Cl.**  
**H02J 7/00** (2006.01)  
**G06F 1/16** (2006.01)  
(Continued)

(52) **U.S. Cl.**  
CPC: **G06F 1/163** (2013.01); **A61B 5/01** (2013.01); **A61B 5/021** (2013.01); **A61B 5/025** (2013.01); **A61B 5/02416** (2013.01); **A61B 5/0404** (2013.01); **A61B 5/0452** (2013.01); **A61B 5/1118** (2013.01); **A61B 5/1455** (2013.01); **A61B 5/1452** (2013.01); **A61B 5/681** (2013.01); **A61B 5/6826** (2013.01); **G01P 15/00** (2013.01); **G02B 19/0052** (2013.01); **G02B 19/0061** (2013.01); **G04G 21/02** (2013.01); **G04G 21/025** (2013.01); **G06F 1/1635** (2013.01); **G06F 3/014** (2013.01); **G06F 3/017** (2013.01); **G06F 3/14** (2013.01); **G06F 21/32** (2013.01); **G06K 9/00885** (2013.01); **G06K 9/00892** (2013.01); **G06K 9/6292** (2013.01); **G06C 5/36** (2013.01); **G06B 21/02** (2013.01); **G06C 17/02** (2013.01); **H02J 7/0044** (2013.01); **H02J 7/0047** (2013.01); **H02J 7/355** (2013.01); **H02S 40/22** (2014.12); **H02S 9/00** (2013.01); **A61B 2560/0214** (2013.01); **A61B 2560/0412** (2013.01); **A61B 2562/146** (2013.01); **A61B 2562/164** (2013.01); **A61B 2562/166** (2013.01); **G02B 19/0042** (2013.01); **G06K 2009/00939** (2013.01); **G06C 22/01/30** (2013.01)

(58) **Field of Classification Search**  
CPC: Y02E 60/12; H02J 7/0042; H02J 7/0045; H01M 10/46; H01M 10/44  
USPC: 320/107  
See application file for complete search history.

(56) **References Cited**

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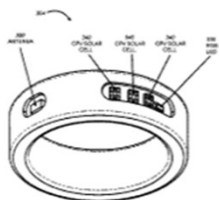
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CN 103109462 A 5/2013  
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WO 2009/124076 A1 10/2009

**Primary Examiner**—Arun C. Williams

(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.

**20 Claims, 64 Drawing Sheets**



(12) **United States Patent**  
von Badinski et al.

(10) Patent No.: **US 10,281,953 B2**  
(45) Date of Patent: **May 7, 2019**

(54) **WEARABLE DEVICE AND DATA TRANSMISSION METHOD**

(71) Applicant: **Motiv Inc.**, San Francisco, CA (US)

(72) Inventors: **Curt C. von Badinski**, Valencia, CA (US); **Peter Miles Twiss**, San Mateo, CA (US); **Daniel Jeffrey Post**, Pacifica, CA (US); **Anthony Ambuchel**, El Cerrito, CA (US); **Michael J. Strasser**, San Francisco, CA (US); **Eric Strasser**, San Francisco, CA (US)

(73) Assignee: **Motiv 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.: **15/854,783**

(22) Filed: **Dec. 27, 2017**

(65) **Prior Publication Data**  
US 2018/0120892 A1 May 3, 2018

**Related U.S. Application Data**

(63) Continuation-in-part of application No. 15/043,412, filed on Feb. 12, 2016, now Pat. No. 9,958,904, which (Continued)

(51) **Int. Cl.**  
**G06F 1/16** (2006.01)  
**A61B 5/00** (2006.01)  
(Continued)

(52) **U.S. Cl.**  
CPC: **G06F 1/163** (2013.01); **A61B 5/081** (2013.01); **A61B 5/6826** (2013.01); **G01P 15/00** (2013.01); (Continued)

(58) **Field of Classification Search**  
CPC: combination set(s) only.  
See application file for complete search history.

(56) **References Cited**

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(Continued)

**FOREIGN PATENT DOCUMENTS**

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(Continued)

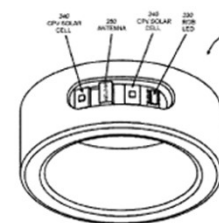
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**Primary Examiner**—Travis R. Hunnings

(57) **ABSTRACT**  
The disclosure discloses a wearable computing device (WCD) that would selectively and automatically activate a transceiver of the WCD for data transmission based on sensor data obtained from a sensor module of the WCD. In some example, the sensor module may convert the physical movements of the WCD into sensor data. Then, a processor module of the WCD compares the sensor data to a predetermined pattern pre-stored in the memory. If the sensor data matches the predetermined pattern, the processor module activates the transceiver to receive/transmit data packets. If the sensor data does not match the predetermined pattern, the process goes back to the beginning, where the processor module monitors the movement of the WCD through the sensors.

**43 Claims, 69 Drawing Sheets**

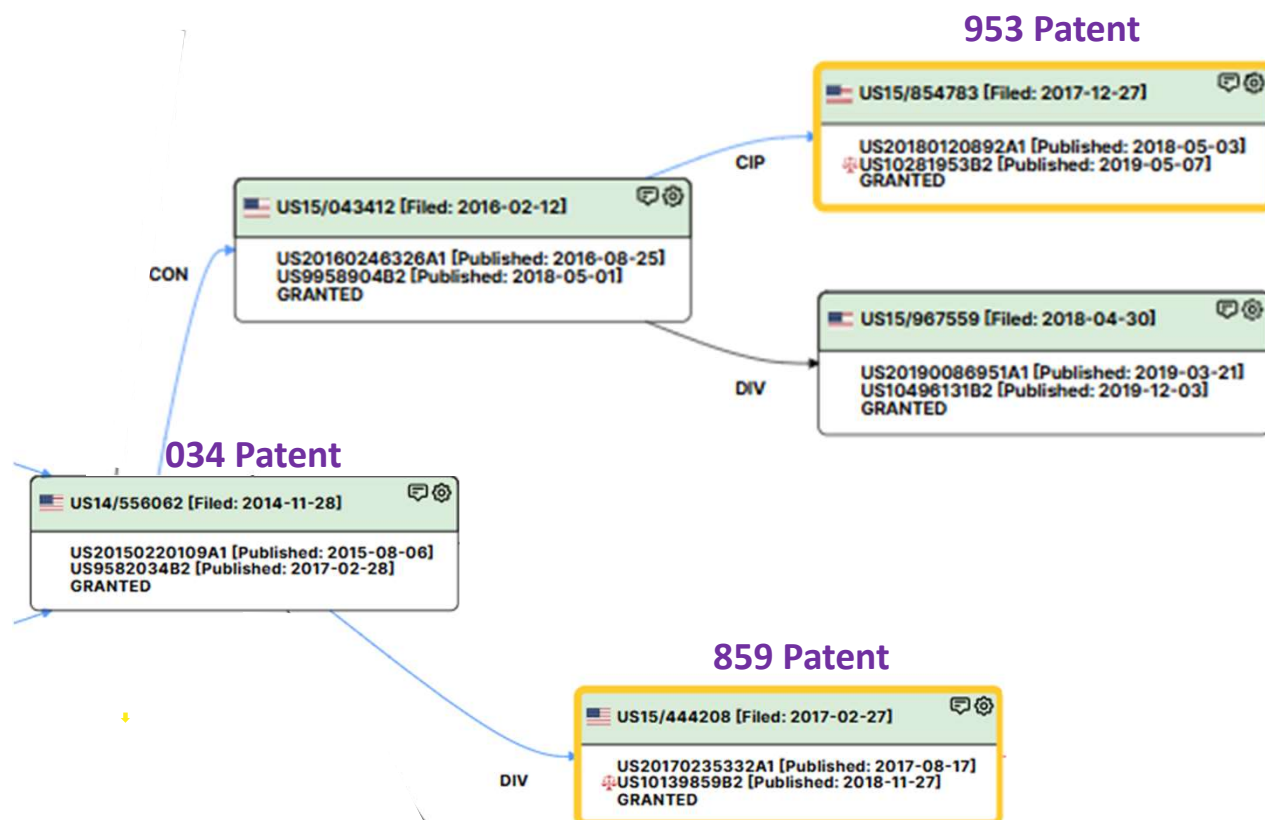


Ex-1001 at Cover

# 859 and 953 patents are children of the 034 patent

## DETAILED DESCRIPTION

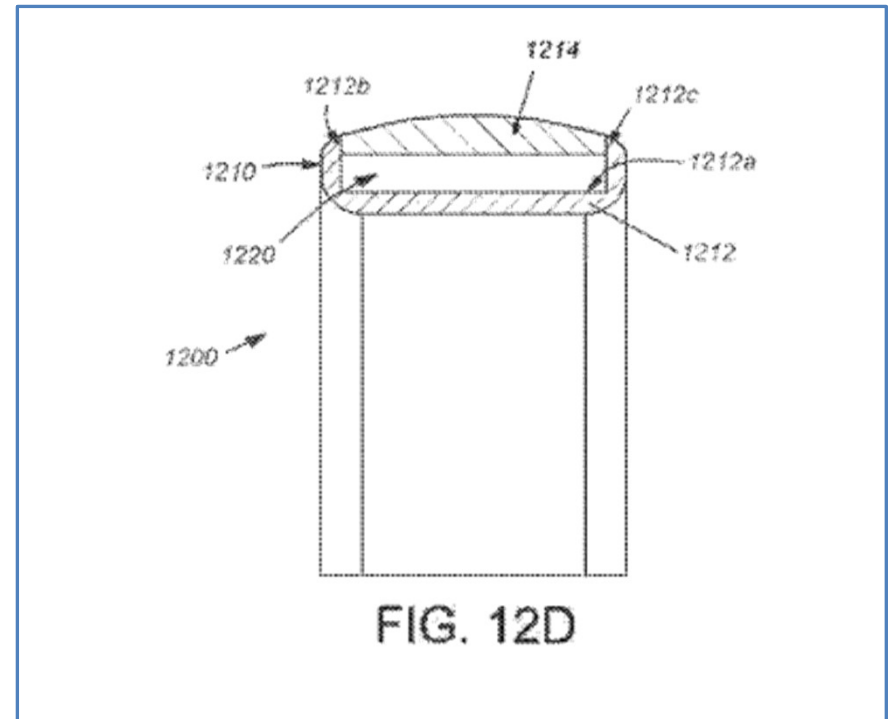
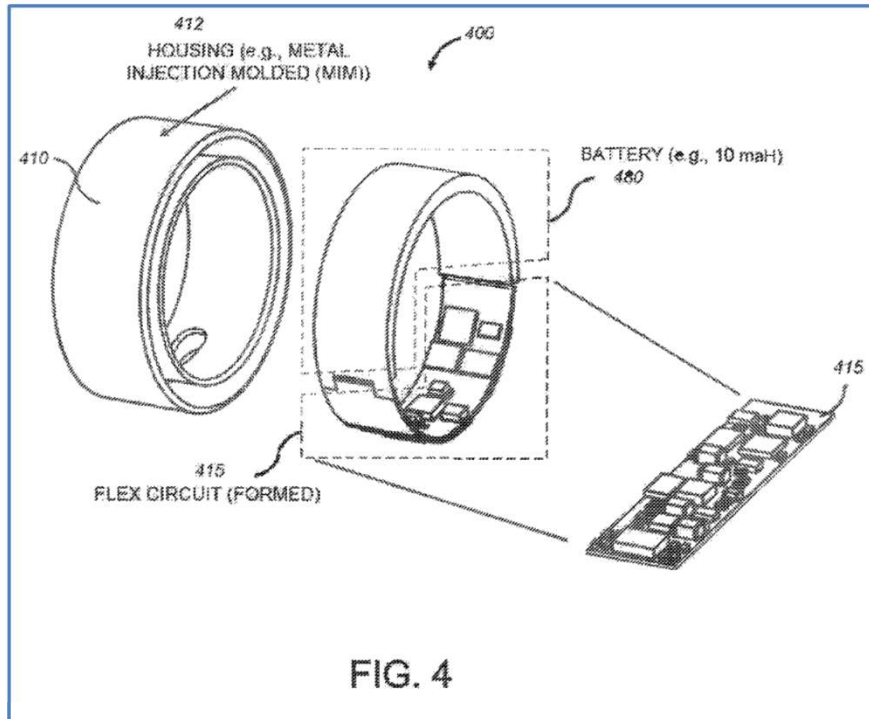
The present disclosure describes a wearable computing device (WCD) that enables a wearable fitness monitor(s)/ computer(s) which is suitable for prolonged usage with accurate results. The WCD can be in the form of a ring that can be worn on the finger of a human (or animal) user. Although the WCD of 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.



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953Ex-1001 at 6:54-67; 859Ex-1001, 8:48-61

# Challenged patents focus on internal packaging in a wearable form factor



**Challenged patents are about packaging, not miniaturization of internal components**

*E.g., Ex-1001, Figs. 4, 12D*

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# Challenged patents focus on internal packaging in a wearable form factor

PO Expert, Dr. Mercier:

17           There isn't any particular teaching in the  
18 '953 patent of how to miniaturize a battery, for  
19 example; right?

20           A. To the best of my recollection, no. The  
21 '953 patent is not a battery-manufacturing patent, and  
22 they don't describe that.

23           Q. And so the '953 patent, in your opinion,  
24 describes packaging of these components, like where to  
25 place them, for example; right?

1           A. The '953 patent describes how to structure  
2 the external and internal housing components, how to  
3 place a curved battery, how to put the PCB in there and  
4 arrange the sensors and so on. And it -- it provides a  
5 great deal of detail of how to do all of that, yes.

9           Q. Well, you would agree that the '953 patent  
10 doesn't describe the miniaturize -- miniaturization  
11 process of these internal components; right?

12           A. That's right, the '953 patent doesn't  
13 describe how to miniaturize batteries and other --  
14 other things like that.

**Challenged patents are about packaging, not  
miniaturization of internal components**

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Ex-1085, 122:17-123:5, 125:9-14; e.g., 953Ex-1079 ¶21

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# Substantial overlap of issues across challenged patents

| Claimed Features                                                             | 859 Patent | 953 Patent |
|------------------------------------------------------------------------------|------------|------------|
| Coupled members with a waterproof cavity of a Wearable Ring Computing Device | ✓          | ✓          |
| Curved Battery                                                               | ✓          | ✓          |
| Flexible PCB                                                                 | ✓          | ✓          |
| Sensor(s) and Electronic components                                          | ✓          | ✓          |
| Windows and Potting                                                          |            | ✓          |
| Objective indicia                                                            | ✓          | ✓          |

Demonstrative Exhibit Not Evidence

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# Overview

- Alleged invention
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Demonstrative Exhibit Not Evidence

# Schröder

## (859 and 953 Grounds)

(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:** Sönke 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  
(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 Jun. 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)

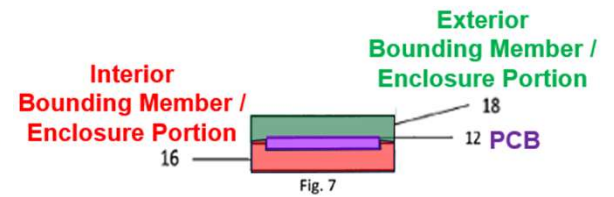
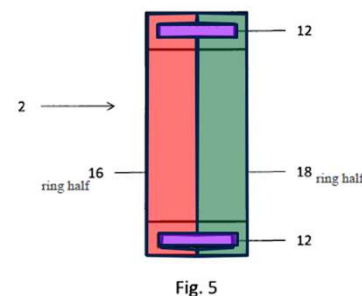
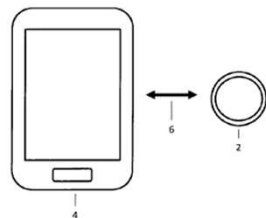
(52) **U.S. CL.**  
**CPC** ..... **G06F 21/34** (2013.01); **G06F 21/32** (2013.01); **G06F 21/35** (2013.01); **H04B 5/0031** (2013.01);  
(Continued)

(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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EP 2551788 A1 1/2013  
(Continued)  
OTHER PUBLICATIONS  
German Search Report for corresponding German Application No. 102013012339.9, dated Jan. 28, 2014.  
(Continued)  
Primary Examiner — Jonel Jeady  
(74) **Attorney, Agent, or Firm** — Workman Nydegger

(57) **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



Demonstrative Exhibit Not Evidence

Ex-1007 at Cover, Figs. 5, 7 (annotated); e.g., 859Pet. (Paper 1), 53-55; 859Reply (Paper 23), 17; 953Pet. (Paper 3), 62-64

# Mestas

(859 and 953 Grounds)

(19) **United States**  
 (12) **Patent Application Publication** (10) Pub. No.: US 2014/0244009 A1  
 Mestas (43) Pub. Date: Aug. 28, 2014

(54) **ACTIVITY MONITORING, TRACKING AND SYNCHRONIZATION**

(71) Applicant: NIKE, INC., Beaverton, OR (US)  
 (72) Inventor: Alex Mestas, Portland, OR (US)  
 (73) Assignee: NIKE, INC., Beaverton, OR (US)  
 (21) Appl. No.: 14/186,425  
 (22) Filed: Feb. 21, 2014

**Publication Classification**

(51) Int. Cl. A63B 24/00 (2006.01)  
 (52) U.S. Cl. CPC A63B 24/0062 (2013.01)  
 USPC 700/91

**ABSTRACT**

A physical activity monitoring method and system may include a competition component requiring users to compete based on various metrics. The challenge may be device-specific, activity type-specific, user-type specific and the like. In some examples, the users' performance might only affect the status of the competition if the user synchronizes the information to an activity monitoring system.

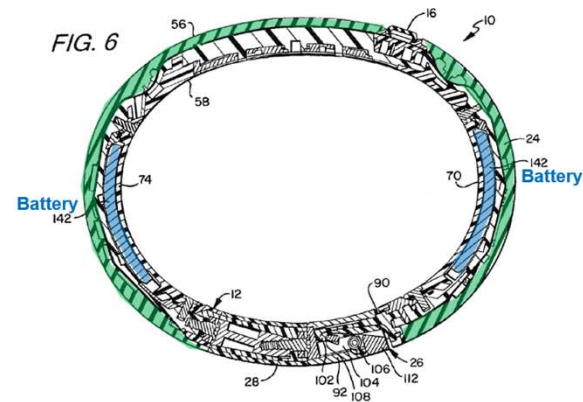
**Related U.S. Application Data**

(60) Provisional application No. 61/768,279, filed on Feb. 22, 2013.



(57) **ABSTRACT**

A physical activity monitoring method and system may include a competition component requiring users to compete based on various metrics. The challenge may be device-specific, activity type-specific, user-type specific and the like. In some examples, the users' performance might only affect the status of the competition if the user synchronizes the information to an activity monitoring system.



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Ex-1010 at Cover, Fig. 6 (annotated); e.g., 859Pet. (Paper 1), 24

# Yuen (859 grounds)

(12) **United States Patent**  
**Yuen et al.**

(10) **Patent No.:** **US 8,954,135 B2**  
(45) **Date of Patent:** **Feb. 10, 2015**

(54) **PORTABLE BIOMETRIC MONITORING DEVICES AND METHODS OF OPERATING SAME**

(71) Applicant: **Fitbit, Inc.**, San Francisco, CA (US)

(72) Inventors: **Shelton Gee Jao Yuen**, Berkeley, CA (US); **Mark Manuel Martinez**, San Francisco, CA (US); **Andrew Cole Axley**, 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.: **13/924,784**

(22) Filed: **Jun. 24, 2013**

(65) **Prior Publication Data**  
US 2014/0107493 A1 Apr. 17, 2014

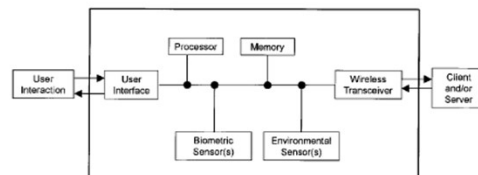
**Related U.S. Application Data**

(60) Provisional application No. 61/662,961, filed on Jun. 22, 2012, provisional application No. 61/752,826, filed on Jan. 15, 2013.

(51) **Int. Cl.**  
**A61B 5/00** (2006.01)  
**A61B 5/024** (2006.01)  
(Continued)

(52) **U.S. Cl.**  
CPC ..... **A61B 5/0002** (2013.01); **A61B 5/02427** (2013.01); **A61B 5/02438** (2013.01); **A61B 5/02433** (2013.01); **A61B 5/02416** (2013.01); **A61B 5/11** (2013.01); **A61B 5/681** (2013.01); **A61B 5/1123** (2013.01); **A61B 5/4812** (2013.01); **H04W 4/027** (2013.01); **H04W 4/008** (2013.01); **H04L 67/12** (2013.01)

**29 Claims, 30 Drawing Sheets**



## (57) **ABSTRACT**

The present inventions, in one aspect, are directed to portable biometric monitoring device including a housing having a physical size and shape that is adapted to couple to the user's body, at least one band to secure the monitoring device to the user, a physiological sensor, disposed in the housing, to generate data which is representative of a physiological condition of the user data. The physiological sensor may include a light source to generate and output light having at least a first wavelength, and a photodetector to detect scattered light (e.g., from the user). A light pipe is disposed in the housing and optically coupled to the light source directs/transmits light therefrom along a predetermined path to an outer surface of the housing. Processing circuitry calculates a heart rate of the user using data which is representative of the scattered light.

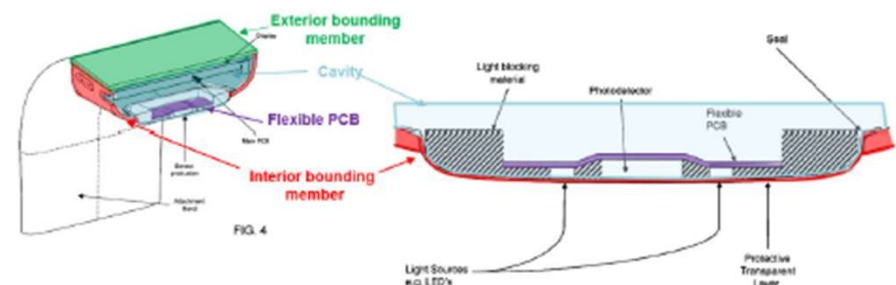


FIG. 5

Ex-1006 at Cover, Fig. 5 (annotated); e.g., 859Pet. (Paper 1), 30

Demonstrative Exhibit Not Evidence

# Asami (953 Grounds)

(19) **United States**  
(12) **Patent Application Publication** (10) Pub. No.: US 2010/0219989 A1  
Asami et al. (43) Pub. Date: Sep. 2, 2010

(54) INPUT SYSTEM AND WEARABLE ELECTRICAL APPARATUS  
(75) Inventors: Katsushi Asami, Nukata-gun (JP); Ichiro Akahori, Toyota-city (JP)  
Publication Classification  
(51) Int. Cl. H03K 17/94 (2006.01)  
(52) U.S. Cl. 341/20

Correspondence Address:  
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12640 SOUTH LAKES DRIVE, SUITE 101  
RESTON, VA 20191 (US)

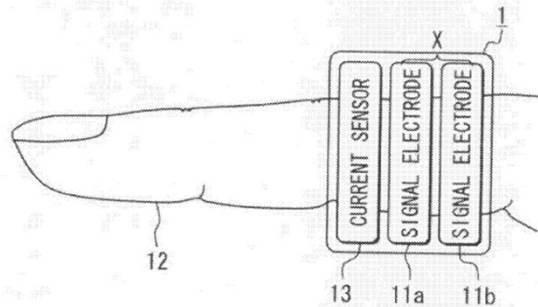
(73) Assignee: DENSO CORPORATION, Kariya-city (JP)

(21) Appl. No.: 12/656,662

(22) Filed: Feb. 12, 2010

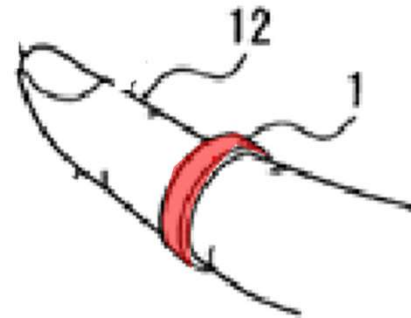
(30) Foreign Application Priority Data  
Feb. 27, 2009 (JP) 2009-46635

(57) **ABSTRACT**  
A wearable input device is worn on a finger of a user to detect contact and separation of the finger to and from the other body part of the user, respectively, and further measure motion of the finger. In the wearable input device, a signal supply unit supplies an electrical signal to a pair of signal electrodes worn on the finger, and a current sensor detects a current flowing between the signal electrodes. The contact and the separation are detected based on the detected current. Further a triaxial acceleration sensor detects the motion of the finger. A user input is determined by extracting only the trajectory of the motion of the finger detected when the finger is in contact with the other body part.



(57) **ABSTRACT**

A wearable input device is worn on a finger of a user to detect contact and separation of the finger to and from the other body part of the user, respectively, and further measure motion of the finger. In the wearable input device, a signal supply unit supplies an electrical signal to a pair of signal electrodes worn on the finger, and a current sensor detects a current flowing between the signal electrodes. The contact and the separation are detected based on the detected current. Further a triaxial acceleration sensor detects the motion of the finger. A user input is determined by extracting only the trajectory of the motion of the finger detected when the finger is in contact with the other body part.



Ex-1014 at Cover, Fig. 3A (partial, annotated); e.g., 953Pet. (Paper 3), 13-15

Demonstrative Exhibit Not Evidence

# Wissmar (953 grounds)

(19) **United States**  
 (12) **Patent Application Publication**  
 Wissmar

(10) Pub. No.: US 2012/0218184 A1  
 (43) Pub. Date: Aug. 30, 2012

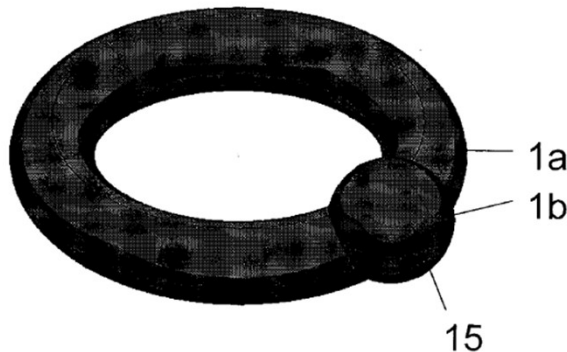
(54) **ELECTRONIC FINGER RING AND THE FABRICATION THEREOF**

(76) Inventor: Stanley Wissmar, Jarfalla (SE)  
 (21) Appl. No.: 13/505,452  
 (22) PCT Filed: Oct. 27, 2010  
 (86) PCT No.: PCT/SE2010/051167  
 § 371 (c)(1), (2), (4) Date: May 1, 2012

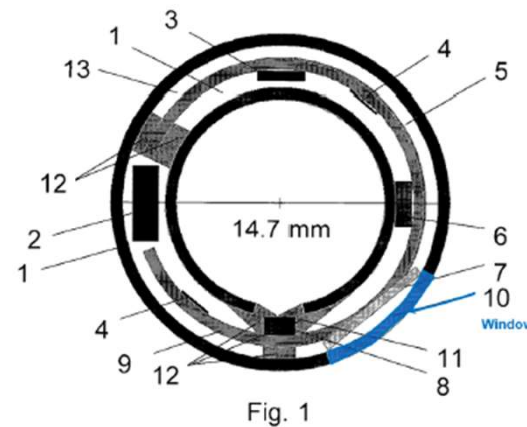
(30) **Foreign Application Priority Data**  
 Nov. 2, 2009 (SE) 0901401-0

**Publication Classification**  
 (51) Int. Cl. G06F 3/033 (2006.01)  
 (52) U.S. Cl. 345/158

(57) **ABSTRACT**  
 The present invention provides an electronic finger ring (1) for wireless, 4-dimensional remote steering and/or monitoring. The electronic finger ring comprises electronic components packaged and integrated in different ways to obtain either omni- or unidirectional RF transmission dependent on its application, e.g. acting as a multiple steering device communicating with nearby electronic devices wirelessly or for wireless user medical diagnostics.



(57) **ABSTRACT**  
 The present invention provides an electronic finger ring (1) for wireless, 4-dimensional remote steering and/or monitoring. The electronic finger ring comprises electronic components packaged and integrated in different ways to obtain either omni- or unidirectional RF transmission dependent on its application, e.g. acting as a multiple steering device communicating with nearby electronic devices wirelessly or for wireless user medical diagnostics.



Ex-1013 at Cover, Fig. 1 (annotated); e.g., 953Pet. (Paper 3), 15-16

Demonstrative Exhibit Not Evidence

# Asserted grounds

## 859 IPR Grounds

| Claims Challenged | 35 U.S.C. § | Reference(s)/Basis                     |
|-------------------|-------------|----------------------------------------|
| 1, 11, 13–20      | 103         | Yuen, <sup>1</sup> Mestas <sup>2</sup> |
| 1, 11, 13–20      | 103         | Schröder, <sup>3</sup> Mestas          |

## 953 IPR Grounds

| Claims Challenged              | 35 U.S.C. § | Reference(s)/Basis                       |
|--------------------------------|-------------|------------------------------------------|
| 1–6, 11–14                     | 103         | Mestas <sup>2</sup> , Asami <sup>3</sup> |
| 1–6, 11, 14, 15, 38, 39, 41–43 | 103         | Mestas, Schröder <sup>4</sup>            |
| 1–6, 11, 14, 15, 38, 39, 41–43 | 103         | Schröder, Mestas                         |
| 11–15                          | 103         | Schröder, Mestas, Asami                  |
| 40–43                          | 103         | Schröder, Mestas, Wissmar <sup>5</sup>   |

None of these grounds were before the ITC  
ITC relied on Niwa, which is not at issue here

## Prior art and grounds high-level summary

- Schröder
  - Finger ring prior art asserted as a primary reference against all challenged patents
- Mestas
  - Wearable health monitor that includes curved batteries
  - Teaches reducing “circumferential size” of wearable ring device
- Yuen
  - Wearable health monitor that teaches small form factors, such as an “earring” or “toe band”
- Asami
  - Finger ring that transmits data based on user activity
- Wissmar
  - Wearable finger ring device with inner coating and water-resistant seal

# Overview

- Alleged invention
- Overview of the prior art
- Coupled members with a waterproof cavity of a Wearable Ring Computing Device
- Curved Batteries
- Flexible PCB
- Sensor(s) and Electronic components
- Window and Potting
- Motivations
- Secondary indicia of non-obviousness

Demonstrative Exhibit Not Evidence

# Interior and exterior bounding members/enclosure portions

## 859 Patent

**I.** 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;

**11.** A wearable ring computing device  
the ring computing device comprising:  
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.** A ring computing device, comprising:  
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;  
...  
an exterior bounding member, the exterior bounding member for being coupled to the interior bounding member in a manner to produce a waterproof cavity thereby.

## 953 Patent

**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;

**38.** A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

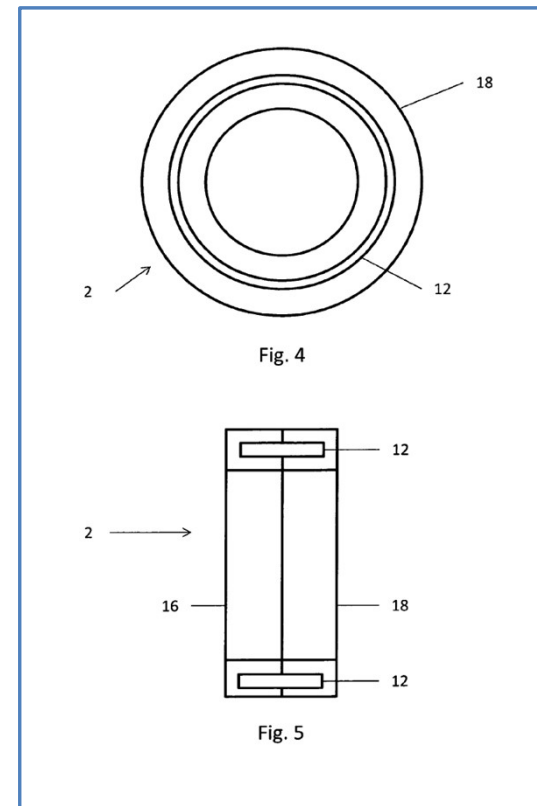
an exterior enclosure structure forming a first part of a housing for the wearable computing device, the exterior enclosure structure retaining one or more electronic components, the one or more electronic components comprising:

...  
a transparent interior enclosure portion configured for being coupled to the exterior enclosure structure, the interior enclosure portion forming a second part of the housing.

## Schröder teaches two ring-half bounding members/enclosure portions in several different “construction variants”

FIGS. 4 to 10 describe, by way of example, possible construction variants of an external secure unit 2 in the form of a finger-ring 2.

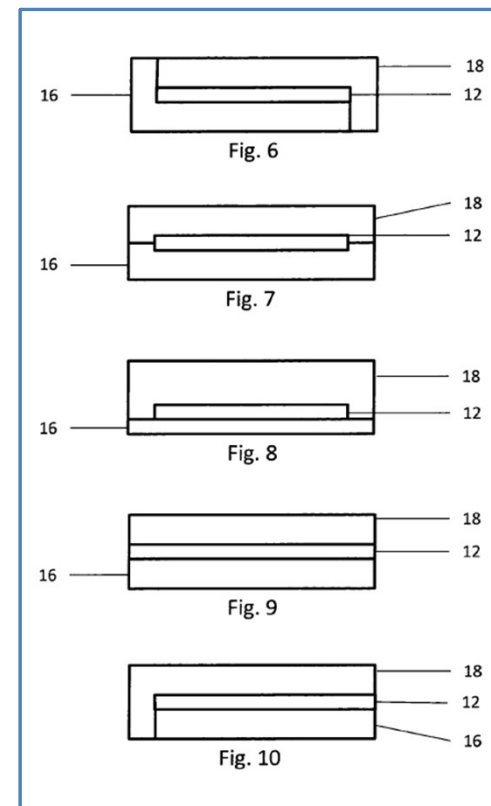
FIG. 4 shows a longitudinal section through a finger-ring 2. Here, an inlay 12 is inserted into one half 18 of the finger-ring 2. FIG. 5 shows a cross section, corresponding to FIG. 4, of the finger-ring 2. The finger-ring 2 consists of two ring halves 16 and 18. The two ring halves 16 and 18 respectively have a recess into which the inlay 12 is inserted.



## Schröder teaches two ring-half bounding members/enclosure portions in several different “construction variants”

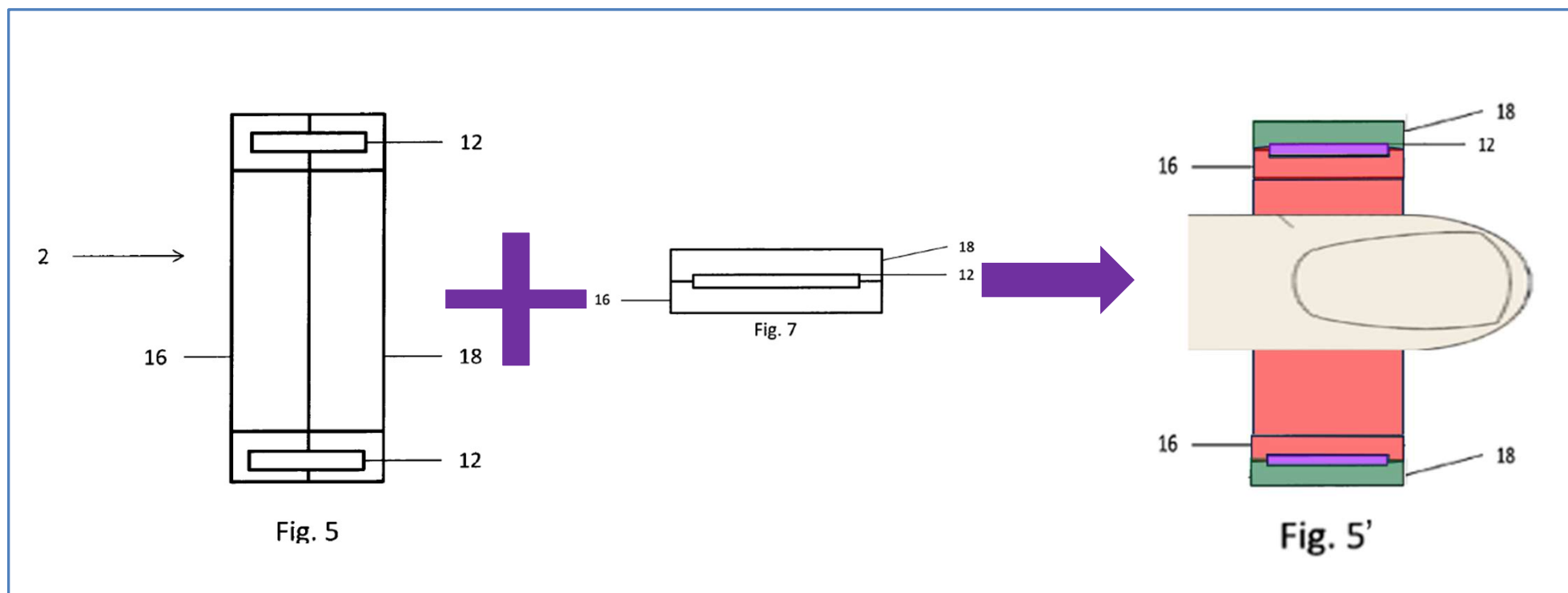
FIGS. 4 to 10 describe, by way of example, possible construction variants of an external secure unit 2 in the form of a finger-ring 2.

FIGS. 6 to 10 show different cross sections through a finger-ring 2, consisting of ring-shaped components 16, 18 of the finger-ring 2 and of an inlay 12. FIG. 6 shows a cross section with the components 14 and 16 having an L-shaped profile. Between the two L-shaped components 16 and 18 an inlay 12 is arranged. FIG. 7 accordingly shows two U-shaped components 16 and 18 between which an inlay 12 is arranged. FIG. 8 shows a U-shaped component 18 and an even component 16, with the inlay 12 being arranged between the components 16 and 18. FIG. 9 shows two even components 16 and 18 between which the inlay 12 is arranged. FIG. 10 shows an L-shaped component 18 and an even component 16 between which the inlay 12 is arranged.



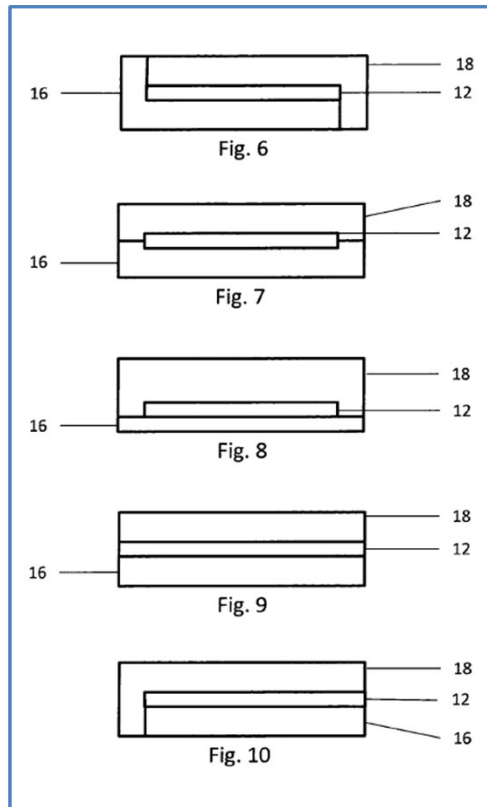
### “Construction variants”

## Schröder's Figure 7 "construction variant" and Figure 5



Schröder teaches an interior ring half and an exterior ring half

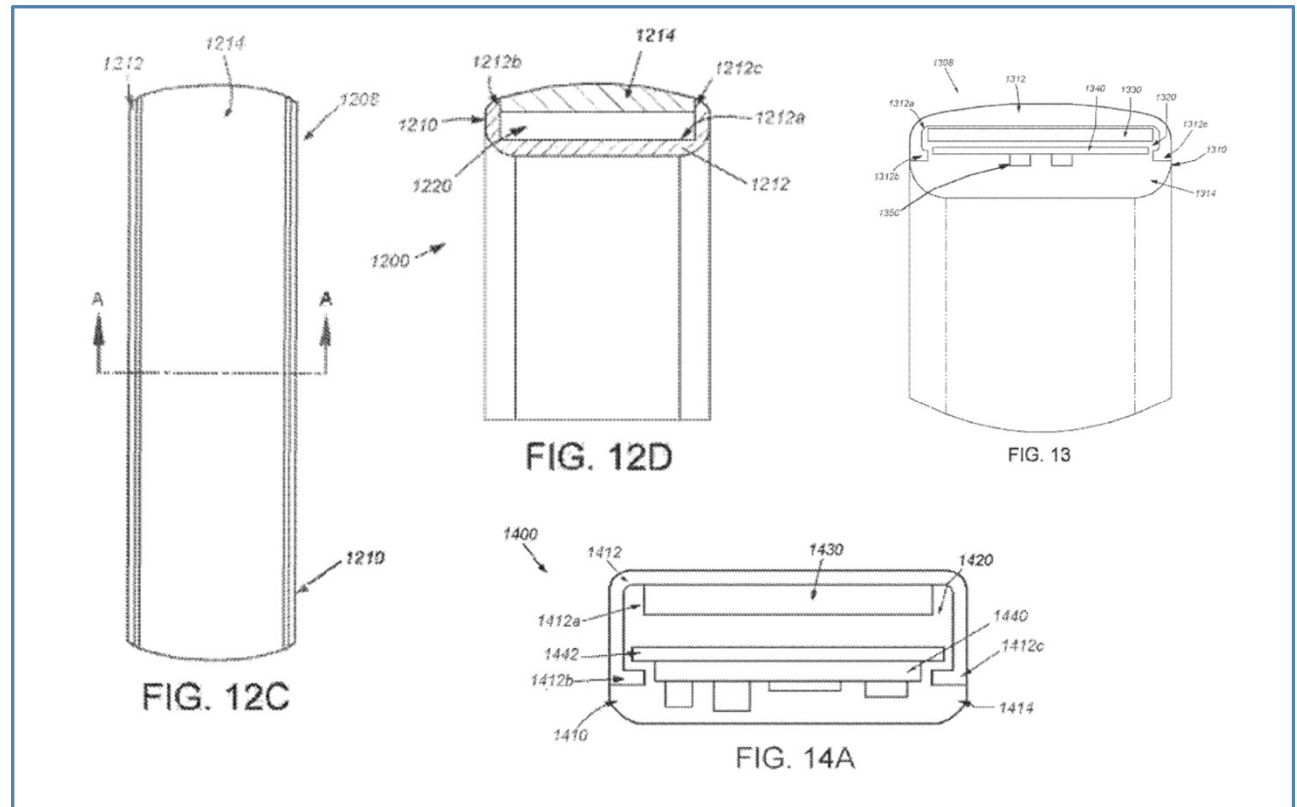
# Schröder teaches the same housing/packaging as the challenged patents



**Schröder's**

**"construction variants"**

Demonstrative Exhibit Not Evidence



**Cross-sections of challenged patents**

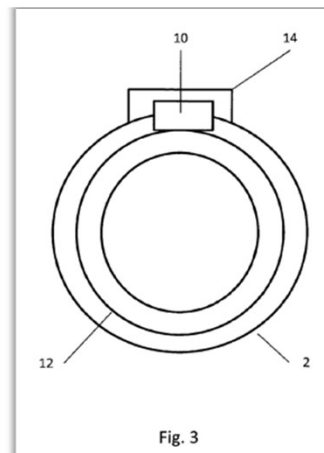
E.g., 859Reply (Paper 23), 16-17; Ex-1079 ¶¶73-74, Ex-1007, Figs. 6-10; Ex-1001, Figs. 12C, 12D, 13, 14A

22

## PO attacks Schröder's Figure 3 but Petitioner relies on different embodiments

### PO's Response

Schröder's disclosure of a ring structure is rudimentary, nonspecific, and completely lacks the claimed arrangement of components and disclosure of the '859 Patent. The only electronic component shown in the figures of Schröder is chip module 10, which protrudes beyond the surface of the ring housing, making it accessible via a hinged cover 14. *Id.*, Fig. 3, 9:1-3 ("The chip module 10 is arranged in particular replaceably in the finger-ring 2."); Ex-2018, ¶89.



Demonstrative Exhibit Not Evidence

859POR (Paper 18), 14-15; see also *id.*, 64-65; Ex-1007, Fig. 3

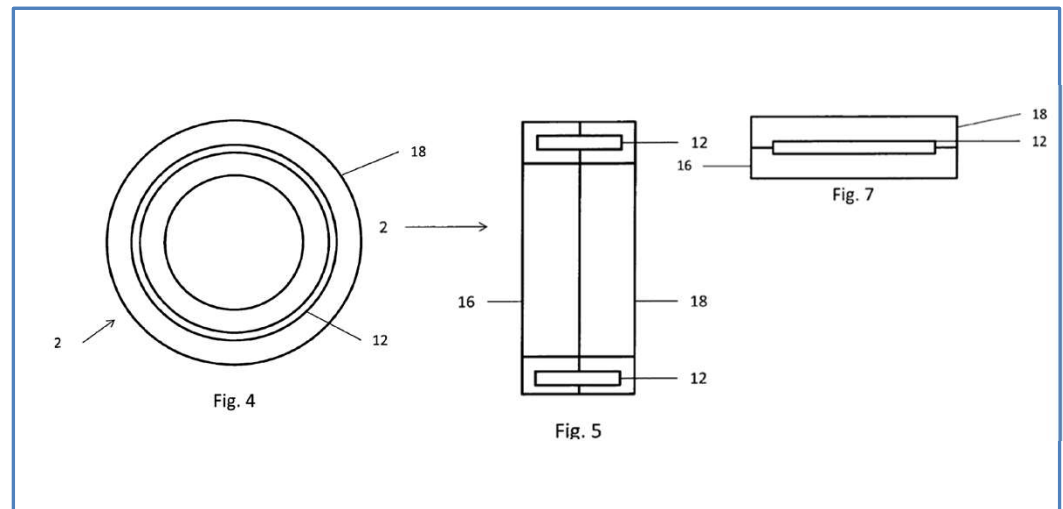
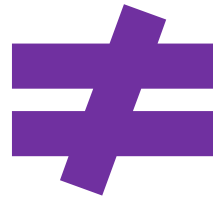
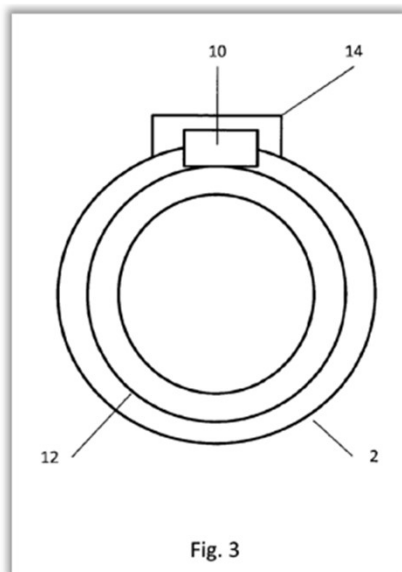
23

## PO attacks Schröder's Figure 3 but Petitioner relies on different embodiments

### Dr. Mercier's testimony

**Q:** And so would you agree that the figure 4 embodiment is a different embodiment from the figure 3 embodiment?

**A:** Yeah. It would -- it would have to be.



Demonstrative Exhibit Not Evidence

Ex-1081, 77:15-18, Ex-1007, Figs. 3-4, 7

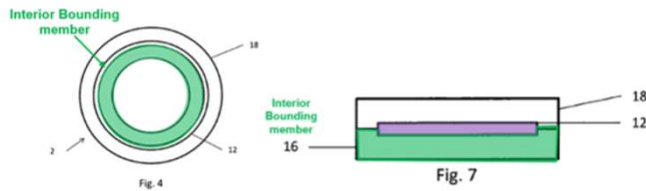
24

# Schröder teaches two ring bounding members/enclosure portions

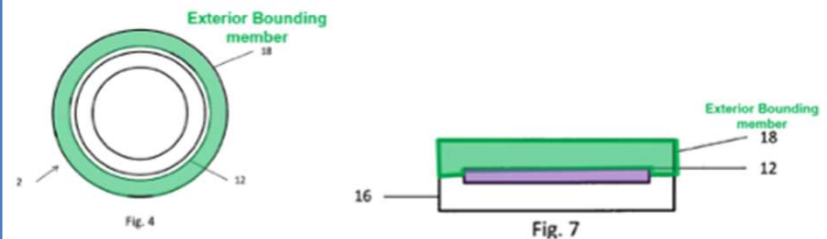
859/953

## Petition

Schröder teaches Elements 1[A(ii)]/11[A] and 11[B(i)]. Ex-1002 ¶¶217-219. Schröder's ring computing device includes a housing having interior and exterior bounding members. *Id.* As shown in Figures 4 and 7 below, Schröder's finger ring consists of "two ring halves 16 and 18 [green]" with a recess so that "inlay 12 is inserted [purple]." Ex-1007, 12:7-9. Schröder's ring halves can be formed in a U-shape to enclose inlay 12 between the components 16 and 18. *Id.*, 12:45-55. Schröder's ring half 16 is the wearable ring housing's interior bounding member touches the user's finger. Ex-1002 ¶218.



Schröder's ring half 18 is the wearable ring housing's exterior bounding member because it is the side of Schröder's finger ring that is exposed to the environment and provides an enclosing structure to inlay 12. Ex-1002 ¶219; Ex-1001, 16:45-46 (exterior surface is portion facing away from the finger).



## The ITC agreed that Schröder teaches separate housing components

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.

# PO tries to distinguish Yuen on claim construction grounds: PO argues that Yuen does not teach a finger ring

859

## 859 Patent

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;

11. A wearable ring computing device  
the ring computing device comprising:  
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. A ring computing device, comprising:  
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;  
...  
an exterior bounding member, the exterior bounding member for being coupled to the interior bounding member in a manner to produce a waterproof cavity thereby.

### Petitioner's plain meaning

A wearable ring computing device

### PO's interpretation

The proper construction of "ring" is "a device specifically configured to be worn on a user's finger." A POSITA around November 29, 2013 would understand

## The 859 Patent is not limited to a finger ring

Demonstrative Exhibit Not Evidence

859Ex-1001, Cls. 1, 11, 14; 859Reply (Paper 23), 1-3; 859POR (Paper 18), 19

27

# Claims make clear that: The 859 Patent is not limited to a finger ring

859

## 859 Patent

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;

11. A wearable ring computing device  
the ring computing device comprising:  
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. A ring computing device, comprising:  
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;  
an exterior bounding member, the exterior bounding member for being coupled to the interior bounding member in a manner to produce a waterproof cavity thereby.

## 953 Patent

1. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

38. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

## 034 Patent

1. A wearable computing device, comprising:

11. A wearable computing device, comprising:  
an internal housing portion defining a first enclosing structure, the internal housing portion configured to be disposed near a finger of a user;

16. A wearable computing device, comprising:

## 859 claims do not recite a “finger,” while other claims do

Demonstrative Exhibit Not Evidence

859Ex-1001, Cls. 1, 11, 14; Ex-1034, Cls. 1, 38 and Ex-1361, Cls. 1, 11, 16 cited at 859Reply (Paper 23), 1-3

28

## Specification makes clear that: The 859 Patent is not limited to a finger ring

859

### 859 Patent Specification

computer(s) which is suitable for prolonged usage with accurate results. The WCD can be in the form of a ring that can be worn on the finger of a human (or animal) user. 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.

**The specification explicitly recites “ring” form factors  
that are not “finger” rings**

## File history makes clear that: The 859 Patent is not limited to a finger ring

859

### c. The file history conflicts with Dr. Mercier's construction

15. Dr. Mercier also argues that PO expressed “this understanding of ‘ring’ as a finger-worn device when distinguishing the prior art during the prosecution of the ‘859 Patent.” Ex-2018 ¶¶62-64. But there was no finger-ring requirement made during prosecution. Dr. Mercier argues that the Examiner rejected the claims over wrist-worn prior art and then allowed the claims after PO’s amendment, somehow means that the claims are limited to finger-rings. For example, PO’s statements during prosecution that the asserted reference Raghunath did not “teach, nor suggest a single, ring that includes the recited components that is capable of generating one or more sensed conditions, which may then be used to identify and authenticate a user of the ring.” Ex-1004, 472. PO similarly argued during prosecution that the applied Ahagbe reference was “certainly not directed to a wearable computing device that is configured as a ring” because “Ahagbe is directed to a bracelet that serves as an energy store, such as for charging a cell phone.” Ex-1004, 473. It is clear that PO did not argue that the Examiner’s references did not teach the recited WCD because the references did not teach a finger-sized ring to clearly limit the claims to a finger-worn device. While Dr. Mercier attempts to argue that the PO

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 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;

**Applicant never distinguished the prior art based on, or even mentioned, a “finger” requirement**

Demonstrative Exhibit Not Evidence

859Ex-1079 ¶15; Ex-1004, 474

30

## Extrinsic evidence makes clear that: The 859 Patent is not limited to a finger ring

859

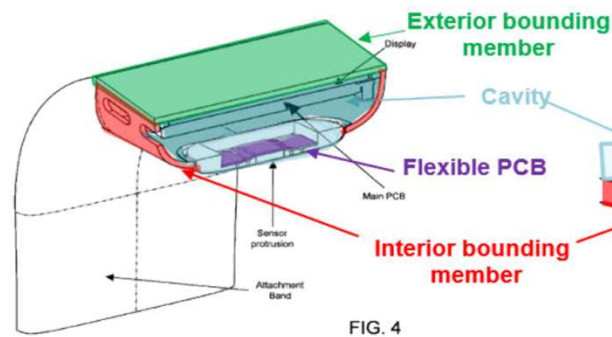
computing device” to a finger-ring that excludes other ring form factors. The plain meaning of “ring” is a “small, circular band, *esp* one of metal, worn on the finger, in the ear, nose, or *elsewhere*; ... an *encircling band*.” Ex-1365, 3. “Ring” has also been defined as “an object... in the form of a circle whose center is not filled.” Ex-1366, 3. Or as “a circle which goes around something.” Ex-1367, 3. Indeed, a ring is a circular object, such as circle, band, loop, hoop, crown, or halo. Rings, which circle a neck, toe, or wrist thus fall under the plain meaning of ring. Ex-1085, 30:8-19 (earring).

# Yuen teaches a wearable ring computing device

859

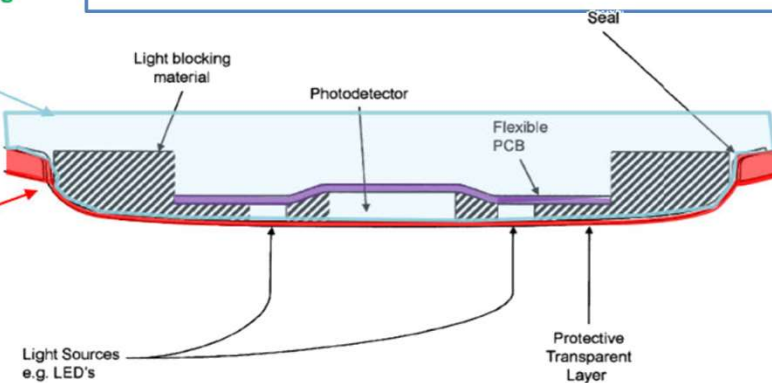
## Yuen

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 any number of ways including, but not limited to, those listed above.



## Dr. Anthony's testimony

ring, as I described in the previous section. Yuen teaches a "biometric monitoring device," that can be worn on an appendage of the user's body including a chest band, necklace, earring, or "toe band." Ex-1006, 2:7-9, Fig. 2. A toe band, chest band, and necklace are circular, and an earring is also a "ring" for a user's ear. These are "ring" computing devices. In particular, Yuen's "toe band" is equivalent to a finger-worn



Ex-1006, 24:35-41, 859Ex-1079 ¶¶20-21

32

# Yuen teaches a wearable ring computing device

859

## Dr. Anthony's testimony

21. Dr. Mercier argues that Yuen's toe band is not a "ring" and is further distinguished because it is allegedly "used around the entire toe area of the foot," Ex-2018 ¶¶126-128. While Dr. Mercier's declaration says that the "toe band" is not what a POSITA would have understood as the claimed ring computing device, Dr. Mercier previously testified that "ring" and "band" are synonymous. Ex-1081,

## Dr. Mercier's testimony

9 Q. You understand that, you know, there are times  
10 when a wedding ring is called a wedding band, right?

11 A. Yes.

12 Q. So, at least in common parlance, a ring and a band  
13 can mean the same basic form factor?

14 A. They could.

15 Q. And you would agree that a toe ring -- if it had  
16 said the word "ring" -- at least of the same size as a  
17 finger ring if not smaller?

18 A. Depending on the toe and one's relative big toe  
19 versus little toes, but we'll call it similar.

## Yuen teaches inner and outer bounding members coupled together to provide a waterproof cavity

859

### PO's Response

This specific architecture is absent from Yuen. Dr. Mercier explains that Yuen's "skin side" and "environmental side" merely denote general external surfaces of its device and do not teach or suggest the claimed distinct, coupled, and concentric interior and exterior bounding members that form the required internal waterproof cavity. Ex-2018, ¶¶136-139. Yuen's structure, particularly as Petitioner attempts to portray it (Pet., 20), resembles an open shell, potentially with exposed sensor protrusions, rather than the fully sealed internal cavity formed between distinct bounding members as claimed. Ex-2018, ¶¶136-139. Yuen's general discussion of sensor locations provides no structural basis for the claimed housing.

*Id.*

**FALSE**

**PO's argument against Yuen is factually wrong  
and based on improper claim limitations**

Demonstrative Exhibit Not Evidence

859POR (Paper 18), 42

34

# Yuen teaches inner and outer bounding members coupled together to provide a waterproof cavity

859

## Petitioner's Reply

Regardless, PO ignores Yuen's teachings. Specifically, a biometric monitoring device with a "bounding member" that "contacts, touches and/or faces the [user's] skin" (red) and another bounding member that is exposed to the environment (green). Pet., 19-21. Yuen's "environmental side" faces the environment and has a display, as it is the portion that does not contact the user's skin. *Id.*, Fig. 4. That side is not open to the environment. Ex-1006, 19:52-53; Ex-1079 ¶27.

Yuen's sensor module is sealed within the cavity (blue) formed between the interior and exterior bounding members and covered with a "protective transparent layer," which completes the internal bounding member (red). Ex-1079 ¶28; Ex-1006, Figs. 4, 5, Fig. 7 (no "protrusion").

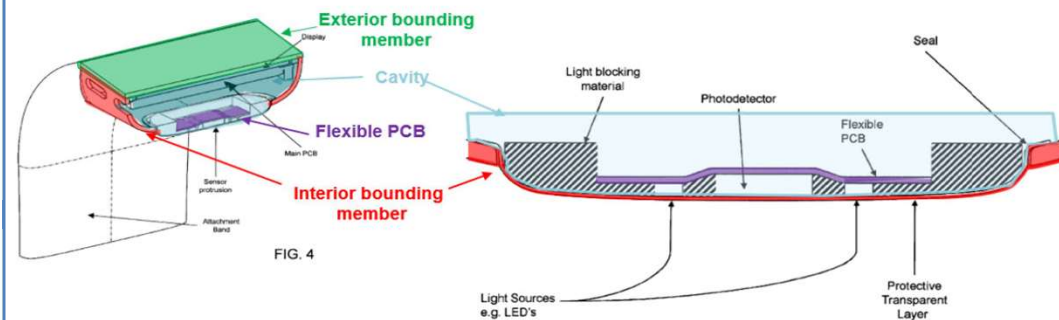


FIG. 5

Demonstrative Exhibit Not Evidence

859Reply (Paper 23), 6; Ex-1006, Figures 4 and 5 (annotated)

35

# Yuen teaches inner and outer bounding members coupled together to provide a waterproof cavity

859

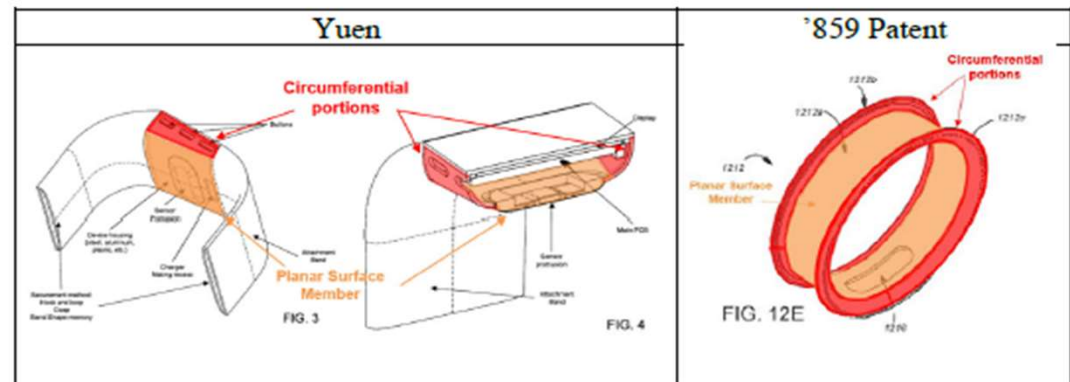
## PO's Response

46:12-16)—is not found in Yuen. Petitioner's attempt to force Yuen's general wristband housing into this detailed claim language is an exercise in impermissible hindsight. Yuen simply does not disclose this specific internal geometry, which is essential for the compact component integration of the '859 Patent's finger ring. Ex-2018, ¶¶136-139. Neither Yuen nor Mestas, alone or in combination, discloses or

**FALSE**

## 859 Patent

14. A ring computing device, comprising:  
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;



**PO's attorney argument is wrong; Yuen teaches claim 14's planar surface and raised circumferential portions**

Demonstrative Exhibit Not Evidence

859POR (Paper 18), 44; 859Ex-1001, Cl. 14, 12E; Ex-1006, Figs. 3, 4 cited at 859Reply (Paper 23), 7-8

36

# Yuen-Mestas teaches inner and outer bounding members coupled together to provide a waterproof cavity

859

## Petition

Ex-1006, Figs. 4, 5. Yuen further teaches that a device “made out of a metal” or plastic material provides a stiff-enough structure to maintain the device’s structural integrity, while also providing “a watertight seal for the sensor package.” Ex-1006, 14:66-15:4. Yuen teaches using “watertight glues” to secure or attach the device body. Ex-1006, 15:10-14. A POSITA would have understood that the housing (made of exterior and interior bounding members) form a watertight cavity because they would be attached to each other with a watertight seal in order to protect the electrical components mounted inside the cavity. Ex-1002 ¶164.

## Dr. Anthony’s testimony

that the housing is “water-resistant.” Ex-1010 ¶141. The combination is simple: a POSITA would have been motivated to apply Mestas’s waterproofing techniques to Yuen’s housing to prevent liquid ingress into the entire biometric monitoring device to increase durability and prevent damage to the internal components. Ex-1002 ¶165.

**Yuen’s bounding members form a watertight seal.  
Mestas provides additional teachings to provide a water-tight seal**

# Mestas-Asami teaches a wearable computing device “configured as a ring”

953

## 953 Patent

1. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

38. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

## Petitioner’s Reply

125:9-14. Miniaturizing and integrating known components into a ring form factor was routine. Ex-1081, 17:3-7; 18:17-19:9; Ex-1079 ¶15.

Both Mestas and Asami teach different device circumferential sizes, as Dr. Mercier concedes. Ex-1085, 60:17-25; POR, 24 (“Asami teaches that its device ‘may be enlarged in size as an arm ring or armlet’”). PO incorrectly argues that Mestas’s ribbing to reduce slippage teaches away from a finger-ring. POR, 26. A POSITA would have been motivated to reduce device size to minimize slippage by using a finger-ring. Ex-1079 ¶¶13-14; *Pearce v. Mulford*, 102 U.S. 112, 116 (1880) (“nothing patentable in merely reducing the size of the bracelet...”).

# Mestas-Asami motivates devices “configured as a ring” for a finger

953

## Mestas

nism 26. In one or more arrangements, an outward or exterior facing side of housing 12 of the wearable device assembly 10 may include a smooth texture while an interior facing side (e.g., contacting the wearer's body) may include frictional features. In one example, the interior facing side of the wearable device assembly 10 may be ribbed to improve traction and prevent slippage around a user's wrist or other body part.

[0162] The device 10 may be varied in circumferential size wherein the device 10 can define smaller and larger loop configurations to accommodate, for example, different wrist sizes of users. To this end, the housing 12 may incorporate a spacer member 28 or expansion member or element 28 as shown in FIGS. 12-13. It is understood that a single spacer

## Dr. Mercier's testimony

5 Q. Would you agree that a wearable device in a  
6 ring form factor should also be designed so that it  
7 is -- doesn't slip off of a user's finger, for example?  
8 A. I think in general that's a desired outcome  
9 of a wearable ring device. You don't want it to just  
10 fall off the -- the finger of a user. That's -- that's  
11 something reasonable that a designer would try to  
12 achieve.

17 Q. You would agree that Mestas describes that  
18 its wrist-worn device can be larger or smaller in  
19 circumferential size; correct?  
20 A. Yes. Different users have different-sized  
21 wrists, so it would be reasonable to design something  
22 that has different sizes, and -- and as you -- we see  
23 here in paragraph 162, they can have larger or smaller  
24 loop configurations to accommodate different wrist  
25 sizes.

# Mestas-Asami's ring device has interior and exterior enclosure portions

953

## 953 Patent

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;

38. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

an exterior enclosure structure forming a first part of a housing for the wearable computing device, the exterior enclosure structure retaining one or more electronic components, the one or more electronic components comprising:

...

a transparent interior enclosure portion configured for being coupled to the exterior enclosure structure, the interior enclosure portion forming a second part of the housing.

## PO's Response

and depicted in Fig. 8 and Fig. 13 above. The claimed "coupling" implies an assembly of at least two separate structural pieces to define the final housing. EX2018, ¶111.

**FALSE**

## Dr. Mercier's testimony

Q. Okay. The -- the feature that the structures are separate and then subsequently brought together, that's not specifically recited in the claims.

You're taking that from some of the figures; correct?

A. That's right. The claims need to be read in light of the specification, and the specification is -- clearly does depict that. They're coupled together, and then there's insulators that go in and protect things and so on. So there's a -- quite of bit of description in the specification about how that -- how that happens.

## The 953 claims do not require "separability"; or a "cavity" as in the 859

Demonstrative Exhibit Not Evidence

953Ex-1001, CLs. 1, 38; 953PO's Response, 32; Ex-1085, 105:24-106:11 cited at 953Reply (Paper 23), 5

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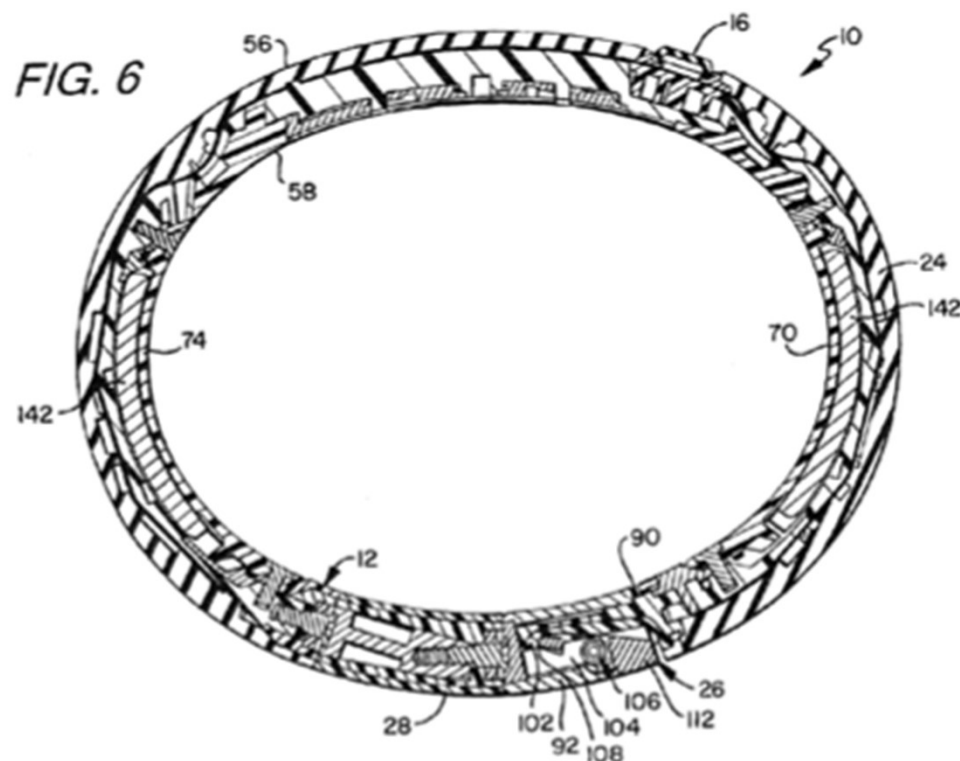
# Mestas-Asami's ring device has interior and exterior enclosure portions

## Petition

953

Mestas teaches “encasement member 24” (which Mestas refers to as the “outer encasement”), which houses the spine member 22 inside. Ex-1010 ¶151; Ex-1002 ¶198. The “encasement member...has a generally rounded outer surface 56 and a generally planar inner surface 58, and may be considered to have an inner portion defining an inner diameter of device 10 and an outer portion defining an outer diameter of the device 10.” Ex-1010 ¶157, Fig. 6. The inner and outer portions of the device may be manufactured in separate processes. See *id.* ¶173 (“As further

Mestas teaches that the device’s “encasement member 24” also has “an outer portion defining an outer diameter of the device,” which is an exterior enclosure structure. Ex-1010 ¶157; Ex-1002 ¶201. The printed circuit board in Mestas, which is coupled to the spine, is thus “received” by Mestas’s device’s exterior enclosure structure. *Id.* The inner and outer portions of the encasement member are coupled and form a housing 12. See Ex-1010 ¶151 (“The housing 12 is in the form of a



953Pet. (Paper 1), 23-25; Ex-1010, Figure 6

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Demonstrative Exhibit Not Evidence

# Overview

- Alleged invention
- Overview of the prior art
- Coupled members with a waterproof cavity of a Wearable Ring Computing Device
- **Curved Battery**
- Flexible PCB
- Sensor(s) and Electronic components
- Window and Potting
- Motivations
- Secondary indicia of non-obviousness

Demonstrative Exhibit Not Evidence

# Curved battery limitations

## 859 Patent

- 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;
- 11. A wearable ring computing device**  
the ring computing device comprising:  
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;
- 14. A ring computing device, comprising:**  
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;  
a curved rechargeable battery, the rechargeable battery being configured for being wirelessly recharged;

## 953 Patent

- 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;
- 38. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:**  
an exterior enclosure structure forming a first part of a housing for the wearable computing device, the exterior enclosure structure retaining one or more electronic components, the one or more electronic components comprising:  
a curved printed circuit board comprising a microprocessor, the printed circuit board disposed proximate the exterior enclosure structure;  
a curved battery disposed proximate the printed circuit board;

# Schröder expressly teaches a battery

859/953

## Schröder

In a further embodiment example, the external secure unit 2 has an energy storage device, e.g. an accumulator or a battery. The energy storage device is connected to the chip module 10 in order to supply the chip module 10 with energy outside an electromagnetic field of a reader. Within the reader's field the energy of the energy storage device can be additionally employed in order to increase the range of the antenna coil 8 upon transmission. The energy storage device is preferably charged by means of the reader's electromagnetic field. The energy storage device can also be employed to operate alternative communication channels, such as wireless LAN, infrared, etc., which are likewise supported by the chip module 10, outside the reader's field. Further, the energy storage device can be employed for operating electronic components, such as display units or display elements, and supplying them with energy. The energy storage device further enables uninterrupted operation of the processor after leaving the reader's field. The energy storage device can, for charging, be connected directly to the antenna coil 8 via a rectifier circuit, with the chip module 10 connecting the energy storage device to the antenna coil 8 accordingly by means of a suitable connection device.

## Dr. Mercier disputes that the battery fits in Schröder's recess, but this is what Schröder says

859/953

PO's Expert Dr. Mercier:

20 Q. And so Schroder says that inlay 12 can have on it  
21 at least chip module 10, further antenna coil 8, and at  
22 least one or more electronic component, such as a battery,  
23 right?

24 A. Yes. And to further that, in figure 3, you know,  
25 which is the -- well, figure 2 and 3, which are the only

Schröder

FIG. 4 shows a longitudinal section through a finger-ring 2. Here, an inlay 12 is inserted into one half 18 of the finger-ring 2. FIG. 5 shows a cross section, corresponding to

Schröder

crimping. Besides the chip module 10, at least one further electronic component can also be located on the carrier, e.g.

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859Reply (Paper 23), 17; Ex-1081, 98:20-24, Ex-1007, 12:4-6, 12:40-42

45

## Dr. Mercier admits that inlay 12 is inserted into Schröder's recess

859/953

10 Q. And so inlay 12, with chip module 10 and various  
11 other components on it, is inserted into a recess between  
12 ring halves 16 and 18 in Schroder, right?

13 A. Yes.

17 Q. So figure 4 talks about a recess in which inlay 12  
18 is inserted. Right? Kind of implies that there's a recess  
19 that exists, and then inlay 12 is put into that recess,  
20 right?

21 A. That's right.

## PO incorrectly suggests that Schröder doesn't teach anything about a battery's position

859/953

### PO's Response:

In contrast, Schröder fails to provide any enabling disclosure for such a feature.

Schröder does not depict a battery in any figure, nor does it describe the shape, size, or specific internal position for its merely optional battery. Ex-2018, ¶189. Schröder only vaguely suggests its optional battery is “connected to the chip module 10” (Ex-1007, 11:46-50), a module which Schröder's primary embodiment (Fig. 3) clearly shows as an external and flat component. Ex-1007, Fig. 3. This explicit teaching of

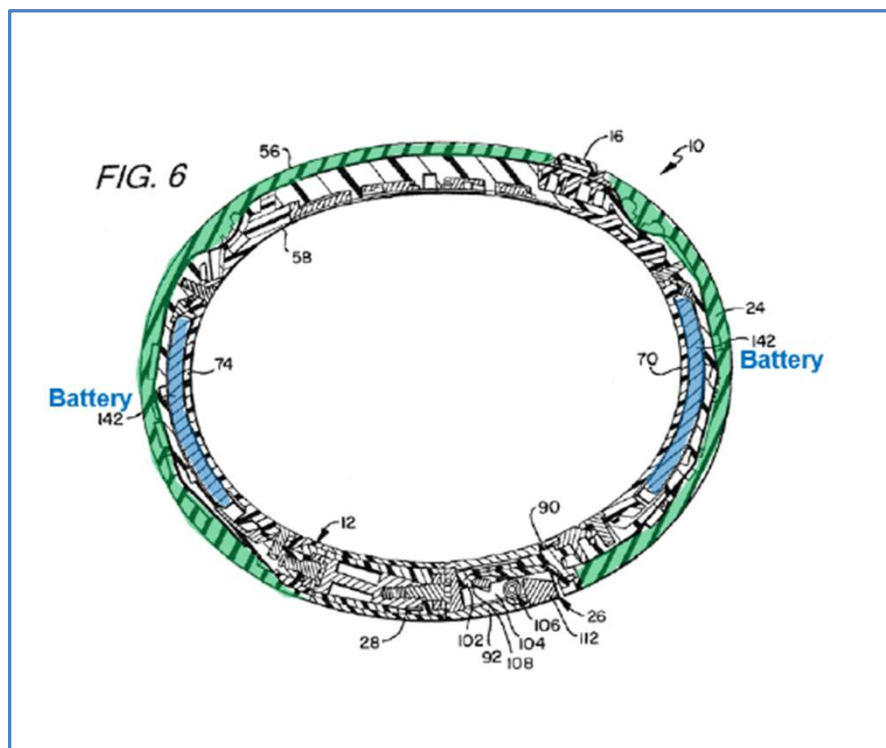
**FALSE**

### Schröder's teaching related to positioning electronic components such as a battery

- Battery “connected to chip module”
- Electronic components, such as a battery, “on the carrier”
- Electronic components, such as a battery, “applied to a carrier foil”
- “further electronic devices are inserted into the depression” in the carrier
- Electronic component, such as a battery, should “not protrude beyond the carrier foil”
- Carrier “wound or rolled up” around a “core ring” that has a “u-shaped cross- sectional profile”

# Mestas expressly teaches a curved battery

859/953



[0168] As discussed, the controller 14 includes the power supply 142 in the form of batteries 142. It is understood that a single battery 142 could be utilized in the design. Such a design may allow for a flexible circuit member having additional areas to support additional components associated with the device 10. In an exemplary embodiment, however, the power supply 142 utilizes a pair of batteries 142. As can be appreciated from FIGS. 6 and 20, the batteries 142 have a curvilinear or curved configuration and are generally rigid members. The batteries 142 define curved planar surfaces. In an exemplary embodiment, the device 10 utilizes the pair of batteries 142. The first battery 142 is positioned in the first recessed compartment 50 of the spine member 22, and the second battery 142 is positioned in the second recessed compartment 52 of the spine member 22. The batteries 142 have a thickness that generally corresponds to a depth of the recesses 50, 52. The batteries 142 are generally flush with the

Demonstrative Exhibit Not Evidence

E.g., 859Pet. (Paper 1), 23-24; Ex-1010, Fig. 6 (annotated), ¶168

48

## PO argues bodily incorporation of Mestas's battery into Schröder's ring

859/953

### PO's Response:

Petitioner's reliance on Mestas to supply the "curved battery" (Ex-1010, ¶168, Fig. 6) is misplaced and does not cure Schröder's deficiencies. Mestas's curved battery is designed for a large wristband and is dimensionally unsuitable for the claimed cavity within a finger-ring housing. Ex-2018, ¶190. As discussed above (Section VII.A.1), supported by inventor testimony and Dr. Anthony's admissions regarding scaling challenges, adapting Mestas's significantly larger battery for Schröder's ring would require a non-obvious, substantial redesign and miniaturization effort, not a simple substitution. Ex-2018, ¶¶165-170. A POSITA would recognize that forcing Mestas's wrist-sized battery into Schröder's thin ring would inevitably and dramatically increase the wearable device's thickness or require a complete structural overhaul, beyond routine adaptation. *Id.*, ¶190.

### PO's response relies on bodily incorporation

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859POR (Paper 18), 62-63

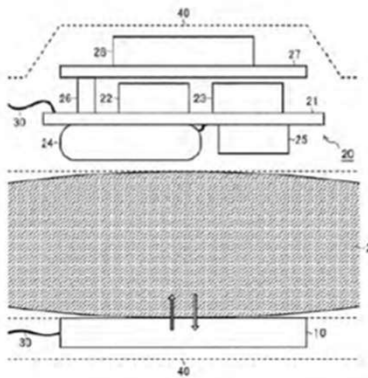
49

# ITC determination was also based on bodily incorporation arguments, in conjunction with different references

859/953

## ITC's decision regarding Niwa "in view of Battery art"

Fig. 28 of Niwa shows this stacking of the components to reduce the protrusion of the area of the first substrate 21 in the lateral direction – i.e., Niwa teaches reducing the lateral area taken up by the first substrate and the battery by stacking components, as shown below:



Niwa at Fig. 28. Respondents argue that one could “fit more battery” if you “continue along the arc,” Resp. Br. at 62, quoting Alarcon Tr. at 1007:10–16, but this would require increasing the area of the first substrate 21, which would directly contradict Niwa’s disclosure that the area of the first substrate 21 should be reduced to reduce the consciousness of the wearer of the device. See Niwa at [0214]. In addition, Niwa discloses a flat battery: “according to this construction, the battery 24 [is] formed as highly flat” and “is located right above the finger 2” to enhance the affinity of the sensor. Niwa at [217].

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 against a conclusion that it would have been obvious to replace its flat and stacked configuration with a curved battery. *Philip Morris Products S.A. v. Int’l Trade Comm’n*, 63 F.4th 1328, 1347 (Fed. Cir. 2023). One of skill would understand why a flat and stacked configuration was superior such that there would be no need for or benefit from a curved battery. Rosing Tr. at 1203:16–18 (“For the same volume, the flat battery generally will have a better energy density than the curved battery”) and 1212:3–17 (“Niwa specifically wants battery to be highly flat. And that he very specifically locates it right above the finger and that he also specifically places two very flat substrates right on top of the finger. So he says he does this because it enhances affinity of the sensor and reduces consciousness of the examinee for wearing the ring. In addition, this highly flat battery has a better capacity. . . . So there is no real reason for Niwa to want to modify this flat battery. He has from his perspective solved the problem that he was after.”).

...

The evidence does not support that one of skill would have modified Niwa to include a curved battery within its curved ring structure. Nonetheless, each of the “battery art” references is

Demonstrative Exhibit Not Evidence

Ex-2122, 90-92

50

# Using a curved battery, as taught by Mestas, in a curved recess, as taught by both Mestas and Schröder, would have been obvious

859/953

## Petitioner's Expert Dr. Anthony:

58. Dr. Mercier also argues as if a POSITA would be literally shrinking Mestas's components to fit into Schröder's ring. Ex-2018 ¶¶138-140. But I am not bodily incorporating Mestas's battery into Schröder's ring. See Ex-2021 (Anthony Tr. 307:7-17) (Q: "Whether we're talking about using one or both of Mestas's batteries, the battery disclosed in Mestas's bracelet is too big to put in a ring like Schröder, correct?" A: "... what's taught is the benefit of a curved battery. And *I'm not proposing a wholesale, just copying and paste that battery into a device of the size of a ring, but a POSITA would curve the battery to beneficially use the space and size the -- use an appropriate energy density as well as for the power requirements for.*"). Mestas teaches having curved batteries in a wearable device. It is that teaching that a POSITA would have considered implementing into Schröder. As I explained in my declaration, a battery having a curved shape like the "curved battery" of Mestas would have been obvious to avoid increasing the ring's thickness or straining the battery or housing. Ex-1002 ¶¶214-220. While Dr. Mercier argues

## PO's Expert Dr. Mercier:

12 Q. Okay. But you would agree that there was kind of  
13 a general pressure in the industry around 2013 to attempt  
14 to miniaturize batteries, correct?  
15 ATTORNEY PLUTA: Object to form. Object to form.  
16 THE WITNESS: I do. And one other piece of

**PO's expert acknowledges general pressures in the industry to make electronic components smaller**

Demonstrative Exhibit Not Evidence

953Reply, 14;Ex-1079 ¶158; Ex-1081 at 148:12-149:16

51

# Size reduction does not impart patentability

859/953



“There certainly is nothing patentable in merely reducing the size of the bracelet so as to adapt it to use in a necklace.”

*Pearce v. Mulford*, 102 U.S. 112, 116, 26 L. Ed. 93 (1880)

## The challenged patents do not teach routine battery miniaturization details because the such details would have been known to a POSITA

859/953

9           Q. Well, you would agree that the '953 patent  
10 doesn't describe the miniaturize -- miniaturization  
11 process of these internal components; right?

12           A. That's right, the '953 patent doesn't  
13 describe how to miniaturize batteries and other --  
14 other things like that.

# Yuen teaches a battery and a very small form factor that would have been implemented with a curved battery

859

## Yuen

(for example, a grade of stainless steel that is ferrous). Under this circumstance, the portable biometric monitoring device (where it includes a rechargeable energy source (for example, rechargeable battery) may interconnect with a charger using magnetic properties to secure thereto. In addition, the por-

## Petitioner's expert, Dr. Anthony's testimony

14:43-46; Ex-1002 ¶¶ 166-169. Although not depicted in Yuen's figures, a POSITA would have understood that Yuen's toe band battery would be curved to encircle the user's toe and merely changing the proportional size of Yuen's battery would have been an obvious change. Ex-2021, 390:2-392:2; Ex-2022, 51:8-56:6. While Dr. Mercier's declaration claims that Yuen's battery is depicted as flat, he admitted that making a curved battery out of a flat one was within the skill set of a POSITA at the time. Ex-1085, 131:8-17; Ex-2020, 172:6-173:2; Ex-1081, 148:24-149:1.

...

because there would be no need to manufacture a battery from scratch. I specifically testified that there was no need for a POSITA to design the battery to fit into a ring because there were vendors that sell batteries. See Ex-2021, 315:9-316:19-21, 454:2-455:11. Dr. Mercier even testified that curved batteries were available. See, e.g., Ex-1081, 148:24-149:1. To obtain a small, curved battery that appropriately fits within the wearable device is within the skills of a POSITA. As acknowledged by Dr. Mercier, electronic components were trending smaller, and thus a POSITA would

Demonstrative Exhibit Not Evidence

Ex-1006, 14:43-45; 859Ex-1079 ¶¶ 31-32

54

# Yuen-Mestas teaches a curved battery

859

## Petitioner's expert, Dr. Anthony's testimony

40. To the extent that Dr. Mercier is arguing that the curved battery needed to fit into a ring is smaller than Mestas's curved batteries in a larger wearable device does not distinguish Mestas's teaching of using a curved battery, regardless of the size. As I explained above, a POSITA would have known how to adapt a curved battery into Yuen's ring form factor. A battery having a curved shape like the "curved battery" of Mestas would have been obvious to try to avoid increasing the ring's thickness or straining the battery or housing. To clarify, my opinion was not based on bodily incorporation of Mestas's battery into Yuen's ring. Rather, implementing a curved battery would have been a design consideration for the ring. See Ex-2020, 172:1-5 ("*There's design flexibility in how you would locate any component to accomplish the design trade-offs*" with the amount of battery capacity needed relative to the other components that also need to be assembled on the inlay."). As I explained at my deposition, "a battery could exist in part of the cavity

**Mestas makes clear that  
a POSITA would have known to curve Yuen's Battery**

Demonstrative Exhibit Not Evidence

859Ex-1079 ¶140 cited at 859Reply (Paper 23), 9

55

# Overview

- Alleged invention
- Overview of the prior art
- Coupled members with a waterproof cavity of a Wearable Ring Computing Device
- Curved Battery
- Flexible PCB
- Sensor(s) and Electronic components
- Window and Potting
- Motivations
- Secondary indicia of non-obviousness

Demonstrative Exhibit Not Evidence

# Flexible PCB/curved PCB

## 859 Patent

1. A system, comprising:

...

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:

11. A wearable ring computing device the ring computing device comprising:

...

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:

14. A ring computing device, comprising:

...

a flexible printed circuit board positioned proximate a first portion of the planar surface of the interior bounding member between the raised circumferential portions, the flexible circuit board portion comprising:

## 953 Patent

1. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

...

a flexible printed circuit board disposed proximate the curved battery, the flexible printed circuit board comprising:

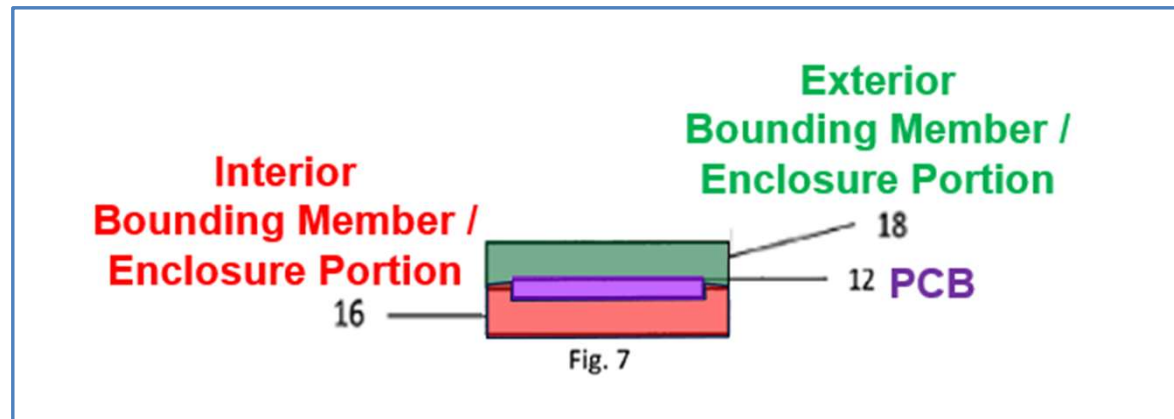
38. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

...

a curved printed circuit board comprising a microprocessor, the printed circuit board disposed proximate the exterior enclosure structure;

# Schröder's "inlay 12" corresponds to the claimed "flexible PCB"

859/953



finger-ring 2. FIG. 5 shows a cross section, corresponding to FIG. 4, of the finger-ring 2. The finger-ring 2 consists of two ring halves 16 and 18. The two ring halves 16 and 18 respectively have a recess into which the inlay 12 is inserted.

# Schröder's "inlay 12" is made of the same flexible material described in the challenged patents

859/953

## Schröder

There are applied to a carrier foil at least one chip module 10 and at least one antenna coil 8 and optionally further electronic devices, e.g. a further antenna coil 8 or a display. The antenna coil 8 can for example be printed on the carrier foil by means of a conductive paste. Advantageously, a depression is manufactured in the carrier foil, e.g. by milling, lasering, etching, before the chip module 10, the antenna coil 8 and optional further electronic devices are inserted into the depression. The depression has the purpose that the devices to be inserted into the depression should not protrude beyond the carrier foil if possible, so that an even surface is present on the carrier foil to facilitate a later processing of the carrier foil with inserted devices. The carrier foil itself consists of a flexible plastic material, e.g. PET or Kapton. The carrier foil consists of at least one foil. A strip-shaped ring blank is singled out of the carrier foil, e.g. by punching, lasering. Alternatively, it is possible that a ring blank is first singled out of a carrier foil, a depression is formed in said blank, and then the devices are inserted into the depression. Advantageously, a plurality of depressions for the later ring blanks are formed in a foil sheet, the devices are inserted into the depressions and finally the ring blanks with the inserted devices are singled out of the carrier foil. Further, a manufacture of ring blanks is accordingly also possible by a roll-to-roll process.

## Challenged Patents

The stiffener element 1442 can be formed of any material, such as polyamide or thin FR4, depending on construction of the PCB 1440. In particular, the material of the stiffener can be chosen to be more or less flexible than the PCB 1440.

**Schröder uses the same material for its inlay/carrier as the challenged patents**

Demonstrative Exhibit Not Evidence

Ex-1007, 13:22-47; 859Ex-1001, 18:25-27; e.g., 859Reply (Paper 23), 16, 19; 859Ex-1079 ¶¶ 73, 79

59

# Schröder's multi-layer carrier holds all of the internal electrical components

859/953

## Schröder

There are applied to a carrier foil at least one chip module 10 and at least one antenna coil 8 and optionally further electronic devices, e.g. a further antenna coil 8 or a display. The antenna coil 8 can for example be printed on the carrier foil by means of a conductive paste. Advantageously, a depression is manufactured in the carrier foil, e.g. by milling, lasering, etching, before the chip module 10, the antenna coil 8 and optional further electronic devices are inserted into the depression. The depression has the purpose that the devices to be inserted into the depression should not protrude beyond the carrier foil if possible, so that an even surface is present on the carrier foil to facilitate a later processing of the carrier foil with inserted devices. The carrier foil itself consists of a flexible plastic material, e.g. PET or Kapton. The carrier foil consists of at least one foil. A strip-shaped ring blank is singled out of the carrier foil, e.g. by punching, lasering. Alternatively, it is possible that a ring blank is first singled out of a carrier foil, a depression is formed in said blank, and then the devices are inserted into the depression. Advantageously, a plurality of depressions for the later ring blanks are formed in a foil sheet, the devices are inserted into the depressions and finally the ring blanks with the inserted devices are singled out of the carrier foil. Further, a manufacture of ring blanks is accordingly also possible by a roll-to-roll process.

## Schröder

At least one further foil can be applied to the carrier foil or the ring blank on at least one side. A multilayer foil composite can therefore be produced. The foils can be interconnected e.g. by means of glue or lamination.

Demonstrative Exhibit Not Evidence

859Reply (Paper 23), 16, 19; 859Ex-1079 ¶¶73, 79; Ex-1007, 13:22-47; 13:47-51

60

# Schröder's inlay 12 is formed flat, and then rolled into a ring shape around a "u-shaped" "core ring"

859/953

## Schröder

There are applied to a carrier foil at least one chip module 10 and at least one antenna coil 8 and optionally further electronic devices, e.g. a further antenna coil 8 or a display. The antenna coil 8 can for example be printed on the carrier foil by means of a conductive paste. Advantageously, a depression is manufactured in the carrier foil, e.g. by milling, lasering, etching, before the chip module 10, the antenna coil 8 and optional further electronic devices are inserted into the depression. The depression has the purpose that the devices to be inserted into the depression should not protrude beyond the carrier foil if possible, so that an even surface is present on the carrier foil to facilitate a later processing of the carrier foil with inserted devices. The carrier foil itself consists of a flexible plastic material, e.g. PET or Kapton. The carrier foil consists of at least one foil. A strip-shaped ring blank is singled out of the carrier foil, e.g. by punching, lasering. Alternatively, it is possible that a ring blank is first singled out of a carrier foil, a depression is formed in said blank, and then the devices are inserted into the depression. Advantageously, a plurality of depressions for the later ring blanks are formed in a foil sheet, the devices are inserted into the depressions and finally the ring blanks with the inserted devices are singled out of the carrier foil. Further, a manufacture of ring blanks is accordingly also possible by a roll-to-roll process.

## Schröder

After the ring blank has been prepared and singled to a certain desired length in accordance with the above steps, the ring blank is wound or rolled up to obtain the form of a finger-ring 2 with a corresponding diameter and thickness of the finger-ring 2. To form a firm bond, the ring blank is laminated under pressure and heat in a mold into which the rolled ring blank has been inserted.

Alternatively, the ring blank can be wound around a core ring. The core ring has the form e.g. of a finger-ring 2. Further, the core ring has for example a U-shaped cross-sectional profile. The core ring advantageously consists of plastic. Preferably, the core ring is manufactured by an injection-molding or die-casting process.

Demonstrative Exhibit Not Evidence

Ex-1007, 13:22-47, 14:14-26; e.g., 859Reply (Paper 23), 16, 19; 859Ex-1079 ¶¶ 73, 79

61

# Schröder's inlay design and packaging is the same as the challenged patents

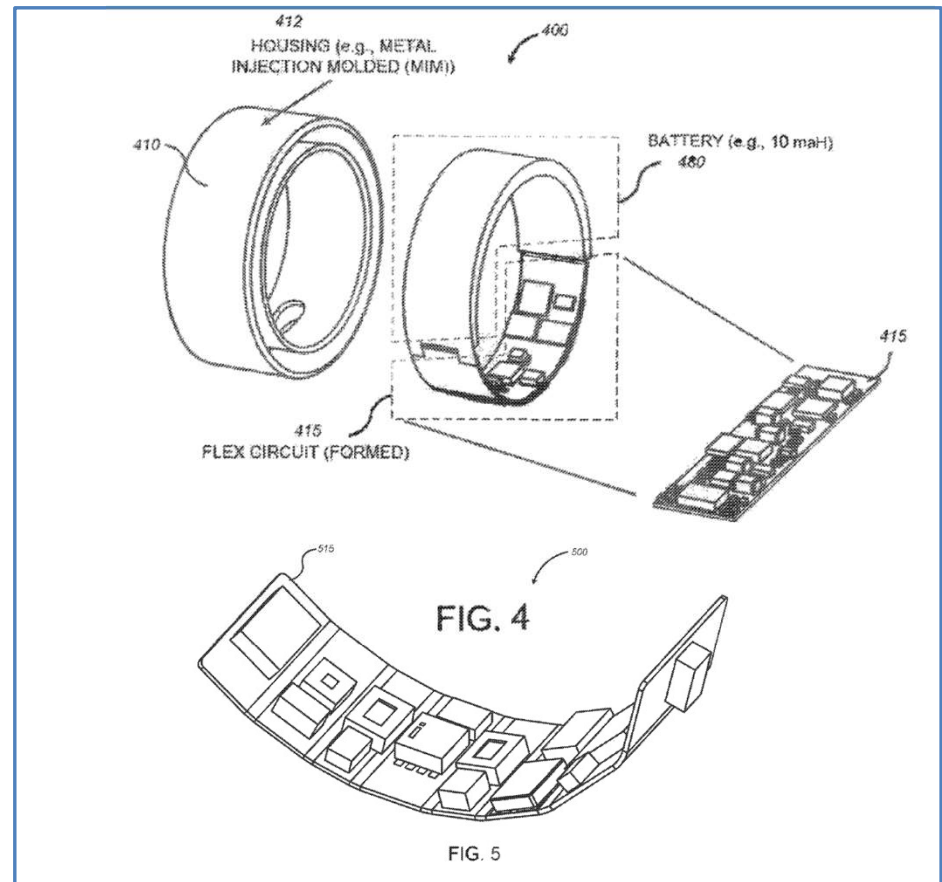
859/953

## Schröder

There are applied to a carrier foil at least one chip module 10 and at least one antenna coil 8 and optionally further electronic devices, e.g. a further antenna coil 8 or a display. The antenna coil 8 can for example be printed on the carrier foil by means of a conductive paste. Advantageously, a depression is manufactured in the carrier foil, e.g. by milling, lasering, etching, before the chip module 10, the antenna coil 8 and optional further electronic devices are inserted into the depression. The depression has the purpose that the devices to be inserted into the depression should not protrude beyond the carrier foil if possible, so that an even surface is present on the carrier foil to facilitate a later processing of the carrier foil with inserted devices. The carrier foil itself consists of a flexible plastic material, e.g. PET or Kapton. The carrier foil consists of at least one foil. A strip-shaped ring blank is singled out of the carrier foil, e.g. by punching, lasering. Alternatively, it is possible that a ring blank is first singled out of a carrier foil, a depression is formed in said blank, and then the devices are inserted into the depression. Advantageously, a plurality of depressions for the later ring blanks are formed in a foil sheet, the devices are inserted into the depressions and finally the ring blanks with the inserted devices are singled out of the carrier foil. Further, a manufacture of ring blanks is accordingly also possible by a roll-to-roll process.

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## Challenged Patents



E.g., 859Reply (Paper 23), 16, 19; 859Ex-1079 ¶¶73, 79 ; Ex-1007, 13:22-47; 859Ex-1001, Figs 4 and 5

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# PO argues that Schröder's inlay 12 is not a PCB, but its own definition proves otherwise

859/953

## PO sur-reply

Dr. Mercier explained that a POSITA would require, at minimum, etched or printed conductive traces, multiple layers, and mounted components before calling a structure a "printed circuit board." Ex-1081, 69:18-71:17.

## Schröder

There are applied to a carrier foil at least one chip module 10 and at least one antenna coil 8 and optionally further electronic devices, e.g. a further antenna coil 8 or a display. The antenna coil 8 can for example be printed on the carrier foil by means of a conductive paste. Advantageously, a depression is manufactured in the carrier foil, e.g. by milling, lasering, etching, before the chip module 10, the antenna coil 8 and optional further electronic devices are inserted into the depression. The depression has the purpose that the devices to be inserted into the depression should not protrude beyond the carrier foil if possible, so that an even surface is present on the carrier foil to facilitate a later processing of the carrier foil with inserted devices. The

## Schröder

At least one further foil can be applied to the carrier foil or the ring blank on at least one side. A multilayer foil composite can therefore be produced. The foils can be interconnected e.g. by means of glue or lamination.

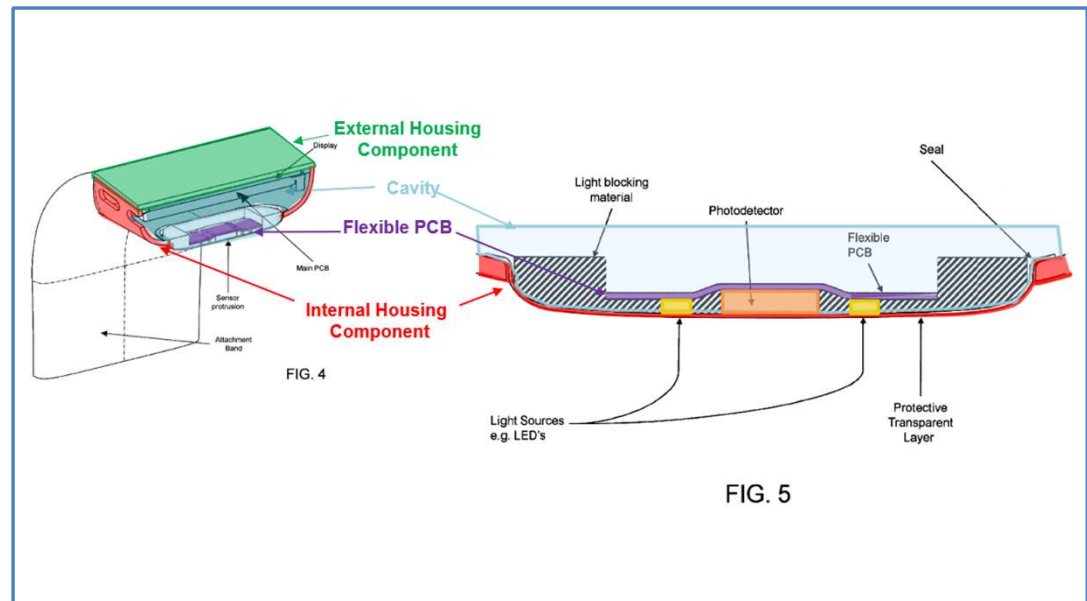
# Yuen's flexible PCB

859

Yuen

FIG. 5 illustrates a cross sectional view of a sensor protrusion of an exemplary portable biometric monitoring device; notably, two light sources (e.g. LED's) may be located on one or more sides of the photodetector (for example, either side or opposing sides of a photodetector) to enable photoplethysmography (PPG) sensing wherein light blocking material may be placed between the light sources and the photodetector to prevent any light from the light sources from going through the device body and being detected by the photodetector (in one embodiment, the light sources and photodetector are placed on a flexible PCB); a flexible transparent layer may be placed on the lower surface of the sensor protrusion to form a seal wherein the transparent layer may provide other functions such as preventing liquid from entering the device where the light sources or photodetectors are disposed or placed; notably, the transparent layer may be formed through in-mold labeling or "IML";

Yuen



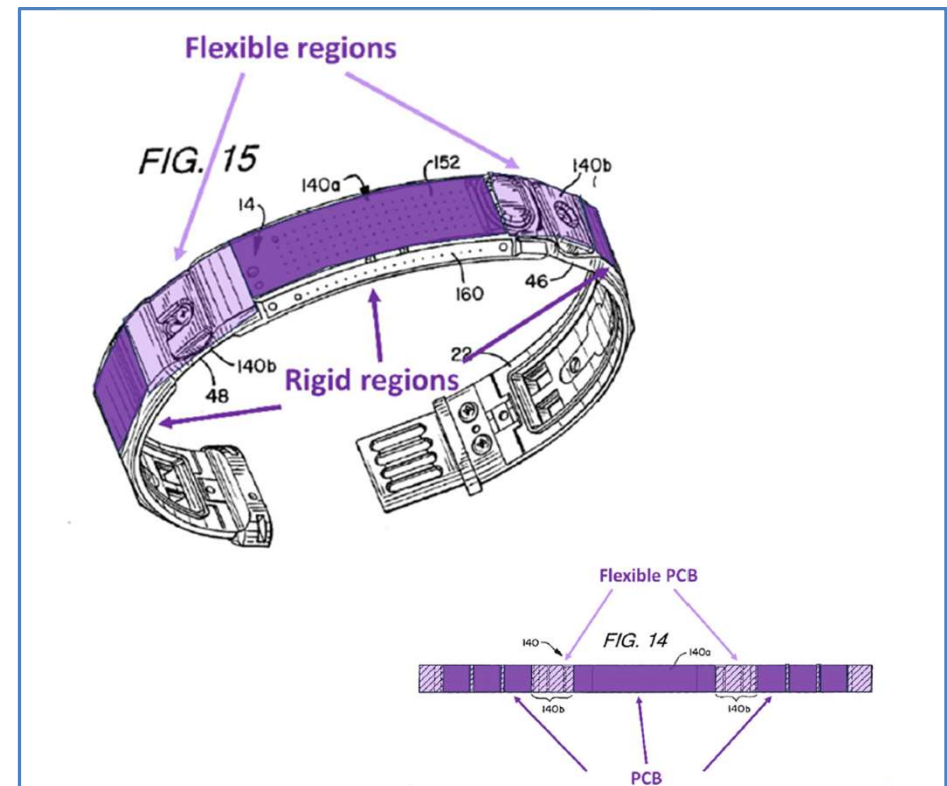
# Mestas teaches a curved PCB

953

## Mestas

[0164] FIG. 14 shows a schematic view of the printed circuit board (PCB member) 140. In an exemplary embodiment, the PCB member 140 is a flexible circuit member. The PCB member has various regions or sections to support the various components thereon. The PCB member further has a central region 140a wherein the display 18 and indicator system 20 are operably connected thereto. The PCB member also has flex regions 140b that will correspond in position to the flexible zones 46,48 of the spine member 22. Other components described herein are also connected to the PCB member 140. As shown in FIGS. 15 and 16, the PCB member 140 is wrapped around and mounted to the spine member 22. Fasteners may be used to fixedly attach the PCB member to the spine member 22. It is understood that the central region 140a of the PCB member corresponds to the central portion 34 of the spine member 22 when connected. The PCB member 140 generally follows the contours of the spine member 22 including the contours of the flexible zones 46,48. Thus, the flex regions 140b are positioned at the flexible zones 46,48 of the spine member 22 and in general surface-to-surface engagement. This configuration allows the PCB member to be moved proximate a neutral axis wherein stress on the PCB member is minimized when the device 10 is flexed.

## Mestas



Demonstrative Exhibit Not Evidence

E.g., 953 Petition at 26-27; Ex-1010, Figures 14, 15, ¶164

65

# Yuen-Mestas's curved PCB is proximate to the curved battery

## 859 Patent

1. A system, comprising:

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:

11. A wearable ring computing device the ring computing device comprising:

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:

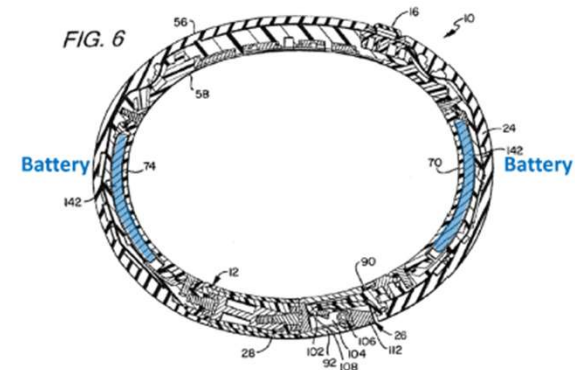
## Reply

859

But there is no need to redesign Yuen's PCB because the PCB is proximate to the sensor module and battery in order provide the connection to power the light sources.

Ex-1002 ¶¶176-178. Mestas further teaches that its sensor assembly is proximate to the battery by contacting and engaging with the flexible PCB. Ex-1010 ¶¶151 (spine member), 164 (flexible PCB wraps spine member), 168, 177 (batteries contact and engage flexible PCB); Ex-1079 ¶51. A POSITA would have made Yuen's flexible

PCB "proximate" the sensor module and battery, as taught in Mestas, to reduce risk of electrical components losing mechanical or electrical connection and reduce thickness thereby increasing comfort. Ex-1002 ¶179; Ex-2022, 30:3-40:1.



Demonstrative Exhibit Not Evidence

859Ex-1001, Cls. 1, 11; 859POR, 53-54; 859Reply, 11-12

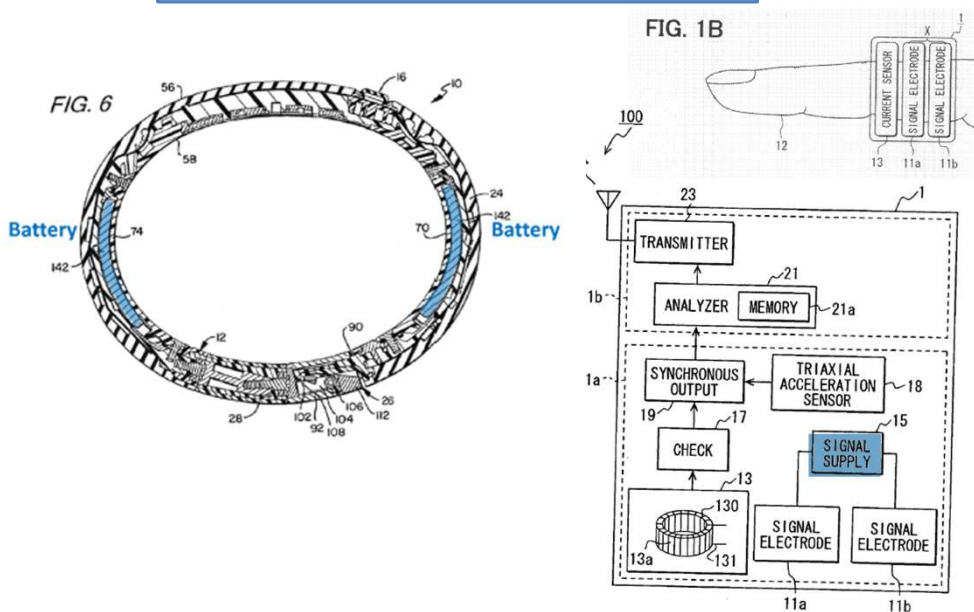
66

# Mestas-Asami's curved PCB is proximate to the curved battery

## 953 Patent

1. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

...  
a flexible printed circuit board disposed proximate the curved battery, the flexible printed circuit board comprising:



## Dr. Anthony's testimony

953

33. Again recycling his miniaturization argument, Dr. Mercier also argues that "[t]he fundamental structure of Asami's ring does not provide the necessary internal space or support for Mestas's PCB-battery assembly." Ex-2018 ¶126. This argument, rebutted above, incorrectly assumes that a POSITA would attempt to bodily incorporate Mestas's battery and PCB at their current sizes into Asami's ring. But that is not correct in my opinion. Rather, a POSITA would have implemented Mestas's components scaled down and adjusted to the finger ring form factor. See *supra* ¶21.

34. Additionally, Dr. Mercier's assertion that Asami lacks a battery or PCB is incorrect and irrelevant. Ex-2018 ¶125. First, Dr. Mercier admitted in deposition that "there has to be" a power supply in Asami, which could be implemented through a battery. Ex-1085, 72:9-14. More importantly, Dr. Mercier acknowledges that Ground 1 of the Petition relies on Mestas for the electronic components, while Asami supplies the finger-ring form factor. See Ex-2018 ¶122. Because the Mestas-Asami combination supplies all the required elements of the claim limitation, Dr. Mercier's argument fails. See Ex-1002 ¶¶210-216.

Demonstrative Exhibit Not Evidence

953Ex-1001, Cl. 1; 953POR (Paper 23), 37-38; Ex-1079 ¶¶33-34; Ex-1010, Figure 6; Ex-1014, Figs 1B, 6A

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# Overview

- Alleged invention
- Overview of the prior art
- Coupled members with a waterproof cavity of a Wearable Ring Computing Device
- Curved Battery
- Flexible PCB
- **Sensor(s) and Electronic Components**
- Window and Potting
- Motivations
- Secondary indicia of non-obviousness

Demonstrative Exhibit Not Evidence

# Sensors and electronic components

## 859 Patent

1. A system, comprising:

...

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.

11. A wearable ring computing device  
the ring computing device comprising:

...

a sensor module, the sensor module positioned within the cavity, the sensor module comprising one or more sensors, the one or more sensors being configured to sense a change in a condition of a wearer of the ring and for producing sensed data thereby; and

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 memory, for storing the sensed data;

a processor, coupled to the memory, the processor configured for accessing the sensed data from the memory, and for performing one or more analyses on the sensed data; and

a semiconducting light element disposed at least partially within the housing.

14. A ring computing device, comprising:

...

a sensor module, the sensor module positioned within the cavity, the sensor module comprising one or more sensors, the one or more sensors being configured to sense a change in a condition of a wearer of the ring and for producing sensed data thereby; and

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 memory, for storing the sensed data;

a processor, coupled to the memory, the processor configured for accessing the sensed data from the memory, and for performing one or more analyses on the sensed data; and

a semiconducting light element disposed at least partially within the housing.

NOT DISPUTED

NOT DISPUTED

NOT DISPUTED

# Sensors and electronic components

## 953 Patent

1. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

...

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 micro-processor, a sensor module, a light emitting diode, and a transceiver;

2. The wearable computing device of claim 1, wherein the at least one component comprises:

at least one processor;

at least one sensor configured to measure sensor data; and

at least one transceiver;

wherein the at least one processor activates the at least one transceiver to transmit a first data packet and/or receive a second data packet based in part on the sensor data.

3. The wearable computing device of claim 2, wherein the sensor comprises an accelerometer, and the sensor data comprises an acceleration measurement of an accelerometer disposed on the flexible printed circuit board of the wearable computing device.

4. The wearable computing device of claim 3, wherein the sensor data further comprises an axial rotation measurement.

5. The wearable computing device of claim 3, wherein the sensor comprises a capacitive touch sensor, and the sensor data further comprises a capacitive touch input and/or the measurement of one or more touch inputs.

6. The wearable computing device of claim 3, wherein the sensor comprises one or more of a light sensor, a gyroscope, and a magnetometer, and the sensor data further comprises one or more of a measurement from a light sensor, a gyroscope and/or a magnetometer.

11. The wearable computing device of claim 2, wherein the at least one processor determines an activity of a wearer based at least in part on the sensor data and activates the at least one transceiver to transmit a first data packet and/or receive a second data packet based at least in part on the activity of the wearer.

12. The wearable computing device of claim 2, wherein the at least one processor processes the sensor data to obtain a series of samples, compares the series of samples to a predetermined pattern, and activate the at least one transceiver to transmit the first data packet and/or receive the second data packet if the series of samples matches the predetermined pattern.

13. The wearable computing device of claim 2, wherein the comparison between the series of samples and the predetermined pattern is determined by a recognition technique.

38. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

...

one or more sensors disposed within the housing, the one or more sensors for sensing one or more conditions of the user;

a light emitting diode; and

# Schröder teaches a sensor module

859/953

## Schröder's sensor coupled to PCB

In a further embodiment example of the invention, the external secure unit 2 has a biometric sensor. This enables the user of the external secure unit 2 to authenticate himself. For example, the finger-ring 2 as an external secure unit 2 can have integrated therein at least one biometric sensor. The biometric sensor is connected suitably to the chip module 10. The sensor can be arranged on the chip module 10 or it can be arranged in the finger-ring 2 separately from the chip module 10 e.g. on a separate circuit foil. The biometric sensor can be integrated into the finger-ring 2 e.g. such that the biometric sensor captures e.g. at least a partial vein image in the finger while the finger-ring 2 is being pushed over a finger. As biometric sensors there can be employed e.g. at least one infrared diode and at least one infrared sensor. The infrared diode and the infrared sensor are arranged e.g. opposite each other such that e.g. an finger bone located therebetween has no adverse effect on a measuring result. Upon a first capture e.g. of a vein image of the ring finger, the vein image must be captured along the whole

## Schröder cont'd

finger length from all possible angles in order to enable a later authentication of the user to be carried out from arbitrary angles upon arbitrary displacements along the finger. The first capture can be effected by means of the at least one biometric sensor of the finger-ring 2 or by means of an external biometric sensor. After the first capture the captured biometric data must be stored in the chip module 10 of the finger-ring 2 as an external secure unit 2. This can be done e.g. upon a personalization of the external secure unit 2, i.e. here of the finger-ring 2. Upon an authentication of the user, the captured biometric data are compared with the stored data. If the comparison yields a match of the captured data with the stored data, the user is authenticated. Upon comparison of the captured with the stored biometric data, either the complete captured data can be compared with the stored data, or only certain characteristic points of the captured data can be compared with the stored data. The characteristic data may be e.g. intersection points of veins or other unusual features. Further, a tolerance can additionally be established with regard to a position of the features or to a lightness difference relative to a captured background. The characteristic data are advantage in that less memory space is required in the chip module 10. Alternatively, a fingerprint e.g. of one finger can also be captured.

# Schröder's sensor module is within the cavity

859/953

## 859 Patent

### 1. A system, comprising:

...  
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

### 11. A wearable ring computing device the ring computing device comprising:

...  
a sensor module, the sensor module positioned within the cavity, the sensor module comprising one or more sensors, the one or more sensors being configured to

## Petitioner's Reply

Schröder expressly teaches that inlay 12, chip module 10, and other components are arranged inside the ring. Ex-1079 ¶¶79-80. First, Schröder teaches that inlay 12, a carrier foil, is flat and then rolled into a ring shape. Ex-1007, 14:14-20. Then “chip module 10 and antenna coil 8 and the possibly further electronic devices are arranged [into] a carrier,” which is “preferably inserted into a recess in the second component.” Ex-1007, 15:19-22; Ex-2020, 167:17-170:5.

...

circuitry is a PCB. Ex-1079 ¶¶79-80. PO's expert cannot dispute this fact (Ex-1081, 118:19-121:6) and agreed that “inlay 12, with chip module 10 and various other components on it, is inserted into a recess between ring halves 16 and 18.” Ex-1081, 82:10-13, 101:12-16. PO's expert further agreed Schröder suggests minimizing space in the recess. Ex-1081, 112:4-9.

Demonstrative Exhibit Not Evidence

859Ex-1001, Cls. 1, 11; 859Reply (Paper 23), 19

72

# PO concedes that both Schröder and Mestas teaches a processor

## 859 Patent

1. A system, 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
11. A wearable ring computing device the ring computing device comprising:  
a processor, coupled to the memory, the processor configured for accessing the sensed data from the memory, and for performing one or more analyses on the sensed data; and
14. A ring computing device, comprising:  
a processor, coupled to the memory, the processor configured for accessing the sensed data from the memory, and for performing one or more analyses on the sensed data; and

## PO's Response

1007, 10:11-24, 10:59-62. While Schröder's processor handles "biometric data" in the form of static vein images for authentication, this is fundamentally different in kind, complexity, and processing demand from the continuous, dynamic physiological data analysis required by the '859 Patent to determine metrics like steps taken, nuanced sleep quality, real-time heart rate, blood pressure, and body temperature. Ex-2018, ¶206. Schröder simply does not disclose or suggest its

...

Mestas, while disclosing a processor for determining some athletic performance metrics like "heart rate," "steps taken," and "calories" (Ex-1010, ¶148), does not teach a processor configured for the full breadth of the claimed functionalities, such as determining "quality of sleep," "blood pressure," or "body temperature" in the comprehensive manner envisioned and enabled by the '859 Patent. Ex-2018, ¶207. Mestas's focus is on athletic activity monitoring via its large wrist-worn device, and its processor is tailored to that distinct purpose.

**PO conceded that both Schorder and Mestas teach a processor to access sensed data and perform analysis**

Demonstrative Exhibit Not Evidence

859Ex-1001, Cls. 1, 11, 14; 859POR (Paper 18), 73-74

73

# Schröder and Mestas each teach a processor to analyze sensor data

859

## 859 Patent

1. A system, 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
11. A wearable ring computing device the ring computing device comprising:
  - a processor, coupled to the memory, the processor configured for accessing the sensed data from the memory, and for performing one or more analyses on the sensed data; and
14. A ring computing device, comprising:
  - a processor, coupled to the memory, the processor configured for accessing the sensed data from the memory, and for performing one or more analyses on the sensed data; and

## Petitioner's Reply

PO concedes that Schröder's processor in chip module 10 is used for user authentication based on biometric data but argues that Schröder's processor is "fundamentally different [than]... the '859 Patent." POR, 73-74. The claims simply recite that the processor analyzes sensed biometric data. Schröder has a "processor for processing...data" for user authentication using vein imaging. Ex-1007, 10:60-67, 27:49-50; Ex-1079 ¶¶87-88.

PO ignores that Mestas's processor analyzes "sensor, algorithm, and sensed data" (Ex-1010 ¶201) to determine a change in "different parameters, metrics or physiological characteristics including...steps taken, and...heart rate." Ex-1010 ¶148. PO only argues that there is no motivation to combine Mestas with Schröder. POR, 74-75. While PO argues that Mestas's processor cannot do "the full breadth of the claimed functionalities" (POR, 74), this requires more than the challenged patent discloses. A POSITA would have been motivated to implement Mestas's processing teachings to improve Schröder's processor, which already processes biometric data. Ex-1079 ¶¶89-90.

**A POSITA would have been motivated combine Schröder-Mestas and the claims only requires at least one analysis**

Demonstrative Exhibit Not Evidence

859Ex-1001, Cls. 1, 11; 859Reply (Paper 23), 22

74

# Yuen teaches a sensor module positioned within the cavity and proximate to the battery

859

## 859 Patent

### 1. A system, comprising:

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;

### 11. A wearable ring computing device the ring computing device comprising:

a sensor module, the sensor module positioned within the cavity; the sensor module comprising one or more sensors, the one or more sensors being configured to sense a change in a condition of a wearer of the ring and for producing sensed data thereby; and

### 14. A ring computing device, comprising:

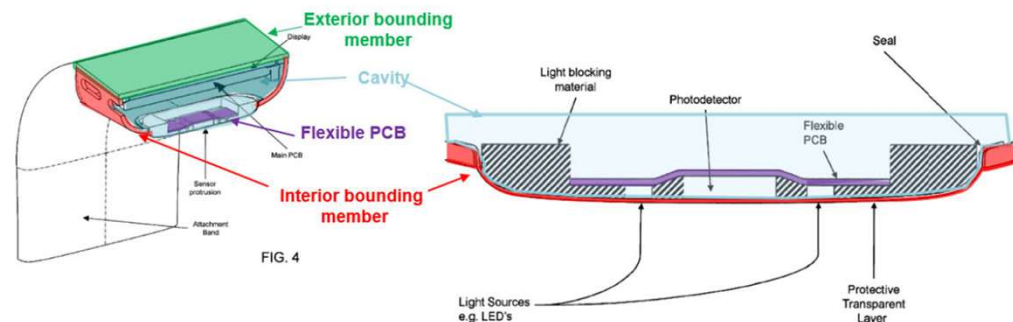
a sensor module comprising one or more sensors to produce sensed condition data;

**FALSE**

## PO's Response

Yuen's primary disclosure of a sensor assembly is not within an enclosed cavity of a main ring housing, but rather as part of an external sensor protrusion on its wrist-worn device. (Ex-1006, Fig. 4; Ex-2018, ¶150). This exposed protrusion is

## Yuen's sensor module is within the cavity



Yuen's sensor module is sealed within the cavity (blue) formed between the interior and exterior bounding members and covered with a "protective transparent layer," which completes the internal bounding member (red). Ex-1079 ¶28; Ex-1006, Figs. 4, 5, Fig. 7 (no "protrusion").

## Demonstrative Exhibit Not Evidence

859Ex-1001, Cls. 1, 11, 14; 859POR (Paper 18), 49; Ex-1006, Figs. 4, 5; 859Reply (Paper 23), 6

75

# Yuen teaches a sensor module positioned within the cavity and proximate to the battery

859

## 859 Patent

### 1. A system, comprising:

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;

## PO's Response

**FALSE**

Furthermore, Petitioner's suggestion that placing Yuen's sensor assembly "proximate to a battery" (Pet. at 26) satisfies the limitation is misdirection. The primary deficiency is the failure to disclose the sensor module within the cavity of a finger ring as claimed. Proximity to the battery, while also a claimed feature, does not excuse Petitioner's failure to show the sensor module in its claimed location within the protected internal cavity. *Id.*

## Yuen/Yuen-Mestas's sensor module is proximate the battery

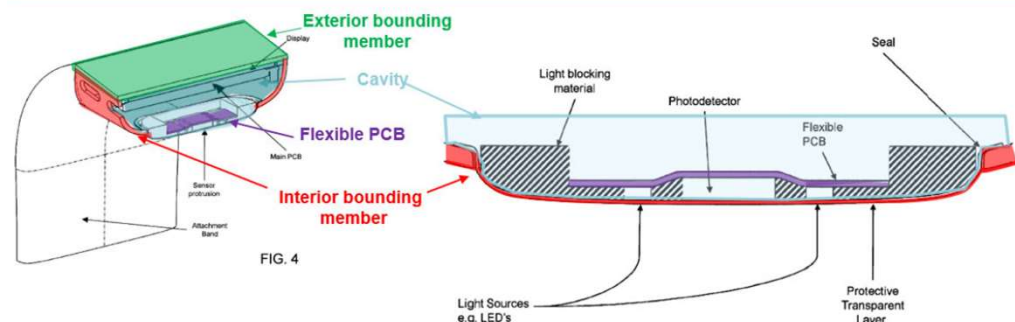


FIG. 5

Second, PO argues that the sensor assembly is not proximate to the battery because it is not within the housing. POR, 50. Yuen's sensor module is located proximate to the battery to receive power, as shown by Yuen placing its electronic components, such as its heart rate sensor, in a low power mode when the user is not wearing the device. Pet., 25-26; Ex-1006, 9:15-35; Ex-1079 ¶46.

PO does not rebut Mestas's sensor assembly placement nor that the motivation to implement Mestas's placement teaching to Yuen is to simplify the manufacturing assembly by reducing wires or long electrical traces and reduce thickness for comfort. Pet., 26-27; Ex-1079 ¶47.

Demonstrative Exhibit Not Evidence

859Ex-1001, Cl.1; 859POR (Paper 18), 50; 859Reply (Paper 23), 10

76

# PO's only attack on Mestas is that it is not a "finger ring"

953

## PO's Response

petition only utilizes citations to Mestas for this element. Petitioner points to Mestas for disclosing each of these types of components (electromagnetic induction charging at ¶201; "processing units" at ¶063; "sensor assembly" at ¶165; "LED lights" for display at ¶170; and a "radio" transceiver at ¶¶166, 203), all associated with its flexible PCB. Pet., 28-31; EX1002, ¶¶217-223.

Mestas discloses its components for its wristband device. Their size, power requirements, and integration are specific to that larger form factor. EX2018, ¶131.

## PO's Response

Asami discloses a far simpler set of electronics for its gesture input ring: electrodes, a current sensor, an accelerometer, an analyzer unit, and a transmitter. EX2018, ¶132; EX1014, Fig. 6A). Asami is missing: (1) An "electromagnetic induction or RF charging mechanism" (Asami has no battery), (2) A "sensor module" for physiological monitoring (Asami's sensors are for gesture input/contact), (3) A "light emitting diode" for user feedback or physiological sensing, (4) a full "transceiver" (Asami Fig. 6A shows a "transmitter unit 23," not explicitly a transceiver for two-way data synchronization). EX2018, ¶132.

As discussed in Section VII.A.1, Mestas's many components and large wristband battery system is incompatible with a compact finger ring and neither reference provides guidance on miniaturization and design required for compatibility. See EX2018, ¶¶ 85-97, 127-133.



"There certainly is nothing patentable in merely reducing the size of the bracelet so as to adapt it to use in a necklace."

*Pearce v. Mulford*, 102 U.S. 112, 116, 26 L. Ed. 93 (1880)

Demonstrative Exhibit Not Evidence

953POR (Paper 19), 40-41; 953Reply (Paper 23), 7-8

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# Overview

- Alleged invention
- Overview of the prior art
- Coupled members with a waterproof cavity of a Wearable Ring Computing Device
- Curved Battery
- Flexible PCB
- Sensors and electronic components
- Window and Potting
- Motivations
- Secondary indicia of non-obviousness

Demonstrative Exhibit Not Evidence

# Window and Potting Limitations

953

## 953 Patent

1. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

...

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.

14. The wearable computing device of claim 1, wherein the interior enclosure portion comprises potting.

15. The wearable computing device of claim 14, wherein the potting is transparent.

38. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

...

a transparent interior enclosure portion configured for being coupled to the exterior enclosure structure, the interior enclosure portion forming a second part of the housing.

39. The wearable computing device of claim 38, wherein the interior enclosure comprises potting.

40. The wearable computing device of claim 39, wherein the potting comprises an epoxy.

41. The wearable computing device of claim 39, wherein the potting forms a water-resistant seal against the exterior enclosure for enclosing one or more electronic components.

NOT DISPUTED

# Mestas/Mestas-Schröder/Schröder teaches a transparent interior enclosure portions

953

## 953 Patent

1. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

...

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.

38. A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:

...

a transparent interior enclosure portion configured for being coupled to the exterior enclosure structure, the interior enclosure portion forming a second part of the housing.

## Dr. Anthony's testimony

37. Dr. Mercier concedes in his declaration and deposition that Mestas discloses "illumination regions" facilitating "electromagnetic transmission", meeting the claim requirement. Ex-2018 ¶138; Ex-1085, 72:9-14. Yet Dr. Mercier

51. For element 38[f], Dr. Mercier contends that "Schröder does not explicitly state that its interior ring half (component 16) is transparent." Ex-2018 ¶184. This argument also fails, because, as I previously noted, Schröder teaches that either half of its ring can be PET, which is typically transparent—a transparent polymer resin. Ex-1002 ¶317; Ex-1007, 9:65-10-9; 15:10-11, 15:14-15. A POSITA would have had good reason to pursue both options, given Schröder's teaching that either half is transparent.

# Schröder teaches transparent windows and components, and internal-facing IR LEDs

953

## Schröder's transparent window

tively.

25

In a further embodiment example, the external secure unit 2 has at least one security feature as protection against forgery. The external secure unit 2, e.g. a finger-ring 2, has security elements for example incorporated into the surface, applied thereto or integrated therein, such as holograms, 30 Kinegrams, security threads, microprint, guilloches, fluorescent or phosphorescent inks, optically variable inks, color gradations, e.g. gradients, iridescent print, intaglio print, transparent regions, e.g. windows, etc. Depending on the manufacturing method for the external secure unit 2, the 35

## Schröder's IR LEDs to illuminate finger

In a further embodiment example of the invention, the external secure unit 2 has a biometric sensor. This enables the user of the external secure unit 2 to authenticate himself. For example, the finger-ring 2 as an external secure unit 2 can have integrated therein at least one biometric sensor. The biometric sensor is connected suitably to the chip module 10. The sensor can be arranged on the chip module 10 or it can be arranged in the finger-ring 2 separately from the chip module 10 e.g. on a separate circuit foil. The biometric sensor can be integrated into the finger-ring 2 e.g. such that the biometric sensor captures e.g. at least a partial vein image in the finger while the finger-ring 2 is being pushed over a finger. As biometric sensors there can be employed e.g. at least one infrared diode and at least one infrared sensor. The infrared diode and the infrared sensor are arranged e.g. opposite each other such that e.g. an finger bone located therebetween has no adverse effect on a measuring result. Upon a first capture e.g. of a vein image of the

## PO cannot dispute that Schröder teaches IR transmissive windows for its vein mapping

953

### Dr. Mercier's deposition testimony

17 Q. Okay. But one of skill in the art would have  
18 understood that, in order for an IR light to be transmitted  
19 from the inside of a structure to the outside of a  
20 structure, there needs to be some sort of IR transmissive  
21 window or other IR transmissive material that allows that  
22 to happen, right? That's how that would function, right?  
23 A. Yeah. I mean, that's correct. And as I stated in  
24 my disclosure, you know, I do, in paragraph 92, discuss how  
25 Schroder doesn't actually disclose windows on the inside of

Page 197

1 the ring or that the materials that compose the inside of  
2 the ring are transparent to all light.  
3 I'll concede that it would be pointless to say  
4 that you would use infrared diodes and sensors to image  
5 something if you can't get the light into the thing you're  
6 trying to image. But, again, my position is that, even if  
7 it were so, there's no disclosure about being transmissive  
8 to other forms of light in Schroder.

**Dr. Mercier agrees that Schröder's interior-side housing would require an IR window**

Demonstrative Exhibit Not Evidence

Ex-1082, 196:17-197:8

82

# Wissmar teaches an epoxy potting

953

## 953 Patent

14. The wearable computing device of claim 1, wherein the interior enclosure portion comprises potting.

15. The wearable computing device of claim 14, wherein the potting is transparent.

39. The wearable computing device of claim 38, wherein the interior enclosure comprises potting.

40. The wearable computing device of claim 39, wherein the potting comprises an epoxy.

## Wissmar

[0076] In this embodiment of the present invention, after the electrical components are mounted and electrically connected to the FPCB they are painted with a nonconductive and preferably conformal coating 13. Commonly used conformal coatings are silicone, epoxy, acrylic, urethane and paraxy-lene. The function of the coating is to (i). prevent damage from rough handling, (ii). reduction of mechanical and thermal stress as well as (iii). prolonging the lifetime of the components. Also to (iv). increase the dielectric strength between conductors lines on the FPCB enabling the design of the FPCB to be more compact and small.

## PO's Response

Simply because Wissmar lists “epoxy” as a conformal coating material does not make it obvious to use epoxy as the bulk material forming the “interior enclosure portion comprising potting” of the claimed ring device derived from Schröder and Mestas. EX2018, ¶320. The combination fails to teach the claimed potting of the interior enclosure portion comprising an epoxy.

## Dr. Mercier's testimony

5 Q. And Wissmar describes that:  
6 "Commonly used conformal coatings  
7 are silicone, epoxy, acrylic, urethane  
8 and para-xylene."  
9 Do you see that?  
10 A. Yes.  
11 Q. And you would agree with what Wissmar says  
12 here, that these are commonly used conformal coatings?  
13 A. I would agree with that. "Conformal  
14 coatings" meaning, you know, something thin that is  
15 used to cover or protect the electronics or something  
16 like this, yes.

Demonstrative Exhibit Not Evidence

953Ex-1001, Cls. 14, 15, 39, 40, 41; 953POR (Paper 19), 80; Ex-1013 ¶176, Ex-1085, 94:5-16

83

# Overview

- Alleged invention
- Overview of the prior art
- Coupled members with a waterproof cavity of a Wearable Ring Computing Device
- Curved Battery
- Flexible PCB
- Sensors and electronic components
- Window and Potting
- **Motivations**
- Secondary indicia of non-obviousness

Demonstrative Exhibit Not Evidence

# Motivations

- Schröder-Mestas (859, 953) and Mestas-Schröder (953)
- Yuen-Mestas (859)
- Mestas-Asami (953)
- Schröder-Mestas-Asami (953)
- Schröder-Mestas-Wissmar (953)

# A POSITA would have been motivated to combine Schröder with Mestas

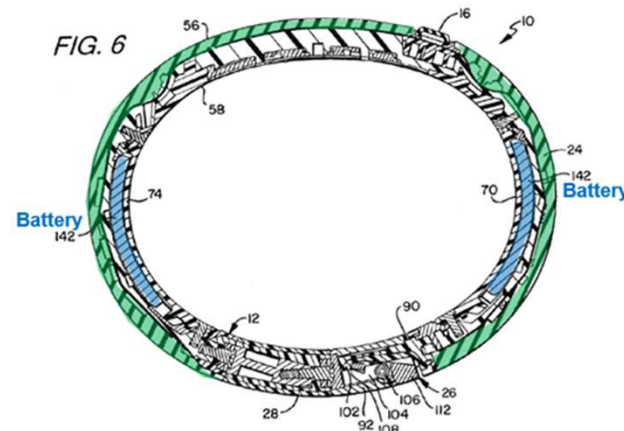
859/953

## Schröder and Mestas are analogous art

Both relate to wearable biometric sensing devices with similar structures (inner/outer surfaces, cavity, battery, PCB).

## Mestas discloses motivations to implement a curved battery

## Dr. Anthony's Declaration



[0168] As discussed, the controller 14 includes the power supply 142 in the form of batteries 142. It is understood that a single battery 142 could be utilized in the design. Such a design may allow for a flexible circuit member having additional areas to support additional components associated with the device 10. In an exemplary embodiment, however, the power supply 142 utilizes a pair of batteries 142. As can be appreciated from FIGS. 6 and 20, the batteries 142 have a curvilinear or curved configuration and are generally rigid members. The batteries 142 define curved planar surfaces. In

Demonstrative Exhibit Not Evidence

859Pet. (Paper 1), 49-52; 953Pet. (Paper 3), 59-61; Ex-1010 at Fig. 6, ¶168

86

# A POSITA would have been motivated to combine Yuen with Mestas

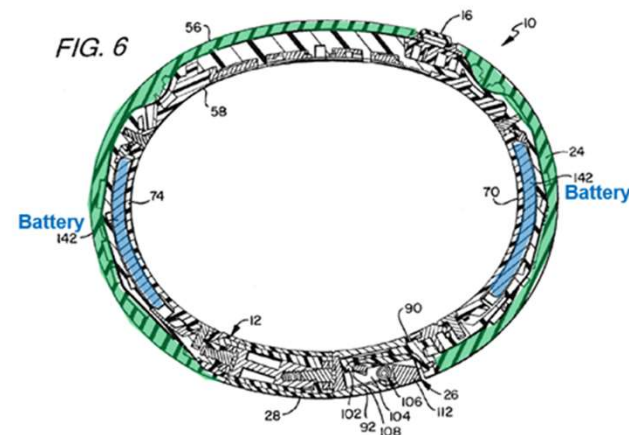
859

## Yuen and Mestas are analogous art

Both relate to wearable electronic devices that collect health-related information.

**Mestas discloses motivations to use a curved battery to conform to a circular and more compact structure and use water-proofing techniques to waterproof the entire device.**

## Mestas's curved battery



[0168] As discussed, the controller 14 includes the power supply 142 in the form of batteries 142. It is understood that a single battery 142 could be utilized in the design. Such a design may allow for a flexible circuit member having additional areas to support additional components associated with the device 10. In an exemplary embodiment, however, the power supply 142 utilizes a pair of batteries 142. As can be appreciated from FIGS. 6 and 20, the batteries 142 have a curvilinear or curved configuration and are generally rigid members. The batteries 142 define curved planar surfaces. In

# A POSITA would have been motivated to combine Mestas with Asami

## Mestas and Asami are analogous art

Both relate to wearable electronic devices that collect information about a user's movement.

**A POSITA would have been motivated to make Mestas's wearable device smaller, such as Asami's finger ring, to further Mestas's goal of preventing slippage**

Demonstrative Exhibit Not Evidence

## Dr. Anthony's Declaration

12. *Dr. Mercier's ring form factor arguments fail.* Dr. Mercier asserts that implementing Mestas's device in a more compact form "is lifted directly from the '953 Patent" and that "Mestas and Asami provide no such teaching." Ex-2018 ¶¶91-92. I disagree. In his deposition Dr. Mercier admitted that Mestas teaches making wearable devices smaller and tighter to prevent slippage, and Asami discloses a small form factor finger ring device. Ex-1085, 54:22-55:4, 60:17-25, 77:3-6. *See also* Ex-1002 ¶¶181-182.

13. Further, both Mestas and Asami teach that the device can have different circumferential sizes, as PO and Dr. Mercier concede. Ex-1085, 60:17-25; Ex-2018 ¶95 ("Asami teaches that its device . . . 'may be enlarged in size as an arm ring or armlet'") (quoting Ex-1014 ¶92). This further shows that a POSITA would have been motivated to design the device with different form factors, including Asami's finger-ring, including to prevent the device from slipping off.

14. Dr. Mercier also asserts that Mestas's ribbing to reduce slippage teaches away from the claimed finger-ring. Ex-2018 ¶104. I disagree. On the contrary, as I previously explained, because Mestas discusses the problem of slippage, a POSITA would have been motivated to reduce device size – and slippage – further by using a finger ring. *See* Ex-1002 ¶¶181-182.

953Pet. (Paper 3), 18-21; Ex-1002 ¶¶181-182; Ex-1079 ¶12-14

953

88

# PO argues against motivations because of alleged size disparities

859

## PO's Response (Yuen and Mestas)

Neither Yuen nor Mestas, individually or combined, suggests a finger-worn ring computing device as claimed, despite each reference providing an exhaustive list of body parts to which the devices of Yuen and Mestas could be attached. Yuen primarily describes devices adapted for larger body parts like the arm, wrist, leg, or ankle, with preferred embodiments being wrist-worn or arm-mounted. Ex-1006, 12:53-55. Mestas similarly discloses a “wearable athletic device” for locations such as the chest, wrist, arm, head, ankle, or thigh (Ex-1010, ¶143)—notably omitting fingers. These references provide no enabling disclosure or specific motivation that would lead a POSITA to re-engineer wrist-based or arm-based designs into the compact, integrated structure of the '859 Patent's finger-ring. Ex-2018, ¶104. The failure to list a finger-ring in these references is further evidence that POSITA simply would not consider the drastic redesign necessary to adapt these devices to a ring form factor.

## PO's Response (Mestas and Schröder)

Petitioner's suggestion to import Mestas's curved battery and PCB into Schröder's ring (Pet., 50-51) also ignores the vast dimensional mismatch. *Id.*, ¶170. Mestas's components are designed for a device “5 to 10 times” larger than a finger ring. Ex-2021, 313:12. Incorporating Mestas's substantially larger battery into Schröder's slim ring profile would inevitably increase its thickness significantly or necessitate a complete, non-obvious structural overhaul, not a “trivial” modification as Petitioner cavalierly suggests. *Id.* Furthermore, Schröder's only disclosure of an optional battery shows it connected to the external chip module (Ex-1007, 11:46-50, Fig. 3), teaching away from an internal curved battery. *Id.*, ¶171.

Demonstrative Exhibit Not Evidence

859POR (Paper 18), 29-30, 58-59

89

## PO's expert acknowledges general trend to miniaturize electronic components

859, 953

**PO's Expert Dr. Mercier:**

**Q.** Okay. But you would agree that there was kind of a general pressure in the industry around 2013 to attempt to miniaturize batteries, correct?

**A.** I do....

**PO's Expert Dr. Mercier:**

**Q.** And you would agree that between 2003 and 2017 when this paper was published, the components that Professor Asada was working with got substantially smaller than they were in 2003, right?

**A.** I'm not certain if the exact components did. In general, electronic miniaturization happened between 2003 and 2017.  
Yes.

# All references relate to small form factor electronic devices

859, 953

- Schröder
  - “finger-ring is worn by a user, e.g., permanently on the finger”
- Mestas
  - “wearable athletic device ... worn in a variety of locations on a user’s body including on a user’s chest..., 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”
  - “may be varied in circumferential size”
- Yuen
  - “biometric monitoring device which may be secured to the user through the use of a band”
  - “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 ... can be worn in any number of ways including, but not limited to, those listed above.”
- Asami
  - “A wearable input device is worn on a finger of a user to detect contact and separation of the finger to and from the other body part of the user, respectively, and further measure motion of the finger.”
- Wissmar
  - “finger ring ... acting as a multiple sensor device”

# A POSITA would be motivated to implement Wissmar's epoxy coating in Mestas-Asami/Schröder-Mestas

## PO's Response (Wissmar)

Even if POSITA were to combine Schröder and Mestas and decide to use potting, there is no specific reason provided why they would then turn to Wissmar's teaching of a conformal coating on an FPCB to select "epoxy" as the material for the potting forming an interior enclosure portion. EX2018, ¶314. The problems solved by Wissmar's coating (stress on FPCB during formation into a toroidal shape before shell assembly) are different from the general encapsulation suggested by "potting" an interior enclosure portion. *Id.*

**FALSE**

## Dr. Anthony's testimony

104. Dr. Mercier further contends that a POSITA would not have turned to Wissmar because "[t]he problems solved by Wissmar's coating . . . are different from the general encapsulation suggested by 'potting' an interior enclosure portion." Ex-2018 ¶314. I disagree. Wissmar teaches that its coating is "chosen to *optimize the hermetic encapsulation* and thus increase the lifetime of the internal, electrical components." Ex-1013 ¶87. And Dr. Mercier admitted in deposition that Wissmar's "conformal coating" are "used to cover or protect the electronics." Ex-1085, 94:11-16. As I previously noted, this addresses the problem of the '953 Patent. Ex-1002 ¶425.

## Dr. Mercier's testimony

11 Q. And you would agree with what Wissmar says  
12 here, that these are commonly used conformal coatings?  
13 A. I would agree with that. "Conformal  
14 coatings" meaning, you know, something thin that is  
15 used to cover or protect the electronics or something  
16 like this, yes.

# Similar subject matter (sensors) in all references

859, 953

## ● Schröder

- “finger-ring ... can have integrated therein at least one biometric sensor”
- “infrared diode and the infrared sensor” capture “vein image of the ring finger”

## ● Mestas

- “sensor assembly 146 may comprise a plurality of different sensors”
- “When worn by the user, the device 10 can track activity of the user... including sensing of activity by a user”

## ● Yuen

- “a biometric monitoring device ... to collect ... physiological and/or environmental data from embedded or resident sensors”

## ● Wissmar

- “finger ring ... acting as a multiple sensor device”

## ● Asami

- “A wearable input device is worn on a finger of a user to detect contact and separation of the finger to and from the other body part of the user, respectively, and further measure motion of the finger.”

## The challenged patents include biometric monitoring *and* security applications

859, 953

*See, e.g., 859 Patent*

FIG. 47B depicts a block process diagram for generating and managing alerts according to one or more aspects of the disclosure and FIG. 47C is a flow chart depicting a method  
20 for generating and managing alerts according to one or more aspects of the disclosure.

At block 4710C, and as shown at process block 4710B, the user is authenticated with respect to the WCD. In this regard, a single user can be associated with a single WCD  
25 and can be associated with a predetermine identifier, such as an alphanumeric number. If the user is not authenticated or the authentication process is not conclusive, the WCD may invite the user to retry authentication at block 4715C until the user is successfully authenticated. In some examples, the  
30 WCD may timeout the authentication process, lock the WCD, or place the WCD in safe mode in the event of too many unsuccessful authentication attempts as a security measure.

35 The user can be authenticated according to any of the authentication methods described in the present application, such as via a unique capillary map, a unique ECG profile, etc.

If the user is authenticated, biometric data can be transmitted to the server at block 4720C. The captured biometric  
40 data 4720B can be transmitted to the server via network 4720A, 47222B

# Overview

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- Overview of the prior art
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- Window and Potting
- Motivations
- Secondary indicia of non-obviousness

Demonstrative Exhibit Not Evidence

# Objective Indicia

859, 953

- Oura is not entitled to a presumption of nexus
- Oura did not prove actual nexus
- No commercial success
- No copying
- No long-felt but unmet need

Demonstrative Exhibit Not Evidence

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# PO's evidence is not due presumption of nexus

859, 953



“presuming nexus is appropriate ‘when the patentee shows that the asserted objective evidence is tied to a specific product and that product “embodies the claimed features, and is coextensive with them.”’ ... Conversely, ‘[w]hen the thing that is commercially successful is not coextensive with the patented invention—for example, if the patented invention is only a component of a commercially successful machine or process,’ the patentee is not entitled to a presumption of nexus.”

*Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019)

**PO is not entitled to a presumption of nexus:**  
**PO has not shown that the product is coextensive with the claims**

Demonstrative Exhibit Not Evidence

859Reply (Paper 23), 23; 953Reply (Paper 23), 22

97

# ITC determination only based on embodying a subset of the 178 patent's claims

859, 953

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.

...

The Federal Circuit has “never held that the existence of one or more unclaimed features, standing alone, means nexus may not be presumed” because “there is rarely a perfect correspondence between the claimed invention and the product.” *Fox Factory*, 944 F.3d at 1374; *Teva Pharms. Int’l GmbH v. Eli Lilly & Co.*, 8 F.4th 1349, 1360–61 (Fed. Cir. 2021) (same). Oura is entitled to a presumption of nexus to the extent that its objective evidence is tied to a specific product that embodies the claimed features, and is coextensive with them. *Volvo Penta*, 81 F.4th at 1210. The evidence supports that Oura is entitled to a presumption of nexus, which respondents have not rebutted.

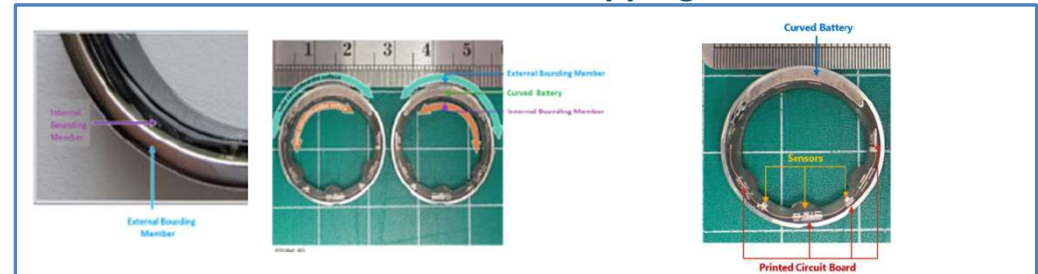
# PO argues nexus for only certain product and only some claims

859, 953

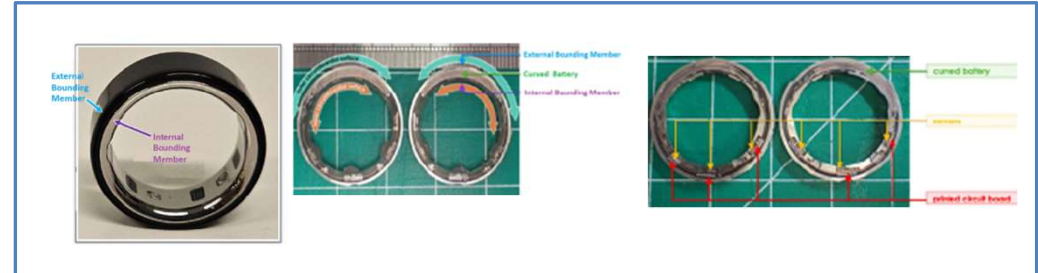
## PO's Response

Since the introduction of the first generation ("Gen."), Oura has released four generations of Oura Ring: Gen. 2 in 2018, Gen. 3 in 2021, and Gen. 4 in 2024. As explained by Dr. Mercier, Oura Ring Gen. 3 and Gen. 4 are coextensive commercial embodiments of the '859 Patent. Ex-2018, ¶¶216-246. Thus, Oura "is entitled to a rebuttal presumption of nexus between the asserted evidence of secondary considerations and a patent claim[.]" *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (citation omitted).

## PO's Gen. 3 Mapping



## PO's Gen. 4 Mapping



**PO asserts that Gen. 3 and 4 are *coextensive* with the claims by merely arguing that Gens. 3 and 4 *practice* a subset of claims**

Demonstrative Exhibit Not Evidence

859POR (Paper 18), 77-89; 953POR (Paper 19), 82-92

99

# PO itself identifies significant unclaimed features of its rings

859, 953



“It is undisputed that the X-Sync chainrings include unclaimed features that the patentee describes as “critical” to the product's ability to “better retain the chain under many conditions” and that go to the “heart” of another one of SRMA’s patents. See J.A. 5284, 5289. In light of the patentee's own assertions about the significance of the unclaimed features, no reasonable fact finder could conclude that these features are insignificant. As an initial matter, the fact that SRAM obtained the '250 patent covering the combination of wide and narrow teeth and >80% gap filling leads us to conclude that this combination of features amounts to more than an insignificant feature not claimed by the '027 patent.”

*Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1375 (Fed. Cir. 2019)

“A patent claim is not coextensive with a product that includes a “critical” unclaimed feature that is claimed by a different patent and that materially impacts the product's functionality by ‘lead[ing] to a chainring that will retain a chain in even the worst conditions.’”

*Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1375 (Fed. Cir. 2019)

Demonstrative Exhibit Not Evidence

859Reply (Paper 23), 23-24; 953Reply, 22-24

100

## PO's expert identifies significant unclaimed features: membership and apps

859, 953

### Mr. Clarke's Testimony

illness detection and period prediction, among others (EX-2051). Oura introduced the Oura Membership in 2021 in conjunction with the launch of the Oura Ring Gen 3 (EX-2024, at 95; EX-2067). The Oura Ring and Oura Membership work “hand-in-hand,” such that a user’s experience improves over time as the Oura Ring gathers more data, enabling Oura to generate more nuanced insights into the user (EX-2051). The Oura Ring and Oura application collectively form a “complete solution,” and the Oura application is “essential” for a user to take advantage of the ring’s offerings; without the application and Membership, a user has limited access to the data tracked by the Oura Ring (EX-2024, at 88, 93-95).

**PO's expert explains that Oura Application and Membership are “essential”**

Demonstrative Exhibit Not Evidence

859Reply (Paper 23), 24; Ex-2019 ¶21

101

# Significant, “essential” features are claimed by other Oura Patents

859, 953

## Mr. Clarke’s Testimony

The Oura Ring works in conjunction with the Oura application, available for both Apple and Android mobile devices, enabling users to review measured data and gain insights into their health and wellness (EX-2064; EX-2065). All Oura Ring users have access to three daily scores—Sleep, Readiness, and Activity (EX-2051). However, access to more detailed performance metrics tracked by the Oura Ring requires an ongoing paid subscription with the Oura Membership (EX-2051; EX-2066).

## PO’s 429 Patent

|                                                                         |                                                                                                                                  |
|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| (12) <b>United States Patent</b>                                        |                                                                                                                                  |
| Kinnunen et al.                                                         |                                                                                                                                  |
| (10) Patent No.: <b>US 10,842,429 B2</b>                                |                                                                                                                                  |
| (45) Date of Patent: <b>Nov. 24, 2020</b>                               |                                                                                                                                  |
| (54) <b>METHOD AND SYSTEM FOR ASSESSING A READINESS SCORE OF A USER</b> | (52) U.S. CL.<br>CPC ..... <i>A61B 5/16</i> (2013.01); <i>A61B 5/01</i> (2013.01); <i>A61B 5/02405</i> (2013.01);<br>(Continued) |
| (71) Applicant: <b>Oura Health Oy, Oulu (FI)</b>                        | (58) <b>Field of Classification Search</b>                                                                                       |

1. A method for assessing readiness of a user, the method comprising:  
obtaining the user’s movements;  
using the obtained user’s movements to determine a nature of the period, wherein the nature of the period is selected from an activity period and a rest period;  
measuring at least one biosignal of the user during the rest period;  
determining a rest summary for the rest period, based on the measured at least one biosignal and at least one biosignal of a previous rest period;  
determining an activity summary for the activity period, based on the obtained movements of an activity period and obtained movements of at least one previous activity period;  
determining a body response summary based on the rest summary and the activity summary;  
calculating a readiness score based on the body response summary and a previous body response summary, whereby the readiness score indicates a level of readiness of the user; and  
using a user interface of the mobile communication device to show elements contributing to the readiness score and instructions related to physical activity and mental activity for improving the readiness score.

Demonstrative Exhibit Not Evidence

Ex-2019 ¶120; 859Reply (Paper 23), 23 (citing Ex-1086)

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## PO's expert identifies significant unclaimed features: materials, comfort, and aesthetics

859, 953

### Mr. Clarke's Testimony

In October 2024, Oura launched the fourth-generation Oura Ring ("Oura Ring Gen 4"), "bringing battery life improvements, greater measurement accuracy, and an all-new circular titanium-based design" (EX-2058). In particular, the sensors," among others on its website (EX-2101). In comparing the Oura Ring Gen 4 with the Oura Ring Gen 3, Oura also explains that the latest generation "features a sleeker, fully titanium design and recessed sensors on the interior, enhancing both durability and wearability" (EX-2059). Similarly, third-party review site WIRED noted how the Oura Ring Gen 4 "[l]ooks and feels more like jewelry than ever" and is "easier and more accurate to wear" (EX-2060).

## PO's expert's evidence rests on materials and other issues

Demonstrative Exhibit Not Evidence

859Reply (Paper 23), 24; Ex-2019 ¶¶18, 49

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# Significant unclaimed features claimed by other patents

859, 953

## Mr. Clarke's Testimony

In October 2024, Oura launched the fourth-generation Oura Ring ("Oura Ring Gen 4"), "bringing battery life improvements, greater measurement accuracy, and an all-new circular titanium-based design" (EX-2058). In particular, the . . . sensors," among others on its website (EX-2101). In comparing the Oura Ring Gen 4 with the Oura Ring Gen 3, Oura also explains that the latest generation "features a sleeker, fully titanium design and recessed sensors on the interior, enhancing both durability and wearability" (EX-2059). Similarly, third-party review site WIRED noted how the Oura Ring Gen 4 "[l]ooks and feels more like jewelry than ever" and is "easier and more accurate to wear" (EX-2060).

## PO's 147 Patent

|                                                                                                                           |                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| (12) <b>United States Patent</b><br>von Badinski et al.                                                                   | (10) <b>Patent No.:</b> US 11,599,147 B2<br>(45) <b>Date of Patent:</b> *Mar. 7, 2023                                   |
| (54) <b>WEARABLE COMPUTING DEVICE</b>                                                                                     | (58) <b>Field of Classification Search</b><br>CPC ..... G08B 1/142<br>See application file for complete search history. |
| (71) Applicant: <b>Proxy, Inc.</b> , San Francisco, CA (US)                                                               | (56) <b>References Cited</b>                                                                                            |
| (72) Inventors: <b>Curt C. von Badinski</b> , San Francisco, CA (US); <b>Michael J. Stoenner</b> , San Francisco, CA (US) |                                                                                                                         |

1. A wearable electronic device comprising:  
a body part made of a material, having an inner surface and an outer surface, wherein a cavity is formed on the inner surface of the body part, the cavity extending from the inner surface of the body part towards the outer surface of the body part and having a depth arranged within the inner surface of the body part, an electronic part arranged in the cavity, wherein at least a portion of the electronic part has a thickness that is less than the depth of the cavity, and  
a coating made of a potting material on the inner surface of the body part, covering the electronic part and the cavity.
2. The wearable electronic device according to claim 1, wherein the material is a titanium material.
3. The wearable electronic device according to claim 1, wherein the material is selected from a group consisting of: steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide and a metal alloy.

**PO obtained the 147 Patent directed to titanium and other construction materials**

Demonstrative Exhibit Not Evidence

Ex-2019 ¶¶18, 49; 859Reply (Paper 23), 24 (citing Ex-1087)

104

# Significant unclaimed features

859, 953

## Dr. Mercier's Testimony

3 Q. The claims don't recite an aesthetically pleasing  
4 ring, correct?  
5 A. That's right. That language isn't in the claims,

## Dr. Mercier's Testimony

4 Is there a certain level of comfort, user comfort,  
5 required by the claims of the '178 or '702 patents?  
6 A. So the claims of the '178 and '702 patents don't  
7 recite comfort in the language of the claims, but, again,  
8 they need to be read in light of the specification in which  
9 comfort and wearability and so on are important objectives  
10 of the inventions.  
11 And, you know, the specification and,  
12 subsequently, the claims, you know, offer solutions to  
13 design a ring that ultimately does enable a comfortable  
14 device to be worn.  
15 Q. You would agree that the elements recited in  
16 claims, those are technical elements, right?  
17 A. Correct.  
18 Q. And so they don't have kind of subjective  
19 requirements of visually appealing or specifically  
20 comfortable to a particular user, correct?  
21 A. Again, the language in the claims don't -- when  
22 read in light of the specification, you know, they do  
23 provide a recipe for designing something that would be  
24 comfortable.

## Claims do not recite comfort or aesthetics

Demonstrative Exhibit Not Evidence

859Reply (Paper 23), 24; Ex-1082, 215:3-5, 216:4-7, 15-21

105

# PO has not proven nexus

859, 953



“To the contrary, the patent owner is still afforded an opportunity to prove nexus by showing that the evidence of secondary considerations is the ‘direct result of the unique characteristics of the claimed invention.’”

*Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373-1374 (Fed. Cir. 2019)

**PO cannot show actual nexus:**  
**Alleged secondary evidence is not a “direct result” of the claims**

Demonstrative Exhibit Not Evidence

859Reply (Paper 23), 25; 953Reply, 24

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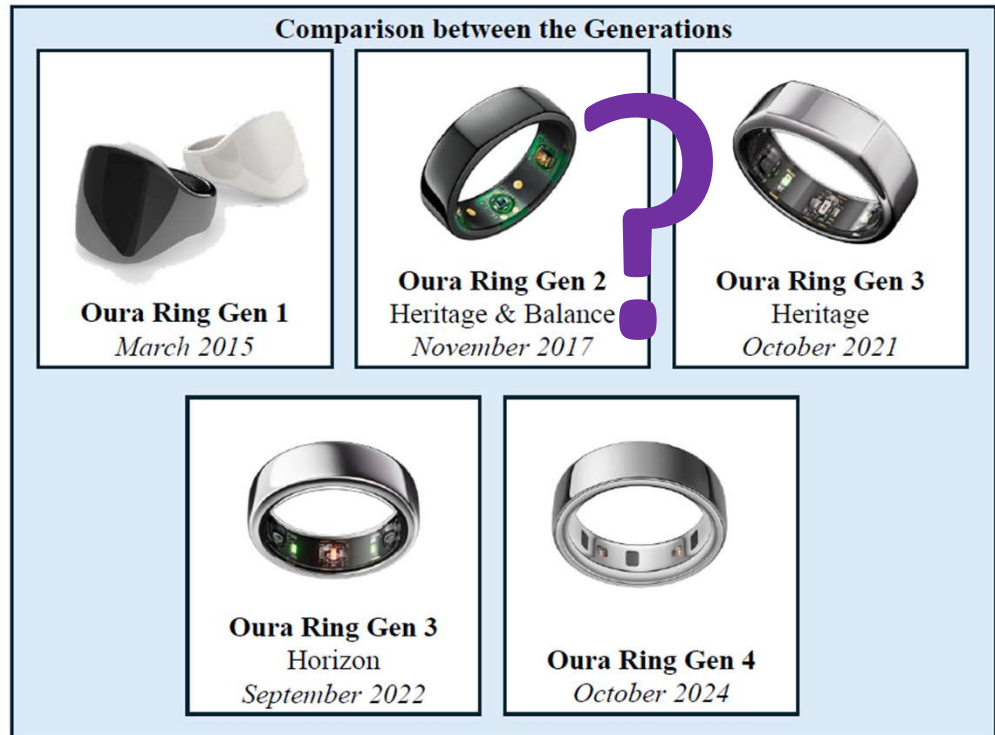
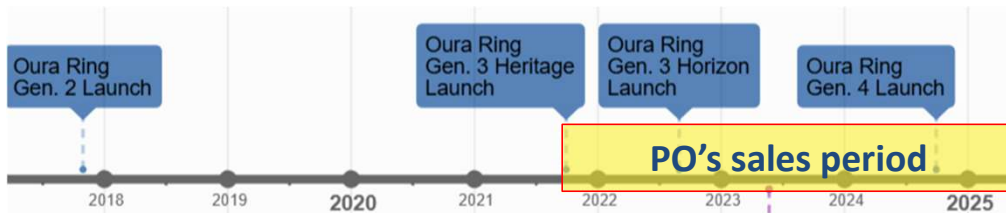
# Oura cannot prove a “direct result”: sales include models that PO does not allege practice the claims

859, 953

## PO's Response

### 1. Sales and Sales Growth.

The marketplace success of the Oura Ring is evidenced by substantial sales and sales growth, especially since the introduction of the Oura Ring Gen 3 in October 2021. Ex-2019, ¶33. Specifically, worldwide Oura Ring gross unit sales increased



**PO provides no evidence or argument that  
Gen. 2 and Gen. 3 Heritage practices the claims, yet includes it in its sales data**

Demonstrative Exhibit Not Evidence

859POR (Paper 18), 80; Ex-1079 ¶¶98-112; Ex-1080 ¶¶175-176, 178, 305

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# Oura cannot prove a “direct result”: sales include models that PO does not allege practice the claims

859, 953

## Mr. Clarke's Testimony

3 Q. You mentioned that there was a period of  
4 time when a new product is released and there are  
5 sales for the new product and for the old product  
6 during that period. Do you recall mentioning that a  
7 moment ago?

8 A. Generally speaking, yes. When a new  
9 product launches, there are still versions of the  
10 previous generation that are available for a short  
11 period of time.

12 Q. What do you call that period of time?

13 A. I don't know the specific name associated  
14 with that period of time.

18 Q. Okay. For the crossover period, how did  
19 you assign sales figures to each of the two available  
20 product generations?

21 A. So this is why the analysis that we see in  
22 Appendix 7 is focused on the time period, the months  
23 in which sales were available. So as I explained in  
24 my declaration, the Gen 3 -- Oura Ring Gen 3 was  
25 available starting in October 2021 through September

Page 105

1 2024. I think there were a few months after that  
2 that it's still been available.

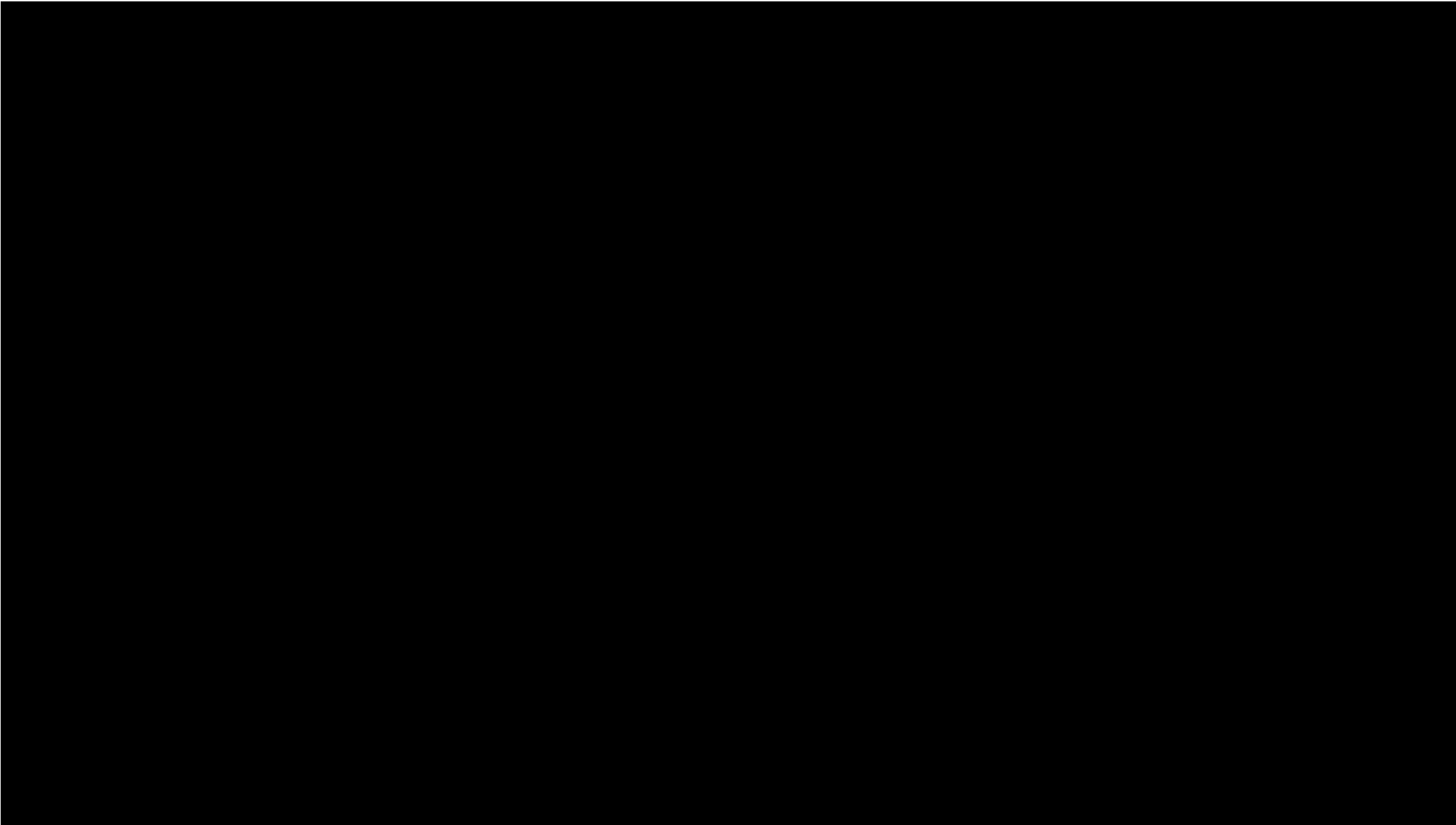
3 For the purposes of my analysis, I didn't  
4 seek to try to differentiate which sales during that  
5 crossover period were of one product versus the  
6 other. That wasn't -- that wasn't required to reach  
7 the opinions that I made.

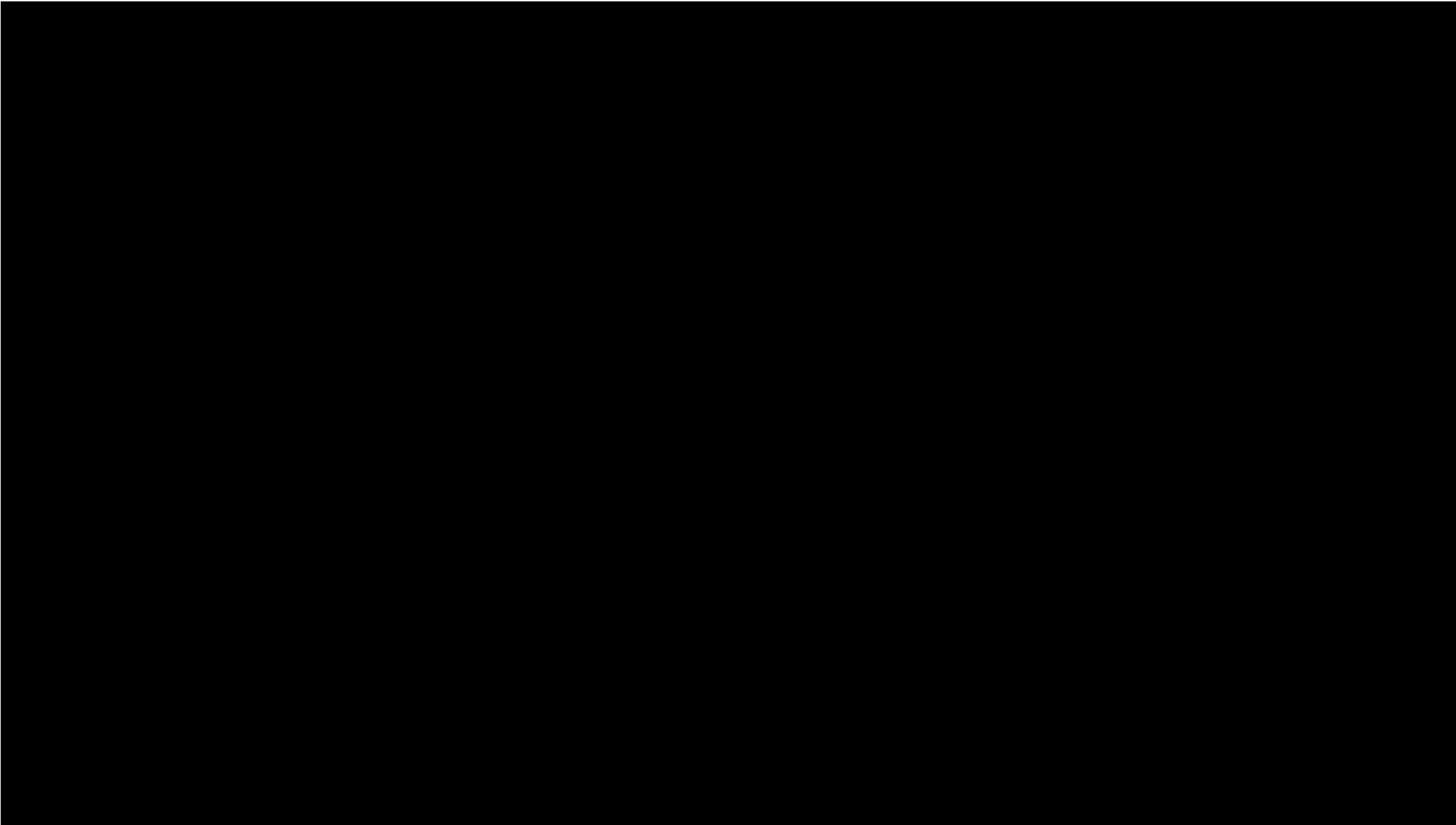
## PO made no effort to differentiate products in its sales data

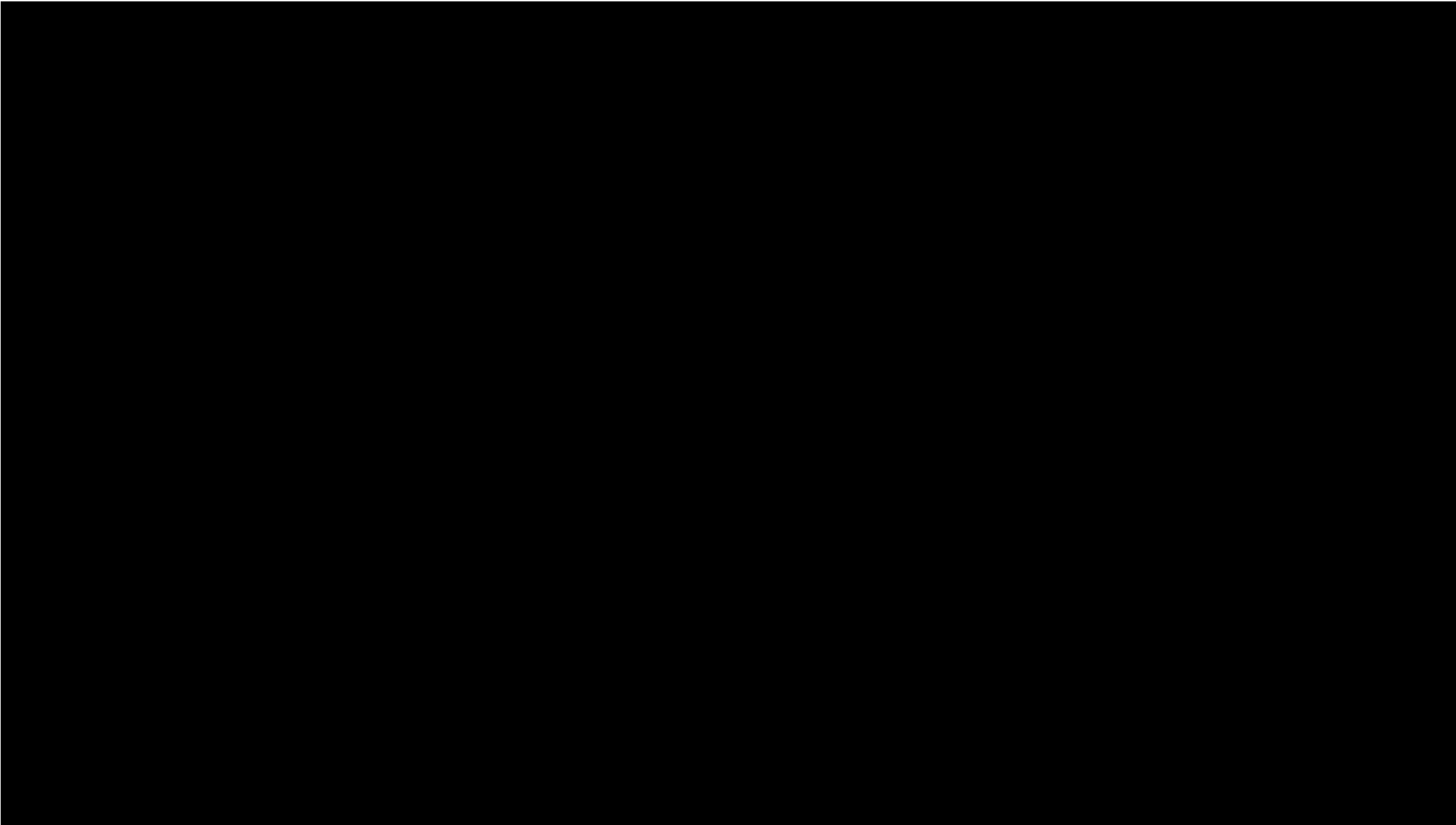
Demonstrative Exhibit Not Evidence

859Reply (Paper 23), 25-26; Ex-1083, 104:3-14, 104:18-105:7

108







# Mere evidence of sales is not necessarily evidence of success in the relevant market

## PO's Response

859, 953

### 3. Performance Relative to Competing Products.

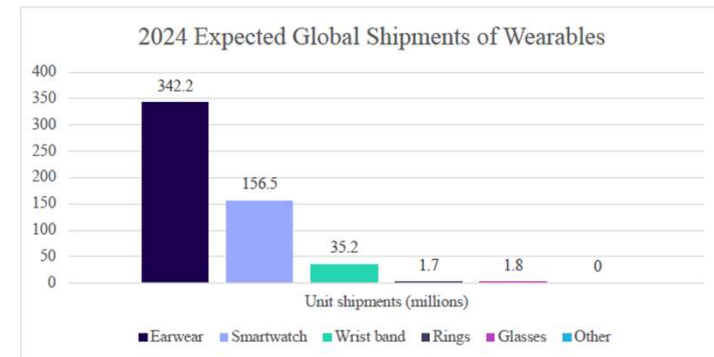
Oura's development and commercialization of the Oura Ring has resulted in the creation of a new market segment within the wearables marketplace. Ex-2019, ¶41. As mentioned previously, CNBC credited Oura as "one of the market pioneers" for the smart ring marketplace segment (Ex-2036). Although there have been new

## Mr. Clarke's Testimony

Smart rings, such as the Oura Ring, are part of a broader wearables marketplace, including smartwatches and fitness trackers (EX-2024, at 102-103; EX-2068). Generally, these devices track and monitor users' physiological behavior (EX-2024, at 244-245). For 2024, the global smartwatch and fitness tracker marketplaces were valued at approximately \$33.6 billion and \$60.9 billion, respectively, including companies such as Apple, Samsung, Garmin, and Fitbit (EX-2069; EX-2070).

## Mr. Davies's Testimony

253. Considering all wearable devices (including earwear, smartwatches, wristbands, rings, glasses, and others), smart rings account for just 0.3 % of the overall expected wearables shipments in 2024.



**Smart Rings make up only .3% of the wearable device market**

Demonstrative Exhibit Not Evidence

859POR (Paper 18), 94; Ex-2019 ¶23; Ex-1080 ¶¶252-260

112

# PO did not create a smart ring market segment

859, 953

## PO's Response

### 3. Performance Relative to Competing Products.

Oura's development and commercialization of the Oura Ring has resulted in the creation of a new market segment within the wearables marketplace. Ex-2036

¶41. As mentioned previously, CNBC credited Oura as "one of the market pioneers for the smart ring marketplace segment (Ex-2036). Although there have been new

**FALSE**

## Mr. Davies's Testimony

### 4. The early commercial performance of the Oura Ring reflected only its serendipitous timing

261. Oura Health Oy was founded in Finland in 2013 and introduced the first generation of the Oura Ring, Oura Ring Gen 1, in March 2015.<sup>207</sup> Around the time of its founding and well before launching Oura Ring Gen 1, a number of companies had introduced wrist-worn wearables for tracking activity, including Jawbone (in 2011), Fitbit (in 2013), and Misfit (in 2013). These wrist-worn wearables introduced the concept of fitness tracking via screenless devices that required Bluetooth connectivity with a smartphone to access data in an application. These companies enjoyed substantial success, a factor that likely encouraged Oura and other smart ring vendors to enter the wearables market. Furthermore, these companies paved the way for smart rings from a technological standpoint showing that electronics could be miniaturized and worn on the body.

**Alleged success due to timing,  
and the wearable/ring market existed before Oura entered it**

Demonstrative Exhibit Not Evidence

859POR (Paper 18), 94; Ex-1080 ¶¶261-311

113

# PO did not create a smart ring market segment

859, 953

## PO's Response

### 3. Performance Relative to Competing Products.

Oura's development and commercialization of the Oura Ring has resulted in the creation of a new market segment within the wearables marketplace. Ex-2019.

¶41. As mentioned previously, CNBC credited Oura as "one of the market pioneers" for the smart ring marketplace segment (Ex-2036). Although there have been new entrants in the smart ring market since the launch of the Oura Ring, Oura has "long been synonymous with 'smart ring'" (Ex-2089). According to Athletech News,

**FALSE**

## Mr. Davies's Testimony

264. Once Oura Ring Gen 1 entered the market in 2015, it was joined by at least 6 other smart ring vendors, most of whom were unknown start-ups reliant on crowdsourcing for funding. Oura had entered the smart ring market at a time when wrist-worn wearables and smartwatches had demonstrated market potential and technological feasibility for wearables in general. Smart ring pioneers then demonstrated there was a potential niche for smart rings within the wearables market.
265. After Oura Ring Gen 3 Horizon launched in 2022, there were 4 competitor smart rings on the market. After Oura's release of its Gen 4 ring in 2024, there were 10 competitor rings on the market, all of which adopted the dominant design form factor. This period was marked by increasing competition and slowing growth. Oura entered the smart ring market after first movers McLearn and Logbar and then had several years to gain traction against limited, relatively weak competition before other new entrants started flooding in.

**Alleged success due to timing,  
and the wearable/ring market existed before Oura entered it**

Demonstrative Exhibit Not Evidence

859POR (Paper 18), 94;Ex-1080 ¶¶261-311

114

# PO cannot show a “direct result” from any novelty in the claims

859, 953



But there is a more fundamental requirement that must be met before secondary considerations can carry the day. “For objective evidence of secondary considerations to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention.” *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed.Cir.2010) (quotation omitted). **Where the offered secondary**

**consideration actually results from something other than what is both claimed and novel in the claim, there is no nexus to the merits of the claimed invention.**

*Tokai Corp. v. Easton Enters., Inc.*, 632 F.3d 1358, 1369 (Fed.Cir.2011) (“If commercial success is due to an element in the prior art, no nexus exists.”); *Ormco Corp.*, 463 F.3d at 1312 (“[I]f the feature that creates the commercial success was known in the prior art, the success is not pertinent.”); *In re Woodruff*, 919 F.2d 1575, 1578 (Fed.Cir.1990) (“The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims.... [and] in such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.” (citations omitted)).

*In re Huai-Hung Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011)

Demonstrative Exhibit Not Evidence

859Reply (Paper 23), 29-30; 953Reply, 28-29

115

# PO has not shown copying

953

## PO's Response

This arrangement satisfied the long felt need for a finger-ring wearable device that the user would actually want to wear around the clock. Dr. Mercier admits to being surprised that Oura managed to fit all the components and functionality into a wedding band-type ring. The satisfaction of this long felt need is validated by the considerable commercial success enjoyed by the commercial embodiment as well as competitors copying this layout in the market.

## Dr. Anthony's Testimony

explained in above in Section IV.A, PO has failed to show that Gen. 3 is coextensive with the challenged claims and PO cannot show the asserted copying is directed to the challenged claims or the claims of other Oura patents, or some combination thereof. Specifically, the "optical protrusions in the potting material" are not explicitly claimed in the '953 Patent.

## Mr. Davies's Testimony

369. The evolution of the smart ring makes it clear that Oura did not "invent" anything but merely obtained patents that covered some aspects of the dominant design that had already been established.
370. Oura did not invent the smart ring or the wedding ring form factor.

**PO has not argued copying.  
Copying cannot be based on unclaimed  
features or well-known features**

Demonstrative Exhibit Not Evidence



McLearn Ring



Logbar



HB Ring

953POR (Paper 19), 101, Ex-1079 ¶¶129, Ex-1080 ¶¶369-378

116

# There was no long-felt, unmet need

859, 953

## PO's Response

C. The '859 Patent fulfilled a long felt need for a compact and comfortable wearable finger ring.

The world's leading wearable ring researcher Asada recognized the advantages a wearable ring has over wearables worn on other parts of the body a decade prior to the '859 Patent. Ex-1025, 1:56-58. Asada acknowledged that comfort and compactness were the keys to realizing the advantages of a finger-worn ring. Ex-1035, 9-10; Ex-1037, 3. If the ring were as comfortable as a wedding band, the wearer would not take it off, thereby achieving the goal of round-the-clock biometric monitoring. Asada even recognized that his prototype failed to achieve these goals. Ex-1035, 74 ("the size of the first prototype, as shown in Figure 8-1, was too large to be of use in real life.").

## Dr. Anthony's Testimony

my deposition (Ex. 2020 (Anthony Tr. 125:5-127:1). Dr. Mercier mischaracterizes the scope of Asada's research by omitting the fact that Asada's primary research focus was addressing pressure-induced variations in ring sensors and mitigating associated noise. Notably, Asada did not identify nor emphasize any technical issues related to battery challenges.

94. Dr. Mercier also claims he was "surprised" of PO's use of a curved battery as evidence of long felt unresolved need. Ex. 1082 (Mercier Tr. 221:7-23). Asada's and Dr. Mercier's inability to successfully commercialize a wearable ring with a curved battery do not show that a POSITA recognized a need that was long felt or that others had tried and failed to solve the problems. Critically, Dr. Mercier fails to provide any evidence indicating that either his or Asada's attempts or inability to commercialize a wearable ring was specifically due to issues with curved battery technology. Dr. Mercier does not rule out other plausible factors for lack of commercialization success, such as insufficient marketing strategies, limited expertise regarding manufacturing scale-up, or prohibitive production costs.

**Lack of commercialization does not mean  
a long felt unresolved need**

Demonstrative Exhibit Not Evidence

859POR (Paper 18), 96-96; 859Ex-1079 ¶¶117-119

117

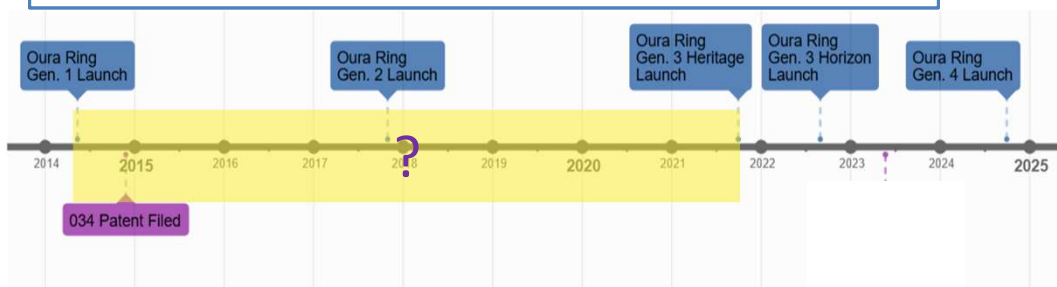
# There was no long-felt, unmet need

859, 953

## PO's Response

C. The '859 Patent fulfilled a long felt need for a compact and comfortable wearable finger ring.

The development of wearable rings did not fulfill these needs until the '859 Patent. Ex-2018, ¶256. The prior art largely followed Asada's lead, bunching components at the top of the ring in an attempt at least make the ring wearable by limiting the width of the sides of the ring. *Id.* None of these efforts proposed using a curved battery in conjunction with a PCB mounted within a ring housing. Even Dr. Mercier's own efforts in 2013 in creating a smart ring as part of the Center of Wearable Sensors at UCSD required him to put components and battery atop of the ring similar to Asada. *Id.* Indeed, in his own endeavor on this front in 2013, the



Demonstrative Exhibit Not Evidence

## Not also compact and comfortable?



McLearn Ring



Logbar



HB Ring

Patented Rings: Schröder, Niwa, LeBoeuf, Wissmar  
Patented small wearables: Mestas, Yuen

859POR (Paper 18), 97; Ex-1080 ¶¶294, 254-378

118

**Samsung Electronics Co., Ltd.;  
Samsung Electronics America, Inc.,  
v.  
Ouraring, Inc.,**

**Petitioner's Presentation For IPR2024-00928, PGR2024-00030, -00039**

**U.S. Patent Nos. 9,582,034; 11,868,178; 11,874,702**

**September 11, 2025**