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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MASIMO CORPORATION
Petitioner,

v.

APPLE INC.
Patent Owner.

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

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

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I. “ENCLOSURE”

The Board asked the parties to propose constructions for “enclosure” to resolve whether Mills’s plating 14b is part of an enclosure. Prelim., 33-34. Masimo complied, showing that the ’257 Patent uses the ordinary meaning of “enclosure,” namely “something that encloses.” RMTA Opp., 1-6; *see also* EX1080, 28:10-15 (admitting definition of enclosure is “something that encloses”). Apple refused to construe “enclosure,” acquiescing to Masimo’s proposed construction. RMTA Reply, 3-6; EX1080, 16:15-18:7; 29:6-30:7 (refusing to provide a construction).

With “enclosure” properly construed, Apple cannot plausibly dispute that Mills’s plating 14b, along with the upper part of housing 12, is part of an enclosure. Masimo showed that plating 14b and housing 12 together form a portion of an external structure that encloses internal parts. RMTA Opp., 1-6.

None of Apple’s arguments about Mills are relevant under the correct claim construction. Apple merely parrots its previous characterizations of Mills’s plating 14b but fails to explain why plating 14b cannot be part of an enclosure. RMTA Reply, 3-6.

Apple repeats its argument that Mills’s plating 14b is too thin to be considered part of the enclosure. RMTA Reply, 3-6. But the claimed “enclosure” need not have any minimal thickness. An “enclosure” is simply “something that encloses,” regardless how thick it is. *Id.* Mills’s plating 14b and housing 12 together enclose

internal parts, and, thus, are an “enclosure.” Moreover, even if some protective function were required, Mills discloses that its plating 14b “has been found to protect, and thus to greatly extend the life, of a dry skin electrode such as electrode 14 by producing an extremely hard, exterior, skin-contactable surface.” EX1006, 4:39-43; *see* EX1080, 19:17-20:6.

Apple also asserts that plating 14b cannot be part of the enclosure because it is not separate and distinct from the electrode pad 14a. RMTA Reply, 3-5. But the claimed “enclosure” is merely “something that encloses.” The enclosure does not need to be entirely separate and distinct from what it encloses. Indeed, the claim requirement that the pad is “embedded in” the enclosure covers pads “incorporated into a[n] ... enclosure.” *See* EX2005, 3 (Apple’s dictionary definition of “embedded”). In any event, Mills identifies plating 14b and base metal 14a as separate components by giving them different reference numerals and describing their separate structure and composition. EX1006, 4:4-13, 4:32-47. Apple’s expert Kenny admitted “there is no requirement that the enclosure be physically separate from the pad.” EX1080, 45:11-14. He further admitted pad 14a and plating 14b are distinct and made from different materials. *Id.*, 49:18-50:1, 49:2-10, 51:3-21.

Apple argues that “outer plating 14b does not ‘enclose’ the base metal layer 14a.” RMTA Reply, 4. This argument incorrectly assumes that Masimo asserts that plating 14b alone is the enclosure. To the contrary, Masimo asserts that both plating

14b and housing 12 are parts of the enclosure. Pet. 19-22; Reply, 3-5. The plating 14b and housing 12 enclose internal parts including base metal 14a.

Apple further argues that plating 14b cannot be part of an enclosure because it “cannot stand alone to form a portion of the housing 12 in the absence of the main body of electrode 14.” RMTA Reply, 4. The claims do not require the enclosure to “stand alone” or have any specific structural rigidity. An “enclosure” is simply “something that encloses.” *Id.* Mills’s plating 14b and housing 12 together enclose internal parts, and, thus, are an “enclosure.”

Apple points to one embodiment of the ’257 patent as allegedly indicating that “a conductive coating” on leads 322 and 324 is not part of the enclosure. RMTA Reply, 4; *see* EX1001, 9:4-13. But this citation provides no insight regarding whether the coating is part of the enclosure. Moreover, the ’257 patent explains that this coating serves merely aesthetic purposes such as “to match the color, tone and reflectivity of bezel.” EX1001, 9:8-10. By contrast, Mills discloses that plating 14b includes protective structure. EX1006, 4:39-43 (plating 14b protects electrodes by “producing an extremely hard, exterior, skin-contactable surface.”). Thus, the ’257 patent’s discussion of aesthetic coatings is not relevant to Mills’s protective plating 14b from being part of the enclosure.

Apple argues that Mills’s electrode 14 is merely a multi-layered electrode, “not an enclosure and separate pad embedded in the enclosure.” RMTA Reply, 4.

Apple again incorrectly assumes that Masimo relies on plating 14b as the entire enclosure. It also relies on the logical fallacy that because plating 14b is part of an electrode it cannot also be part of the enclosure. The claimed enclosure is merely “something that encloses” and does not exclude components that also serve another function. Indeed, the ’257 patent teaches that “an entire portion of the electronic device enclosure ... *can serve as a lead* for the heart sensor.” EX1001, 6:33-36.¹

Apple concedes that Mills’s disclosure that electrode 14 is “integrally molded” into the housing can mean that electrode 14 is part of the enclosure. RMTA Reply, 5. This concession means that plating 14b can be part of the enclosure. Apple argues that 14b is part of the enclosure only when electrode 14 is part of the enclosure. Not so. The Petition has two alternative mappings for the “enclosure.” First, Masimo showed housing 12 and plating 14b together are part of an enclosure because they enclose internal parts, including base metal 14a. Second, Masimo showed that housing 12 and the entire electrode 14 (treated as one component) are part of an enclosure because they enclose internal parts. The Petition’s alternative theories properly rely on Mills’s disclosure that, while base metal 14a and plating 14b are distinct components, they collectively form an electrode 14.

Moreover, even if the entire electrode 14 must be treated as part of the

¹ Emphasis added unless otherwise noted.

enclosure, then Mills’s base metal 14a is still a first pad embedded in a first portion of the enclosure. The claims do not require the first pad and the first portion of the enclosure to be entirely separate physical components. The ’257 patent teaches that “an entire portion of the electronic device enclosure ... *can serve as a lead* for the heart sensor.” EX1001, 6:33-36. And Apple’s dictionary definition of “embedded”—“incorporated into a[n] ... enclosure” (EX2005, 3)—undermines that an embedded-in pad cannot be part of the enclosure.

Apple argues that base metal 14a and plating 14b “are parallel, adjacent surfaces with neither layer embedded in the other.” RMTA Reply, 5-6. Apple again incorrectly assumes that Masimo relies on 14b *alone* as the enclosure’s first portion. Masimo relies on a top part of Mills’s housing 12 and 14b together as the first portion. The base metal 14a is embedded in the upper part of the housing 12 and 14b. *See* Pet., 19-22; Reply 3-5. Moreover, under Apple’s “embedded in” construction, base metal 14a is *partially* surrounded by, and, thus, embedded in, plating 14b.

II. THE AMENDED CLAIMS ARE UNPATENTABLE

A. Substitute Claim 23 Is Unpatentable Over Mills Alone or With Markel

Apple argues that Mills lacks “embedded in” pads relying on its “enclosure” arguments. Masimo explained above that those “enclosure” arguments are incorrect.

Apple argues Mills’s and Markel’s electrodes are on opposite sides of the

device, not “adjacent.” RMTA Reply, 6-8. But “adjacent” does not exclude opposite-side electrodes. Rather, the ‘257 patent uses “adjacent” to describe pads separated from each other by a “sufficiently large” distance or merely separated by an insulating portion to avoid electrical interference. RMTA Opp., 17-18; *see* EX1001, 9:53-57, 2:51-59; EX1069, ¶331. Thus, Mills’s and Markel’s electrodes are “adjacent.” RMTA Opp., 17-18; EX1069, ¶331. Masimo’s argument is unrebutted; Kenny testified, “I really don’t know.” EX1080, 105:16-19; 105:8-108:4.

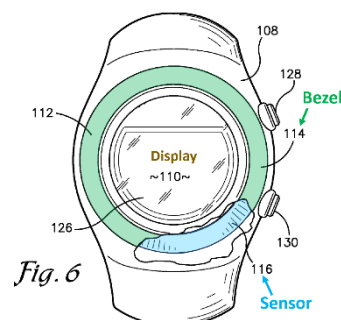
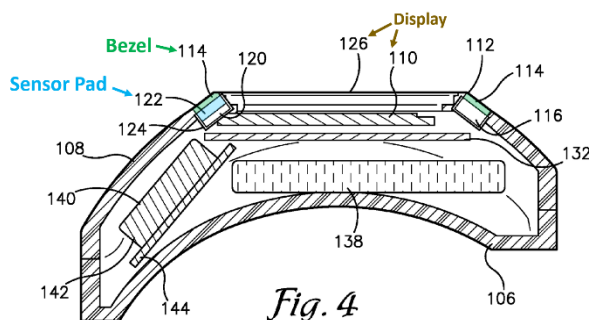
Apple does not dispute that Markel’s Figure 15 bezel electrodes are adjacent. RMTA Opp., 18; EX1080, 105:1-7. And Masimo showed that Figure 15 meets the other claim limitations, contrary to Apple’s argument. RMTA Opp., 18.

Apple repeats its claim 1 argument that the top of Mills’s leaf spring 62 is merely “placed ... against,” not “embedded in,” Mills’s electrode 14. Reply RMTA, 7. Apple ignores that Masimo’s second theory relies on a top part of housing 12 and electrode 14 as the first portion of the enclosure. Pet., 19-22; Reply, 3-5. Masimo shows that the top of leaf spring 62 is embedded in that first portion. Reply, 6-7.

Apple argues that Markel describes its electrodes as “disposed *on*,” not *underneath*, the exterior. RMTA Reply, 7-8. But Apple ignores that Markel uses “disposed *on*” to describe pads *integrated into* a touchscreen and shows the pads as dashed lines to suggest they are under illustrated surface components. RMTA Opp., 15-16. Apple argues that Markel’s Paragraph 50 describes that *all* of Markel’s

electrodes are exposed for “user contact.” RMTA Reply, 7-8. To the contrary, Paragraph 50 describes a “*non-limiting exemplary configuration*” of an earpiece electrode and an electrode on the back of the phone. Further, Masimo’s Opposition showed that Markel’s electrodes can be “integrated into” its bezel, and cited Mills’s embedded electrodes and Lyons as motivation to embed a “sensor pad” on an inner surface of a bezel. RMTA Opp., 14-17, 19.

For motivation to combine for claim 23 (and as part of claim 24-26 obviousness combinations), Masimo explained that Lyons would further motivate embedding an electrode pad under a bezel. Lyons discloses “sensor pad 122” on the inner surface of “bezel 114.” EX1068, ¶26, Figs. 4, 6.



Kenny agreed that Lyons’s capacitive touch pad 122 is “partially surrounded” by, sandwiched in, and embedded in the bezel 114. EX1080, 56:13-57:11; 63:10-64:3. But Apple argues Lyons’ sensor pad is “fundamentally incompatible with the direct contact sensors of Mills and Markel.” RMTA Reply, 8-9. Masimo’s grounds did not suggest incorporating the capacitive electrodes of Lyons into Markel’s design. Rather, Masimo showed that “A POSITA would have been motivated to place

Markel's electrode pads under the bezel, as taught by Lyons, to accomplish Markel's goal of concealing the electrodes from the user." Opp. to RMTA, 16; *see also id.* at 20 ("a POSITA would have been motivated to embed *a pad like Mills's* in the inner surface of the bezel"). Thus, Apple's extensive arguments about capacitive electrodes fail to address Masimo's actual grounds. Kenny's declaration is almost entirely devoted to arguing that capacitive electrodes and conductive electrodes are not interchangeable. EX1069, ¶25. But the Opposition never substituted the conductive electrodes of Markel with those of Lyons. Instead, the Opposition relied on placing electrodes like Markel's or Mills's under a bezel because all types of electrodes (capacitive, conductive, and hybrid) had previously been placed under a conductive layer or metal bezel. EX1068, EX1074, EX1076; RMTA Opp., 17, 20; EX1069, ¶344-348.

Moreover, Masimo's Opposition showed a wide spectrum of compatible variations of capacitive and conductive electrodes: 1) Markel's and Mill's embedded conductive electrodes (discussed above); 2) Lyon's capacitive touch sensor pad placed under a "metal or plastic" bezel (EX1068, ¶20); Larson's capacitive EKG/ECG sensor (16) placed under the glass face of a watch (EX1075, Fig. 1, 4a-4c); Rytiky's conductive ECG "electrode area 208" placed under a conducting material for "indirect" user skin contact (EX1074, [0046]); and Taheri's "hybrid" conductive/capacitive electrode placed under an outermost metal layer (EX1076,

8:48-61, Fig. 12). *See* EX1069, ¶344-348; RMTA Opp., 17.

Apple’s Reply and Kenny’s RMTA declaration never respond to Lyons statement that its sensor pad is not limited to capacitive sensors: “While a capacitive flex sensor is shown specifically in the drawings and discussed herein, it is contemplated that other touch based sensor technologies (e.g., resistive, etc.) may be utilized.” EX1068, ¶27. However, during his deposition, Kenny had to concede that Lyons’s teachings are not limited to capacitive electrodes. EX1080, 93:11-13. Lyons further provides a compelling reason to embed a pad under a bezel so the sensor “can be protected from impingement by liquids and other foreign object[s] beneath the bezel 114.” EX1068, ¶27. Kenny added that this positioning would be desirable to make the pad “visually indistinct.” EX1080, 96:10-97:1.

B. Substitute Claim 24 Would Have Been Obvious

The Markel-Mills-Lyons combination would render Claim 24 limitations obvious at least for the reasons provided above regarding Claim 23.

Apple argues that the combination does not include a “metal” bezel. RMTA Reply, 10-11. But Lyons ¶20 states its “bezel 114 may be formed of metal or plastic.” RMTA Opp., 20; EX1068, ¶18. The Opposition explained that using a metal would “facilitate transmission of cardiac signals through the bezel.” RMTA Opp., 20. Lyons explains that electrical signals travel through the bezel and change the electric field around the sensor pad 122. EX1068, [0026]. A conductive bezel is

similarly important to non-capacitive electrodes. Rytky, cited in the Opposition, explains that a “[c]onducting material may be provided between the surface of the skin and the electrode area.” EX1074, ¶46; *id.*, ¶44, ¶55; *see* EX1080, 127:8-129:19.

Apple argues that Lyons’ metal bezel with electrodes embedded therein would “*potentially* lead to shorting of the various electrodes” in Markel’s Figure 15. RMTA Reply, 10. But Oslan testified that a POSITA would know if electrodes are provided in *relative* proximity, an insulating portion would be needed. EX1065, ¶305. EX1069, ¶331. Indeed, Markel explains an insulation region may separate electrode. 0045; 0047. Moreover, in Claim 24 the first pad is on the inner surface of the bezel and the second pad is exposed somewhere else in the enclosure. As one example, when the second pad is exposed, the electrical signal need not be transmitted through the bezel to the first pad.

The Reply contends that Masimo “makes no attempt” to show how Markel’s Figure 4 and 15 would be combined. RMTA Reply, 10. Not true. Masimo cited the Board’s analysis that Figures 4 and 15 generally disclose the same embodiment (D.I., 43) and Figure 15’s electrode placement would have been obvious in MCD 100 because Markel teaches electrodes in “a border of the display.” RMTA Opp., 18; EX1005, ¶44; EX1069, ¶¶339-340, 350-352, 364.

C. Substitute Claim 25 Would Have Been Obvious

Apple did not separately argue claim 25, but relied on claim 23/24 arguments.

D. Substitute Claim 26 Is Indefinite or Would Have Been Obvious

Apple says Masimo “fabricated” its Figure 15 hand placement. RMTA Reply, 11. But Markel’s electrodes may be placed “*for convenient access*” for a user to “contact ... simultaneously (e.g., with different hands ...).” EX1006, ¶49. The hands could only be practically placed as Masimo showed. EX1069, ¶¶362-364.

E. Substitute Claim 27 Would Have Been Obvious

Apple admits that Markel teaches cardiac *authentication*, but complains that Kyoso only teaches ECG *identification*. RMTA Reply, 12. This is a frivolous distinction. Regardless, Kyoso clearly teaches a “comparison” of extracted cardiac signals as required by claim 27. EX1070 at Abstract. A POSITA would have found it obvious to combine the authentication process taught by Markel with the extraction, comparison, and identification techniques of Kyoso at least because Markel and Kyoso both teach identification of an individual based on heart signals. EX1069, ¶¶367-368. Moreover, Apple never addresses Masimo’s other cited authentication references supporting obviousness. *See* EX1077-EX1079, EX1055.

III. CLAIMS 23-27 LACK WRITTEN DESCRIPTION SUPPORT

Apple failed to meet its burden to show written-description support for amended claims. Apple impermissibly picks and chooses from the specification without any linking disclosure. RMTA Opp., 7-8.

Apple argues that “embedded in an inner surface of a bezel” in claims 24 and

25 is supported by ¶46 of EX2002, which states that “lead 472 can be placed within the thickness of bezel 460 (e.g., in a pocket within the bezel wall), but underneath the outer surface of the bezel.” RMTA Reply, 1. But positioning the lead in a “pocket” in the bezel or “within the thickness of the bezel” is not embedding a lead in the inner surface of the bezel. Being “within the thickness” is ambiguous with respect to the inner or outer surface. And the sentence at issue specifically refers to the “outer surface.” Therefore, the specification provides no support.

Apple also cites to the specification’s statement that “bezel 310 can include...any other suitable distribution of leads,” but leaves out that this refers to the distribution “along,” not in, the bezel. RMTA Reply, 1.

For Claim 26, Apple’s references to general statements about hand(s) do not provide support for the specific hand and electrode relationships claimed.

IV. SUBSTITUTE CLAIM 26 ENLARGES THE SCOPE OF THE CLAIM

Apple never addressed Masimo’s showing that substitute claim 26 would cover subject matter not covered by the original patent. RMTA Opp., 6-8. Apple’s cases are inapplicable. *Network-1 Techs* did not address broadening of the dependent claims “because they are not asserted.” 981 F.3d at 1029 (Fed. Cir. 2020). *Apple Inc. v. Qualcomm Inc.* found that removing a limitation from a dependent claim was not broadening because the removed limitation was already in the independent claim. IPR2018-01277, Paper 46 at 45 (PTAB Jan. 17, 2020); RMTA Reply, 3.

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

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that, pursuant to 37 C.F.R. §42.105, a true and correct copy of the foregoing **PETITIONER'S SUR-REPLY TO PATENT OWNER'S REVISED CONTINGENT MOTION TO AMEND** is being served electronically on August 5, 2024, to the e-mail addresses shown below:

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