

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ALIVECOR, INC.,
Petitioner,

v.

APPLE INC.,
Patent Owner

Case IPR2023-00950
U.S. Patent 10,076,257

**PATENT OWNER'S
SUR-REPLY TO PETITIONER'S REPLY**

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LIST OF EXHIBITS

APPLE-2001	Declaration of Dr. Thomas Kenny
APPLE-2002	Curriculum Vitae of Dr. Thomas Kenny
APPLE-2003	Complaint, <i>Apple Inc., v Masimo Corporation, et al.</i> , Case No. 1-22-cv-01378 (D. Del., Oct. 20, 2022)
APPLE-2004	Second Declaration of Dr. Thomas Kenny
APPLE-2005	Definition of “embedded” from Wiley Electrical and Electronics Engineering Dictionary, IEEE Press, Wiley-Interscience (2004)
APPLE-2006	Finland Patent No. 119716 B (Application No. 20002304) (patent application to which Nissilä (EX1006) claims priority)
APPLE-2007	Certified English Translation of Finland Patent No. 119716 B (Application No. 20002304)
APPLE-2008	Definition of “bezel” from Wiley Electrical and Electronics Engineering Dictionary, IEEE Press, Wiley-Interscience (2004)
APPLE-2009	Definition of “bezel” from Merriam-Webster’s Collegiate Dictionary, Eleventh Edition (2006)
APPLE-2010	Definition of “bezel” from McGraw-Hill Dictionary of Scientific and Technical Terms, Sixth Edition (2002)
APPLE-2011	U.S. Patent Application Publication No. 2014/0171776 (“Lin”)
APPLE-2012	U.S. Provisional Application No. 61/111,498
APPLE-2013	Transcript of March 27, 2024 deposition of Dr. Ronald D. Berger

APPLE-2014	Definition of “membrane” from ASM Materials Engineering Dictionary, ASM International (2006)
APPLE-2015	Definition of “membrane” from Collins English Dictionary, HarperCollins Publishers (1998)
APPLE-2016	U.S. Patent App. Ser. No. 14/136,658
APPLE-2017	U.S. Patent App. Ser. No. 12/358,905
APPLE-2018	Transcript of July 26, 2024 deposition of Dr. Ronald D. Berger

I. INTRODUCTION

AliveCor's Reply presents a barrage of strawman arguments and doubles down on the Petition's erroneous assertions—insisting that there are additional structures in the devices of Markel and Nissilä that are neither described nor depicted by the references themselves. But the fact remains, none of the references of record disclose a conductive pad *embedded in and positioned underneath* the exterior surface of a first portion of the enclosure of a device, as required by independent claim 1. As identified in the Patent Owner's Response ("POR"), and in additional detail below, the only conductive pads disclosed by Markel are exposed "metallic or conductive plastic" electrodes positioned on the exterior of the device to "provide for *electrode contact with a user's hand* during use" of the device.¹ EX1005, [0043]-[0047], [0049] (describing that the electrode "placement may, for example, provide for convenient access for a user to *contact both the first and second electrodes* simultaneously."). Similarly, as discussed in the POR, the only conductive pads disclosed by Nissilä are the exposed "*electrodes 118, 122* of the electrode structure 100 [that] *consist of* a membrane 119 that is located at both ends of the electrode structure 100." EX1006, 5:32-37. Nissilä is express that the electrodes 118 and 122 are exposed on the exterior surface of the device to directly

¹ All emphasis added unless otherwise noted.

contact the user's skin when Nissilä's device is worn by the user, stating

“the electrodes 118, 122 are preferably located on the inner surface 116 of the band 101.” EX1006, 5:50-59.

There is simply no disclosure or suggestion in either Markel or Nissilä of a conductive pad positioned underneath the exterior surface of a first portion of the enclosure of a device. As such, for the reasons discussed here and in the POR, all Grounds fail with respect to independent claim 1 and its dependent claims.

II. CLAIM CONSTRUCTION

“embedded in” (claims 1, 15) – Contrary to AliveCor's assertions, Apple's proposed scope for the plain and ordinary meaning of the term “embedded in” is not based on cherry-picked extrinsic evidence but rather is based on the detailed description of the '257 patent itself, with additional extrinsic evidence presented to corroborate the intrinsic evidence. POR, 8-10; APPLE-2004, ¶¶27-35. The '257 patent repeatedly distinguishes between a component that is “positioned against” or “adjacent to” a second component (such as a portion of the housing) and a component being “embedded in” a second component such as being “placed within the thickness” of the second component. EX1001, 10:24-29, 9:44-48; APPLE-2004, ¶¶28-31, 95. As another example, claim 1 recites “a first lead comprising a first pad that is embedded *in* a first portion of the enclosure” while claim 9 recites “a third lead embedded *with* the display.” EX1001, 12:26-27, 13:29. This once

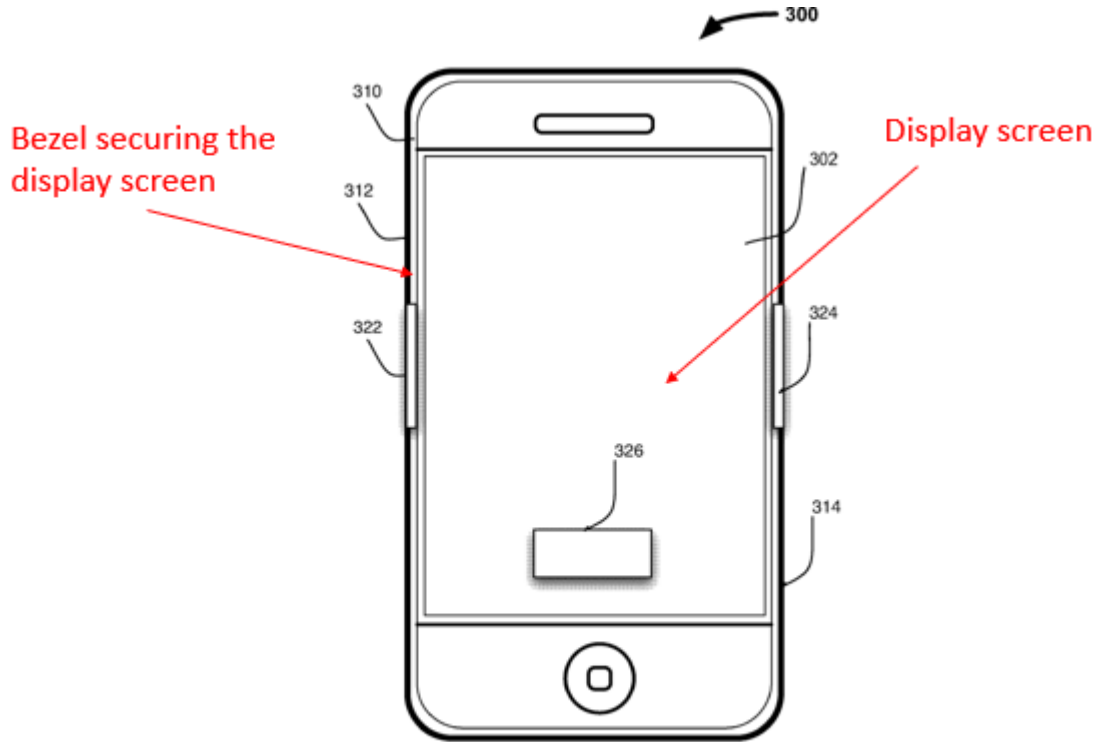
again indicates that the term “embedded in” has a different scope than the broader term “embedded.” APPLE-2004, ¶33.

Additionally, the dictionary definitions identified in a co-pending IPR proceeding involving the ’257, which were cut from the POR in the current proceeding for length, support the plain and ordinary meaning of “embedded in” presented by Apple. The definitions of “embed” reciting “to enclose closely in or as if in a matrix,” “to make something an integral part of,” and “to envelop or enclose” all indicate that for a first component to be “embedded in” a second component, the first component must be at least partially set in or partially surrounded by the second component. Pet. Rep., 2, fn. 2 (citing IPR2023-00745, Paper 15 at 10); APPLE-2004, ¶¶33-34.

Finally, even if the Board were to adopt AliveCor’s interpretation of “‘embedded in’ to simply require inclusion within a larger entity” (Pet. Rep., 5), the claim language specifies what that “larger entity” must be. Element [1.c.i] recites “a first lead comprising a first pad that is *embedded in a first portion of the enclosure*.” Therefore, under AliveCor’s interpretation, this claim element cannot be satisfied by the first pad being included within any “larger entity” but rather must be included *within* “a first portion of the enclosure” having the properties recited throughout claim 1.

For the reasons discussed here and in the POR, the plain and ordinary meaning of the term “embedded in” consistent with the ’257 patent is “at least partially set in or partially surrounded by a material.” POR, 8-10; APPLE-2004, ¶¶27-35.

“**bezel**” (claims 12, 13, 19) – Contrary to AliveCor’s assertions, Apple is not relying on lexicography or disclaimer to interpret the term “bezel” but rather has presented what it believes to be the plain and ordinary meaning of the term in rebuttal to the improperly broad interpretation presented by AliveCor in the Petition. The plain and ordinary meaning of the term “bezel” is “[a] rim that secures a transparent covering for an indicating device such as a meter, oscilloscope, or watch.” APPLE-2008; *see also* APPLE-2009 (“a rim that holds a transparent covering (as on a watch, clock, or headlight)”); APPLE-2010; APPLE-2004, ¶38. This is consistent with the use of this term in the ’257 patent which shows the bezel 310 as a rim that holds the display screen 302:



EX1001, FIG. 3, 8:15-20.

III. MARKEL FAILS TO DISCLOSE OR SUGGEST A FIRST PAD POSITIONED UNDERNEATH THE EXTERIOR SURFACE OF THE FIRST PORTION OF THE ENCLOSURE

Claim 1 includes several limitations that recite a specific physical arrangement for the claimed first pad with respect to the claimed first portion of the enclosure. Specifically, claim 1 recites:

- “a first pad is *embedded in* a first portion of the enclosure”
- “the first pad *is positioned underneath* the exterior surface of the first portion” of the enclosure.

However, as identified in the POR, there is simply no disclosure in Markel of a conductive pad “positioned underneath the exterior surface of the first portion” of the enclosure and such an arrangement would not be obvious based on the prior art of record. POR, 22-23, 26-37; APPLE-2004, ¶¶61-66, 77-94. Indeed, the only structure of Markel that could possibly read on a conductive pad are the external electrodes of Markel’s various embodiments, all of which are positioned on the external surface of Markel’s device for direct contact with the user. POR, 27-29; APPLE-2004, ¶¶85-89, 92-93; APPLE-2018, 28:3-20.

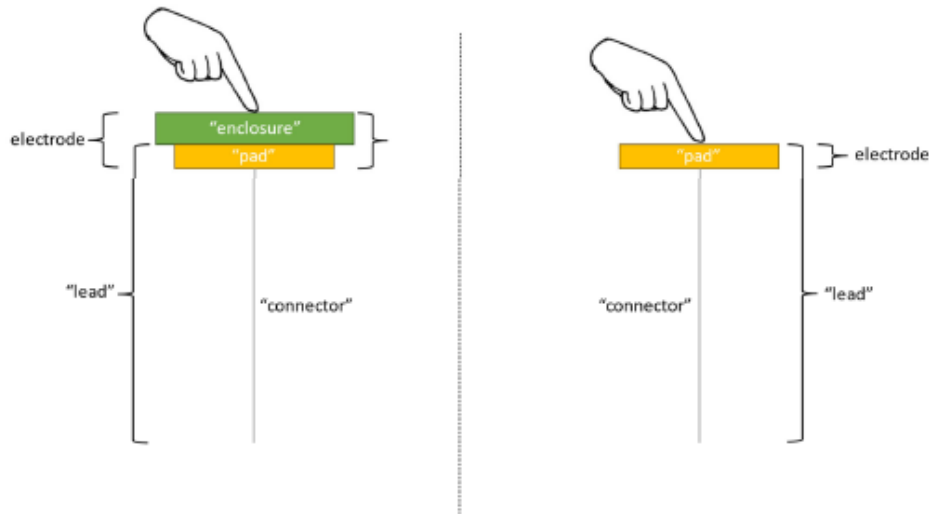
AliveCor attempts to support its assertion that Markel somehow suggests a secret, undisclosed and non-depicted second conductive pad under the externally exposed electrodes with a number of strawman arguments and misleading assertions. Apple will first briefly address each of these assertions and explain how they are not relevant to the fact that Markel fails to disclose a conductive pad “positioned underneath the exterior surface” of a first portion of the enclosure as required by claim 1. Following this discussion, Apple will address AliveCor’s false characterizations of Dr. Kenny’s deposition testimony and unsupported assertions regarding the alleged inherency of a secret, undisclosed and non-depicted second conductive pad under the externally exposed electrodes of Markel’s device.

A. AliveCor's Strawman and Misleading Assertions

Here, Apple presents some of the misleading and irrelevant assertions made by AliveCor in its Petitioner's Reply along with a brief rebuttal:

- **Assertion by AliveCor:** “Apple incorrectly assumes an exterior ‘electrode’ cannot meet element [1.c.iii]’s requirement of a ‘pad’ ‘positioned underneath the exterior surface of the’ enclosure.” Pet. Rep., 9.
- **Rebuttal:** This assertion falsely characterizes the arguments presented in the POR. *See*, POR 26-37. Apple agrees that is entirely possible for a theoretical device that would satisfy claim 1 to have an exterior electrode with a second conductive pad positioned underneath that exterior electrode. What AliveCor's assertion ignores is that Markel discloses *only* external electrodes “disposed on” exterior surfaces of the device to “provide for electrode contact with a user” when using the device. *see* EX1005, [0042]-[0050]. There is simply no disclosure of an additional pad positioned underneath and embedded in any of the external electrodes of Markel. APPLE-2004, ¶¶85-88.
- **Assertion by AliveCor:** “Apple's analysis must be rejected because it improperly equates an ‘electrode’ (which is *never* recited anywhere in the '257 patent) with a ‘pad.’” Pet. Rep., 9.

- **Rebuttal:** The POR analyzed how the electrodes of Markel's device fail to provide the claimed "first pad" of claim 1 because AliveCor's Petition expressly mapped the claimed "first pad" to each of the electrode 1022 and the electrodes located at portions 610 and 420 of Markel's various embodiments. Pet., 10-13, 18-20. It is unreasonable for AliveCor to now complain that Apple addressed the mapping of Markel to the claims set forth in the Petition itself.
- **Assertion by AliveCor:** "The terms 'electrode' and 'pad' are not necessarily equivalent." Pet. Rep., 9.
- **Rebuttal:** Apple agrees that the terms "electrode" and "pad" are not coextensive. As Dr. Kenny testified, an electrode can take numerous forms that are not pads, such as "cylindrical or spherical" shapes. EX1022, 70:17-72:9. Similarly, not all pads serve as electrodes. As mentioned above, POR addressed the arguments presented in the Petition that certain electrodes of Markel's embodiments allegedly read on the claimed first pad. Pet., 10-13, 18-20.
- **Assertion by AliveCor:** an electrode "in the context of the '257 patent" can have multiple layers, including a non-external pad, followed by the following figure (generated from entirely from whole-cloth by AliveCor):



Pet. Rep., 10.

- **Rebuttal:** The discussion in the Petitioner's Reply as to whether an electrode can have multiple layers is irrelevant for at least two reasons: (1) the claims of the '257 patent do not recite an "electrode," and (2) there is no disclosure of the configuration on the left side of the above figure in Markel. Markel discloses only external electrodes with no disclosure of a separate pad positioned underneath the external electrodes. APPLE-2004, ¶¶85-88; POR, 26-29.
- **Assertion by AliveCor:** "an 'electrode' is always exterior." Pet. Rep., 10.
- **Rebuttal:** AliveCor provides no support for this bold assertion. It is also irrelevant because Markel discloses only external electrodes with

no disclosure of a separate conductive pad positioned underneath the external electrodes. APPLE-2004, ¶¶85-88; POR, 26-29.

- **Assertion by AliveCor:** “A ‘pad’ is a narrower term referring to a specific component of an ‘electrode.’” Pet. Rep., 10.
- **Rebuttal:** This assertion by AliveCor assumes too much. Here, AliveCor misleadingly implies that *all* electrodes necessarily include a pad. This is simply not the case. As Dr. Kenny testified, an electrode can take many shapes and does not require a pad. EX1022, 70:17-72:9. The portions of Dr. Kenny’s deposition cited by AliveCor do not support this assertion and in-fact, Dr. Kenny was very careful to specify that “the notion of a pad carries some kind of geometric understanding” and that a POSITA would need to specifically evaluate “things that are called electrodes in the prior art references and make a judgment as to whether those are equivalent” to the claimed first pad of the ’257 patent. *Id.*, 71:6-71:21. Nowhere did Dr. Kenny state or imply that all electrodes inherently include a “pad” as AliveCor asserts.
- **Assertion by AliveCor:** “disclosure of an exterior ‘electrode’ does not preclude a prior art reference from rendering obvious the ‘pad’ of element [1.c.iii].” Pet. Rep., 11.

- **Rebuttal:** This is a strawman argument. The reason Markel fails to disclose element [1.c.iii] is not because it discloses exterior electrodes, it is because Markel discloses *only* exterior electrodes with no disclosure of an additional conductive pad positioned underneath and embedded in any of the external electrodes (or any other portion of Markel’s enclosure). APPLE-2004, ¶¶85-88; POR, 26-29; EX1005, [0042]-[0050]. Apple agrees that it is entirely possible for a device to include an external electrode that forms part of the enclosure having a separate pad that is both embedded in and positioned underneath the surface of the external electrode in a manner that would satisfy Elements [1.c.i]-[1.c.iii]. However, Ground 1 fails because Markel is devoid of any such teaching.
- **Assertion by AliveCor:** “The salient question—which Apple fails to address—is whether Markel renders obvious that ‘audio output portion 610’ comprises a pad underneath the enclosure.” Pet. Rep., 11.
- **Rebuttal:** Apple agrees that this is the salient question and, counter to AliveCor’s assertion, Apple has amply answered this question both here and in the POR. POR, 22-23, 26-37; APPLE-2004, ¶¶61-66, 77-94. There is simply no disclosure in Markel of a pad positioned under a conductive surface of the “audio output portion 610” or any other

electrode of Markel. *Id.* There is no discussion in Markel of a pad positioned beneath any of the electrodes. There is no depiction in Markel of a pad positioned beneath any of the electrodes. Such a description of a pad positioned beneath a conductive portion of a device enclosure exists only in the '257 patent itself.

B. AliveCor Mischaracterizes Dr. Kenny's Testimony

The Petitioner's Reply repeatedly mischaracterizes Dr. Kenny's testimony and then insists that these mischaracterizations to allegedly support its flawed theories. Tellingly, as identified below, many of the most egregious assertions presented by AliveCor are followed by long string citations to lengthy portions of Dr. Kenny's deposition with no discussion or analysis of Dr. Kenny's actual statements.

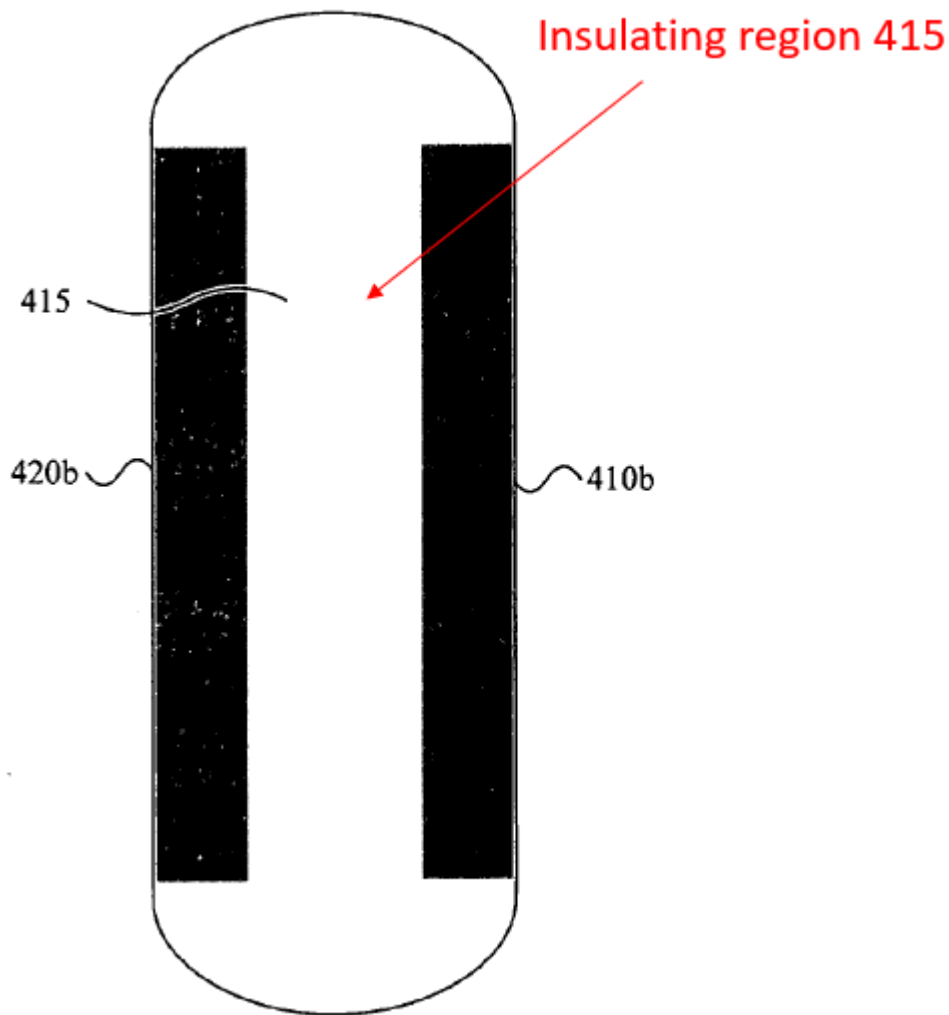
For example, AliveCor identifies a portion of Dr. Kenny's deposition in which, in the moment, he was unable to identify what material is used to form the main body of Markel's enclosure. Pet. Rep., 12. From this, AliveCor makes the wild assertion that because Markel allegedly does not disclose a material for the main body of the enclosure "*Markel's* enclosure and the surface of 'audio output portion 610' *must* comprise the same material—conductive plastic." *Id.* Such an assertion is nonsensical for several reasons. First, the absence of an express disclosure for the material used for the enclosure in the embodiment of FIG. 6 in

no way supports an assertion that the enclosure “**must**” comprise the same material as the electrode of the audio output portion 610. Such an assertion is equivalent to asking someone eating a block of cheese if they know what material the moon is made of and, when they say “no,” insisting that the moon must be made of cheese.

Second, implementing Markel’s entire enclosure from a conductive material, such as a conductive plastic, would cause the device of Markel to be non-functional. Markel discloses that the embodiment of FIG. 6 includes two electrodes, a “first electrode” positioned on the back and a “second electrode...disposed on the audio output portion 610.” EX1005, [0050]. Markel also makes clear, with respect to other embodiments, that the electrodes need to be separated by insulating material. *Id.*, [0045] (describing “insulating region 415” separating electrode regions 410b and 420b); [0047] (describing pushbutton 240 having “a first electrode 242...and a second electrode 244...separated by an insulating portion 243.”). If Markel’s device were implemented such that the entire enclosure were formed of a conductive material, which AliveCor asserts “**must**” be the case, the electrodes would short out and the device would be unable to read the user’s ECG signal. Markel’s actual teachings demonstrate the opposite, the electrodes are electrically isolated. *Id.*

Third, in other embodiments, Markel gives an express example of a material used as an insulator to separate the various electrodes: “non-conductive plastic.”

EX1005, [0047]. Additionally, Markel expressly describes the area outside of the electrode portions as an “insulating area 415.” EX1005, [0045].



The fact that Markel expressly identifies the non-electrode regions as an “insulating region” and also provides an express example of “non-conductive plastic” as an insulator once again demonstrates the flaw in AliveCor’s theory.

AliveCor next falsely asserts that “Dr. Kenny’s testimony also demonstrates that the sort of conductive ‘enclosure’ disclosed in *Markel* would have an electrode

‘pad’ underneath if it had ‘superior conductivity’ and appropriate geometry.” Pet. Rep., 12. Ignoring for now that Markel does not disclose a “conductive ‘enclosure,’” this bold assertion by AliveCor is simply not supported by the record. Rather than provide any analysis to support this assertion, AliveCor cites to several long portions of Dr. Kenny’s deposition and Dr. Berger’s deposition without discussing any of the statements actually made by either expert. This is because in all of the portions of Dr. Kenny’s deposition that AliveCor cites to in support of this assertion, Dr. Kenny is discussing “the context of the ’257 patent” and not universal truths about all devices where a portion of the enclosure is conductive, as AliveCor insists. EX1022, 45:3-46:9 (Dr. Kenny discussing the disclosures of “column 6” of the ’257 patent), 45:6-47:22 (Dr. Kenny stating that it is “possible” to “make a bezel and a pad out of the same material” within “the context of the ’257 patent” and discussing the teaching of the ’257 patent itself that “the pads should be constructed from materials that have superior conductivity where possible.”), 67:3-15 (Dr. Kenny discussing the requirements of claim 1 and not universal truths regarding “conductive ‘enclosure[s]” as AliveCor asserts), 67:16-68:17 (Dr. Kenny discussing the disclosures of “column 6” of the ’257 patent), 68:18-69:22 (Dr. Kenny giving a theoretical example of a conductive pad positioned under a stainless steel enclosure, with no indication that all conductive portions of a device enclosure would require an underlying conductive pad).

Indeed, the cited portions of Dr. Kenny’s deposition actively refute AliveCor’s assertions, as Dr. Kenny testified that the “conductive plastics” of Markel and Nissilä “hav[e] sufficient conductivity to function in the role of capturing these heart signals” with no need for a separate pad positioned under the electrodes. EX1022, 48:1-14. This is exactly what Markel states: an electrode “formed from conductive plastic” can “provide sufficient conductivity for an electrode to perform adequately.” EX1005, [0037]; APPLE-2018, 28:3-20.

AliveCor’s attempt to support its assertion that **all** devices having an enclosure with a conductive portion would necessarily include “an electrode ‘pad’ underneath” using Dr. Kenny’s discussions of the teachings of the ’257 patent itself is the epitome of impermissibly attempting to use “that which only the inventor taught...against its teacher.” *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983). Such a use of Dr. Kenny’s discussion of the teachings of the ’257 patent itself is the exact use of “unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis” that federal appellate courts have long warned against. *In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967). Even if the prior art **could** be modified (which Apple does not concede), the modification is not obvious unless the prior art suggested such a modification. *In re Fritch*, 972 F.2d 1260 (Fed. Cir. 1992); *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984). There must be some teaching or suggestion in the

references to support the modification proposed by AliveCor, yet here, there is none. *Smithkline Diagnostics, Inc. v. Helena Labs Corp.*, 859 F.2d 878, 886 (Fed. Cir. 1988).

Indeed, AliveCor’s unsupported assertions about what must be necessarily present in all devices having external electrodes “cannot be used as a wholesale substitute for reasoned analysis and evidentiary support, especially when dealing with a limitation missing from the prior art references specified.” *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361-62 (Fed. Cir., 2016) (calls to logic or common sense can only be used “to supply a missing claim limitation” in rare instances where “the limitation in question was unusually simple and the technology particularly straightforward” such as repeating a set of steps fully disclosed in the prior art.).

AliveCor’s assertions in both the Petition and the Petitioner’s Reply do not meet the high bar set by the Federal Circuit for establishing that a limitation, though not expressly taught by prior art, might nonetheless be present by inherency:

A party must, therefore, meet a high standard in order to rely on inherency to establish the existence of a claim limitation in the prior art in an obviousness analysis—the limitation must be present, or the natural result of the

combination at elements explicitly disclosed by the prior art.

PAR Pharm., Inc. v. TWI Pharms., Inc., 773 F.3d 1186, 1195-96 (Fed. Cir. 2014); *see also PersonalWeb Techs., LLC v. Apple, Inc.*, 917 F.3d 1376, 1382-83 (Fed. Cir. 2019) (reversing Board where claimed inherent element “does not necessarily exist” in reference).

AliveCor’s assertions that it would have been obvious to include an additional conductive pad positioned underneath and embedded in one or more of the external electrodes of Markel’s device, despite the complete lack of any teaching or suggestion to do so in Markel, are based entirely on Dr. Berger’s unsupported testimony that “you would have metal, something -- highly conductive metal, that's going to be part of the electrode that's underneath a layer of conductive plastic if the metal itself is not exposed.” EX2013, 101:11-22 (cited at Pet. Rep., 13). Such unsupported testimony with no analysis or supporting evidence cannot properly serve to insert a limitation that is entirely absent from the prior art.

AliveCor next cites to additional portions of Dr. Kenny’s testimony as allegedly supporting its assertion that “a POSITA would have formed the connection with a conductive metal underneath *Markel*’s conductive plastic.” Pet. Rep., 13. However, the cited portion of Dr. Kenny’s deposition finds Dr.

Kenny describing the claimed “connector” of the ’257 patent and how it would connect to the claimed first pad. EX1022, 90:8-92:20 (cited at Pet. Rep., 13).

AliveCor’s attempt to twist Dr. Kenny’s discussion of the invention of the ’257 patent itself into somehow supporting the notion that all conductive plastic electrodes (a feature not discussed in the ’257 patent) would inherently include an underlying metal pad once again improperly attempts to use “that which only the inventor taught...against its teacher.” *W.L. Gore*, 721 F.2d at 1553.

Similarly, AliveCor’s assertion that Dr. Kenny testified that a POSITA would have designed Markel to include “an electrode pad with ‘superior conductivity’ to ensure a ‘high margin for success’” once again completely twists the truth as AliveCor supports this assertion only by citing Dr. Kenny’s discussion of the teachings of the ’257 patent. Pet. Rep., 13.

There is simply no support for AliveCor’s assertion that “the experts’ testimony demonstrates how *Markel* renders obvious that ‘audio output portion 610’ comprises a *pad* underneath the enclosure.” Pet. Rep., 13. AliveCor has mischaracterized Dr. Kenny’s testimony, insisting that testimony in which Dr. Kenny is clearly and expressly discussing the teachings of the ’257 patent is somehow actually a discussion of what would have been obvious for all heart monitoring devices with external electrodes. All that AliveCor is left with are bald assertions from its own expert that the claimed invention of the ’257 patent would

have been obvious, with no analysis or evidence to support these assertions. For these reasons, and those discussed in the POR, Ground 1 fails.

IV. MARKEL FAILS TO DISCLOSE A FIRST PAD “EMBEDDED IN” THE FIRST PORTION OF THE ENCLOSURE AS REQUIRED BY ELEMENT [1.C.I]

As discussed in the POR, under the proper construction of the term “embedded in” AliveCor has failed to demonstrate a first pad that is “embedded in” the first portion of the enclosure because Markel provides no details on the physical arrangement of its internal components and AliveCor has proposed no configuration of the inner and outer electrodes in its proposed (and entirely unsupported) two-layered-electrode configuration for Markel. APPLE-2004, ¶¶95-101. Even if Markel were modified to add a second intermediate conductive layer under the electrodes of Markel’s device, AliveCor makes no attempt to demonstrate why such an intermediate layer would have been “embedded in” the external electrode rather than the two layers being merely in parallel contact with no portion of the outer electrode at least partially surrounding the lower electrode/pad. APPLE-2004, ¶¶96-97. As such, AliveCor’s proposed modified version of Markel also fails to provide Element [1.c.i]. POR, 37-39.

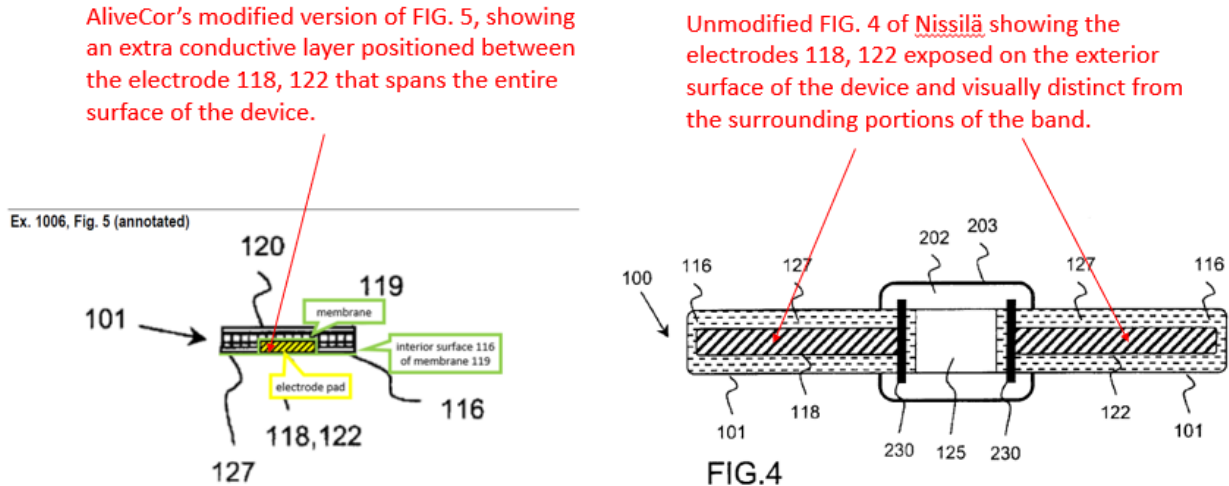
V. THERE IS NO DISCLOSURE IN NISSILÄ OF AN ELECTRODE ENCLOSED BY A SEPARATE CONDUCTIVE MEMBRANE

A. Nissilä's Electrodes 118, 122 are Formed of the Membrane 119

As amply demonstrated in the POR, Nissilä includes no disclosure of a pad or electrode positioned *underneath* the exterior surface of a first portion of the enclosure of Nissilä's device. POR, 41-54; APPLE-2004, ¶¶102-123. Rather, Nissilä is clear that "the electrodes 118, 122 of electrode structure 100 consist of a membrane 119." EX1006, 3:18-40; 5:25-38. AliveCor's Reply's rehashing of its unsupported assertions from the Petition does nothing to refute the clear analysis laid out in the POR. POR, 41-54. The green line that AliveCor has added to FIG. 5 of Nissilä in its briefs—that it insists is a separate conductive membrane that encloses the electrodes 118 and 122—is nothing more than a fabrication of AliveCor and its expert, with no actual support for this extra layer in the teachings of Nissilä. APPLE-2004, ¶¶102-123.

As discussed in the POR, AliveCor's assertions ask the reader to ignore the clear disclosure of Nissilä—that "the electrodes 118, 122...consist of a membrane 119." EX1006, 3:18-40; 5:25-38. Indeed, AliveCor's insistence that Nissilä's device includes an extra conductive membrane positioned between the electrodes 118, 122 and the user's skin that spans the entire device, despite not actually being depicted in the figures, is entirely inconsistent with FIG. 4 of Nissilä, which clearly

shows that the electrodes 118, 122 are visually distinct from the surrounding portions of the band:

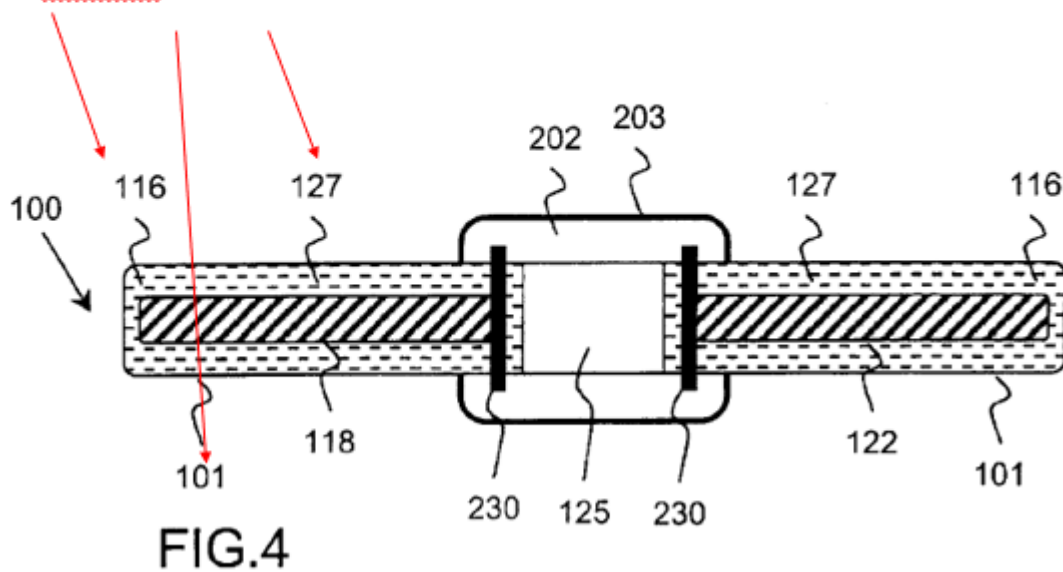


The Petitioner's Reply presents no arguments or evidence that refute the clear disclosures of Nissilä and analysis in the POR that the electrodes 118, 122 *are formed from* the membrane 119, not encircled by a separate, undepicted conductive membrane, as AliveCor insists. POR, 43-52. For example, AliveCor's assertion that "membrane 119 comes 'into contact with the person's skin surface'" is entirely consistent with Nissilä's disclosure that each of the electrodes 118, 122 *is* a membrane 119. Pet. Rep., 16 (citing EX1006, 5:40-41). For example, as shown in FIG. 4 of Nissilä, above, the electrodes 118, 122 (each of which is a membrane 119) are shown as exposed on the inner surface of the device to contact the user's skin. APPLE-2004, ¶¶106, 108-110.

AliveCor's insistence that use of different reference numerals means that the reference numeral 119 must refer to a distinct structure from reference numerals

118 and 122 is similarly disproven by the disclosures of Nissilä itself, which uses different reference numerals to refer to the same portions of the device on numerous occasions. For example, in FIG. 4, reference numerals 101, 116, and 127 all point to the same portion of Nissilä's device, the "inner surface 116" of "continuous band 101" having "electrically conductive adhesive 127." EX1006, 5:3-6, 5:40-44.

Reference numerals 116, 127, and 101 all pointing to the same structure of Nissilä's device.



EX1006, FIG. 4 (annotated)

FIG. 6 similarly shows reference numerals 101, 116, and 127 as pointing to the same structure of the device. In another example, in the embodiment of FIGs. 7-9, Nissilä shows the reference numerals 116, 127, 101, and 118 all pointing to the same structure:

Reference numerals 116, 127, 101,
and 118 all pointing to the same
structure of Nissilä's device.

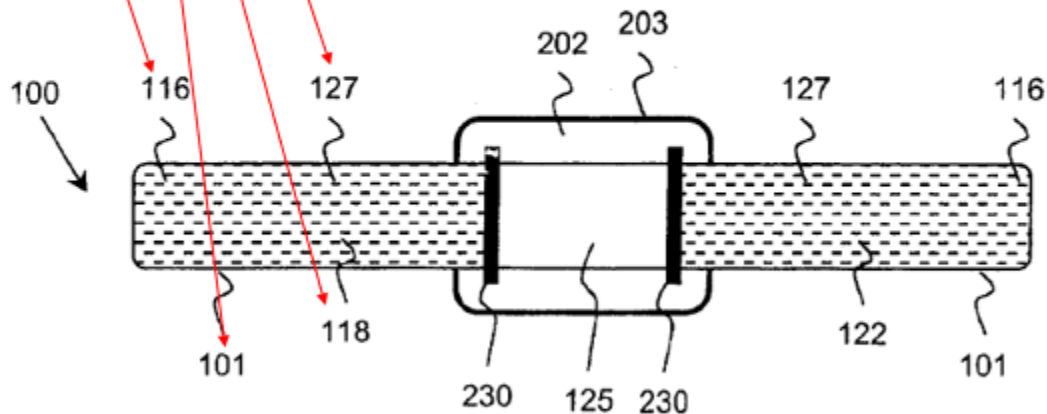


FIG. 7

EX1006, FIG. 7 (annotated)

The reason that Nissilä uses the reference numeral 119 to identify the membrane that forms the electrodes 118 and 122 in the embodiment of FIGs. 3-6 is that, while the electrodes 118 and 122 are formed of the membrane 119 in the embodiment of FIGs. 3-6, in the distinct embodiment depicted in FIGs. 7-9, the electrodes are not formed of the membrane 119 but rather are formed from an “electrically conductive adhesive 127.” EX1006, 5:18-32. Note that the embodiment of FIGs. 7-9 does not mention the membrane 119 because in this embodiment the electrodes 118, 122 *are* the conductive adhesive, not a membrane 119, as they are in the embodiment of FIGs. 3-6. That is, in one embodiment, the electrodes 118, 122 are formed of the membrane 119 while in another

embodiment, the electrodes are formed of the conductive adhesive 127. EX1006, 5:18-49. As such, in the embodiment of FIGs. 3-6, the reference numeral 119 is used to show that the electrodes 118, 122 are formed from the membrane 119 in that embodiment while in FIGs. 7-9, the reference numeral 127 is used to show that the electrodes 118, 122 are formed from the conductive adhesive 127 in that embodiment. *See* FIG. 7, reproduced above.

**B. The Case Law Supports Apple’s Interpretation of the Phrase
“consist of”**

AliveCor asserts that the case law cited in the POR in support of the correct interpretation of the term “consist of” should be dismissed, asserting that the cited case law is allegedly only applicable to “claim language.” However, the cited case law is broader than AliveCor asserts. For example, in *Hoskins Mfg. Co. v. General Elec. Co.*, the court was not limiting their interpretation to claim language exclusively, but rather held that in the English language in general “‘*formed of*’ and ‘*composed of*’ are the same; they *both mean consisting of*.” 212 F. 422, 428 (N.D. Ill. 1913). Similarly, in *In re Bertsch*, the court did not limit its holding to only claim language but rather more broadly stated that “we hold that the words ‘composed of’ should be regarded as synonymous with ‘consisting of.’” 30 C.C.P.A. 813, 820; 132 F.2d 1014 (CCPA 1942).

In *Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, Judge Taranto was clear that “in patent law,” including in the specification of the patent and not just the claims of a patent, “‘consisting of’ means ‘including only’ (‘containing only,’ ‘composed of only,’ ‘made of only’).” 831 F.3d 1350, 1358 (Fed. Cir. 2016) (J. Taranto, dissenting). Other Federal Circuit and district court cases similarly did not limit their opinions exclusively to claim interpretation when opining on the meaning of the term “consisting of” in general. *Unimed Pharms., LLC v. Perrigo Co.*, LEXIS 29703, *14-15 (D. Del. 2015) (“**consisting of describes what the composition is made from**”); *Norian Corp. v. Stryker Corp.*, 432 F.3d 1356, 1361 (Fed. Cir. 2005) (describing that the term “consisting of” in a patent indicates what something is “made from”); *Azurity Pharms., Inc. v. Alkem Labs. Ltd.*, 2023 U.S. Dist. LEXIS 77839, *36-37 (D. Del. 2023) (equating the terms “consisting of” and “made from”); *Manuli Stretch USA, Inc. v. Pinnacle Films, Inc.*, 2010 U.S. Dist. LEXIS 146029, *29-30 (E.D. Ten. 2010) (equating the terms “consisting of” and “made from”).

The fact that claim 6 of Nissilä uses open “comprise” language similarly does not refute the analysis in the POR. Claim 6 simply states that “the first electrode and the second electrode of the electrode structure comprise a conductive membrane located at both ends of the electrode structure.” EX1006, 8:38-41. This is wholly consistent with the “consist of” language used in the specification. In

claim 6, as in the rest of Nissilä, there is no description of the membrane being a separate structure that encloses or envelopes the electrodes, rather, claim 6 states that the electrodes are constructed of “a conductive membrane” while leaving open the possibility of other materials being included in the electrodes (without actually identifying any additional materials).

For these and the additional reasons discussed in the POR, Ground 2 fails.
POR, 57-69.

**VI. GROUNDS 1 AND 2 FAIL TO PROVIDE ADDITIONAL
RECITATIONS OF THE DEPENDENT CLAIMS**

**A. Dr. Kenny Fully Rebutted Dr. Berger’s Assertions with Respect to
Claim 5**

Regarding claim 5, AliveCor asserts that “[u]nrebutted expert testimony deserves substantial weight.” Pet. Rep., 23. While this may be true, Dr. Kenny fully rebutted the assertions made by AliveCor and its expert, stating that “Markel only discusses the insulating region 415, with no disclosure of a material used for the insulating region 415” and that “Dr. Berger does not support his assertions with any disclosures of Markel (or Nissila or Righter)” and “presents no analysis as to why a POSITA would have selected aluminum or steel for the insulating region 415 and makes no effort to demonstrate that such an implementation of Markel would have been successful.” APPLE-2004, ¶147. Dr. Kenny goes on to state that “[a]s with his analysis of the insulating region 415 of Markel, Dr. Berger presents

no analysis as to why a POSITA would have selected silver or silver chloride for implementing the electrodes of Markel and makes no effort to demonstrate that such an implementation of Markel would have been successful.” *Id.*, ¶148.

B. Dr. Kenny Fully Rebutted Dr. Berger’s Assertions with Respect to Claim 6

As with claim 5, Dr. Berger’s testimony regarding claim 6 is far from “unrebutted” as AliveCor asserts. Pet. Rep., 24. Rather, Dr. Kenny stated that “Dr. Berger does not identify any teaching that would dictate ‘a thickness of the second portion’ separating the second pad from the exterior of the device or compare that thickness to the electrical transmission properties of the second portion” and that “[t]he analysis of Dr. Berger and AliveCor with respect to elements [6.c]-[6.e] is purely conclusory and is not supported by any teachings of Markel.” APPLE-2004, ¶¶150-151.

C. Markel Does Not Render Claim 7 Obvious

AliveCor asserts that Dr. Kenny did not dispute that the proposed modifications to Markel that AliveCor proposed with respect to claim 7 “would have been within a POSITA’s skill.” Pet. Rep., 25. However, the relevant issue is not whether a POSITA would have been able to implement the invention of claim 7 but rather, whether the prior art of record included teachings that would have led a POSITA to create a device having all of the features recited by claim 7. Apple

does not dispute that implementing the invention of claim 7 would have been “within a POSITA’s skill” had the POSITA been given the ’257 patent as a guide, because the claims of the ’257 patent is fully enabled. The Petition erred by not demonstrating that the prior art disclosed all features of claim 7. POR, 69-70; APPLE-2004, ¶152.

D. Additional Dependent Claims

Dependent claims 8-9, 12-13, and 19-20 are patentable over the cited references for the reasons discussed in the POR. POR, 70-77; APPLE-2004, ¶¶153-170.

VII. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests a final written decision confirming patentability of the Challenged Claims.

Respectfully submitted,

Date: August 7, 2024

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Patent Owner's Sur-Reply to the Petitioner's Reply totals 5,589, which is less than the 5,600 allowed under 37 CFR § 42.24.

Respectfully submitted,

Date: August 7, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4), the undersigned certifies that on August 7, 2024, a complete and entire copy of this Patent Owner's Sur-Reply to the Petitioner's Reply 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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