

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUUL LABS, INC.,

Petitioner,

v.

NJOY, LLC,

Patent Owner.

IPR2024-00161
U.S. Patent No. 10,334,881

PATENT OWNER'S SUR-REPLY

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UPDATED EXHIBIT LIST

Exhibit No.	Description
2001	U.S. Patent Publication US2009/0095311A1 (“Han”)
2002	Transcript Excerpt from Case Management Conference in <i>In the Matter of Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof</i> , ITC-337-TA-1372, dated Feb. 16, 2024
2003	National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Committee on the Review of the Health Effects of Electronic Nicotine Delivery Systems; Eaton DL, Kwan LY, Stratton K, editors. Public Health Consequences of E-Cigarettes. Washington (DC): National Academies Press (US); 2018 Jan 23. Chapter 14, Injuries and Poisonings, pp. 473-479 https://www.ncbi.nlm.nih.gov/books/NBK507183/
2004	Darragh O’Carroll, MD, “Nicotine poisoning: “What are the symptoms, and can you overdose?” (Medical News Today, Feb. 16, 2023), https://www.medicalnewstoday.com/articles/319627
2005	<i>Fuma International LLC v. R.J. Reynolds Vapor Company</i> , Case No. 1:19-cv-260, D.I. 1 (M.D.N.C., Mar. 6, 2019) (“Fuma Complaint”)
2006	IPR2024-00160 Excerpt for IPR2024-00161 POPR
2007	<i>Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof</i> , 337-TA-1372, Complainant’s Pre-hearing Brief (May 20, 2024)
2008	<i>Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof</i> , 337-TA-1372, JUUL Labs, Inc. Pre-hearing Brief (May 24, 2024)
2009	<i>Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof</i> , 337-TA-1372, Order No. 36 (Apr. 4, 2024)
2010	Collins Dictionary (10th ed. 2010)
2011	Chambers Concise Dictionary (2nd ed. 2009)
2012	Concise Oxford English Dictionary (12th ed. 2011)

Exhibit No.	Description
2013	NJOY NPRO CT Scan Images, JLI-ITC1372_00979982
2014	<i>Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof</i> , 337-TA-1372, Public Transcript
2015	Photograph of NJOY Pro, JLI-ITC1372_00979934
2016	Photograph of NJOY Pro, JLI-ITC1372_00979938
2017	Deposition Transcript of Robert Sturges, dated Aug. 9, 2011 (IPR2024-00160, IPR2024-00161)
2018	<i>Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof</i> , 337-TA-1372, Order No. 51 (June 25, 2024)
2019	Merriam-Webster’s Collegiate Dictionary (11th ed. 2004)
2020	The American Heritage Dictionary of the English Language (4th ed. 2006)
2021	Random House Webster’s College Dictionary (1992)
2022	Declaration of William Singhose
2023	Declaration of Daniel Hillenbrandt
2024	Declaration of Rebecca Moore
2025	<i>Intentionally left blank</i>
2026	RJR Email dated June 15, 2010
2027	RJR Email dated June 29, 2010
2028	RJR Email dated July 19, 2010
2029	U.S. Patent No. 11,497,864 File History
2030	Declaration of Gregory D. Conley, U.S. Patent No. 10,334,881
2031	Excel Spreadsheet, Fuma Sales
2032	RJR Horizon 3 Vapor Presentation: The Open Innovation Solution
2033	Premarket Tobacco Product Applications – Vuse Ciro ENDS Products

Exhibit No.	Description
2034	R.J. Reynolds Vapor, Vuse Launch
2035	Vuse Patent List
2036	Premarket Tobacco Product Applications – Vuse Solo ENDS Products
2037	Certified Translation of Patent No. KR20100004364U, JLI-ITC1372_00980718
2038	GreenSmoke 2008 – 1st Generation Cartridge Presentation, NJOYITC00104148
2039	Carmines Consulting, LLC – Rechargeable e-Cigarettes, NJOYITC00105699
2040	<i>Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof</i> , 337-TA-1372, JUUL Labs, Inc.’s Responsive Post-Hearing Brief (July 15, 2024)
2041	U.S. Patent Application 13/594,813 File History
2042	Exhibit 2 from the October 24, 2024 Deposition of William Singhose, PH.D.
2043	Excerpts from Vallee ITC Demonstratives (CDX-002C)

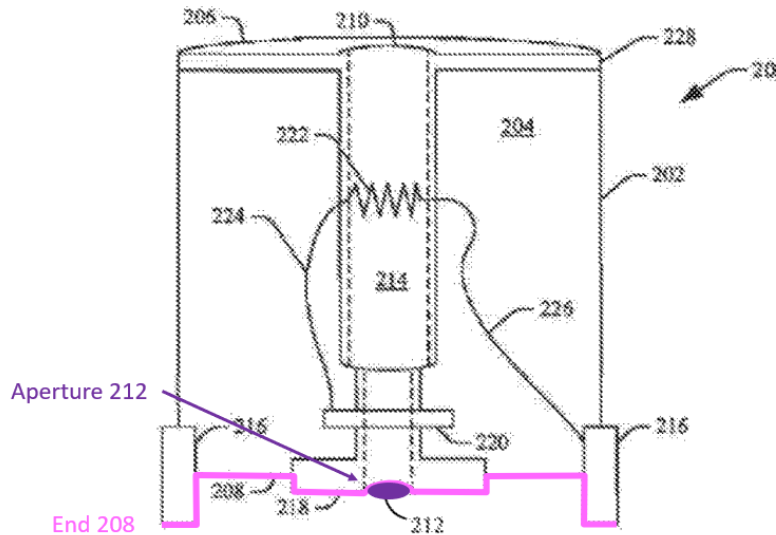
I. Introduction

JLI cannot meet its burden to show invalidity. JLI's proposed claim constructions are incorrect, and its arguments relying thereon cannot stand. JLI's Reply misleads and otherwise resorts to unsupported attorney argument. As detailed herein, JLI numerous times attributed statements or positions to Dr. Singhose that he did not make and omitted key testimony giving context. Ultimately, Dr. Singhose's testimony supports validity, and he is the only expert that expressly weighed the significant drawbacks against the alleged benefits of the proposed combinations. His opinion that a POSITA would not have made the proposed combinations after expressly weighing these considerations stands unrebutted: JLI could have submitted a reply declaration but tellingly did not.

II. Claim Construction

A. "end"

The term "end" means the "extrema of an object." POR, 19. It may be non-planar, such as end 208 in the 881 Patent (below). *See also* EX2022 ¶¶66.



EX1001, Fig. 2 (annotated)

By contrast, JLI argues an “end” extends to the cartridge’s center. Reply, 6-7. No evidence supports JLI’s interpretation and its Reply arguments rely on inaccuracies and out-of-context statements.

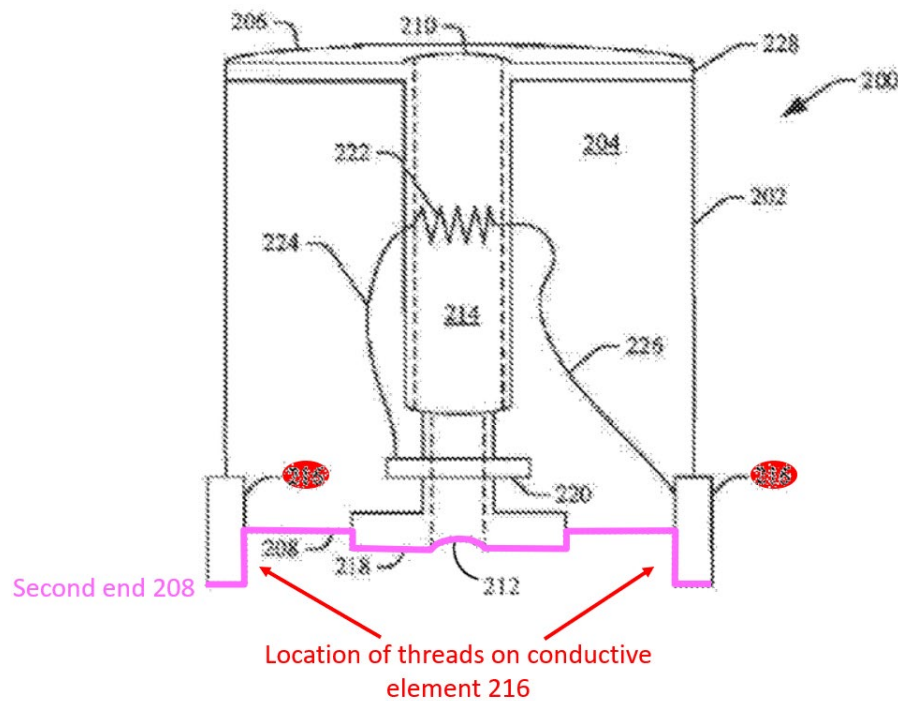
First, while Dr. Singhose agreed an “end” may be “a part or *place* at or *adjacent to an extremity*” (Reply, 6 (original emphasis) (citing EX1035, 104:7-11)), his agreement was caveated: “as long as we understand adjacent to have some bounds on it” and “generally means next to and touching.” EX1035, 104:7-23. This aligns with NJOY’s construction and the non-planar first end shown in Figure 2 of the 881 Patent.

JLI also quotes Dr. Singhose’s testimony that an “end” is “fundamentally a three-dimensional thing.” Reply, 7. JLI, however, omitted surrounding testimony where he noted, “it’s always a three-dimensional to some extent” because “the

minimum thing to identify is a molecule, which has a third dimension.” EX1035, 95:12-18. Dr. Singhose also explained, “it would extend a minimal distance, a de minimus amount” and “basically it’s the extreme surface.” *Id.*, 96:7-15.

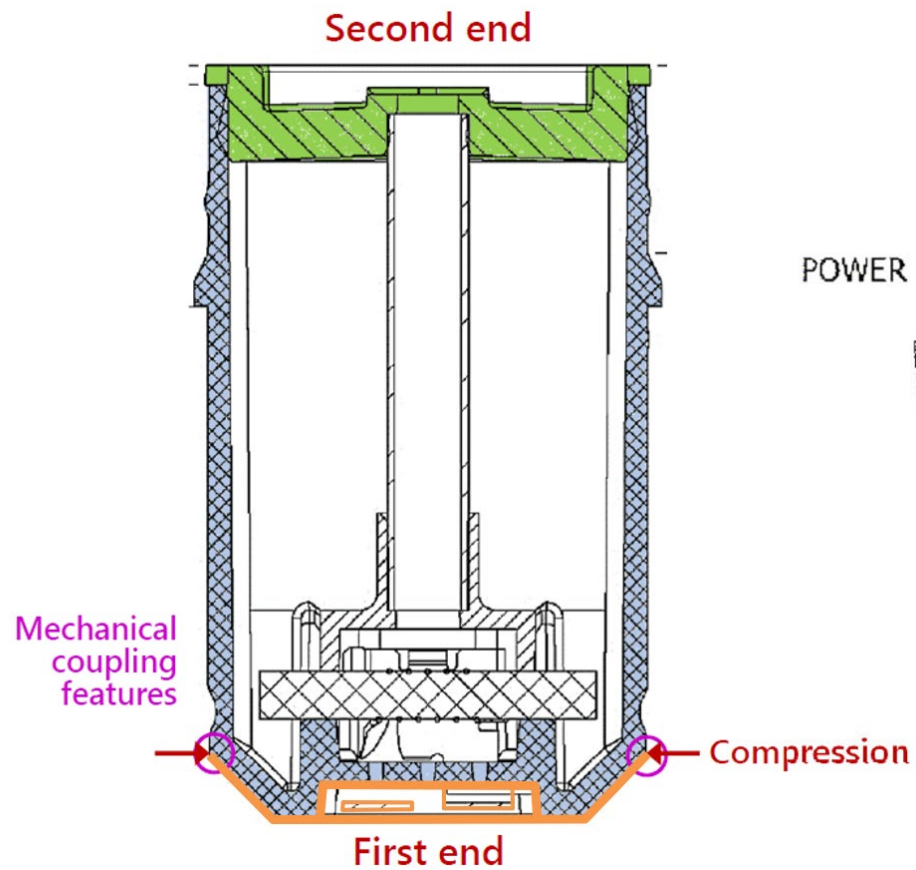
JLI then contends Dr. Singhose agreed that “there would be a range of distances from the very end somewhere inward towards the center of the cartridge that you would call the end.” Reply, 7. That quote was part of the examining attorney’s question. EX1035, 95:23-25. Dr. Singhose’s answer explained, with reference to Figure 2, that the end is not necessarily planar, and therefore, an end can have portions still on the extrema that range towards to the cartridge’s center. EX1035, 96:1-6.

Second, JLI relies on claim 1 because its recites, “the first end ... includes [a] ... portion that is adapted to mechanically ... couple.” Reply, 7. According to JLI, to perform this coupling the end must extend inward from the extrema. *Id.* Figure 2 of the patents, however, depicts conductive element 216, which is both part of the extrema and “facilitate[s] mechanically ... coupling the cartridge.” EX1001, 6:29-31.



EX1001, Fig. 2 (annotated)

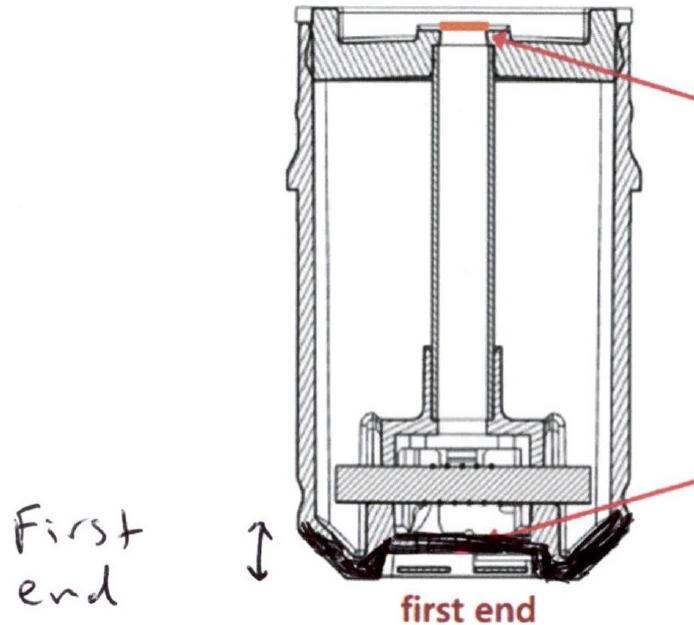
Third, contrary to JLI's incorrect assertion that NJOY's construction conflicts with its infringement positions at the ITC (Reply, 7), NJOY did not identify the JUULpod notches as an end "portion" that mechanically couples. Instead, NJOY identified compression areas on the bottom surface for coupling.



EX2043.003 (further annotated in orange to show NJOY's identification of the end)

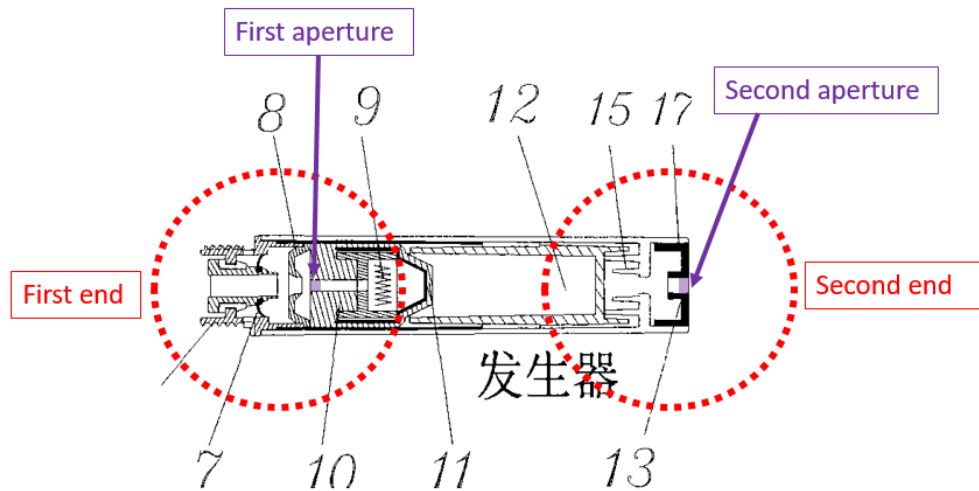
Dr. Singhose testified that a POSITA would identify the JUULpod's bottom surface as the first end, and annotated an image of the JUULpod accordingly.

EX1035, 100:10-101:17.



EX2042.001

At best, JLI's cited evidence shows that an "end" can be a non-planar surface (and three-dimensional because of some de minimus thickness). No evidence supports JLI's position (below) that Xia's "end" extends well into the center of Xia's generator. EX2022 ¶295. The ALJ in the parallel ITC investigation involving the same prior art agreed. *See Certain Vaporizer Devices, Cartridges Used Therewith, And Components Thereof*, Inv. No. 337-TA-1372, Final ID, 134-135 (Dec. 5, 2024).



Petition, 35

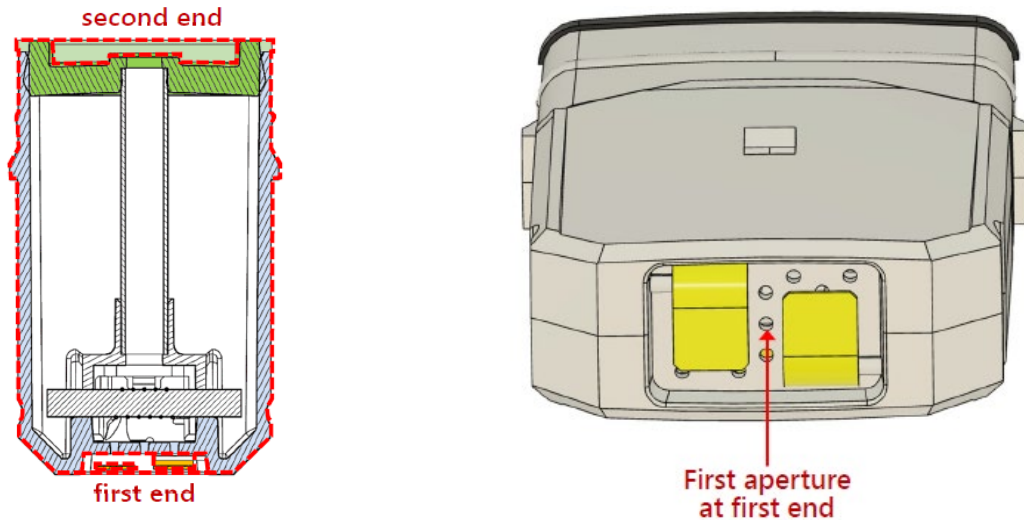
B. “housing having a first aperture on the first end”

This term means “a hole in the housing structure at a location proximate the first end of the housing.” POR, 28. No intrinsic evidence supports interpreting this limitation as encompassing an aperture inside the housing. POR, 23-24.

First, NJOY’s ITC infringement contentions regarding the JUULpod align with its construction here. As shown below (left), the JUULpod lacks a planar first end; instead, the housing (indicated with red dashed lines) has a first end defined by the bottom surface of a tank and electrical contacts.¹ See EX1035, 91:15-19. As

¹ JLI states “NJOY argued that ‘two tiers of ‘housing’ of the JUUL device serve as the claimed housing ... because it pointed to the electrical contacts as also being part of the claimed ‘housing’.” Reply, 10. It is unclear what JLI means by “two tiers.”

shown on the right, below, the first aperture is a hole in the housing's first end. It is not in the interior of the housing.



Left: EX1043.002; Right: EX2043.002

Second, JLI argues that fully internal structures can be housings. This is irrelevant. Reply, 11-12. The fact that some housings, “in other contexts,” may be internal to other housings does not mean that the first aperture can be placed interior to the *claimed* housing. Moreover, the first apertures in JLI identifies in Xia and Wang are part of the liquid storage, not the claimed housing.

Third, NJOY’s position at the ITC regarding the Vuse Cirro is consistent. POR,

Regardless, the 881 Patent discloses that the end of the housing can be formed of both conductive and non-conductive material. EX1001, 5:32-37, 6:3-6.

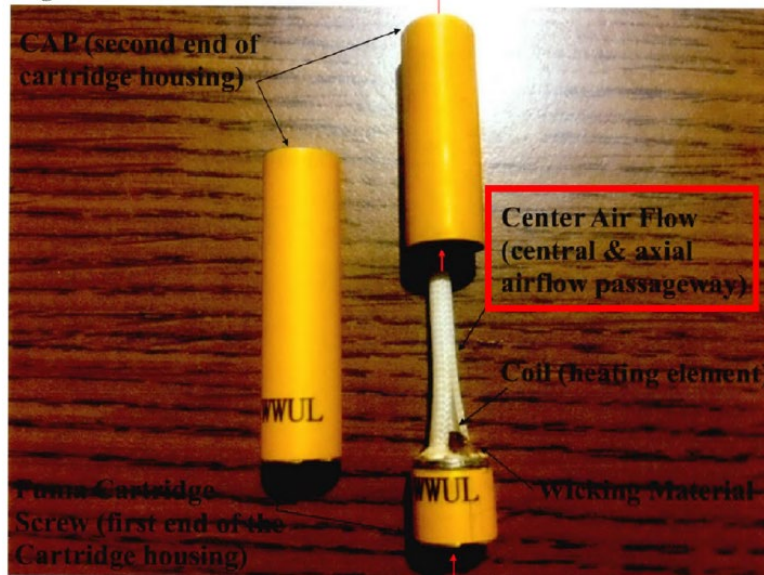
32-37. Contrary to JLI’s characterization, Dr. Singhose did not state that the Vuse Ciro’s positive pin is *fully* internal. Reply, 12-13 (citing EX1035, 88:11-22). By “internal,” Dr. Singhose meant the positive pin is “recessed below” the screw conductor while still being the “outermost thing that you see” consistent with the non-planar end of the 881 Patent’s Figure 2. EX1035, 88:23-89:10; *see also id.*, 85:23-86:13, 87:9-17, 88:1-6, 89:11-92:25.



EX2005.0023

Fourth, the inventor declaration submitted during examination of the 881 Patent is consistent. JLI identifies a figure from the declaration (below) to argue the first aperture is the white tube’s bottom hole because the claim requires the airflow passageway extend from the first aperture. Reply, 14-15.

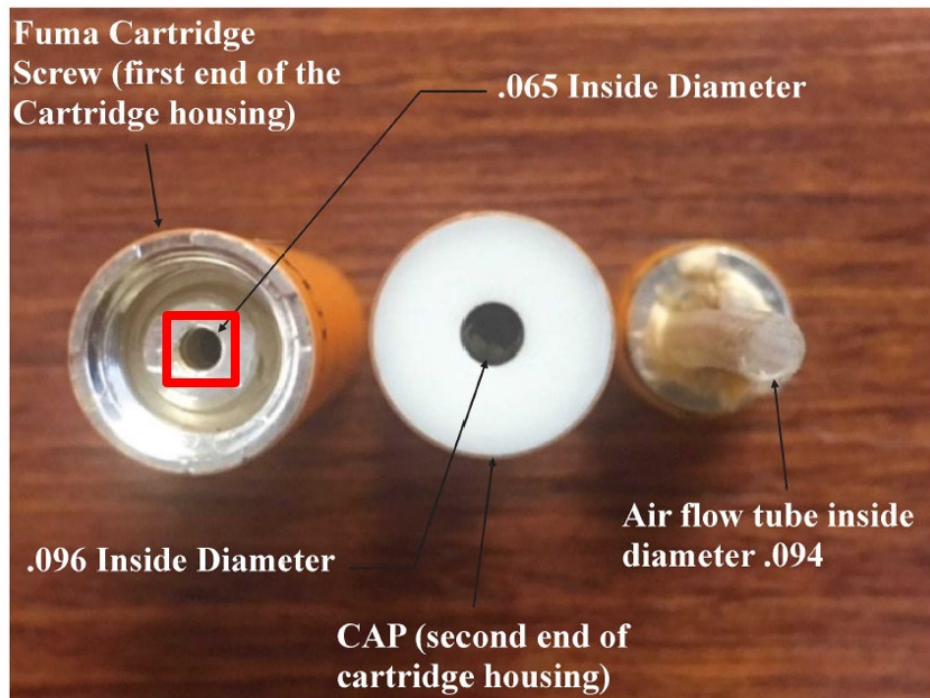
Figure: 6



EX2030.018 (annotated by JLI)

This tube is not the entire passageway. Instead, the “passageway [is] through the yellow cartridge.” EX2030.003. Indeed, JLI omits portions of the declaration identifying an exterior hole as the first aperture:

Figure: 15



EX2030.027 (annotated); *see also id.*, .002

C. “airflow passageway” extending “centrally and axially”

This term’s proper construction encompasses central, axial airflow passageways that may include small obstructions. POR, 22-23. To support its contention that Xia’s circuitous passageway is central, JLI argues, “[t]here is no principled distinction between large and small obstacles.” Reply, 15. False. The prosecution history and M.D.N.C. decision (EX1015) provide guidance on this: obstructions like Han’s or Xia’s liquid storage are “large,” and obstructions diverting airflow no more than the heating element are “small.” POR, 23-28.

JLI fails to address the prosecution history. At minimum, the prosecution

history regarding Han, which is analogous to Xia's device, demonstrates that a large liquid storage that only permits airflow along the periphery does not have a central, axial passageway. POR, 23-27.

JLI argues that NJOY "misreads the M.D.N.C. decision," but it is JLI that misreads. In the decision, the court addressed whether an internal portion of the VUSE Ciro's positive pin is an obstruction that created a non-central, non-axial passageway, or whether the internal portion was like the 881 Patent's heating element—*i.e.*, a small obstruction in a central, axial passageway. The court concluded that the positive pin's internal portion "obstruct[s] airflow and alter[s] the airflow's path but not the ... passageway" because it is similar in size to the Ciro's heating element. *See* EX1015.016. JLI's reading that the obstruction can be any size with the entire housing interior being the passageway vitiates the claim's central and axial requirements. Thus, only obstructions contemplated by the 881 Patent (*e.g.*, that divert the airflow no more than the heating element) should be deemed an obstruction not altering the shape of the airflow passageway.

NJOY's construction aligns with its ITC position regarding Vuse Solo. There, NJOY contended that Solo comprises a central, axial passageway, and the PCB board does not alter the shape of the passageway. EX2043.004. Indeed, the PCB board does not divert airflow more than Solo's heating element. EX1035, 147:2-148:4.

III. Ground 1: Xia (Unmodified)

A. Cartridge Having Both a Heating Element and a Solution Holding Medium

The claims require a cartridge having both a heating element and a solution holding medium, not a first cartridge having a heating element and a second cartridge having a solution holding medium. POR, 8-11. This is evident from the claims themselves and consistent with the specification's distinction between these two form factors. *Id.* JLI attempts to rebrand Xia's "generator," which is the combination of the atomizer and liquid cartridges, as the recited cartridge. Reply, 18. But Xia does not say the generator is a single cartridge. Rather, the record demonstrates that Xia's generator comprises a disposable liquid cartridge and a separate, reusable atomizer cartridge. *See* POR, 37-43, 67-68; *see also* EX1035, 60:8-61:9, 177:20-179:9.

Moreover, treating two cartridges as the claimed cartridge erases the 881 Patent's distinction between its two-cartridge and one-cartridge/cartomizer designs. JLI's specification citations do not support a contrary view. Reply, 18. Regarding Figure 2 (a claimed embodiment), the specification states "*the* cartridge can be manufactured as a multi-piece assembly"—that describes *one* cartridge comprising multiple pieces. EX1001, 1:46-48. That the cartridge may be unassembled does not change that Figure 2 describes one cartridge, not two.

JLI also states, “Dr. Singhose seemed to agree that Xia’s generator is a cartridge.” Reply, 20. False. When asked if the generator is a cartridge, he responded that “it’s two cartridges connected together” and not covered by the claims. EX1035, 61:22-62:5.

Lastly, JLI’s argument about the heating element being interior to the liquid cartridge shell when Xia’s two cartridges are pushed together is irrelevant. Reply, 18-20. The claims require a cartridge comprising both the solution holding medium and the heating element. Xia has separate cartridges for each, even when pushed together.

B. Aperture

JLI bases its Reply argument on claim construction (Reply, 20), which is incorrect. *See* Section II.B, *supra*.

C. Airflow Passageway

JLI bases its Reply argument on claim construction (Reply, 20-21), which is incorrect. *See* Section II.C, *supra*; *see also Vaporizer Devices*, Final ID, 133-134 (finding that Xia does not disclose a central, axial passageway).

D. Claim Elements Not Addressed by JLI

JLI’s Reply does not address several limitations missing from Xia, as raised in NJOY’s Response. *See* POR, §§VI.B.1.d-i.

IV. Ground 1: Xia as Modified Alone or with Wang and/or Fang

JLI's combination of Xia with Wang or Fang's alleged passageway² lacks motivation and is plagued by improper hindsight. None of the alleged benefits would have supported a motivation and many do not even exist. Moreover, JLI's proposed combination creates numerous drawbacks. POR, 59-62. Only one expert (Dr. Singhose) expressly considered and weighed the alleged benefits against these drawbacks, and he concluded that a POSITA would not have been motivated to pursue the combination. *Arctic Cat Inc. v. Polaris Indus., Inc.*, 795 F. App'x 827, 833 (Fed. Cir. 2019) ("The Board must weigh the benefits and drawbacks of the modification ..."); *Winner Int'l. Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 (Fed. Cir. 2000) ("Trade-offs often concern what is feasible, not what is, on balance, desirable. Motivation to combine requires the latter."). JLI supplied no expert declaration in reply and has no expert testimony rebutting Dr. Singhose's analysis.

A. The Alleged Benefits Do Not Support a Motivation

First, JLI's argument that the combination provides a cheaper device (Reply,

² Fang includes a "wall" that precludes the claimed passageway. POR, 51-52. JLI responds that the wall "does not block airflow" because the control switch may detect suction. Reply, 22 n.1. JLI's fails to rebut NJOY's argument that Fang's device may properly function even with a solid wall. POR, 51 (citing EX2022 ¶157).

21-22) is offset by removing components critical to Xia's proper functioning. *See* POR, 55-62. A POSITA would not have pursued these modifications to reduce cost. *See Winner Int'l.*, 202 F.3d at 1349; *see* EX2022 ¶¶189-225; *see also Vaporizer Devices*, Final ID, 137-138 (finding that a POSITA would not have been motivated to remove components).

Second, the combination's straight airflow path providing "reduced airflow resistance and thus better airflow" (Reply, 22) has not been shown as beneficial. No evidence suggests Xia's design suffered from high air resistance or that reduced resistance is desirable. Rather, higher resistance may be desirable. EX1035, 170:10-14; *id.*, 22:4-5, 127:20-24. Moreover, a POSITA would have understood that Xia's non-straight airflow path beneficially mitigated leakage. EX2022 ¶183.

Modifying Xia to have a straight passageway is motivated purely by hindsight, as underscored by JLI's argument that because the *inventors* designed the passageway to be straight, "anyone would." Reply, 22-23; *Otsuka Pharm. Co. v. Sandoz, Inc.*, 678 F.3d 1280, 1296 (Fed. Cir. 2012) ("The inventor's own path itself never leads to a conclusion of obviousness; that is hindsight."). In reality, before the 881 Patent "vaporization was not performed in a central air passageway." EX1041, 58:20-25.

Third, even if extending the liquid storage increases liquid-holding capacity

(Reply, 23),³ this modification would “be disadvantageous in other ways.” EX1035, 59:2-4. For example, the alleged increase only comes from removing the vibrating diaphragms and liquid-blocking plate, which are both critical for Xia’s proper functioning. POR, 61-62; EX2022 ¶¶205, 215-218.

Fourth, regarding the removal of Xia’s vibrating diaphragm (Reply, 23), JLI fails to articulate why it was “over-complicated and error-prone.” Dr. Sturges never opined that removal is a benefit; rather he proposed removal in order to modify Xia’s airflow passageway. *See* EX1007, ¶¶93-96. Regardless, removing the diaphragm deteriorates Xia’s pressure sensing accuracy. *See* Section IV.B, *infra*; *see also* POR, 61; EX2022 ¶¶215-218.

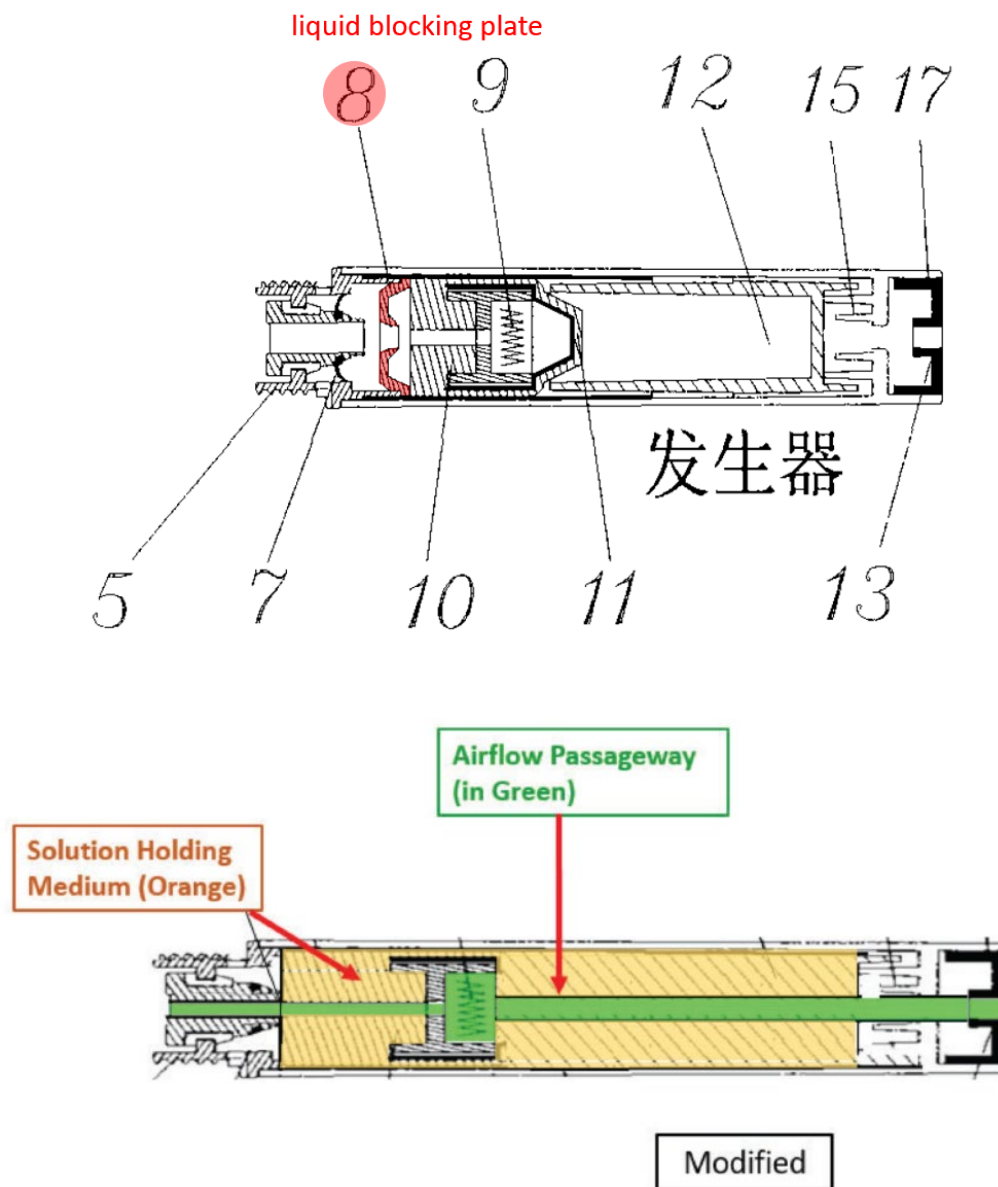
B. The Combination Creates Significant Drawbacks

JLI’s combination creates drawbacks that would have dissuaded a POSITA from pursuing it. POR, 46-57, 59-62. JLI dismisses these drawbacks with unavailing attorney argument. Reply, 23-25.

First, the combination removes the liquid blocking plate. POR, 61; EX1004.0013; EX2022 ¶¶121. As shown in the combination (below), liquid escaping the liquid storage can freely run down the passageway into the battery

³ JLI only cites Dr. Singhose’s testimony in support, but he was discussing Wang, not Xia. EX1035, 58:21-59:4.

portion without being caught.

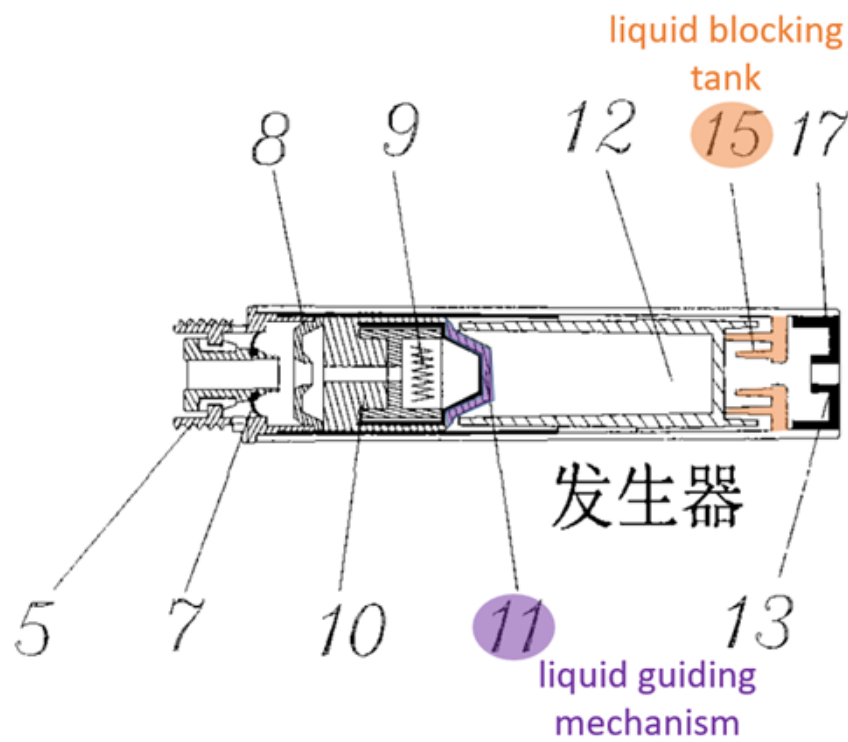


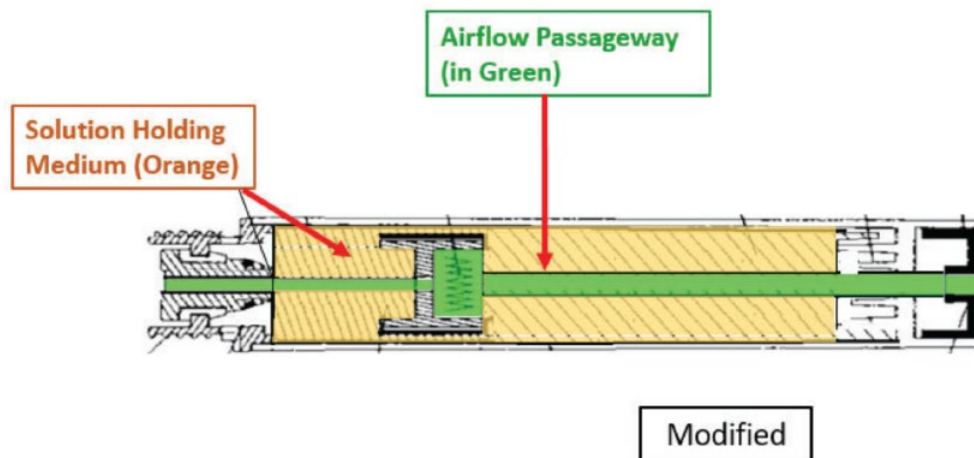
Top: Xia, Fig. 2 (annotated); Bottom: Petition, 44

JLI argues the combination uses “the same approach already disclosed in Xia, merely moving it to the center of the passageway from the outside.” Reply, 23. To the extent JLI means moving the “liquid blocking plate ... to the end of the secondary

liquid storage chamber” (Petition, 48), there is no space in the combination to fit it because the liquid storage is “extended to the edge of the housing.” Petition, 36. JLI cannot backtrack its initial combination. *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016). Even if that were permitted, placing the liquid blocking plate back into the combination would reduce the liquid storage’s length, nullifying JLI’s alleged benefit of increasing liquid capacity. Reply, 23; Petition, 36.

Second, the combination removes the liquid guiding mechanism and liquid blocking tank, which reabsorb or block excessive droplets. Removal would destroy Xia’s leakage prevention and droplet absorption capabilities. EX2022 ¶¶204-206.

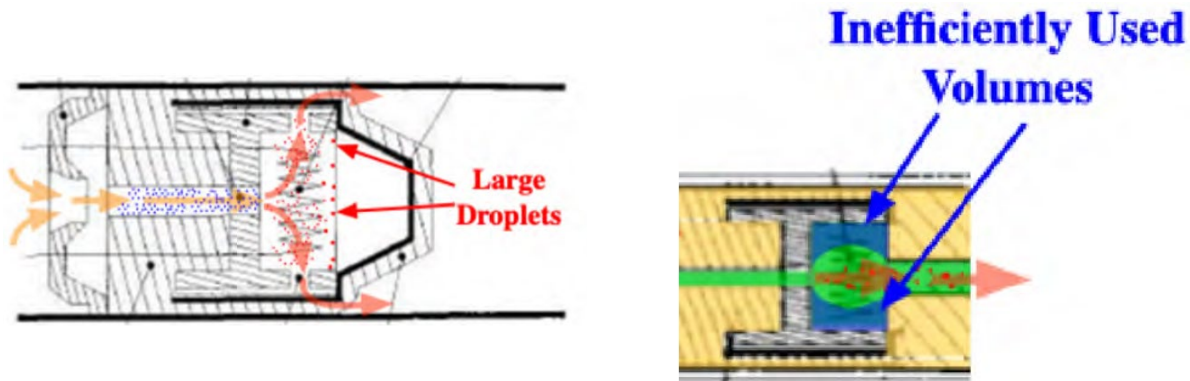




Top: Xia, Fig. 2 (annotated); Bottom: Petition, 44

JLI asserts that removing the liquid guiding mechanism is acceptable because “the heating cavity and surrounding solution holding medium act to trap and reabsorb potential droplets, as they do in Xia.” Reply, 24. JLI’s mere attorney argument downplays the importance of Xia’s liquid guiding mechanism. Xia teaches a method of spraying droplets into the heating cavity through spray hole 904. EX1004.0013. Unvaporized droplets, and droplets formed via condensation, circulate through the entire heating cavity for ample opportunities to contact and be reabsorbed by the liquid guiding mechanism. EX1004.0016 (“droplets after atomization are attached to a wall under the action of a vortex to be reabsorbed by the liquid-guiding mechanism”). In the modification, however, air containing these droplets flows straight through the center of the heating cavity (below, right, in green), greatly reducing contact with surrounding structures and opportunities for

reabsorption.⁴ Thus, the combination would not prevent droplets from travelling straight down the passageway into the consumer's mouth.



EX2022 ¶¶190, 197 (Left: airflow in Xia; Right: airflow in the modification)

Regarding the liquid blocking tank, JLI downplays its removal by proposing a modification not identified in the Petition nor any prior art: adding a liquid-impermeable barrier to the combination's airflow passageway. Reply, 24. In support,

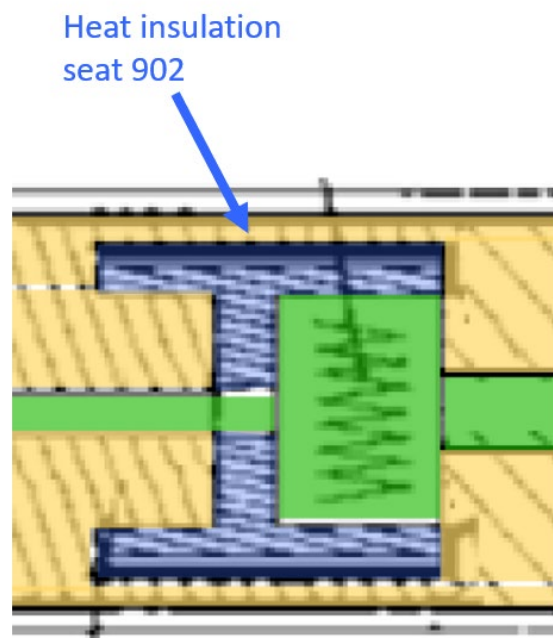
⁴ JLI alleges, "Dr. Singhose asserts that the airflow would swirl and 'be stagnant,' providing more opportunity for reabsorption." Reply, 24 (quoting EX2022.123). This is a gross mischaracterization. Dr. Singhose never stated that airflow would "swirl," nor opine that airflow would remain in the heating cavity, which appears to be what JLI means by "stagnant." *Id.* Rather, he explained that JLI's modification would provide less-effective vaporization because air would not flow through most of the heating cavity (below, right, in blue) and "*most of the cavity* would be stagnant." EX2022 ¶198.

JLI cites Dr. Sturges’s opinion that the combination “can additionally have the same impermeable barrier interior *it has in Xia’s original design.*” *Id.* (quoting EX1007 ¶122)⁵. But Xia never mentions any “impermeable barrier” and would not work with one. Indeed, Xia specifically relies on the method of spraying droplets from the liquid storage into the airflow channel. EX2022 ¶115. Thus, JLI’s liquid-impermeable barrier is fabricated from hindsight, and JLI should be precluded from alleging it now because it was not in the Petition. *Intelligent Bio-Sys.*, 821 F.3d at 1369.

Recognizing the combination’s ineffectiveness at preventing droplet inhalation, JLI asserts that “contemporary evidence demonstrates droplet inhalation was common.” Reply, 24. JLI only cites the 881 Patent, which does not use Xia’s spray method and never hints that its embodiments cause droplet inhalation. Rather, the 881 Patent confirms that the claimed heating element and Figure 2 may include a wick to draw liquid. EX1001, 5:52-53, 6:43-47, 19:15-19; *see also* EX1035, 40:14-41:11 (opining that vaporization according to the 881 Patent “would be really hard to do without a wick ... you would get a few molecules.”).

⁵ JLI’s reply mistakenly quotes paragraph 151 of Dr. Singhose’s declaration (EX2022). Paragraph 122 of Dr. Sturges’ 881 declaration (corresponding to paragraph 151 of his 864 declaration) discusses the “impermeable barrier.”

Next, JLI argues that using a wick (as in Fang) would solve the modification's droplet issue. Reply, 24 (citing Petition, 48-52). JLI has not proposed *substituting* a wick for Xia's spray method, which is a source of Xia's droplet issue, but instead *adding* the wick. Moreover, JLI never explained *why* or *how* a POSITA would have made the substitution. See Petition, 48-52, 86. Further, simply applying a wick would not work. As shown below, the two ends of the combination's heating wire do not contact the liquid storage. Indeed, the heat insulation seat prevents a wick from making contact.



Petition, 44 (annotated)

Third, JLI's proposed modification impairs Xia's pressure sensing by removing the vibrating diaphragms. POR, 61; EX2022 ¶¶215-218. Dr. Singhose analyzed why the modified control system would not work. EX2022 ¶¶215-218.

Instead of submitting a reply declaration to rebut Dr. Singhose’s analysis, JLI asks the Board to disregard it. Reply, 25. Dr. Singhose’s testimony is far from conclusory and there is no basis to disregard it. *See* EX2022 ¶¶215-218; *cf. Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 788 (Fed. Cir. 2021). Indeed, as Dr. Singhose confirmed, implementing JLI’s proposed modification “wouldn’t be straightforward” and would be “undue experimentation.” EX1035, 162:10-163:4. And even if one could get the combination to work without the diaphragms, the device would be prone to inadvertent activation. *Id.*, 163:10-165:15.

Fourth, JLI’s combination degrades vaporization efficiency. As explained, airflow only contacts the center of the heating element in the combination—most of the heating element is not utilized for vaporization. EX2022 ¶¶194-203. JLI responds that “the straight flow passageway modification increases overall airflow” and compensates for the reduced vaporization efficiency. Reply, 24-25. JLI’s arguments amount to attorney say-so; it cites no evidence to rebut Dr. Singhose.

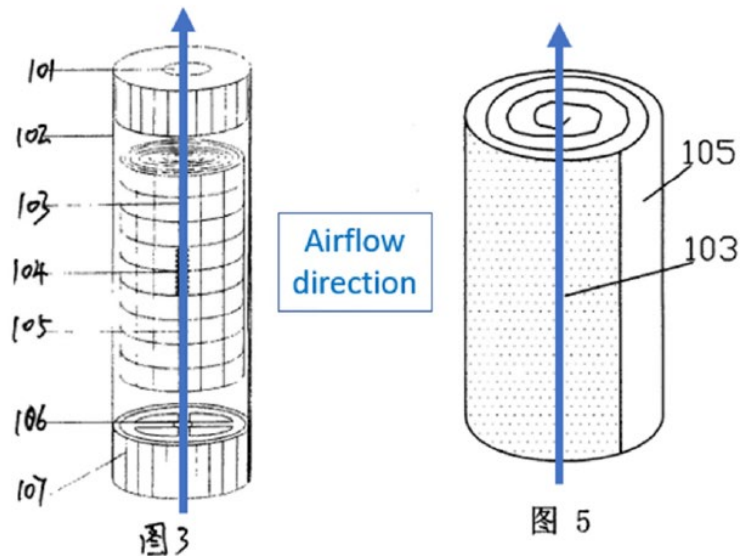
V. Ground 2: Wang (Unmodified)

A. Airflow Passageway

Wang does not depict or describe a central, axial passageway. *See Vaporizer Devices*, Final ID, 136 (“the evidence does not support that one of skill would consider Wang as disclosing a central and axial airflow passageway.”).

Although JLI claims that Wang illustrates a passageway in Figures 3 and 5,

JLI simply drew a vertical arrow of arbitrary width at an arbitrary point:



Reply, 26

No gap is illustrated—Wang depicts a solid roll of fiber. POR, 87-88. And JLI concedes that “Wang does not state in text that there is a central gap in the fiber.”

Reply, 30.

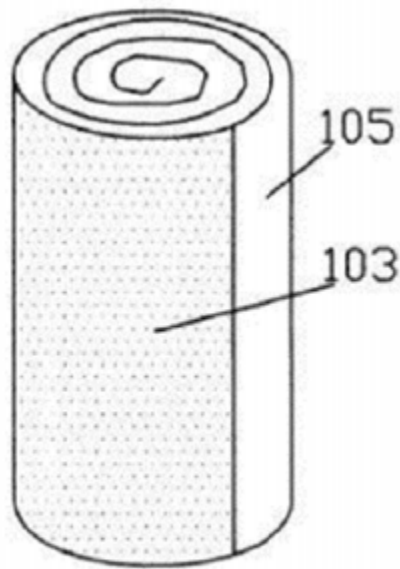


Fig. 5

Wang, Fig. 5

Nonetheless, JLI provides five rationales for its annotations, which are either irrelevant or unsubstantiated attorney argument.

First, JLI relies on Mr. Wang's statements from the M.D.N.C. Litigation regarding what the Wang reference discloses. Mr. Wang's testimony is irrelevant: i) it is inadmissible hearsay, and Mr. Wang was unavailable for deposition⁶; ii) Mr. Wang's testimony is unreliable⁷; and iii) Mr. Wang's subjective, self-serving

⁶ Petitioner will file a motion to exclude this evidence. *New World Medical, Inc. v. Microsurgical Tech., Inc.*, IPR2020-01573, Paper 49 (PTAB Nov. 5, 2021).

⁷ POR, 48.

opinion⁸ of what his patent discloses is irrelevant to how a POSITA would have interpreted the Wang reference.

Second, JLI relies on purported images of Smoke51 from a declaration in a prior litigation between unrelated parties. Reply, 30. But Smoke51 is irrelevant: i) there is no connection between the Wang reference and Smoke51; ii) the Smoke51's design differs from Wang; iii) Smoke51 is not asserted prior art; iv) the supporting declaration is hearsay; and v) nothing in the cited testimony suggests the inventors copied Smoke51.⁹

Third, JLI relies on Dr. Singhose's inability to roll legal pad paper during his deposition without leaving a gap in the middle. Reply, 29. This is not a "gotcha." Dr. Singhose stated that although paper *could* be rolled without a gap, he "might not be able to do it on the fly here." EX1035, 51:21-24. That Dr. Singhose could not tightly roll legal pad paper does not mean Wang's absorbent fiber is not tightly rolled. Lollipop sticks, cigars, and other types of fiber are commonly rolled without a central gap. JLI also ignores that, unlike the legal pad paper, Wang's organic fiber would swell when soaked with liquid, closing any gap surrounding the heating

⁸ R.J. Reynolds paid Mr. Wang \$23,343 to support its invalidity defense in the M.D.N.C. Litigation. EX1036, 6.

⁹ Even if they did, that would have no bearing on how to interpret Wang.

element.

Relatedly, JLI asked Dr. Singhose how vapor could pass through a wet fiber without a central channel, and Dr. Singhose explained that vapor, like bubbles rising in boiling water, does not need a channel to bubble through porous fiber. EX1035, 24:24-25:23. JLI disputes that vapor cannot permeate wet fiber only with attorney argument. Reply, 27. JLI did not submit a reply declaration to substantiate its dispute.

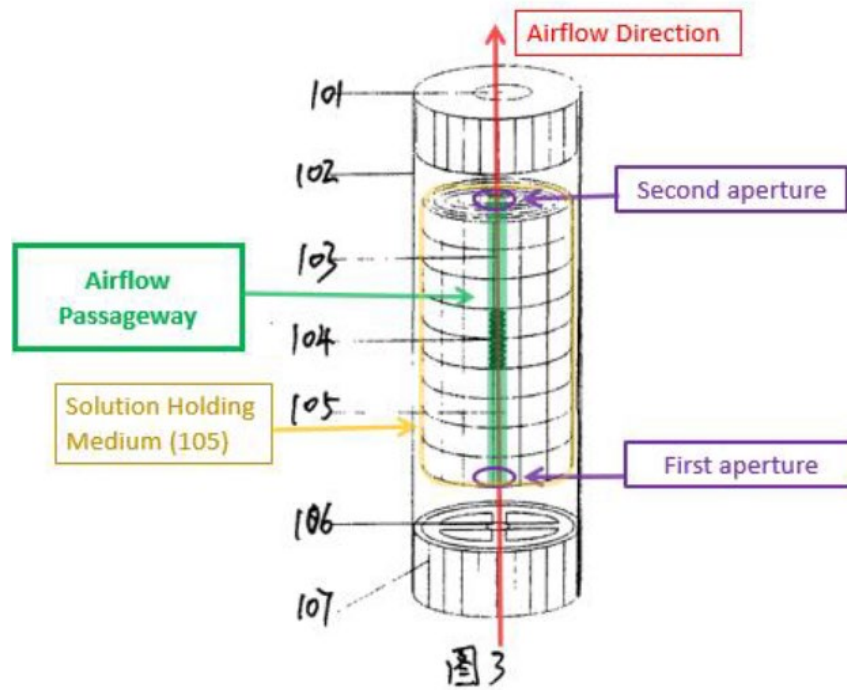
Fourth, JLI asserts that “the heating element ... would necessarily create a channel of at least the coil’s diameter within the fiber ‘wound’ around it.” Reply, 26. This is attorney argument and cannot carry JLI’s burden.

Fifth, JLI claims that “it would be known by a POSITA” that Wang has a central, axial passageway. Reply, 30. Dr. Sturges makes the same claim without explanation or support. EX1007 ¶55. Naked assertions cannot carry JLI’s burden.

B. Aperture

JLI bases its Reply argument on claim construction (Reply, 30), which is incorrect. *See* Section II.B, *supra*.

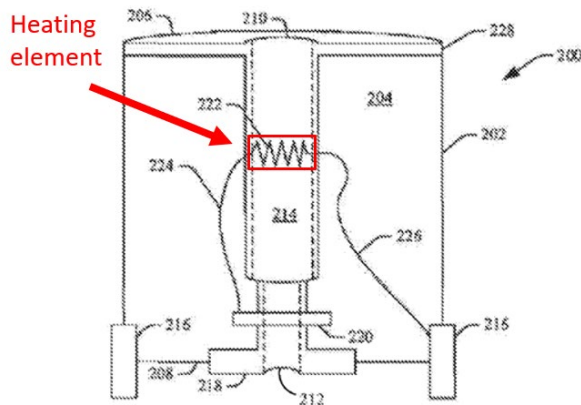
JLI ignored NJOY’s criticism that—even under JLI’s construction—JLI has not identified apertures *in the housing*, but rather in the alleged solution holding medium. POR, 89-90.



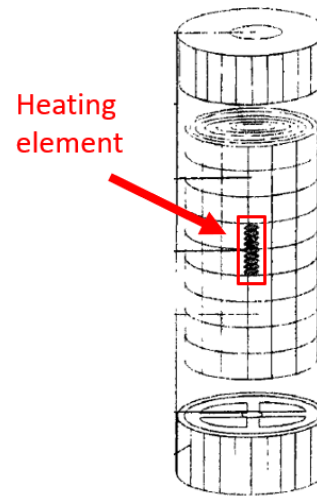
Petition, 113

C. Transverse Heating Element

Figure 2 of the 881 Patent depicts a transverse heating element. Wang's heating element, in contrast, extends longitudinally.



EX1001, Fig. 2 (annotated)



Wang, Fig. 3 (annotated)

JLI nevertheless contends the “coils of Wang’s heating element 104 extend transversely” because they have both transverse and longitudinal dimensions and the claims do not “impose a relative length requirement.” Reply, 31. In support, JLI cites Dr. Singhose’s testimony that “something could extend in three dimensions.” EX1035, 49:9-13 (cited in Reply, 30).¹⁰ JLI essentially argues that if any portion of the heating element is transverse, this claim element is met.

JLI’s construction vitiates this limitation. All real objects extend in a

¹⁰ JLI claims Dr. Singhose “conceded a heating element could be considered to extend both longitudinally *and* transversely, and is not restricted to being characterized as only extending one way or another.” Reply at 30. He did not. EX1035, 49:9-13.

transverse direction (and all other directions) to some extent. For transverse heating element to have any meaning, it must refer to a heating element where the major axis is crosswise to the longitudinal axis. POR, 12-15.

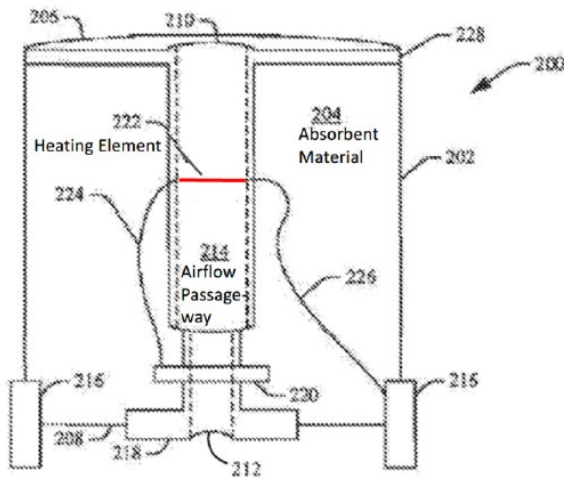
Moreover, JLI's focus on Wang's individual coils is misplaced. The claims do not recite *heating coils*, but rather cover the entire heating element. Regardless, Wang's coils do not extend transversely to the central longitudinal axis; they encircle it helically. *See* POR, 15.

JLI also relies on Mr. Hillenbrandt's testimony to construe the meaning of "extends transversely." Reply, 31-34. But inventor testimony is irrelevant:

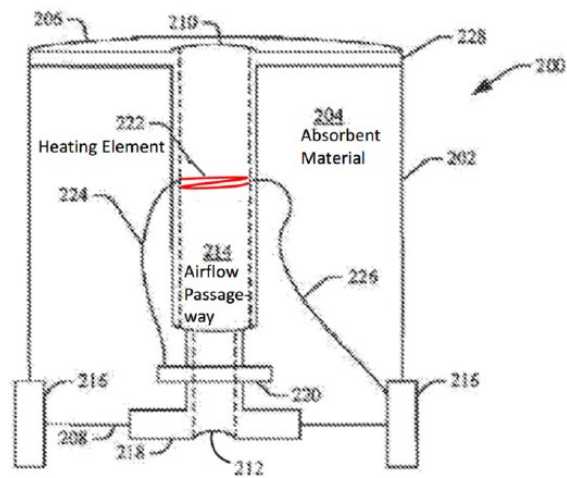
The subjective intent of the inventor when he used a particular term is of little or no probative weight in determining the scope of a claim (except as documented in the prosecution history)....

Markman v. Westview Instruments, Inc., 52 F.3d 967, 985 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996).

Regardless, Mr. Hillenbrandt's testimony does not support JLI's argument. He was questioned on two hypothetical configurations (below); neither matches Wang's disclosure.



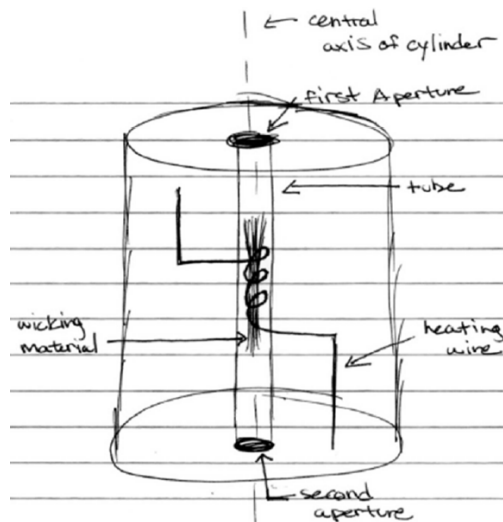
EX1040, 2



EX1040, 3

In both configurations, the major axis of a heating element extends crosswise across a passageway. In Wang, a coil encircles a purported passageway and its major axis extends *parallel* to the purported passageway.

Finally, Petitioner cites Mr. Hillenbrandt's testimony from an ITC investigation about a third configuration (below). Reply, 33-34.



EX1042

Mr. Hillenbrandt did not state that the above heating element “extend[s] transversely across the passageway” as JLI claimed. *Id.* JLI quotes its *attorney’s question*, to which Mr. Hillenbrandt responded “I can see it *can be interpreted* like that.” EX1041, 242:9-15; *id.*, 241:17-24 (“I would be guessing.”). Regardless, unlike Wang, the figure above includes two wires extending crosswise through the airflow passageway. *See* EX1041, 242:6-8.

D. Claim Elements Not Addressed by JLI

JLI’s Reply does not address several limitations missing from Wang, as raised in NJOY’s Response. *See* POR, §§VI.C.1.d-g.

VI. Ground 2: Wang as Modified Alone or with Fang

JLI proposes combining Wang with Fang but fails to address the references’ structural differences, how the modifications would affect Wang’s operation, or the disadvantages of its combination. POR, 62-67. Moreover, JLI fails to substantiate the combination’s alleged benefits. *Id.* JLI thus fails to show a motivation to combine or an expectation of success.

JLI glosses over these deficiencies by oversimplifying the combination, claiming the “main modification ... is to turn the heating element and wrap it around a wick.” Reply, 35. The Petition tells a different story, which proposes combining Wang with Fang’s “airflow passageway,” “solution holding medium,” “heating element,” and “wick.” Petition, 93-94. A simple “rotation-plus-wick” combination

was not asserted in the Petition and would be nonsensical. Wang's coil already directly contacts the liquid storage; rotating the coil and adding a wick without more is superfluous. POR, 64, 91.

JLI incorrectly contends that Dr. Singhose agreed the rotation-plus-wick modification would provide better vaporization. Reply, 35. JLI's counsel did not ask about vaporization, but whether rotating Wang's coil (which lacks a wick) would result in airflow over more of the coil. EX1035, 55:15-58:9. Dr. Singhose agreed, because whereas Wang's longitudinal coil is only exposed internally to airflow (the exterior contacts the organic fiber), when rotated both the interior and exterior would be exposed. *Id.* But in that case, only the coil's ends contact the organic fiber, meaning less liquid contacts the coil for vaporization.

JLI claims NJOY argues "that the prior art devices are [] too different." Reply, 35. The prior art devices are indisputably different (*see, e.g.*, POR, 62-67). While "literal substitution of elements is not required" (Reply, 35), JLI must address the differences between the devices and how the modification would impact functionality. *See NJOY, LLC v. JUUL Labs, Inc.*, IPR2024-00536, Paper 17 at 47-48 (P.T.A.B. Aug. 12, 2024) ("Because Petitioner did not direct our attention to any argument or testimony to account for whether or how the modified device would function, Petitioner does not meet its initial burden of proof"). It did not. JLI fails to address additional structures needed to maintain the coil in a transverse orientation

when Wang’s organic fiber is wrapped around it and packed into the cartridge. POR, 63. JLI also fails to address how this modification would impair functionality. These failures are material, particularly considering that Wang, unlike Fang, is designed to be a simple disposable cartomizer. POR, 64.

JLI next claims “NJOY’s expert agrees that it would be beneficial to extend the solution-holding medium, bringing the apertures to the very edge of the housing.” Reply, 36. Untrue. Dr. Singhose stated that extending Wang’s fiber would hold more liquid, but “*it would be disadvantageous in other ways.*” EX1035, 58:19-59:4. Again, JLI fails to address how this hypothetical configuration would function. And even in this configuration, JLI still only identified apertures on the liquid storage, not the housing. *See* Section V.B, *supra*.

Finally, irrespective of motivation to combine and expectation of success, JLI failed to identify several claim limitations in either Wang or Fang. POR, 96-97.

VII. Dependent Claims

Petitioner alleges that the dependent claims “add nothing meaningful” and have no “innovative concept.” Reply, 36. However, that the combination of claimed elements did not exist in prior art demonstrates novelty. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). JLI has failed to prove otherwise.

JLI alleges Dr. Singhose “admitted that the dependent claims represent nothing novel, *e.g.*, confirming that increasing the size of the second aperture (claims

4, 12, 20, 23) would be known by a POSITA ... to increase airflow.” Reply, 36 (citing EX1035, 157:16-169:6)¹¹. It does not follow that modifying Wang’s device, as proposed by JLI, would have been obvious. JLI provides no evidence that increased airflow is desirable in Wang. Nor has JLI accounted for this modification’s impact to Wang’s functionality. POR, 92-93.

VIII. Secondary Considerations

JLI incorrectly asserts the claimed invention does not prevent droplet inhalation. Reply, 37. *See* Section IV.B, *supra*. Neither the Fuma device nor claimed invention use a spray method (like Xia); rather, the heating element resides in an airflow passageway and may use a wick to draw liquid from a separate storage, thus preventing droplet formation. *See* EX1001, 6:46-49; EX2022, ¶¶346-347, 350-359.

Contrary to JLI’s assertion that the claims do not reduce burnt taste (Reply, 37), Fuma’s device and invention eliminate burnt taste by separating the heating element and liquid storage. EX2022, ¶¶346-347. The uninsulated lead wires do not heat and are thus irrelevant. JLI fails to support that consumers experienced a burnt

¹¹ JLI’s citation of Dr. Singhose’s deposition transcript appears to be a typo, and should be to 168:16-169:6 instead. Regardless, 157:16-168:15 of the transcript discusses modifying the diaphragm for the *independent* claims and is irrelevant to JLI’s assertion.

taste with the Fuma device or any device embodying the 881 Patent. JLI's reliance on Smoke51 is irrelevant because it does not embody the claims and was considered by the PTO during prosecution. EX1001. JLI fails to show that the devices depicted in EX1039 were prior art.

JLI contends that neither the claims nor specification comment on the alleged novelty. Reply, 37. But the claims recite features that improve the issues with pre-existing devices.

JLI asserts that the Fuma device's unclaimed features were praised. Reply, 37-38. The Federal Circuit, however, has "never held that the existence of one or more unclaimed features, standing alone, means nexus may not be presumed. Indeed, there is rarely a perfect correspondence between the claimed invention and the product." *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1374 (Fed. Cir. 2019). The unclaimed features JLI identifies are not material to functionality as they would not have improved issues with pre-existing devices, and JLI has provided no evidence suggesting otherwise. Rather, the 881 Patent invention resolved such issues. EX2022, ¶¶346-347; *see also Vaporizer Devices*, Final ID, 153 ("[S]uccess of the Fuma device was tied to the 'unique characteristics of the claimed invention.'"), 154. Accordingly, these unclaimed features are not responsible for commercial success, industry praise, or copying. Further, contrary to JLI's assertions, the "new central airflow design" was novel. POR, 71-73, 87-88.

The commercial success of the Fuma e-cigarette directly resulted from the claimed features that eliminated issues in pre-existing devices. EX2024; EX2022, ¶403; *see also Vaporizer Devices*, Final ID, 153-154. Further, “[a] patentee is not required to prove as part of its prima facie case that the commercial success of the patented invention is **not** due to factors other than the patented invention. It is sufficient to show that the commercial success was of the patented invention itself.” *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1394 (Fed. Cir. 1988) (original emphasis). Further, “market share data, though potentially useful, is not required to show commercial success.” *Chemours Co. FC, LLC v. Daikin Indus., Ltd.*, 4 F.4th 1370, 1378 (Fed. Cir. 2021).

IX. Conclusion

For the reasons stated above and in the Response, the challenged claims should be confirmed as patentable.

Date: December 20, 2024

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24 et seq., the undersigned certifies that this document complies with the type-volume limitations. This document contains 5,598 words as calculated by the “Word Count” feature of Microsoft Word 2016, the word processing program used to create it.

Dated: December 20, 2024

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