



UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NJOY, LLC and NJOY HOLDINGS, INC.,
Petitioners,

v.

JUUL LABS, INC.,
Patent Owner

Case No. IPR2024-00231
U.S. Patent No. 10,130,123

**PETITIONERS' REPLY TO
PATENT OWNER'S RESPONSE**

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PETITIONERS' EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 10,130,123 (“123 Patent”)
1002	123 Patent File History
1003	Expert Declaration of Joseph C. McAlexander ^{III}
1004	U.S. Patent Publication No. 2015/0245658 (“Worm”)
1005	U.S. Patent Publication No. 2016/0128389 (“Lamb”)
1006	U.S. Patent Publication No. 2015/0020831 (“Weigensberg”)
1007	U.S. Patent No. 8,528,569 (“Newton569”)
1008	U.S. Patent Publication No. 2014/0000638 (“Sebastian”)
1009	U.S. Patent No. 8,499,766 (“Newton766”)
1010	WO 2012/142293 (“Levitz”)
1011	U.S. Patent No. 8,375,957 (“Hon957”)
1012	U.S. Patent Publication No. 2014/0174458 (“Katz”)
1013	U.S. Patent Publication No. 2014/0261495 (“Novak”)
1014	U.S. Patent Publication No. 2017/0318861 (“Thorens II”)
1015	U.S. Patent No. 9,801,415 (“Tu”)
1016	U.S. Patent Publication No. 2014/0318559 (“Thorens”)
1017	EP0277519 (“Roberts”)
1018	EP2110034 (“Fernando”)
1019	U.S.I.T.C. Investigation No. 337-TA-1368, Joint Claim Construction Chart
1020	MS5637-02BA03 Data Sheet
1021	WO 2015/153443 (“Henry”)
1022	U.S. Patent Publication No. 2016/0374397 (“Jordan”)

Exhibit No.	Description
1023	U.S. Provisional Pat. No. 62/184,569
1024	EP1736065 (“Hon065”)
1025	<i>Reserved</i>
1026	Honeywell 160PC Low Pressure Datasheet
1027	Curriculum Vitae of Joseph C. McAlexander ^{III}
1028	U.S. Patent Publication No. 2014/0150810 (“Hon810”)
1029	Screen shots of Internet Archives webpages for Honeywell website on November 27, 2004 with Model 163PC01D36 datasheet
1030	Screen shots of Internet Archives webpages for Measurement Specialties website on August 12, 2013 with MS5637-02BA03 datasheet, dated May 22, 2013
1031	<i>JUUL Labs, Inc. v. NJOY, LLC</i> , No. 23-cv-01204 (D. Ariz.) Docket (retrieved Nov. 13, 2023)
1032	U.S. Patent No. 8,205,622 (“Pan622”)
1033	U.S. Patent Publication No. 2013/0228191 (“Newton191”)
1034	JLI-NJOY-ITC1368-01326346
1035	JLI-NJOY-ITC1368-01935331
1036	Transcript from Deposition of James Monsees in Inv. 337-TA-1368
1037	Transcript from Deposition of Adam Bowen in Inv. 337-TA-1368
1038	Levitz Annotated Figures 16 and 18, Ex. 1038 of Deposition Transcript of John Collins, IPR2024-00231, dated Nov. 7, 2024
1039	Declaration of Dr. John M. Collins, IPR2014-01300, dated Aug. 15, 2014
1040	Deposition Transcript of John Collins, IPR2024-00231, dated Nov. 7, 2024
1041	Excerpts from Mark’s Mechanical Engineering Handbook



Exhibit No.	Description
1042	Declaration of Ingrid Hsieh-Yee, Ph.D. regarding Excerpts from Mark's Mechanical Engineering Handbook
1043	Declaration of Joseph C. McAlexander III In Support of Petitioners' Reply To Patent Owner's Response
1044	Patent No. USD 825,102
1045	Excerpts of Initial Determination, Inv. No. 337-TA-1368, dated Aug. 23, 2024
1046	Excerpts from Petitioner for Inter Partes Review, IPR2024-00160, dated Nov. 8, 2023
1047	Excerpts from Petitioner for Inter Partes Review, IPR2024-00161, dated Nov. 8, 2023
1048	RX-1245
1049	U.S. Patent No. 10,709,173
1050	U.S. Patent No. 11,134,722
1051	U.S. Patent No. 11,606,981



I. GROUND 1: WORM

A. Worm Anticipates

Contrary to Patent Owner’s (“PO”) arguments, anticipation is properly found from multiple embodiments where the reference “teach[es] that the disclosed elements may be combined” such that a POSA could implement the combination as a single embodiment. *Hayward Indus. v. Pentair Water Pool & Spa, Inc.*, 814 Fed. Appx. 592, 597 (Fed. Cir. 2020); *see also* 2020 Pat. App. LEXIS 10386, *21-22 (PTAB Oct. 1, 2020) (finding a reference can direct a POSA to use features of embodiments in combination for anticipation). In contrast, the Court in *Net MoneyIN*, which PO relies on, determined there could be no anticipation because the prior art disclosed “two ***mutually exclusive*** payment models.” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1363 n.1 (Fed. Cir. 2008).¹

Worm’s disclosure satisfies the standard for anticipation based on multiple embodiments/figures. Worm Figure 2 is an overview of the device, which is “***representative*** of the components...and are not intended to limit the scope...” EX1004, ¶¶[0014], [0053].

¹ Emphasis added unless otherwise indicated.

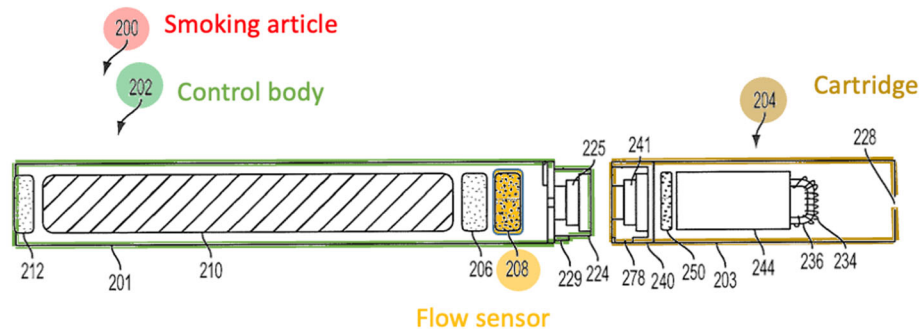


FIG. 2

EX1004, Fig. 2 (annotated)

Figures 5 and 7 provide a more detailed view of Figure 2's structure and illustrate structural variations in implementing internal components. *See* EX1040, 73:1-18 (Figures 5-7 disclose similar geometries and air inlets); EX1043, ¶¶19-23; EX1004, ¶¶[0014], [0017], [0020].

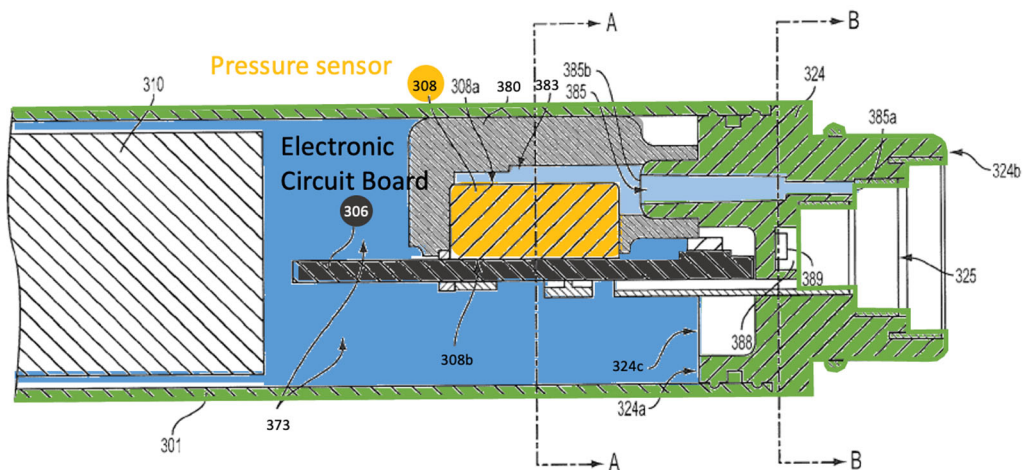
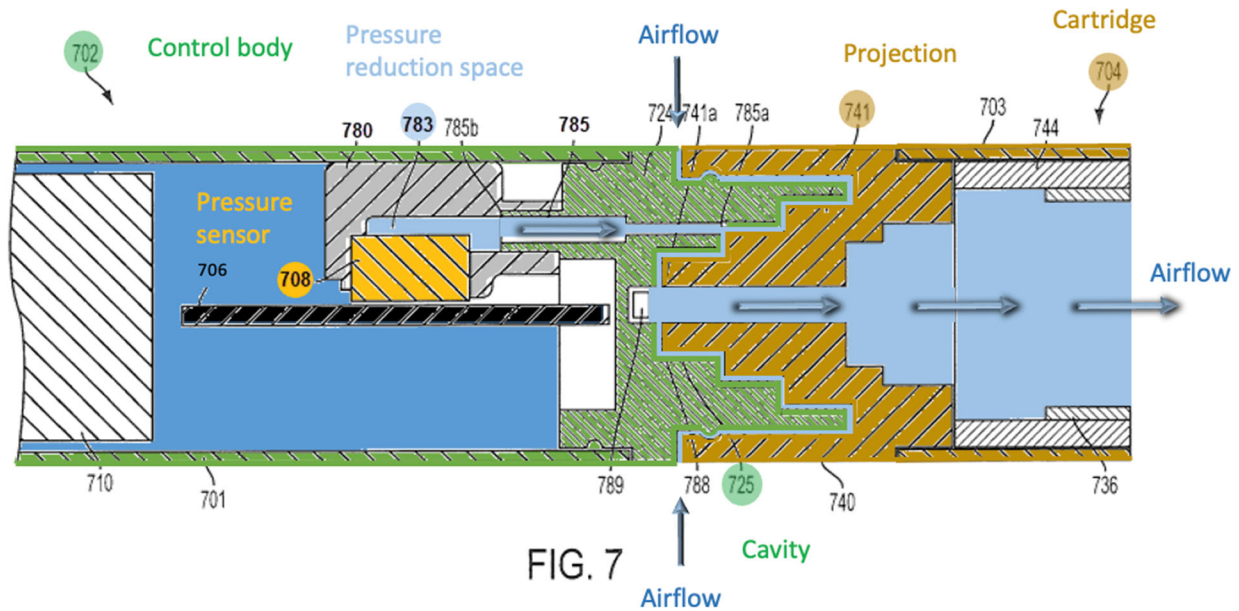


FIG. 5



EX1004, Figs. 5, 7 (annotated)

Indeed, cartridge components and airflow in Figure 2 are incorporated into the description of Figure 5, and Figure 7 is a “further illustrat[ion]” of the “[t]he spatial relationship of the air inlet channel and the first end of the pressure channel” of Figure 5. EX1004, ¶¶[0067], [0072]-[0074].

Figures 5 and 7 are not distinct from Figure 2, but are more detailed drawings illustrating examples of a cartridge and control body for the same vaporizer shown in Figure 2. EX1043, ¶¶17-23. Worm itself states that, the disclosed device “*can encompass a variety of combinations of components* useful in forming an electronic aerosol delivery device” (EX1004, ¶[0040]), and that “modifications and other embodiments are intended to be included within the scope of the appended claims” (*id.*, ¶86). These disclosures are compelling indicators that Worm’s features can

[REDACTED]

apply across similar embodiments for anticipation. *Hayward Indus.*, 814 Fed. Appx. 592, 597 (finding anticipation where prior art stated that embodiments “may be combined”); *Victaulic Co. v. Iancu*, 753 Fed. Appx. 895, 899-900 (Fed. Cir. 2018) (finding anticipation because the “disclosures expressly teach various combinations”). Accordingly, the combination of Figures 2, 5, and 7 is proper for anticipation. EX1043, ¶¶17-26.

PO’s sole argument that the embodiments are “disparate” is that Figure 2 discloses a “flow sensor” (208) while Figures 5 and 7 disclose a “pressure sensor” (308/708). POR, 59. The consistent number ending in “08,” however, indicates that these are not distinct components. Indeed, a flow sensor can be a pressure sensor. EX1005, ¶¶[0026], [0043] (describing that “flow sensor 110” is a “MEMS pressure sensor”); EX1043, ¶¶24-26. Moreover, PO relies on Figures 2 and 5 to interpret Figure 7, thus demonstrating that the embodiments are not disparate. *See* POR, 60-62, 68-69; EX2053, ¶¶4 3, 45, 56. Accordingly, PO’s argument that Figure 2 is disparate from Figures 5 and 7 is baseless. EX1040, 73:1-22.

B. Worm Discloses a “Sealed Air Flow Path”

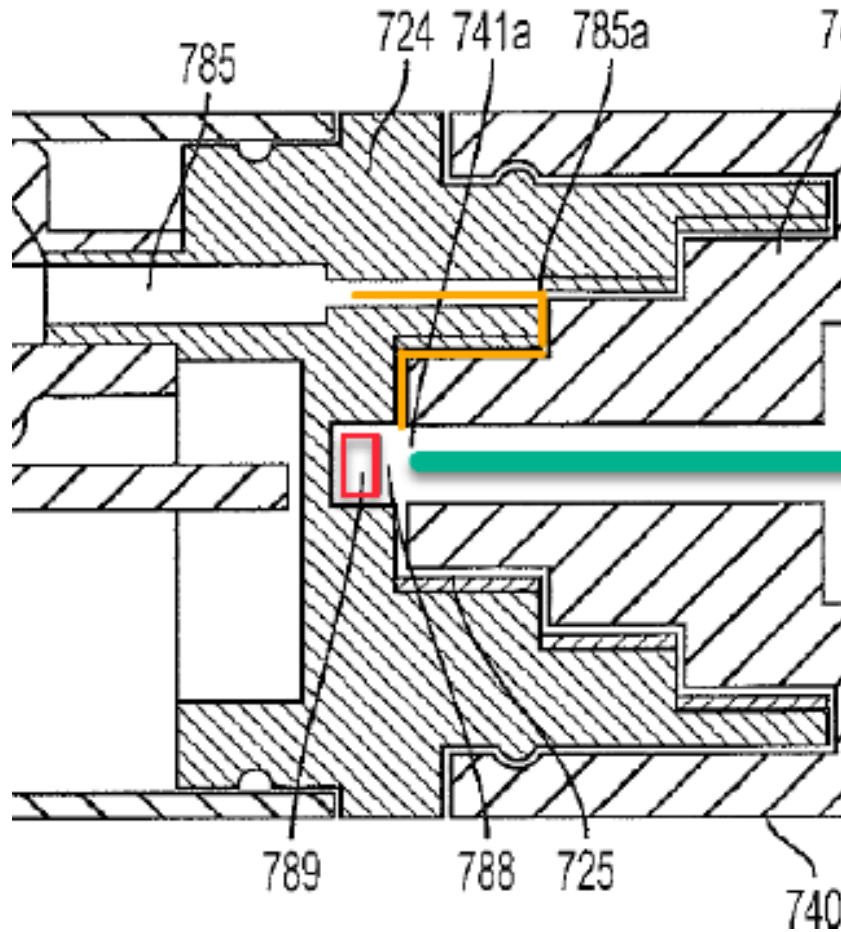
Worm’s Figure 7 depicts a gap that begins at the periphery between the control body 702 and cartridge 704. Air enters this gap, passes to the heater, and exits via a mouthpiece. EX1004, ¶¶[0063]-[0064], [0076], [0077], [0127]; EX1043, ¶¶27-42.

1. Worm's Sealed Airflow Path Is Not Limited To Air Inlets 389/789

PO incorrectly contends that air only enters via air inlets 389/789. POR, 59-60. Worm discloses that air inlets 389/789 are optional. EX1004, ¶[0069]. These inlets also only appear in Worm's dependent claims. *See, e.g.*, EX1004, cl. 8. Moreover, Worm expressly discloses that the cavity-projection interface is not airtight as explained below. EX1004, ¶[0076] ("The matched configuration of the cavity 725 and the projection 741 preferably does not substantially form an air tight connection...."); EX1043, ¶¶27-28.

2. Worm's Gap Is Not Airtight

PO does not dispute that Figure 7 illustrates a gap or that at least a portion of the gap is not air-tight (illustrated in orange below). POR, 64-65; EX1004, ¶[0076]; EX1040, 70:5-10, 71:3-6.



POR, 65

PO contends, however, that as to the remaining gap portion, “patent figures are not intended to convey specific dimensions or sizes.” POR, 63 (citing *Hockerson-Halberstadt*, 222 F.3d at 956). But, “a patent drawing may serve as prior art ‘without referring to the surrounding description’ if ‘the prior art features are clearly disclosed by the drawing.’” *Unified Patents, LLC v. Ocean Innovations LLC*, IPR2020-01463, 2022 WL 500391, at *17 (PTAB Feb. 14, 2022); *Cummins-Allison Corp. v. SBM Co., Ltd.*, 484 F.App’x 499, 507 (Fed. Cir. 2012) (permitting reliance on a figure to demonstrate relative dimensions).

Here, Worm illustrates a uniform gap along its entire length, which unambiguously conveys that it is dimensioned to communicate airflow along its entire length—confirmed by Worm’s disclosure that the cavity-projection interface is not airtight. EX1004, ¶[0076]; EX1043, ¶¶29-31.

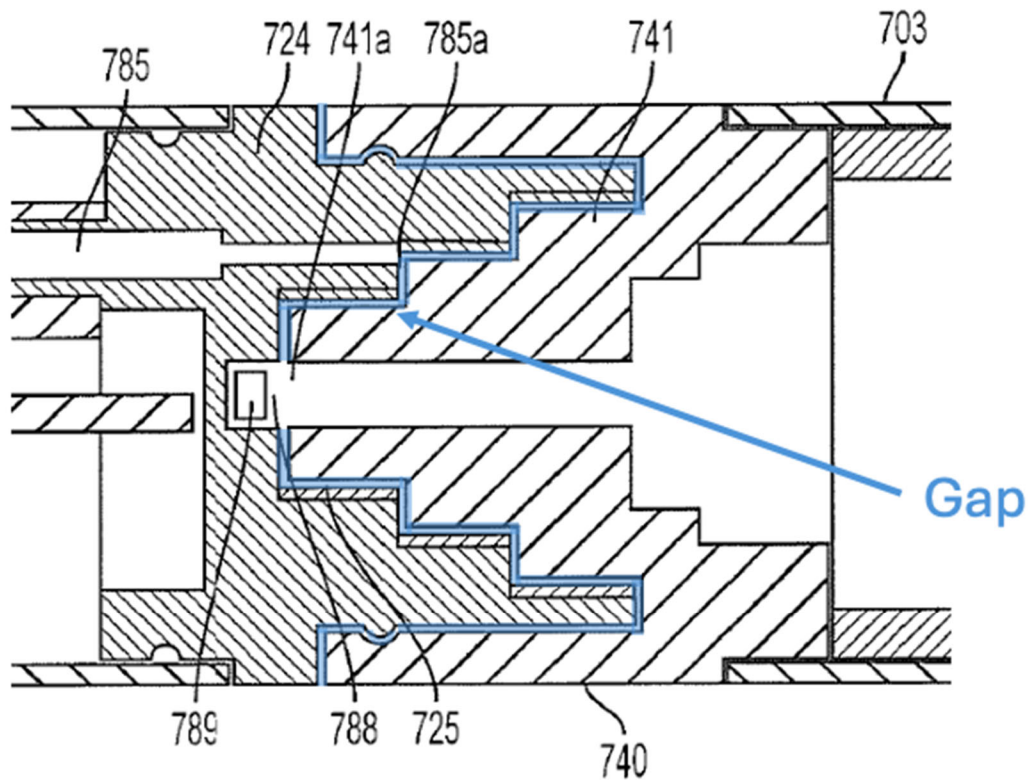


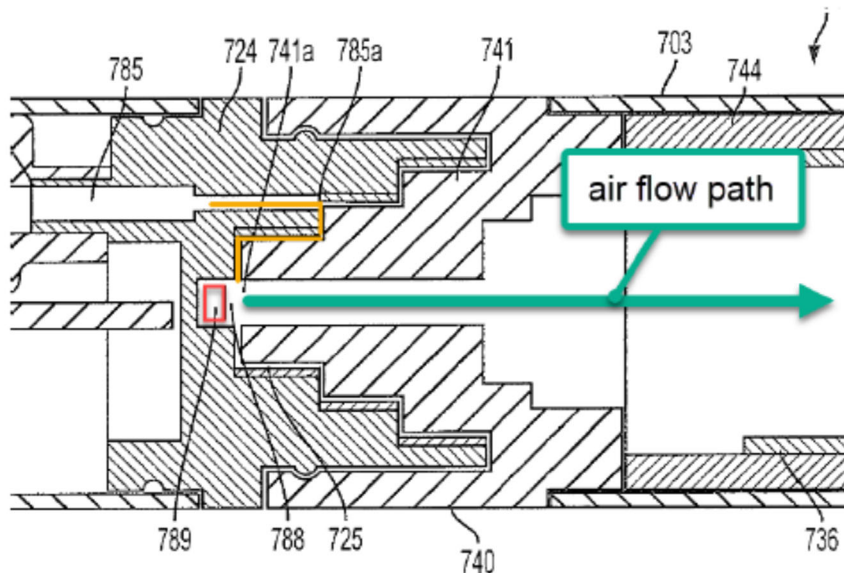
FIG. 7

EX1004, Fig. 7 (annotated)

The interface between Worm’s cavity and projection satisfies the sealed airflow path limitation even if it is not the only air inlet and even if only a small percentage of air enters. PO’s dismissal of Figure 7 is also at odds with its position in IPR2024-00160 and IPR2024-00161, where PO relies exclusively on figures to

establish relative dimensions and uniform cross-sectional areas of airflow passageways. EX1046.004-.005; EX1047.003-.004, .006-.007.

PO nonetheless argues that the interface would be sealed between channel 785 and the periphery because there is no reason for air to flow further than the orange path below. POR, 64.



POR, 65

However, Worm has no such disclosure and specifically recites that the interface is *not airtight*. EX1004, ¶[0076]. EX1043, ¶31.

PO further argues that air does not flow from the periphery because the pressure channel is an “isolated segment of the device.” POR, 64. But the pressure channel remains isolated even if air flows through the entire interface because air does not flow through the pressure channel. EX1043, ¶32.

PO also alleges that the winding cavity-projection interface prohibits exterior



air from entering the gap, and analogizes the interface to a labyrinth seal. POR, 65-66. But labyrinth seals are well known to be *non-contacting seals* (*i.e.*, they have gaps) that permit airflow therethrough, as described in Mark’s Standard Handbook for Mechanical Engineering. EX1041, 28 (“[W]here it is desirable to *eliminate all rubbing contact*, the *labyrinth seal...is chosen. This seal is not fluid-tight* but restricts a serious flow....”); EX1042, ¶46; EX1040, 29:19-30:6 (PO’s expert testifying that Mark’s Standard Handbook would have been known to a POSA). Moreover, an airflow path embodiment in the 123 Patent specification includes numerous turns according to the arrows shown below, yet still provides required airflow according to PO’s expert. EX1040, 42:10-17.

FIG. 10A

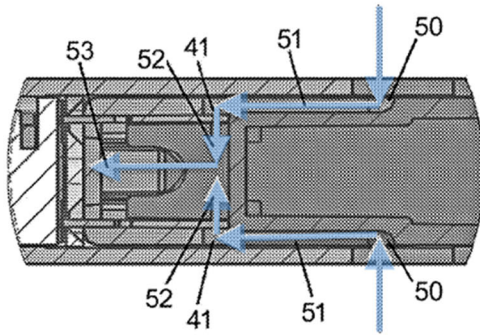


FIG. 10B

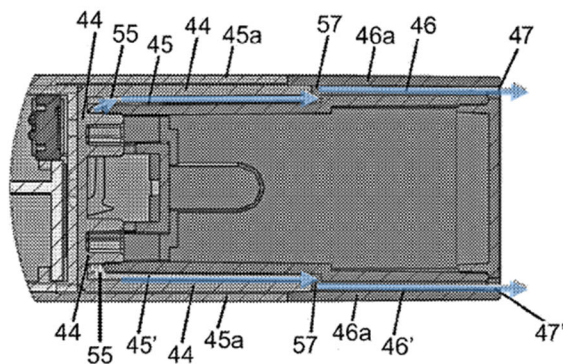
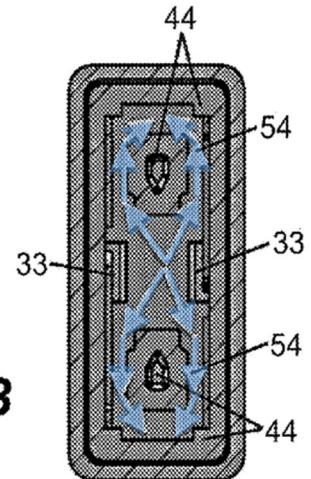


FIG. 10C

EX1001, Figs. 10A-C (annotated)

EX1001, Figures 10A-C, 13:40-41; EX1040, 34:3-42:16; EX1043, ¶33.

PO also alleges that Worm's electrical connections prevent air from flowing through the gap. POR, 61-62, 68-69. But at deposition, PO's expert admitted that Worm's electrical connections do not seal the gap. EX1040, 69:20-71:13. Otherwise Worm would be inoperable because channel 785 would be isolated from the negative pressure drop. EX1043, ¶¶34-35. Thus, there is no basis to conclude that Worm's

other electrical connections form an airflow-blocking seal.²

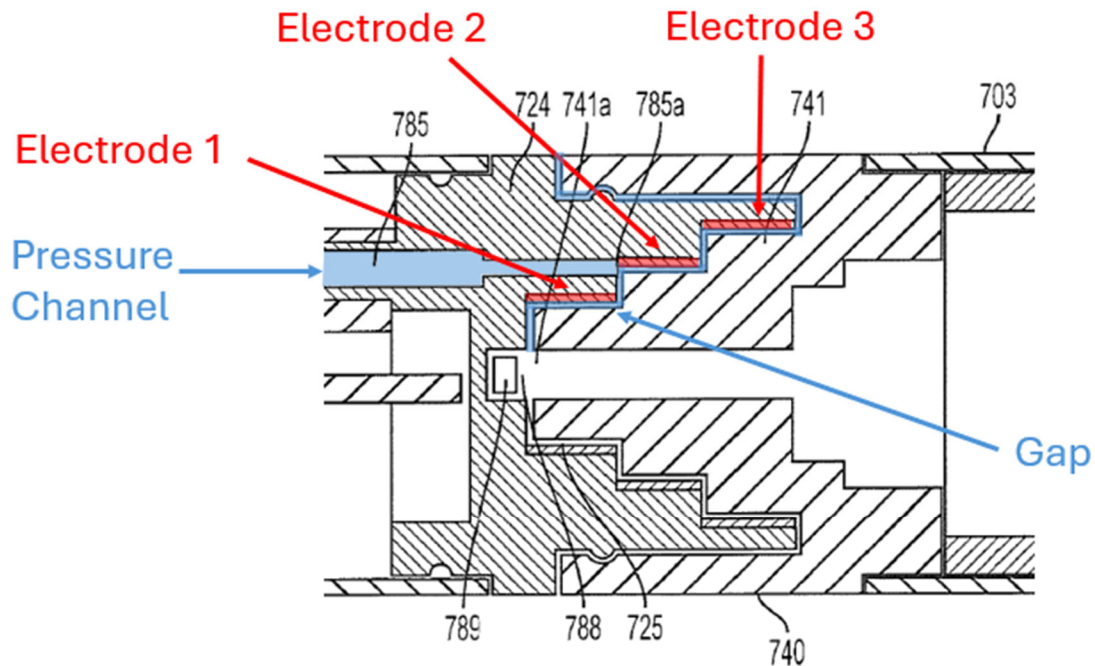
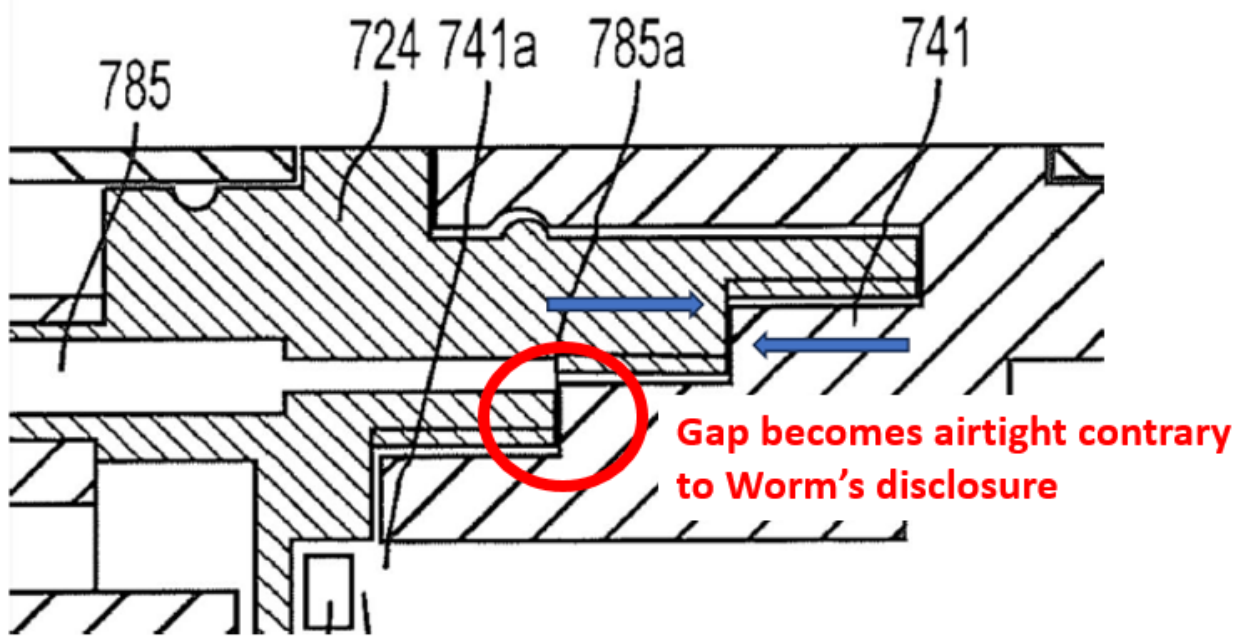


FIG. 7

EX1004, Fig. 7

PO also incorrectly alleges that the gap seals under negative pressure caused by a draw. POR, 66-67.

² The JUUL System, for example, includes electrical connections in the sealed airflow path that do not block airflow. EX1040, 84:14-2.



POR, 67 (annotated in red)

First, *there is no such disclosure in Worm*. Second, if the gap seals during a draw as PO alleges, pressure channel 785 would be isolated from all airflow, which is contrary to Worm's disclosure that the gap is not airtight. EX1004, ¶[0076]. Third, a detent structure in each Worm embodiment secures the cartridge to the device, which would maintain the non-airtight interface without blocking air flow. See EX1004, ¶[0057] (disclosing a detent structure in Figure 2 that can be one or more protrusion/recess pairs); EX1043, ¶¶36-38.

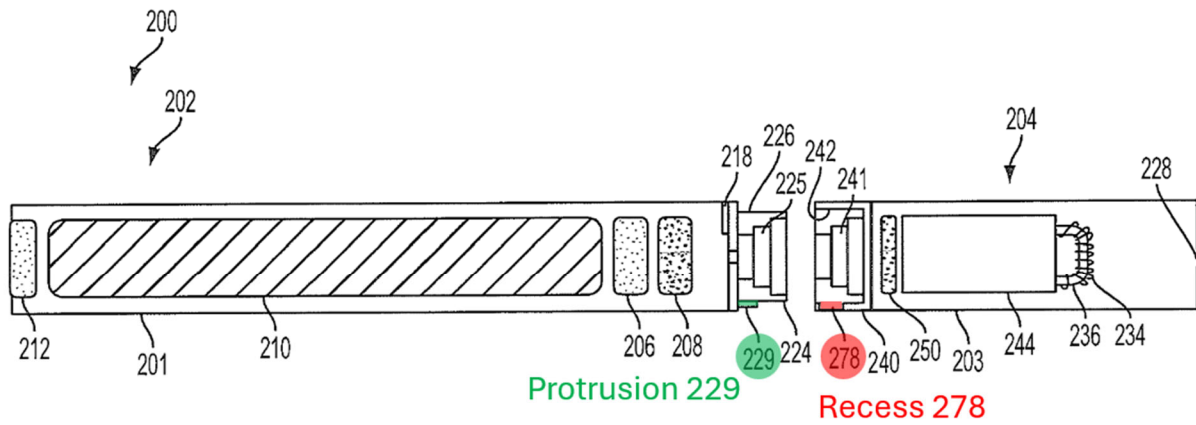


FIG. 2

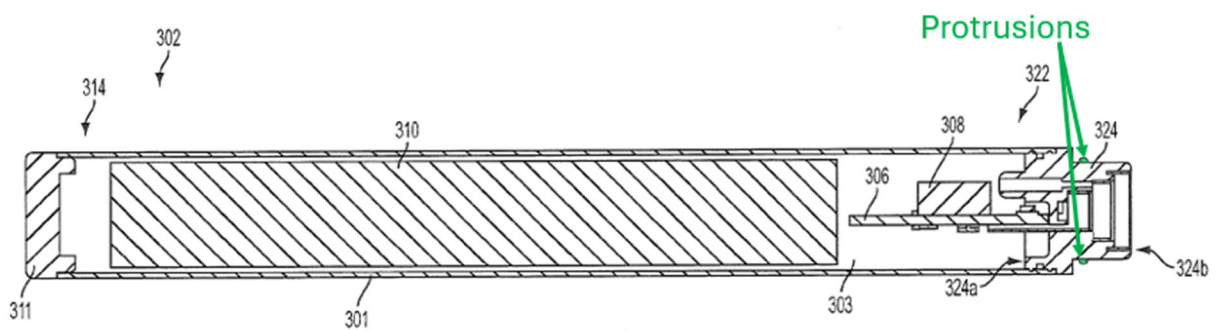


FIG. 3

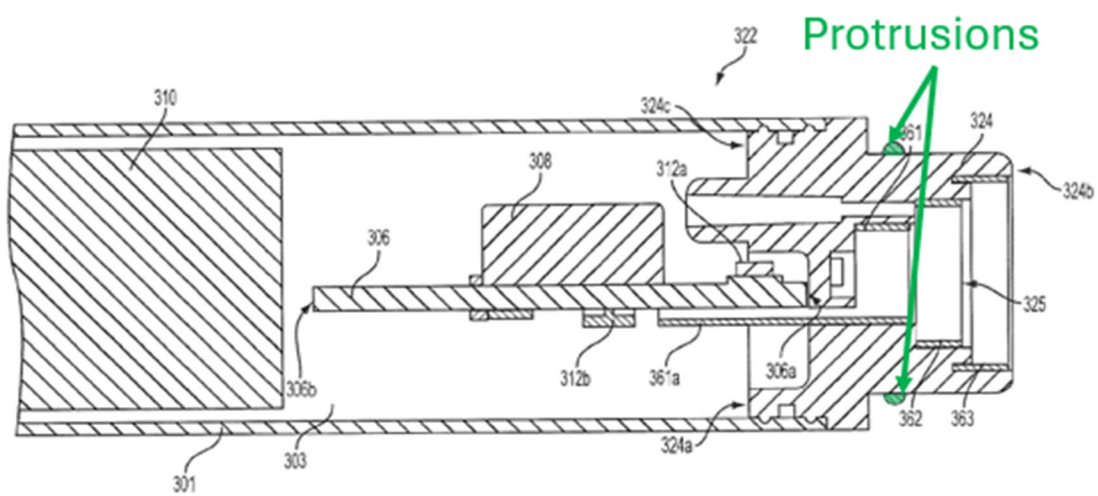


FIG. 4

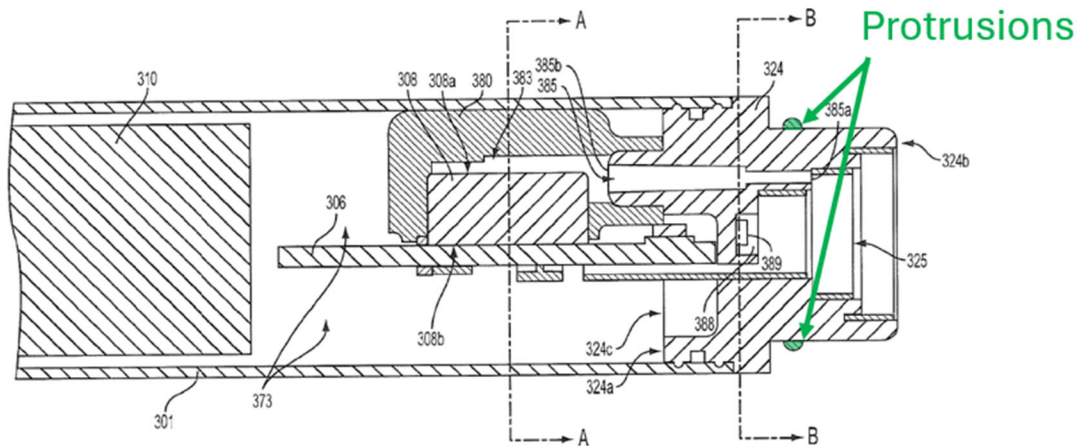


FIG. 5

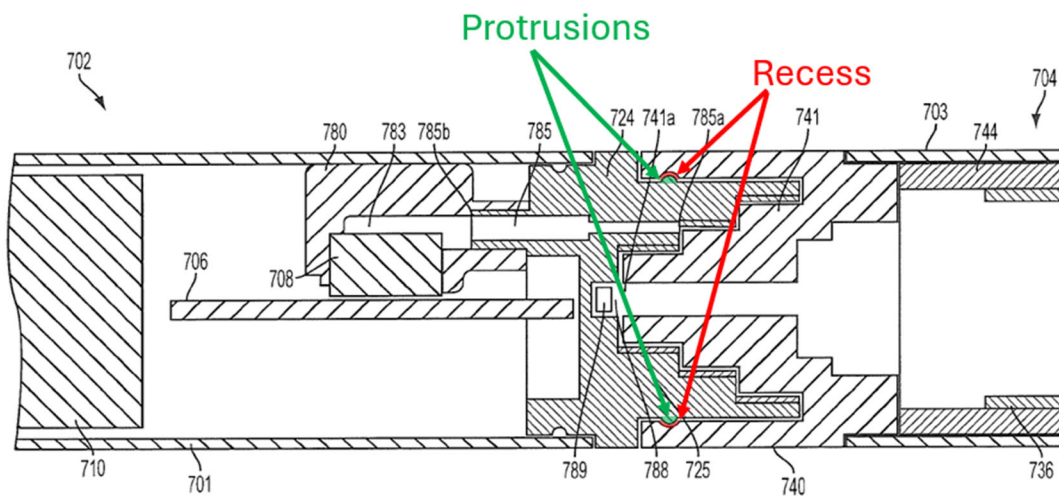


FIG. 7

EX1004, Figs. 2-5, 7 (annotated)

3. Worm's Airflow Is Not Difficult To Control

PO also incorrectly argues that little air flows into the gap because it is the “smallest area limiting airflow.” POR, 66. First, PO’s expert admitted that a POSA would know how to properly size such passages in a vaporizer to achieve the desired

[REDACTED]

airflow.³ EX1040, 51:13-16, 79:19-80:10. Second, Figure 7 depicts only the gap's length and width, not its depth. Accordingly, PO cannot know whether the gap is the smallest limiting airflow. Third, Worm affirmatively states that interface is not airtight. EX1004, ¶[0076].

PO also argues that the gap variability affects vapor formation and draw resistance. POR, 68, 70-72. This argument fails—PO's expert admitted that a POSA would have known how to design and manufacture the passages "to create a resistance that is —results in a pleasant use cigarette, e-cigarette." EX1040, 42:4-44:1. Moreover, PO's assertions concerning the importance of minimizing variation is overstated. For example, PO's founder and designer of the JUUL System considered the interface gap in the JUUL System to be a "flawed" design. EX1048. Indeed, although PO contends that the JUUL System is "tightly controlled," its [REDACTED]

[REDACTED]

[REDACTED]. EX2003, 26; EX1043, ¶¶40-42. Yet even with this substantial variation, PO considers the device successful. POR, 19. But even if the airflow through the interface is less optimal, that is irrelevant for anticipation. *Impax Labs. v. Aventis Pharm. Inc.*, 468 F.3d 1366, 1383 (Fed. Cir. 2006) ("[A]...reference does

³ A POSA necessarily is capable of sizing airflow channels because the 123 Patent fails to disclose any such dimensions. EX1040, 42:4-9.

[REDACTED]

not have to be ‘effective’ to be enabling and thus anticipating.”).

II. GROUND 2: WORM RENDERS OBVIOUS CLAIMS 14, 27, AND 32

In addition to the arguments above, PO argues for Ground 2 that Worm cannot render obvious the claimed sealed airflow path because (1) there is no motivation to use Worm’s interface as an additional air source and (2) a POSA would not have been motivated to use the gap for airflow because it is “impossible” to control. POR, 70. Both arguments fail.

First, Worm discloses that air inlets 789 are only “[i]n some embodiments.” EX1004, ¶[0069]. For embodiments without air inlets 789, Worm is not a “fuming” device as PO contends. EX1043, ¶45. Regardless, PO’s expert admitted that, even in “fuming devices,” an air inlet is required. EX1040, 103:4-13. PO’s expert also opined in another IPR that a POSA “would [] have found the placement of [*sic*] air flow channel *anywhere in an e-cigarette housing*...an obvious implementation choice.” EX1039, ¶60. And indeed, it is undisputed that the prior art discloses an air inlet at the interface between the cartridge and device body—Levitz and Thorens, for example. POR, 6, 8-9; *id.*, Ground 4 (not disputing that Thorens discloses the claimed channel). Accordingly, it would have been obvious to use such an interface gap as part of a sealed airflow path in embodiments without air inlets 789.

Second, PO’s assertion that it would be “undesirable” to use the interface gap as an additional source of airflow should be rejected. POR, 70. As PO’s own expert

[REDACTED]

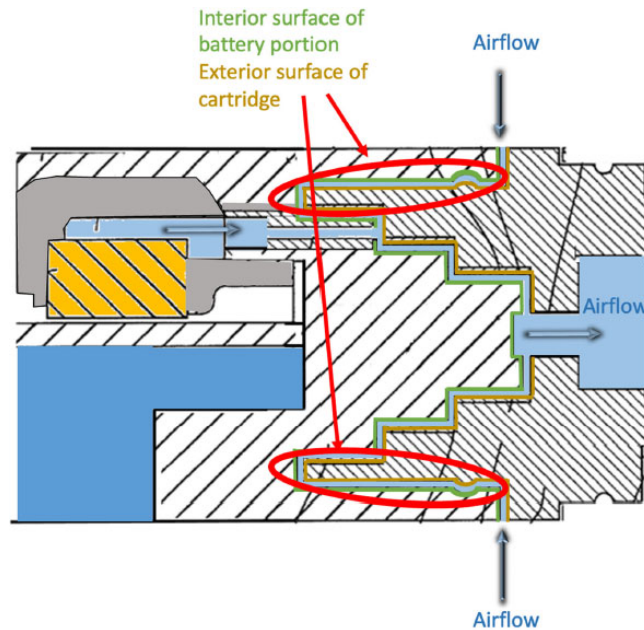
admitted, multiple air inlets are beneficial to prevent an e-cigarette from being rendered inoperable if one inlet is clogged or otherwise blocked. EX1040, 105:7-16. If redundancy was undesirable, Worm would not have contemplated multiple air inlet apertures and channels. EX1004, ¶¶[0070], [0075]; EX1043, ¶53.

Third, PO alleges the modification is undesirable because it would be difficult to control. POR, 69-72. Yet PO's expert admitted that a POSA would have known how to properly size such a channel to achieve the appropriate airflow and PO's own product confirms that substantial airflow and draw resistance variation is acceptable. *See* Section I.B.3 *supra*; EX1043, ¶46.

III. GROUND 3: WORM IN VIEW OF LEVITZ RENDERS OBVIOUS CLAIMS 14, 27, AND 32

A. The Combination Discloses A “sealed air flow path”

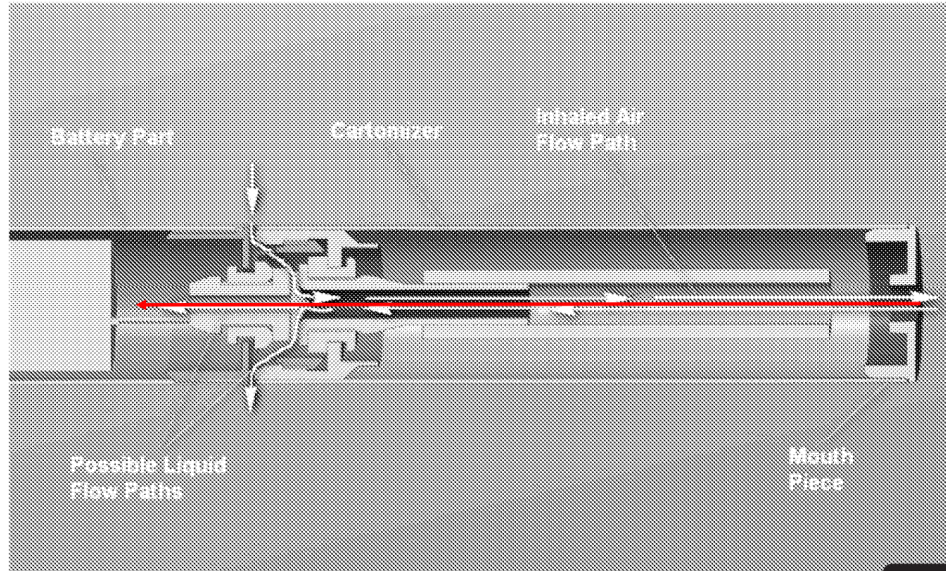
PO alleges that Petitioners' combination only relies on Levitz's air inlets. POR, 6-7. Not so. Petitioners' combination “modif[ies] Worm so that outside air enters at the interface between the battery and cartridge connection.” Pet., 56. Petitioner even illustrated a new airflow path if the male-female connections were swapped:



Pet., 62

This is consistent with Dr. Collins’ prior testimony in which he asserted that a POSA “would [] have found the placement of [sic] air flow channel *anywhere* in an e-cigarette housing...an obvious implementation choice.” EX1039, ¶60; EX1043, ¶¶48-49.

PO argues that Levitz purportedly teaches that the airflow path in Figure 16 is undesirable, which is also incorrect. POR, 8-9. Levitz describes that Figure 16 may have backflow issues, *not because of its side air inlets*, but because the pressure channel is directly aligned with the cartridge airflow passage, as illustrated below. EX1040, 88:21-90:5, 91:2-15.



EX1038.001

Levitz's Figure 18 embodiment minimizes backflow by not directly aligning the pressure channel with the cartridge airflow path, as shown below, yet retains the side air inlets and airflow through the cartridge and device body interface. EX1040, 92:17-93:2.

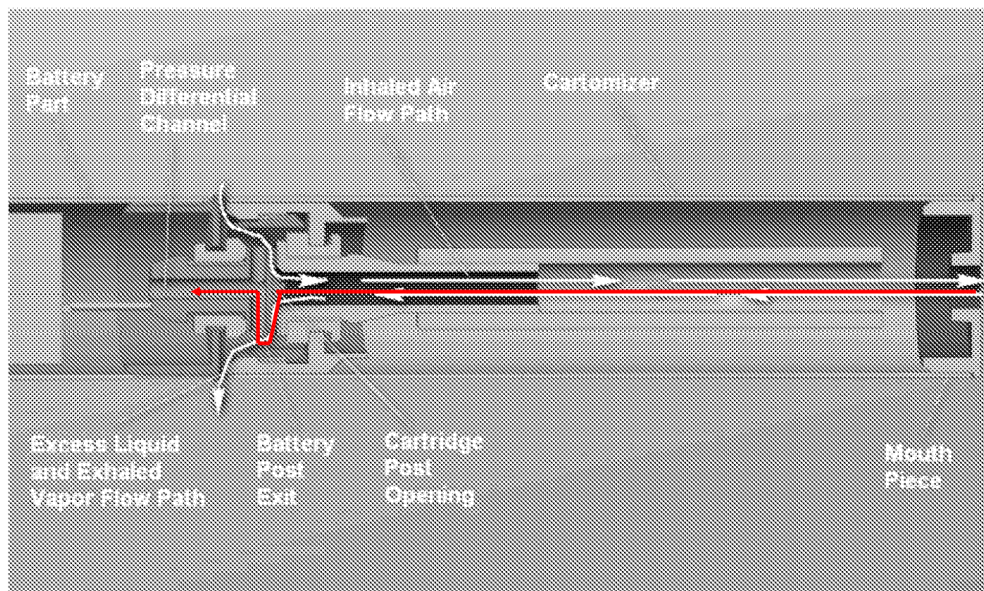


Figure 18

EX1038.002

Levitz's use of side air inlets in both embodiments demonstrates that it would have been considered suitable in an e-cigarette. EX1043, ¶¶50-51.

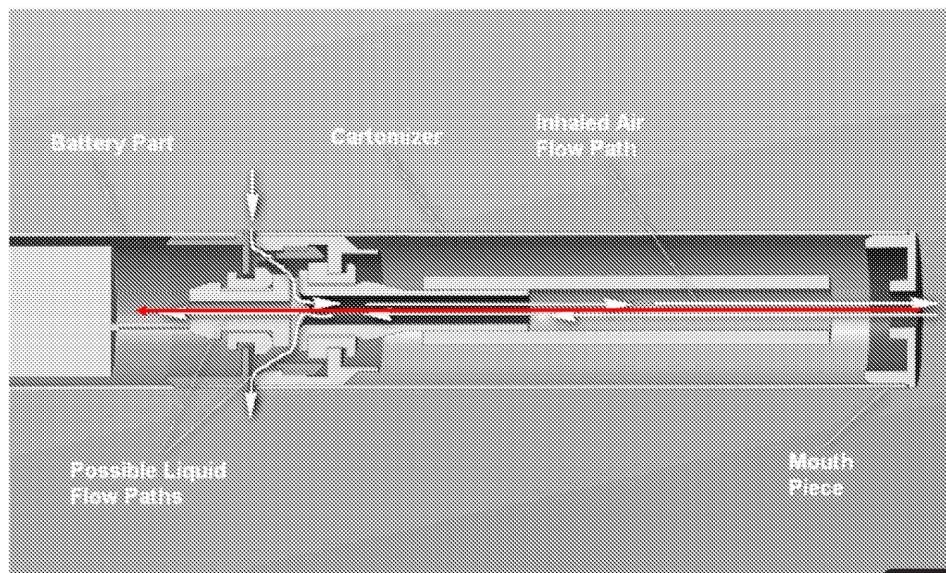
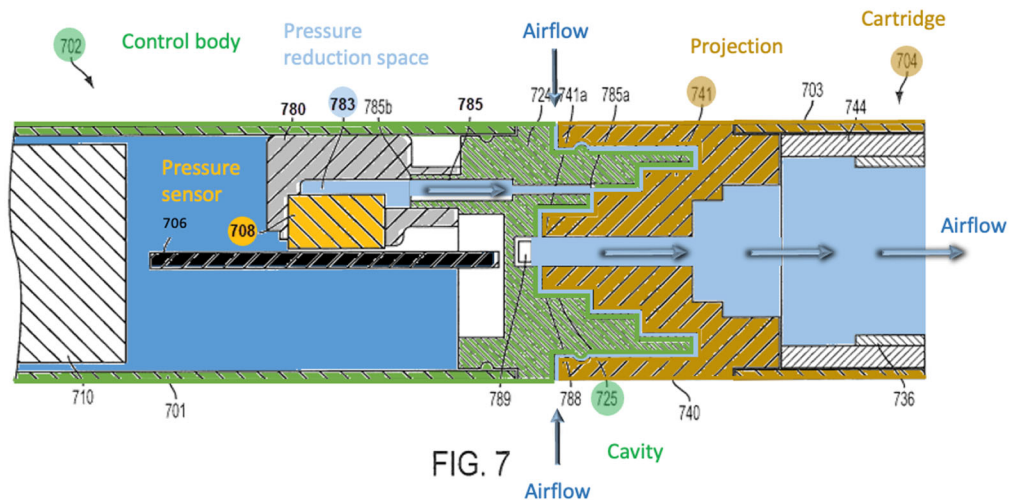
B. A POSA Would Have Been Motivated To Combine Worm With Levitz

PO argues that a POSA would not have been motivated to combine Worm with Levitz because: 1) Levitz's air inlets are redundant; 2) Worm already solved the backflow problem; 3) Levitz teaches away from using the intake path for backflow and increases backflow; and 4) the airflow in the gap cannot be controlled. POR, 8-18. Each argument should be rejected.

First, Levitz's air path at the cartridge and device body interface is not redundant of air inlets 789. POR, 8-14. PO steadfastly ignores that air inlets 389/789 are not in every embodiment. At a minimum, Levitz's air inlets are the only backflow path for embodiments without air inlets 789. Regardless, PO's own expert concedes the value of multiple air inlets. EX1040, 105:7-16. And Worm discloses using multiple air inlets, thereby decreasing failure. EX1004, ¶¶[0070], [0075]; EX1040, 105:2-16. EX1043, ¶¶52-53.

Second, Worm's embodiments only *reduce* backflow, so Worm does not solve that problem. EX1004, ¶¶[0005], [0076]. Levitz adds a further backflow path away from the pressure channel, which a POSA would have understood to be desirable. EX1010, Fig. 16; EX1003, ¶172. EX1043, ¶54.

Third, Levitz does not teach away from using side air inlets to a cartridge and device body interface—*e.g.*, the embodiment at Figure 18 also includes this design. The concern with Figure 16 (*i.e.*, backflow entering the pressure channel) is not relevant to Worm because Worm’s pressure channel 785 is not in line with the cartridge airflow path. EX1043, ¶55.



EX1004, Fig. 7 (annotated); EX1038.001

[REDACTED]

Levitz additionally teaches “Possible Liquid Flow Paths” exiting either side of the reduced pressure channel. EX1010, ¶¶[0011], [0044]; Fig. 16. EX1043, ¶55.

Fourth, PO repeats arguments from Ground 1, which Petitioner addressed above. *See* POR, 5-6, 12-13.

Thus, Worm in view of Levitz renders claims 14, 27, and 32 obvious.

IV. GROUND 4: THORENS IN VIEW OF WEIGENSBERG RENDERS OBVIOUS CLAIMS 14, 27, AND 32

PO argues that a POSA would not have been motivated to combine Thorens and Weigensberg because the combination lacks any benefits while the proposed changes are allegedly disadvantageous. POR, 75. PO further argues that Weigensberg’s cap is not a gasket because the cap is purportedly not airtight. *Id.*, 84.

A. PO Failed To Rebut That A POSA Would Have Been Motivated To Use Weigensberg’s Pressure Sensor Assembly

PO alleges that the combination senselessly replaces and eliminates components in Thorens with those of Weigensberg. *Id.*, 76. PO ignores Weigensberg’s explicit motivation to save space by combining the sensor, integrated circuitry, and LED within Weigensberg’s LED cap. EX1006, ¶[0107]; EX1003 ¶¶184, 192. EX1043, ¶¶56-74. The additional space in modified Thorens could be used for a larger battery or other uses. *See* EX1006, ¶[0107]; EX1003, ¶190.

B. Modified Thorens Does Not Require Significant Changes

PO alleges that significant changes are required to modify Thorens. This allegation, however, is predicated on the false assumption that Thorens’ puff

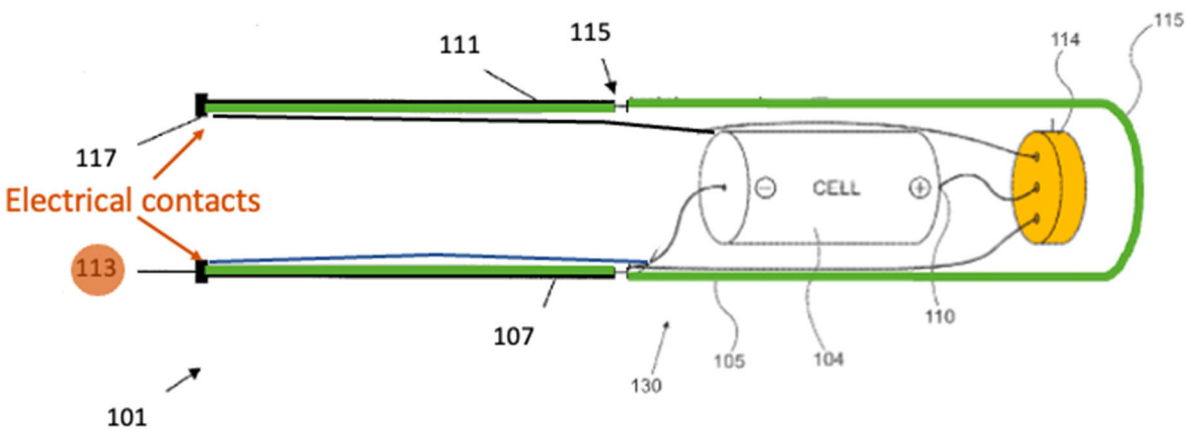
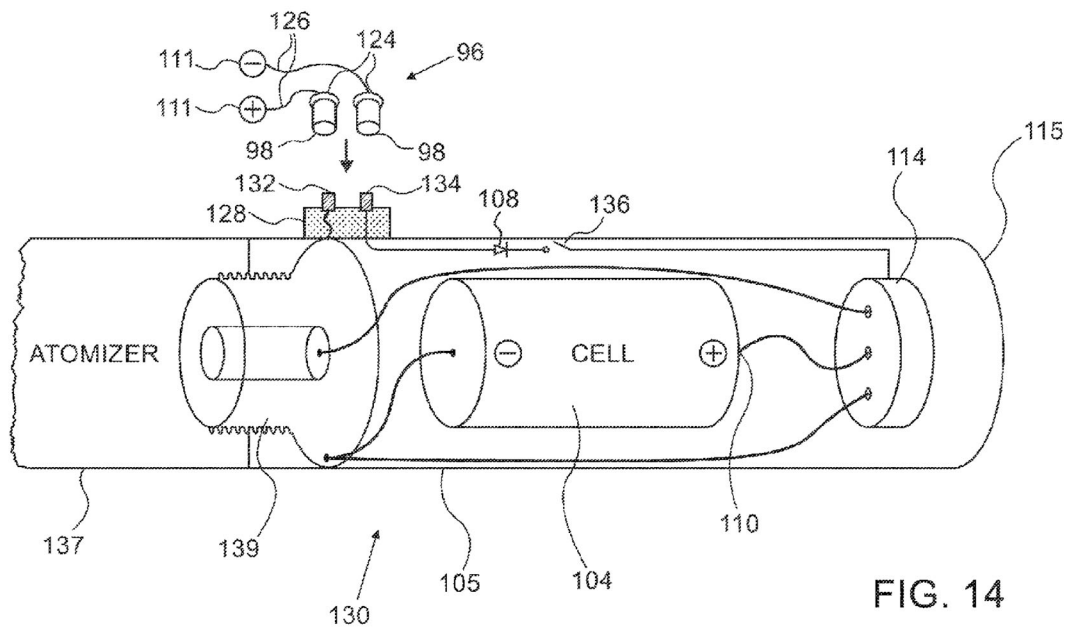
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detection system is limited specifically to a sensor that *directly* measures airflow and is therefore different than the pressure sensor of Weisenberg. POR, 76. But Thorens describes that its “electric circuitry comprises a sensor to *detect* air flow indicative of a user taking a puff. The sensor may be...a mechanical device, an optical device, an opto-mechanical device and a micro electro mechanical systems (MEMS) based sensor.” EX1016, ¶[0015]. A POSA would have understood that a pressure sensor can detect air flow without directly measuring airflow. *See, e.g.*, EX1005, Abstract (describing a MEMS sensor that measures pressure to detect air flow). In fact, PO’s expert admitted at deposition that differential pressure sensors were commonly used to detect airflow in e-cigarettes. EX1040, 102:20-103:2. Accordingly, Weigensberg’s pressure sensor is not materially different from Thorens’ and would not require substantial changes. Pet., 69-70; EX1043, ¶¶59-60.

PO also argues that a pressure sensor is less desirable because the device may overheat. POR, 77; EX1040, 103:9-16. Thorens, however, discloses temperature controls that prevent overheating. EX1016, ¶[0052]. Moreover, differential pressure sensors were typical in e-cigarettes at the time, meaning that they were not known to cause overheating. EX1022, ¶[0101]; EX1043, ¶61.

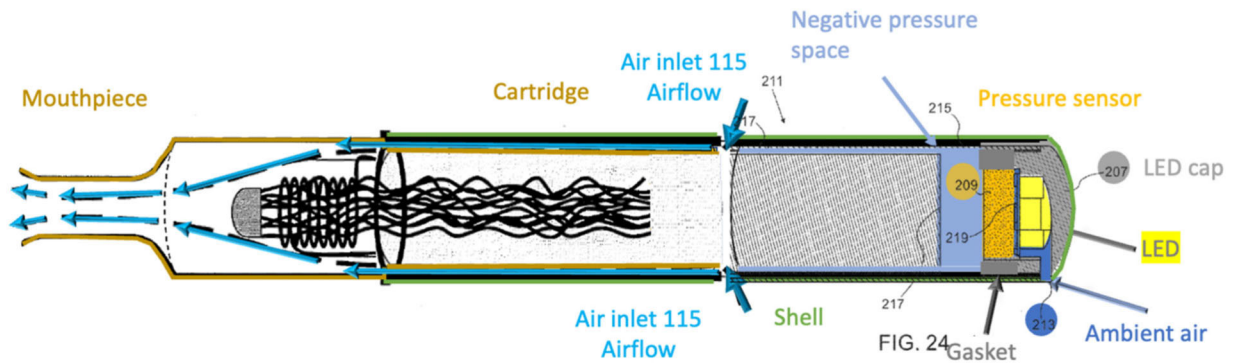
PO also alleges the proposed combination leaves exposed leads and wiring based on the use of a “schematic diagram” from Weigensberg. POR, 78-79; EX1006, ¶[0046], Fig. 14. The figure in the Petition schematically illustrated the electrical

connections between the pressure sensor assembly 114 and Thorens' existing electrical structure, which connects the LED to electrical contacts 113. Pet., 69; EX1040, 97:16-100:3. The schematic is not a production device—*e.g.*, the battery is depicted floating in the housing. A POSA would have recognized that these connections can be made in a safe and secure manner. EX1043, ¶¶62-64.



EX1010, Fig. 3; EX1006, Fig. 14, Pet., 69

As illustrated in the Petition, Thorens' electrical structure is maintained. And as depicted in Weigensberg, the leads are encapsulated in the LED cap, not exposed as PO alleges. POR, 79, 82; EX1006, ¶[0107], Fig. 24. Modified Thorens is no more prone to wiring damage than unmodified. EX1043, ¶¶65-66.



Pet., 77

Finally, PO erroneously contends the combination is inoperable because the controller is removed. POR, 80, 82. Weigensberg's pressure sensor assembly includes the integrated circuitry for controlling the device. EX1006, ¶[0107] (the tip "accommodates a sensor in an internal chamber, and may include integrated circuitry."); *see also id.*, ¶¶[0023], [0029], [0059] (describing circuitry); EX1043, ¶67.

C. Weigensberg Discloses A Gasket

The Board determined that "the plastic LED cap, while not a perfect seal, provides enough separation for the differential pressure sensor to work." Paper 15, 43. Indeed, resilient polymeric (*e.g.*, plastic) gaskets are disclosed in the prior art,

[REDACTED]

and plastic is a type of resilient polymer. EX1043, ¶¶68-74; EX1009, 6:3-9; EX1041, 22 (Table 1 identifying “gaskets” as “Major uses” for certain types of plastic). While PO argues that plastic cannot create a perfect airtight seal, its expert provides no support for that bald assertion. POR, 83-84; EX2053, ¶98. Nonetheless, Weigensberg discloses that the cap “*may* be constructed of a plastic material,” without excluding other materials that could provide an airtight seal. *See* EX1006, ¶[0107]; EX1043, ¶¶71.

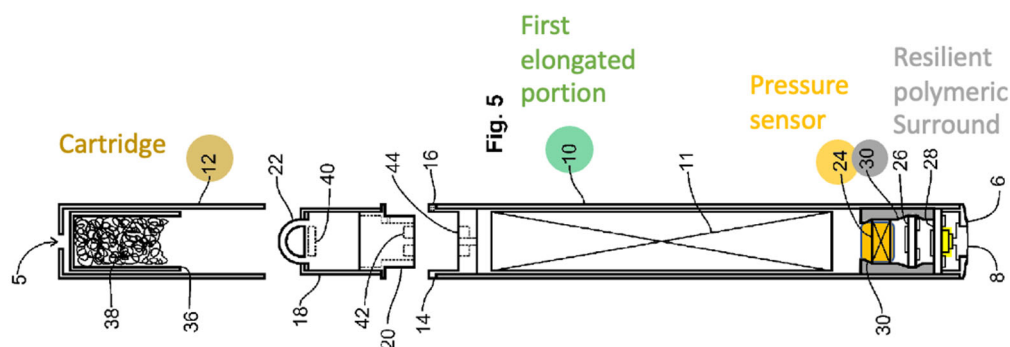
If the LED cap is not a gasket, PO alleges that there is no space in Weigensberg’s figure for a gasket. POR, 84. First, the argument incorrectly assumes that plastic cannot be a gasket. Second, this argument is irrelevant because Petitioners’ combination is not limited to the size of the figures because obviousness does not require bodily incorporation. *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc) (“...the criterion being not whether the references could be physically combined but whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole.”). Modified Thorens would include a gasket around the differential pressure sensor (Pet., 77), consistent with typical prior art e-cigarette designs. EX1009, 6:6-9; EX1023, ¶[0083]; EX1022, ¶[0101]; EX1043, ¶¶73-74.

Accordingly, a POSA would have been motivated to combine Thorens and Weigensberg because the proposed modifications are simple design choices within the parameters of Thorens resulting in a more compact pressure sensor design.

V. GROUNDS 5-8 RENDER OBVIOUS THE CHALLENGED CLAIMS

PO does not dispute that Lamb's pressure sensor outputs sensor readings, meets the dependent claims, or that a POSA would have had requisite motivation and reasonable expectation of success in Grounds 5-8. POR, 85. For these limitations, PO only refers to its arguments for Grounds 1-4. *Id.* These arguments fail as discussed in Sections I-IV.

For Ground 8, PO also disputes whether Lamb incorporates Newton766's gasket and if so, whether it would fit in Weigensberg's pressure sensor assembly. PO is wrong on both counts. Lamb incorporates Newton766 in its entirety and specifically identifies the "components that yield visual cues or indicators." EX1005, ¶[0041]. Newton766's indicator components include: an LED responsive to a pressure sensor and a controller within a resilient polymeric surround. EX1009, 6:3-6. EX1003, ¶¶256-259.



EX1009, Fig. 5 (annotated)

PO also argues that Petitioner did not provide a motivation to add Newton766's gasket to Ground 4. POR, 86. Not so. Petitioner put forth several

reasons to combine Lamb with Thorens in view of Weigensberg. Pet., 90-94. Moreover, they have similar structures and use a differential pressure sensor. EX1005, ¶¶[0004]-[0006], [0045] *compared with* EX1004, ¶[0077]. As explained above, Lamb incorporates Newton766 and its LED responsive to a pressure sensor, as well as a controller within a resilient polymeric surround. EX1009, 6:3-6. Accordingly, the combination with Lamb and the motivation to combine with Lamb, bring in the disclosure of Newton766.

Finally, PO's criticism about the lack of space in Weigensberg's cap for a gasket (Weigensberg has a gasket) is a red herring—bodily incorporation of a feature is not required to show obviousness, as explained above.

VI. SECONDARY CONSIDERATIONS DO NOT SUPPORT NON-OBVIOUSNESS

PO's evidence of purported secondary considerations cannot support non-obviousness for Grounds 2-8.

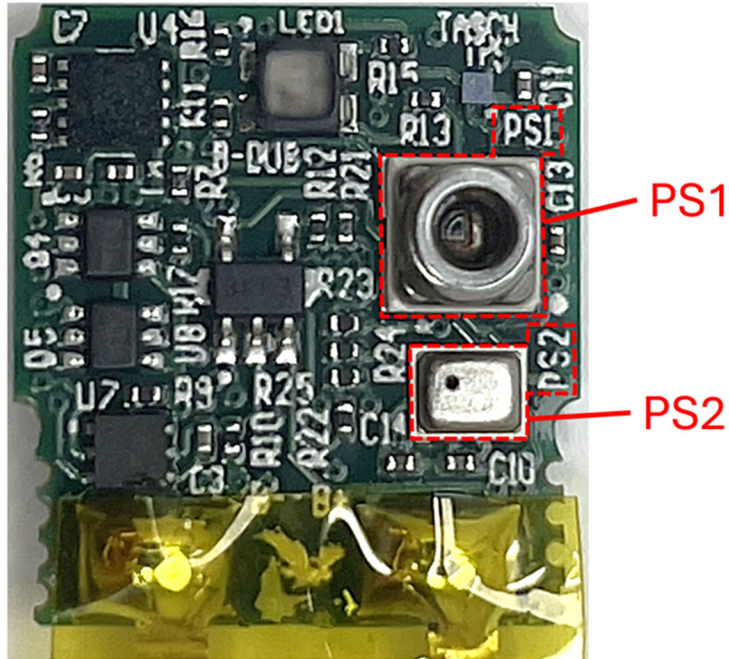
A. The JUUL System Does Not Practice the 123 Patent

PO's secondary considerations evidence is irrelevant because the JUUL System does not practice the challenged claims. It is undisputed that the JUUL System includes two discrete pressure sensors, where each pressure sensor has only one exposed side. The claims, however, require "a pressure sensor ... wherein a first side of the pressure sensor is exposed to a sealed air flow path and a second side of the pressure sensor is exposed to a device air path open to ambient pressure."



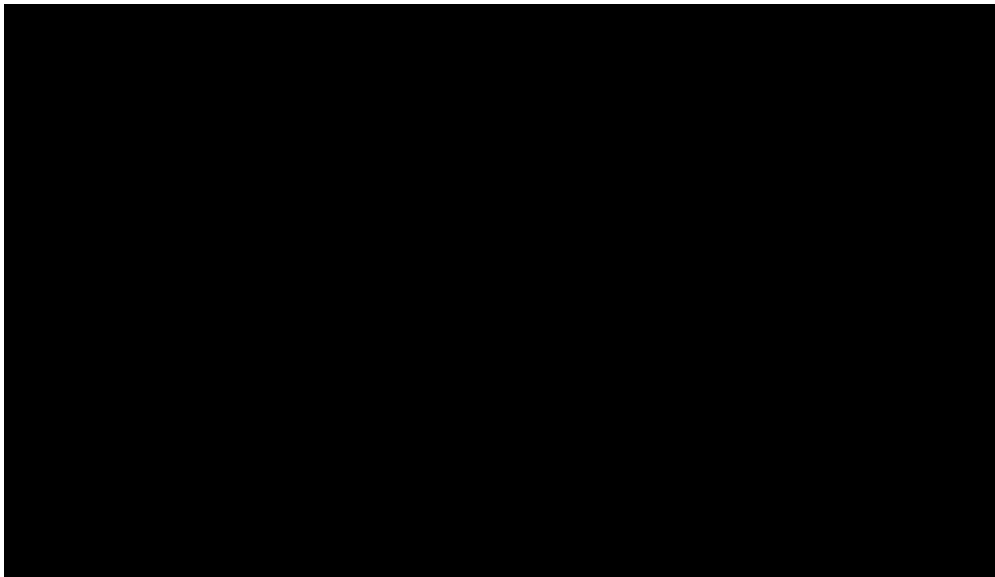
EX1001, claims 14, 27. Though the term “a pressure sensor” may mean “one or more,” that does not negate the subsequent claim language that requires “*the* pressure sensor” have a “first exposed side” *and* a “second exposed side.” *In re Varma*, 816 F.3d 1352, 1362-63 (Fed. Cir. 2016). Thus, it does not suffice to have multiple pressure sensors, each having only one exposed side; the claim language requires at least one pressure sensor that has a first exposed side *and* a second exposed side. *Salazar v. AT&T Mobility LLC*, 64 F.4th 1311, 1318 (Fed. Cir. 2023); *see also Traxcell Techs., LLC v. Nokia Sols. & Networks Oy*, 15 F.4th 1136, 1143-44 (Fed. Cir. 2021).

As shown in the picture below, the printed circuit board of the JUUL System has two discrete pressure sensors (labeled PS1 and PS2). Each pressure sensor has only one exposed side at the top of each sensor—PS1 has a side exposed to the air path pressure, while PS2 has a side exposed to ambient pressure. EX1043, ¶79. Both are soldered to the board.



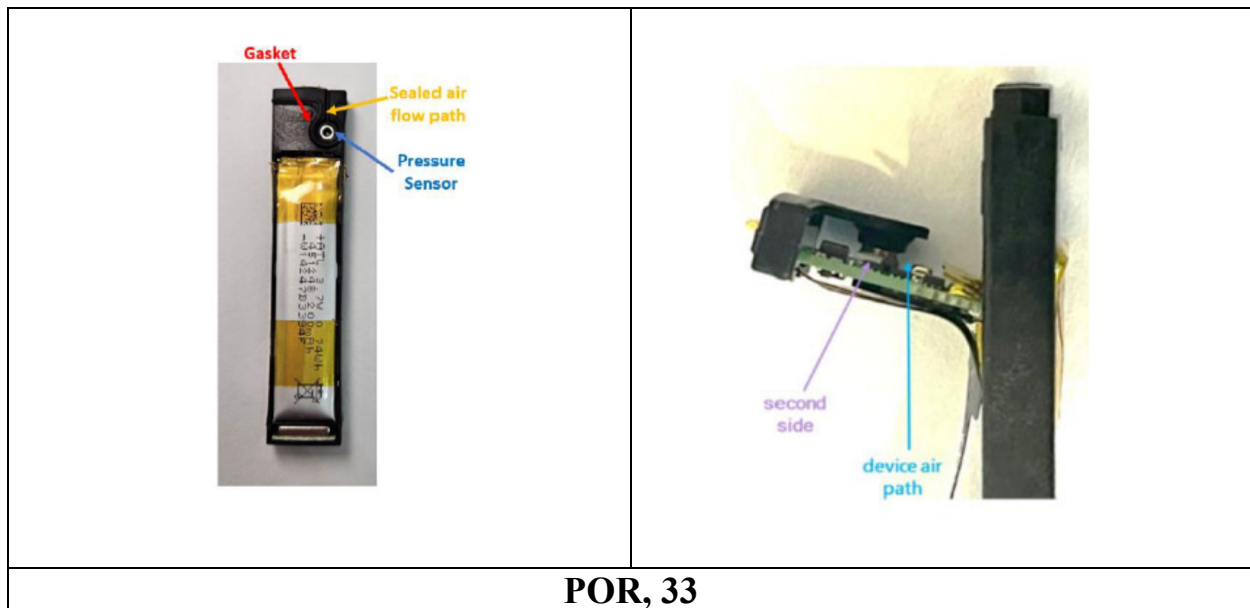
JUUL Photograph

PO's design documents confirm that there are two pressure sensors, one that measures airpath pressure (*i.e.*, sealed airflow path) and another that measures ambient pressure (*i.e.*, device airflow path). EX1043, ¶80.



EX2003, 45

PO did not explain how its identified pressure sensor has one side exposed to a sealed airflow path and a second side exposed to a device airflow path. POR, 32-34. It does not. PO identifies a “second side” and draws an arbitrary arrow that purportedly points to a device airflow path without any explanation regarding how the pressure sensor identified in the photo is exposed to that path. But the “second side” of the identified pressure sensor does not sense and is not exposed to the device airflow path because its “second side” is soldered to the board.



PO’s expert Dr. Collins admitted that the identified sensor only measures sealed airflow path pressure (EX1040, 55:1-17), which means it is **only** exposed to the sealed airflow path and is not the claimed pressure sensor. EX1043, ¶¶81-82. No pressure sensor in the JUUL System has the two claimed exposed sides. The JUUL System uses a combination of two single-sided pressure sensors and an MCU to

[REDACTED]

calculate a differential pressure, unlike the claimed pressure sensor that has two exposed sides and outputs a sensor reading.

The Board should reject PO's assertion that the JUUL System nonetheless practices the 123 Patent because its "pressure sensor comprises two pressure detecting components and associated circuitry" that collectively comprise the claimed pressure sensor. POR, 22-23. First, PO's expert did not even know that the JUUL System comprises two distinct sensors. EX1040, 56:14-20. His cursory analysis is flawed, incorrect, and cannot meet PO's burden. Second, to the extent that PO asserts the claimed "pressure sensor" is the combination of the two pressure sensors and associated circuitry, it is impossible for the JUUL System to meet the claim language requiring "a gasket around the pressure sensor." EX1001, claim 27. The plain meaning of "around" in the context of the 123 Patent is "surround." EX1043, ¶83; EX1001, 42:25-32 (explaining that the gasket forms a seal around the sensor case). There is no gasket that surrounds the combination of the two sensors and associated circuitry (*i.e.*, what PO alleges is the claimed "pressure sensor"). EX1043, ¶83. There is a gasket in the JUUL System around one sensor, but not one that is also around the second sensor or the controller. *Id.*

B. PO Cannot Rely on Presumed Nexus

PO relies solely on a presumption of nexus for secondary considerations, but is precluded from doing so under Federal Circuit precedent. Specifically, PO

[REDACTED]

admitted that the evidence it relies on for long-felt need, industry praise, and commercial success is identical to the evidence it relied upon before the ITC. POR, 19; EX2055, 11-17. In the ITC, however, the evidence supported non-obviousness for three *other* patents (U.S. Patent Nos. 10,709,173, 11,134,722, 11,606,981),⁴ but not the 123 Patent.⁵ EX2055, 11, 18. PO likewise previously relied on nearly identical evidence to argue that copying of the JUUL System supported non-obviousness of a different patent set in another ITC Investigation. EX2042, 311-319; EX1043, ¶104.

PO cannot rely on a presumption of nexus with this evidence for the 123 Patent because the “same evidence of secondary considerations cannot be presumed to be attributable to two different combinations of features.” *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1378 (Fed. Cir. 2019). Instead, PO had “the burden of proving the degree to which evidence of secondary considerations tied to a product is attributable to a particular claimed invention.” *Id.* PO, however, did not contend, let alone demonstrate actual nexus between its secondary considerations evidence and the 123 Patent (because there is none). EX1043, ¶¶75-78.

⁴ These patents claim different features than the 123 Patent. EX1049-EX1051.

⁵ The only 123 Patent invalidity ground before the ITC was anticipation based on a prior art product, so secondary considerations were irrelevant.

[REDACTED]

C. The 123 Patent Claims are Not Coextensive with the JUUL System

PO contends that the presence of unclaimed features in the JUUL System does not preclude a presumption of nexus because the Federal Circuit has never held that “the existence of one or more unclaimed features, standing alone, means nexus may not be presumed.” POR, 25 (citing *Fox Factory*, 944 F.3d at 1374). In the same decision, however, the Federal Circuit expressed that “a patent claim is not coextensive with a product that includes a ‘critical’ unclaimed feature that is claimed by a different patent and that materially impacts the product’s functionality.” *Fox Factory*, 944 F.3d at 1375. The JUUL System comprises numerous such features.

First, PO cannot dispute that nicotine salts is a patented feature that affects the JUUL System’s functionality. PO’s founder and designer of the JUUL System stated that JUUL would not have 5% market share if it did not use patented nicotine salts. EX1034.001 (JLI founder asserting that JUUL “would be lucky to have 5% share” if it had used conventional nicotine chemistry instead of nicotine salts); EX2040, 6 (“JUUL leverages IP-protected nicotine salts”); EX1035.014 (“JUUL’s unique nicotine delivery profile, enabled by *patented chemistry* and innovative design. JUUL pods use *nicotine salts*....”). While PO contends that nicotine salts are claimed as a “vaporizable material,” this argument should be rejected. As PO’s expert admitted, a vaporizer that does not utilize nicotine salts falls within the scope of the claims. EX1040, 46:1-4.

[REDACTED]

Second, the rectilinear shape of the JUUL system that differentiated it from cylindrical cig-a-likes unquestionably affected the success of the JUUL system. POR, 44 (arguing that non-cylindrical shape satisfied a long-felt need). This too is not claimed; PO's expert admitted that cylindrical vaporizers are within the scope of the claims. EX1040, 44:15-19. Moreover, PO has numerous patents that cover the shape of the JUUL System. *See* EX1044 (USD825102).

Third, PO asserted in a prior ITC investigation that the JUUL System's locking gaps and electrical contacts claimed in other patents were critical to its success. EX2042, 319-320 ("JLI has shown that the patented features of the JUUL system have contributed to its success in the marketplace. ... The '568 and '130 patents recite ... folded-over contact tabs. ... The '915 patent recites ... use of locking gaps"); *id.*, 316 ("In combination with the ***locking gap*** connection, the inventors developed ***folded-over contact tabs***."). PO's assertions in prior ITC investigations preclude a finding coextensiveness under *Fox Factory*. 944 F.3d at 1375 ("In light of the patentee's own assertions about the significance of the unclaimed features, no reasonable fact finder could conclude that these features are insignificant. ... A patent claim is not coextensive with a product that includes a 'critical' unclaimed feature that is claimed by a different patent.").

D. There is No Actual Nexus

PO has waived any argument of actual nexus because it did not include it in

[REDACTED]

its POR. Regardless, none of the evidence of industry praise, commercial success, or long-felt need refers to the claimed features (*i.e.*, the combined airflow path and pressure sensor configuration). POR, 42-46, 48-51. Likewise, there is no evidence that anyone has specifically copied an allegedly novel claimed feature of the 123 Patent. Finally, the evidence of industry praise⁶ and unexpected results⁷ is similarly untethered from the claimed features. EX1043, ¶¶85-107.

VII. MR. MCALEXANDER IS AN EXPERT IN THE RELEVANT TECHNOLOGY

There is no dispute that Petitioners' expert, Mr. McAlexander, satisfies the POSA definition adopted by the Board. Paper 15, 10-11. PO nonetheless challenges whether Mr. McAlexander is qualified to provide opinions on airflow and vapor formation. POR, 1-3, 13, 73-74. Similar challenges were rejected in the parallel ITC investigation and should be rejected here. EX1045.002-.003.

⁶ EX2024 refers to the JUUL System's "fresh airflow design." EX2024, ¶219. But there is no evidence or testimony attributing that statement to the claimed airflow path.

⁷ PO's expert asserts, without support, that the JUUL System's accurate pressure sensing was unexpected. PO, however, failed to cite any evidence that accurate pressure sensor would have been unexpected as of the 123 Patent.

[REDACTED]

Experience in technologies underlying e-cigarettes is sufficient to opine on the issues in the Petition. *See* EX1040, 15:12-28:18. Mr. M^cAlexander's extensive technical experience includes fluid mechanics. He has been recognized as a technical expert in several legal proceedings involving fluid mechanics including tire pressure monitoring, PSC blower motors, underwater sound listening and generation, as well as fan sensors and controls. EX2052, 15:11-23, 20:5-13; EX1027.011-.030. And specifically related to electronic cigarette devices, Mr. M^cAlexander was a testifying expert in at least 11 matters over the past four years. EX1027.024-.029. Many of these cases involved fluid mechanics. *See, e.g.,* IPR2021-00650 (directed to e-cigarettes with dispersions added to airflow); *RAI Strategic Holdings, Inc. et. al. v. Altria Client Servs. LLC et. al.*, Case No. 1:20-cv-00393 (E.D.Va. 2023); EX1043, ¶¶14-15.

Mr. M^cAlexander's experience is not simply academic. He founded a commercial testing laboratory where he has reverse engineered and tested a myriad of e-cigarette devices, modeled airflow of e-cigarettes, and developed an apparatus to emulate human breath to activate ENDS devices. EX1043, ¶16.

PO implies that any knowledge Mr. M^cAlexander acquired after the critical date is not relevant. POR, 3-4. Experts, however, may develop an understanding of the knowledge of a POSA at the time of filing or even after the critical date. *Osseo Imaging, LLC v. Planmeca USA Inc.*, 116 F.4th 1335, 1341 (Fed. Cir. 2024).



Mr. M^cAlexander is more than qualified to provide opinions on airflow and vapor formation in ENDS devices.

VIII. CONCLUSION

For the reasons set forth in the Petition and herein, the Board should determine that the challenged claims are invalid based on the asserted grounds.

Respectfully submitted,

Dated: November 27, 2024

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CERTIFICATE OF COMPLIANCE

1. The undersigned certifies that this brief complies with the type volume limitations of 37 CFR § 42.24(a)(1)(i). This brief contains 5,539 words (excluding the table of contents, the table of authorities, mandatory notices under 37 CFR § 42.8, the certificate of service, certificate of compliance, and appendix of exhibits), as calculated by the “Word Count” feature of Microsoft Word 2016, the word processing program used to create it.

2. The undersigned further certifies that this brief complies with the typeface requirements of 37 CFR § 42.6(a)(2)(ii) and typestyle requirements of 37 CFR § 42.6(a)(2)(iii). This brief has been prepared in a proportionally spaced typeface using Microsoft Word 2016 in Times New Roman 14 point font.

Respectfully submitted,

WEIL, GOTSHAL AND MANGES LLP

Dated: November 27, 2024

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CERTIFICATE OF SERVICE

The undersigned certifies that on November 27, 2024, the foregoing
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