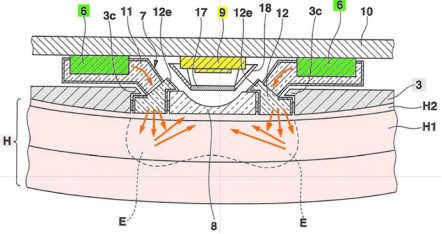
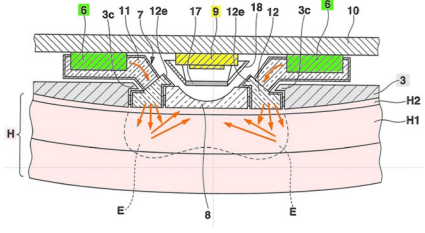
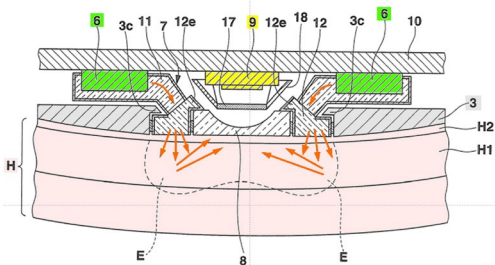


Comparison of EX1003 with Corrected IPR2022-01291 Petition

Anthony Declaration (EX1003)	Corrected IPR2022-01291 Petition
<p>29. Iwamiya discloses an “optical biological information detecting apparatus” which is a physiological monitoring device. APPLE-1004, Abstract. For example, Iwamiya describes that the “optical biological information detecting apparatus” is provided in “a central portion of the back cover” of “a wristwatch” (<i>i.e.</i>, facing the wearer’s wrist). APPLE-1004, 5:54-66, FIG. 1. As shown in the following annotated FIG. 4 from Iwamiya, the device includes LEDs 6 (shown in green) that emit light (orange) that is reflected by the tissue of the wearer’s wrist (pink) and detected by photodiodes 9 (yellow).</p>  <p align="center">APPLE-1004, Detail of FIG. 4 (annotated)</p>	<p>Iwamiya discloses an “optical biological information detecting apparatus” which is a physiological monitoring device. APPLE-1004, Abstract. For example, Iwamiya describes that the “optical biological information detecting apparatus” is provided in “a central portion of the back cover” of “a wristwatch” (<i>i.e.</i>, facing the wearer’s wrist). APPLE-1004, 5:54-66, FIG. 1. As shown in the following annotated FIG. 4 from Iwamiya, the device includes LEDs 6 (shown in green) that emit light (orange) that is reflected by the tissue of the wearer’s wrist (light pink) and detected by photodiodes 9 (yellow).</p> <p>APPLE-1003, [29]:</p>  <p align="center">APPLE-1004, Detail of FIG. 4 (annotated)</p> <p>(Pet. 6-7)</p>
<p>30. Sarantos describes a “wristband-type wearable fitness monitor” that measures “physiological parameters” of the wearer, such as the person’s “heart rate” and “blood oxygenation levels.” APPLE-1005, 2:5-14, 5:55-59, 7:12-14, 13:39-47. The monitor performs these measurements using a photoplethysmographic (PPG) sensor,</p>	<p>Sarantos describes a “wristband-type wearable fitness monitor” that measures “physiological parameters” of the wearer, such as the person’s “heart rate” and “blood oxygenation levels.” APPLE-1005, 2:5-14, 5:55-59, 7:12-14, 13:39-47. The monitor performs these measurements using a photoplethysmographic (PPG) sensor,</p>

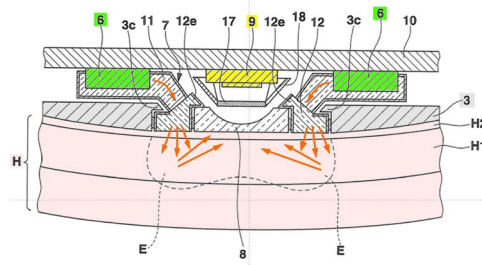
<p>which includes one or more light sources (e.g., LEDs) and an array of photodetectors. <i>Id.</i>, 1:9-10, 43-47, 7:12-16, 15:23-43. Sarantos describes that when the monitor “is worn by a person in a manner similar to a wristwatch, the back face” of the monitor “may be pressed against the person's skin, allowing the light sources” of the PPG sensor “to illuminate the person’s skin.” <i>Id.</i>, 1:48-51, 7:12-23. The light “diffuses through the person's flesh and a portion of this light is then emitted back” (i.e., reflected) “out of the person's skin in close proximity to where the light was introduced into the flesh.” <i>Id.</i>, 7:24-28. The photodetector array of the PPG sensor measures the “intensity” of this reflected light, and provides signals representing the intensity to “control logic” of the monitoring device. APPLE-1005, 2:5-14, 7:12-23, 13:39-47. The control logic can then calculate different physiological parameters based on characteristics of the reflected light signal. <i>Id.</i>, 1:54-56, 7:12-23. For example, the person’s heart rate can be calculated based on “fluctuations in the amount of light from the light source that is emanated back out of the flesh” that correspond fluctuations in blood volume associated with each beat of the person’s heart. <i>Id.</i>, 7:23-60.</p>	<p>which includes one or more light sources (e.g., LEDs) and an array of photodetectors. <i>Id.</i>, 1:9-10, 43-47, 7:12-16, 15:23-43. Sarantos describes that when the monitor “is worn by a person in a manner similar to a wristwatch, the back face” of the monitor “may be pressed against the person's skin, allowing the light sources” of the PPG sensor “to illuminate the person’s skin.” <i>Id.</i>, 1:48-51, 7:12-23. The light “diffuses through the person's flesh and a portion of this light is then emitted back” (i.e., reflected) “out of the person's skin in close proximity to where the light was introduced into the flesh.” <i>Id.</i>, 7:24-28; APPLE-1003, [30]. The photodetector array of the PPG sensor measures the “intensity” of this reflected light, and provides signals representing the intensity to “control logic” of the monitoring device. APPLE-1005, 2:5-14, 7:12-23, 13:39-47. The control logic can then calculate different physiological parameters based on characteristics of the reflected light signal. <i>Id.</i>, 1:54-56, 7:12-23. For example, the person’s heart rate can be calculated based on “fluctuations in the amount of light from the light source that is emanated back out of the flesh” that correspond fluctuations in blood volume associated with each beat of the person’s heart. <i>Id.</i>, 7:23-60; APPLE-1003, [30].</p> <p>(Pet. 7-8)</p>
<p>31. In the combination, Iwamiya discloses an “optical biological</p>	<p>In the combination, Iwamiya discloses an “optical biological information</p>

information detecting apparatus” which is a physiological monitoring device. APPLE-1004, Abstract. For example, Iwamiya describes that the “optical biological information detecting apparatus” is provided in “a central portion of the back cover” of “a wristwatch” (*i.e.*, facing the wearer’s wrist). APPLE-1004, 5:54- 66, FIG. 1. As shown in the following annotated FIG. 4 from Iwamiya, the device includes LEDs 6 (shown in green) that emit light (orange) that is reflected by the tissue of the wearer’s wrist (pink) and detected by photodiodes 9 (yellow).



APPLE-1004, Detail of FIG. 4 (annotated)

detecting apparatus” which is a physiological monitoring device. APPLE-1004, Abstract; **APPLE-1003, [31]**. For example, Iwamiya describes that the “optical biological information detecting apparatus” is provided in “a central portion of the back cover” of “a wristwatch” (*i.e.*, facing the wearer’s wrist). APPLE-1004, 5:54- 66, FIG. 1. As shown in the following annotated FIG. 4 from Iwamiya, the device includes LEDs 6 (shown in green) that emit light (orange) that is reflected by the tissue of the wearer’s wrist (**light pink**) and detected by photodiodes 9 (yellow). **APPLE-1003, [31]:**



APPLE-1004, Detail of FIG. 4 (annotated)

(Pet. 8-9)

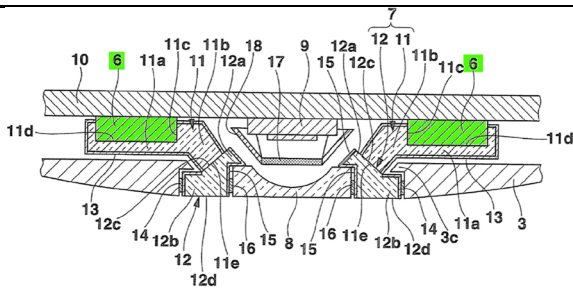
32. Accordingly, the combination of Iwamiya and Sarantos renders obvious a “physiological monitoring device.”

Accordingly, the combination of Iwamiya and Sarantos renders obvious a “physiological monitoring device.”

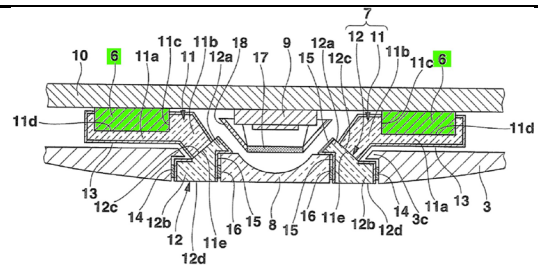
(Pet. 9)

33. In the combination, Iwamiya discloses “light emitting units 6” that are each “composed of a light emitting diode (LED).” APPLE-1004, 6:7-11, 6:32-39. The light emitting units 6 are shown in green in the following annotated FIG. 3 from Iwamiya:

In the combination, Iwamiya discloses “light emitting units 6” that are each “composed of a light emitting diode (LED).” APPLE-1004, 6:7-11, 6:32-39, **15:30-33, FIGS. 3-4, FIG. 12**. The light emitting units 6 are shown in green in the following annotated FIG. 3 from Iwamiya:



APPLE-1004, Detail of FIG. 3
(annotated)



APPLE-1004, Detail of FIG. 3
(annotated)

(Pet. 10-11)

34. The light emitting units 6 “emit observation light of a specific wavelength band to optically observe a skin tissue of a human body.” *Id.*, 6:7-11. The emitted observation light is in a first shape characterized by the specific location of each light emitting unit, e.g., the “3 o'clock” and “9 o'clock” positions as shown in FIGS. 3 and 4 of Iwamiya. See *id.*, 6:7-11, FIGS. 3-4.

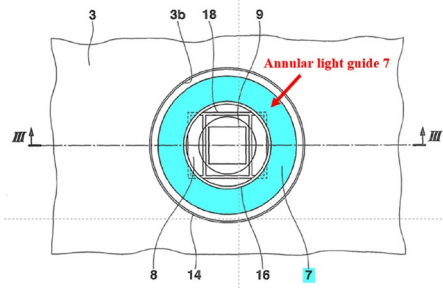
The light emitting units 6 “emit observation light of a specific wavelength band to optically observe a skin tissue of a human body.” *Id.*, 6:7-11. The emitted observation light is in a first shape characterized by the specific location of each light emitting unit, e.g., the “3 o'clock” and “9 o'clock” positions as shown in FIGS. 3 and 4 of Iwamiya. See *id.*, 6:7-11, 6:32-39, 15:30-33, FIGS. 3-4, FIG. 12; APPLE-1003, [34].

(Pet. 11)

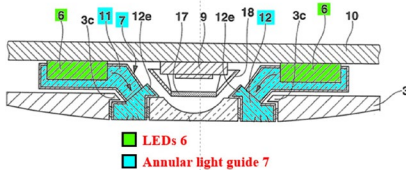
35. In the combination, Iwamiya describes that the physiological sensor includes “an annular light guide unit 7 that guides the observation light emitted from the light emitting units 6 and annularly diffuses and irradiates the observation light with respect to a skin H.” APPLE-1004, 6:7-14, Fig. 4. The annular light guide unit 7 includes “a light guiding ring portion 11” formed “using a material such as transparent glass or a transparent resin with a high light transmitting property.” *Id.*, 6:40-45. The annular light guide unit 7 also includes “a

In the combination, Iwamiya describes that the physiological sensor includes “an annular light guide unit 7 that guides the observation light emitted from the light emitting units 6 and annularly diffuses and irradiates the observation light with respect to a skin H.” APPLE-1004, 6:7-14, Fig. 4. The annular light guide unit 7 includes “a light guiding ring portion 11” formed “using a material such as transparent glass or a transparent resin with a high light transmitting property.” *Id.*, 6:40-45. The annular light guide unit 7 also includes “a diffusion/irradiation ring

diffusion/irradiation ring portion 12” that is “formed in almost a ring shape, using a clouded or milky resin with a light diffusing property.” *Id.*, 6:40-42, 7:4-6. The following annotated FIGS. 2 and 4 from Iwamiya show top and cross-section views of physical monitoring device the annular light guide unit 7 (annotated in teal).



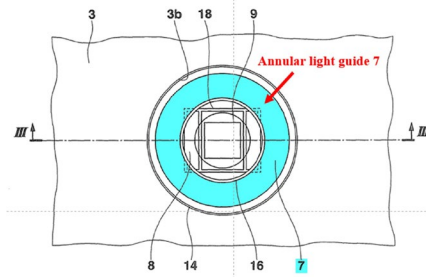
APPLE-1004, Detail of FIG. 2 (annotated)



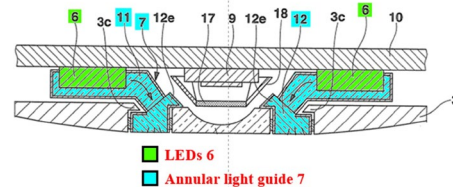
APPLE-1004, Detail of FIG. 4 (annotated)

36. Annular light guide unit 7 changes the shape of the light emitted from individual light emitting units 6 to an annular shape (a second shape) and causes the light to irradiate an annular portion of tissue. *Id.*, 11:55-12:36. As shown in the following annotated FIG. 4 from Iwamiya, the light from the light emitting units (the orange arrows) irradiates “an irradiation area E” in the user tissue “having a ring shape” (shown in yellow). *Id.*, 7:61-65:

portion 12” that is “formed in almost a ring shape, using a clouded or milky resin with a light diffusing property.” *Id.*, 6:40-42, 7:4-6. The following annotated FIGS. 2 and 4 from Iwamiya show top and cross-section views of physical monitoring device the annular light guide unit 7 (annotated in teal). **APPLE-1003, [35]:**



APPLE-1004, Detail of FIG. 2 (annotated)



APPLE-1004, Detail of FIG. 4 (annotated)

(Pet. 10-11)

Annular light guide unit 7 changes the shape of the light emitted from individual light emitting units 6 to an annular shape (a second shape) and causes the light to irradiate an annular portion of tissue. *Id.*, 11:55-12:36. As shown in the following annotated FIG. 4 from Iwamiya, the light from the light emitting units (the orange arrows) irradiates “an irradiation area E” in the user tissue “having a ring shape”

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