

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NJOY, LLC,
NJOY HOLDINGS, INC.,
Petitioners

v.

JUUL LABS, INC.,
Patent Owner

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

PATENT OWNER'S SURREPLY

PUBLIC VERSION

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No.	Exhibit
2001	Declaration of John Collins, Ph.D.
2002	<i>Curriculum vitae</i> of John Collins, Ph.D.
2003	JUUL System FDA Premarket Tobacco Product Application, produced as JLI-NJOY-ITC1368-01159601
2004	Photo of JUUL System, produced as JLI-NJOY-ITC1368-01945391 ¹
2005	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013494
2006	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013502
2007	Photo of JUUL System, produced as JLI-NJOY-ITC1368-01945377
2008	Photo of JUUL System, produced as JLI-NJOY-ITC1368-01945372
2009	“American Cancer Society Position Statement on Electronic Cigarettes,” produced as JLI-NJOY-ITC1368-02013557

¹ Several exhibits listed here were produced in the parallel ITC investigation, *In the Matter of: Certain Vaporizer Devices, Cartridges Used Therewith and Components Thereof*, ITC Investigation No. 337-TA-1368. Although those exhibits are labeled with the designation “Confidential Business Information Subject to Protective Order,” PO certifies that among these exhibits, with the exception of Exhibits 2003, 2025, 2026, and 2041, none of them contain Confidential Business Information.

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2010	World Health Organization, Tobacco Fact Sheet, retrieved from https://www.who.int/news-room/fact-sheets/detail/tobacco
2011	Gottlieb, “Healthy Innovation, Safer Families: FDA’s 2018 Strategic Policy Roadmap,” produced as JLI-NJOY-ITC1368-02013568
2012	Nitzkin, “The Case in Favor of E-Cigarettes for Tobacco Harm Reduction,” Int. J. Environ. Res. Public Health 2014, produced as JLI-NJOY-ITC1368-02013655
2013	Gottlieb & Zeller, “A Nicotine-Focused Framework for Public Health,” N Engl J Med 2017, produced as JLI-NJOY-ITC1368-02013549
2014	Hall & Doran, “How Much Can the USA Reduce Health Care Costs by Reducing Smoking?” PLoS Med 13 (May 10, 2016)
2015	Center for Disease Control and Prevention, Smoking & Tobacco Use: Costs and Expenditures, retrieved from https://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/cost-and-expenditures.html
2016	Center for Disease Control and Prevention, Smoking Cessation: Fast Facts, retrieved from https://www.cdc.gov/tobacco/data_statistics/fact_sheets/cessation/smoking-cessation-fast-facts/index.html
2017	Chaiton et al., “Estimating the number of quit attempts it takes to quit smoking successfully in a longitudinal cohort of smokers,” BMJ Open 2016
2018	Lee & Kahende, “Factors Associated With Successful Smoking Cessation in the United States, 2000,” American Journal of Public Health, Vol. 97, No. 8 (Aug. 2007)
2019	Tolentino, “The Promise of Vaping and the Rise of JUUL,” The New Yorker, May 14, 2018, produced as JLI-NJOY-ITC1368-02013685
2020	Cig20-schematic (Jan. 11, 2012), produced as JLI-NJOY-ITC1368-02013708
2021	Center for Disease Control and Prevention, Electronic Cigarettes, produced as JLI-NJOY-ITC1368-02013560
2022	Brose et al., “Is the use of electronic cigarettes while smoking associated with smoking cessation attempts,

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	cessation and reduced cigarette consumption? A survey with a 1-year follow-up,” <i>Addiction</i> 110 (2015)
2023	U.S. Pat. Pub. No. 2009/0272379
2024	Corrected Post-Trial Proposed Findings of Fact and Conclusions of Law of Respondents Altria Group, Inc. and JUUL Labs, Inc., <i>In the Matter of Atria Group, Inc.</i> , before the FTC Office of Administrative Law Judges, Dkt. No. 9393
2025	Excerpts from Deposition Transcript of Adam Bowen, ITC No. 337-TA-1368 (Dec. 14, 2023)
2026	Excerpts from Deposition Transcript of James Monsees, ITC No. 337-TA-1368 (Jan. 18, 2024)
2027	Hines, “Vape King Juul Wants Everyone To Chill Out,” <i>Bloomberg Businessweek</i>
2028	Peebles, “Popular e-cigarette Juul’s sales have surged almost 800 percent over the past year,” <i>CNBC</i> (Jul. 2, 2018), produced as JLI-NJOY-ITC1368-02013602
2029	Zaleski, “E-Cigarette Maker Juul Labs Is Raising \$1.2 Billion,” produced as JLI-NJOY-ITC1368-02013564
2030	Chambers, “Imperial Takes on Juul as Big Tobacco Faces Upstart Rival,” <i>Bloomberg</i> (Jul. 4, 2018)
2031	Robinson, “How a startup behind the ‘iPhone of vaporizers’ reinvented the e-cigarette and generated \$224 million in sales in a year,” <i>Business Insider</i> (Nov. 21, 2017), produced as JLI-NJOY-ITC1368-02013607
2032	“Our Evening With blu: Takeaways from Imperial Brands’ E-Cig Event,” Wells Fargo Securities Equity Research (Mar. 28, 2018), produced as JLI-NJOY-ITC1368-02013571
2033	“Tobacco: Latest Consumer Anecdotes Still Consistent: iQOS and JUUL Stand Out,” <i>Piper Jaffray</i> (Feb. 14, 2018)
2034	“Nielsen: Tobacco All Channel Data Thru 8/10 – Cig Vol Declines Hold Steady,” Wells Fargo Securities Equity Research (Aug. 20, 2019), produced as JLI-NJOY-ITC1368-02013619

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2035	“Innovation Invigorates Inhalables,” Cowen and Company Equity Research (July 22, 2016), produced as JLI-NJOY-ITC1368-02013586
2036	“Big Tobacco Finds a Friend in the FDA, Today,” Cowen Equity Research (Sep. 12, 2018), produced as NJOYITC00148578
2037	“Three Key Take-aways From Our JUUL City Scanner Analysis,” Morgan Stanley (Sep. 10, 2018)
2038	“Is JUUL Hype Overblown?” Morgan Stanley (Jun. 26, 2018), produced as JLI-NJOY-ITC1368-01332225
2039	“Latest US Scanner Data Show Improving Trends for Cigarettes, JUUL,” Piper Jaffray (May 15, 2018)
2040	“PAX Finds Its Crown JUUL,” Cowen and Company (Sept. 22, 2016)
2041	Excerpts from Deposition Transcript of Vittal Kadapakkam, ITC No. 337-TA-1368 (Jan. 9, 2024)
2042	<i>In the Matter of Certain Electronic Nicotine Delivery Systems and Components Thereof</i> , Investigation No. 337-TA-1139, Final Initial Determination
2043	August 7, 2018 Letter to Dr. S. Gottlieb from American Academy of Pediatrics et al.
2044	“Top Juul-Compatible Pods on the Market,” Vaper City: Price Comparisons for Vapers (Oct. 2, 2018), produced as JLI-NJOY-ITC1368-02013546
2045	Photo of JUUL System, produced as JLI-NJOY-ITC1368-01945383.
2046	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013522.
2047	“Juul Compatible Pods,” Zalt, retrieved Nov. 6, 2018, produced as JLI-NJOY-ITC1368-02013548
2048	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013520.
2049	Photo of JUUL System, produced as JLI-NJOY-ITC1368-01945388.
2050	Photo of JUUL System, produced as JLI-NJOY-ITC1368-01945378.

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2051	Photo of JUUL System, produced as JLI-NJOY-ITC1368-01945387.
2052	Redacted and Excerpted Deposition Transcript of Joseph McAlexander from <i>In the Matter of: Certain Vaporizer Devices, Cartridges Used Therewith and Components Thereof</i> , ITC Investigation No. 337-TA-1368, taken March 1, 2024 ²
2053	Supplemental Declaration of Dr. John Collins
2054	Deposition Transcript of Joseph McAlexander, taken August 30, 2024
2100	Proposed Stipulated Protective Order (redline)
2101	Proposed Stipulated Protective Order

² Although Exhibit 2052 has a confidentiality designation, Petitioners have informed PO that, in view of the redactions, it does not contain any confidential business information.

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The Board, when assessing whether to institute this proceeding, correctly determined that 7 of the 8 grounds in the Petition fail to demonstrate a reasonable likelihood the challenged claims are invalid, and nothing that has happened since institution should upset that analysis. For example, Petitioners have not put forward any evidence that addresses Worm’s failure to disclose the claimed “air flow path,” or the lack of motivation to combine Thorens and Weigensberg. For the one ground for which the Board did find the Petition sufficient—the Worm-Levitz combination—at no point has Petitioner demonstrated a POSITA would have any reason to combine Worm with Levitz, or that the proposed combination would result in a system that meets all the limitations of the claims. Instead, Petitioners merely propose adding air inlets, not the missing “air flow path,” and in any case, Petitioners do not address the evidence that the combination would result in worse backflow issues, directly contradicting Petitioners proffered motivation to combine.

I. MR. MCALEXANDER’S TESTIMONY SHOULD BE GIVEN LESS WEIGHT

The disputes with respect to this proceeding are squarely directed to the airflow *design* of ENDS vaporizer devices, and particularly designing airflow paths to provide a satisfying vape experience. Such considerations include

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draw resistance, vapor production, the size of the visible vapor cloud, and nicotine delivery to a user. Ex. 2053, ¶73; *see also* Ex. 2052, 26:1-27:13 (acknowledging that draw resistance and throat hit are a function of airflow). Mr. McAlexander ***admitted*** he has no experience with the design of such devices outside of recent litigation consulting. Ex. 2052, 13:5-10.

Petitioners overstate Mr. McAlexander's experience. In IPR2021-00650, Mr. McAlexander's testimony did not involve airflow mechanics. IPR2021-00650, Exs. 2001, 2012; Paper 49 (Final Written Decision). PO included no arguments relating to the design of airflow ***paths*** and how they affect the user experience. IPR2021-00650, Paper 49 at 26-30. Similarly, Mr. McAlexander's testimony in the parallel litigation did not involve airflow mechanics. *RAI Strategic Holdings, Inc. et al. v. Altria Client Servs. LLC et al.*, 1:20-cv-00393 (E.D. Va. 2023), Dkt. 889-1 (expert report of Mr. McAlexander). Indeed, prior to this IPR proceeding, Mr. McAlexander's litigation experience was limited to ***sensors***, but not airflow path design. *See* Ex. 2052, 13:12-20, 15:3-10.

Accordingly, his testimony regarding airflow path design should be given less weight than Dr. Collins's.

PUBLIC VERSION**II. GROUND 1: WORM DOES NOT ANTICIPATE****A. Petitioners Improperly Rely On “Multiple Different Embodiments”**

As the Board noted in its Institution Decision, the Petition relies on Worm’s Figures 2, 5, and 7 for its challenge against claim 14. ID, 18; Pet. 32, 34-45. There is no dispute that they are figures for different embodiments, a fact Petitioners’ expert admitted. Ex. 2052, 43:13-23 (“[Figures] Three through 5 would represent the same embodiment. ... Figure 7 is another embodiment.”); 74:9-11 (“[T]hen [Worm] goes through multiple different embodiments.”).

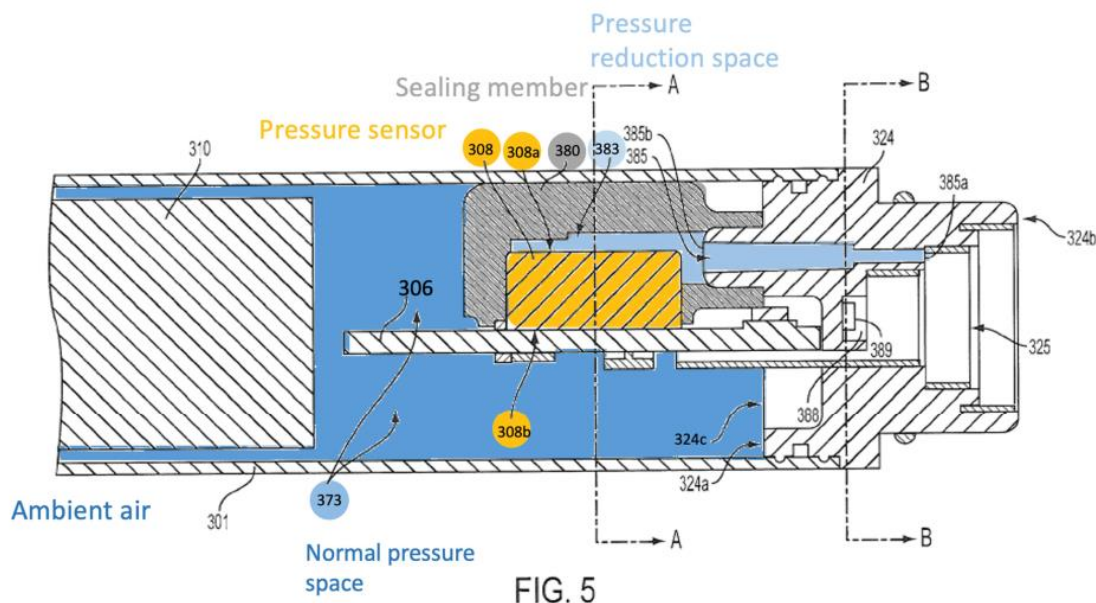
There are important differences between the embodiments that make them dissimilar. Figure 2 is described as having an “air flow sensor.” Ex. 1004, ¶54. By contrast, Figure 5 is described as having a differential “pressure sensor.” *Id.*, ¶¶60, 77. And Figure 7 does not say what type of sensor it uses. As Dr. Collins explained, “[d]ifferential pressure sensors detect a user’s draw through the reduced pressure in the device compared to ambient [a]s an indicator of airflow, but does not measure airflow itself.” Ex. 2053, ¶84. Mr. McAlexander admitted that the sensor in Figure 2 is different than the sensor in Figure 5. Ex. 2052, 46:3-11 (“Q. ... But it’s a little different here because

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208 is described as a flow sensor while 308 is described as a pressure sensor.

... A. ... I would anticipate the answer to be, yes.”); *see also* Ex. __, __.

The distinction between the embodiments is further evidenced by the fact that, as shown in Figure 5, a differential pressure sensor must have two sides that are sealed from each other: an ambient air side and a pressure reduction side. *See* Pet. 35 (“The two sides of the pressure sensor are sealed from each other by sealing member 380”); Ex. 1004, ¶7. It is the presence of these two sides that led Mr. McAlexander to conclude Figure 7 uses a differential pressure sensor (despite no mention of one). Ex. 2052, 46:18-20.



By contrast, Figure 2’s “flow sensor 208” is simply depicted as a stand-alone component within the body of the device. Worm does not depict or

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describe separate chambers sealed from each other on either side of the flow sensor, nor describe or depict any air inlet where ambient air may enter.

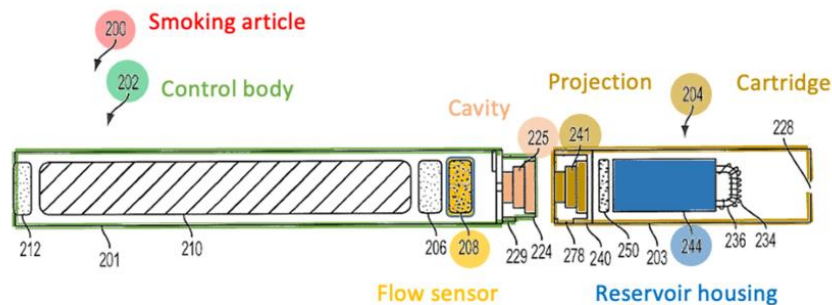


FIG. 2

As Petitioners admit, anticipation can only be found using multiple embodiments if the reference itself “teach[es] that the disclosed elements may be combined.” Reply 1 (citing *Hayward Indus. v. Pentair Water Pool & Spa, Inc.*, 814 Fed. Appx. 592, 597 (Fed. Cir. 2020)).³ In *Hayward*, the prior art expressly taught the embodiments could be combined, including that “a particular feature ... disclosed with respect to only one of several implementations ... **may be combined** with one or more other features.” 814 Fed. Appx. at 343.

³ *Net MoneyIn* stands for the proposition that the reference must disclose all claimed elements “arranged as in the claim.” *Net MoneyIN Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008); see also *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1344 (Fed. Cir. 2016).

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Worm provides no such teaching. Petitioners first quote Worm’s teaching that Figure 2’s **cartridge** components “are representative of the components that may be present in a **cartridge** and are not intended to limit the scope of **cartridge** components that are encompassed by the present disclosure.” Ex. 1004, ¶53; Reply 1. But as shown above in Petitioners’ annotated Figure 2, the flow sensor is not a **cartridge** component but rather a component of the **control body**. Petitioners also contend that “cartridge components and airflow in Figure 2 are incorporated into the description of Figure 5, and Figure 7.” Reply 1. But again, Figure 2 is lacking any disclosure of air-tight chambers on either side of the pressure sensor that are found in Figures 5 and 7.

Petitioners also quote Worm’s teaching that its device “can encompass a variety of combinations of components useful in forming an electronic aerosol delivery device.” Reply 3 (quoting Ex. 1004, ¶40). However, this is a reference to an enumerated list of patent publications that follow. Ex. 1004, ¶¶40-42. Worm never teaches that Figure 2’s airflow sensor can be replaced with Figure 5’s differential pressure sensor.

Petitioners also claim that “a flow sensor can be a pressure sensor” relying on a different reference, Lamb. Reply 4 (quoting Ex. 1005, ¶43). The

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law requires the prior art reference itself (here, Worm) must “teach[] that the disclosed components or functionalities may be combined and one of skill in the art would be able to implement the combination.” *Blue Calypso*, 815 F.3d at 1344. Nothing in Worm suggests that Figure 2’s airflow sensor is a differential pressure sensor.

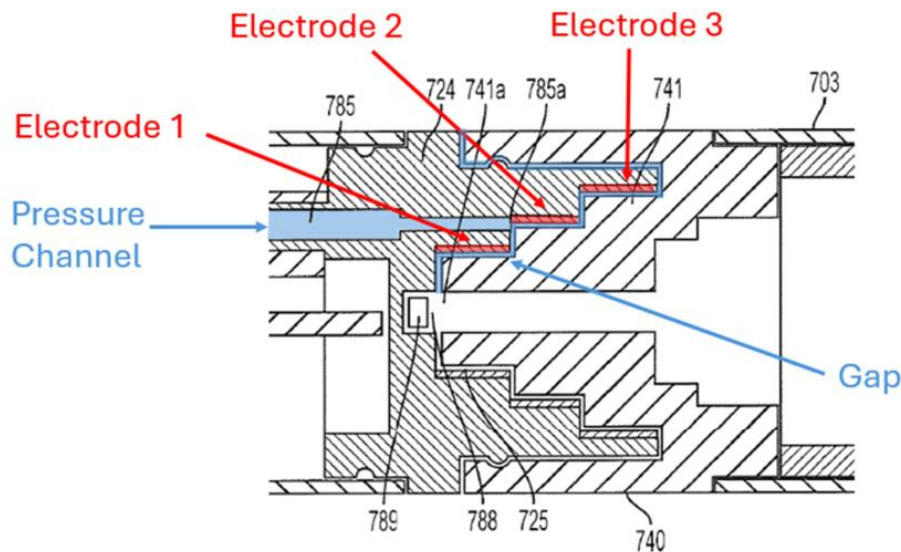
Finally, Petitioners argue that “PO relies on Figures 2 and 5 to interpret Figure 7, thus demonstrating that the embodiments are not disparate.” Reply 4 (citing POR 60-62, 68-69). However, those cited portions do not rely on Figure 2 at all.

B. Worm Does Not Disclose The Claimed “Air Flow Path”

There is no dispute that Worm does not describe the claimed “air flow path.” There is no dispute that the only air inlets described in Worm are air inlets 389/789. Petitioners instead argue that Figure 7’s unexplained gap is “a uniform gap along its entire length, which unambiguously conveys that it is dimensioned to communicate airflow along its entire length.” Reply 7. But Worm never describes this alleged gap as being uniform, never describes the alleged gap as connected to an air inlet, and never describes the alleged gap as allowing airflow from outside the device.

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Indeed, Worm provides several disclosures that indicate ***there is no gap***, despite its depiction. For example, Figure 7 depicts electrode bands found on the device body and the cartridge. POR 62; Reply 10-11; Ex. 1004, ¶58 (“The electrical contacts may comprise circular metal bands”).



These electrodes are “electrical contacts ... such that the terminals ***come into contact*** therewith when the base and the coupler are joined together to establish an electrical connection therebetween.” Ex. 1004, ¶58. Thus, despite Figure 7’s alleged depiction of a gap, there is no gap at least where the electrodes come into contact with the coupler. Ex. 1040, 69:21-70:4 (“[T]he combination of the contact between the electrical contacts in the cavity and ... the shoulder, on the outside would prevent any air flow from going in those gaps.”). Given this clear disclosure, Figure 7’s alleged gap (which is not even

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a labeled element) does not “clearly disclose[]” the recited feature. IPR2020-01463, Paper 27 at 42; *Hockerson-Halberstadt*, 222 F.3d at 956 (“[P]atent drawings do not define the precise proportions of the elements and **may not be relied on to show particular sizes** if the specification is completely silent on the issue.”).

In addition, Figure 7 also depicts the alleged gap between the protrusions and their corresponding recesses, which Petitioners agree are intended to “secure[] the cartridge to the device.” Reply 12-13; Figure 7 (as annotated by Petitioners).

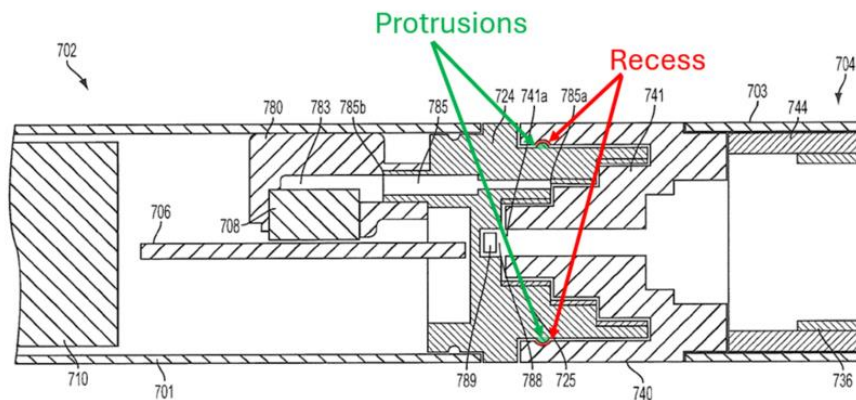


FIG. 7

If a gap actually existed around the entirety of the protrusion as Petitioners allege, it would separate the protrusion and recess, causing it to not be tightly coupled, preventing the cartridge and device from being “secured.” Ex. 2054, 18:18-19:9 (“[O]ne would certainly want to minimize the amount

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of movement”). To the contrary, Worm teaches the need for a tight coupling where “the inner periphery of the base may define a radius that is *substantially equal* to, or *slightly* greater than, a radius of the outer periphery of the coupler.” Ex. 1004, ¶57.

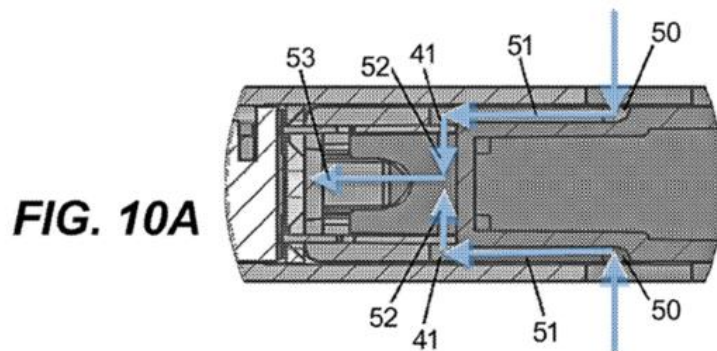
Moreover, Petitioners do not dispute that the winding path forms a labyrinth seal. POR 65-66; Reply 8-9. Instead, Petitioners cite to a reference stating that labyrinth seals are “non-contacting seals” and “not fluid-tight.” Reply 9. Yet Petitioners rely on a reference that describes intentionally-designed labyrinth seals for “steam and gas turbines” which operate at “extremely high speeds” and therefore need “to eliminate all rubbing contact,” *i.e.* all contact between moving components that would otherwise rub against each other. Ex. 1024, 27-28. This description has no relevance to the device in Worm. Ex. 2054, 18:18-19:9 (testifying desirability of minimal movement). It is also wrong. Dr. Collins testified, without rebuttal,⁴ that labyrinth seals are “not always noncontact.” Ex. 1040, 75:22-76:4.

Petitioners instead cite to the ’123 patent’s “numerous turns” that “still provide required airflow.” Reply 9-10 (citing Figures 10A-C). This has no

⁴ Indeed, in the parallel litigation, Petitioners’ expert testified that he was not familiar with a labyrinth seal. Ex. 2052, 63:21-64:1.

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bearing on Worm’s lacking disclosure. Regardless, this is a misleading description of the figures. Arrows 52 and 53 are arrows depicted in “an open chamber,” not a narrow, winding path. Ex. 1040, 112:15-19. As Dr. Collins explains, the arrows “indicat[e] the general direction of the air flow,” but “air doesn’t turn those 90 degrees.” *Id.*, 113:6-10. At most, only the turn at 41 is a 90 degree angle.



PO also argued, and the Board agreed, that the alleged gap, if it existed, would be sealed during inhalation. POR 66-67; ID, 25. Petitioners argue without a hint of irony that Worm does not disclose this—of course, Worm does not disclose **anything** about Figure 7’s alleged gap. Reply 11-12. PO’s argument is merely a natural consequence of the fact that negative pressure will bring the two components together, to the extent they are not already tightly coupled. Petitioners also argue that PO’s argument cannot be true because then the path between the pressure chamber and air inlet 789 “would

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be isolated from all airflow.” Ex. 1004, ¶76. This, however, assumes that gap is uniform which is Petitioners’ burden to prove and, as explained above, is contradicted by Worm’s express disclosures. Finally, Petitioners argue that Worm’s protrusions “secure[] the cartridge to the device, which would maintain the non-airtight interface without blocking air flow.” Reply 12-14. But that would not be true if there is a uniform gap as Petitioners argument requires, since such a gap would also be between the protrusions and recesses.

In sum, Worm provides no description of Figure 7’s alleged gap, and there is no reason other than the figure to believe any such gap would exist.

C. Petitioners Cannot Rely On the Knowledge of a POSITA to Fill Deficiencies in the Prior Art

Worm’s failure to disclose that Figure 7’s alleged gap is an airflow path is not cured by Petitioners’ arguments about the knowledge of a POSITA, which are contradictory and unsupported.

Petitioners argue that Worm’s air inlets 389/789 “are optional” and “only appear in Worm’s dependent claims.” Reply 5. This is false. Worm only says that “[i]n some embodiments, the coupler 324 can include an air inlet channel 388 that can be adapted to distribute drawn, ambient air through an electronic smoking article including the coupler.” Ex. 1004, ¶69. This says nothing about air inlet 789 (the embodiment Petitioners rely on), and does

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not suggest air inlet 389's presence is **optional**, only that "in some embodiments" it is found on "coupler 324." For example, in Figure 2, the air inlet is found on "control body shell" and is a "notch in the shell **where it connects to the coupler.**" Ex. 1004, ¶56. There is no suggestion anywhere in Worm that the alternative airflow path would be Figure 7's alleged gap.

Moreover, as Dr. Collins testified, a fuming device would not need air inlet 389. While a fuming device does need an air inlet to mix the vapor with air, Dr. Collins explained that the air inlet would be "above" (*i.e. downstream* toward the direction of the user) of where "the liquid is vaporized" to "mix the air with the vapor that's generated." Ex. 1040, 104:8-18. Such a device's air inlet would be on Worm's **cartridge**, because that is where the fluid reservoir and heater are located to form vapor. Ex. 1004, ¶53; Fig. 2; Pet. 44. Petitioners do not dispute this testimony.

PO had pointed out that even if the gap existed in Figure 7, given the presence of air inlet 789, such an alleged gap would have the "smallest area limiting airflow" given its necessary small size for tightly coupling two components. POR 66-67. Petitioners respond that, with respect to Figure 7's alleged gap, a POSA would know how to "properly size such passages in a vaporizer to achieve the desired air flow." Reply 14-15. This is not a proper

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argument for anticipation. Regardless, increasing the size of the alleged gap would loosen the coupling, which Mr. McAlexander agrees is undesirable. Ex. 2054, 18:18-19:9. Petitioners also argue that “Figure 7 depicts only the gap’s length and width, not its depth,” and so “PO cannot know whether the gap is the smallest limiting airflow.” Reply 15. But it is Petitioners who must show the alleged gap has enough depth to allow airflow, and they now fully admit Worm lacks any disclosure of such depth.

PO had also argued that if the alleged gap existed, there would be manufacturing “variability in the size of the gap and air inlet,” creating “problems with the operation of the device.” POR 68. Petitioners again argue that a “POSA would have known how to design and manufacture the passages” to create a desirable draw resistance. Reply 15. This does not address the problems with the undisputed variability in the manufacturing process, which would significantly be increased by the addition of an alleged winding gap as depicted in Figure 7. Petitioners instead point to comments of JUUL’s founder Adam Bowen during the design of the JUUL system, who had called its airflow path design “flawed” because manufacturing variances might cause inconsistent draw resistance. Reply 15 (Ex. 1048). But as the evidence shows, Mr. Bowen’s observation actually ***supports*** PO’s argument

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that any actual gap would have had similar issues at the time of the patent. Ex. 1048. Mr. Bowen also provided several recommendations to resolve the issues, [REDACTED] [REDACTED]

[REDACTED] It is improper for Petitioners to rely on the *inventor's* ability to overcome these variabilities as evidence a POSITA would be able to, especially in a hypothetical, hindsight-driven modification to an alleged gap depicted in Figure 7.

[REDACTED]

[REDACTED]

[REDACTED] [REDACTED] [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

⁵ See <https://www.metric-conversions.org/pressure/atmospheres-to-millimeters-of-water.htm>. PO requests the Board take judicial notice of this well-known fact.

PUBLIC VERSION**III. GROUND 2: WORM ALONE DOES NOT RENDER OBVIOUS THE CHALLENGED CLAIMS**

As explained in the POR, Petitioners’ arguments that the alleged gap would be obviously an airflow path do not resolve Worm’s failure to disclose it.

Petitioners respond that Worm discloses that air inlets 789 are only “[i]n some embodiments.” Ex. 1004, ¶69. But as discussed above, even if an embodiment of Figure 7 does not have air inlet 789, it could be a “fuming device” where the air inlet is on the cartridge downstream of the heating coil. Ex. 1040, 103:4-13. Moreover, Petitioners provide no motivation why Figure 7’s alleged gap could be modified to be an airflow path. Petitioners instead rely on Dr. Collins’s testimony from over a decade ago opining that, with respect to a 1997 patent application describing a vaporizing device, it would be obvious to place an “air flow channel anywhere in an e-cigarette housing.” Reply 16 (quoting Ex. 1039, ¶60). This testimony was with respect to a device with a single, integrated housing—not one with coupled parts as in Worm or the ’123 patent. Dr. Collins testified it would be obvious to place an air flow channel within “an e-cigarette *housing*,” but that says nothing about whether it would be obvious to turn any alleged “gap” between the housings of two

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components into an air flow channel. Dr. Collins’s testimony did not even mention a “gap.”

Petitioners also argue that Levitz and Thorens⁶ “disclose[] an air inlet at the interface between the cartridge and device body.” Reply 16. Neither reference teaches, suggests, or provides any motivation to make Worm’s alleged **winding gap** an airflow path, as Petitioners propose for this ground.

Petitioners do not dispute the undesirability of using Worm’s alleged gap as an actual airflow path. POR 70. Petitioners instead mischaracterize Dr. Collins’s testimony as an admission that “multiple air inlets are beneficial to prevent an e-cigarette from being rendered inoperable if one inlet is clogged.” Reply 16-17 (citing Ex. 1040, 105:7-16). However, Dr. Collins made clear multiple air inlets make “tolerance issues ... more and more problematic.” Ex. 1040, 105:7-16.

In response to PO’s argument that Figure 7’s alleged gap would be difficult to control as an airflow path given manufacturing variances, Petitioners argue “a POSA would have known how to properly size such a channel to achieve the appropriate airflow and PO’s own product confirms

⁶ Petitioners attempt to concoct a new ground of unpatentability (Worm in view of Thorens) should be rejected as an improper new argument.

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that substantial airflow and draw resistance variation is acceptable.” Reply

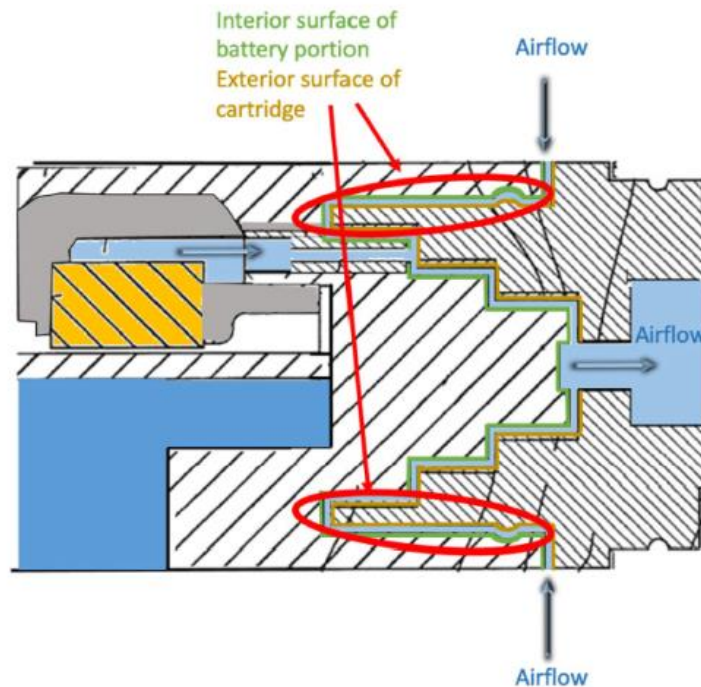
17. This argument fails for the same reasons discussed above.

IV. GROUND 3: WORM-LEVITZ DOES NOT RENDER OBVIOUS THE CHALLENGED CLAIMS**A. Petitioners’ Combination Merely Adds Air Inlets And Does Not Address Worm’s Lack of Airflow Path**

PO pointed out that Petitioners only propose adding Levitz’s *air inlets*, not its *air flow path*, and therefore the combination fails to address Worm’s lack of the claimed air flow path. POR 6-7; Pet. 56. This is further supported by the specific motivations proffered in the Petition: that “placement of *air inlets* is a design choice” (Pet. 57), that “having ... *air enter* at the connection interface was well known in the art” followed by several references disclosing an *air vent inlet* (Pet. 57-58), that the combination provides an additional “*exit*” for backflow (Pet. 59-60), and that there would be a reasonable expectation of success “placing the *air inlet* on the periphery of the device where the battery and cartridge connect” (Pet. 60). Accordingly, even if it were obvious to add an air inlet, the combination fails to render obvious the claimed air flow *path*.

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Petitioners’ only argument to the contrary is that they “illustrated a new airflow path if the male-female connections were swapped.” Reply 17-18; Pet. 62.



Pet., 62

Here, however, Petitioners only proposed “reversing the coupling,” and only argued the reversal was simply a “known design choice.” Pet. 61. Petitioners’ combination still relies on the same-sized alleged gap depicted in Figure 7, and all the problems with such an alleged gap discussed above. The Petition does not mention changing anything about Figure 7’ alleged **gap**, only the configuration of the coupling. Pet. 61. Indeed, the Petition argued the

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modification of the coupling “would not have meaningfully impacted the rest of the device and it maintains the coupling stability.” Pet. 62. At bottom, the Petition simply does not propose or provide any motivation for modifying Worm’s alleged gap to result in the claimed air flow path.

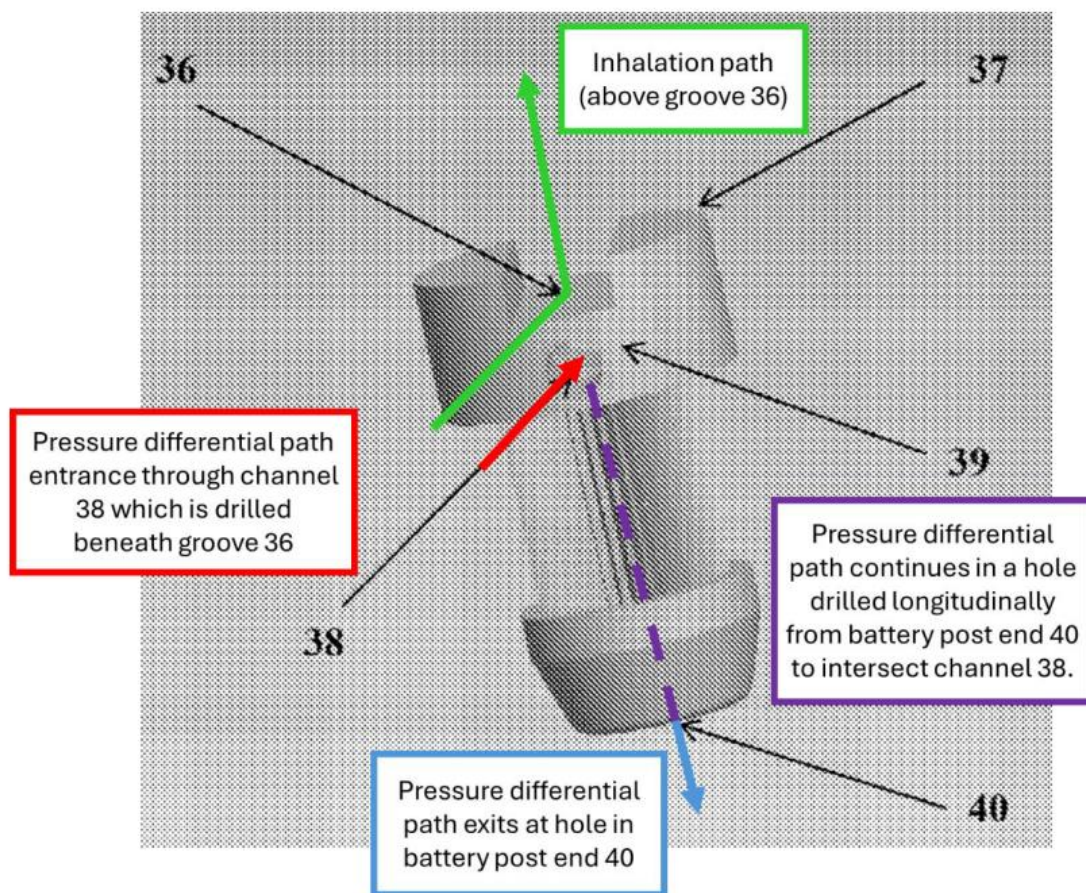
B. Levitz’s Figure 16 Has Backflow Problems And There Is No Motivation to Combine

PO argued that even if one were to consider Levitz’s air flow path in Figure 16, a POSITA would lack motivation because Levitz describes that embodiment as undesirable due to backflow issues, especially because “backflow” was Petitioners’ only motivation for combining with Levitz. POR 8-9. Petitioners do not dispute that Figure 16 does not solve backflow problems. Reply 18. Instead, Petitioners respond that Figure 16’s backflow issues are “not because of the *side air inlets*, but because the pressure channel is directly aligned with the cartridge airflow passage.” Reply 18-19. Accordingly, Petitioners concede that Figure 16’s “airflow passage” has undesirable backflow problems. And as explained above, merely adding Levitz’s “side air inlets” does not resolve Worm’s lack of an air flow path.

In Reply, Petitioners point to Figure 18, improperly relying on a new embodiment in Levitz. Petitioners argue that Figure 18 “minimizes backflow ... yet retains the side air inlets and airflow through the cartridge and device

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body interface.” Reply 19. But as Dr. Collins testified, Figure 18’s air flow path does not meet the claimed requirement that it is “exposed” to “the pressure sensor.” Ex. 2053, ¶¶70-72. Indeed, Mr. McAlexander acknowledged that the inhalation/backflow path of Figure 18 is separate from the pressure differential path. Ex. 2054, 22:20-24:15.



Annotated Figure 17

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C. Arbitrary Placement of Air Inlets is Not a Mere “Design Choice”

PO explained why an air inlet and air flow path cannot be arbitrarily added anywhere to the e-cigarette, and that Petitioners and their expert failed to consider how it would affect draw resistance. POR 12. Petitioners respond that Worm’s air inlets 389/789 “are not in every embodiment,” and that there is value in redundant air inlets. Reply 20. This is untrue, for the reasons explained above. As for the numerous considerations necessary for adding an air inlet and corresponding path, Petitioners simply refer to their arguments from Ground 1, which fail for the same reasons discussed above. Reply 22.

D. No Motivation to Combine Because Combination Causes Backflow Problems that Worm Already Solved

PO explained that Worm already solves backflow issues, and so there would be no motivation to look to Levitz. POR 14. Petitioners respond that Worm only “reduce[s] backflow,” and so does not solve that problem. Untrue. Worm states that its design “**prevent[s]** passage of liquid ... [and] **prevent[s]** contamination of the sensor,” not merely reduces it. Ex. 1004, ¶5; *see also* ¶76 (“[P]revent[s] ... incidence of passage of liquid”).

Petitioners argue, relying for the first time on Levitz’s Figure 18, that the combination “adds a further backflow path away from the pressure

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channel, which a POSA would have understood to be desirable.” Reply 20. The Board should not consider this new argument. Regardless, Dr. Collins’s undisputed testimony is that Figure 18 does not teach the claimed air flow path, and so would provide no teaching to modify Figure 7 to meet the claims.

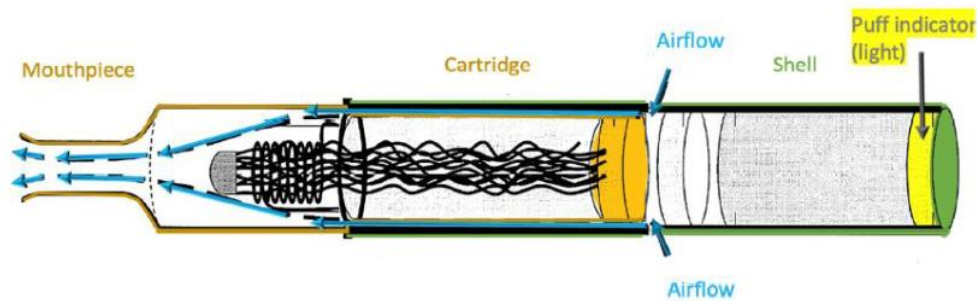
Moreover, modifying Figure 7’s alleged gap into an air flow path would **increase** the chance backflow enters Worm’s pressure channel. Ex. 2053, ¶77; POR 15-18. Petitioners’ only response is that this would not happen because “Worm’s pressure channel 785 is not in line with the cartridge airflow path.” Reply 21. Yet this fails to address Dr. Collins’s detailed testimony about how backflow will enter the pressure channel if Figure 7’s alleged gap is an air flow path. Ex. 1040, 116:18-120:10. Specifically, Dr. Collins explained that vapor entering the alleged gap and leaving the device will carry some backflow into the alleged gap, and then when a negative pressure is applied, “fluid that’s in the chamber ... will start to move to the left and go into the pressure chamber.” *Id.*, 116:18-118:3. Dr. Collins also explained that gravity could cause liquid to flow into the pressure channel depending on the orientation of the device. *Id.*, 118:5-119:1. Petitioners do not provide any rebuttal.

PUBLIC VERSION**V. GROUND 4: THORENS-WEIGENSBERG DOES NOT RENDER OBVIOUS THE CHALLENGED CLAIMS****A. No Motivation to Combine**

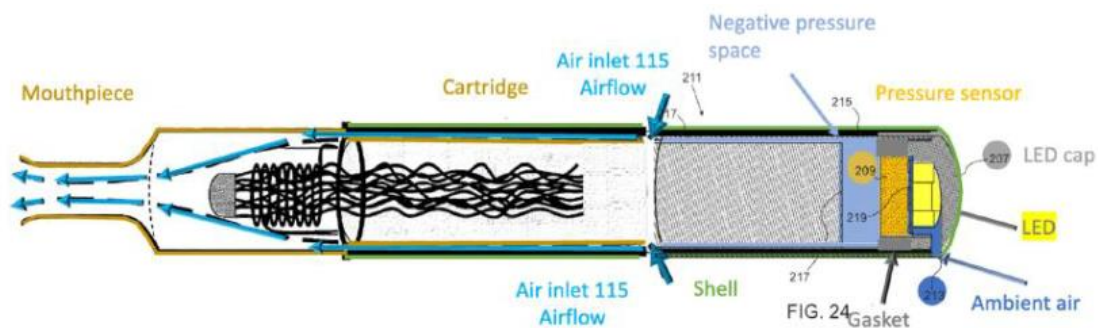
PO explained, and the Board credited, Petitioners' failure to provide a motivation to make the significant, wholesale changes to Thorens in view of Weigensberg—especially in view of Thorens's disclosure that it can already detect inhalation. POR 74-82; ID, 42. Petitioners argue for the first time that “combining [Thorens's] sensor, integrated circuitry, and LED within Weigensberg's LED cap” would “save space” which “could be used for a larger battery or other uses.” Reply 22. The Board should not consider this argument which newly introduces motivation and proposes including the integrated circuit (which PO pointed out was removed from the combination described in the Petition (POR 80)).

Moreover, Petitioners' proposed modification does not save space, because the addition of a differential pressure sensor requires air flow paths on both sides of the sensor, as well as an LED cap to separate them. This is apparent from the unmodified and modified versions of Thorens presented in the Petition, where “Modified Thorens” has a number of components at the end of the device that are not present in the original Thorens.

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Unmodified Thorens

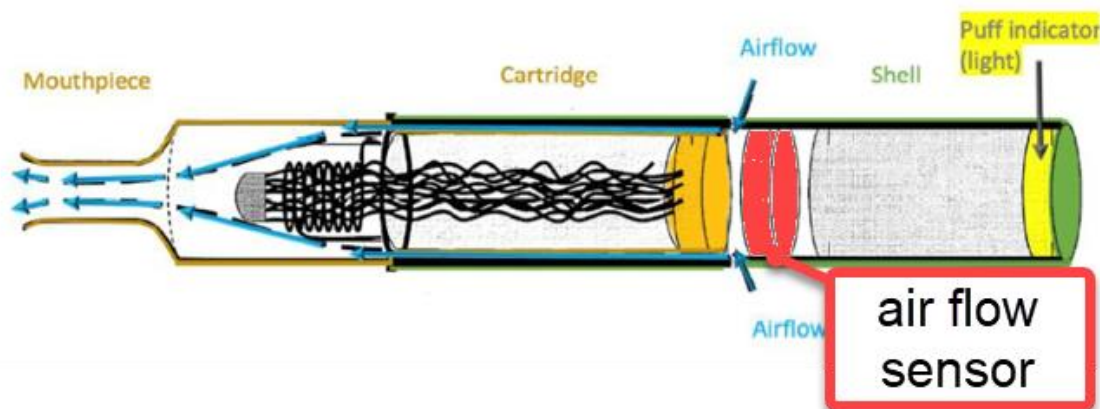


Modified Thorens

Petitioners next argue that the modification does not require “significant changes” because Thorens’s “sensor to detect air flow” could be a pressure sensor, and therefore “Weigensberg’s pressure sensor is not materially different from Thorens’.” Reply 22-23. This calls into question the entire purpose of the combination, and raises another new obviousness theory not found in the Petition. Regardless, a differential pressure sensor does not “detect air flow.” Instead, as Mr. McAlexander admitted, a pressure differential sensor “measures the [pressure] difference between two points.”

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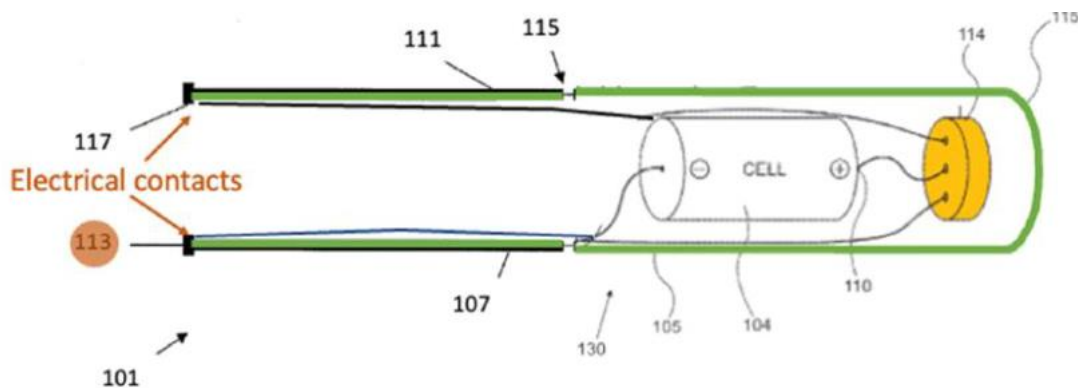
Ex. 2054, 20:7-11. This might correspond with sensing inhalation which causes negative pressure, but **only** if one side is exposed to ambient air and sealed off from the other side that is exposed to a pressure chamber in fluid connection with the inhalation. These separate chambers are disclosed in Weigensberg, but not Thorens. Instead, Thorens's sensor is directly adjacent to the air inlet, indicating it directly measures airflow.



PO argued that the use of a differential pressure sensor could cause overheating. Petitioners respond that Thorens “discloses temperature controls that prevent overheating,” and that “differential sensors were typical in e-cigarettes at the time.” Reply 23. But to regulate temperature with an inaccurate sensor, a temperature sensor would be needed. That is not in Petitioners’ proposed combination and would further add complexity to the combination.

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PO also argued that the combination leaves exposed leads and wiring, as shown in Petitioners’ own images of the proposed combination. POR 78-79. Petitioners respond that the “schematic is not a production device” and a “POSA would have recognized that these connections can be made in a safe and secure manner.” Reply 24. But Petitioners do not explain how.



Petitioners further argue that “the leads [in the combined device] are encapsulated in the LED cap, not exposed as PO alleges.” Reply 25. But Petitioners do not explain how the battery would be coupled to the leads in the LED cap, or how that could be done without exposing the battery leads.

VI. GROUNDS 5-8 ALSO FAIL

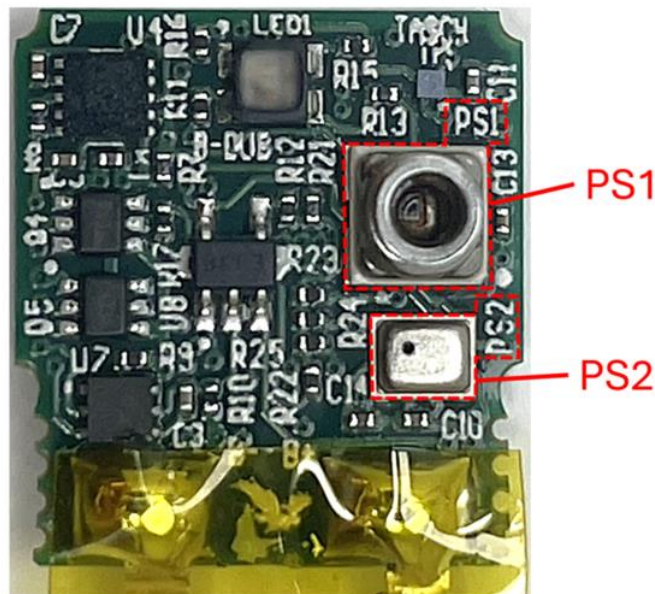
Grounds 5-8 rely on Grounds 1-4 and therefore fail for the same reasons.

PUBLIC VERSION**VII. SECONDARY CONSIDERATIONS SUPPORT NON-OBVIOUSNESS**

Petitioners do not dispute that there is extensive evidence of industry praise, commercial success, and long-felt need of the JUUL System. POR 42-54. Instead, Petitioners argue that the JUUL System does not practice a “pressure sensor” and that it is not co-extensive with the ’123 patent.

A. The JUUL System Practices a “Pressure Sensor”

Petitioners argue that the JUUL System does not have a single pressure sensor with two exposed sides, but instead uses two pressure sensors, labeled PS1 and PS2 in the below. Reply 28-32.



Petitioners’ arguments are largely a rehash of their preliminary reply arguments which the POR already addressed. POR 22-23. Specifically, the

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JUUL System’s “pressure sensor comprises two pressure detecting **components** and associated circuitry,” each of which has a corresponding “side.” POR 23.

Petitioners resort to a narrow claim construction of “pressure sensor” to exclude an integrated circuit with two pressure sensing components, but provide no support for such a construction. In any case, there is no basis for any such narrowing construction in the ’123 Patent. At a minimum, the JUUL System embodies an equivalent to the pressure sensor. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731 (2002) (“The scope of a patent is not limited to its literal terms but instead embraces all equivalents to the claims described.”). Petitioners do not dispute this.

Petitioners also argue that the JUUL System’s pressure sensor does not have a “gasket around” it, because there is only “a gasket ... around one sensor” but not the other. Reply 32. Petitioners again rely on a narrow construction of “around” as requiring “surround.” But this is not consistent with Petitioners’ reliance on Worm, where Worm’s sealing member 380 (gray) does not surround Worm’s pressure sensor (orange). Pet. 46. Indeed, Worm’s sealing member only covers a small part of Worm’s pressure sensor, as shown in Petitioners’ annotated version of Figure 5. *Id.*

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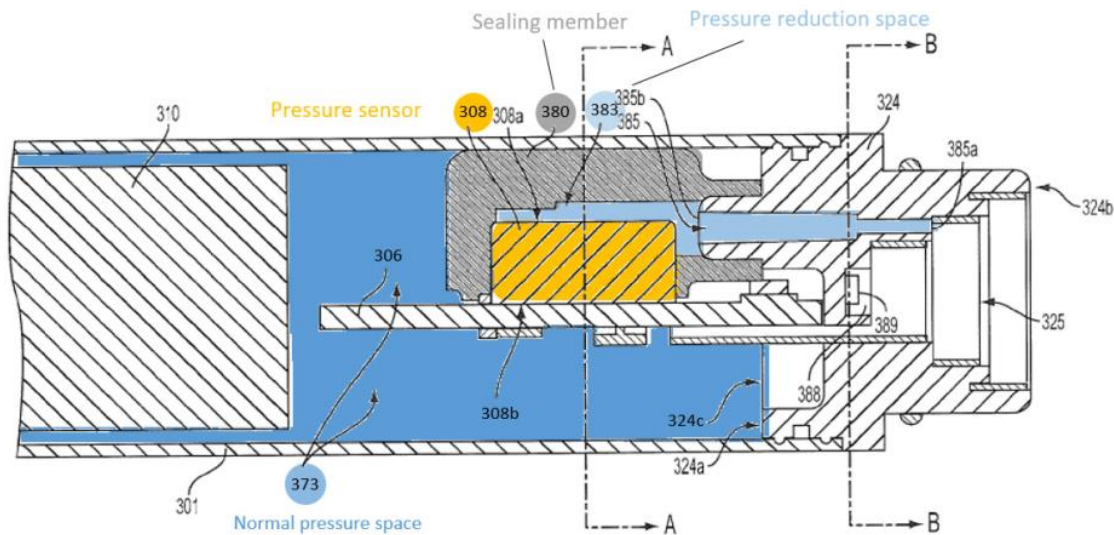


FIG. 5

It is also inconsistent with the purpose of the gasket, which is to isolate the ambient pressure from the airflow path pressure. The gasket in the JUUL System performs this function.

B. The JUUL System is Co-Extensive With the '123 Patent

Petitioners' argument that the JUUL System is not co-extensive with the '123 patent largely rehashes its preliminary reply arguments based on *Fox Factory*, arguing that there are three "critical" unclaimed features of the JUUL System: nicotine sale formulation, thumb drive shape, and temperature control system. Reply 34-35. The POR already addressed such arguments, including that these features are actually claimed. POR 23-27.

Petitioners do not dispute that these features are claimed. Instead, Petitioners respond that the claims are **broader** than the three features. POR

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34-35. But Petitioners do not cite to any authority that a practicing product lacks co-extensiveness when particular features practice broader limitations. *Fox Factory* held that the product must include a “critical’ ***unclaimed*** feature.” 944 F.3d at 1375. This is why *Fox Factory* was concerned with the fact that the claims only covered ***a subcomponent*** of the practicing product. POR 24 (citing cases).

The ITC rejected a similar legal argument made with respect to the related ’722 patent. Ex. 2055, 89-90 (“NJOY argues that ... the JUUL System comprises critical unclaimed features—including nicotine, salts, flavors, and the overall appearance of the JUUL System.”). The ITC concluded “NJOY’s arguments regarding nexus are unpersuasive” because “there is rarely a perfect correspondence between the claimed invention and the product.” *Id.*, 90 (quoting *Fox Factory*, 944 F.3d at 1374). The ITC’s decision is persuasive authority that the Board should adopt.

VIII. CONCLUSION

For the foregoing reasons the Board should affirm the patentability of all challenged claims of the ’123 patent.

Date: January 15, 2025

By: /s/ James Glass

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PUBLIC VERSION**CERTIFICATE OF LENGTH (37 C.F.R. §§ 42.24)**

The undersigned hereby certifies that, according to the word-processing system used to prepare the foregoing document, this document has 5,419 words and thus complies with the applicable word limit.

Date: January 15, 2025

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CERTIFICATE OF SERVICE (37 C.F.R. §§ 42.6(E), 42.105(A))

The undersigned hereby certifies that the foregoing document was served in its entirety on January 15, 2025 upon the following parties via Electronic Mail:

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