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UNITED STATES PATENT AND TRADEMARK OFFICE

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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MASIMO CORPORATION
Petitioner,

v.

APPLE INC.
Patent Owner.

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Case No. IPR2023-00745
U.S. Patent No. 10,076,257

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# PETITIONER'S REPLY IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,076,257

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## I. INTRODUCTION

Apple misreads the Petition to allege it is procedurally deficient in identifying which prior-art structures show unpatentability. But the Petition identified the grounds sufficiently and proved all challenged claims unpatentable. Apple also offers new claim-construction arguments for "embedded in" and alleges the prior art does not disclose pads embedded in an enclosure. But Mills's pads are embedded in an enclosure under all constructions. Apple's expert, Dr. Kenny, admitted as much.

## II. CLAIM CONSTRUCTION

Masimo proposed construing "embedded." Pet., 8-9. Apple argues that construction is too broad and proposes construing "embedded in." POR, 8-10. But construing "embedded" more broadly than the narrower phrase "embedded in" is appropriate. Moreover, Apple's "embedded in" construction is not significantly narrower.

Apple asserts "embedded in" should be given its ordinary meaning and does not necessarily need construction. POR, 13. If the Board construes "embedded in," Apple proposes the construction "at least partially set in or partially surrounded by a material." *Id*. Apple does not specify a threshold for "partially," so its construction covers pads ***minimally*** set in ***or*** surrounded by an enclosure. Apple asserts its construction excludes pads pressed against a single flat surface but does not credibly

explain why. EX2003, ¶34. Kenny conceded the construction covers pads pressed against a single ***curved*** surface but could not say how much curvature is required or why. EX1052, 128:4-131:5. Regarding "embedded in," Kenny said, "you sort of know it when you see it," just like obscenity. *Id.*, 131:4-5.

Apple also argues the Board should require Masimo to prove unpatentability under Masimo's district court construction of "embedded in," namely, "set firmly into and surrounded by material." POR, 10-12. But Apple does not argue that construction is correct. Indeed, Apple disputes it and does not commit to be bound by it for infringement. POR, 12-13.

Nevertheless, Masimo proves the claims unpatentable under its Petition construction and Apple's newly raised claim-construction arguments. Thus, no construction is needed. EX1065, ¶¶211-215.[1]

## III. GROUND 1

### A. Masimo Clearly Identified The Pads And Enclosure Portions

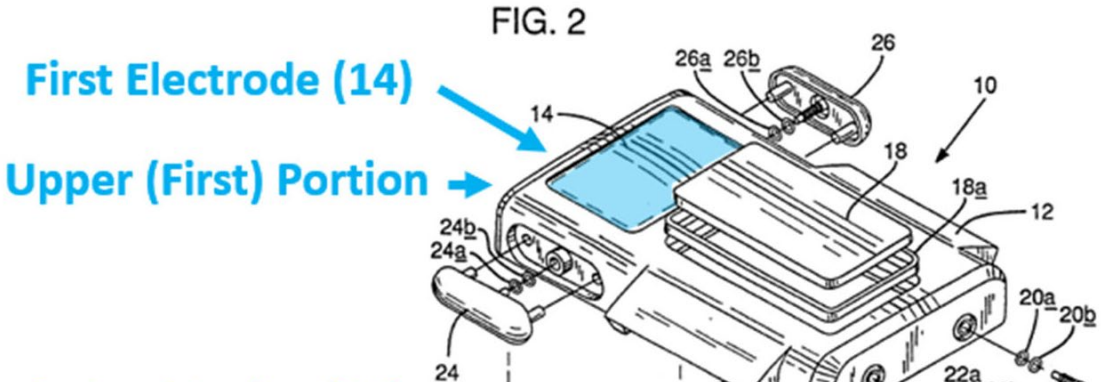
Apple argues Masimo inconsistently mapped different structures of Mills to the claimed first and second pads embedded in first and second portions of the enclosure. POR, 13-16. To the contrary, while each ground includes two alternative

[1] In general, a single citation to EX1065 is provided after each paragraph(s) supported by Alan Oslan's testimony.

theories, each theory clearly and consistently identifies which of Mills's structures satisfies the pads-embedded-in-enclosure limitations.

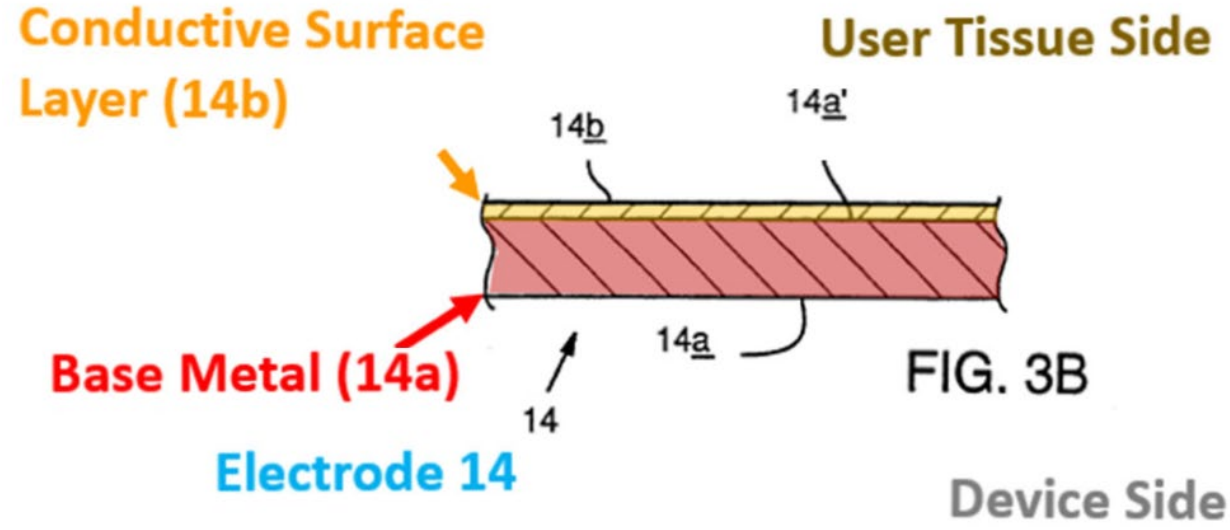
**1. First Theory**

Masimo identified Mills's base metal 14a ("pad 14a") as the claimed "first pad" and an upper portion of Mills's housing 12 and conductive surface coating 14b ("plating 14b") as the claimed "first portion." Pet., 19-22. In the first sentence of the "embedded in a first portion of the enclosure" section of the Petition, Masimo explained electrode 14 is "integrally molded" into housing 12. *Id.*, 19. That sentence makes clear the first portion of the enclosure in which the first pad is embedded includes at least part of housing 12. Masimo further explained the electrodes are not only embedded in the housing but also have "a base material" 14a "embedded underneath an outer surface coating" or plating 14b. *Id.*, 21. Thus, Masimo also identified plating 14b as part of the first portion. Masimo also included a figure (excerpted below) showing electrode 14 (identified by an arrow) molded into the first portion of housing 12 (identified by a separate arrow).



*Id.*, 23.

Masimo expressly identified "base metal 14a" as the "first pad" that is "embedded under the exterior of the first portion." *Id.*, 21. The figure below separately identifies base metal 14a and conductive surface layer 14b.




Pet., 22 (rotated).

Masimo further explained Mills's "second electrode 16 includes identical material content and cross-sectional structure as the first lead 14 discussed above." Pet., 29. Thus, electrode 16 has the same pad 14a and plating 14b as electrode 14. Pet., 29. Masimo identified electrode 16's pad as the claimed "second pad" and a lower portion of Mills's housing 12 and electrode 16's plating as the claimed "second portion." *Id.*, 28-30; EX1065, ¶¶217-219.

Apple attempts to sow confusion about this theory in three ways. First, Apple points out Masimo sometimes refers to electrode 14 as the "first pad" and sometimes

refers to it as part of the "first portion." *See, e.g.,* POR, 15 (citing Pet., 19, 24). Apple insinuates Masimo relies on electrode 14 as a unitary structure for both the "first pad" and "first portion." *Id*. But Masimo explained electrode 14 has ***two separate parts*** corresponding to different limitations: (1) base metal 14a is the "first pad" and (2) plating 14b is part of the "first portion." Pet., 21. Thus, when Masimo refers to electrode 14 as a pad, it refers to pad 14a and when it refers to electrode 14 as part of the enclosure, it refers to plating 14b. Apple's cases suggesting a single structure generally cannot satisfy distinct limitations are inapplicable. POR, 29.

Second, Apple argues Masimo's reliance on Mills's housing as disclosing limitation 1[a], "an enclosure," is inconsistent with Masimo's addition of plating 14b as part of the enclosure in the "embedded in" limitation 1[b(ii)]. POR, 18-19. However, there is nothing wrong with identifying additional structure to prove more detailed limitations.

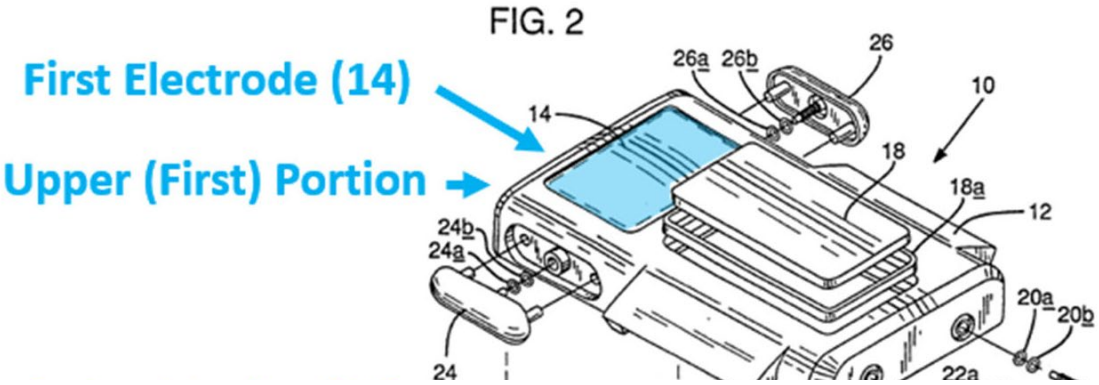
Third, Apple incorrectly implies Masimo identified plating 14b as the entire "first portion." POR, 18-19. Masimo identified plating 14b as only an "exterior surface" of the first portion. Pet., 22. Masimo identified the upper portion of Mills's housing and plating 14b as the first portion. Pet., 19-22. EX1065, ¶¶220-222.

**2. Second Theory**

Masimo also identified (1) the top of Mills's leaf spring 62 ("leaf-spring pad") as the claimed "first pad" and (2) an upper part of housing 12 and electrode 14 as

the claimed "first portion." Pet., 22-24. Apple argues Masimo did not expressly identify the leaf-spring pad as the "first pad," but only "a pad." POR, 21. This semantic gymnastics falls flat. Masimo explained, in the section addressing the first pad being embedded, "[t]he top of the trapezoid-shaped leaf spring 62 is a pad." Pet. 23. Apple complains Oslan refused to say the leaf-spring pad is the first pad. POR, 21. But when asked, "Is the top of the trapezoid-shaped leaf spring 62 the claimed first pad?", Oslan responded "electrode 14 is the pad [first theory] and leaf spring 62 is also a pad [second theory]." EX2008, 44:17-45:1.

Apple argues Masimo identified "the entire electrode 14 as the claimed first portion." POR, 22. However, as discussed above, Masimo separately identified electrode 14 and the first portion.




*Id.*; Pet., 23. Further, Masimo explained the leaf-spring pad is "pressed against the inner wall of electrode 14" and "surrounded by the housing 12 of Mills," and, thus, embedded in the first portion. Pet., 23-24. Thus, the figure above and the Petition's text include both part of housing 12 and electrode 14 in the first portion. EX1065,

¶¶223-224.

#### 3. The Board understood Masimo's theories.

The Board confirmed the clarity of the first theory, agreeing electrode 14 is "'integrally molded' (*i.e.*, embedded) into the housing [12]' and electrode 14 'also has a base material embedded underneath an outer surface coating.'" I.D., 23. The Board also understood "leaf spring 62 carries the electrical signal from the electrode 14 through the leaf spring 62 via the leaf spring's ***top pad***," consistent with the second theory. *Id.*, 24 (emphasis added).

## B. Mills Anticipates Claim 1

### 1. Mills discloses the embedded-in pads under all proposed constructions

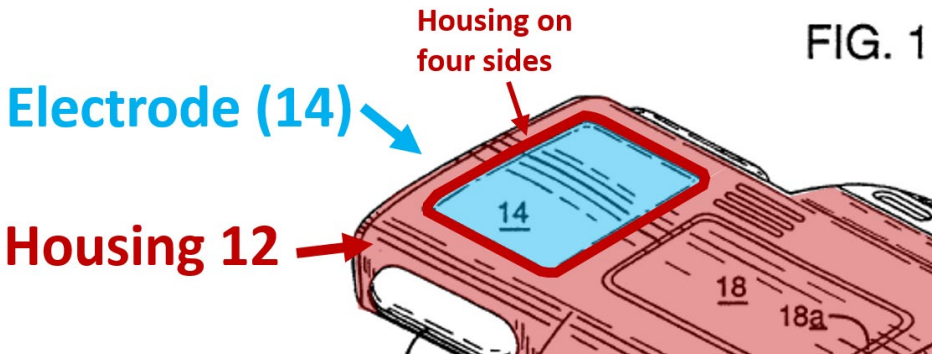
#### a. Masimo's "embedded" construction

Masimo showed Mills discloses the embedded-in pads under its "embedded" construction. Pet., §IV. Apple does not dispute that showing under Masimo's "embedded" construction. POR, 5-13.

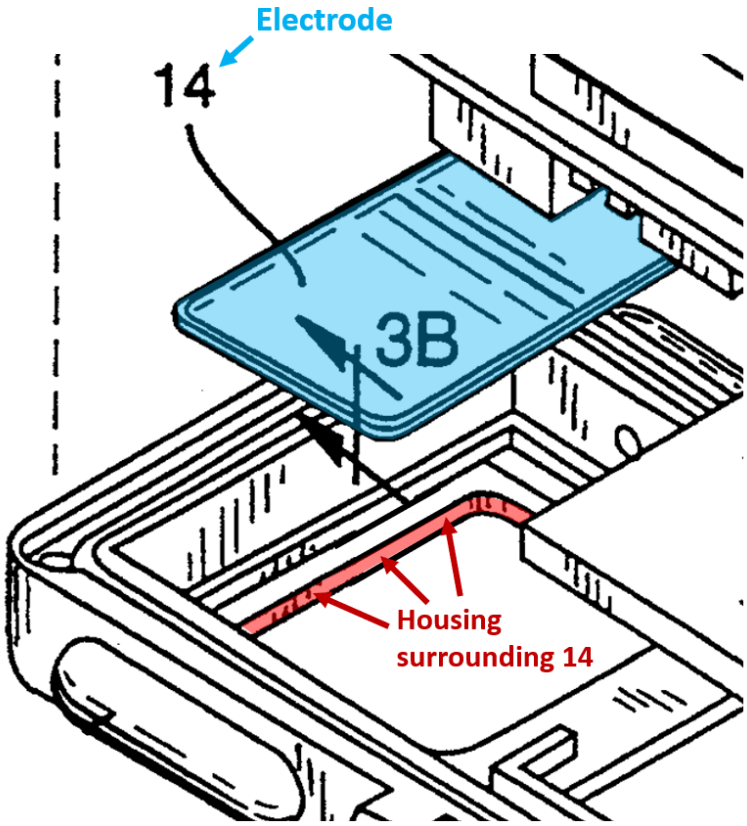
#### b. Apple's "embedded in" construction

Apple relies on its newly proposed construction of "embedded in" to argue Mills does not disclose pads embedded in an enclosure. POR, 5, 36-38. Kenny admitted Mills's pads 14a of electrodes 14 and 16 are "embedded in" the enclosure. EX1052, 186:18-187:6, 191:11-14. Under Apple's construction, Mills's pads 14a of electrodes 14 and 16, and leaf-spring pad are all at least partially set in or

surrounded by, and, thus, "embedded in," the first portion (upper portion of housing 12 and plating 14b). POR, 5; EX1052, 186:18-187:6, 191:11-14. EX1065, ¶227.




EX1006, Fig. 1.[2]

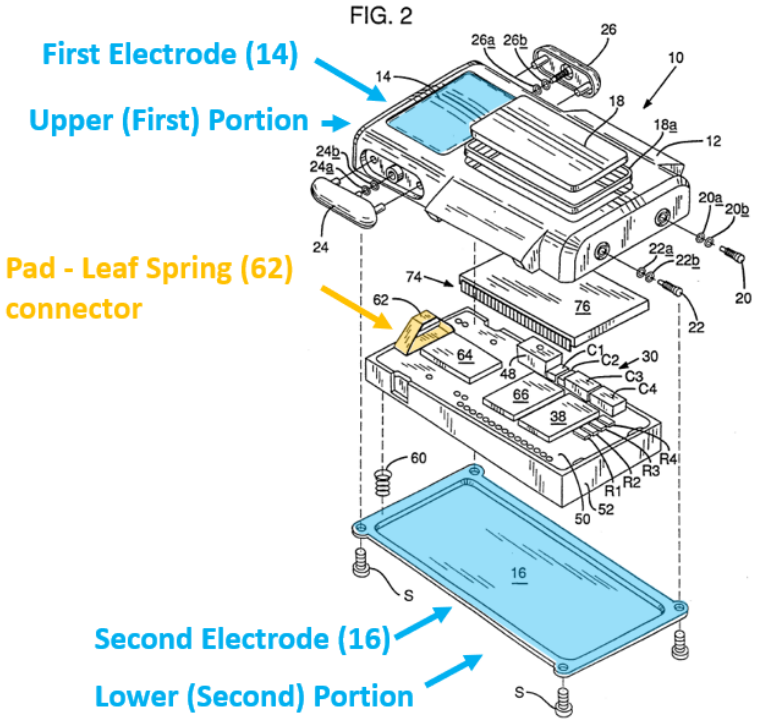



EX1006, Fig. 3A (detailed view, text "3B" removed). *See* Pet., 21.

[2] Figures include colored annotations.

As shown above, pad 14a of electrode 14 is surrounded on its four edges by the enclosure or housing 12. Kenny agreed Figure 1's electrode 14 is "definitely surrounded by the housing 12." EX1052, 186:1-187:2. Then he confirmed "electrode 14 is embedded in the housing 12 as shown in Figure 1 and 2." EX1052, 187:3-6. He similarly agreed electrode 16 was "set in the housing" and "housing 12 would surround the electrode 16" after assembly. EX1052, 190:12-191:10. Accordingly, pads 14a of electrodes 14 and 16 are at least partially set in and partially surrounded by, and, thus, embedded in, the first and second portions. EX1065, ¶¶228.

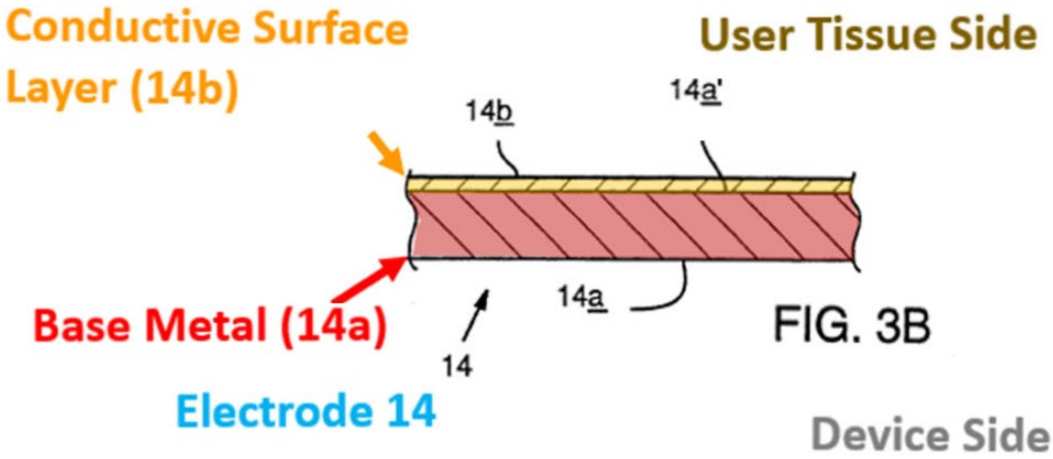
Alternatively, Mills discloses leaf spring 62. EX1006, 4:1-3, 4:67-5:3. The leaf-spring pad satisfies Apple's construction because it is at least "partially set in or partially surrounded" by the first portion. Indeed, Kenny testified a book "floating" within a desk drawer would be "embedded in" the desk, even if the book did not touch the drawer. EX1052, 55:16-22, 56:2-8, 143:16-144:22. Figure 2 of Mills, annotated below, shows the leaf-spring pad embedded in the first portion.




Pet., 22-24. EX1065, ¶¶229-230.

**c. Masimo's district court "embedded in" construction**

Mills's pad 14a is embedded in the first portion because it is set firmly into and surrounded by all four edges the housing 12 and on the top by plating:



EX1006, Fig. 3B (rotated). Mills's electrode 16 has the same structure as 14, with plating on the outside. EX1006, 2:16-20, 4:10-13.

Mills's electrode shown in Figure 3B consists of a base metal 14a (the embedded "pad") and a "base metal-plating composition 14b" on the "outer, skin-contactable region." EX1006, 4:4-5, 4:32. Pad 14a is firmly set into and surrounded by the enclosure consisting of housing 12 and plating 14b. EX1065, ¶¶231-232.

Mills's specification confirms pads 14a are embedded in the enclosure by describing the electrodes as "***integral with the monitor's housing***." EX1006, Abstract, 1:43-45. Moreover, Mills describes its "housing 12" as including "electrodes 14, 16 ***unitarily connected therewith and forming an integral part thereof***." *Id.*, 3:7-13, 3:44-51. The specification's consistent description electrodes 14 and 16 are "integral" with the housing supports that pads 14a are set firmly into and surrounded by the first and second portions.

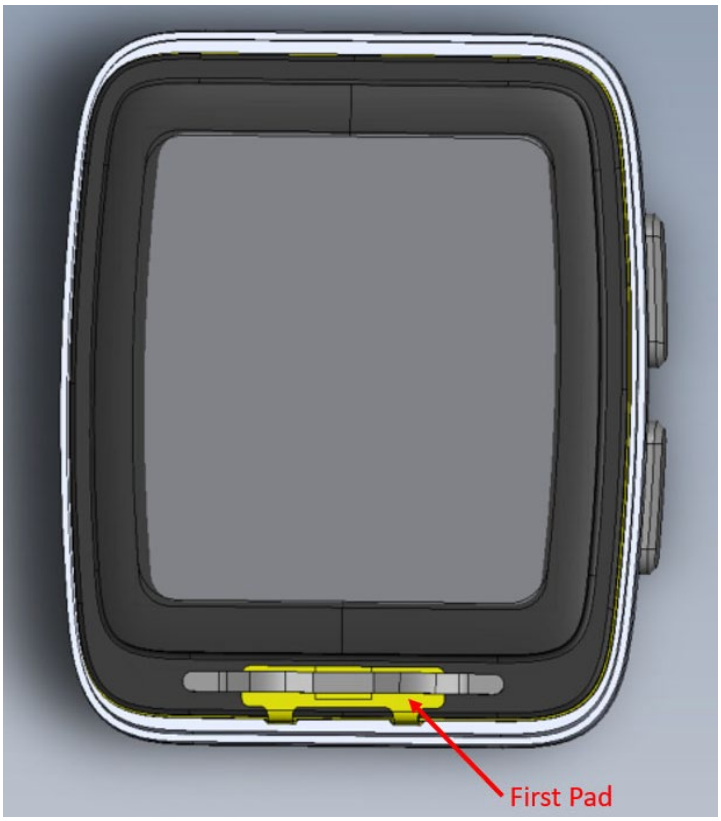
The leaf-spring pad is also set firmly into and surrounded by the first portion. The leaf-spring pad is surrounded by an upper portion of housing 12 and electrode 14 and is held firmly in place by being compressed tightly between the PCB and the electrode. EX1065, ¶¶233-234.

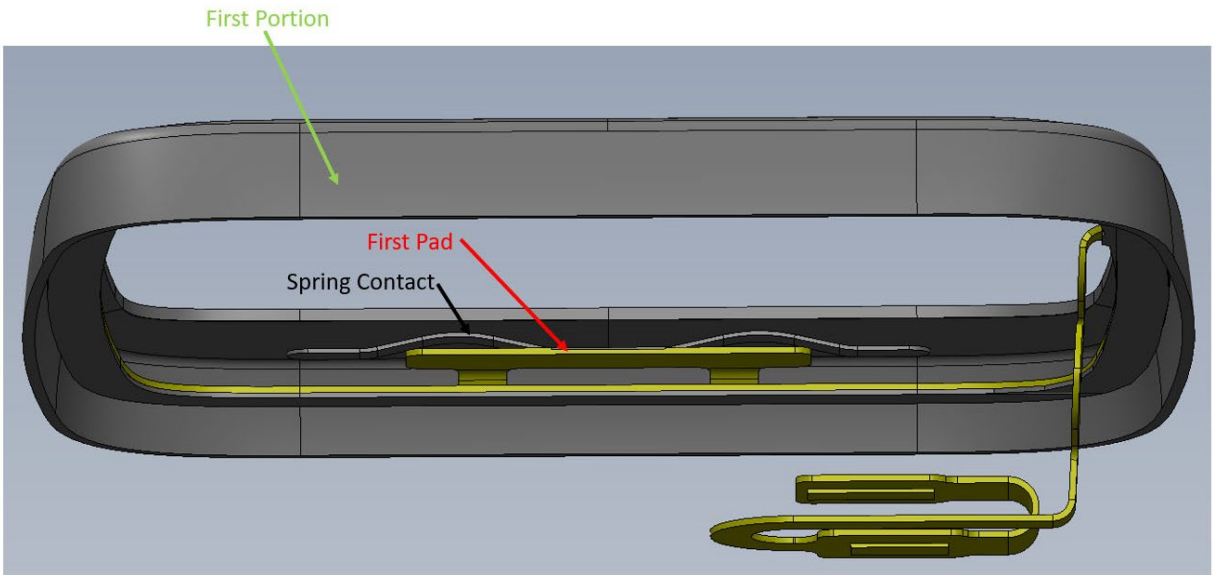
Therefore, the first and second pads identified in the Petition are "embedded in" the first and second portions under all constructions.

**d. Apple's infringement allegations undermine its argument Mills lacks embedded-in pads.**

Apple accuses Masimo of twisting the claims one way for unpatentability and another for non-infringement. POR, 11-12. But Masimo merely argues in the alternative and proves the claims unpatentable under all constructions.

Moreover, Apple uses different constructions for patentability and infringement. It does not even adopt its district court construction here. EX2004, 57-61. In district court, Apple asserted embedded-in pads need not be surrounded ***at all***. *Id*. It alleges, under both district court constructions, the yellow-colored exposed copper region (labeled "first pad") in the annotated CAD drawings below is "embedded in" the bezel (labeled "first portion") of Masimo's W1 watch. EX1065, ¶236.


First Pad


First Portion
First Pad
Spring Contact

EX1063, 3-4. Masimo disagrees (EX1064, 9-13), but Apple's allegations undermine Apple's arguments in this IPR that Mills's pads are not embedded in Mills's enclosure. EX1065, ¶¶237-238.

**2. Mills's first pad is positioned underneath the exterior surface of the first portion**

Under Masimo's first theory, Mills's pad 14a is ***positioned underneath*** the exterior surface (plating 14b) of the first portion, as shown below:

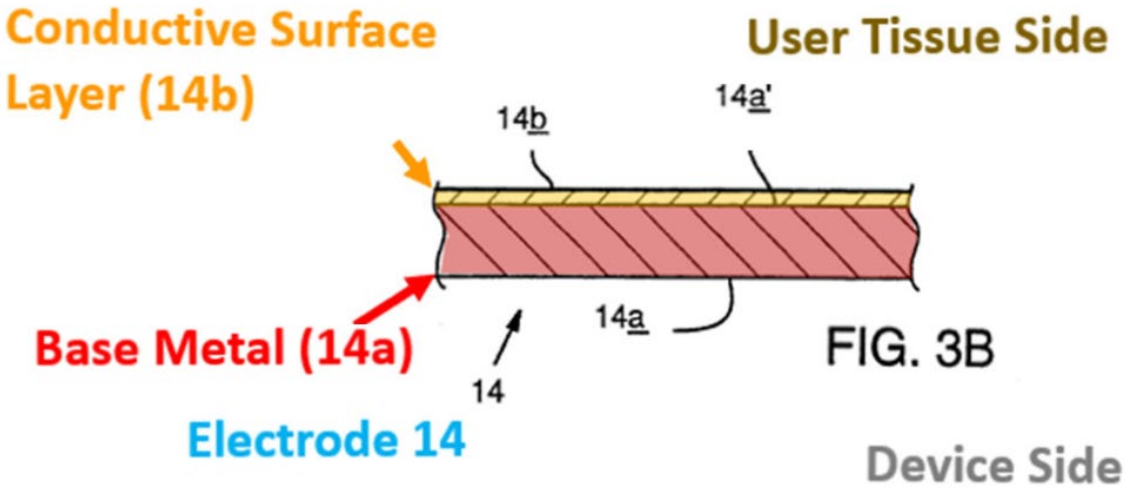
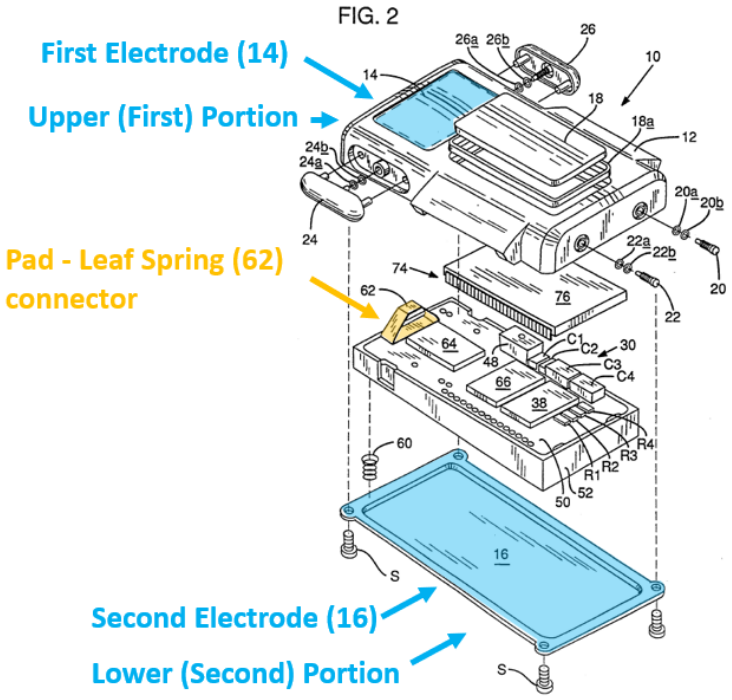



FIG. 3B

Pet., 21-22, 24-25, 30. EX1065, ¶¶241-247.

Under Masimo's second theory, the leaf-spring pad is positioned underneath the exterior surface (electrode 14) of a first portion, as shown below.




Pet., 23. The Petition, including the annotated Figure 2 above, identifies the plating of electrodes 14 and 16 as part of Mills's enclosure, contrary to Apple's assertions. POR, 18-19, 22-23, 35, 38, 40. EX1065, ¶¶248-252.

## C. Apple's Claim 1 Arguments Are Meritless

### 1. Apple's "first mapping" arguments are incorrect.

Apple characterizes Masimo's "first mapping" as identifying the entire electrode 14 as the first pad. POR, 27. Apple then argues electrode 14 is exposed, and, thus, not embedded in and underneath the first portion. *Id.*, 27-28. However, Masimo identified pad 14a as the "first pad" and plating 14b and part of housing 12 as the "first portion." *Supra*, III.A.1; Pet., 21-22, 24, 25, 30. Thus, Masimo did not

identify entire electrode 14 as both the first pad and first portion, as Apple contends. *Id.*; POR, 29. And Apple's cases suggesting separate limitations generally cover distinct components (POR, 29) are inapplicable. Pad 14a is both embedded in and underneath the first portion. *Supra*, III.A.1. Further, the cardiac signal is detected from skin contact with plating 14b, an exterior surface of the first portion. *Id.* EX1065, ¶253.

**2. Apple's "second mapping" arguments are incorrect.**

**a. Mills's plating 14b is part of the enclosure.**

Apple argues Mills's plating 14b is not part of the enclosure because electrode 14 is "a separate component from the housing 12 that is affixed to the housing 12." POR, 31. However, the claims do not require the enclosure to be a unitary piece. Masimo identified plating 14b and housing 12 as part of the enclosure. *Supra,* III.A.1. Masimo never limited the enclosure to only Mills's housing 12.

Apple argues plating 14b is not part of the enclosure because it is an "imperceptibly thin coating" that lacks structural integrity. POR, 30, 32, 34-35. This argument is incorrect. The ordinary meaning of "enclosure" includes plating 14b because the plating cooperates with housing 12 to enclose other components. Kenny agreed an enclosure's functions are "to enclose" and "provide some protection." EX1052, 185:1-15. Mills's plating serves those functions. EX1065, ¶¶254-256.

The claims and specification do not require minimal thickness or structural rigidity for the enclosure. EX1001, 12:21-14:50. Kenny agreed. EX1052, 182:3-13. Even so, Mills teaches plating 14b provides rigidity and protects and extends electrode life with an ***extremely hard*** surface. EX1006, 4:40-43. EX1065, ¶¶257-258.

**b. Mills's pad 14a is embedded in the first portion.**

Apple argues Mills's pad 14a is not "embedded in" plating 14b. POR, 36-38. But pad 14a is embedded in the first portion under all constructions. *Supra,* III.B.1. Apple's arguments regarding plating 14b being parallel to pad 14a do not fully address Masimo's identification of the first portion, which also includes part of housing 12. *Supra*, III.A.1. Moreover, Kenny admitted pad 14a is embedded in the enclosure. *Id.* EX1065, ¶259.

**c. Apple's "second mapping" arguments do not defeat anticipation.**

Apple argues to disregard the "second mapping" because Mills's pad 14a is not separate from plating 14b. POR, 38-39. Specifically, Apple asserts there is no disclosure in Mills of outer plating 14b being integrally molded in housing 12 with pad 14a being separate. *Id.* But the fact both pad 14a and plating 14b are integrally molded in housing 12 does not make them the same component. Their different reference numerals indicate they are separate. Pad 14a is integrally formed in

housing 12 under plating 14b, making it embedded in the first portion. *Supra*, III.B.1. EX1065, ¶260.

### 3. Apple's "third mapping" arguments are incorrect because the identified "first pad" is "embedded in" the "first portion"

Apple incorrectly repeats the "Petition never expressly maps" the leaf-spring pad to the "first pad." POR, 39 n.5.

Apple characterizes Masimo's "third mapping" as identifying electrode 14 ***alone*** as the first portion. POR, 41. Apple then argues the leaf-spring pad is merely "positioned behind" or "pressed against" this electrode. *Id*., 42. But Masimo's second theory identified an upper part of housing 12 and the electrode as the "first portion." *Supra*, III.A.2. The leaf-spring pad's being pressed against the electrode ***and*** surrounded by the housing makes it embedded in the first portion under Apple's construction. *Supra*, III.B.1. Kenny's embedded-in testimony supports that conclusion. Specifically, he said a book within a desk drawer is embedded in the desk even if it does not touch the drawer or desk. EX1052, 56:2-8. Further, Apple's dictionary defines "embedded" as "that which has been included within a larger entity." EX2005, 3. Thus, Mills's leaf-spring pad is embedded in the first portion. EX1065, ¶261.

Apple argues the leaf-spring pad is not "firmly set into" the first portion under Masimo's district court construction because the leaf spring is "slidably yielding."

POR, 43. But in a fully assembled device, the leaf spring would be compressed tightly between electrode 14 and PCB 50, and, thus, the pad would remain fixed within a small tolerance. EX1006, Fig. 2. A POSITA would have understood the pad is set firmly into the first portion. EX1065, ¶262.

Apple cites one sentence of the Petition stating the pad is embedded in the ***device***, not the enclosure. POR, 44. But Apple ignores the next sentence asserting the pad is embedded in the ***enclosure***. Pet., 23-24.

Apple argues electrode 14 is not part of the enclosure because it is separate from housing 12. *Id*. But the claims do not require the enclosure to be a unitary piece. The electrode helps enclose other components. EX1065, ¶¶263-264.

**4. Apple's "third mapping" arguments are incorrect because the "first pad" and "first connector" are separate parts of the leaf spring.**

Apple argues the leaf spring cannot include both the "first pad" and the "first connector." POR, 44-45. But the top portion Masimo identifies as the "first pad" is readily distinguishable from the bridging portion Masimo identifies as the "first connector." Pet., 31-32, 47. Moreover, unlike the cases Apple cites, the claim language and specification do not require the first pad and first connector to be physically separate parts. *See Google LLC v. EcoFactor, Inc.*, 92 F.4th 1049, 1058 (Fed. Cir. 2024); *Powell v. Home Depot U.S.A., Inc.*, 663 F.3d 1221, 1231-32 (Fed. Cir. 2011). Indeed, a POSITA would have understood physical connection of the

leaf-spring pad (first pad) to the bridging portion (first connector) serves the claimed signal-transmission function. EX1065, ¶265.

**D. Claim 3**

Masimo established Mills's housing 12 is an electrical insulator, and, thus, the housing's upper and lower portions that are parts of the enclosure are electrically isolated. Pet., 34-35. All but one of Apple's Claim 3 arguments rely on an incorrect assertion Masimo did not specify which parts of the housing are the first and second portions. POR, 46-48. Masimo identified the relevant portions of the housing. *Supra*, III.A. Apple's other argument is Masimo stated the housing separates two ***electrodes*** rather than first and second ***portions***. But that distinction is meaningless because the electrodes are embedded in the first and second portions. The housing separates the first and second portions for the purpose of separating, and electrically isolating, the electrodes. Further, Masimo stated, "Mills teaches that the first and second portions are electrically isolated." Pet., 35. EX1065, ¶¶266-267.

**E. Claim 4**

Apple's Claim 4 arguments rely entirely upon its Claim 3 arguments, and, thus, likewise fail. POR, 48.

**F. Claim 10**

Apple argues "Masimo provides no analysis or reasoning as to what makes electrode 16 part of housing 12." POR, 48-49. But Masimo never asserted electrode

16 is part of the housing. Pet., 39. Rather, electrode 16's plating is part of the ***enclosure***. *Id*. EX1065, ¶269.

Apple incorrectly argues Masimo identified electrode 16 as a unitary structure that is both the "second pad" and the "second portion." POR, 49. Masimo identified electrode 16's pad as the "second pad" and its plating as part of the "second portion." Pet., 29. Therefore, Apple's cases suggesting a single structure generally cannot satisfy distinct limitations are inapplicable.

Apple argues Mills's housing 12 is an "electrical insulator and therefore cannot provide electrical connectivity from the user's contact to the second lead." POR, 50. That argument incorrectly assumes Masimo identifies the housing ***alone*** as the second portion. POR, 50. A lower portion of the housing and electrode 16's plating are the second portion. The plating electrically connects the user to the second lead. EX1065, ¶¶270-271.

## IV. GROUND 2

Apple argues Ground 2 inconsistently identifies (1) Markel's electrode 410b and (2) Mills's leaf-spring pad as the "first pad." POR, 52. Apple distorts Masimo's proposed combination and labels it a "shift" in position. *Id.* Ground 2 is a normal obviousness combination including coupling Markel's electrode 410b and internal components with Mills's leaf spring 62. This combination renders the claims obvious.

## A. Claim 1

### 1. The Markel/Mills combination includes a first pad positioned underneath the first portion.

Apple argues Markel's electrode 410b cannot be the "first pad" because it is not positioned underneath the first portion. POR, 53. Apple further argues electrode 410b is "disposed on a main body portion 110" and provides "electrode contact with a user's hand." *Id*., 54.

These arguments ignore Masimo's proposed combination. Masimo relied on the Mills's leaf-spring pad, added into Markel's enclosure, as the first pad. Pet., 45-48. Masimo explained the leaf-spring pad is embedded in the first portion. *Id*., 16-33, 45-48. Further, leaf-spring pad, added into Markel, would be positioned underneath the first portion. Pet., 49. EX1065, ¶¶273-276.

### 2. The Markel/Mills combination includes a first pad embedded in the first portion.

Apple focuses on one sentence in the Petition to argue Masimo does not show the leaf-spring pad is "embedded in" the first portion: the leaf-spring pad "is placed underneath an exterior surface material and against an inner wall of the exterior surface material." POR, 56-57 (citing Pet., 48). That sentence shows the leaf-spring pad is embedded in the first portion under Masimo's "embedded" construction. Apple did not directly address Masimo's unpatentability theory under its "embedded" construction.

Instead, Apple's POR raised "embedded in" construction arguments. But the Petition's combination satisfies the "embedded in" limitation under Apple's construction and Masimo's district court construction. Masimo explained that, in Mills's device, the leaf-spring pad is "pressed against the inner wall of electrode 14" and "surrounded by the housing" and "is therefore embedded in the device of Mills." Pet., 46. Masimo then said the pad is embedded in the enclosure. *Id.*

The proposed combination of Mills's leaf spring 62 with Markel would also result in Mills's leaf-spring pads being pressed firmly against Markel's electrodes 410, 420 and surrounded by Markel's housing 110. Therefore, the leaf-spring pad would be embedded in the enclosure in the combination just like it is in Mills's device, under either Apple's construction or Masimo's District court construction. EX1065, ¶¶277-278.

Apple argues the leaf-spring pad would not be "set firmly into and surrounded by" the first portion under Masimo's district court construction. Pet., 57. Apple relies on Mills's disclosure the leaf spring is "slidably yielding." *Id.* However, the tight compression of Mills's leaf spring between Markel's electrode and PCB would firmly set the leaf-spring pad into Markel's housing. *Supra*, III.A.2; III.B.1. EX1065, ¶279.

### 3. The Markel/Mills combination includes the claimed first connector to a processor.

Apple argues Masimo's combination does not use Mills's leaf spring to transmit signals to a processor but instead uses the pads and connectors in Markel's Figure 20:

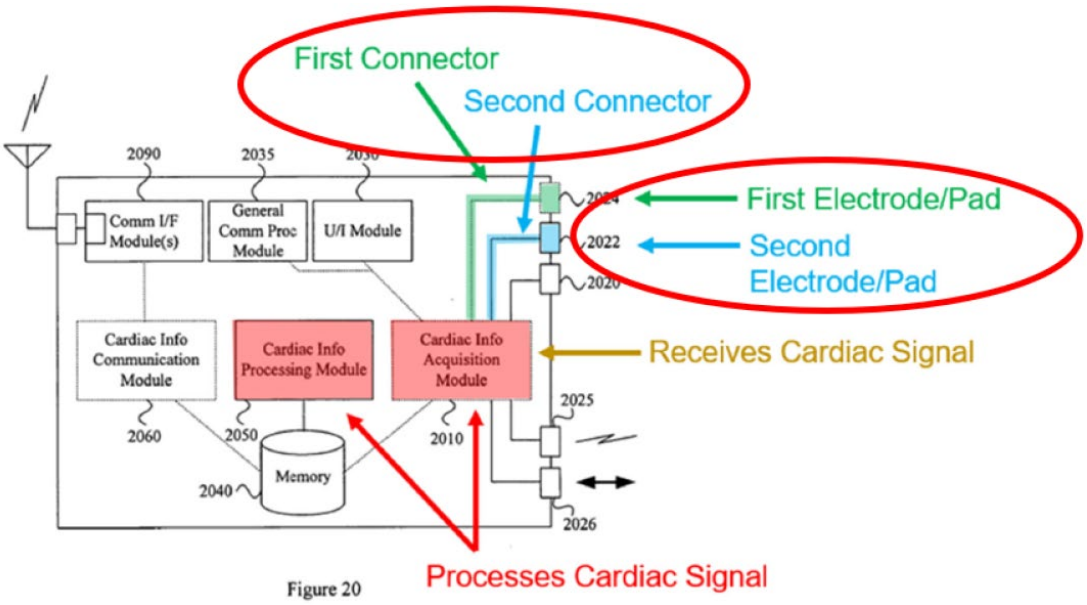



Figure 20

POR, 59 (annotating Pet., 53). That argument is incorrect. Markel's Figure 20 discloses a block diagram of the concept of transmitting signals from the pads to a processor. Pet., 52-53. Masimo included Figure 20 to conceptually show a first and second pad (which are part of first and second electrodes) would couple to a processor through a connector. EX1065, ¶¶280-282.

Masimo proposed using Mills's leaf spring as the pad and connector for coupling electrodes 410, 420 to "internal processing arrangements." Pet., 50-51 (signal carried from electrode 420b through the leaf spring via the leaf spring's top

pad to PCB). Thus, Masimo proposed using Mills's "more specific implementation details" of the structure for coupling electrodes to a processor. *Id*., 53-54. That structure includes the pad plus connector of Mills's leaf spring 62. EX1065, ¶283.

Apple argues Masimo fails to describe how to connect the pad to the processor via Mills's leaf spring. POR, 59-60. But Masimo explained "[l]eaf springs are well known electrical ***connectors***" and are "placed between two components as an electrical ***connector*** (or bridge)." Pet., 47. Thus, connecting the pad to the processor with a leaf spring would have been well within the routine skill of a POSITA. EX1065, ¶283.

**B. Claim 2**

Contrary to Apple's arguments, Masimo explained Markel's region 420b (first portion) is on the left and region 410b (second portion) is on the right. Pet., 54-55. Left and right are opposite sides. EX1065, ¶294.

**C. Claim 9**

Masimo relied on the enclosure supporting a display in Markel's Figure 1. Pet., 58-59. A POSITA would have understood the supporting enclosure has an exterior portion behind the display. EX1005, Fig. 4, [0043], [0045], Fig. 9, [0056]. EX1065, ¶295.

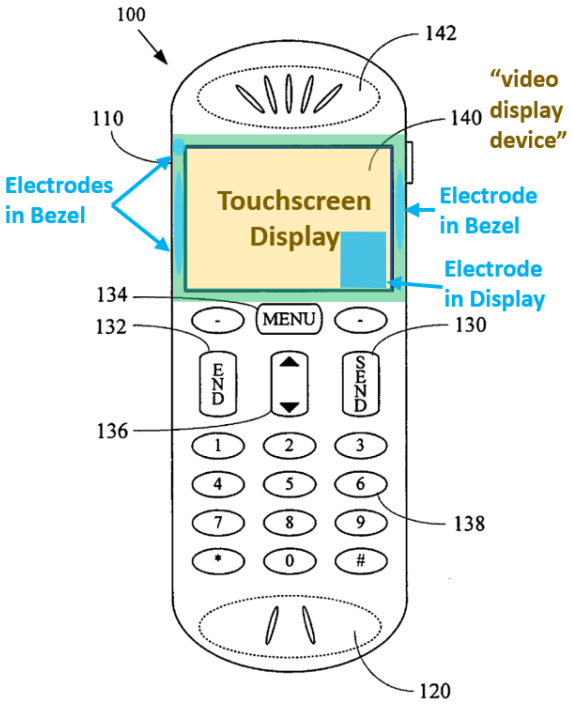
**D. Claim 10**

Apple incorrectly argues Markel's electrode 420b must be "externally exposed," and, thus, the device would detect a signal via user contact with the enclosure. POR, 62-63. Masimo explained a POSITA would have understood Markel's disclosure the electrode may be "***molded into*** region 420b" to mean a signal would be detected via user contact with the enclosure. EX1005, [0045]; EX1003 ¶¶101-102. EX1065, ¶296.

**E. Claim 12**

Claim 12 depends on Claim 1 and adds only the first portion is a bezel. Apple alleges Masimo abandoned its Claim 1 analysis referencing Figure 1 and engaged in a "slight [sic] of hand" by relying on Figure 15 for a different "first portion." POR, 63-64. Apple misreads the Petition. Masimo relied on Markel's teaching, concerning Figure 1, "an electrode may be disposed on a border of the display (*i.e.*, bezel)" of the mobile communication device (MCD) 100. Pet., 62; EX1005, [0044]. The MCD is the Figures 1-10 ***phone*** embodiment. EX1005, [0006]-[0015]. Thus, Masimo did not combine Figures 1 and 15 to move embedded-in electrodes to the bezel. It cited Figure 15 merely as depicting "an example of a display with electrodes on the border." Pet., 62. In addition, the Board found Figure 4 discloses generally the same embodiment as Figure 15, further confirming Markel's disclosure

of an MCD with bezel-located electrodes. I.D., 43. Using Figure 15 as guidance, a POSITA would have known to place electrodes into the MCD's bezel as follows:




EX1005, Fig. 1. EX1065, ¶¶297-300.

Further, Markel discloses many devices and locations where electrodes may be placed. EX1005, 2-13 (pushbuttons, mobile devices, audio ports, auxiliary devices, keyboards, touchpads, desktop mouse, and bezels). Thus, Markel's teachings are not constrained to any particular form factor. It would have been obvious to add Mills's embedded pads (either pad 14a or leaf spring 62) under Markel's bezel. EX1065, ¶¶301-302.

**F. Claim 13**

Apple's Claim 13 arguments rely entirely on its Claims 12 arguments, and, thus, likewise fail. POR, 65.

**G. Claim 15**

Apple incorrectly argues Masimo used Markel's Figure 1 embodiment for most limitations but switched to Figure 15 for the display-screen-embedded lead. POR, 66. Similar to Claim 12, Masimo showed the Figure 1 embodiment ***itself*** has a display-screen-embedded electrode. Pet., 75; EX1005, [0044]. EX1065, ¶304.

**H. Claim 19**

The Markel/Mills combination renders obvious "the first portion … comprises a bezel" for the reasons identified for Claim 12. For the electrical-isolation limitation, Apple does not dispute Markel's Figure 2 discloses an electrical-isolation insulator but alleges Masimo did not explain how to integrate the insulator into other embodiments. POR, 67. Masimo did not propose bodily incorporation but cited Markel as suggesting electrically isolating leads is necessary to measure ECG. Pet., 80-81. A POSITA would have easily included an electrical-isolation insulator. EX1065, ¶305.

**I. Claim 20**

As discussed for Claim 10, Apple's argument an electrical signal is detected through a user contacting Markel's electrodes, not the first portion, is incorrect.

POR, 68-69; *Supra*, IV.D. As discussed for Claim 1, Apple's argument Mills's leaf spring 62 is merely placed against an inner surface of electrode 410b is incorrect. EX1065, ¶¶306-307.

## J. Motivation to Combine

Masimo showed a POSITA would have been motivated, with a reasonable expectation of success, to use Mills's leaf spring 62 with Markel. Pet., 44-48. Masimo explained Markel discloses electrodes "***integrated into*** various molded components" or "***molded into*** the region 410b." *Id*., 42; EX1005, [0037], [0045]. That suggests embedded-in electrodes generally but "does not provide details of the internal components of its device." Pet., 44. Therefore, Masimo explained a POSITA would need to look to other references "for information on internal components and structures" to make a Markel device. *Id*. Masimo further explained a POSITA would have added Mills's "pad (leaf spring 62) teachings" to Markel "because Mills provides details of internal physical connections on which Markel is silent." *Id*., 47. Indeed, Markel's conceptual disclosure of embedded-in electrodes would have strongly motivated a POSITA out of ***necessity*** to find implementation details in another reference.[3] EX1065, ¶¶284-285.

[3] Masimo does not contend Markel is non-enabling. Markel enables embedded-in electrodes in view of background prior art such as Mills.

Masimo then identified Mills's disclosure of two types of embedded-in electrodes—electrode 14 (specifically, 14a) formed in "an integral part of the housing 12 by being molded therein" and the leaf-spring pad 62—as examples of information a POSITA would use to implement Markel's electrodes. A POSITA would have been motivated by necessity and found it obvious to add either of Mills's electrode structures into Markel at least because Markel conceptually discloses embedded-in electrodes and Mills provides additional implementation details. EX1005, [0037]; EX1006, 3:44-51, 6:51-56. EX1065, ¶286.

Apple argues Masimo only demonstrated a POSITA ***could*** have combined the references. POR, 70. But Masimo presented detailed expert testimony of Mr. Oslan, not attorney argument, why a POSITA ***would*** have combined the references. EX1003, ¶¶84-86; Pet., 47-48; EX1065, ¶287.

The Board invited more development of the motivation-to-combine record. I.D., 41-42. In response, Masimo submits technical literature corroborating Oslan. In addition to the Petition's reasons, a POSITA would have been motivated to use leaf springs as taught by Mills with Markel at least because leaf springs:

- ensure continuous, reliable, low-resistance connections (EX1059, 1; EX1060, 1; EX1061, 2);
- avoid soldering, allowing easier device assembly, disassembly, and maintenance (EX1060, 1);

- reduce movement and mating cycles without significantly reducing performance (*Id.*, 1, 4; EX1061, 7);
- obtain such benefits under harsh conditions and rapid temperature changes (EX1060, 1; EX1061, 7; EX1059, 5);
- are compact and ideal for small consumer devices (EX1061, 7);
- provide constant contact via spring-induced pressure, such as with Mills's "slideably yielding" leaf spring (EX1061, 7; EX1006, 5:1);
- have a "self-adjusting nature" to "compensate for any minor misalignments" to reduce connection-failure risk (EX1061, 7);

EX1065, ¶288. Kenny confirmed leaf springs function similarly to other connectors. EX1052, 197:19-198:2. He testified a POSITA would have considered them a "reasonable choice" at the time of Mills but later would prefer flex cable. *Id.*, 197:19-199:3. However, a recent webpage still lists several advantages of leaf springs. EX1061, 7-10. Moreover, combining Mills's leaf spring with Markel need only be a "suitable" alternative, not optimal, to make the combination obvious. *Intel Corp. v. Qualcomm Inc.*, 21 F4th 784, 800 (Fed. Cir. 2021); *In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012). Therefore, the evidence shows combining Mills's leaf spring with Markel would have been an obvious rearrangement of known mechanical components in known ways in a complementary device. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 401 (2007). EX1065, ¶291.

Apple alleges stark electrode-positioning differences between Mills and Markel would have discouraged using leaf springs with Markel. POR, 70. One difference Apple identifies is (1) Mills's electrodes are on the front and back of the housing and (2) Markel's Figure 4 shows its electrodes on the left and right of the device. *Id*., 71. That difference is meaningless. Markel is not limited to a left-right electrode orientation. EX1005, [0045]. This front-back to left-right change is a "mere rearrangement of known mechanical components in known ways," despite Apple's conclusory assertion. Leaf springs would couple components to both front-back-oriented and left-right-oriented electrodes in essentially the same way. EX1065, ¶¶289-291.

Apple argues incorporating, into Markel, the precise alignment of Mills's electrode 14, with leaf spring 62 beneath it and PCB 50 beneath that, would cause logistical complications. POR, 73-74. Apple assumes a POSITA would need to maintain the physical relationship of these parts when applied to Markel. *Id*. Under that assumption, the PCB in Markel would be perpendicular to the front and back faces of Markel's MCD, with the left electrode attached to one face of the PCB and the right electrode attached to the other face of the PCB. This unreasonable arrangement seems contrived to create logistical complications. EX1065, ¶292.

But bodily incorporation of all aspects is not required. *Axonics, Inc. v. Medtronic, Inc.,* 73 F.4th 950, 957 (Fed. Cir. 2023). A POSITA would have known

to arrange Markel's PCB parallel to the front and back faces of the MCD with both electrodes coupled via leaf springs on the same PCB face. *See* EX1005, Fig. 4. Arranging the components in that manner would have been a trivial task well within the skill and creativity of a POSITA. *See KSR*, 550 U.S. at 421 (a POSITA "is also a person of ordinary creativity, not an automaton"). And that arrangement would not cause the logistical difficulties Apple seeks to manufacture. EX1065, ¶¶292-293.

Therefore, the evidence shows a POSITA would have been motivated, with a reasonable expectation of success, to combine Mills's embedded-in-pad and leaf-spring teachings with Markel.

## V. CONCLUSION

The Board should find all challenged claims unpatentable.

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Dated: April 22, 2024

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## CERTIFICATE OF COMPLIANCE

The undersigned certifies that foregoing **PETITIONER'S REPLY IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,076,257,** exclusive of the parts exempted as provided in 37 C.F.R. § 42.24(c), contains 5,590 words and therefore complies with the type-volume limitations of 37 C.F.R. § 42.24(c).

Respectfully submitted,

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Masimo Corporation v. Apple Inc.
IPR2023-00745 / Patent 10,076,257

## CERTIFICATE OF SERVICE

I hereby certify that, pursuant to 37 C.F.R. § 42.6(e) and with the agreement of counsel for Patent Owner, a true and correct copy of **PETITIONER'S REPLY IN SUPPORT OF PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 10,076,257** is being served electronically on April 22, 2024, to the e-mail addresses shown below:

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