

PUBLIC VERSION

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 IPR2024-00536
U.S. Patent No. 11,606,981

**PATENT OWNER'S PRELIMINARY RESPONSE
PURSUANT TO 35 U.S.C. § 313 AND 37 C.F.R. § 42.107**

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Exhibit #	Description
2001	Declaration of Dr. John Collins
2002	<i>Curriculum Vitae</i> of Dr. John Collins
2003	JUUL System FDA Premarket Tobacco Product Application, produced as JLI-NJOY-ITC1368-01159601
2004	Intentionally Left Blank
2005	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013494 ¹
2006	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013502
2007	Intentionally Left Blank
2008	Intentionally Left Blank
2009	“American Cancer Society Position Statement on Electronic Cigarettes,” produced as JLI-NJOY-ITC1368-02013557
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

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,” Patent Owner certifies that, with the exception of Exhibits 2003, 2025, 2026, and 2041 (which will be filed under seal), none of them contain Confidential Business Information.

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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, cessation and reduced cigarette consumption? A survey with a 1-year follow-up,” Addiction 110 (2015)
2023	Intentionally Left Blank

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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 Altria 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,” Bloomberg Businessweek
2028	Peebles, “Popular e-cigarette Juul’s sales have surged almost 800 percent over the past year,” CNBC (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,” Bloomberg (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,” Business Insider (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,” Piper Jaffray (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
2035	“Innovation Invigorates Inhalables,” Cowen and Company Equity Research (July 22, 2016), produced as JLI-NJOY-ITC1368-02013586

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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	Intentionally Left Blank
2046	Intentionally Left Blank
2047	“Juul Compatible Pods,” Zalt, retrieved Nov. 6, 2018, produced as JLI-NJOY-ITC1368-02013548
2048	Intentionally Left Blank
2049	Intentionally Left Blank
2050	Intentionally Left Blank
2051	Intentionally Left Blank
2052	Intentionally Left Blank
2053	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013486.
2054	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013491.

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2055	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013510.
2056	Intentionally Left Blank
2057	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013512.
2058	Intentionally Left Blank
2100	Proposed Stipulated Protective Order (redline)
2101	Proposed Stipulated Protective Order

PUBLIC VERSION**I. Introduction**

Patent Owner JUUL Labs, Inc. (“Patent Owner” or “JLI”) manufactures the highly-successful JUUL System, a cartridge-based, electronic cigarette system for delivering nicotine via vapor. U.S. Patent No. 11,606,981 (the “’981 patent”) covers several novel ideas developed by JLI and is coextensive with the JUUL System. Petitioners are competitors to JLI who have been accused of infringing the ’981 patent and now seek to invalidate it.

Petitioner’s first set of grounds are based on the combination of Liu783 and Liu438. However, the base reference Liu783 fails to disclose multiple key limitations of the challenged independent claims, including a chamber defined by the outer shell of the battery portion, a battery housing segment proximate to the first end of the battery portion, and coplanar battery electrical contacts. Moreover, Liu783 discloses a three-piece devices configuration and explicitly teaches away from the two-piece configuration in the ’981 patent.

Petitioner’s second set of grounds, based on combining Thorens788 with Thorens231, similarly fails. Petitioner suggests dramatically altering the structure and internal circuitry of Thorens788’s device, without accounting for existing components or fundamental design considerations. Additionally, Petitioner does not even allege that its proposed mouthpiece modification could have been performed

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with a reasonable expectation of success—this failure alone merits denial. And neither reference discloses the inhalation tube required by the challenged claims.

Particularly in light of the objective evidence and secondary considerations supporting the non-obviousness of the '981 patent, Petitioner has failed to establish either a motivation to combine or a reasonable expectation of success for any of its proposed combinations. The Board should deny institution of an *inter partes* review.

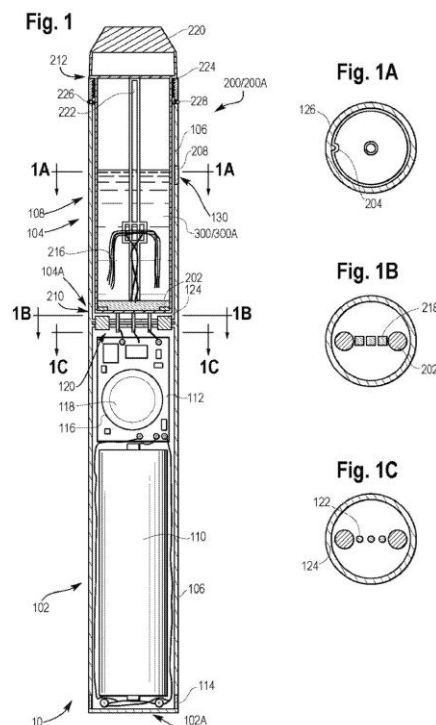
II. Background

A. Overview of the '981 Patent

The '981 patent generally relates to Electronic Nicotine Delivery System (“ENDS”) products, which have a cartridge containing a liquid nicotine formulation that a user inserts into a device body. The body has a battery and a cartridge receptacle into which the cartridge is inserted, as well as charging contacts for charging the battery. When a circuit is activated by a user puffing on the cartridge, electrical power is provided by the battery to a heating element that converts the electrical power to heat, which in turn heats the vaporizable liquid, generating a vapor that then forms into an aerosol. The vaporizable liquid is drawn towards the heater by a wick coupled to the heating element so that the heating element may generate the vapor. The vapor travels towards the mouthpiece through an aerosol channel, mixing with air and cooling to form the aerosol to be inhaled by a user.

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The '981 patent is titled "Vaporizer" and is directed to rechargeable electronic cigarettes or vaporizers comprised of two segments: a "battery portion" and a "cartomizer." '981 patent (Ex. 1001) at Abstract, 2:42-49, 6:22-27. The battery portion is comprised of an outer shell that forms "a battery segment and a cartomizer receiving segment," where the cartomizer receiving segment defines a "chamber" for receiving the cartomizer body. *Id.* at 1:49-56, 2:8-13. The cartomizer body comprises a volume for storing a vaporizable substance, a wicking element (or wick), a heating element, a mouthpiece, and cartomizer electrical contacts that direct current to the heating element when the cartomizer body is received by the chamber. *Id.* at 2:13-38, 9:61-63. The body of the cartomizer includes an internal reservoir holding a vaporizable liquid. *Id.* at 9:49-51. The body contains heating element 214 and wick 216. *Id.* at 9:61-63. The wick delivers the vaporizable fluid 300 to the heating element, which allows the heating element to vaporize the fluid. *Id.* at 10:3-20. The vaporized fluid mixes with air as it travels from the heater through an inhalation tube to the user. *Id.* at 10:3-8. Figure 1 highlights these features:

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Id. at Figs. 1, 1A-C.

B. Overview of the Cited Art

1. Liu783

U.S. Patent Publication No. 2014/0150783A1 (Ex. 1010) (“Liu783”) is entitled “Electronic Cigarette Having a Connector for Magnetic Connection,” and was filed as a PCT Application on December 5, 2012. Liu783 discloses an electronic cigarette with a removable connector threaded into the device and a cartridge magnetically attached to the connector. Liu783 is a cited reference on the face of the ’981 patent.

To “facilitate the installation, detachment, and replacement” of the sucking rod of its electronic cigarette, Liu783 describes “an electronic cigarette having a

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connector.” Liu783 at [0003]-[0004]. As shown below in Figures 5, 7, and 8, the sucking rod (left), connector (middle), and power rod (right) are each separate components that are affixed together to form Liu783’s electronic cigarette:

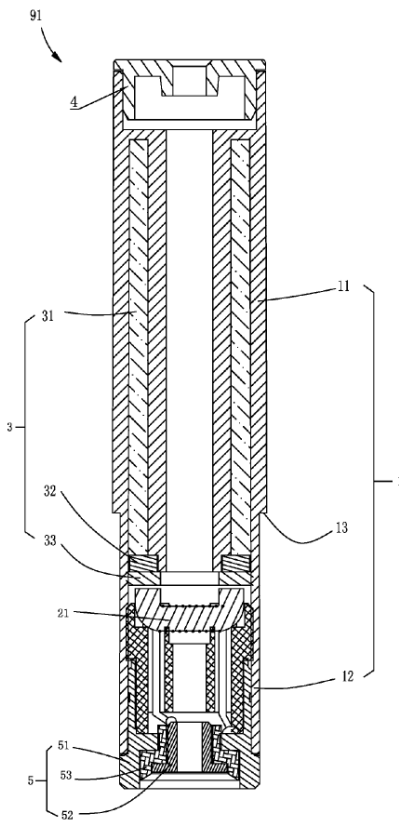


FIG. 5

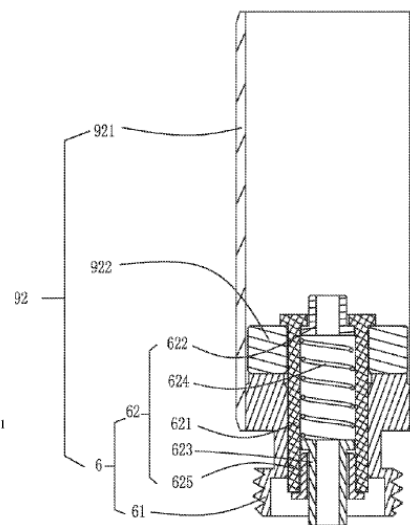


FIG. 7

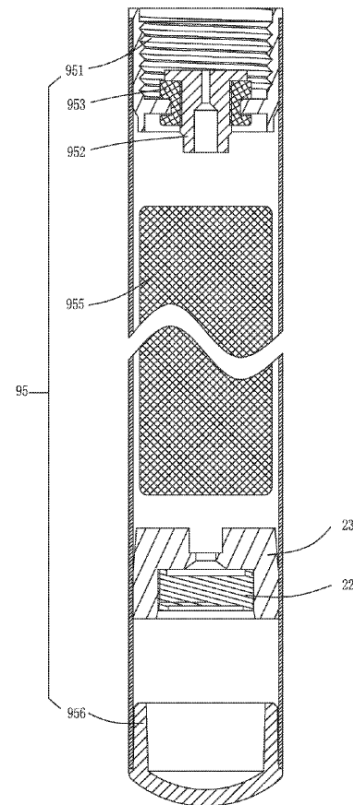


FIG. 8

Id. at Figs. 5, 7, 8.

2. Liu438

U.S. Patent Publication No. 2013/0319438 (Ex. 1013) (“Liu438”) is entitled “Electronic Cigarette and Its Sucking Rod,” and was filed as a PCT Application on June 5, 2012. Liu 438 discloses an electronic cigarette with a connecting module

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affixed to a sucking rod that threads into a device. The connecting module is part of the sucking rod 90 that threads into the power rod 91:

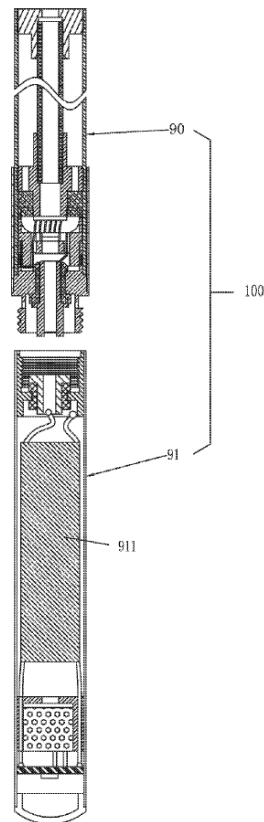


FIG. 13

Id. at [0043]; Fig. 13. The connecting module in Liu438 is significantly different from Liu783's connector 92. Liu438's connecting module provides threads for the sucking rod, but is not designed to be removed from the sucking rod during regular use.

3. Tucker

U.S. Patent Publication No. 2013/0192623 (Ex. 1034) ("Tucker") is entitled "Electronic Cigarette," was filed on January 31, 2013, and was published on August

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1, 2013. Tucker discloses an electronic cigarette with a window provided on the cartomizer portion of the device.

4. Thorens788

WO 2011/160788 A1 (Ex. 1004) (“Thorens788”) is entitled “An improved Aerosol Generator and Liquid Storage Portion for Use with the Aerosol Generator” and was filed on June 15, 2011. Thorens788 is a cited reference on the face of the ’981 patent.

Thorens788 states that one perceived disadvantage of previous smoking utensils was that there was no way to determine that the liquid fed into the device was suitable for use. *Id.* at 1:13-16. Thorens788 addresses this issue with various mechanisms to differentiate between different types of storage portions containing liquids, which is the focus of its invention. *Id.* at Abstract. Thorens788 discloses no embodiments that have a mouthpiece.

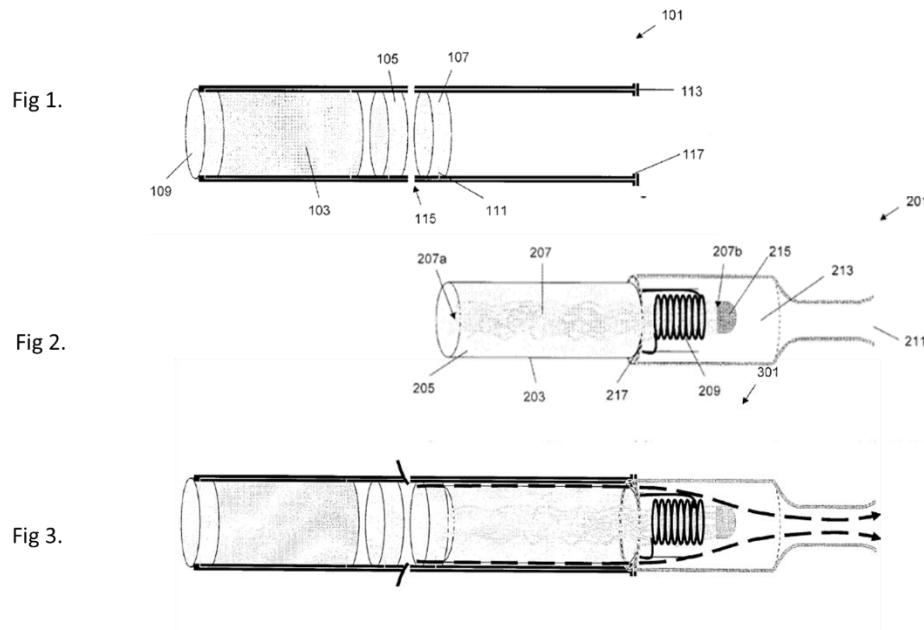
5. Thorens231

U.S. Patent No. 8,794,231 (Ex. 1002) (“Thorens231”) is entitled “Electrically Heated Smoking System Having a Liquid Storage Portion” and was filed on April 29, 2009. Thorens231 is a cited reference on the face of the ’981 patent.

Thorens231 describes an electrically heated smoking system with a shell and a replaceable mouthpiece. Thorens231 at 1:51-52. Figure 1 depicts the shell 101 of

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Thorens231's device; Figure 2 depicts the mouthpiece 201; Figure 3 depicts the mouthpiece inserted into the shell:



Id. at Figs. 1-3; 6:23-29.

III. Level of Ordinary Skill in the Art

A POSITA relevant to the '981 patent at the time of the invention would have had a B.S. in mechanical engineering, electrical engineering, or an equivalent degree, and either at least two years of experience designing electro-mechanical consumer products or an advanced degree in mechanical engineering, electrical engineering, or an equivalent field. More education can substitute for practical experience and vice versa. Declaration of Dr. John Collins, Ex. 2001 ¶¶17-22.

Petitioner proposes a slightly different level of ordinary skill as part of claim construction—*i.e.*, that a person of ordinary skill in the art would have had at least a

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B.S. degree in Mechanical Engineering, Electrical Engineering, Industrial Design, Product Design, or similar field, with at least two years of industry experience in one of these fields, and would have been familiar with electrically powered vaporizing articles, their components, or the underlying technologies. Pet. 6-7.

However, no issue relevant to this Preliminary Response turns on the level of ordinary skill in the art. Ex. 2001 ¶21.

IV. Claim Construction**A. Agreed Terms**

Patent Owner agrees with Petitioner’s proposed constructions of “wicking element,” “heating element,” and “window.” Pet. 7-8; Ex. 2001 ¶¶63-68.

B. “A Battery Portion Having an Outer Shell and a Chamber Defined by the Outer Shell”

The parties dispute whether Liu783 discloses “a battery portion having an outer shell and a chamber defined by the outer shell.” Petitioner appears to contend that there is a claim construction dimension to this dispute: “To the extent the Board determines that this limitation requires a unitary outer shell, it would have been obvious to a POSA to modify Liu783 in view of the knowledge of a POSA” Pet. 28. However, Petitioner did not include any argument, analysis, or supporting evidence seeking a claim construction that does not require “a unitary outer shell,” despite discussing the claim construction of other terms. Pet. 7-8. As such,

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Petitioner has not even attempted to justify its implicit proposed claim construction. Its interpretation is also wrong. Ex. 2001 ¶66. The outer shell of the battery portion need not be unitary to define the chamber. However, the outer shell must be a part of the battery portion—as opposed to a separate component—as required by the plain language of the claims. As discussed in more detail in the context of Ground 1 below, Petitioner incorrectly attempts to construct a chimeric “battery portion” in Liu783 that mixes and matches distinct components in a way not suggested by the reference. No intrinsic evidence from the ’981 patent supports this interpretation, nor has Petitioner cited any. The Board should reject Petitioner’s invitation to read out a plain requirement of the claims.

C. “The Battery Electrical Contacts Being Coplanar”

The parties also dispute whether Liu783 discloses “the battery electrical contacts being coplanar” in challenged claim 17. As with the previous term, despite not discussing it in the claim construction section of the Petition, Petitioner appears to believe there is a claim construction aspect to this dispute: “To the extent that the Board requires that the topmost portions (not express in the limitation) of the battery contacts must be planar with the surface of the receiving end of the chamber (not express in the limitation), Liu783 in view of the knowledge of a POSA renders this limitation obvious as set forth in IX.B.1.” Pet. 62-63. But Petitioner’s position is based on an incorrect assumption that the “battery electrical contacts” in Liu783’s

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device are dimension-less, volume-less points, and because “two points always fall on a plane” (Pet. 61-62) the contacts are supposedly coplanar. Petitioner cites a single line of the ’981 patent specification, 7:31-34, but that only says: “In embodiments where button 118 is coplanar or aligned with the surface of outer shell 106, as described herein, ring indicator 116 may also be coplanar or aligned with button 118 and the surface of outer shell 106.” The specification does not support Petitioner’s attempt to redefine the electrical contacts in Liu783’s device as abstract points that would be inherently coplanar because they do not take up any space. A POSITA would determine whether Liu783’s electrical contacts are coplanar by treating them as physical objects, which they are, they are rather than a mathematical abstraction. Ex. 2001 ¶67. More detail is provided in the context of Ground 2 below.

V. Liu783, Liu438, and Knowledge of a Person of Ordinary Skill in the Art Do Not Render Claims 1, 2, 5, or 13-16 Obvious (Ground 1)

The base reference relied on by Petitioner, Liu783, fails to teach critical limitations of the challenged independent claims. Additionally, Petitioner has not established a motivation to combine Liu783 with Liu438 and the so-called “knowledge of a POSA” to achieve the challenged independent claims with a reasonable expectation of success.

PUBLIC VERSION**A. Liu783 Does Not Disclose or Render Obvious “a Battery Portion Having an Outer Shell and a Chamber Defined by the Outer Shell” (Claims 1 and 13)**

Challenged independent claims 1 and 13 of the '981 patent each require a vaporizer device comprising “a battery portion having an outer shell and a chamber defined by the outer shell.”² Petitioner contends that Liu783 “discloses and renders obvious this limitation.” Pet. 26. Petitioner further argues that “[t]o the extent it is argued that Liu788’s [sic] battery component and connector do not share a common housing or shell because they are two pieces, it would have been within the knowledge of a POSA to integrate the battery component with the connector.” Pet. 22, 23-25.

² Challenged independent claims 1 and 13 also specify “wherein the cartomizer body is configured for insertion into the chamber such that at least part of the volume is positioned in the chamber when the cartomizer body is inserted into the chamber.” For the reasons described throughout this section, Liu783 does not disclose or render obvious this limitation because the outer shell of the battery portion of the device does not define a chamber, so the cartomizer body cannot be configured for insertion into any chamber.

PUBLIC VERSION**1. Liu783 Does Not Disclose “a Battery Portion Having an Outer Shell and a Chamber Defined by the Outer Shell”**

Liu783 fails to disclose this limitation because the outer shell of its battery portion does not define a chamber. Rather, it defines a threaded connection used for threading into a separate shell that forms a chamber that receives the sucking rod. Liu783 describes a battery portion (power rod 95) having an outer shell and a separate chamber (connector 92), which is a distinct piece of hardware that threads into the battery portion. Liu783 explicitly teaches the benefits of the separate connector 92 “to facilitate the installation, detachment and replacement of the atomizing means and the connecting means of the sucking rod.” Liu783 at [0002]. As such, the chamber is not defined by the outer shell of the battery portion, as required by claims 1 and 13 of the ’981 patent. Ex. 2001 ¶70.

Petitioner contends that the battery portion is comprised of the combination of the power rod 95 and the connector 92. Pet. 27. Thus, in Petitioner’s view, the chamber in connector 92 in Liu783’s device is part of the battery portion, and hence defined by an outer shell of the battery portion. *Id.* 26-28; *see also* Ex. 1005 ¶¶338-41. Not so. Liu783 describes the power rod 95 as the portion of the vaporizer device “configured with a storage battery 955” (*i.e.*, the battery portion). Liu783 at [0043]. Liu783 does not suggest that the connector 92 is part of the battery portion, or that any portion of the connector 92 contains a battery. In all cases, Liu783 treats the

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power rod 95 and the connector 92 as separate components. Ex. 2001 ¶71. As a primary example, Figure 2 depicts atomizer 91, connector 92, and power rod 95 as the three main (and distinct) components of its device:

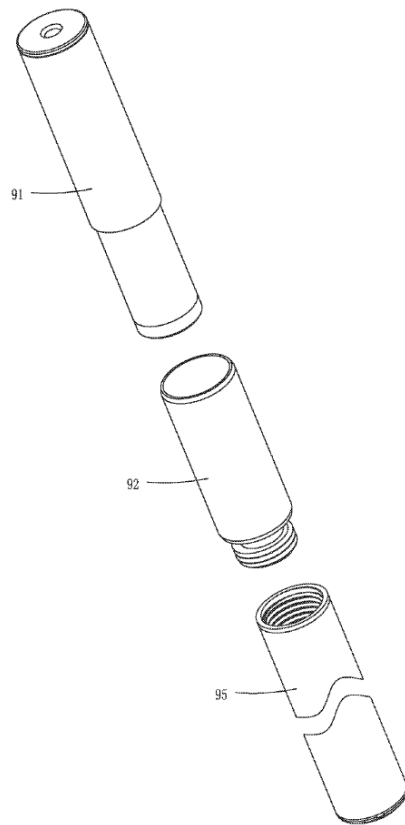


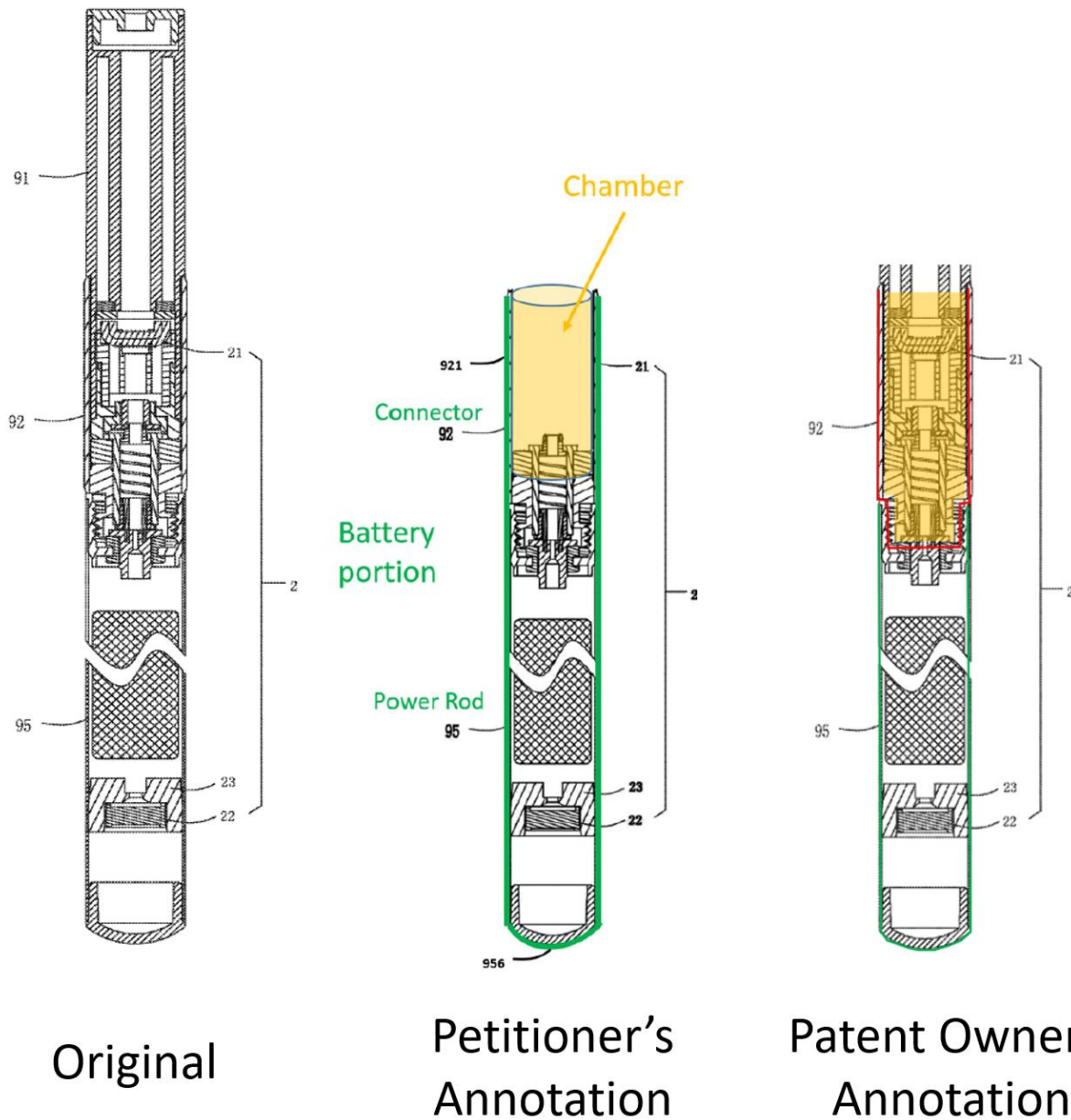
FIG. 2

Id. at Fig. 2.

Additionally, Petitioner misleadingly annotated Figure 3 of Liu783. The original figure is below on the left. Petitioner's annotated version is in the middle.

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A more accurate counter-annotation is on the right, depicting the power rod 95 in green, the connector 92 in red, and the interior of the connector 92 in yellow:



Id. at Fig. 3 (Petitioner's annotation from Pet. 27). Petitioner incorrectly colors the figure such that the boundary of the "battery portion" outlined in green encompasses

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both the power rod 95 and the connector 92, when they are repeatedly described by Liu783 as separate components. In addition, without noting that the figure was annotated in this manner, Petitioner significantly redraws the interior of connector 92 to show a “chamber” that is not present in the original figure. Someone reading the Petition without pre-existing familiarity with Liu783 would believe that Petitioner’s annotations were limited to the colored material, and not to redrawing the original reference’s figure to insert a new “chamber” that does not exist in that figure.

Petitioner suggests that there may be a claim construction dispute concerning this limitation. But Petitioner did not include any argument, analysis, or evidence in the Petition or its supporting expert declaration in favor of its claim interpretation. Although the outer shell of the battery portion need not be unitary to define the chamber, the outer shell must be a part of the battery portion, as opposed to a separate component, as required by the plain language of the claims. Ex. 2001 ¶73. The specification’s discussion of the “battery portion,” “outer shell,” and “chamber” are consistent with this view, and Petitioner does not cite any contrary intrinsic evidence. ’981 patent at 9:44-46 (“Chamber 108 is defined by outer shell 106 and electrical connector 120.”); 6:2-11 (discussing the “outer shell”). Thus, Petitioner’s claim

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construction position lacks merit, and Liu783 alone does not disclose “a battery portion having an outer shell and a chamber defined by the outer shell.”

2. Liu783, Alone or in Combination with Any Other Reference, Does Not Render Obvious “a Battery Portion Having an Outer Shell and a Chamber Defined by the Outer Shell”

Petitioner and its expert contend as a backup argument that “it would have been within the knowledge of a POSA to integrate the battery component with the connector.” Pet. 22; Ex. 1005 ¶332. According to Petitioner, the prior art “is replete with teachings that an e-cigarette device connector can be integrally formed with the battery portion.” Pet. 22. Petitioner argues this despite the explicit teachings in Liu783 as to the benefits of the three- vs two-piece configuration common in the prior art. Liu783 at [0002].

The central defect with Petitioner’s obviousness position is its reliance on a grab-bag of additional references *that are not part of the articulated IPR grounds*, but which Petitioner attempts to rope in via reliance on an amorphous “knowledge of a POSA.” Petitioner relies on *four* different, additional, unasserted prior art references in Exhibits 1022, 1025, 1035, 1036. *See generally* Pet. at 22-25. The Board should ignore these additional references and Petitioner’s obviousness case which rests entirely upon them.

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To merit institution, the statute requires that “the petition identif[y], in writing and **with particularity**, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim” 35 U.S.C. § 312(a)(3). Moreover, “[t]he petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon.” 37 C.F.R. § 42.104(b)(4). The Petition does not satisfy those requirements because the additional obviousness theories relying on the four additional prior art references are not identified with particularity. To the contrary, they are deliberately obfuscated by the phrasing “knowledge of a POSA.” Moreover, Petitioner has not explained “with particularity” how Liu783’s device would be modified according to the teachings of the four additional references. Rather, Petitioner glosses over the mechanics of the modification by simply stating that a “POSA would have been motivated to adapt Liu783 to include an integrated battery/connector component.” Pet. 23. Petitioner and its expert are silent on **how** Liu783’s three-piece system would be modified (while also retaining all of the other features that Petitioner relies on for other claim limitations) to accomplish this.

The Petition also does not make clear whether it is relying upon the references actually identified in the grounds of unpatentability or some combination of the additional references. In such “circumstances, [the Board] will not ‘attempt to fit

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evidence together into a coherent explanation that supports an argument that demonstrates a reasonable likelihood that Petitioner would prevail.” *QuantifiCare, Inc. v. Proctor & Gamble Co.*, IPR2017-02113, Paper 11 at 9 (PTAB Mar. 16, 2018) (quoting *Zetec, Inc. v. Westinghouse LLC*, IPR2014-00384, Paper 10 at 15 (PTAB July 23, 2014)). In *Zetec*, the Board exercised its discretion under 35 U.S.C. § 314(a) and 37 C.F.R. § 42.108(b) and refused to consider the petition where Petitioner’s lack of clarity “obfuscat[ed] the arguments as to each ground.” IPR2014-00384, Paper 10 at 12-16. The Board expressly “decline[d] to expend [its] resources scouring the numerous grounds for one that demonstrates a reasonable likelihood that Petitioner would prevail in showing unpatentability.” *Id.* at 15.

As in *QuantifiCare* and *Zetec*, the Board should decline to use the additional four references cited by Petitioner in an attempt to backfill the gaps in Ground 1 or to cobble together new, unidentified arguments on Petitioner’s behalf. Petitioner has not even established that the references accurately describe the state of the art. Indeed, the additional references are not described in any detail at all. They are simply cherry-picked for a one-sentence sound bite that purportedly shows a “unitary body” and then discarded, without analyzing how their teachings would interoperate with Liu783.

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Petitioner’s articulated motivations to combine fail to pass muster. Petitioner alleges that “an integrated component reduces the components and would therefore reduce the complexity and expense of manufacturing the device.” Pet. 23. Petitioner fails to quantify this benefit, and additionally ignores the cost of redesigning Liu783’s existing device. Ex. 2001 ¶75. Moreover, Liu783’s three-piece solution with the intermediate connector 92 was explicitly created to reduce manufacturing and use cost: “An object of the present invention is to provide an electronic cigarette having a connector for magnetic connection, to decrease manufacture and use cost of the electronic cigarette, and facilitate the installation, detachment and replacement of the electronic cigarette.” Liu783 at [0003].

Petitioner further contends that “whether the connector is a separate component or integrated with the battery component is a matter of design choice from a finite number of options.” Pet. 23. Petitioner fails to provide any analysis showing that this is true. Petitioner only citation here is to Ex. 1036, which is not part of Ground 1. Moreover, there are a number of different technical considerations that go into designing connections between components of ENDS devices, and Petitioner over-simplifies the analysis. Ex. 2001 ¶76.

Petitioner also asserts that “by integrating the connector with the battery component, there is less possibility the consumer damages the device during

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assembly/disassembly.” Pet. 23-24. Petitioner does not quantify this benefit, nor does it cite any evidence identifying this as a real concern. Nor does Petitioner articulate any specific assembly/disassembly problem with Liu783’s existing device. Liu783’s device is not susceptible to damage during assembly or disassembly. Ex. 2001 ¶77.

Petitioner argues that “integrating the connector with the battery component would have been beneficial to the consumer” because they “would have fewer pieces to assemble and fewer pieces to misplace.” As with the previous point, Petitioner does not quantify this benefit or cite any evidence. This argument also runs directly contrary to Liu783’s own disclosure, which touts its convenience: “assembly and detachment of the atomizer and the connector become very convenient.” Liu783 at [0019]; *see also id.* at [0003] (“An object of the present invention is to . . . facilitate the installation, detachment and replacement of the electronic cigarette.”). Ex. 2001 ¶78.

Petitioner contends that there would be a reasonable expectation of success in modifying Liu783 because the “connector is simply an extension of the battery component and integrating the connector would not interfere with the operation of the battery component or the connector.” Pet. 24. This is an oversimplification of the effect of changing the connector on the other aspects of the device. Airflow,

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electrical and physical connections, and heat dynamics would all be affected and require study. Ex. 2001 ¶79.

Last, Petitioner argues that “it was well-known and common practice for the battery component to connect directly to the atomizer.” Pet. 24. This is just another way of saying “it was in some random piece of prior art,” and Petitioner’s only citation here is to Ex. 1025, which is not part of Ground 1. This is not sufficient to establish a “well-known and common practice.” Ex. 2001 ¶80.

Petitioner’s expert declaration on all of these points simply mirrors the Petition, and provides no additional analysis. Ex. 1005 ¶332-34; *see also, e.g., Initiative for Meds., Access & Knowledge (I-Mak), Inc. v. Gilead Pharmasset LLC*, IPR2018-00103, Paper 7 at 12 (PTAB June 13, 2018) (denying institution and discounting expert’s “conclusory statement”).

B. Liu783 Does Not Disclose Cartomizer Electrical Contacts at the Base of the Chamber (Claim 1)

Challenged independent claim 1 of the ’981 patent requires “a plurality of cartomizer electrical contacts . . . positioned to contact a plurality of battery electrical contacts at a base end of the chamber when the cartomizer body is inserted into the chamber.” Similarly, challenged dependent claim 16 specifies “wherein cartomizer electrical contacts are positioned to contact a plurality of battery electrical contacts at a base end of the chamber when the cartomizer body is inserted

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into the chamber.” Petitioner relies solely on Liu783 as purportedly disclosing these limitations, and does not rely on any other reference or contend the limitations would have been obvious. Pet. 39-41.

Liu783 does not disclose these limitations because the electrical contact located in connector 92 (second seat 61) of Liu783’s device that contacts one of the cartomizer electrical contacts (first seat 51) is located “circumferentially” along the inside walls of connector 92 and thus, not at the base end of connector 92. Liu783 at [0042] (“[T]he side wall of the first seat 51 and the inner wall of the connecting casing 921 circumferentially contact with each other to realize conduction therebetween, to thereby achieve corresponding conduction of inner circuits of the atomizer 91 and the connector 92.”); *see also* Ex. 2001 ¶82. Moreover, as described above, the inner volume of connector 92 is not the claimed chamber because it is defined by connector 92 rather than by the outer shell of the battery portion of the device. Thus, to the extent the contact is assumed to be located at the base end of connector 92 (which it is not), it still would not be located at a base end of a chamber.

Petitioner asserts without explanation that the “conductive portion of the inner wall of the connecting casing 921 is the electrical contact” located at the base end of the chamber because it “does the contacting.” Pet. 40. Petitioner fails to explain how that electrical contact is located at the base end, as opposed to the inner wall, of

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connector 92. Indeed, Petitioner admits that the “[s]econd seat 61, however, is *separated from the chamber base* by permanent magnet 922 and does not contact first seat 51.” *Id.* (emphasis added). Petitioner thus concedes that the contacts within connector 92 are not located at the base of end of connector 92, and are hence not located at the base end of any chamber, let alone the base end of the alleged chamber in Liu783. *See also* Ex. 2001 ¶83.

VI. Liu783, Liu438, Tucker, and Knowledge of a Person of Ordinary Skill in the Art Do Not Render Claims 9-10 or 17-18 Obvious (Ground 2)

A. Liu783 Does Not Disclose or Render Obvious “the Cartomizer Receiving Segment Comprising a Chamber Defined by an Outer Shell of the Battery Portion” (Claim 9) or “Wherein the Cartomizer Body Is Configured for Insertion into a Chamber Defined by an Outer Shell of a Battery Portion of a Vaporizer Device” (Claim 17)

Challenged independent claim 9 of the ’981 patent requires a battery portion comprising a cartomizer receiving segment, “the cartomizer receiving segment comprising a chamber defined by an outer shell of the battery portion.” Challenged independent claim 17 of the ’981 patent requires a cartomizer body “wherein the cartomizer body is configured for insertion into a chamber defined by an outer shell

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of a battery portion of a vaporizer device.”³ Petitioner contends that Liu783 “discloses and renders obvious [these] limitation[s].” Pet. 56, 59.

The combination of Liu783, Liu438, and Tucker does not render obvious these claim limitation for the same reasons as discussed above in Section V.A in the context of Ground 1. Liu783 does not disclose a chamber defined by an outer shell of the battery portion. Instead, a chamber is defined by an outer shell of connector 92, which separately forms the cartomizer receiving segment, outside of the battery portion. Ex. 2001 ¶84.

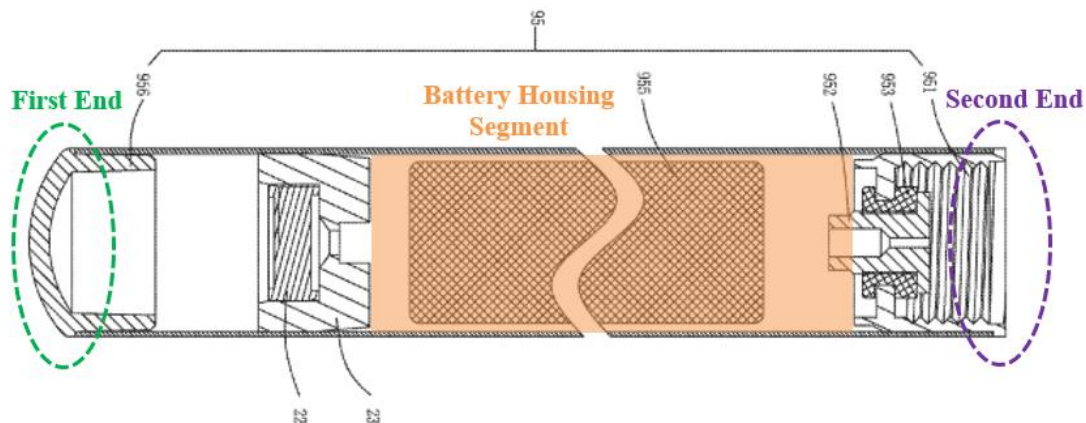
³ Challenged independent claim 17 also specifies “a chamber of a cartomizer receiving segment, the chamber configured for receiving the cartomizer body, the cartomizer electrical contacts, and the heating element through an opening at a distal insertion end of the battery portion.” For the reasons described throughout this section, Liu783 does not disclose or render obvious this limitation because the outer shell of the battery portion of the device does not define a chamber. There is no opening at a distal insertion end of the battery portion through which the chamber is configured for receiving the cartomizer body, because the chamber is not part of the battery portion.

PUBLIC VERSION**B. Liu783 Does Not Disclose “a Battery Housing Segment Proximate the First End of the Battery Portion” (Claim 9)**

Challenged independent claim 9 of the '981 patent requires a battery portion comprising “a battery housing segment proximate the first end of the battery portion.” Petitioner contends that Liu783 discloses this limitation, and does not rely on any other reference, or on obviousness. Pet. 54-55.

Liu783 does not disclose this limitation because the alleged cartomizer receiving segment (connector 92) is not part of the battery portion of the device (power rod 95). *Cf.* Pet. 55 (“Connector 92 is the receiving segment.”). To the contrary, Liu783’s connector 92 is a separate piece of hardware that threads into the battery portion of the device. Liu783 at [0030] (describing “power rod 95” and “connector 92” as separate components that are “assembled together,” and explaining that, after assembly, “connector 92 is located between atomizer 91 and the power rod 95”). And without the connector 92, the battery housing segment of the battery portion is closer to the second end of the battery portion than it is to the first end of the battery portion. Ex. 2001 ¶85. As shown below in an annotated version of Figure 8, the battery housing portion is thus not proximate to the first end of the battery portion, as required by claim 9:

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Liu783 at Fig. 8 (annotated).

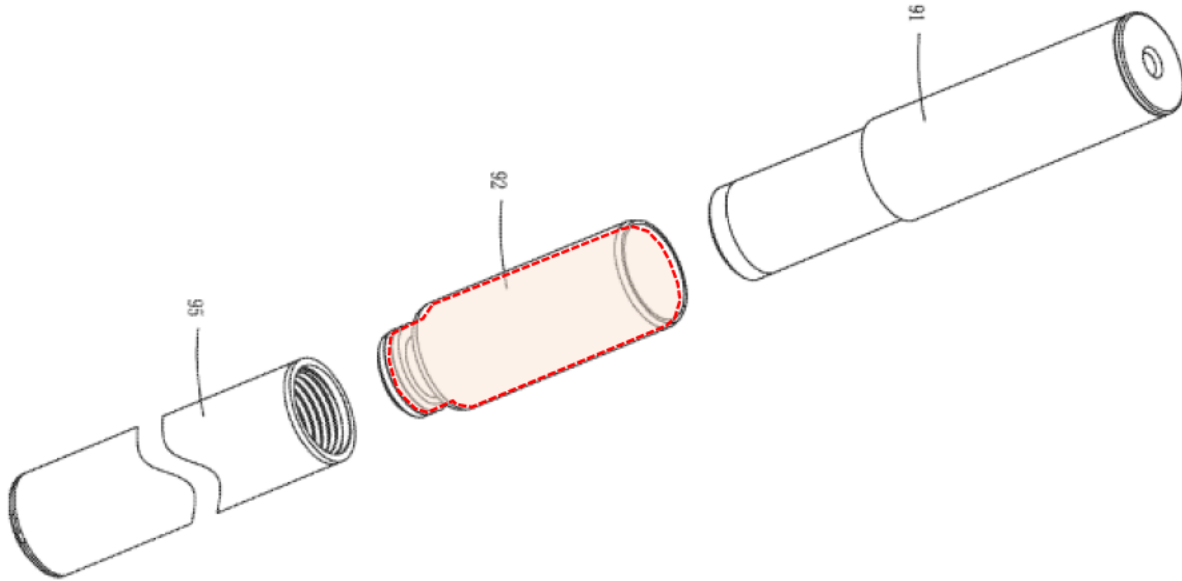
C. Liu783 Does Not Disclose “a Cartomizer Receiving Segment Proximate the Second End of the Battery Portion” (Claim 9)

Claim 9 of the '981 patent requires a battery portion comprising “a cartomizer receiving segment proximate the second end of the battery portion.” Petitioner contends that Liu783 discloses this limitation, and does not rely on any other reference, or on obviousness. Pet. 55.

Liu783 does not disclose this limitation because the battery portion of its device (power rod 95) does not include the alleged cartomizer receiving segment (connector 92). *Cf.* Pet. 55 (“Connector 92 is the receiving segment.”). Rather, as explained above, the cartomizer receiving segment (connector 92) is a separate component that attaches to the battery portion of the device and can be easily be removed using a threaded connection. Ex. 2001 ¶86. For example, in Liu783’s Figure 2, the alleged cartomizer receiving segment (connector 92) is displayed as a

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separate component that threads into the battery portion of the device (power rod 95):



Id. at Fig. 2 (annotated).

Petitioner fails to explain how the battery portion (power rod 95) comprises the cartomizer receiving segment (connector 92). *See generally* Pet. 54-57. Instead, Petitioner simply assumes that the battery portion includes the cartomizer receiving segment, based on a figure where the two components are assembled using a threaded connection. *Id.* But Liu783 repeatedly explains that the power rod is the battery portion. And the battery portion does not comprise the cartomizer receiving segment because connector 92 is defined by its own outer shell, rather than by the outer shell of the battery portion. Ex. 2001 ¶87.

PUBLIC VERSION**D. Liu783, Liu438, and Tucker Do Not Render Obvious a Window (Claims 9 and 17)**

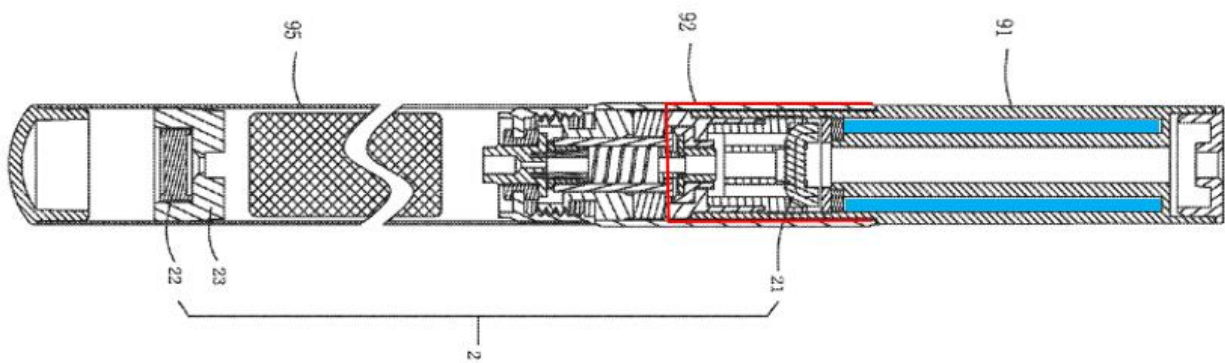
Challenged independent claim 9 of the '981 patent requires a cartomizer receiving segment defined by an outer shell of the battery portion, “wherein a window is provided in the outer shell, and wherein the translucent portion of the cartomizer body aligns with the window when the cartomizer body is inserted into the chamber.” Challenged independent claim 17 requires “an outer shell forming at least part of the chamber, wherein a window is formed in the outer shell to permit viewing of the cartomizer body when the cartomizer body is received into the chamber.” Petitioner contends that “Liu783, Liu438, and Tucker in combination renders obvious [these] limitation[s]” and that “a POSA would have found it obvious to modify Liu783’s cartridge receptacle, in view of Tucker’s teachings, such that it comprises a transparent window permitting viewing of the liquid smoke cup when the atomizer 91 is inserted into the connector.” Pet. 57, 63.

It is undisputed that neither Liu783 nor Liu438, alone or in combination, disclose or render obvious a window provided in the outer shell of the battery portion of the device. Pet. 46 (“Liu783 in view of Liu438 disclose a transparent cartridge but ***do not disclose that the outer shell covering the cartridge includes a window.***”) (emphasis added). Instead, Petitioner relies on Tucker’s disclosure of a window formed on the cartridge used for viewing the amount of liquid remaining in the liquid

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reservoir. *Id.* (“Tucker, on the other hand, teaches a window for review [sic] the remaining liquid.”).

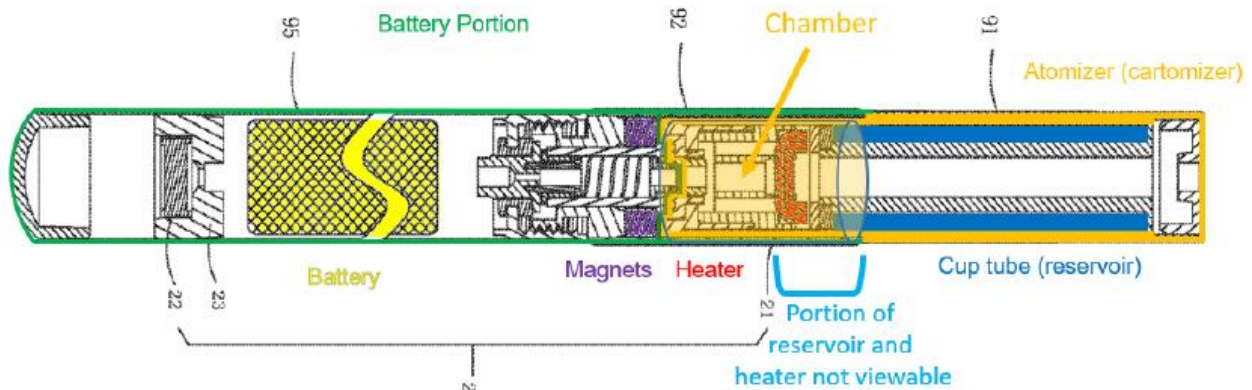
A POSITA would not have been motivated to combine Tucker’s disclosure of a window on a cartridge with Liu783’s outer shell because Liu783’s liquid reservoir is located substantially outside of the chamber defined by connector 92, and would thus allow a viewer to directly view the remaining liquid level without need for a window formed in the outer shell of connector 92:



Liu783 at Fig. 3 (annotated with shell of connector 92 highlighted in red and the vaporizable fluid highlighted in blue); *see also* Ex. 2001 ¶89.

In an attempt to exaggerate the purported benefits of adding a window to Liu783, Petitioner suggests that window should allow viewing of the wicking and heating elements in addition to an insubstantial portion of the liquid reservoir located below the insertion edge of connector 92, as shown below in Petitioner’s annotated version of Figure 3:

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Pet. 47 (Petitioner’s annotation of Liu783’s Fig. 3). Petitioner fails to provide any motivation as to why a smoker would want to see the wicking or heating elements. Petitioner has provided no indication that the heater or wicking elements would provide any indication of liquid level, and the overwhelming majority of the liquid supply reservoir is already visible in Liu783’s device. Moreover, Petitioner does not explain how adding Tucker’s window near the heating element in Liu783’s device could withstand the heat generated by the heating element, and it is likely that it could not. Nor does Petitioner address how the wicking and heating elements could be viewed through Tucker’s window when they would likely be blocked by a heat shield or other opaque material to prevent damage to the cartomizer body. Ex. 2001 ¶90.

Petitioner cites to an additional reference that is not part of Ground 2 for the proposition that a user would need to monitor the very bottom portion of the liquid reservoir “to prevent empty burning of the heating wire after liquid smoke has run

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out.” Pet. 46-47. But a user would best be able to prevent “empty burning of the heating wire” by ceasing use of the device before the liquid reservoir is completely depleted, and thus would not need to view the amount of liquid remaining in the last several millimeters of the liquid reservoir. Thus, a cartomizer body formed of a translucent material (with the liquid supply reservoir almost completely exposed) would not need to be combined with a window on the outer wall of connector 92, to purportedly prevent such a situation from arising. Ex. 2001 ¶91.

Petitioner contends that “[u]sing a window to view liquid amounts was common in the prior art” and cites a grab-bag of references that are not part of Ground 2. Pet. 47-48 (citing Exs. 1052, 1030, 1031). Citing to individual prior art references does not establish that it was “common in the prior art.” Petitioner ignores that the liquid supply is already visible in Liu783’s device, which calls into question the utility of adding a window from any of the additional cited prior art references.

Moreover, adding Tucker’s window to the outer wall of connector 92 would increase manufacturing costs and complexity, both of which would deter anyone from making modifications to any device. Ex. 2001 ¶93.

In any case, in the combination proposed by Petitioner, the window would be formed on connector 92, not an outer shell of the battery portion of the device because connector 92 is not part of the battery portion of device.

PUBLIC VERSION**E. Liu783 Does Not Disclose or Render Obvious Coplanar Battery Electrical Contacts (Claim 17)**

Challenged independent claim 17 of the '981 patent requires a battery portion comprising “battery electrical contacts for completing a circuit with the cartomizer electrical contacts when the cartomizer electrical contacts are received into the chamber, the battery electrical contacts being coplanar.” Petitioner contends that Liu783 discloses this limitation, and does not rely on any other reference, or on obviousness. Pet. 61-63.

As explained above, Liu783 does not disclose a chamber of a cartomizer receiving segment defined by an outer shell of the battery portion of the device. It necessarily follows that the cartomizer electrical contacts could not be received by a chamber of the battery portion because the chamber that receives the cartomizer is part of connector 92 rather than the battery portion. Ex. 2001 ¶96.

Moreover, even if it connector 92 could form a chamber of the battery portion, Liu783 does not disclose this limitation because the battery electrical contacts located in the chamber of connector 92 are not coplanar. A POSITA would understand that coplanar refers to surfaces that lie on the same plane. Ex. 2001 ¶97. Indeed, Petitioner cites to 7:31-34 of the '981 patent, which is consistent with this interpretation because it refers to “aligned” (*i.e.*, on the same plane) surfaces as “coplanar.” Pet. 61-62 n.3. But Petitioner goes dramatically awry by arguing that

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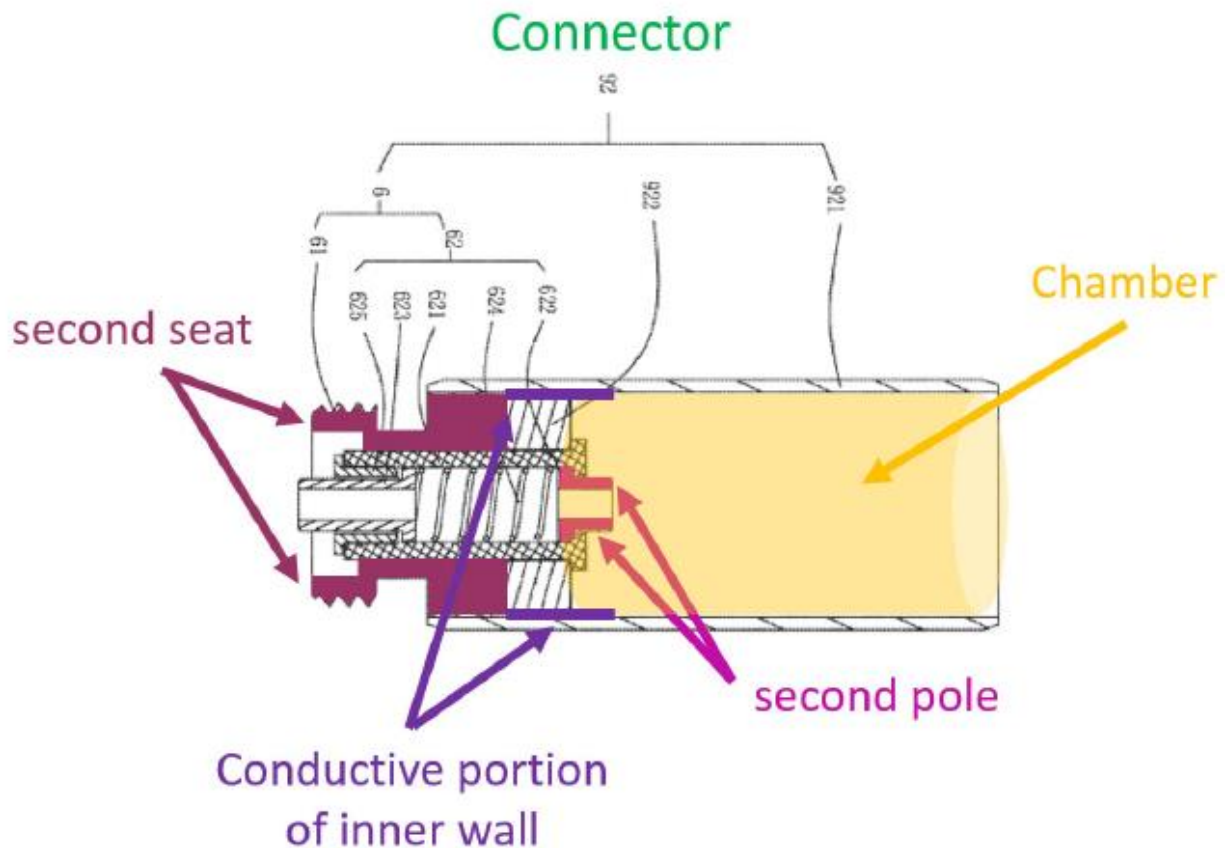
any two contacts are coplanar: “Because Liu783 discloses two contacts, and two points always fall on a plane, Liu783’s contacts are co-planar.” *Id.* 61-62. Petitioner is incorrect.

First, while two points may fall on the same plane, by definition two points define a line and a line can fall on an infinite number of planes. A plane needs at least three points to be defined. As such, the two asserted points themselves do not define a surface that falls on the same plane. Ex. 2001 ¶98.

Second, a point is a mathematical concept used to describe an infinitesimally small discrete position in space, not the surface of an object. The battery electrical contacts in Liu783’s device are not abstract mathematical concepts. They are objects in physical space with dimensions, surfaces, and orientations. Flat tabs, for example, will only be considered coplanar when their length and width dimensions (perpendicular to its thickness dimension) fall on the same plane. Ex. 2001 ¶99.

Third, Petitioner assumes that any two surfaces that intersect the same plane are coplanar. As shown below in Petitioner’s annotated version of Liu783’s Figure 7, Petitioner assumes that cross sections of the inner wall of connector 92 and second pole are coplanar because they are intersected by a single plane that defines the cross section:

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Pet. 62 (Petitioner’s annotation of Liu783’s Fig. 7). This argument renders the “coplanar” term meaningless because a plane can be found in any 3D object on which any two points fall. Ex. 2001 ¶100.

Alternatively, Petitioner and its expert argue that if coplanar was understood to refer to two surfaces that fall on the same plane, such a configuration would be obvious because surfaces forming “electrodes could easily be arranged to be flat.” Pet. 49; Ex. 1005 ¶401. Petitioner and its expert describe several alternative arrangements where the contacts disclosed by Liu783 could purportedly be modified to be coplanar. Pet. 49-52; Ex. 1005 ¶¶400-04. But Petitioner and its expert fail to

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acknowledge the difficulty in forming electrical circuits between planar surfaces. For example, a POSITA would have had difficulty implementing structures such as springs, pogo pins, and bent tabs that would have to be used to ensure a robust electrical connection at the compact interface between the cartomizer electrical contacts and the battery electrical contacts. Ex. 2001 ¶101. Implementation of such systems would be especially difficult in the arrangement disclosed by Liu⁷⁸³, where both the battery and cartomizer electrical contacts are concentric between the cartomizer and connector portion of the device. A POSITA would not have had a reasonable expectation of success implementing a system that could maintain robust electrical connection between coplanar contacts that are concentric in the device disclosed by Liu⁷⁸³. *Id.*

Petitioner and its expert further assert that a POSITA could have easily implemented coplanar electrical contacts because the magnets at the base of connector 92 could serve a dual purpose as both a connection means and an electrical contact interface. Pet. 50; Ex. 1005 ¶402. However, permanent magnets are not typically good conductors. Most permanent magnets are made from materials like iron, nickel, cobalt, or their alloys. These materials are ferromagnetic, meaning they can be magnetized and retain their magnetization. However, they do not conduct well compared to materials like copper or aluminum. A POSITA would therefore

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not use a permanent magnet as a conductor as this would drain the battery much faster. A POSITA would avoid using magnets as both a fastening and conducting means. A POSITA thus would not have had any reasonable expectation of success implementing coplanar electrical contacts made of magnets or contacts that are arranged above magnets. Ex. 2001 ¶102.

VII. Liu783, Liu438, and Zheng Do Not Render Dependent Claim 8 Obvious (Ground 3)

Petitioner relies solely on the combination of Liu783 and Liu438 to render obvious independent claim 1, from which claim 8 depends. Pet. 63-68. For the reasons given in Section V above, Liu783 in view of Liu438 does not render independent claim 1 obvious. The addition of Zheng cannot remedy the deficiencies of Liu783 and Liu438 with respect to claim 1. Therefore, the petition also fails to demonstrate a reasonable likelihood claim 8 is obvious in light of Liu783, Liu438, and Zheng.

VIII. Thorens788 and Thorens231 Do Not Render Obvious Claims 1, 2, or 13-16 (Ground 4)

Petitioner has not established a cognizable motivation to combine Thorens788 with Thorens231 to achieve the challenged independent claims. Petitioner has also not established a reasonable expectation of success in making the proposed combination.

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A. Thorens788 and Thorens231 Do Not Render Obvious a Mouthpiece (Claims 1 and 13)

Challenged independent claims 1 and 13 each specify “a mouthpiece at or proximate to the mouthpiece end, the mouthpiece in fluid communication with the inhalation tube.” Petitioner concedes Thorens788 does not have a mouthpiece, and instead relies on a modification of Thorens788 according to the teachings of Thorens231 to render obvious these limitations. Pet. 68-70, 85-86.

However, a POSITA would not have found it obvious to combine Thorens788 and Thorens231 in the manner suggested by Petitioner. In particular, Petitioner has not established either a motivation to combine Thorens788 with Thorens231, or a reasonable expectation of success. Petitioner’s articulated motivations to combine are conclusory and do not withstand scrutiny. And Petitioner has ***no contention that the modification would be performed with a reasonable expectation of success.***

Petitioner argues that “Thorens788 already discusses mouthpiece housing and a POSA would have looked to Thorens231, which shares common inventors and is directed to substantially the same invention.” Pet. 70. However, Petitioner has not established that the two references are “substantially the same invention”; it is simply an assertion. And to the contrary, there are significant differences between Thorens788 and Thorens231, including the size and position of the alleged heating element and alleged wicking element. Ex. 2001 ¶¶108-09.

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Petitioner next contends that “a POSA would have been motivated to provide a mouthpiece housing for Thorens788 because the mouthpiece is replaceable, and without a housing, a consumer would be forced to grip the heating element to remove the mouthpiece. That could lead to injury if the heating coil is still hot.” Pet. 70. But neither Thorens788 nor Thorens231 mention any such potential burn injury or related defect with their devices’ structure. And at most, concern for potential burns from the heating coil would counsel in favor of merely enclosing or protecting the heating coil in some manner, not providing a cartomizer body with all of the various claimed limitations that Petitioner concedes are not disclosed by Thorens788. Ex. 2001 ¶110.

Dr. Janet’s declaration fails to correct the deficiencies in the Petition. Ex. 1005 ¶¶464-67. These paragraphs are generally a carbon copy of the material in the Petition, with only slight additions, such as including the text of quoted material. In instances where Dr. Janet does provide elaborations that go beyond the Petition, they are conclusory. Dr. Janet’s declaration devotes three paragraphs to the contention that Thorens788 and Thorens231 “are directed to substantially the same device.” *Id.* ¶¶464-66. But these paragraphs simply cite portions of the two references without analysis. And Dr. Janet’s remaining paragraph parrots the Petition’s unfounded

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contention (reviewed above) that Thorens788 device has a danger of user injury from a hot heating coil, without additional analysis. *Id.* ¶467.

Crucially, neither the Petition nor its supporting expert declaration contain **any allegation** that a POSITA could have made the proposed mouthpiece modification to Thorens788’s device with a reasonable expectation of success. A reasonable expectation of success is a necessary and indispensable element of showing obviousness. *Regents of Univ. of Cal. v. Broad Inst., Inc.*, 903 F.3d 1286, 1291 (Fed. Cir. 2018) (“An obviousness determination requires finding that a POSITA would have been motivated to combine or modify the teachings in the prior art and would have had a reasonable expectation of success in doing so.”). It was Petitioner’s burden, at the Petition stage, to establish a reasonable expectation of success for its proposed combination. *Eli Lilly & Co. v. Teva Pharms. Int’l GmbH*, 8 F.4th 1331, 1344 (Fed. Cir. 2021) (“A finding by the Board that a patent challenger has demonstrated a motivation to combine references does not necessarily imply that the challenger has also met its burden of showing a reasonable expectation of success”). But Petitioner has not even attempted to meet its burden. Ground 4 fails for this reason alone.

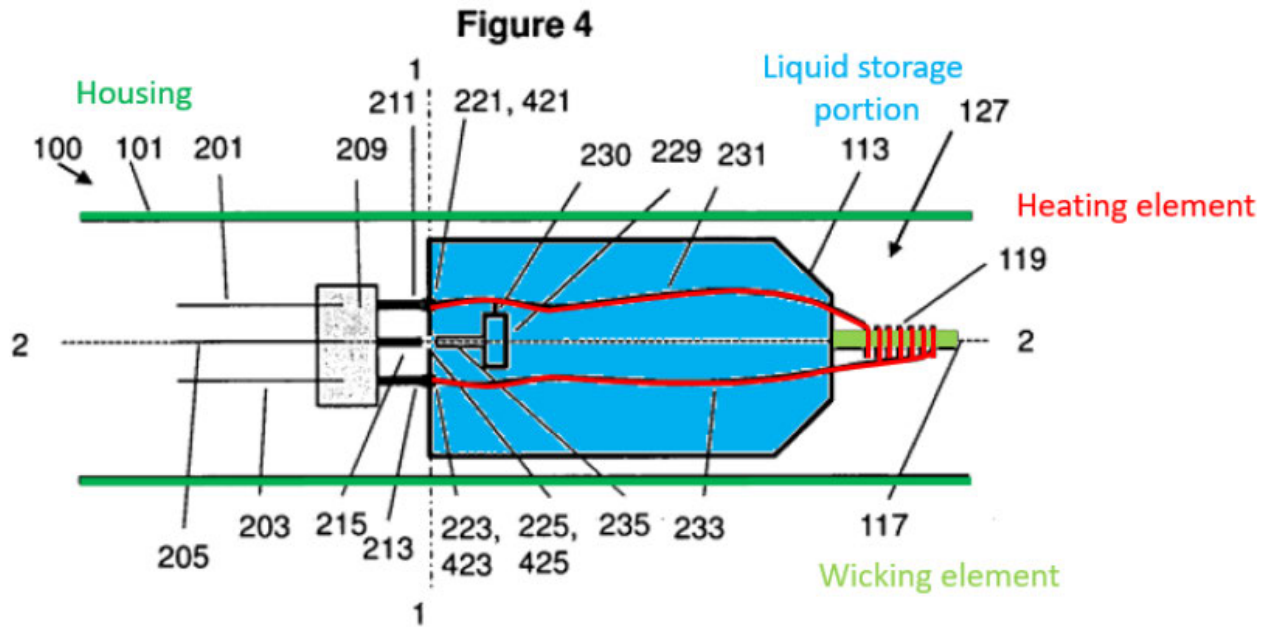
Beyond the deficiencies in Petitioner’s arguments, there are several additional affirmative reasons why a POSITA would not have been motivated to modify

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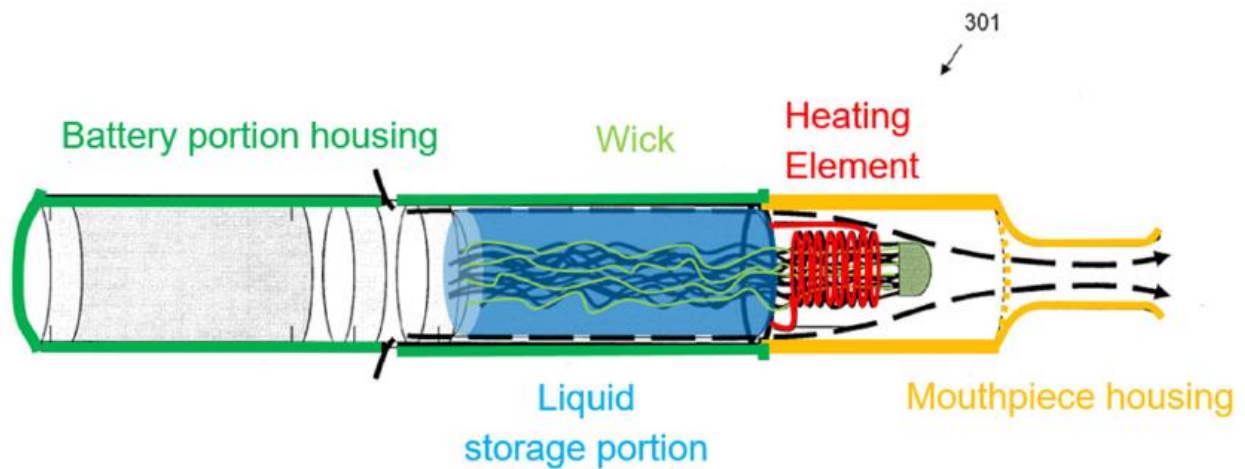
Thorens788's device to add Thorens231's mouthpiece, and would not have a reasonable expectation of success in doing so.

First, Petitioner and its expert fail to account for the differing form factors and structural configurations of the distinct devices taught in Thorens788 and Thorens231. Petitioner does not discuss what modifying Thorens788's device to include a mouthpiece would do to the performance or functionality of the modified device. Petitioner does not address how the new mouthpiece would be attached to Thorens788's device. The two devices also differ significantly in the size of their heating elements and the proximity of the heating elements to the sides of the device enclosures. The differences between the disclosures are readily apparent from Petitioner's own annotations to the figures for each reference:

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EX1004, Fig. 4



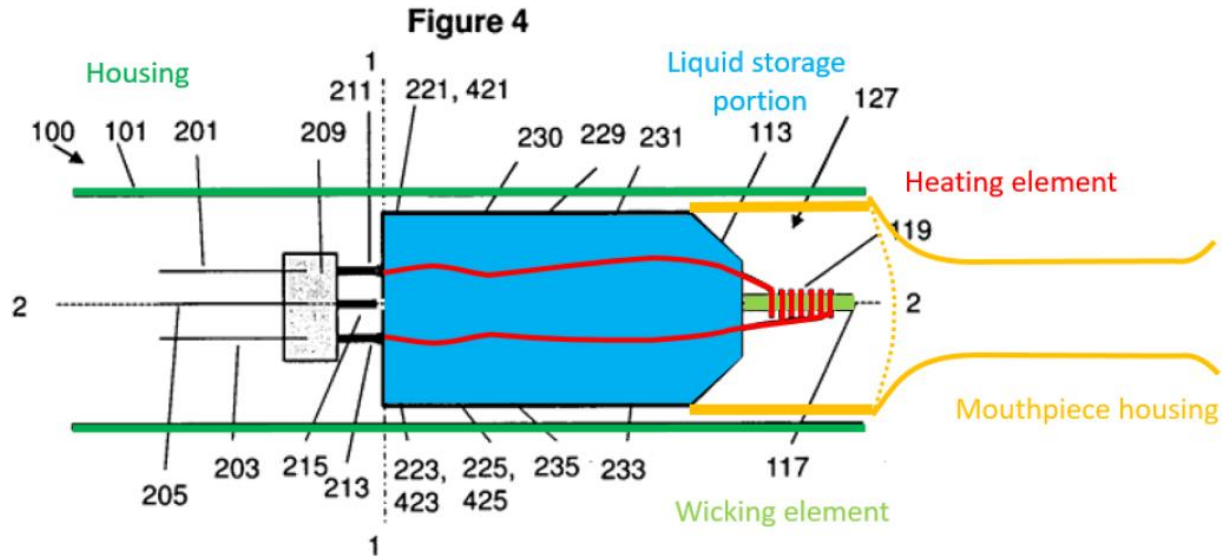
EX1002, Fig. 3.

Pet. 69. The size of the heating element is related to energy consumption, rate of liquid consumption, temperature of vapor, amount of vapor, particle size of the aerosol, material selection, battery life, and airflow, all of which Petitioner and its

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expert fail to consider. The devices also differ significantly in their wick placements, which a POSITA would know alters the characteristics of the device, such as the airflow path, draw resistance, and placement of components. Further, the alleged heating element for Thorens788 is located within the housing of the device, while the heating element for Thorens231 is located outside of the housing and within the mouthpiece. Petitioner and its expert, however, fail to discuss how the air would flow in Thorens788's modified device when the mouthpiece is added. Petitioner's annotated Figure 4 appears to block any airflow through the device and out of the mouthpiece. Petitioner and its expert do not account for how the mouthpiece would be secured to the liquid storage portion in Thorens788. Moreover, as drawn by Petitioner, the wick touches what is presumably the air inlet for the mouthpiece (although Petitioner does not discuss where the air inlet is), which could adversely impact performance or user experience, such as draw resistance:

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Pet. 65 (Petitioner’s annotation of Thorens788 Fig. 4 with the addition of yellow “Mouthpiece housing” transplanted from Thorens231 Fig. 3). Additionally, assuming the mouthpiece is attached to the liquid storage portion, Petitioner’s combined device has no path for air to flow into the area surrounding the heating element. Ex. 2001 ¶114.

Second, Thorens231 states that one of its advantages is “because the replaceable mouthpiece contains the at least one heating element, the liquid storage portion of the wick, all elements which are potentially in contact with the liquid are changed when the mouthpiece is replaced.” Thorens231 at 2:11-15. According to Thorens231, this means that “there will be no cross-contamination in the shell between different mouthpieces, for example ones using different liquids.” *Id.* Thorens231 further states that “the mouthpiece structure means that there is a low risk of leakage from the liquid storage portion, which is not the case for many of the

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electrically heated smoking systems,” and that “if the mouthpiece is replaced at suitable intervals, there is little chance of the heating element becoming clogged with liquid.” *Id.* at 2:22-30. However, these benefits are all specific to the position of the mouthpiece in *Thorens231’s device*, not Thorens788’s device, and Petitioner and its expert do not address how their proposed transplantation of Thorens231’s mouthpiece could achieve the same benefits in Thorens788’s device. Ex. 2001 ¶115.

Third, a POSITA would not have a reasonable expectation of success in making the proposed changes to Thorens788’s device. Instead, re-architecting the mouthpiece would require substantial design and analysis work, including the electrical connections of the pressure sensor and battery. These changes would require a complete re-engineering of the airflow in the device, which is complicated and the focus of considerable research when designing an e-cigarette. Having the correct air flow, connections, and fit are key, because the goal is for the device to simulate the experience of using a cigarette. Thus, draw resistance is a key consideration, and it is well-known to POSITAs in the industry that it is very difficult to get correct. Draw resistance impacts vapor production, the size of the visible vapor cloud, the throat hit, and the particle size of the aerosol. All of these considerations must be fine-tuned in order to ensure an acceptable user experience. But changing Thorens788’s device as Petitioner suggests would throw all of these

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parameters into flux, potentially ruining the user experience, and at a minimum requiring significant analysis to get the balance right after any changes. A POSITA would not have been able to make the proposed changes with any expectation of success. Instead, a POSITA would have had an expectation of considerable additional work being required to evaluate any change, even a minor one. Ex. 2001 ¶116.

B. Thorens788 and Thorens231 Does Not Render Obvious a Translucent Cartomizer Body (Claim 1)

Challenged independent claim 1 requires that at least a portion of the claimed cartomizer body comprises “a translucent material configured to allow viewing of the fluid vaporizable substance.” Petitioner contends that Thorens788 discloses this limitation, or in the alternative renders it obvious in combination with Thorens231. Pet. 78.

As an initial matter, Thorens788 teaches away from a translucent cartomizer body because it expressly states that liquid storage portion is preferably opaque, as this limits degradation of the liquid by light. Thorens788 at 7:26-27 (“***Preferably, the container is opaque***, thereby limiting degradation of the liquid by light.”) (emphasis added). This is a strong indication that Petitioner’s proposed combination does not render these limitations obvious. *See Janssen Pharm., Inc. v. Watson Labs., Inc.*, Case No. 08-5103, 2012 WL 3990221, at *29 (D.N.J. Sept. 11, 2012) (holding

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that, “[b]ecause of the prior art teaching away from [the claimed invention], the skilled artisan . . . would not have had a reasonable expectation of success in modifying the [prior art].”); *Impax Labs., Inc. v. Lannett Holdings Inc.*, 246 F. Supp. 3d 1024, 1037 (D. Del. 2017), *aff’d*, 893 F.3d 1372 (Fed. Cir. 2018) (finding there to be “strong evidence of nonobviousness” where “[t]he state of the art at the priority date taught away from [the claimed inventions].”).

Additionally, Thorens788’s instruction to use an opaque container makes technical sense. A POSITA would know that, without countermeasures, light (or heat, oxygen, or moisture) may alter the liquid, such as making it spoil faster than normal. In turn, this affects how the liquid is vaporized, the performance of the device, and user experience. Ex. 2001 ¶119. Petitioner suggests that the liquid could be protected “by using a tinted glass” (Pet. 79; Ex 1005 ¶487), but this misses the point of what is taught by Thorens788 and Thorens231. In this context, depending on the degree of tint, glass could still let in entirely too much light into the container such that the problem of light degradation still occurs. Ex. 2001 ¶119.

Astonishingly, Petitioner and its expert attempt to turn Thorens788’s express preference for an opaque cartridge into an **endorsement** of translucency. Pet. 77 (“Thorens788 discloses that the container may be opaque or not opaque (*i.e.*, translucent), but the preference is for opaque.”); Ex. 1005 ¶485 (“While Thorens788

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discloses that the container of the liquid storage portion is preferably opaque, a POSA would have understood the preference to mean that the container may be optionally not opaque (*i.e.*, translucent).”). This novel interpretation appears to be a product of creative lawyering and is simply not present in the text of Thorens788. Petitioner’s position is akin to saying that when a restaurant diner orders “a cheeseburger, preferably not rotten,” they have actually instead said (and genuinely meant) “a cheeseburger, optionally rotten.” Nonsense. Here, Thorens788’s explicit preference for opacity cannot be transformed into a motivation for (or disclosure of) translucency. Ex. 2001 ¶120.

Petitioner and its expert contend that because the combination reference Thorens231 states that the cartridge can be glass, it necessarily means that it is translucent. Pet. 78; Ex. 1005 ¶486. However, a POSITA would have understood that there are many types of glass or plastics that are opaque, and may have labels covering them to make a wall even made of clear glass opaque, and these would also be suitable for the Thorens231’s devices. Ex. 2001 ¶121. Notably, Thorens231 does not describe its device’s cartridge as translucent. Nor does it list any benefits to a translucent cartridge. Thorens231 teaches that the wall materials should be acceptable for use in the pharmaceutical or food industries – and should be chosen to stably hold the liquid, not for any visibility considerations. Thorens231 at 7:34-

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35. The advantages cited by Petitioner and its expert are not expressed in the references themselves. In fact, the advantages run directly contrary to other guidance in the references. For example, Petitioner and its expert contend that a POSITA would have been motivated to use a translucent container so that a consumer can more easily refill the cartridge, but that ignores Thorens788's teaching that the "liquid storage portion is arranged to hold liquid for a pre-determined number of puffs." Thorens788 at 7:26-31. Additionally, Petitioner itself concedes in the context of Ground 6 that ***this advantage is not actually present*** in the proposed combined device. Pet. 98 ("The advantages of a translucent container, however, are mitigated by Thorens788's housing 101, which extends to cover the entirety of the liquid container when the cartomizer is inserted into the housing.").

C. Thorens788 and Thorens231 Do Not Render Obvious "an Inhalation Tube in Fluid Communication with the Heating Element and the Wicking Element" (Claims 1 and 13)

Challenged independent claims 1 and 13 of the '981 patent each require that the cartomizer comprises "an inhalation tube in fluid communication with the heating element and the wicking element." Petitioner contends that the combination of Thorens788 and Thorens231 renders these limitations obvious because "Thorens231 discloses an inhalation tube" as part of its mouthpiece housing. Pet. 82-84. Petitioner does not contend that Thorens788 discloses an inhalation tube. Petitioner does not explain how Thorens788's device would be modified to add

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Thorens231's purported inhalation tube and does not identify any motivations to combine the references to accomplish the modification, nor does Petitioner contend that the modification could be performed with a reasonable expectation of success. To the extent that Petitioner intended to argue that its proposed modification of Thorens788 to add Thorens231's mouthpiece would also entail the addition of an inhalation tube, it was incumbent on Petitioner to actually make that argument in the Petition, but it did not. Petitioner has failed to present a *prima facie* case of obviousness for this limitation. Additionally, all of the defects with Petitioner's proposed mouthpiece modification discussed above in Section VIII.A would apply here as well. Ex. 2001 ¶122. In addition, the inhalation tube plays a critical role in the process of converting the vapor into an aerosol as it travels and mixes with air to cool and form an aerosol. Many competing considerations go into the design of an inhalation tube, and a person of ordinary skill would not be able to simply transplant Thorens231's purported inhalation tube into Thorens788's device without undue experimentation and costly engineering work. *Id.* ¶123.

Moreover, there is simply no inhalation tube in Thorens231. Thorens231 only describes an *air flow path*, not a separate *inhalation tube*. None of Petitioner's annotated figures or text for this limitation identify an inhalation tube, and a POSITA would know that an "aerosol forming chamber" or "air outlet" is not the same thing

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as an inhalation tube. *Id.* ¶124. Petitioner appears to contend that Thorens231’s “aerosol forming chamber” is an inhalation tube. Pet. 83 (citing Thorens231 at 7:9-12). But the cited section only says: “In the aerosol forming chamber 213, the vapor condenses to form an inhalable aerosol, which is carried towards the outlet 211 and into the mouth of a user.” Thorens231 at 7:9-12. The aerosol is formed in the “aerosol forming chamber,” which is where the heater is located and the vapor is created. The aerosol goes directly from the aerosol forming chamber through the mouthpiece to the smoker. The structure and function of the “aerosol forming chamber” are completely different from an inhalation tube. There is no inhalation tube described in this section of Thorens231 (or anywhere else).

Petitioner’s expert declaration does not correct the defects in the Petition and fails to add any analysis or explanation for how Thorens231’s device could have an inhalation tube. Ex. 1005 ¶¶496-98.

IX. Thorens788, Thorens231, and Levin Do Not Render Dependent Claim 5 Obvious (Ground 5)

Petitioner relies solely on the combination of Thorens788 and Thorens231 to render obvious independent claim 1, from which claim 5 depends. Pet. 94-98. For the reasons given in Section VIII above, the combination of Thorens788 and Thorens231 does not render independent claim 1 obvious. The addition of Levin cannot remedy the deficiencies of Thorens788 and Thorens231 with respect to claim

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1. Therefore, the petition also fails to demonstrate a reasonable likelihood claim 5 is obvious in light of Thorens788, Thorens231, and Levin.

X. Thorens788, Thorens231, and Tucker Do Not Render Obvious Claims 9-11 or 17-18 (Ground 6)

A. Thorens788, Thorens231, and Tucker Do Not Render Obvious a Translucent Cartomizer Body (Claim 9)

Challenged independent claim 9 requires that at least a portion of the claimed cartomizer body comprises “a translucent material configured to allow viewing of the fluid vaporizable substance.” Petitioner contends that Thorens788 discloses this limitation, or in the alternative renders it obvious in combination with Thorens231. Pet. 78, 100. Petitioner does not rely on any aspect of Tucker for this limitation. Therefore, for the reasons given in Section VII.B above, in the context of Ground 4 and the similar limitation of claim 1, “wherein at least a portion of the cartomizer body comprises a translucent material configured to allow viewing of the fluid vaporizable substance,” the combination of Thorens788, Thorens231, and Tucker does not render this limitation obvious.

B. Thorens788, Thorens231, and Tucker Do Not Render Obvious a Window (Claims 9 and 17)

Challenged independent claim 9 of the '981 patent requires a cartomizer receiving segment defined by an outer shell of the battery portion, “wherein a window is provided in the outer shell, and wherein the translucent portion of the

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cartomizer body aligns with the window when the cartomizer body is inserted into the chamber.” Challenged independent claim 17 requires “an outer shell forming at least part of the chamber, wherein a window is formed in the outer shell to permit viewing of the cartomizer body when the cartomizer body is received into the chamber.” Petitioner contends that “Thorens788 and Thorens231 further in view of Tucker render obvious this limitation” and that “it would have been obvious to a POSA to include a window in Thorens788 to permit viewing of the liquid inside based on the teachings of Tucker.” Pet. 104, 98-100. However, the combination of Thorens788, Thorens231, and Tucker does not render this limitation obvious.

Petitioner concedes that Tucker’s window is on the cartridge, but as discussed above in Section VIII.B, **both** Thorens references teach that liquid storage portions are opaque to minimize light degradation. Petitioner’s proposed combination would modify both the housing and liquid storage portion of Thorens788, which both Thorens788 and Thorens231 teach against. Ex. 2001 ¶128.

Moreover, Tucker is **also** consistent about the risk of liquid degradation. Tucker teaches that its “outer tube 6 is not clear, the liquid supply reservoir 22 is protected from light so that the risk of degradation of the liquid material is significantly reduced.” Tucker at [0062]. “Thus, a high level of shelf-life and cleanliness can be maintained.” *Id.* Petitioner ignores these teachings of Tucker,

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which expressly teach away from being combined with Thorens788 and Thorens231. Ex. 2001 ¶129.

Petitioner and its expert do not provide any motivation to combine or reasonable expectation of success other than a cross-reference to Ground 2, where Liu783 was the base reference. Pet. 99. For the same reasons as given in Section VI.D above, the proposed combination lacks both a motivation to combine and a reasonable expectation of success.

C. Thorens788, Thorens231, and Tucker Do Not Render Obvious a Mouthpiece (Claim 17)

Challenged independent claim 17 specifies “a mouthpiece at or proximate to the mouthpiece end, the mouthpiece in fluid communication with the inhalation tube.” Petitioner only relies on its analysis of the combination of Thorens788 and Thorens231 for similar limitations of claims 1 and 13 in Ground 4. Pet. 107. Petitioner does not rely on any aspect of Tucker for this limitation. Therefore, for the reasons given in Section VIII.A above, in the context of Ground 4, the combination of Thorens788, Thorens231, and Tucker does not render this limitation obvious.

XI. Thorens788, Thorens231, and Zheng Do Not Render Dependent Claim 8 Obvious (Ground 7)

Petitioner relies solely on the combination of Thorens788 and Thorens231 to render obvious independent claim 1, from which claim 8 depends. Pet. 114. For the

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reasons given in Section VIII above, the combination of Thorens788 and Thorens231 does not render independent claim 1 obvious. The addition of Zheng cannot remedy the deficiencies of Thorens788 and Thorens231 with respect to claim 1. Therefore, claim 8 is not obvious in light of the combination of Thorens788, Thorens231, and Zheng.

XII. Objective Evidence Further Demonstrates That the '981 Patent Was Not Obvious

Objective indicia of non-obviousness “may often be the most probative and cogent evidence in the record.” *Medtronic, Inc. v. Teleflex Innovations Sarl*, 70 F.4th 1331, 1342 (Fed. Cir. 2023). In considering such evidence, the Board should conduct “a reasoned, collective weighing of its evidence of secondary considerations,” and not rely on “overly vague and ambiguous” “assignments of weight to different considerations.” *Volvo Penta of the Americas v. Brunswick Corp.*, 81 F.4th 1202, 1213-16 (Fed. Cir. 2023). Objective evidence includes “(1) commercial success, (2) copying, (3) industry praise, (4) skepticism, (5) long-felt but unsolved need, and (6) failure of others.” *Id.* at 1212.

As shown below, there is strong and indisputable objective evidence of non-obviousness. Ex. 2001, ¶¶133-74. For nearly a decade, Patent Owner JLI has marketed and sold electronic cigarette devices under the JUUL brand. These products comprise a JUUL Device and various JUULpod (a removable cartridge)

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products (the “JUUL System”). These products practice, and are coextensive with, at least claim 1 of the ’981 patent.

After its introduction in 2015, the JUUL System met the long-felt need for a nicotine alternative to conventional combustion cigarettes. The JUUL System unexpectedly met this need by declining to use cigarette iconography and instead focusing on modularity and a system that would provide the best user experience. As a result, the JUUL System received significant industry praise and commercial success, raising its market share to over 70% within a few years. The success of the JUUL System also led to copying by competitors, including by Petitioners and Petitioners’ parent company and real party-in-interest, Altria Group, Inc (“Altria”) (f/k/a Philip Morris).

A. JLI’s Products Are Coextensive With the Claimed Invention and Thus a Strong Nexus Exists Between the Invention and the Objective Evidence

In evaluating the nexus requirement for secondary considerations, there is a “presum[ption] that such a nexus applies for objective indicia when the patentee shows that the asserted objective evidence is tied to a specific product and that product embodies the claimed features, and is coextensive with them.” *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1066, 1072 (Fed. Cir. 2018). The nexus analysis looks at the claims as a whole and “proof of nexus is not limited to only

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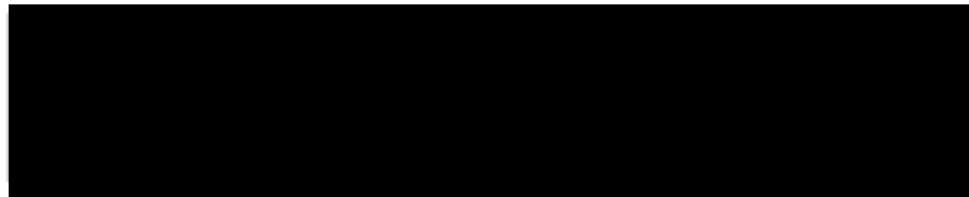
when objective evidence is tied to the supposedly new features.” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1331 (Fed. Cir. 2016).

There is a strong nexus here because the JUUL System is coextensive with at least claim 1 of the '981 patent. Ex. 2001 ¶135. The claimed invention is not merely a subcomponent of the products sold, but rather encompasses the entire apparatus.

1. 1[pre]: A vaporizer device comprising:

To the extent the preamble is limiting, the JUUL System comprises a vaporizer device. The JUUL System is an apparatus that “

_____”:

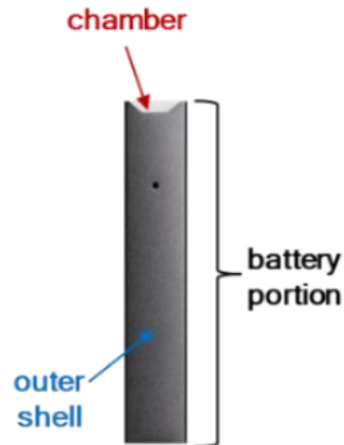


Ex. 2003, 9, 11.

The JUUL System is depicted below:



Ex. 2054 (annotated).

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Ex. 2055 (annotated).

In addition, JLI documentation shows that the JUUL System is a vaporizer device:

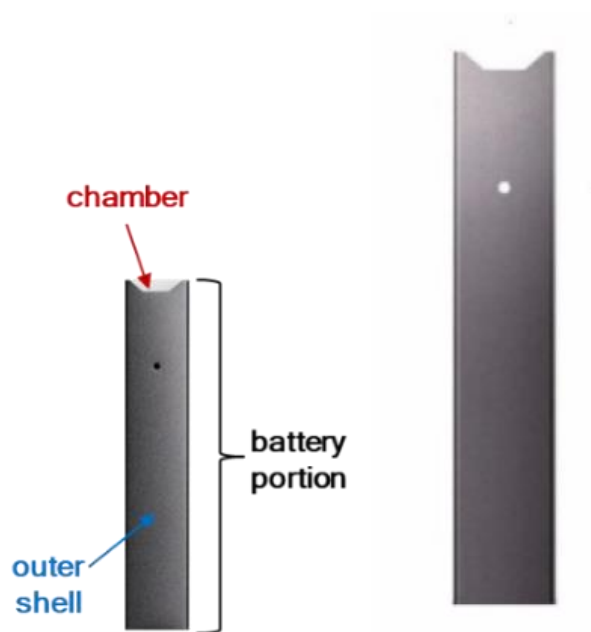


Ex. 2003, 11; Ex. 2001 ¶¶136-37

2. **1[a]: a battery portion having an outer shell and a chamber defined by the outer shell; and,**

Photographs show that the JUUL System meets this limitation:

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Ex. 2055 (annotated); Ex. 2003, 11; Ex. 2001 ¶138.

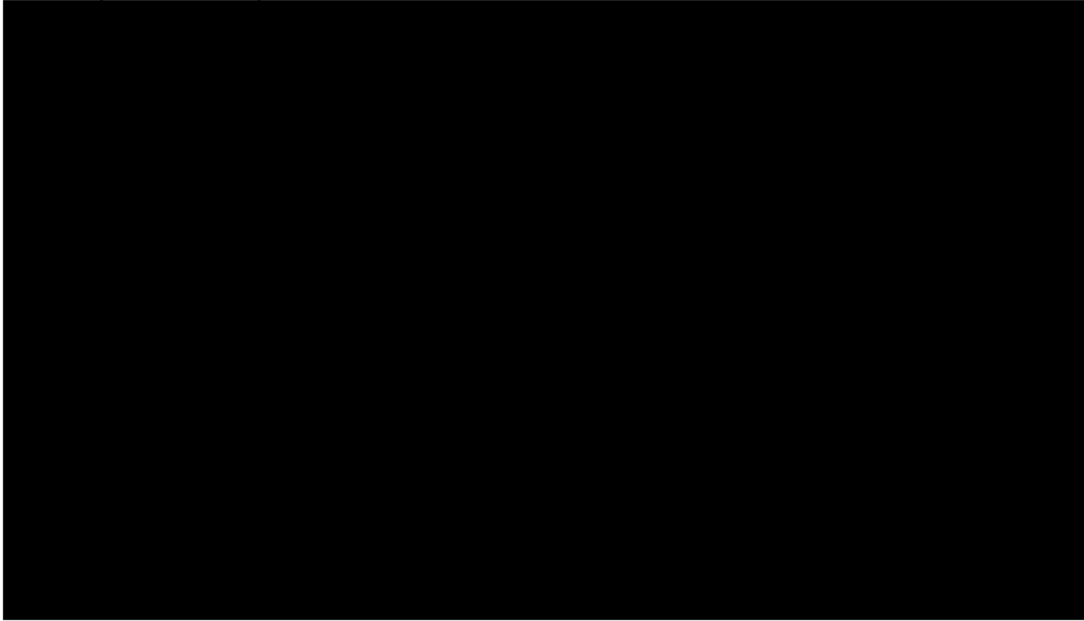
3. **1[b]: a cartomizer having a mouthpiece end and an insertion end disposed opposite the mouthpiece end, the cartomizer comprising:**

Photographs show that the JUUL System meets this limitation:



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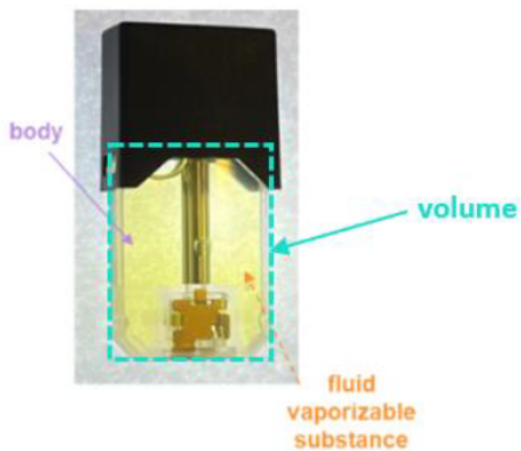
Ex. 2005 (annotated).



Ex. 2003, 26 (annotated); Ex. 2001 ¶139.

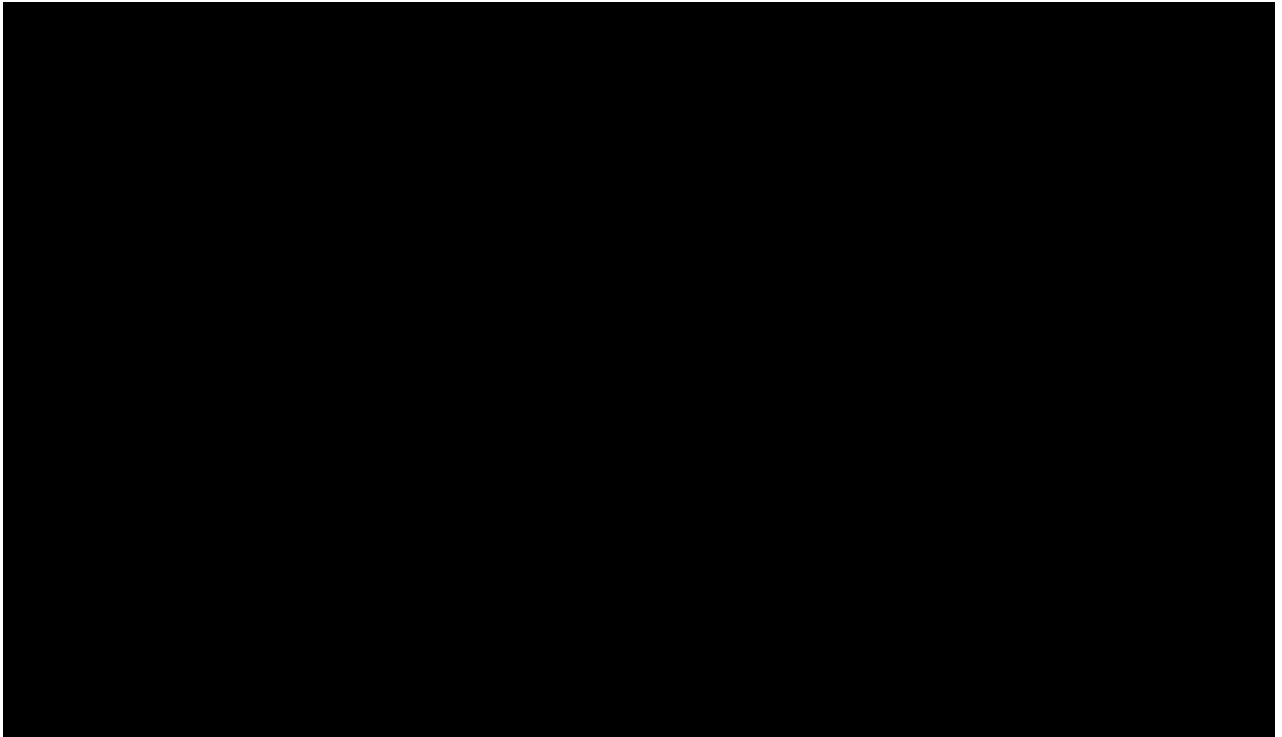
4. **1[c]: a cartomizer body having a volume defined therein,
the volume configured to hold a fluid vaporizable substance,**

Photographs show that the JUUL System meets this limitation:



Ex. 2054 (annotated).

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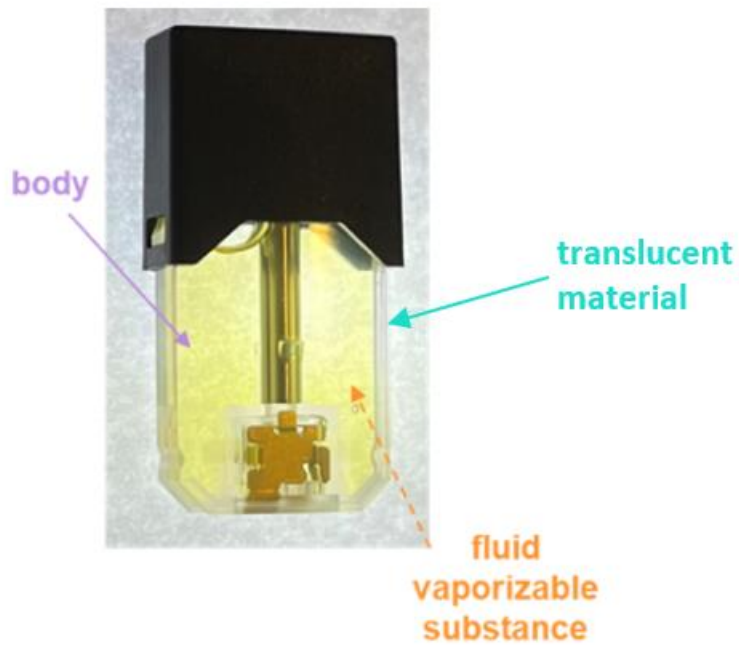


Ex. 2003, 26 (annotated); Ex. 2001 ¶140.

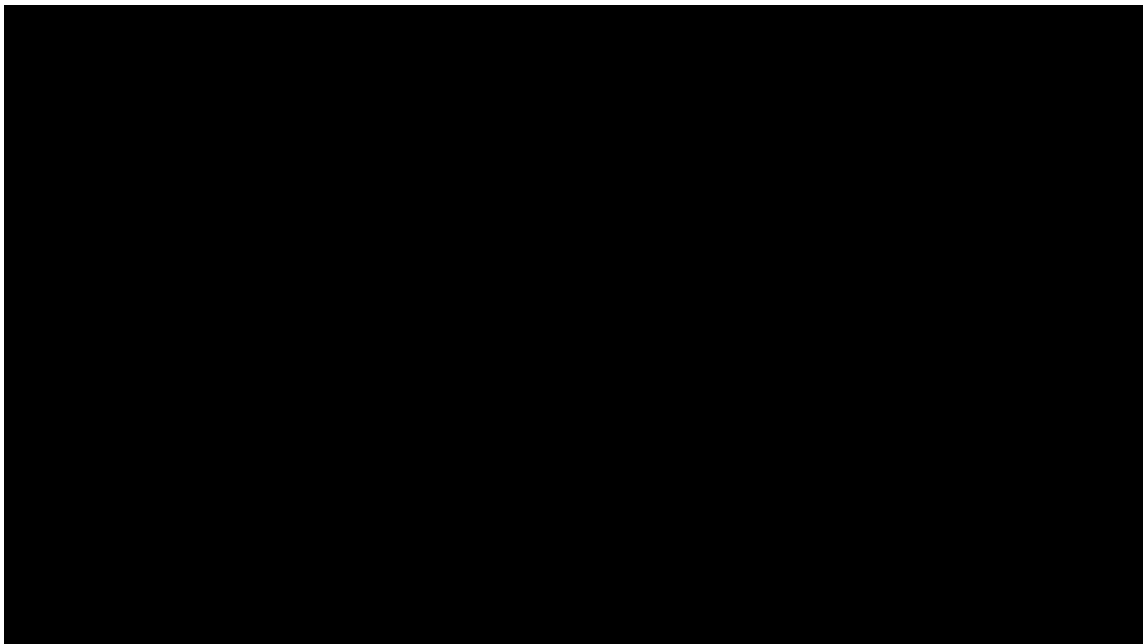
5. **1[d] wherein at least a portion of the cartomizer body comprises a translucent material configured to allow viewing of the fluid vaporizable substance,**

Photographs show that the JUUL System meets this limitation:

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Ex. 2054 (annotated).



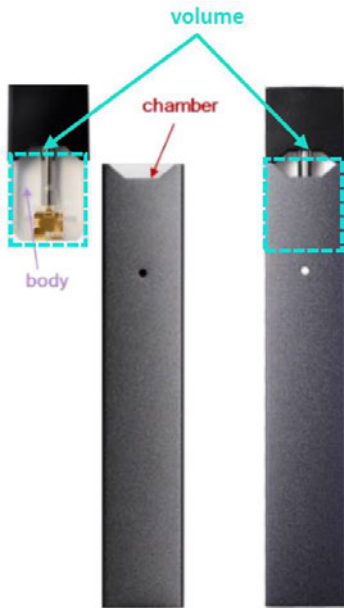
Ex. 2003, 26 (annotated); Ex. 2001 ¶ 141.

6. 1[e]: wherein the cartomizer body is configured for insertion into the chamber such that at least part of the

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volume is positioned in the chamber when the cartomizer body is inserted into the chamber;

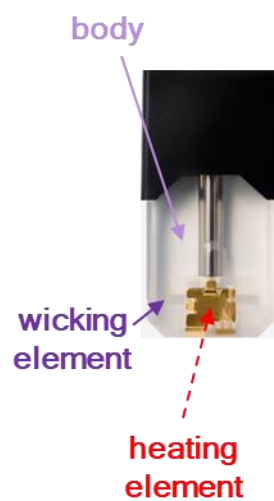
Photographs show that the JUUL System meets this limitation:



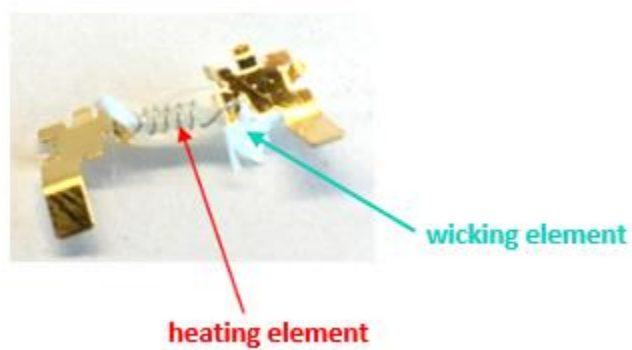
Ex. 2053 (annotated); Ex. 2056 (annotated); Ex. 2001 ¶ 142.

7. 1[f]: a heating element and a wicking element within the cartomizer body;

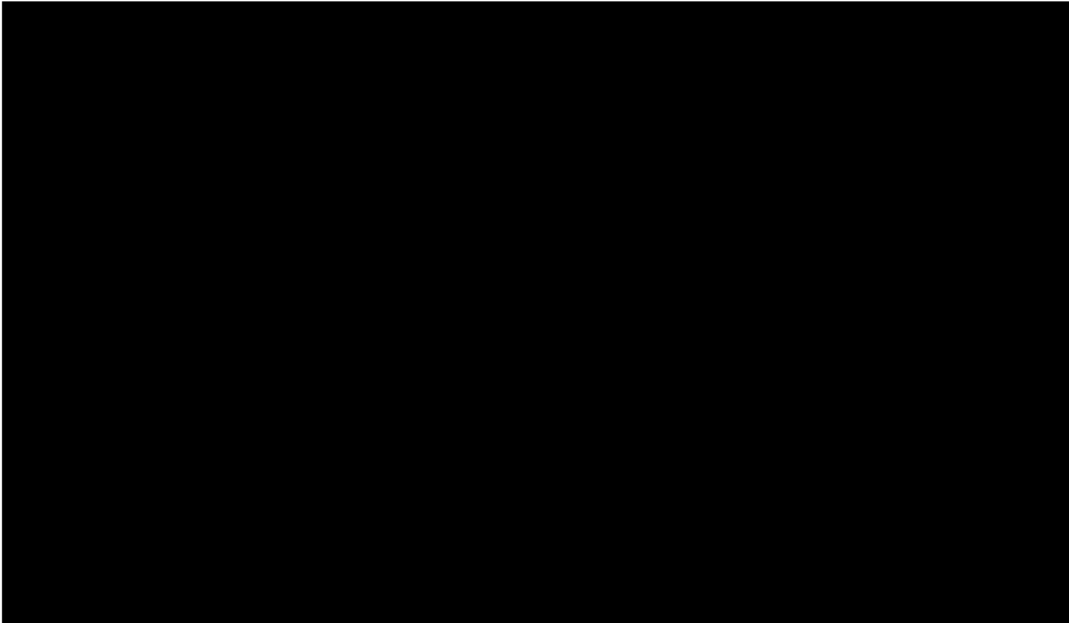
Photographs show that the JUUL System meets this limitation:

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Ex. 2005 (annotated).



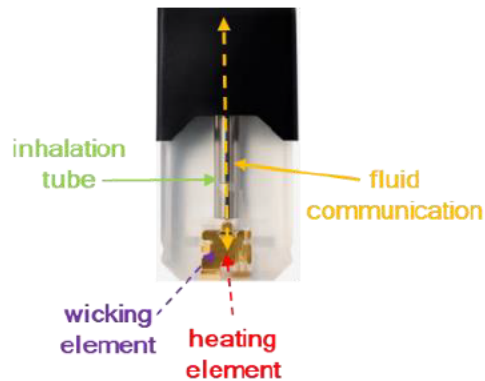
Ex. 2006 (annotated).

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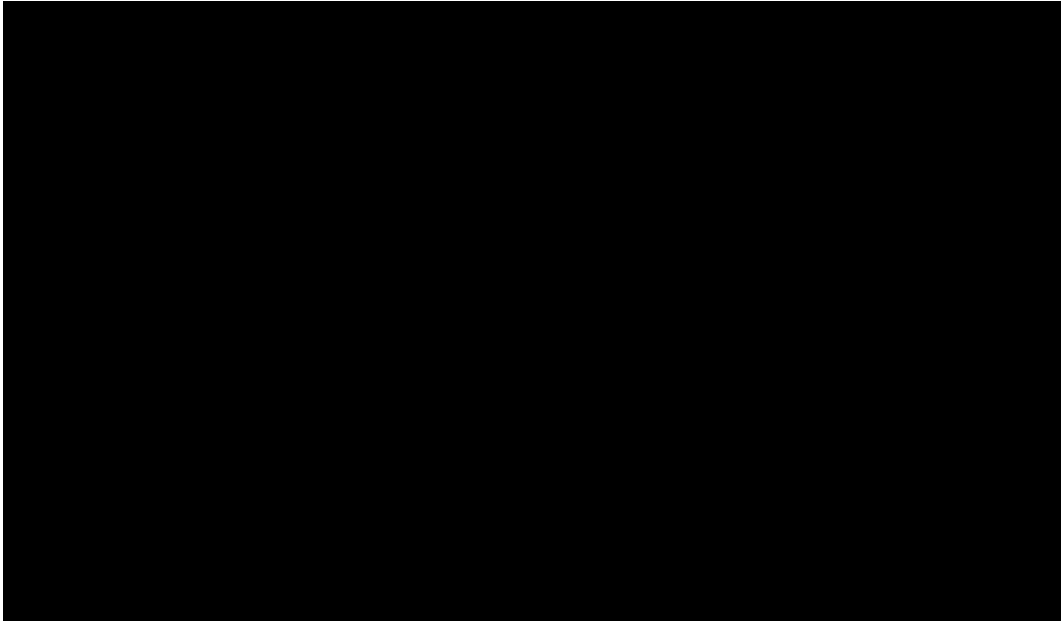
Ex. 2003, 26 (annotated); Ex. 2001 ¶ 143.

8. 1[g]: an inhalation tube in fluid communication with the heating element and the wicking element;

Photographs show that the JUUL System meets this limitation:



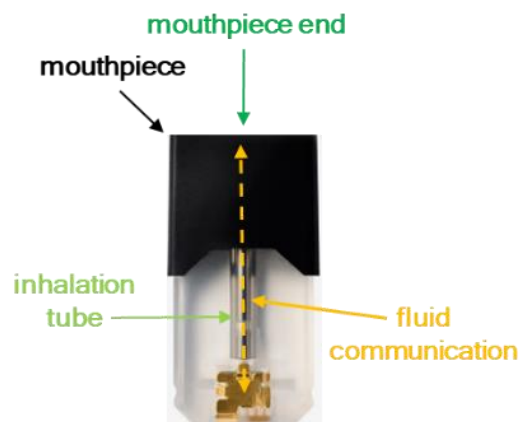
Ex. 2005 (annotated).

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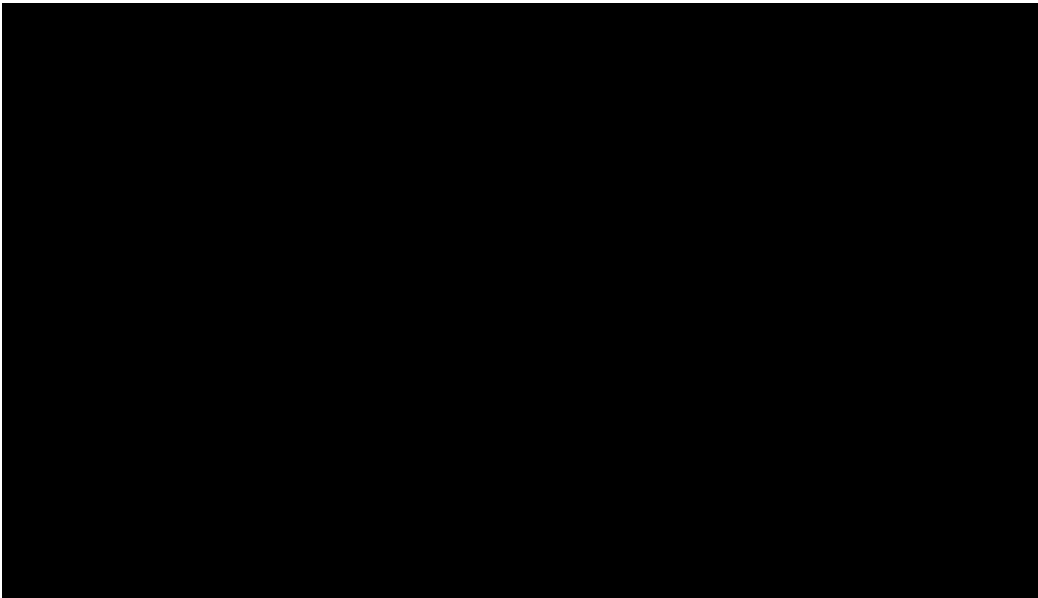
Ex. 2003, 26 (annotated); Ex. 2001 ¶ 144.

9. **1[h]: a mouthpiece at or proximate to the mouthpiece end, the mouthpiece in fluid communication with the inhalation tube; and**

Photographs show that the JUUL System meets this limitation:



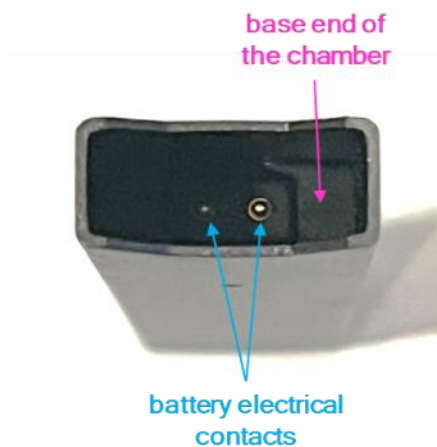
Ex. 2005 (annotated).

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Ex. 2003, 26 (annotated); Ex. 2001 ¶145.

- 10. 1[i]: a plurality of cartomizer electrical contacts on an exterior of the insertion end, wherein the plurality of cartomizer electrical contacts is positioned to contact a plurality of battery electrical contacts at a base end of the chamber when the cartomizer body is inserted into the chamber.**

Photographs show that the JUUL System meets this limitation:



Ex. 2057 (annotated).

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Ex. 2003, 23; Ex. 2001 ¶146.

B. Long-Felt Need

The JUUL System met the long-felt need for a satisfying nicotine delivery product that did not have the unhealthy adverse health effects of smoking combustible cigarettes. Ex. 2001 ¶147.

Before the JUUL System was first introduced in 2015, smoking tobacco cigarettes had long been known to have significant health risks. *Id.* ¶148. Both federal and state governments had for decades made it a priority to decrease smoking through regulations, taxes, and informational campaigns about the dangers of smoking. *Id.*

Thus, before 2015, it was known that tobacco smoke kills half of its users, and more than eight million people die from smoke-related diseases worldwide each year. Ex. 2009; Ex. 2010; Ex. 2001 ¶149. It was known that smoke from burning tobacco contains toxic chemical compounds that are directly and primarily responsible for the illness and death caused by cigarettes. Ex. 2011, 3; Ex. 2012, 3.

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Although nicotine is addictive, an FDA commissioner has recognized that nicotine itself does not directly cause the disease associated with smoking cigarettes. Ex. 2013, 2. Smoking has also caused a significant increase in national healthcare costs. Ex. 2014; Ex. 2015 (CDC estimate of \$240 billion increase in health care costs from smoking).

Despite these known adverse health effects, many smokers have struggled to quit smoking because of the addictive nature of nicotine. Ex. 2001 ¶150. About 70% of adult smokers report that they desire to give up smoking. Ex. 2016. Yet the average smoker attempts to quit at least 30 times before successfully foregoing smoking for at least a year. Ex. 2017. Moreover, a 2007 study concluded that, at the time, smoking cessation fails over 90% of the time without some form of support. Ex. 2018.

In light of the above, companies have long tried to design alternative mechanisms for delivering nicotine to help users quit combustible cigarettes. Ex. 2001 ¶151. For example, in the 1980s, Philip Morris and R.J. Reynolds invested billions in developing “heat-not-burn” cigarettes that deliver nicotine from tobacco without burning it. Ex. 2019, 3-4.

Some companies developed early electronic nicotine vaporizer products that resembled combustible cigarettes, often referred to as “cig-a-likes.” Ex. 2001 ¶152.

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These early ENDS products were often white and cylindrical and approximately the same size as a cigarette in order to mimic the shape, look, and feel of a cigarette. Ex. 2020. However, despite the long-time availability of these early ENDS products before 2015, widespread consumer adoption did not occur before the JUUL System. Ex. 2021, 1; Ex. 2022.

For example, in 2013, Altria (formerly Philip Morris and currently Petitioners’ parent company and RPI to this proceeding) sold through its subsidiary NuMark a cig-a-like product called MarkTen—but Altria did not consider the product to be a success because it “could [not] provide the satisfaction necessary to convert smokers.” Ex. 2024, ¶613; Ex. 2001 ¶153.

On the other hand, JLI took a different approach with its JUUL System, abandoning traditional cigarette iconography altogether, in particular the cylindrical shape, outward-facing, flame-simulating LED, and a screw-in cartridge. Ex. 2001 ¶154. The JUUL System’s inventive design provided the user with a fundamentally different user experience, including with respect to vapor production and nicotine delivery that satisfied smokers’ cravings and that were enabled through practice of the ’981 patent. [REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

The industry recognized that the JUUL System products were unique and abandoned the industry norms of emulating the iconography of traditional cigarettes. Ex. 2019, 3; Ex. 2027. This approach was regarded as technological, elegant, and sophisticated, while also providing satisfactory vapor production and nicotine delivery in a small form factor—all of which were enabled through practice of the '981 patent. Ex. 2001 ¶155. Within a few years of the JUUL System launch, JLI

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became recognized as a leader in the ENDS device market. Ex. 2028, 1, 4; Ex. 2029; Ex. 2030.

Thus, the JUUL System met the long-felt need for nicotine delivery systems alternatives to combustible cigarettes.

C. Unexpected Results

The JUUL System achieved the unexpected result of a reliable, user-satisfying ENDS system, while departing from industry design norms, providing sufficient vapor production and nicotine delivery, and using a relatively small form factor. Providing users with a reliable device that also allowed users to view the current liquid level while the pod was inserted in the vaporizer was unexpected in view of the concern about light degradation of the liquid nicotine formulation. Providing adequate airflow for satisfying vapor production and accurate pressure sensing to avoid accidental triggering of the device were also unexpected, as was providing a pod-based device with a liquid tank as opposed to prior devices that stored liquid in the wick or other sponge-like absorbent material. Ex. 2001 ¶157.

Designing a reliable, user-satisfying ENDS system that could be manufactured in a cost-efficient manner was also unexpected. [REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].

RPI Altria also made considerable investments in the e-cigarette space before it invested in JUUL. Ex. 2001 ¶159. As Altria itself acknowledged, it “really didn’t have success with [its] internally developed products,” despite all the effort “put ... into engineering reduced-risk products.” Ex. 2024, ¶¶144-45. Altria’s failed products included the De-Nic, Accord, SCOR, Marlboro Snus, Marlboro Moist Smokeless Tobacco, MarkTen King Size and MarkTen XL. *Id.*, ¶¶146-202.

D. Industry Praise

The JUUL System received widespread recognition from its customers and others in the industry. Ex. 2001 ¶160. In the years following its release, the JUUL System became the leading alternative for adult smokers, which analysts called a “runaway success.” See Ex. 2029; Ex. 2031; Ex. 2032.

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RPI Altria praised the JUUL System as revolutionary and fueled by a strong innovation pipeline. Ex. 2001 ¶161. Altria described the JUUL System as “an innovative breakthrough.” Ex. 2024, ¶¶213-214. It acknowledged that while “most of the major players in the e-vapor industry acquired their products, [JUUL] ‘is one of the few companies that is responsible for the design and manufacturing of its own products.’” *Id.*, ¶214. Altria acknowledged that JUUL was “really the first pod product in the marketplace.” *Id.* It said that “within the context of the context of the classic three-part structure, JUUL offered a number of signature features that resonated with adult consumers, including ‘the unique form-factor body, the liquid-level viewing window, the reversible pod with locking gaps, the fresh air flow design, and the simple user operation.’” *Id.*, ¶219. Altria acknowledged that “[p]rior to the emergence of Juul, most e-cigarettes were cigalikes” whereas JUUL had a “‘simple, intuitive, [and] easy-to-use’ product design” which “contributed to JUUL’s success.” *Id.*, ¶¶ 220-22; *see also*, Ex. 2026, 25:6-30:8, 35:7-35:24, 63:3-12, 68:23-69:10, 121:18-122:17.

E. Commercial Success

The JUUL System has enjoyed significant commercial success since its release in 2015. Ex. 2001 ¶162. For example, a Wells Fargo analysis of Nielsen data reported that JLI’s effective annual dollar sales increased 783% in the 52-week period ending June 16, 2018, reaching \$942.6 million. Ex. 2028, 1. This came from

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an 882% increase in unit sales over the same period. *Id.* Other analysis made similar findings. Ex. 2032; Ex. 2033, 3 (“JUUL’s 4-week sales growth grew over 800% in 2017, with under \$5M in sales during the 4 weeks ending mid-February 2017 and over \$46M in the 4 weeks ended mid-January 2018.”).

As a result of this huge increase in revenue and unit sales, the JUUL System held dominant market share. Ex. 2001 ¶163. By August 2018, one analyst estimated JUUL to have approximately 70% of market share. Ex. 2034, 8; Ex. 2035, 3; Ex. 2032, 4. Another report estimated 72% market share for JUUL by September 2018. Ex. 2036, 2. A report from 2018 showed that JUUL’s competitors saw decreasing market share shortly after the 2015 JUUL System launch. Ex. 2037, 3.

The success of JUUL System also contributed to growth in the ENDS market as a whole, which had experienced relatively flat sales before the JUUL System. *See* Ex. 2035, 3, 5; Ex. 2036, 3; Ex. 2038, 4; Ex. 2039, 2; Ex. 2040, 3. The JUUL System accounted for a significant portion of the surveyed weekly volume sales of the ENDS pod retail market in the years following the release of the JUUL System: 43.1% of March 2017 annual growth, 90.7% of March 2018 annual growth, and over 95% of growth from April to September 2018. Ex. 2001 ¶164.

RPI Altria also recognized the commercial success of the JUUL System in its offers to potentially license JLI’s intellectual property. [REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

F. Copying

There are several sources that have acknowledged that others began copying the JUUL System shortly after its release.

In prior investigations before the International Trade Commission involving the JUUL System, the ITC observed copying of the JUUL System. Ex. 2001 ¶167. For example, the ITC observed that “[a] number of competitors, including some respondents, have admitted to using the JUUL system as a reference when manufacturing their own ENDS products.” Ex. 2042, 250-51.

Industry commentators have also noted copying of the JUUL System. Ex. 2001 ¶168. For example, in a letter to the U.S. Food and Drug Administration, industry commentators noted how “[m]any of the newly introduced e-cigarette products appear to be attempting to capitalize on the recent marketing success of Juul” and “new products appear to mimic the sleek design of Juul.” Ex. 2043. Copying is further evidenced by competitor marketing material that touts the fact that their products are compatible with the JUUL Device. Ex. 2044 (stating that

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“[e]ver since the Juul device burst onto the vape market, companies have been churning out ... Juul-compatible pods to keep up with the trend.”); Ex. 2047 (advertising JUUL-compatible pods).

RPI Altria represented that it began “working on an internal pod-based product concept designed to appeal to cigarette smokers” in June 2017, two years after JUUL was launched. Ex. 2024, ¶190. This effort was called “Project Panama” and was “in the works for less than a year before it was paused to free up resources to fix the many problems plaguing Altria’s on-market products.” *Id.* Altria said that “[a]ll told, although Nu Mark ultimately pursued at least a half dozen internal device projects, many of which were the subject of ‘years’ of effort, none ever ‘yielded fruit.’” *Id.* ¶191; Ex. 2001 ¶169.

As Altria admitted, since it was “[u]nable to develop an e-vapor product internally, Altria did what it always did when its innovation efforts failed: It turned to acquiring existing products.” Ex. 2024, ¶192. Altria began “searching in the spring of 2017 for opportunities to branch out from MarkTen cig-a-like and to participate in the pod market.” *Id.*, ¶301. This was because “after August 8, 2016 (the predicate date under the Deeming Rule), Altria ‘didn’t have the ability . . . to develop anything internally to compete without waiting multiple years to compete, and . . . thought it was important to go scan the environment to see if there were any

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pod products that were available.” *Id.* ¶302. Internally, Altria referred to this project as “Project Mule.” *Id.*, ¶303; Ex. 2001 ¶170.

In late-May 2017, Altria’s Strategy & Business Development group “surveyed the market” and based on “conversations with a number of different companies” recommended that Altria pursue an acquisition of JLI. Ex. 2024, ¶305. Altria considered JUUL to be the “[t]op performer among adult smokers and vapers” and acknowledged that “‘Juul offers key benefits of a hybrid-evapor system,’ providing cig-a-like users ‘better performance without sacrificing convenience’ and open-system users ‘convenience in a non cigarette form.’” *Id.*, ¶307; Ex. 2001 ¶171.

Altria approached JLI to begin discussing a potential acquisition of, or investment in, JLI in May 2017. Ex. 2024, ¶¶306, 308. Altria admitted that it “found itself with ‘virtually nothing in [Nu Mark’s] pipeline, in-house pipeline, for [it] to sell. Cigalike was declining very quickly. The pod business was growing exponentially, driven by JUUL. And ... [Altria was] getting [its] butt[] kicked week in and week out.’” *Id.*, ¶324. Starting in 2018 Altria shifted some of its focus to an internally-developed pod-based product, the MarkTen Elite, but ultimately did not see a viable path forward for that product given the lack of demand, product defects including excessive leaking, and constraints imposed by the existing regulatory regime. *Id.*, ¶¶570-573, 653-54; Ex. 2001 ¶172.

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Like its parent company Altria, Petitioners' products prior to the release of the JUUL System were cig-a-like products. Ex. 2001 ¶173. After the JUUL System was released and Petitioners observed the success of the JUUL System, Petitioners copied the design and features of the JUUL System in releasing its first pod-based product, the NJOY Ace.

XIII. Conclusion

For the reasons reviewed above, institution should be denied.

Date: May 14, 2024

Respectfully submitted,

By: /s/ James M. Glass

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CERTIFICATE OF COMPLIANCE

I hereby certify that this paper complies with the type-volume limitation of 37 C.F.R. § 42.24 because it contains 13,896 words, excluding the parts of the paper exempted by 37 C.F.R. § 42.24(b).

By: /s/ James M. Glass
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PUBLIC VERSION**CERTIFICATE OF SERVICE**

Pursuant to 37 C.F.R. § 42.6(e), the undersigned hereby certify that PATENT OWNER'S PRELIMINARY RESPONSE, and all exhibits and other documents filed together with the preliminary response, were served on May 14, 2024 by e-mailing copies to counsel for Petitioner at:

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