

EXHIBIT 2023

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CEREBRUM SENSOR TECHNOLOGIES,	)	
INC. and TIRE STICKERS LLC,	)	
	)	
Plaintiffs,	)	
	)	
v.	)	C.A. No. 24-245 (JLH) (SRF)
	)	
REVVO TECHNOLOGIES, INC.,	)	
	)	
Defendant.	)	

PLAINTIFFS' OPENING CLAIM CONSTRUCTION BRIEF

OF COUNSEL:

Christopher D. Bright
SNELL & WILMER
Plaza Tower
600 Anton Boulevard, Suite 1400
Costa Mesa, CA 92626-7689

Christopher Franich
SNELL & WILMER
Executive Center Del Mar
12230 El Camino Real, Suite 300
San Diego, CA 92130

Morgan R. Povinelli
SNELL & WILMER
2001 K Street NW
Suite 425 North
Washington, DC 20006

MORRIS, NICHOLS, ARSHT & TUNNELL LLP

Karen Jacobs (#2881)

Jennifer Ying (#5550)

E. Paul Steingraber (#7459)

1201 North Market Street

P.O. Box 1347

Wilmington, DE 19899

(302) 658-9200

kjacobs@morrisnichols.com

jying@morrisnichols.com

esteingraber@morrisnichols.com

*Attorneys for Cerebrum Sensor Technologies, Inc.
and Tire Stickers LLC.*

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I. INTRODUCTION

This case involves three asserted patents related to different aspects of assemblies attached to tires to include sensors for monitoring tire conditions, including: U.S. Patent No. 10,137,741 (“the ’741 patent”); U.S. Patent No. 11,124,027 (“the ’027 patent”); and U.S. Patent No. 11,835,421 (“the ’421 patent”) (collectively, “the Asserted patents” or “Patents-in-Suit”). The ’741 and ’027 patents are related patents owned by Tire Stickers. The ’421 patent arises from a separate patent family and is owned by Cerebrum.

Plaintiffs’ proposed constructions are rooted in the plain language of the claims and specification, typically verbatim, while Revvo’s proposed constructions seek to add limitations and read out certain specification examples, in an attempt to avoid infringement.

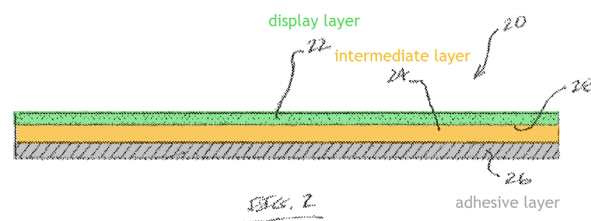
II. BACKGROUND OF THE ASSERTED PATENTS

A. The ’741 and ’027 Patents

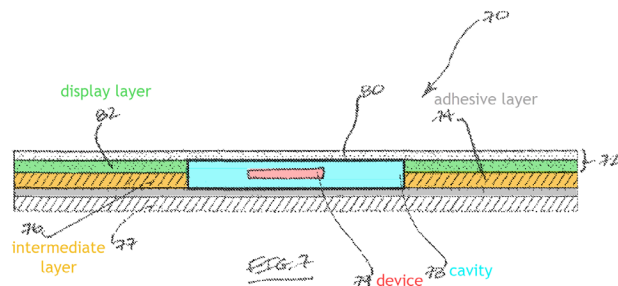
The ’741 and ’027 Patents are directed to a display assembly that can be permanently attached to a vehicle tire in the form of, for example, unique logos, lettering or “smart labels” (*e.g.*, labels with remote communication electronics) that remain intact for the life of the tire despite the harsh operating environment. The display assembly can be, for example, lettering or, alternatively, can include a cavity in which a device for displaying or communicating information (such as RFID (radiofrequency identification), GPS (Global Positioning System), LEDs (light emitting diode), etc.) is disposed. ’741 patent, Fig. 1 (lettering); Fig. 7 (cavity); *id.* at 11:51-54. The assemblies are useful for durable identification and/or tracking of the tire. *Id.* at 3:63-4:1. This is particularly useful, for example, for trucking fleets tracking tire usage.

The display assemblies are comprised of multiple layers of materials. The materials may be the same or different for each layer. *Id.* at 7:53-58; 9:39-57. Each layer may vary in thickness. 6:4-8; 6:52-56; 7:41-44. The patent provides examples of how the display, intermediate, and

adhesive layers are combined into a display assembly. For example, Figure 2 illustrates a display assembly “made by joining the display layer and intermediate layer together and then subjecting the same to vulcanizing conditions of elevated temperature and/or pressure, after which time the adhesive layer may be combined therewith, e.g., at the point of applying the display assembly.” *Id.* at 7:45-51. The adhesive layer is the side that gets applied to the tire. *Id.* at 2:61-62. Each layer is disposed over the other with continuity: display layer labeled 22 (green); intermediate layer labeled 24 (orange); and adhesive layer labeled 26 (gray).



The layers may also vary to accommodate an electronic device to be placed in the display assembly. *Id.* at 11:23-30; Fig. 7. In Fig. 7, each of display layer labeled 82 (green), intermediate layer labeled 76 (orange), and adhesive layer labeled 74 (gray) vary in their thickness across the display assembly, as the assembly includes a cavity 78 (blue) to accommodate device 79 (red).



As such, each layer may be “continuous or non-continuous in form depending on the particular end-use application.” *Id.* at 4:36-41.

The '027 patent, which is a continuation of the '741 Patent, includes claims reciting a “barrier material composition,” which can be used for certain layers such as the intermediate layer.

See, e.g., '027 patent, 6:11-13; cl. 5. Such a composition provides “properties of shock absorbance, elastomeric expansion and/or contraction properties compatible with the vulcanized rubber article [i.e., a tire] that the display assembly is to be attached therewith.” *Id.* at 6:20-24.

B. The '421 Patent

The '421 patent discloses a sensor system designed to be attached inside, for example, the inner surface of a vehicle tire to monitor and report conditions like tire location or tire wear, such as tread depth or alignment. The patent discloses a protective housing for the sensor device, which can wirelessly transmit tire data to a receiver. The sensor may be used to collect data from which tire conditions, e.g., tread depth or and/or alignment, can be determined. *Id.*

Figure 3 discloses one example of a sensor assembly with a housing that includes “surface features” (44) to retain the sensor device in the housing. *Id.* at Fig. 3; 10:24-32. The surface feature of a slot or recessed groove in this example is labeled 44 (pink), in the housing labeled 12 (blue), for receiving the sensor device labeled 40 (red), as seen below.

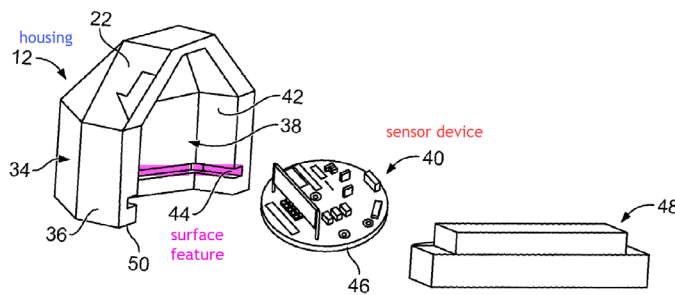


FIG. 3

In another example, the “surface features” can alternatively be “ribs or tabs.” *Id.* at 10:40-46. This is an improvement over the prior art that lacked such surface features and instead solely incorporated an epoxy filling material to completely fill the interior. *Id.* at 13:56-60.

The '421 patent also discloses, for example, that the sensor device may be placed in the internal cavity such that there is a designed-in open space above and/or below the sensor device.

An exemplary purpose of such an open space is to accommodate a sensor device that responds to kinetic energy. *Id.* at 15:12-14. For example, Figure 10 depicts sensor device labeled 40 (red) placed in cavity labeled 38 (blue), as below.

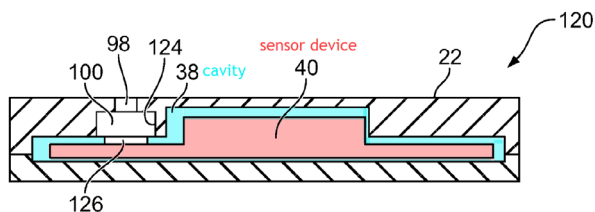


FIG. 10

This open space is a subject of some of the claims. *See, e.g., id.* at claim 31 (“The sensor assembly and sensing system as recited in claim 28, wherein the internal cavity comprises an open space above or below the electrical sensor device disposed within the internal cavity.”). This open space above or below the electrical sensor device is a deliberate design choice, *id.* at 4:24-25 (“wherein an open space exists above and below the electrical sensor device within the internal cavity”), for example, to respond to kinetic energy. *Id.* at 15:12-14.

III. DISPUTED CLAIM TERMS

A. “layer”

The intrinsic evidence supports Plaintiffs’ proposed plain and ordinary meaning construction, which is “at least one material disposed over.” The specification describes, with reference to Figure 2 as an example (*supra* at Section II.A), multiple layers, including a display layer disposed over an intermediate layer, which in turn is disposed over an adhesive layer. ’741 patent, 5:53-57 (“FIG. 2 illustrates a first example display assembly 20 as disclosed herein comprising ... a display layer 22, an intermediate or barrier layer 24, and an adhesive layer 26.”); 6:9-11 (“In an example, the intermediate or barrier layer 24 is attached or adhered along an *underside* surface 28 of the display layer 22.”); *see also id.* at 14:27-28 (“the adhesive may be

applied to the *underside* surface of the display assembly”).¹ Figure 7, for example (*supra* at Section II.A), shows a similar arrangement with an electronic device disposed within a cavity.

The specification also describes that “a transparent protective *layer* may be *disposed over* the one or more display layers, forming an outermost surface of the display assembly.” ’741 patent, 2:18-21. It also describes “a protective over-laminate *layer disposed over* all or a portion of the display layer(s).” *Id.* at 3:36-37; *see also id.* at 4:13-16 (“Further, display assemblies as disclosed herein may optionally comprise an overcoat or transparent protective layer *disposed over the display layer.*”); 10:56-57 (“A feature of this example is the presence of a protective layer 62 that is *disposed over the display layer.*”). Accordingly, a POSITA would understand that the plain meaning of layer is “at least one material disposed over,” consistent with the ’741 patent’s description of an assembly formed of multiple layers.

Revvo’s additional limitations find no support in the intrinsic evidence. First, not only is there nothing in the specification that limits a “layer” to a “single thickness,” but it instead makes clear that a layer may have multiple configurations, depending on the end-use application. As described above, the term “layer” encompasses various types of layers, including an adhesive layer, intermediate layer, and display layer, all of which may have different properties and functions. And contrary to Revvo’s proposed limitation, the specification explicitly describes that each layer may have a different thickness. ’741 patent, 6:4-8 (“In an example, depending on the particular size and configuration of the display assembly 20, the display layer 22 may have a thickness greater than about 0.01 mm, of from about 0.01 to 10 mm, 0.05 to 5 mm, 0.1 to 3 mm, and in a particular example about 0.4 mm.”); 6:52-56 (“In an example, the intermediate layer 24 may have a thickness greater than about 0.008 mm, from about 0.008 to 10 mm, about 0.01 to 5

¹ All emphasis added unless otherwise noted.

mm, about 0.1 mm to 1.5 mm, and in a particular example of about 0.5 mm.”); 7:41-44 (“In an example, the adhesive layer 26 may have a thickness greater than about 0.006 mm, from about 0.006 mm to 0.5 mm, 0.01 mm to 0.3 mm, 0.02 mm to 0.1 mm, and in a particular example of about 0.04 mm.”). Revvo’s claim construction cannot be correct because it introduces this confusing and unwarranted limitation that may suggest that each layer must have the same thickness. *See AstraZeneca AB v. Mylan Pharms. Inc.*, 19 F.4th 1325, 1342 (Fed. Cir. 2021) (claim construction that adds “uncertainty” rejected) (citing cases) (emphasis added).

Further, each individual layer need not have a single thickness. For example, the specification describes “one or more display layers of elastomeric material configured to provide a desired display indicia.” *See id.* at 1:67-2:2; 13:1-3. The display layer will be part of a display assembly which is “provided in a desired form or configuration depending on the desired display indicia or function intended, which can be in the form of a letter, numeral, symbol, design, pattern, logo, insignia, or the like that may be *continuous or non-continuous* in form *depending on the particular end-use application.*” *Id.* at 4:36-41; *see also id.* at 6:49-52 (“The exact *thickness* of the intermediate adhesive layer is understood to *vary depending on* the particular type of material selected for the display layer and the intermediate layer as well as *the particular end-use application.*”). For example, as a display assembly, lettering will vary and be discontinuous, as lettering necessarily includes portions higher than other portions, such that letters are apparent. *See* ’741 patent, Fig. 1. As another example as a display assembly as shown in Figure 7 (*supra* at Section II.A), a layer may be discontinuous to accommodate a functional device. *Id.* at Fig. 7; 4:36-41; 11:51-54. Revvo’s “single thickness” limitation thus is also contrary to the specification’s description of each individual layer as varying in thickness within an assembly.

Second, Revvo’s proposed “separate and distinct material” limitation again finds no

support in the specification. To the contrary, the specification explains that “one or both of the display layer or the adhesive layer may be configured so as to include a barrier composition at an interface therebetween that may operate to provide the barrier properties noted above, thereby **avoiding the need [to] use three separate and distinct layers** for the display assembly.” *Id.* at 7:53-58; *see also id.* at 8:38-42 (“the example display assembly illustrated in FIG. 3 may alternatively comprise a display layer or adhesive layer configured having a barrier composition at an interface, so as to avoid the need to obtain desired barrier properties through a separate and distinct barrier layer”). In fact, the specification explicitly describes composites, which refutes the “separate and distinct material” limitation sought by Revvo:

While the example display assembly illustrated in FIG. 4A has been disclosed as comprising four separate and distinct layers, ***it is to be understood that one or more of the display layer, intermediate adhesive layer, barrier layer, or the adhesive layer may be configured as a composite having properties of another layer so as to reduce the total number of separate and distinct layers*** used for making the display assembly 40. For example, the intermediate adhesive layer may be configured having a barrier composition along an interface with the adhesive layer, thereby avoiding the need to use a separate and distinct barrier layer, or the barrier layer may be configured comprising an adhesive composition on or both of its surfaces so as to avoid having to use one or more separate adhesive layers. These are just a few examples of how ***composite compositions may be used in such multilayer display assemblies to reduce the total number of separate and distinct materials layers*** used while still providing all of the desired described properties.

See id. at 9:39-57.

Third, Revvo’s proposed limitation of a “sheetlike structure” also is belied by the specification. Indeed, the specification describes an example where a “stencil” can be used to expose only the portion of the assembly lettering of the display layer that is desired. *See id.* at 13:42-14:29. Figure 7 (*supra* at Section II.A) also shows another example where each of the layers 74 and 82 is interrupted by presence of a cavity. *See id.* at Fig. 7; *see also id.* at 6:9-17 (“Alternatively, the intermediate layer 24 may ***extend along a partial portion*** of the display layer

underside surface 28, which is less than the entire portion and more than a majority or 51 percent of the total area of the display layer underside surface 28.”).

B. “(an) outer layer”

The intrinsic evidence supports Plaintiffs’ proposed plain and ordinary meaning construction, which is “at least one layer that is outermost.” The specification repeatedly describes, for example, an “outermost” aesthetic or display layer. ’027 patent at 2:60-61 (“layer ‘22’ is defined as the outermost aesthetic layer”); 3:1-2 (“first display layer ‘31’ as the outermost aesthetic display layer”); 3:10-11 (“layer ‘48’ as the outermost aesthetic display layer”); 3:19-20 (“layer ‘45’ as the outermost display layer”); 3:29-30 (“layer ‘57’ as the outermost aesthetic display layer”). Revvo’s indefiniteness position is refuted by these specification examples.

C. “(an) intermediate layer”

The intrinsic evidence supports Plaintiffs’ proposed plain and ordinary meaning construction, which is “at least one layer between other materials.” The specification repeatedly describes, for example, one or more “intermediate” layers between other layers. ’741 patent at 3:21-22 (“intermediate display layer ‘49’ using an intermediate adhesive layer ‘47’”); 5:56-57 (“an intermediate or barrier layer 24”); 8:29-31 (“intermediate layer 36”); 8:53-54 (“intermediate adhesive layer 50, an intermediate or barrier layer 44”); 9:63-64 (“intermediate adhesive layer 47”); 10:5-6 (“intermediate display layer 49”); 10:29-30 (“intermediate adhesive layer 54, an intermediate barrier layer 56”); 10:42 (“intermediate barrier layer 52”); 10:58 (“intermediate barrier layer 66”); 11:29-30 (“intermediate adhesive layer 74, an intermediate barrier layer 76”). That latter example, as shown in Figure 7 (*supra* at Section II.A), discloses that there may be multiple intermediate layers 76 and 74, because they are disposed between other materials. Revvo’s indefiniteness position is refuted by these specification examples. *E.g., Niazi Licensing Corp. v. St. Jude Med. S.C., Inc.*, 30 F.4th 1339, 1349 (Fed. Cir. 2022) (“The intrinsic record

provides objective boundaries by which a skilled artisan could determine the scope of the claims. That puts this case in line with our decisions ... where we held that examples in the written description helped provide sufficient guidance to render the claims not invalid as indefinite.”)

D. “vulcanized”/ “vulcanized to[gether]”

The intrinsic evidence supports Plaintiffs’ proposed construction, which is “cross-linked to[gether], whether chemically, by heat, by pressure, or otherwise.” The specification does not limit the claimed vulcanization to a single method or technique. For example, the specification repeatedly and explicitly describes the use of “pressure” to achieve vulcanization, among other examples such as heat or chemical bonding. ’741 patent at 7:48-49 (“vulcanizing conditions of elevated temperature and/or pressure”); 8:46-47 (“vulcanizing conditions of elevated temperature and/or pressure”); 9:36-37 (“vulcanizing conditions of elevated temperature and/or pressure”); 10:46-47 (“vulcanizing conditions of elevated temperature and/or pressure”); *see also* 12:66-67 (“reaction that may include and not be limited to heat and/or pressure and/or chemical bonding”). *See also* Mineur Decl. ¶¶ 19-29.

Revvo’s proposed construction, in contrast, only permits “heat and/or chemical vulcanization,” which cannot be correct as it excludes the “pressure” vulcanization described by the specification. *See Accent Packaging, Inc. v. Leggett & Platt, Inc.*, 707 F.3d 1318, 1326 (Fed. Cir. 2013) (“a claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.”). Revvo also seeks to add a requirement of “a network of permanent and irreversible crosslinks that is essentially insoluble in any solvent and is no longer processable,” which makes no sense in view of the specification. All of Revvo’s misplaced limitations seem to originate with Revvo’s misunderstanding of solubility (dissolvability) in water versus solubility (dissolvability) in any other type of solvent. Although vulcanized materials may not be dissolvable in water, they may be dissolved in other solvents. The specification recognizes

this in describing the use of “*vulcanizing cements* common in retread applications, water-based or *solvent based* polymer polyurethane based adhesives, and combinations thereof.” ’741 patent at 7:11-13; *accord* 9:17-19 (“vulcanizing cements common in retread applications, water-based or solvent based polymer polyurethane based adhesives, epoxies and combinations thereof.”). A POSITA would recognize that these solvent-based vulcanizing cements are dissolvable in a solvent; although the cement itself is insoluble in water, it is soluble in other solvents. *See* Mineur Decl. ¶¶ 45-46. In contrast, Revvo’s proposed limitations would not make any sense to a POSITA in light of the specification. *See id.* ¶¶ 43-62, particularly ¶¶ 43-48. Revvo’s proposed limitations go too far by requiring “insoluble in any solvent.” *Id.* ¶ 46. That flaw is the basis for Revvo’s other flawed limitations of “permanent and irreversible crosslinks” and “no longer processable.” *Id.* ¶ 45. Because a vulcanized material is soluble in the presence of some solvents, it does not require “permanent and irreversible crosslinks” or that it be “no longer processable.” *Id.* ¶¶ 45-46.

E. “barrier material composition” / “material composition that acts as a barrier”

The specification supports Plaintiffs’ construction by explicitly describing that a “barrier layer 24 is formed from a material capable of providing properties of shock absorbance, elastomeric expansion and/or contraction properties compatible with the vulcanized rubber article that the display assembly is to be attached therewith.” ’027 patent at 6:20-24.

Revvo seeks to import certain embodiments into the claims. For example, dependent claim 5 recites “The assembly as recited in claim 1 wherein the barrier material composition impairs migration of a material constituent within the assembly when the assembly is attached to a vulcanized rubber article.” That limitation is not required, for example, in claim 1. There is no basis to read in a limitation about blocking passage of discoloring chemicals or antioxidants, which would fall under the “impair[ing] [of] migration” recited in claim 5. *See InterDigital Communs.*

LLC v. ITC, 690 F.3d 1318, 1324-25 (Fed. Cir. 2012) (“The doctrine of claim differentiation is at its strongest in this type of case, ‘where the limitation that is sought to be ‘read into’ an independent claim already appears in a dependent claim’.”).

F. “cavity”

The intrinsic evidence supports Plaintiffs’ construction, as the specification repeatedly describes a cavity as a space formed for accommodating an element or object. *See, e.g.*, ’741 patent at 11:35-38 (“A feature of this particular embodiment is the presence of a cavity 78 that is **formed** in the display assembly 70 for the purpose of **accommodating** placement of an element or object 79 therein.”); 11:45-51 (“In this example, the cavity is **formed** within the second display layer 82 and the intermediate adhesive layer 74 and is configured to **accommodate** a desired element or object therein ...”); 13:6-9 (“Alternatively, a housing comprising a single material element construction can be first **formed** and then **modified** to include an internal cavity within which the electrical sensor device may be placed.”); 13:13-14 (“wherein a cavity is formed therebetween to contain the electrical sensor device”); 13:22-25 (“In this example, a first material element 94 and a second material element 96 have already been **formed** in a specific shape so as to create the internal cavity 38 when the two layers are affixed together ...”). For example, the elements or objects that can be accommodated in the cavity are “RFID elements, GPS elements, lighting elements such as LEDs or the like, and the like.” *Id.* at 11:51-54; *see also id.* at 13:5-11.

Revvo’s proposed construction, in contrast, finds no support in the intrinsic evidence, as nowhere does the specification describe the cavity as anything like “a hole or hollow space.” Nor does such a construction align with the specification’s description of the types of elements or objects that can be accommodated in the cavity, including electronic devices such as RFID, GPS, LED, or others. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (2005) (noting specification “is [] the primary basis for construing the claims” and is in most cases “the best source for understanding

a technical term.”). Not just any hole or hollow space can accommodate such objects or elements. For example, manufacturing of assemblies for attachment to a tire, unintentionally, can result in undesigned holes in which no object or element can be placed. *See Spangler Decl.* ¶¶ 44-46. But the “cavity” as described in the specification is intentionally “configured within the construction to provide an area capable of accommodating such an element or object without damaging the element or object, and without causing damage to the display assembly itself during use of the vulcanized rubber article that it is attached thereto.” ’741 patent at 11:54-59.

G. “direct contact”

The intrinsic evidence supports Plaintiffs’ construction, which is “bonded to.” The term in context of the claim language is “the intermediate layer is in *direct contact* with at least of the one or more display layers.” ’741 patent at claim 1. The claim language goes on to recite that “the one or more display layers and the intermediate layer are vulcanized together before attachment with the vulcanized rubber article.” *Id.* The claim language thus indicates that “direct contact” must accommodate vulcanization there.

The specification describes the intermediate layer and display layer as “bonded to” each other. *See id.* at 3:47-48 (“the display layers are vulcanized and bonded to a barrier layer ‘76”). That bond can be formed by a chemical bond. *Id.* at 6:26-31 (“the intermediate layer 24 be formed from a material capable of being chemically bonded to or vulcanized with the display layer 22.”). That chemical bond can be achieved by use of, for example, vulcanizing cement. *See id.* at 7:9-13; 7:26-29; 9:15-19; Mineur Decl. ¶ 32.

Nothing in the specification requires “nothing interposed between two surfaces,” as Revvo proposes, nor would a POSITA read in such a limitation when “bonded to” has plain meaning. *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364 (Fed. Cir. 1999) (“Courts do not rewrite claims; instead, [they] give effect to the terms chosen by the patentee.”); *Phillips*, 415 F.3d at 1312 (“it is

‘unjust to the public, as well as an evasion of the law, to construe [the claims] in a manner different from the plain import of its terms’’). For example, to the extent that the limitation “nothing” would preclude the use of vulcanizing cement to achieve the “direct contact” in the claim language, that would run afoul of both the claim language and the specification.

H. “before attachment with the vulcanized rubber article”/“before attachment to the vulcanized rubber article”

Claims 1 and 19 are proper apparatus claims. Claim 1 is directed to “A display assembly for attachment with a vulcanized rubber article.” Similarly, claim 19 is directed to a “vulcanized rubber tire” with a display assembly. Neither claim recites any step of attaching the assembly to the tire or vulcanized rubber article.

Claim 1 recites further details about the display assembly: “wherein the one or more display layers and the intermediate layer are vulcanized together before attachment with the vulcanized rubber article.” Similarly, claim 19 further recites a tire comprising “an intermediate layer ... vulcanized to at least one of the one or more display layers.” The claim language “vulcanized” is in the past tense. There is nothing in this claim language that recites a method step (verb) of “vulcanizing” as part of the apparatus. *See Mastermine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307, 1316 (Fed. Cir. 2017) (“While these claims make reference to user selection, they do not explicitly claim the user’s act of selection, but rather, claim the system’s capability to receive and respond to user selection.”); *Wago Verwaltungsgesellschaft MbH v. Rockwell Automation*, 2012 WL 775683, at *3 (N.D. Ohio Mar. 7, 2012) (“... this Court finds that the use of the gerund phrase ‘configuring the device’ in the ’241 Patent is permissible functional language. It speaks to the modularity of the apparatus — a hardware characteristic — rather than an act performed...”).

I. “(a) housing”

The specification supports Plaintiffs’ “protective cover” construction by repeatedly

describing that the housing protects the sensor device when inside the housing and places no limitations on the construction of the housing. *See, e.g.*, '421 patent at 13:34-38 (“Regardless of the construction, the material used to form the sensor assembly housing 12 as disclosed herein is one that is specifically and intentionally designed to **protect** the integrity and functionality of the electrical sensor device 40 that is **disposed therein** ...”); 13:46-51 (“A feature of the material selected for forming the housing 12 is that such material operates to **protect** the electrical sensor device 40 **disposed within** the internal cavity 38 from contaminants such as oils and moisture, extreme temperatures, and forces such as acceleration, load, vibration, etc., that may be encountered during use within a dynamic object such as a vehicle tire.”).

First, Revvo’s proposed limitation of a “casing that surrounds” limitation – seemingly requiring that the casing completely surround on all sides, top and bottom – is refuted by the intrinsic evidence. Nowhere does the specification use any form of the word “casing,” “case” or the like, with whatever additional limitations Revvo may be seeking to impose by such terms. Further, Revvo’s “surrounds” limitation appears to require a bottom section (or flooring) for the housing. But none of the claims with the “housing” term (claims 1, 28 and 41) recite any “bottom” or any form of the word “surround” with regard to a housing. Rather, such optional additional limitations of a housing are recited only in dependent claims. *See id.* at claim 3 (“3. The sensor assembly as recited in claim 1, wherein the housing comprises a top cover, a wall structure, and a base section that define the internal cavity”). *See InterDigital Communs.*, 690 F.3d at 1324-25.

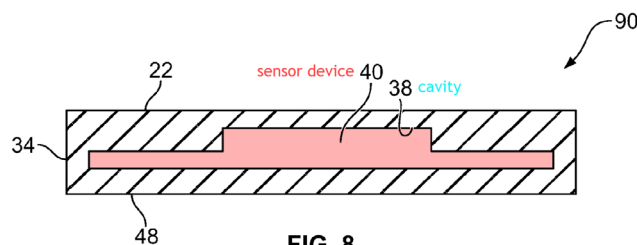
Moreover, the specification describes, for example, an opening in the housing to provide air flow from the external environment to the internal cavity inside the housing, which belies Revvo’s position that the housing “surrounds” the sensor device. *Id.* at 14:22-28 (“With reference to FIGS. 1 and 2, the sensor assembly 10 comprises the housing 12 that is configured to include

an opening 98 positioned along the top cover 22. The opening 98 is configured and positioned to enable air outside of the housing to reach the internal cavity 38 and the electrical sensor device 40 disposed therein.”); 14:41-47 (“FIG. 10 illustrates an example sensor assembly housing 120 that includes a top cover 22 configured to include an opening 98 therethrough ...”).

Second, there is no support in the intrinsic record for Revvo’s attempt to limit the housing to be “configured with surface features that mechanically fix and retain the placement position of the sensor device.” The claims and specification examples show that such surface features are not an intrinsic or necessary part of the “housing” terms. For example, claim 1 recites “a housing” but does not recite any such surface features. Instead, claim 5, which depends on claim 1, recites surface features, but does not say they are part of the housing. *Cf. id.* at claim 5 (“5. The sensor assembly as recited in claim 1, wherein the electrical sensor device is attached within the internal cavity by one or more surface features within the cavity that contact the electrical sensor device to retain its position therein.”). On the other hand, Claim 28 recites “one or more surface features of the housing.” These differences illustrate that surface features need not be part of the “housing” but rather are one example. *Id.* at 4:20-24 (“In an example, the electrical sensor device is mechanically attached within the internal cavity by one or more surface features ...”).

Third, there is no support for Revvo’s proposed limitation of “does not use or require the use of any coating or filling agents or materials.” Although the specification describes in certain examples that “surface features” may be used to retain the sensor device in the housing without the need for coatings or filling agents or materials to do so, the specification distinguished the prior art “common technique used to assist in fixturing the electrical sensor device 40 known within the automotive industry is to fill the internal cavity with a coating material such as a neutral silicone or the like for purposes of retaining placement position.” *Id.* at 13:56-60. Put another way, the

patent actually distinguishes the prior art that lacked any such surface features and **only** relied on coatings or filling agents or materials to prevent movement of the sensor device. *See id.* Contrary to Revvo’s argument, the “unfilled open space” term itself indicates that only a portion of the internal cavity in the housing may be coated or filled. *See, e.g., id.* at Claim 1 (“unfilled open space above or below the electrical sensor device in the housing”). The specification describes encapsulation examples, which demonstrate that the term can include injection molded coatings or filling agents or materials. *See id.* at 4:26-29 (“In an example, the electrical sensor device may be encapsulated by the inner cavity of the housing during a process of making the housing that operates to retain the position of the electrical sensor device within the housing.”); (“FIG. 8 illustrates an example sensor assembly housing 90 formed from ... encapsulating the electrical sensor device 40, e.g., during an injection molding process or the like.”). Indeed, Figure 8 depicts the sensor device 40 (red) fully encapsulated without any open space, e.g., coated or filled during an injection molding process:



There can be no disclaimer of the use of both surface features and filling agents because that structure (or a similar structure) was not discussed in the patent specification or its file history, and Revvo does not argue otherwise. But even if it had been, merely contrasting such “surface features” with filling agents or materials that entirely fill a housing is not a disclaimer or disavowal of any and all uses of such filling agents or materials along with the claimed “surface feature[s].” *See Applications in Internet Time, LLC v. Salesforce, Inc.*, 2024 WL 4456271, at *4 (Fed. Cir. Oct.

10, 2024) (“[T]he Background section’s criticism of the prior art for failing to use intelligent agent routines similarly fails to limit the claim scope ...”); *Continental Circuits v. Intel Corp.*, 915 F.3d 788, 797-798 (Fed. Cir. 2019) (“... We have held that ‘[m]ere criticism of a particular embodiment ... is not sufficient to rise to the level of clear disavowal.’ Thus, comparing and contrasting the present technique to that of the prior art does not ‘rise to the level of [a] clear disavowal’...”).

J. “internal cavity”

The specification supports Plaintiffs’ construction of “an open space inside of the housing” as it repeatedly describes disposing an electrical sensor device in that space, for example, “An electrical sensor device may be disposed within the housing internal cavity.” ’421 patent, 4:14-15; *accord, e.g., id.* at 6:49-51 (“An example method for using pressure assemblies and sensing systems as disclosed herein comprises installing the electrical sensor device within the housing internal cavity”); 8:62-64 (“Generally, sensor assemblies as disclosed herein are configured to both accommodate attachment of a desired electrical sensor device within a housing internal cavity”). The electrical sensor device may or may not fill that open space. *Id.* at 4:24-25 (“wherein an open space exists above and below the electrical sensor device within the internal cavity”); claim 31.

First, Revvo’s proposed limitation of “surrounded by” the housing fails at least for the same reasons discussed above for the claim term “(a) housing.” Furthermore, Revvo improperly seeks to impose a limitation of the housing when the term here at issue is “internal cavity.”

Second, Revvo’s proposed limitation of the term “internal cavity” as “not included as part of” the housing is refuted by that intrinsic evidence. The specification describes examples of a “slot or recessed groove” that is part of the housing; such slot or recessed groove is part of the internal cavity for receiving the sensor device. For example, the specification describes, with regard to Figure 3, “[t]he housing 12 includes an internal cavity 38 that is disposed within the top cover 22 and wall structure 34 and that is specially configured to accommodate placement of one

or more electrical sensor device 40 therein.” *Id.* at 10:17-21. The housing wall structure “includes an inside wall surface 42 comprising a surface feature 44 that is specially configured to accommodate and retain placement of the electrical sensor device 40 therein.” *Id.* at 10:21-24. That surface feature 44 is “in the form of a slot or recessed groove that extends laterally along the wall structure inside surface 42 and that is configured to accommodate placement of a peripheral edge 46 of a component of the electrical sensor device 40, *e.g.*, a printed circuit board or the like, therein to thereby ensure secure fitment of the electrical sensor device 40 within the housing internal cavity 38.” *Id.* at 10:24-32. The specification thus describes and depicts an internal cavity 38 that includes a slot or recessed groove 44 (pink), which is formed in the housing wall, contrary to Revvo’s limitation of “not included as part of” of the housing. *See supra*, Section II.B; *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) (a construction that reads out a preferred embodiment “is rarely, if ever, correct and would require highly persuasive eviden[ce]”).

K. “enclosed/enclosed within the housing”

The intrinsic evidence supports Plaintiffs’ construction of surrounded “within” the housing. *See, e.g.*, ’421 patent at 4:5-8 (“The sensor assembly may comprise a housing having an outer surface and an internal cavity that is enclosed ***within*** the housing.”).

First, Revvo’s attempt to add a “surrounded on all sides” requirement is refuted by the specification. As discussed above for “(a) housing”, *supra* at Section III.I, the specification describes, for example, an opening in the housing to provide air flow from the external environment to the internal cavity inside the housing. *Id.* at 14:22-28; 14:41-47.

Second, Revvo’s proposed limitation of “by the ‘housing’” is an improper re-writing of the claim language, which is “within” (not “by”) the housing. *Id.* at claim 1 (“a housing comprising an outer surface and an internal cavity that is enclosed within the housing”). The “within” claim language captures an example in the specification, whereas the “by” limitation proposed by Revvo

is in another example. *Compare id.* at 4:5-7 (“The sensor assembly may comprise a housing having an outer surface and an internal cavity that is enclosed **within** the housing.”) *with id.* at 6:49-55 (“An example method for using pressure assemblies and sensing systems as disclosed herein ... the electrical sensor device placement is mechanically fixed therein and the electrical sensor device is surrounded **by** the housing, and attaching the housing to the retaining member.”). The difference between “by” and “within” matters because “by the housing” is one of the many misplaced limitations Revvo seeks to impose on the “housing” structure, whereas “within the housing” includes, for example, a housing without a bottom or with an opening in the housing to provide air flow from the external environment to the internal cavity, as described in the specification. *Falana v. Kent State Univ.*, 669 F.3d 1349, 1354–55 (Fed. Cir. 2012) (“[T]his court has cautioned against limiting the claimed invention to preferred embodiments or specific examples ...”).

L. “unfilled open space”/“open space”

The intrinsic evidence supports Plaintiffs’ construction of “a space without filling agents or materials,” as the specification, for example, repeatedly describes an open space above or below the sensor device after the sensor device is placed within the housing. ’421 patent at 4:20-25 (“In an example, the electrical sensor device is mechanically attached within the internal cavity by one or more surface features ... **and wherein an open space exists above and below the electrical sensor device within the internal cavity.**”); *see also id.* at claim 31 (“... **wherein the internal cavity comprises an open space above or below** the electrical sensor device ...”). An example of this open space can be seen, for example, in Figure 10, wherein the sensor device 40 is placed within a larger cavity 38 (highlighted in blue), as shown *supra* at Section II.B. *See id.* at 14:41-47 (“FIG. 10 illustrates an example sensor assembly housing 120 that includes a top cover 22 configured **to include an opening 98 therethrough to permit air from the external environment**, e.g., the air within a pneumatic tire when the sensor assembly is disposed within a vehicle tire, to

access the internal cavity 38 and the electrical sensor device 40 disposed therein.”).

Revvo’s indefiniteness position for “unfilled open space” is refuted by these specification examples showing a space without filling agents or materials. *E.g.*, *Niazi Licensing*, 30 F.4th at 1349 (no indefiniteness based on “examples in the written description”). As discussed above for the “housing” term, in certain examples, the specification distinguishes prior art that lacked any surface features and *only* relied on filling agents or materials to completely fill an internal cavity and prevent movement of the sensor device. *See id.* at 12:41-46; 13:56-60; 13:60-63. It is in that context that the “unfilled” open space would be understandable. *See* Spangler Decl. ¶¶ 44-56.

Nothing in the specification requires that the “open space” be “empty,” as Revvo seeks. Not only does the specification never use the word “empty,” but it in fact describes examples that refute any such notion. For example, it describes a moisture barrier in a cavity. *See id.* at 14:47-52 (“In this example, the housing top cover 22 includes a cavity 124 that is downstream from the opening 98 and that includes a moisture barrier 100 disposed therein.”); *see also id.* at 14:37-40 (“In an example, the moisture barrier 100 may be in the form of a filter element or a molecular sieve, and may or may not be configured to be removable and/or replaceable.”). Revvo’s construction is contrary to the understanding of a POSITA. *See* Spangler Decl. ¶ 44-46.

M. “surface feature[s]”

The intrinsic evidence supports Plaintiffs’ proposed construction of “structure[s] on or of a surface.” For example, as described *supra* at Section II.B, the specification describes surface features, such as a groove or slot in the surface itself and thus are “of” the surface. *See* ’421 patent at 10:24-29. In another example, the specification describes surface features, such as ribs, tabs, or the like that extend radially outwardly from the surface and thus are “on” the surface. *Id.* at 10:40-46. For these reasons, Revvo’s proposed limitation of “feature(s) of a surface” is incorrect to the extent it seeks to exclude such disclosed structures as such ribs, tabs, or the like.

OF COUNSEL:

Christopher D. Bright
SNELL & WILMER
Plaza Tower
600 Anton Boulevard, Suite 1400
Costa Mesa, CA 92626-7689

Christopher Franich
SNELL & WILMER
Executive Center Del Mar
12230 El Camino Real, Suite 300
San Diego, CA 92130

Morgan R. Povinelli
SNELL & WILMER
2001 K Street NW
Suite 425 North
Washington, DC 20006

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MORRIS, NICHOLS, ARSHT & TUNNELL LLP

/s/ Karen Jacobs

Karen Jacobs (#2881)
Jennifer Ying (#5550)
E. Paul Steingraber (#7459)
1201 North Market Street
P.O. Box 1347
Wilmington, DE 19899
(302) 658-9200
kjacobs@morrisnichols.com
jying@morrisnichols.com
esteingraber@morrisnichols.com

*Attorneys for Cerebrum Sensor Technologies, Inc.
and Tire Stickers LLC.*

CERTIFICATE OF SERVICE

I hereby certify that on December 3, 2025, copies of the foregoing were caused to be served upon the following in the manner indicated:

Kelly E. Farnan, Esquire
Sara M. Metzler, Esquire
RICHARDS, LAYTON & FINGER, P.A.
One Rodney Square
920 North King Street
Wilmington, DE 19801
*Attorneys for Defendant Revvo Technologies,
Inc.*

VIA ELECTRONIC MAIL

Reuben H. Chen, Esquire
COOLEY LLP
3175 Hanover Street
Palo Alto, CA 94304-1130
*Attorneys for Defendant Revvo Technologies,
Inc.*

VIA ELECTRONIC MAIL

Adam M. Pivovar, Esquire
Rachel L. Preston, Esquire
COOLEY LLP
1299 Pennsylvania Avenue NW, Suite 700
Washington, DC 20004-2400
*Attorneys for Defendant Revvo Technologies,
Inc.*

VIA ELECTRONIC MAIL

/s/ Karen Jacobs

Karen Jacobs (#2881)