

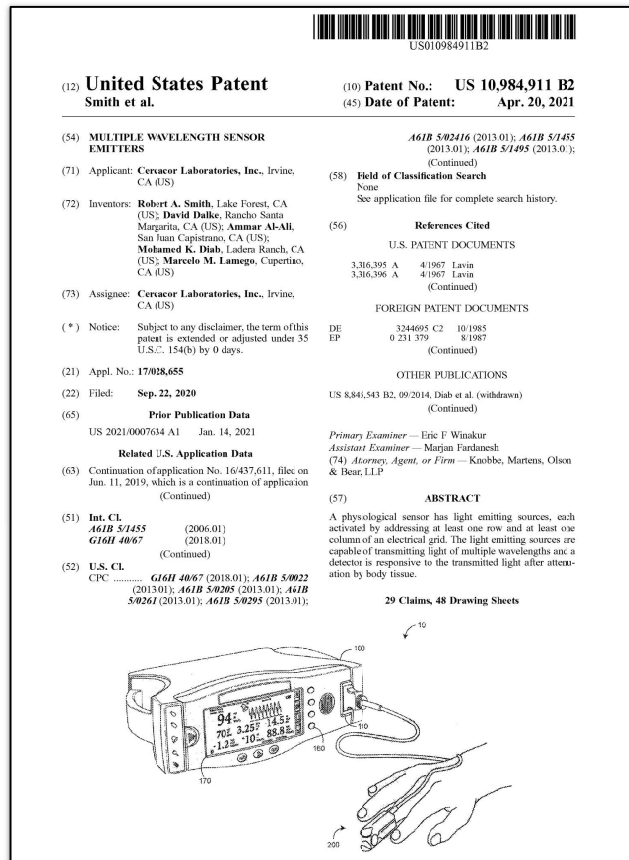
Patent Owner Masimo's Trial Hearing Demonstratives

Apple Inc. v. Willow Labs.

IPR2024-00296

U.S. Patent No. 10,984,911

'911 Patent



- Result of research on noninvasively measuring multiple physiological parameters in addition to oxygen saturation (SpO₂) and pulse rate
 - Carboxyhemoglobin, Methemoglobin, Total Hemoglobin, more
 - Previously, inventors experienced significant measurement inaccuracy due to **light piping**
-
- Patent discloses enhancements to improve measurement accuracy by reducing light piping
 - Claimed enhancements reduce light piping with a novel light block and unique arrangements of sensor features

Apple's Grounds

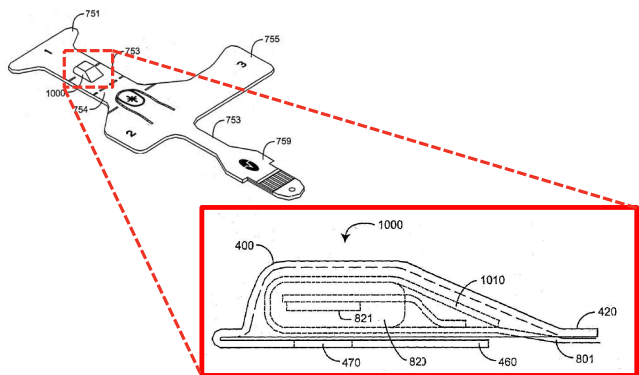
Ground	Claims	Basis
1A	1, 6, 8, 10, 15, 17, 19-21, 26, 28	§103: Abdul-Hafiz and Raley
1B	2-4, 11-13, 23-25	§103: Abdul-Hafiz, Raley, and Secker

Apple Fails To Show Obviousness

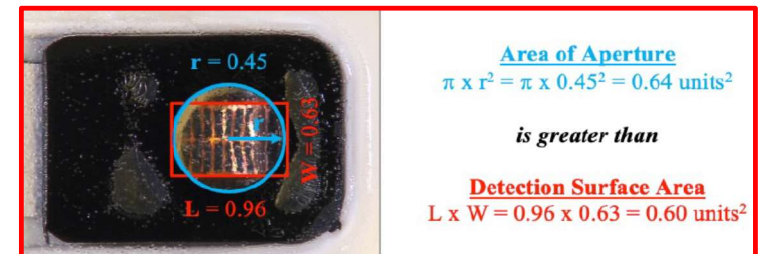
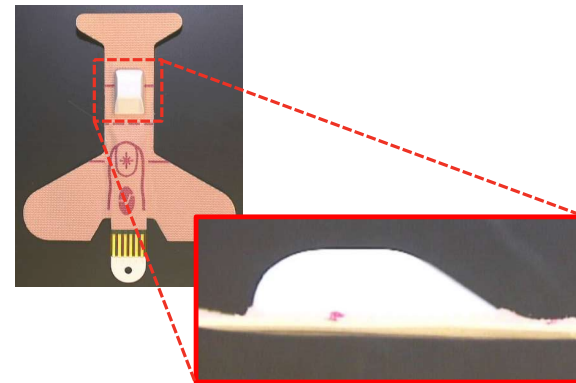
- ☐ Prior art does not disclose opening/window “smaller than” detection surface area
- ☐ Under Apple’s argument, the alleged light block has four openings, not “only one”
- ☐ Apple’s prior art does not enable the disclosure Apple relies on for multiple wavelengths; no reasonable expectation of success; no motivation to combine
- ☐ Prior art does not disclose 8 or 12 LEDs of three wavelengths; no motivation to combine

Apple's Primary Reference Describes a Masimo Sensor

Abdul-Hafiz



Masimo LNOP Sensor



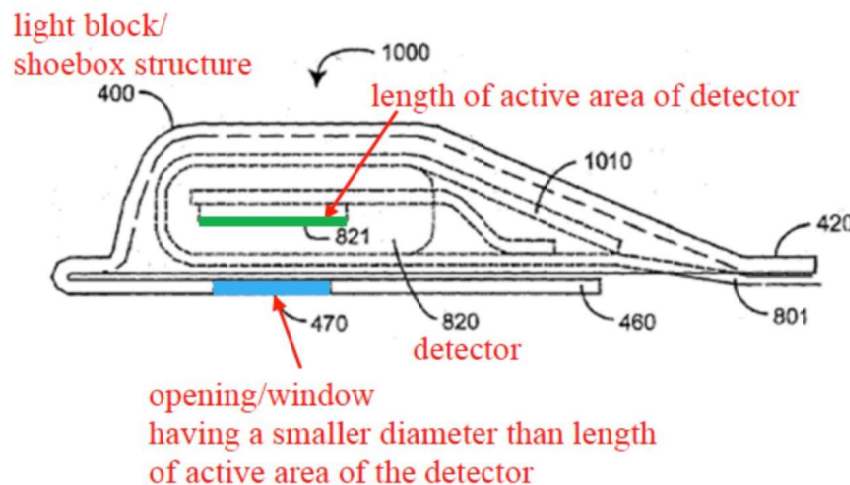
Ground 1A: Abdul-Hafiz + Raley

**No Opening/Window With An Area “Smaller Than A
Detection Surface Area of the At Least One Detector”**

(Claims 1-4, 6, 8, 10-13, 15, 17, 20)

Abdul-Hafiz Does Not Disclose An Opening/Window “Smaller Than” The Detector’s Detection Surface Area

- Apple’s Petition relies on precise dimensions and sizes inferred from Abdul-Hafiz’s figures to argue it discloses this limitation



APPLE-1004, FIG. 6A

The Board Correctly Held Abdul-Hafiz Lacks An Opening/Window “Smaller Than” The Detector’s Detection Surface Area

- ⊙ “[P]atent drawings **do not define the precise proportions of the elements and may not be relied on to show particular sizes**”
 - *Hockerson-Halberstadt, Inc. v. Avia Grp. Int’l, Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000)
- ⊙ “[A]rguments based on drawings not explicitly made to scale in [prior art] patents are unavailing.”
 - *Nystrom v. TREX Co.*, 424 F.3d 1136, 1149 (Fed. Cir. 2005)
- ⊙ Abdul-Hafiz fails to disclose opening/window “smaller than” detection surface area
- ⊙ The Board correctly held Apple’s ground fails because “the shape and dimensions of photodiode chip 821 and detector 820 **remain unclear from Abdul-Hafiz’s disclosure**”
- ⊙ Apple presents no reason to depart from Board’s well-reasoned, legally sound holding

Apple Fails To Show Obviousness

- ✓ Prior art does not disclose opening/window “smaller than” detection surface area

Apple's Comparison Argument Fails For Many Reasons

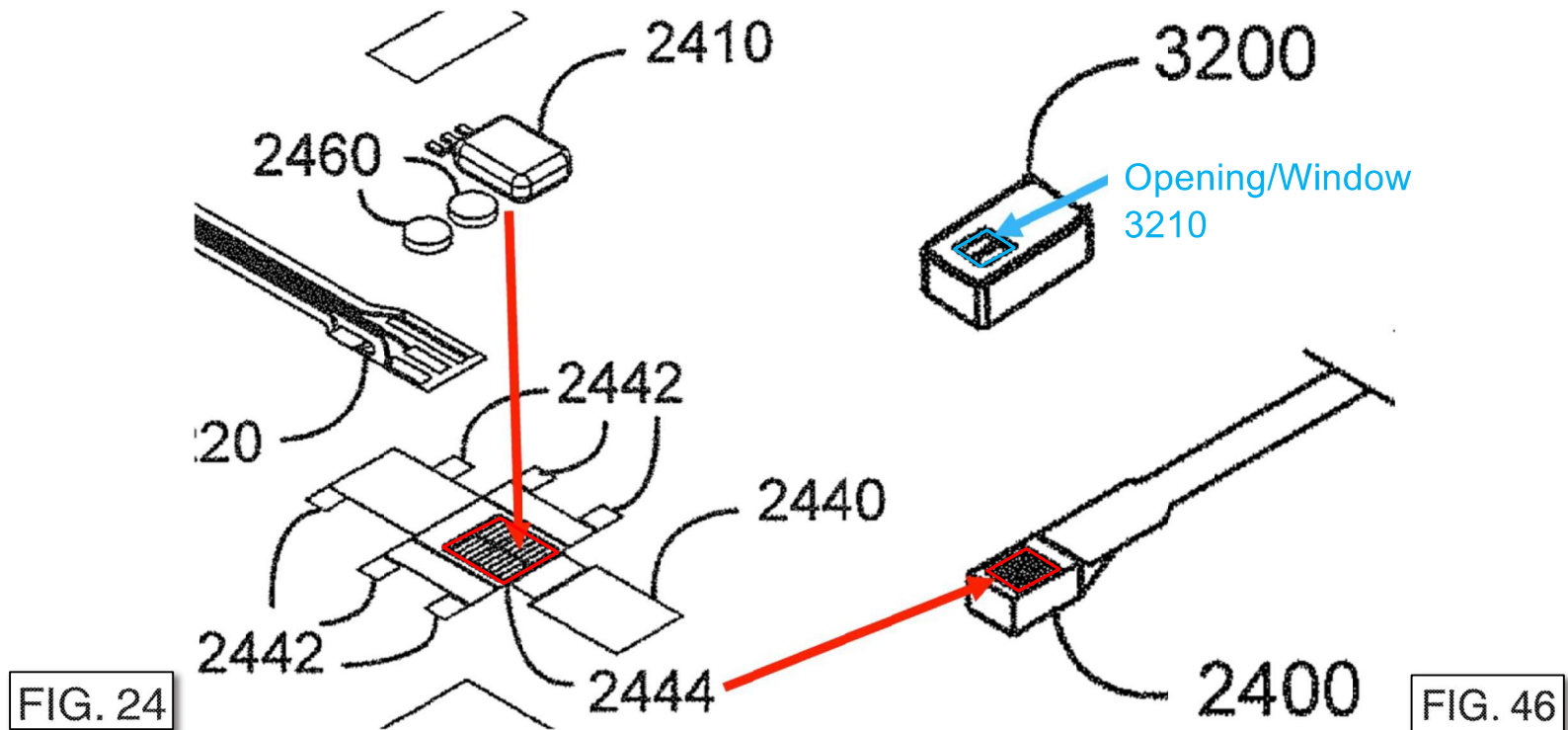
⦿ Apple argues:

- Abdul-Hafiz's disclosure is "at least as, if not more, detailed than the '911 patent's [disclosure] supporting this element"
- "Masimo should not be able to rely on the '911 patent's figures as providing support for this element while complaining that Apple cannot rely on Abdul-Hafiz's figures."

⦿ Apple's comparison argument is the **wrong analysis**

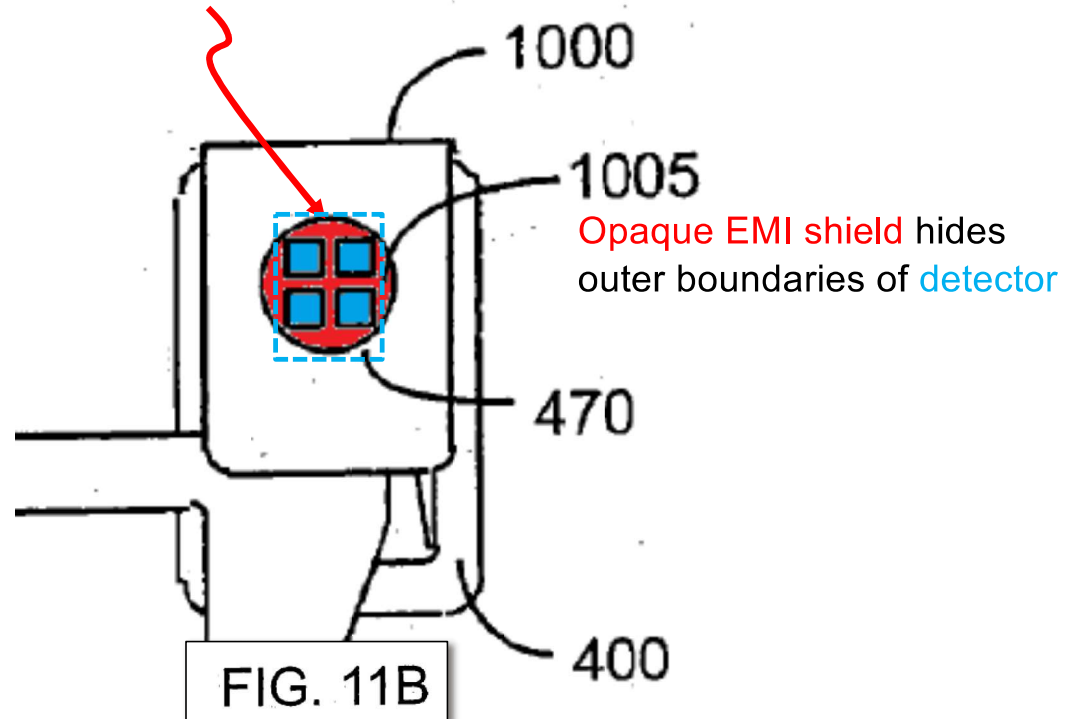
Apple's Comparison Argument Fails For Many Reasons

- Apple's comparison argument is **factually incorrect**



Apple's Comparison Argument Fails For Many Reasons

- Apple ignores Abdul-Hafiz's **EMI shield**



Apple Fails To Show Obviousness

- ✓ Prior art does not disclose opening/window “smaller than” detection surface area

Ground 1A: Abdul-Hafiz + Raley

**A POSITA Would Not Have Been Motivated To Make
Abdul-Hafiz's Alleged "Opening"/"Window" Smaller**
(Claims 1-4, 6, 8, 10-13, 15, 17, 20)

The Board Should Reject Apple's Untimely New Modification Theory

- ⦿ Apple's Reply presents new modification theory:
 - “[I]t would be desirable to have [the alleged] opening configured to have a smaller area than the detection surface area of the detector to decrease the angles of incidence to the detector.”
- ⦿ The Petition argued only that Abdul-Hafiz taught claimed smaller opening/window
- ⦿ Apple's new theory is not in the Petition or responsive to Masimo's POR
- ⦿ ***The Board should not consider it***
 - 37 C.F.R. § 42.23(b)
 - *Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356, 1365-67 (Fed. Cir. 2023)
 - *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369-70 (Fed. Cir. 2016)

Even If Considered, Apple's New Modification Theory Fails For Many Reasons

1. Abdul-Hafiz's optical housing design
2. Abdul-Hafiz's EMI shield
3. Apple's tertiary references
4. No reasonable expectation of success

Apple Fails To Show Obviousness

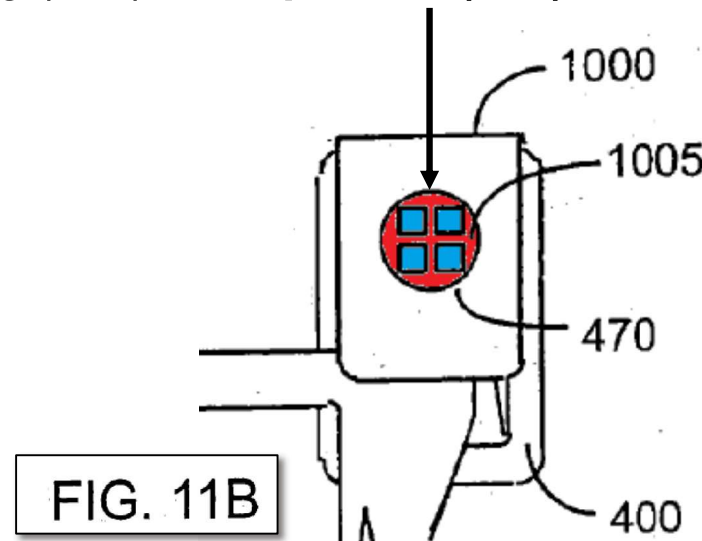
- ✓ Prior art does not disclose opening/window “smaller than” detection surface area

Ground 1A: Abdul-Hafiz + Raley

No Light Block with “Only One Opening”
(Claims 1-4, 6, 8, 19-21, 23-26, 28)

Abdul-Hafiz Has Four Openings, Not “Only One”

- ⊙ Apple: optical housing (400) with **aperture (470)** discloses light block with “only one opening”



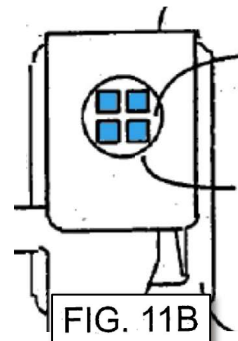
- ⊙ Apple: “FIG. 11B shows that Abdul-Hafiz’s aperture (470) includes a fixed EMI shield (1005, red)”

Apple's Specification Comparison Argument Fails

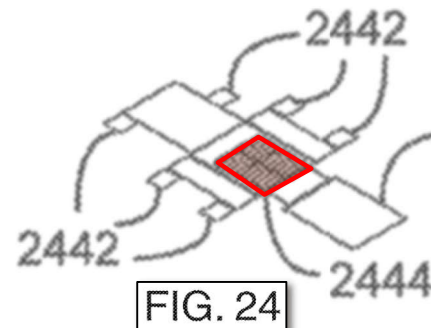
Apple: if Abdul-Hafiz's EMI shield is a light block, '911 Patent "provides no support" for a light block with only one opening "because the '911 patent's EMI shield has a grid [2444] with multiple openings"

- ⊙ Wrong Analysis
- ⊙ Factually Incorrect

Abdul-Hafiz



'911 Patent



Apple Fails To Show Obviousness

- ✓ Prior art does not disclose opening/window “smaller than” detection surface area
- ✓ Under Apple’s argument, the alleged light block has four openings, not “only one”

Ground 1A: Abdul-Hafiz + Raley

**The Prior Art Does Not Enable The Disclosure
Apple Relies On For Obviousness**
(All Challenged Claims)

Raley Does Not Enable What Apple Relies On For Obviousness

- ⦿ Prior art must enable the specific “disclosure being relied upon” for obviousness
 - *Raytheon Techs. Corp. v. Gen. Elec. Co.*, 993 F.3d 1374, 1380 (Fed. Cir. 2021)
- ⦿ Apple relies on Raley as disclosing:
 - “Four emitters” with different wavelengths “for measuring three or four blood analytes such as oxyhemoglobin, deoxyhemoglobin, carboxyhemoglobin and methemoglobin”
- ⦿ But Raley merely speculates it is “possible” or “would be useful” to measure four analytes (oxy-, deoxy-, carboxy-, and met-hemoglobin) with only four wavelengths
- ⦿ Jarman includes the same speculation

Apple Fails To Show Obviousness

- ✓ Prior art does not disclose opening/window “smaller than” detection surface area
- ✓ Under Apple’s argument, the alleged light block has four openings, not “only one”
- ✓ Apple’s prior art does not enable the disclosure Apple relies on for multiple wavelengths

Ground 1A: Abdul-Hafiz + Raley

**No Reasonable Expectation of Success Or Motivation
for Apple's Proposed Combination**
(All Challenged Claims)

No Reasonable Expectation Of Success or Motivation for Apple's Proposed Combination

- ⦿ Desired result of Apple's combination: "measuring additional blood analytes and/or for more accurately measuring oxygen saturation due to the presence of carboxyhemoglobin and methemoglobin"
- ⦿ POSITA: no reasonable expectation that Apple's combination would achieve that result
- ⦿ POSITA: no motivation to modify Abdul-Hafiz as proposed

Apple Fails To Show Obviousness

- ✓ Prior art does not disclose opening/window “smaller than” detection surface area
- ✓ Under Apple’s argument, the alleged light block has four openings, not “only one”
- ✓ Apple’s prior art does not enable the disclosure Apple relies on for multiple wavelengths; no reasonable expectation of success; no motivation to combine

Ground 1B: Abdul-Hafiz + Raley + Secker

**Apple Fails To Show Obviousness of Claims Requiring “Eight” or
“Twelve” LEDs of “At Least Three” Different Wavelengths
(Claims 2-4, 11-13, 23-25)**

Apple's References Do Not Disclose At Least "Eight"/"Twelve" LEDs of "At Least Three" Different Wavelengths

Abdul-Hafiz

Two LEDs: one for each of
two wavelengths

The sensor 110 is attached to a tissue site, such as an adult patient's finger (as shown). Other sensor types are configured to attach, say, to a neonatal patient's foot. The sensor 110 is configured with both red and infrared LEDs 112 (hidden) that, for finger attachment, project light through the fingernail and into the blood vessels and capillaries underneath. A photodiode 114 (not visible) is positioned at the finger tip opposite the fingernail so as to detect the LED emitted light as it emerges from the finger tissues.

Raley

4 LEDs: one for each of
four wavelengths

FIG. 3 depicts a bottom elevational view of one embodiment of the patient end of interconnect cable segment 20. The embodiments of FIG. 3 includes four emitters 21, 22, 23 and 24. Such an embodiment would be useful in a photoplethysmographic monitor for measuring three or four blood

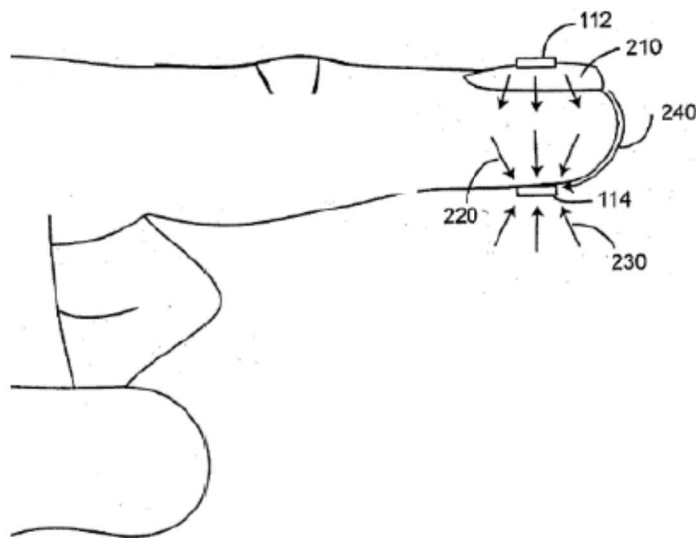
Secker

Many LEDs: multiple for each of
two wavelengths

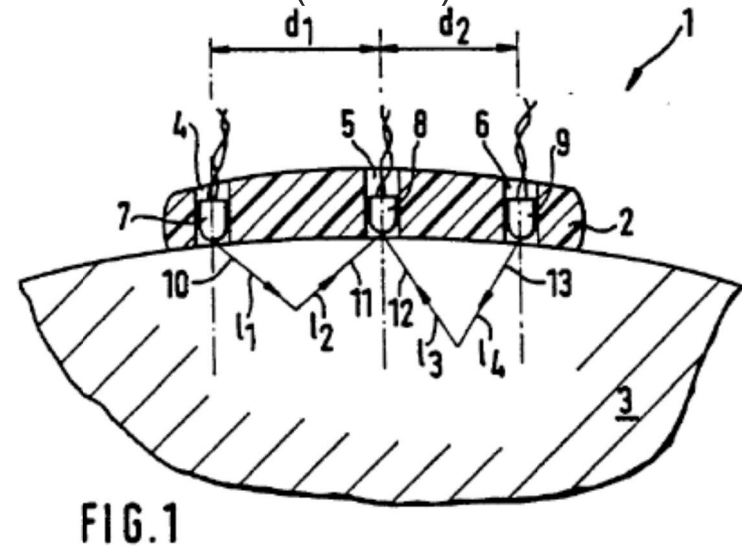
Such a sensor is depicted in FIG. 8. Carrier body 69 comprises red LEDs 70a to 70d and 71a to 71d as well as infrared LEDs 72a to 72d and 73a to 73d. The photoelectric receiver is outlined as 74. Such a sensor may be used, in conjunction with an appropriate oximeter, for very precise manual or automatic adaptation to different kinds of measurement by selecting an appropriate red LED/infrared LED combination.

Secker Provides No Motivation For Adding More LEDs To Abdul-Hafiz+Raley's Transmittance Sensor

Transmittance Sensor
(Abdul-Hafiz+Raley)



Reflectance Sensor
(Secker)



Apple Fails To Show Obviousness

- ✓ Prior art does not disclose opening/window “smaller than” detection surface area
- ✓ Under Apple’s argument, the alleged light block has four openings, not “only one”
- ✓ Apple’s prior art does not enable the disclosure Apple relies on for multiple wavelengths; no reasonable expectation of success; no motivation to combine
- ✓ Prior art does not disclose 8 or 12 LEDs of three wavelengths; no motivation to combine

Challenged Claim 1

1. A physiological monitoring device comprising:
at least three LEDs recessed into a cavity, the at least three LEDs configured to emit light of at least three different wavelengths;
at least one detector configured to detect at least a portion of the light emitted from the at least three LEDs after at least a portion of the light has been attenuated by tissue, the at least one detector configured to output at least one signal responsive to the detected light;
a light block surrounding the at least one detector, the light block comprising a shoebox structure configured to recess the at least one detector into the shoebox structure, wherein the shoebox structure is at least partially formed of a black material, wherein a top of the shoebox structure includes only one opening through which light is configured to pass, the opening comprising an area smaller than a detection surface area of the at least one detector; and
a processor configured to receive and process one or more signals responsive to the outputted at least one signal and determine a physiological parameter of a user responsive to the one or more signals.

Challenged Claim 10

10. A physiological monitoring device comprising:
at least three LEDs recessed into a cavity, the at least three LEDs configured to emit light of at least three different wavelengths;
at least one detector configured to detect at least a portion of the light emitted from the at least three LEDs after at least a portion of the light has been attenuated by tissue, the at least one detector configured to output at least one signal responsive to the detected light;
an electromagnetic interference shield positioned between the at least three LEDs and the at least one detector;
a light block surrounding the at least one detector, the light block at least partially formed of black materials, the light block comprising a base, four side walls and a top forming an enclosure, wherein the light block comprises a window, the window having an area smaller than a detection surface area of the at least one detector; and
a processor configured to receive and process one or more signals responsive to the outputted at least one signal and determine a physiological parameter of a user responsive to the one or more signals.

Challenged Claims 19-20

19. A method for determining a physiological parameter of a living patient, the method comprising:

positioning a sensor with respect to body tissue of a living patient, the sensor comprising at least three LEDs, at least one detector, and a light block at least partially surrounding the at least one detector, wherein a top of the light block comprises only one opening through which light is configured to pass;

activating the at least three LEDs such that at least three wavelengths of light are emitted from the at least three LEDs;

detecting, at the at least one detector, at least a portion of the light emitted from the at least three LEDs after at least a portion of the light has been attenuated by the body tissue and passed through the opening of the top of the light block, wherein the at least one detector outputs at least one signal responsive to the detected light; and

determining a physiological parameter of the living patient responsive to the outputted at least one signal.

20. The method of claim **19**, wherein an area of the opening is smaller than a detection surface area of the at least one detector.

Abdul-Hafiz

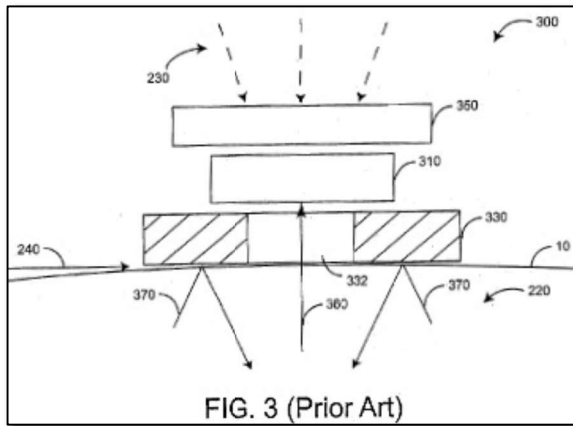


FIG. 3 (Prior Art)

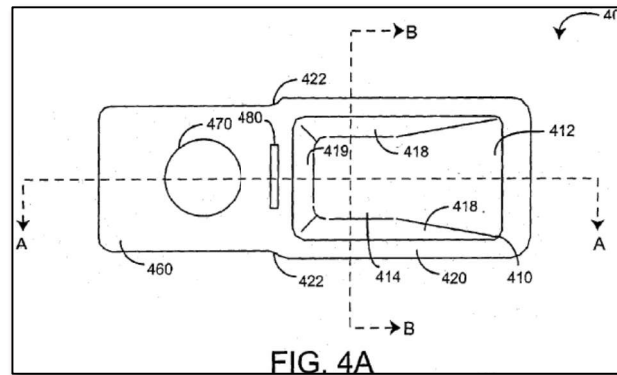
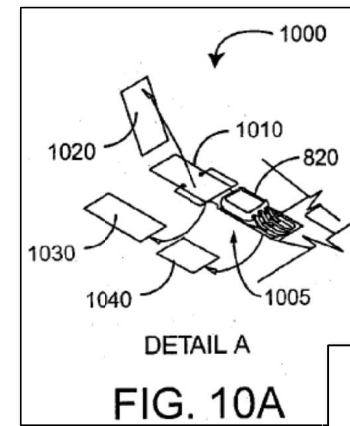
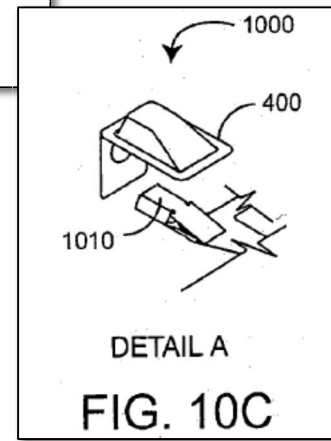


FIG. 4A



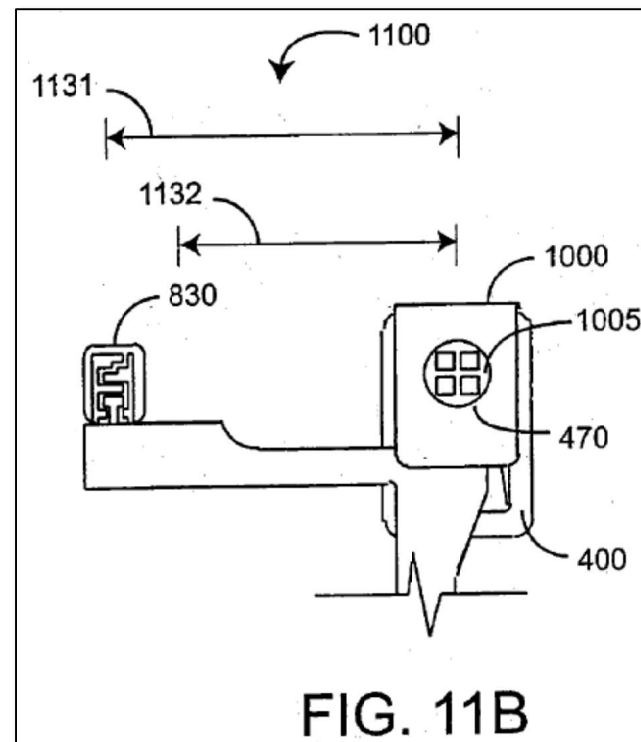
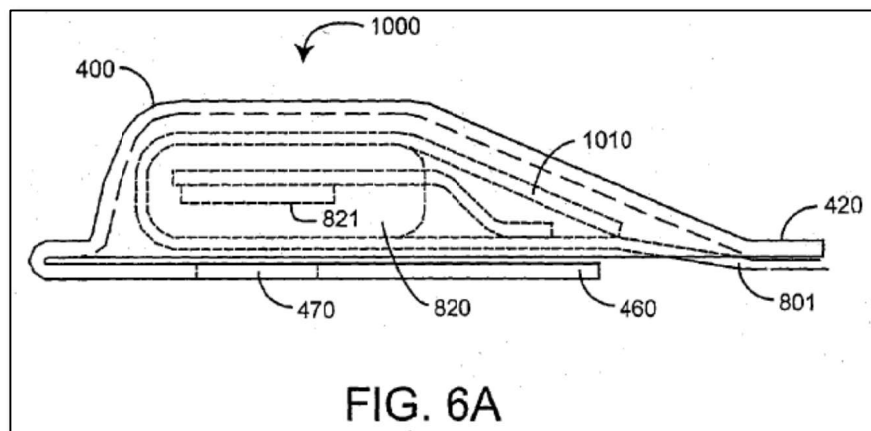
DETAIL A

FIG. 10A

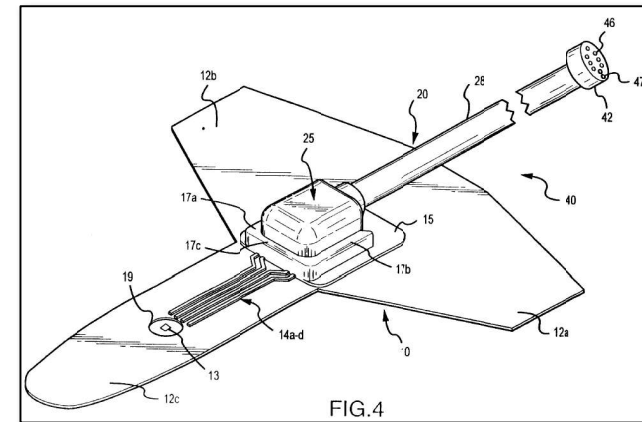
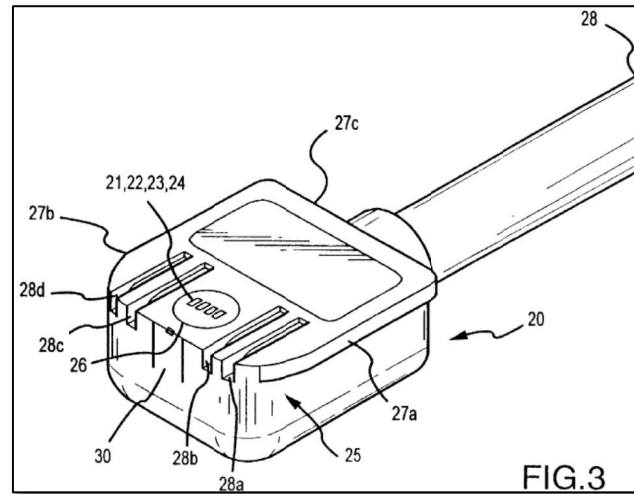
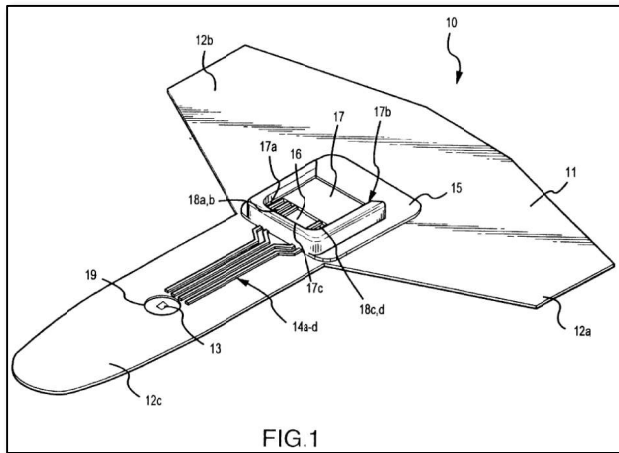


DETAIL A

FIG. 10C



Raley



Apple's Proposed Modification of Abdul-Hafiz+Raley's Transmittance Sensor Based on Secker

