

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MASIMO CORPORATION
Petitioner,

v.

APPLE INC.,
Patent Owner

Case IPR2023-00745
U.S. Patent 10,076,257

**PATENT OWNER'S REPLY TO PETITIONER'S OPPOSITION TO
REVISED CONTINGENT MOTION TO AMEND**

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LIST OF EXHIBITS

APPLE-2001	U.S. Patent Application Publication No. 2014/0171776 (“Lin”)
APPLE-2002	U.S. Provisional Application No. 61/111,49
APPLE-2003	Declaration of Dr. Thomas W. Kenny
APPLE-2004	Joint Claim Construction Brief for Apple Asserted Patents from <i>Apple Inc. v. Masimo Corporation et al.</i> , Case No. 1-22-cv-01378 (D. Del. Oct. 20, 2022)
APPLE-2005	Definition of “embedded” from Wiley Electrical and Electronics Engineering Dictionary, IEEE Press, Wiley-Interscience (2004)
APPLE-2006	Definition of “embed” from Merriam-Webster’s Collegiate Dictionary, Eleventh Edition, Merriam-Webster, Inc. (2005)
APPLE-2007	Definition of “embed” from Webster’s College Dictionary, Random House (2005)
APPLE-2008	Transcript of January 12, 2024 deposition of Alan L. Oslan
APPLE-2009	U.S. Patent App. Ser. No. 14/136,658
APPLE-2010	U.S. Patent App. Ser. No. 12/358,905
APPLE-2011	Transcript of May 15, 2024 deposition of Alan L. Oslan
APPLE-2012	U.S. Patent No. 5,365,461 (“Stein”)
APPLE-2013	U.S. Patent No. 4,686,332 (“Greanias”)
APPLE-2014	Second Declaration of Dr. Thomas W. Kenny
APPLE-2015	Transcript of July 12, 2024 deposition of Alan L. Oslan

I. The substitute claims do not introduce new subject matter.

Substitute claims 23-27 are fully supported by the application that led to the '257 Patent (APPLE-2009) and both the parent application (APPLE-2010) and provisional application (APPLE-2002) to which the '257 Patent claims priority. RMTA, 12-15. For example, contrary to Masimo's assertions (Opp., 8-10), the priority documents support the recitation of substitute claims 24 and 25 of the first pad being embedded in an inner surface of a bezel, stating that "[l]eads 322 and 324 can be integrated in bezel 310 using any suitable approach" such as "*placed within the thickness of bezel 460...but underneath the outer surface of the bezel*" and that "bezel 310 can include...*any other suitable distribution of leads.*" APPLE-2009, [0046]-[0047], [0042], [0009], FIG. 4B; APPLE-2010, [0046]-[0047], [0042], [0009], FIG. 4B; APPLE-2002, [0045]-[0046], [0041], [0008], FIG. 4B, cl. 18 ("the first lead further comprises *a pad embedded underneath the outer surface of the bezel*").

Regarding substitute claim 26, the priority documents disclose that "bezel 310 can include *any other suitable number of leads, or any other suitable distribution of leads.*" APPLE-2009, [0042]; APPLE-2010, [0042]; APPLE-2002, [0041]. This includes any suitable number and arrangement of leads that are "positioned on the exterior surface of bezel 310" or "placed within the

thickness...but underneath the outer surface of the bezel.” APPLE-2009, [0046]-[0047], FIGs. 4A-4B; APPLE-2010, [0046]-[0047], FIGs. 4A-4B; APPLE-2002, [0045]-[0046], FIGs. 4A-4B. “[E]ach lead can include a pad or extended area placed on the outer or inner surface of an electronic device bezel or housing.” APPLE-2009, [0034]; APPLE-2010, [0034]; APPLE-2002, [0033]. The priority documents also support selecting “the size and location of the leads” to make sufficient contact for multiple “different possible positions of the user’s handsu on the device” including an arrangement in which two leads “detect signals through a first hand” and a third lead “detects signals through the second hand.” APPLE-2009, [0042]-[0043]; APPLE-2010, [0042]-[0043]; APPLE-2002, [0041]-[0042].

II. Substitute Claim 26 Does Not Enlarge The Scope of the Claims of the Patent

As addressed in the RMTA, substitute claim 26 does not enlarge the scope of the claims of the patent because it is a dependent claim and the RMTA makes no changes to independent claim 1 from which claim 26 depends. RMTA, 3-4; *see also Network-1 Techs., Inc. v. Hewlett-Packard Co.*, 981 F.3d 1015, 1029, (Fed. Cir. 2020). As such, the “proposed substitute claims...would [not] encompass any device or method that would not have infringed the original patent claims.” *Am. Nat’l Mfg. Inc. v. Sleep No. Corp.*, 52 F.4th 1371, 1374 (Fed. Cir. 2022); *see also Predicate Logic, Inc. v. Distributive Software, Inc.*, 544 F.3d 1298, 1303 (Fed. Cir.

2008). The substitution of the term “first portion” for the original term “second portion” in original dependent claim 13 is fully within the scope of the types of amendments previously granted by the PTAB during IPR proceedings. *See Apple Inc. v. Qualcomm Inc.*, IPR2018-01277, Paper 46 at 45 (PTAB Jan. 17, 2020).

III. The Substitute Claims Distinguish Over the Prior Art of Record

a. Mills Multi-Layered Electrode is Not an Enclosure and a Separate Pad Embedded in the Enclosure

- i. Mills’ “metal-plating composition 14b” is not part of the enclosure separate from base metal layer 14a

The outer plating 14b of Mills’ electrode 14 is not and cannot conceivably be considered a portion of the housing or enclosure of Mills’ apparatus 10 distinct from the base metal layer 14a that somehow “encloses” the base metal layer 14a. APPLE-2003, ¶¶101-107. The outer plating 14b is not a portion of the housing/enclosure that the base metal layer 14a is “embedded in” as required by the claims, but rather, the outer plating 14b (“composition 14b”) is an imperceptibly thin coating plated on the main body of electrode 14 (“expanse 14a”). APPLE-2003, ¶¶101-102; EX1006, 4:1-10, 4:32-47. That is, plated metal composition 14b is merely a layer of electrode 14 that contacts the patient’s skin. *Id.* Even if Masimo’s proposed definition for the term “enclosure” is adopted (Opp., 1-6), the 3-micron thick outer plating 14b is not a portion of the enclosure,

separate and distinct from base metal layer 14a, that somehow “encloses” the base metal layer 14a. APPLE-2003, ¶¶113-116.

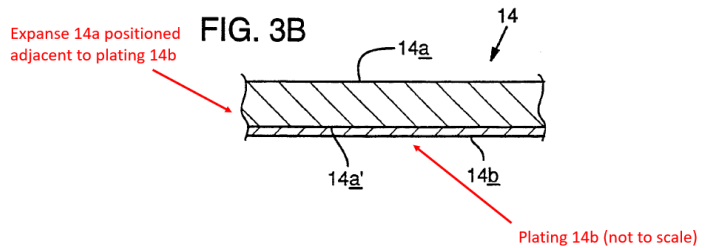
Specifically, Masimo asserts “that an ‘enclosure’ is ‘something that encloses.’” Opp., 2. However, the outer plating 14b does not “enclose” the base metal layer 14a but rather is a plating formed on the upper surface of the base metal layer 14a. APPLE-2003, ¶¶101-102; EX1006, 4:32-39. A POSITA would have understood that Mills’ coating 14b cannot stand alone to form a portion of the housing 12 in the absence of the main body of electrode 14 and therefore is not an “enclosure” separate from the metal base layer 14a that “encloses” the metal base layer 14a. APPLE-2003, ¶106. Indeed, Mills’ disclosure is consistent with description provided by the ’257 Patent, which also applies “a conductive coating” *to its leads*, separate from the enclosure. APPLE-2003, ¶106; EX1001, 9:4-13. As Dr. Kenny testified, it would be impossible for the plating 14b to be affixed to the house 12 of Mills’ device to somehow form a portion of the enclosure separate from the base metal layer 14a. *Id.* Mills’ multi-layered electrode 14 having a main expanse 14a and a three-micron thick “metal-plating composition 14b” is exactly what Mills describes it as: a multi-layered electrode, not an enclosure and separate pad embedded in the enclosure. *See* APPLE-2003, ¶107; APPLE-2008, 56:22-57:3.

Furthermore, Mills statement that the electrode 14 is “integrally molded” into the housing can either mean that the entire electrode 14 is part of the enclosure (not only outer coating 14b) or that none of the electrode 14 is part of the enclosure, not both. APPLE-2003, ¶¶113-116. There is no disclosure in Mills of the outer plating 14b being integrally molded in the housing 12 with the base metal layer 14a being a separate component, and indeed, Mills discloses the exact opposite. EX1006, 4:32-39. Either the entire electrode 14 is part of the enclosure, or the entire electrode 14 is not part of the enclosure. APPLE-2003, ¶¶115-116.

ii. Mills’ base metal layer 14a is not “embedded in” the “metal plating composition 14b”

As addressed in the POR, the proper plain and ordinary meaning of the term “embedded in” is “at least partially set in or partially surrounded by a material.” POR, 5-13; APPLE-2003, ¶¶27-46. Furthermore, Masimo’s expert has stated that “‘embedded in’ is narrower than ‘embedded’” and Masimo has provided no evidence to rebut Apple’s proposed plain and ordinary meaning for this “narrower” term “embedded in.” EX1065, ¶212; Pat. Owner’s Sur-Reply, 2-4. Under this proper interpretation of the term “embedded in,” it is clear that the base metal layer

(“expanse”) 14a of Mills’ electrode 14 is not “embedded in” its outer plating 14b. APPLE-2003, ¶¶108-112. Mills’ FIG. 3B (right) shows that metal base



layer 14a is not “embedded in” the metal-plating 14b but rather merely positioned parallel to the metal-plating composition 14b. APPLE-2003, ¶¶110-111.

The expanse 14a and metal-plating 14b are parallel, adjacent surfaces with neither layer embedded in the other. EX1006, 4:4-10 (describing layer 14b as “[p]lating an outer, skin-contactable region or surface 14a’ of expanse 14a.”); APPLE-2003, ¶¶109-112. Masimo’s expert agreed that “I don’t see anything in Mills explicitly saying that 14a is embedded in 14b.” APPLE-2008, 58:22-62:1.

b. Claim 23 Distinguishes Over the Prior Art

i. Mills does not anticipate claim 23

Mills fails to anticipate substitute claim 23 because, as discussed in Section IV.a, *supra*, and in the POR, the outer metal plating 14b of Mills (whether in the context of electrode 14 or electrode 16) is not a portion of the enclosure separate from the base metal layer 14a and the base metal layer 14a is not “embedded in” the outer metal plating 14b as required by claim 23 (which depends from claim 1) with respect to the second pad. POR, 30-39; APPLE-2003, ¶¶99-116. Furthermore,

Mills “pads” (electrodes 14 and 16) are not adjacent but rather are positioned on opposite sides of the device. EX1006, FIGs. 1-3.

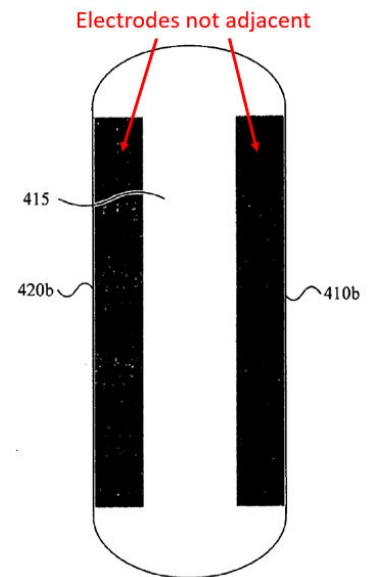
ii. Markel-Mills does not render claim 23 obvious

The Markel-Mills combination fails to render claim 23 obvious for the reasons discussed with respect to claim 1 in the POR. POR, 55-57, 69-74; APPLE-2003, ¶¶156-165. Specifically, Masimo has failed to demonstrate that a POSITA would have been motivated to apply Mills to Markel in the proposed manner and has also failed to demonstrate that the top of Mills’ leaf spring would be “embedded in” the electrode of Markel, as required by claim 23 (based on its dependency from claim 1). *Id.* As discussed in the POR, in the proposed combination, the top of Mills’ leaf spring 62 is merely “placed...against” and parallel to an inner surface Markel’s electrode (Pet., 48) and not “embedded in” the electrode. APPLE-2003, ¶¶157-159. Markel does not describe any specific geometry for the interior surface of electrodes and Masimo does not propose any modification for the inner face of the electrodes such that the top of Mills’ leaf spring 62 would actually be “embedded in” the electrode. APPLE-2003, ¶161.

Masimo’s assertions that Markel alone discloses electrode pads positioned under the exterior surface of the enclosure are similarly misguided as only describes the electrodes as “*disposed on*” not positioned underneath the exterior of

the device to allow for direct “*user contact with both electrodes.*” EX1005, [0042]-[0047], [0050]; APPLE-2003, ¶¶152-154; APPLE-2008, 84:19-85:6.

Furthermore, Masimo has previously argued that the electrodes 410b/420b of Markel “are located on opposite sides of the electronic device.” POR, 54-56. Masimo now argues that electrodes 410b/420b are adjacent. Opp., 17. In contrast to Masimo’s new characterization of Markel’s device, FIG. 4 (right) demonstrates that the electrodes 410b/420b are not adjacent but are separated by the expanse of the back surface of the device. Regarding electrodes 1510 and 1530, Masimo has not demonstrated how the embodiment of FIG. 15 provides all other elements of claim 23 (including base claim 1).



iii. Markel-Mills-Lyons does not render claim 23 obvious

Addition of Lyons to the Markel-Mills combination similarly fails to render claim 23 obvious because the “sensor pads 122” of Lyons device are fundamentally different than the sensors of the Mills and Markel devices. APPLE-2014, ¶¶5-17. Mills and Markel disclose devices having direct contact electrodes for detecting a heart signal of a user. EX1005, [0005]; EX1006, 1:10-14, 6:53-7:6. By contrast, the “sensor pads 122”/“capacitive sensor 118” of Lyons are not

configured to detect a user's heart signal but rather are input pads that simply detect the presence or absence of the user's finger to allow a user to navigate a menu of the device. EX1068, [0026]-[0027], [0022]; APPLE-2014, ¶5; APPLE-2015, 9:2-10:9. Lyons' sensor pads can determine the position of a finger placement, but there is no disclosure such pad placement would be suitable for detecting a user's heart signal using the direct contact sensors of Mills/Markel. APPLE-2014, ¶¶6-8. Furthermore, Masimo has not established that POSITA would have an expectation of success in applying Lyons teachings to the Markel-Mills combination due to widely different functions of Lyons input pads 122 (which only detect user contact) and the heart monitoring electrodes of the devices of Markel and Mills. *Id.*, ¶¶17, 39-42. When questioned, Masimo's expert was unable to describe how a capacitive sensor functions or how it differs from a direct contact sensor. APPLE-2015, 15:3-22, 16:14-17:13. Masimo briefly identifies additional references that discuss ECG measurement using capacitive sensors (Opp., 16), vails fails to acknowledge that these capacitive sensors require a non-conductive, dielectric layer separating the metal layer from the user contact, thus making such sensors fundamentally incompatible with the direct contact sensors of Mills and Markel due to the significant differences in how capacitive sensors function. APPLE-2014, ¶¶18-36.

c. Claim 24 Distinguishes Over the Prior Art

The Markel-Mills combination fails to render obvious claim 24 because neither reference discloses pads positioned under an electrically conductive metal bezel. As discussed in the POR, Markel describes electrodes that are exposed to the outside for directly contacting a user's skin. EX1005, [0035], [0037], [0044], [0068]. Furthermore, while Figure 15 of Markel shows the electrodes arranged in portions of a bezel, Masimo has not established (or even alleged) that the entire bezel of Figure 15's embodiment is an electrically conductive metal, as required by claim 24. Masimo asserts that it would have been "obvious to configure Markel's bezel from a metallic conductive material to facilitate conduction of cardiac signals through the bezel" (Opp., 18) but does not cite any prior art teachings to support this assertion. Masimo also does not address the fact that such an arrangement would potentially lead to shorting of the various electrodes in the embodiment of Figure 15 as the different electrodes would now be electrically connected rather than isolated. Furthermore, Masimo makes no attempt to describe how the embodiment of Markel's Figure 15 would be combined with the embodiment of Figure 4 or how the embodiment of Figure 15 meets all elements of Claim 1.

The Markel-Mills-Lyons similarly fails to render claim 24 obvious for the reasons discussed with respect to claim 23, *supra*; APPLE-2014, ¶¶5-17. Lyons'

“sensor pads 122” are not configured to detect a user’s heart signal but rather are user interface selection pads. EX1068, [0026]-[0027], [0022]. Masimo has failed to establish that Lyons’ placement of capacitive input sensors in a bezel would have been applicable or effective to direct contact heart rate monitoring electrodes.

d. Claim 25 Distinguishes Over the Prior Art

Claim 25 distinguishes over the prior art for the reasons discussed with respect to claim 24, *supra*.

e. Claim 26 Distinguishes Over the Prior Art

Claim 26 distinguishes over the prior art for the reasons discussed with respect to claim 24, *supra*, regarding the lack of an electrically conductive bezel in either Markel or Mills and the inapplicability of Lyons to Markel-Mills.

Additionally, while Markel briefly mentions contacting the electrodes of the device with two different hands, the specific arrangement of hand placements discussed in Masimo’s Opposition is entirely fabricated by Masimo and its expert, with no actual support for the described hand placement in Markel itself. Opp., 22-23.

f. Claim 27 Distinguishes Over the Prior Art

Claim 27 distinguishes over Markel-Mills because rather than disclosing comparing previously stored characteristics to presently extracted characteristics of a detected cardiac signal to authenticate a user, Markel discloses storing cardiac

information for users according to an identification or authentication of the user, to allow cardiac information for multiple users to be stored on a single device.

Specifically, Markel discloses storing a profile for each user. EX1005, [0093].

Markel goes on that the device can “identify the user” and use “such identification (or authentication)” to “segment such information according to user identity.” *Id.*, [0097], *see also* [0098] (discussing storing user cardiac information “indexed by user identification.”).

The proposed Markel-Mills-Kyoso combination also fails to provide all elements of claim 27. Kyoso is a paper describing a one-time experiment involving only nine subjects in which users were successfully **identified** based on ECG parameters. There is no discussion in Kyoso of **authenticating** users based on ECG parameters (e.g., for access to protected features or information). APPLE-2014, ¶¶37-38. Furthermore, Kyoso’s experiment required measurement of numerous aspects of a user’s ECG signal to achieve accurate results. EX1070, 3 (discussing use of QRS interval, QT interval, P wave duration, and PQ interval parameters). There is no indication that a handheld device, such as that of Markel, would be suitable for suitable for collecting and processing the required information described in Kyoso. APPLE-2014, ¶38.

Respectfully submitted,

Date: 7/19/2024

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e)(4), the undersigned certifies that on July 19, 2024, a complete and entire copy of this Patent Owner's Reply to the Petitioner's Opposition to Revised Contingent Motion to Amend and its accompanying exhibits were provided via email to the Petitioners by serving the correspondence email addresses of record as follows:

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