

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 IPR2024-00267
U.S. Patent No. 11,134,722

**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,” Vapor 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	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013520.
2049	Intentionally Left Blank
2050	Intentionally Left Blank
2051	Intentionally Left Blank
2052	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013401.
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	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013511.
2057	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013512.
2058	Photo of JUUL System, produced as JLI-NJOY-ITC1368-02013513.
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. 11,134,722 (the “’722 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 ’722 patent and now seek to invalidate it.

Petitioner’s first proposed obviousness combination is based on Pan, modified to incorporate a micro-USB port as taught in Levin. However, two claim elements that Petitioner relies on being purportedly disclosed by Pan are not present in Pan. Further, Petitioner fails to establish a motivation to combine the two references, and additionally fumbles when asserting that a POSITA would have made the combination with a reasonable expectation of success. Petitioner suggests putting the micro-USB port into Pan’s device in way that would interfere with airflow. Petitioner also does not account for necessary changes that would be needed to incorporate supporting circuitry for the micro-USB port, which would add complexity that Pan expressly sought to avoid.

Petitioner’s second proposed obviousness combination, based on adding Levin’s micro-USB port to Thorens⁷⁸⁸’s device, and also transplanting a

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mouthpiece from Thorens²³¹, founders for similar reasons. Petitioner again 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 with a reasonable expectation of success.

Particularly in light of the objective evidence and secondary considerations supporting the non-obviousness of the '722 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 '722 Patent

The '722 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. The body contains a printed circuit board that controls the electronic operations of the device. 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,

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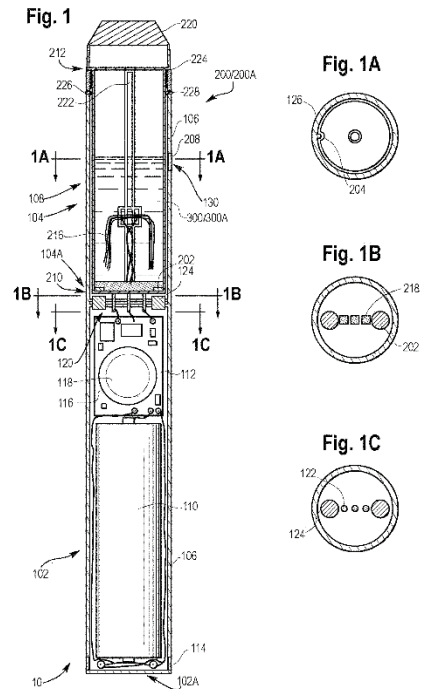
generating a vapor that then forms into an aerosol. The vaporizable liquid is drawn towards the heater by a wick coupled to the heating element so that the heating element may generate the vapor. The vapor travels towards the mouthpiece through an aerosol channel, forming the aerosol to be inhaled by a user.

The '722 patent is titled “Vaporizer” and is directed to rechargeable electronic cigarettes or vaporizers comprised of two segments: a “battery portion” and a “cartomizer.” ’722 patent (Ex. 1001) at Abstract, 2:15-22, 5:7-12. 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 1:48-54. 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 1:54-2:11, 8:47-49.

The '722 patent advances the art of electronic cigarettes and vaporizers by, among other things, including charging contacts at the first end of the battery portion—as opposed to within the chamber—so that the device “may be operated in its typical fashion during the recharging of the battery.” *Id.* at 15:16-29.

Figure 1 highlights these features:

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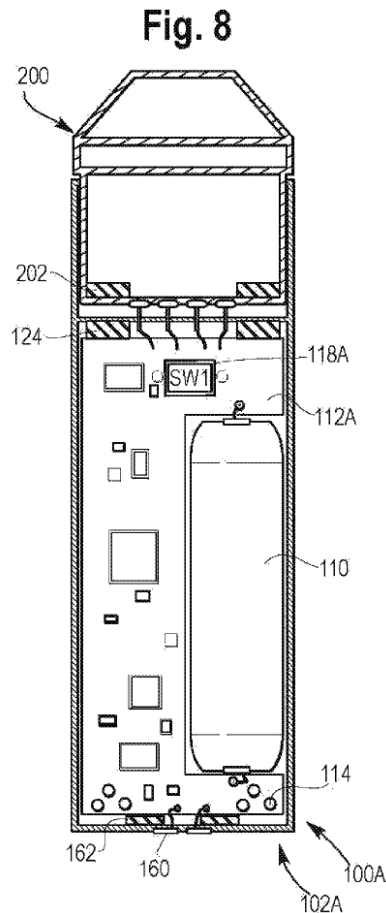


Id. at Figs. 1, 1A-C. A battery portion 100 and a cartomizer 200 connect together to form the complete vaporizer device. *Id.* at 4:47-50. The battery portion contains a battery housing segment 102 at a distal end (relative to the user), and a cartomizer receiving segment 104 at a proximal end. *Id.* at 4:50-54. An outer shell 106 is commonly shared by the battery housing segment and the cartomizer receiving segment.

The body of the cartomizer includes an internal reservoir holding a vaporizable liquid. *Id.* at 8:35-37. The body contains heating element 214 and wick 216. *Id.* at 8:47-49. The wick delivers the vaporizable fluid 300 to the heating element, which allows the heating element to vaporize the fluid. *Id.* at 8:56-9:1.

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Figure 8 depicts charging contacts 160 located on the outer shell at the first end 102a:



Id. at Fig. 8; 13:15-21. The contacts are situated to permit standard operation during battery charging. *Id.* at 15:16-29.

B. Overview of the Cited Art

1. Pan

U.S. Patent No. 8,205,622 (Ex. 1024) (“Pan”) is entitled “Electronic Cigarette” and was filed on May 7, 2009. Pan discloses an electronic inhaler that

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has its components held together through either screws or DC plugs. The components each have a circular cross section with similar diameters. *Id.* at 5:50-67. Figure 4 shows a section view of an electronic inhaler with a screw connector:

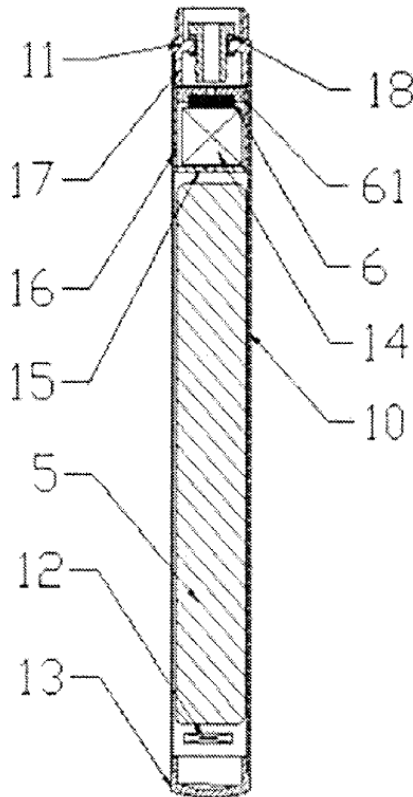


Figure 4

Id. at Fig. 4. Among other components, this embodiment includes an inhaler tube 10, cigarette cap 13 with small holes for air inflow, LED indicator 12, electric power source 5, annular tube 16 with its cap 15, integrated circuit board with a CPU processor 15, electric airflow sensor 6, and first electric connector 17. *Id.* at 5:8-15.

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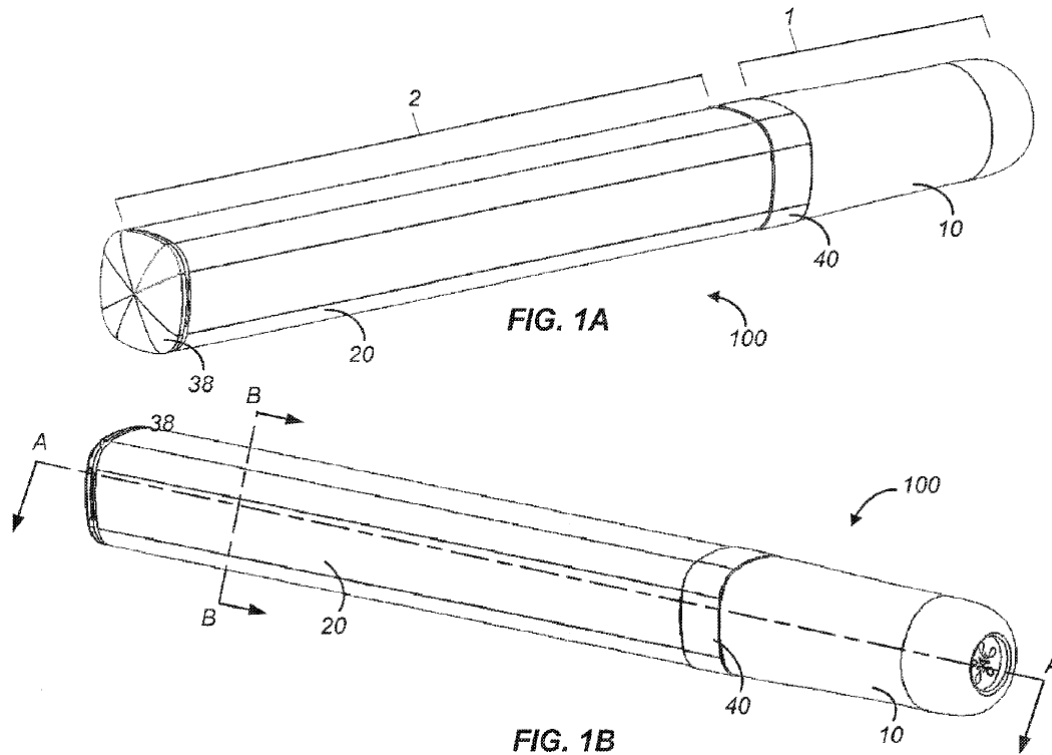
To operate Pan's device, the user puffs on the end of the electronic cigarette with the air-puffing hole. The CPU detects an airflow signal and causes an electric current to flow through the heating wire. The LED indicator 12 lights up when the electric current flows and turns off when the current stops, simulating the glowing end of a conventional cigarette. *Id.* at 4:23-27.

2. Levin

U.S. Patent No. 9,427,022 (Ex. 1003) ("Levin"), titled "Electronic Vaporizing Device and Methods for Use," was filed on March 12, 2013. Levin aims to emulate a traditional smoking experience by resembling a cigarette or cigar, including the lit end. Levin at 8:27-32. Levin's device has an air passageway and a light source (*e.g.*, one or more LEDs) to simulate the burning end of a cigar. *Id.* at 35-37.

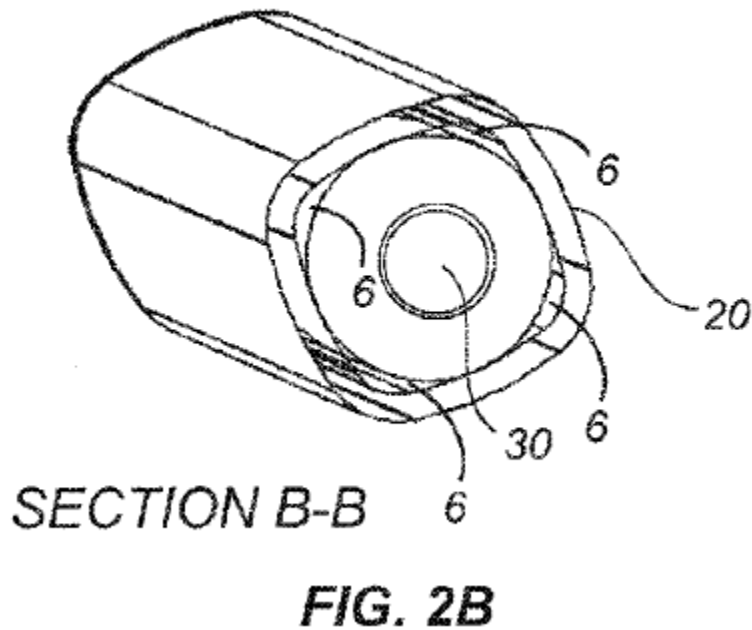
When airflow is detected by an inhalation sensor, the light source illuminates the tip. *Id.* at 9:40-60. Circuitry varies the light output depending on the level of airflow. For example, a shallow inhalation could activate one LED, while a deep inhalation could activate four LEDs. *Id.*

The housing of Levin's device has a rounded rectangle cross section:

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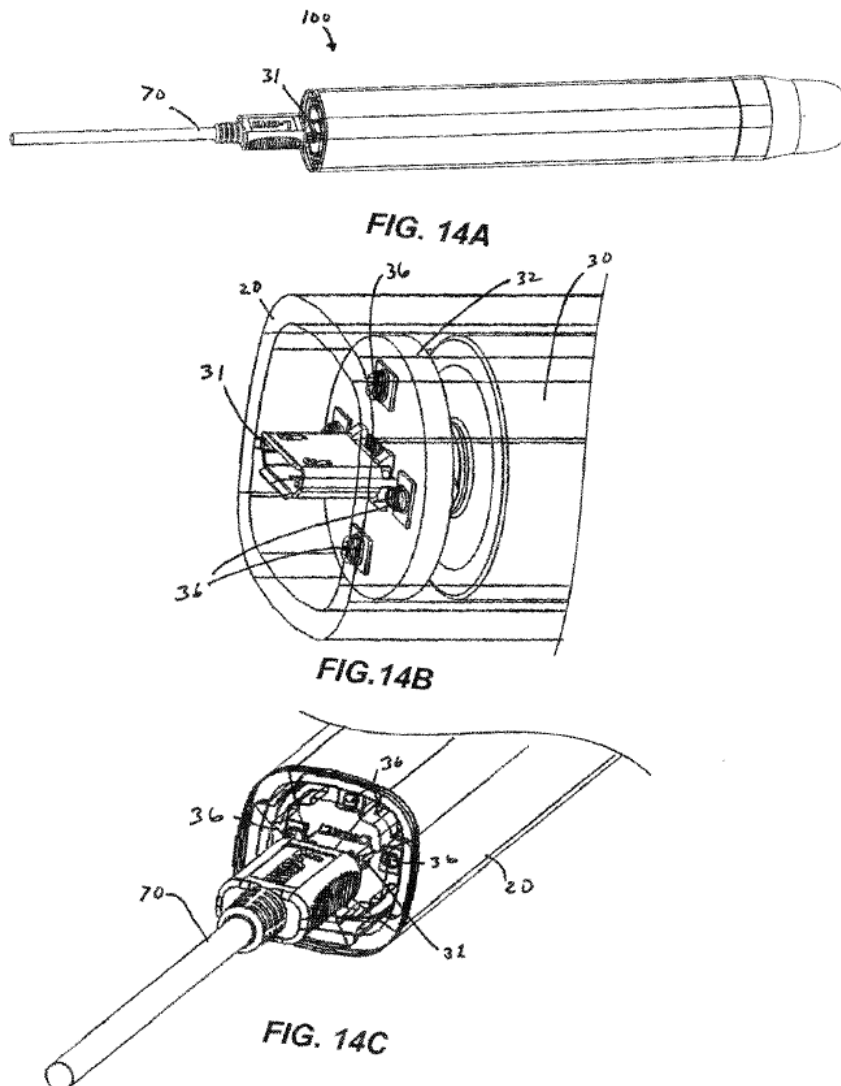
Id. at Figs. 1A, 1B; *see also id.* at 10:65-11:5. The cross section measures about 15 mm by 15 mm, similar to a cigar. *Id.* at 11:26-27.

The non-circular cross-section of the housing accommodates power source 30 (*e.g.*, cylindrical batteries) and defines air passageways 6 in the gap between the power source 30 and the housing, to allow airflow through the device:

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Id. at Fig. 2B; 11:7-17. The four passageways 6 around the power source 30 help simulate the sensation of drawing air through a real cigarette. *Id.* at 23:27-33. The air intakes for the passageways 6 are located at the distal end, away from the middle of the device, which prevents the intakes from being obstructed by the user's fingers. *Id.* at Figs. 6A-D; 23:34-37. Indrawn air also cools the electronics and power source. *Id.* at 23:36-41.

Levin's device includes a micro-USB port 31 to recharge the power source 30:

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Id. at Figs. 14A-C.

3. Thorens788

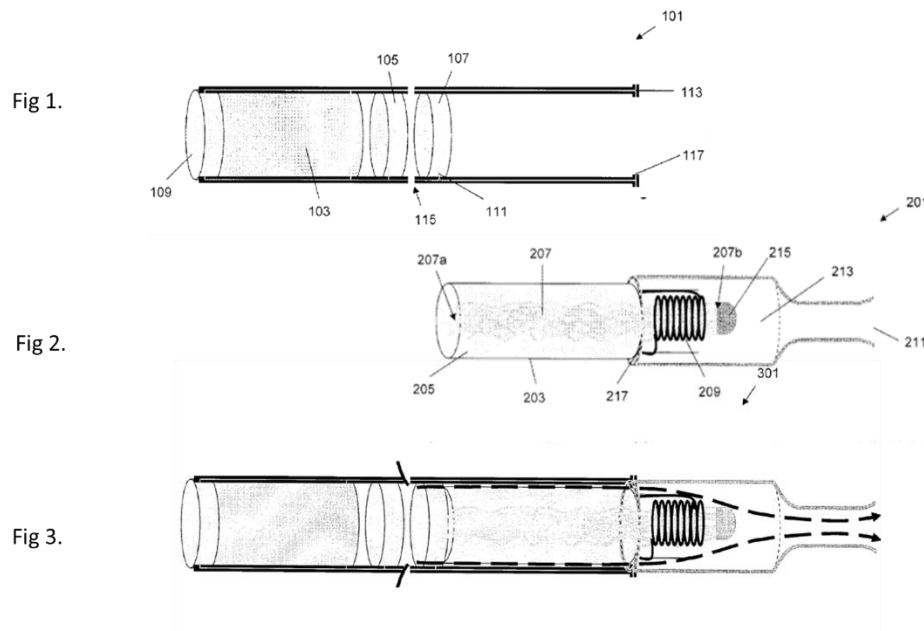
WO 2011/160788 A1 (Ex. 1004) (“Thorens788”) is entitled “An improved Aerosol Generator and Liquid Storage Portion for Use with the Aerosol Generator” and was filed on June 15, 2011.

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Thorens788's device is the size of a conventional cigarette. Thorens788 at 11:8-10. 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.

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

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Id. at Figs. 1-3; *see also id.* at 6:23-29.

Thorens231 does not describe the specifics of the airflow path of its device, instead generally stating that air is drawn through air inlets 115 of the shell before reaching the wick and heating coil. *Id.* at 7:41-49.

III. Level of Ordinary Skill in the Art

A POSITA relevant to the '722 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 ¶¶12-22.

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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 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. 8.

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

IV. Claim Construction

Patent Owner agrees with Petitioner’s proposed constructions of “wicking element,” “heating element,” and “window.” Pet. 8-10; Ex. 2001 ¶¶72-75. No issue relevant to this Preliminary Response turns on a dispute as to the construction of any claim term.

V. The Petition Fails to Demonstrate a Reasonable Likelihood That Independent Claims 1, 3, 7, 9-13, 15-16, or 18-21 Are Obvious Based on Pan in View of Levin (Ground 1)

Petitioner has not established a cognizable motivation to combine Pan with Levin to achieve the challenged independent claims with a reasonable expectation of success. Even when combined, Pan and Levin fail to teach critical limitations of the challenged independent claims.

PUBLIC VERSION**A. Petitioner Has Not Established that Pan Discloses a “Wicking Element”**

Independent claims 1, 10, and 15 of the '722 patent each require that the cartomizer partially comprises a wicking element. The agreed construction of “wicking element” is “any material through which liquid may be drawn via capillary action.” Pet. 8. Petitioner relies solely on Pan to disclose this limitation and does not contend that the limitation is obvious. Pet. 40-41. Petitioner identifies Pan’s heat equalizer 269 as the claimed “wicking element.” *Id.*

Petitioner has not established that Pan discloses this limitation. Petitioner’s analysis for this limitation is two sentences: “Pan discloses a wicking element under the adopted construction because Pan discloses a ‘heat equalizer with absorbed liquid from the liquid-container.’ Because the heat equalizer 269 is made of a liquid-absorbent ‘fiber,’ it transports liquid by capillary action.” Pet. 41 (citations omitted).

However, there is no disclosure in Pan itself that the heat equalizer “transports liquid by capillary action.” Pan does not mention capillary action or wicking. Pan does say that heat equalizer 269 is “made of a special fiber,” but that fiber is special because it “can withstand temperature as high as 2000 degrees centigrade,” not because it wicks liquid. *Cf.* Pan at 4:53-55.

Moreover, it does not automatically follow that a liquid-absorbent fiber must transport liquid by capillary action. Absorbing fluid in a fiber bundle just requires

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that there be voids which can hold the liquid. On the other hand, wicking and capillary action require that the material of the fiber be wetted by the vaporizable liquid. There are fibers that can absorb liquid, but do not employ capillary action and are not wetted, and which could be used in Pan’s device. Ex. 2001 ¶¶77-80. Additionally, the ability to transport liquid by capillary action depends on the wetting angle between the fiber and the liquid, and nothing in Pan offers any indication that the interaction between the liquid in the liquid-storage media and the heat equalizer 269 produce a suitable wetting angle. *Id.* ¶81.

Petitioner cites to its expert declaration for the proposition that absorption necessarily also means wicking via capillary action. Pet. 41 (citing Ex. 1005 ¶ 131). However, the declaration simply parrots the Petition, stating “a POSA would have understood that the heat equalizer draws liquid via capillary action through its fibers.” Ex. 1005 ¶131. There is no further analysis or evidence supporting this assertion—and the assertion is wrong. Ex. 2001 ¶82.

Accordingly, Pan fails to disclose that its heat equalizer 269 transports liquid by capillary action, and thus fails to disclose a “wicking element.” Because this limitation is required by all claims challenged in Ground 1, the deficiency in Pan and the Petition renders Ground 1 as a whole untenable.

PUBLIC VERSION**B. Petitioner Has Not Established that Pan Discloses “the Wicking Element Is Configured to Deliver the Vaporizable Liquid to the Heating Element”**

Independent claims 1, 10, and 15 of the '722 patent each require that the cartomizer partially comprises a wicking element, where “the wicking element is configured to deliver the vaporizable liquid to the heating element.” Petitioner relies solely on Pan to purportedly disclose this limitation and does not contend that the limitation is obvious. Pet. 42, 50, 55. Petitioner identifies Pan’s heat equalizer 269 as the claimed “wicking element” and Pan’s heating wire 265 as the claimed “heating element.” Pet. 40-42.

Petitioner has not established that Pan discloses this limitation, even if the heat equalizer 269 could be considered a “wicking element.” Petitioner’s analysis for this limitation is a single sentence: “[t]he heat equalizer 269 absorbs liquid from the liquid container and is twined with the heating wire 265 to allow the heating wire to vaporize the liquid (*i.e.*, the heat equalizer 269 is configured to deliver the vaporizable liquid to the heating wire).” Pet. 42.

However, there is no disclosure that Pan’s heating wire 265 vaporizes any liquid, and consequently also no disclosure that Pan’s heat equalizer 269 “deliver[s] the vaporizable liquid to the heating element [*i.e.*, heating wire 265]” for vaporization. To the contrary, Pan states that heating wire 265 provides heat to heat

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equalizer 269, and in turn, the heat equalizer “ensures that the heat generated by the electric wire is uniform.” Pan at 6:55-56. Pan explicitly states that it is heat equalizer 269, not heating wire 269, that vaporizes any liquid. *Id.* at 2:57-62 (“This electric current preferably flows through the electric heat wire inside the atomizer tube, which then heats up the heat equalizer with absorbed liquid from the liquid-container. ***The heated equalizer converts the liquid into a form of vapor mist,*** which is finally drawn into the mouth of the user.”) (emphasis added) (cited by Petitioner at Pet. 42); *see also* Ex. 2001 ¶¶84-87. Petitioner completely ignores this portion of Pan. Because Petitioner does not even attempt to engage with this explicit statement from Pan that directly contradicts its invalidity theory, the Petition is deficient on its face.

Petitioner’s additional citations to Figure 3 and 8:43-45 of Pan are unavailing. Pet. 42. Figure 3 fails to address what component vaporizes liquid. And 8:43-45, part of Pan’s claim 18, simply mentions “a heat equalizer coupled with an electric heating wire.” Ex. 2001 ¶88.

Similarly, Petitioner’s supporting expert declaration fails to correct the deficiencies in the petition. Petitioner cites to Ex. 1005 ¶¶136-37, but those paragraphs contain no analysis and repeat the same mistake as the petition, incorrectly stating that the heating wire vaporizes the liquid. Ex. 2001 ¶89.

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Accordingly, Pan fails to disclose that, even if its heat equalizer 269 were a “wicking element,” that it delivers any vaporizable liquid to heating wire 265 for vaporization, and therefore Petitioner has not established that the limitation “the wicking element is configured to deliver the vaporizable liquid to the heating element” is disclosed by Pan. Because this limitation is required by all claims challenged in Ground 1, the deficiency in Pan and the Petition is fatal to Ground 1 as a whole.

C. Petitioner Has Not Established that Pan in View of Levin Renders Obvious Electrical Contacts at the End of the Battery Portion Opposite the Cartomizer

Independent claim 1 of the '722 patent requires “the battery portion further comprising a plurality of charger electrical contacts to provide electrical charge to a battery housed in the battery housing segment, the charger electrical contacts disposed at a first end of the battery portion opposite the insertion end of the chamber of the cartomizer receiving segment.”

Similarly, independent claim 10 of the '722 patent requires a battery portion partially comprising “a plurality of charger electrical contacts disposed at a first end of the battery portion opposite the insertion end of the cartomizer chamber, the insertion end of the cartomizer chamber being at a second end of the battery portion.”

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Independent claim 15 of the '722 patent requires a battery portion partially comprising “a plurality of charger electrical contacts disposed at a first end of the battery portion” and “one or more battery electrical contacts in or proximate [to] the chamber of the cartomizer receiving segment.”

Petitioner concedes that Pan does not meet these limitations. *E.g.*, Pet. 20, 30. Petitioner instead asserts that a POSITA would have found it obvious to adapt Pan to include Levin’s micro-USB charging port. Pet. 35-36; *see also* Pet. 20-25; Ex. 1005 ¶¶ 97-105. However, a POSITA would not have found it obvious to combine Pan and Levin in the manner suggested by Petitioner. Petitioner has not established either a motivation to combine Pan with Levin, or a reasonable expectation of success. *Forest Labs., LLC v. Sigmapharm Labs., LLC*, 918 F.3d 928, 934 (Fed. Cir. 2019) (Showing obviousness requires “a reason, suggestion, or motivation in the prior art that would lead one of ordinary skill in the art to combine the references, and that would also suggest a reasonable likelihood of success.”).

1. **Petitioner Has Not Established a Motivation to Combine Pan with Levin to Achieve Electrical Contacts at the End of the Battery Portion Opposite the Cartomizer, or a Reasonable Expectation of Success in Doing So**

Petitioner’s articulated motivations to combine are conclusory and do not withstand scrutiny.

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First, Petitioner argues that “[a] POSA would have recognized the advantages of including charger contacts on the device, such as the ability to recharge the battery without having to remove the battery from the device, thereby making it more convenient for the consumer.” Pet. 22. But neither Pan nor Levin discuss this purported advantage. Pan does not say what the capacity of its batteries are compared to the power draw from normal usage. Pan’s batteries could have a high enough capacity to enable usage for weeks or months without recharging, which would reduce the benefit to a user of easier recharging. Petitioner’s proposed combination would negate an advantage of Pan’s existing replaceable rechargeable batteries (*i.e.*, commodity rechargeable AA or AAA batteries). These batteries can be quickly swapped for fresh batteries, thus never requiring Pan’s device to be plugged into anything. Ex. 2001 ¶95.

Second, Petitioner argues that “[a] POSA would have been motivated to include charger contacts on the device because it would have enabled a consumer to use the device while the batteries are charging. It is not uncommon for a consumer to run the battery down but still continue to want to use the device.” Pet. 22-23. Again, neither Pan nor Levin discuss this advantage, and the advantage is minimized if Pan’s existing batteries are high enough capacity compared to the device’s power draw. Further, Pan teaches that the cigarette cap 13 has small holes for air inflow.

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A POSITA would have understood that the cap is part of the airflow path and needs to be in place when the device is used, in order to provide the correct resistance to airflow. Thus, the modified device suggested by Petitioner could not be used while charging. Ex. 2001 ¶96. Additionally, this advantage is listed by the '722 patent itself, which states that “the charging contacts are incorporated into the device such that the vaporizer or electronic cigarette may be operated in its typical fashion during the recharging of the battery (‘pass-through’ charging).” Ex. 1001 at 15:23-29. Using the challenged patent’s own cited advantage is impermissible hindsight bias. *Millennium Pharms., Inc. v. Sandoz, Inc.*, 862 F.3d 1356, 1367 (Fed. Cir. 2017) (“[T]he inventor’s own path itself never leads to a conclusion of obviousness; that is hindsight.” (quotation omitted)).

Third, Petitioner argues that “[a] POSA would have been further motivated to include charger contacts on the device because it would have enabled the consumer to recharge the batteries anywhere having a compatible charging cord, *e.g.*, at a friend’s house. Without charging ports, *e.g.*, a micro-USB port, a consumer would need to bring their own battery charging station with them so that they could remove their batteries and charge them.” Pet. 23. The magnitude of the advantage depends on the capacity of Pan’s batteries versus the power draw of Pan’s device, which are not discussed in Pan and which are also not addressed by Petitioner or its expert.

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Additionally, this advantage would negate a benefit of Pan’s already-disclosed replaceable rechargeable batteries: that they could be charged in any suitable charger and that they could be replaced with commodity rechargeable or non-rechargeable AA or AAA batteries. Ex. 2001 ¶97.

Fourth, Petitioner argues that “[a] POSA would have been motivated to include USB charger contacts to enable additional features in the device – *i.e.*, provide access to the internal electronics. A micro-USB receptacle, for example, enables data transmission in addition to charging.” Pet. 23. However, the increased complexity from USB data transmission would increase the cost and manufacturing difficulty of the combined device. Ex. 2001 ¶98. For example, this would require additional firmware on the device as well as software for the external device that is accessing the inhaler. Petitioner does not articulate what “additional features” would be enabled. Neither Pan nor Levin discuss any benefit from USB data transmission.

Fifth, Petitioner argues:

A POSA would have known to place the charger contacts at the distal end of the device because it is an ergonomic location for charger contacts. Specifically, the consumer can grip the device in one hand along the longitudinal axis and easily insert the charger cable (and possibly continue to use the device). If the charging contacts are along the length of the device, it would be more difficult for a consumer to insert the charger cable because there would be torque on the device during insertion. Moreover, there are a finite number of places to put the charger contacts, and the distal end is a typical location.

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Pet. 24. However, Pan already teaches a connection for a DC circuit located at the middle of its assembled device. Pan at 5:29-36. Even assuming that a POSITA were motivated to add recharging connections (they would not be), they would use the existing contacts. Neither Pan nor Levin discuss any “ergonomic location” benefits, and the benefits could be obtained by using a parallel charging contact at the junction between the battery and the cartomizer. Ex. 2001 ¶¶99-101.

Sixth, Petitioner argues:

A POSA would have had a reasonable expectation to successfully incorporate a micro-USB receptacle with electrical contacts at the distal end of Pan’s inhaler. Micro-USB receptacles were standardized, well-known in the art, and specifically disclosed in prior art e-vapor devices. . . . Moreover, Levin’s micro-USB charger contacts are installed at its end cap; Pan likewise has an end cap 13. Thus, a POSA would have expected Levin’s micro-USB charger contacts to work equally well at Pan’s end cap.

Pet. 24. Although Petitioner asserts that micro-USBs were well-known at the time of the invention, the cost of manufacturing and using them was high. Ex. 2001 ¶102. Indeed, Pan states that “due to its extreme complexity in structure and very high manufacturing cost,” “electronic cigarettes were difficult to commercialize.” Pan at 1:55-57. A POSITA would not exacerbate the issues surrounding cost, and unnecessarily make the device in Pan more expensive. Pan states “the existing electronic cigarette devices have several major drawbacks: (1) too complex to be implemented as ordinary consuming product and (2) too costly for manufacturing

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and maintenance.” *Id.* at 2:4-7. According to Pan, the focus of its invention was to “overcome at least some of the above-described problems.” *Id.* at 2:16-18. Adding an additional costly component would run directly contrary to the expressed purposes of Pan’s invention. *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (no motivation to modify prior art where it “would destroy the basic objective” of the prior art). Pan’s emphasis on simplicity, cost-effectiveness, and ease of manufacturing teaches away from the combination. “A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would . . . be led in a direction divergent from the path that was taken by the applicant.” *In re Urbanski*, 809 F.3d 1237, 1244 (Fed. Cir. 2016).

Petitioner’s assertion that a POSITA would have had a reasonable expectation of success because both devices have an end cap is a non sequitur. Ex. 2001 ¶103. Pan’s cigarette cap 13 is designed for air intake, not battery recharging—an entirely different purpose than Levin’s end cap. Pan at 5:31-32 (“cigarette cap 13 with small holes for air inflow”). Petitioner also fails to explain what the significance is of the presence of an end cap in both devices to the proposed combination. Any tube-like device will have a distal end made of some material, but that does not speak to the alleged ease of adding a complex micro-USB port to the end.

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This single paragraph at Pet. 24 is also the sum total of Petitioner’s position concerning reasonable expectation of success. It is insufficient on its face. *Qiagen North Am. Holdings, Inc. v. HandyLab, Inc.*, No. 2020-2249, 2021 WL 5024387, at *2 (Fed. Cir. Oct. 29, 2021) (no reasonable expectation of success in combining the prior art where the IPR petition “offered only a single conclusory statement regarding the POSA’s alleged reasonable expectation of success and that Qiagen’s expert offered only conclusory statements on this issue”). Lack of reasonable expectation of success is sufficient by itself to defeat an invalidity challenge. *Procter & Gamble Co. v. Teva Pharms. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009) (“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.”).

Dr. Janet’s declaration fails to correct the deficiencies in the Petition. Ex. 1005 ¶¶97-105. 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 or nonsensical. Conclusory expert assertions that mischaracterize the underlying reference cannot establish obviousness. *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) (“At this critical point in the

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determination of obviousness, there must be factual support for an expert's conclusory opinion.”); *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements . . .”).

For example, regarding Petitioner's argument that placing the micro-USB connector at the distal end of Pan's device would have been obvious, Dr. Janet adds an analogy to mobile phone charger contacts that is not contained in the Petition. Ex. 1005 ¶102. But in doing so, Dr. Janet fails to account for the differences between the two types of devices. Further, batteries in mobile phones are not typically easy to replaceable, so placing a premium on the maximum battery life is important, and the location of the battery is often constrained to a particular portion of the phone. As such, options for where to place the charger oftentimes has more to do with the location of the battery, as opposed to simply being at the bottom of the device. Ex. 2001 ¶101.

2. A POSITA Would Not Have Been Motivated to Combine Pan with Levin to Achieve Electrical Contacts at the End of the Battery Portion Opposite the Cartomizer, and Would Not Have a Reasonable Expectation of Success in Doing So

Beyond the deficiencies in Petitioner's arguments, there are several additional reasons why a POSITA would not have been motivated to modify Pan's device to add Levin's micro-USB port, and would not have had a reasonable expectation of success in doing so.

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First, there are several detriments to incorporating a micro-USB connector from Levin in Pan's device, such as additional component cost, complexity, space occupied, and the question of how to modify the air flow of the system given that the micro-USB receptacle would modify or displace the cigarette cap 13 in Pan that has small holes for air inflow. Incorporating the micro-USB port from Levin into Pan's device would also entail adding the associated internal circuitry necessary to support the externally-visible micro-USB connector, such as Levin's PCB. Ex. 2001 ¶105. Petitioner and its expert do not address where this additional circuitry would go, or the cost or complexity of the circuitry. The volume needed to accommodate the micro-USB connector would, by necessity, reduce the space for other components, such as liquid or battery. By ignoring these considerations, Petitioner has failed to meet its burden at the institution stage to show a reasonable likelihood that that a POSITA would have been motivated to perform the proposed modification of Pan's device.

Second, Petitioner and its expert fail to account for the form factor of Levin's device versus that of Pan's device. Petitioner and its expert fail to explain how, given the dimensions of Levin's micro-USB connector, it could fit into Pan's device. Levin teaches non-circular body cross-section, which is "advantageous as it allows sufficient space for the power source (e.g., cylindrical batteries) within defining air

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passageways 6 outside the batteries to allow flow of air through the device.” Levin at 11:7-11; Fig. 2B. The micro-USB connector from Levin would not fit within Pan’s device. The additional required circuitry, such as Levin’s PCB, would not fit within Pan’s device either. The micro-USB connector would take space away from the liquid or battery. To achieve the suggested combination, some components would need to be shrunk (in particular, the battery) and other components would need to be expanded (such as the housing) to accomplish the suggested structural and electrical changes. Petitioner and its expert do not address the width or overall dimensions of a micro-USB connector compared to Pan’s device. A POSITA would also know that at the time of the invention there was a strong preference in the industry to make products that modeled the height, weight, look and feel of a real cigarette, which has a typical diameter of 7.5-8 mm. Ex. 2001 ¶106. Pan’s device is intended to resemble a cigarette. Pan at Abstract (“An electronic cigarette has two tubes that resemble a cigarette: an electronic inhaler and an electronic atomizer.”). Petitioner and its expert have not addressed, much less established, that Levin’s micro-USB port could fit in Pan’s device, and it could not, without significant modifications, which would not motivate a POSITA to perform the combination.

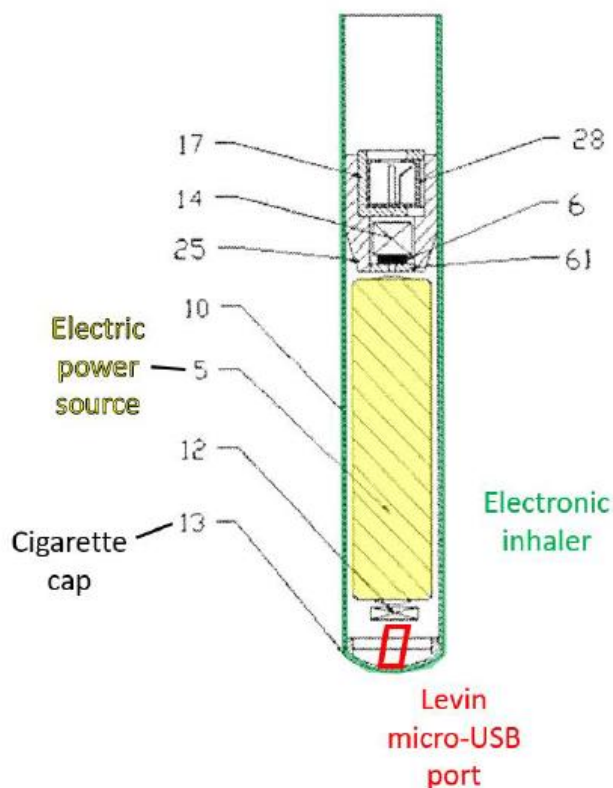
Third, a POSITA would not want to place the micro-USB connectors from Levin at the bottom of Pan’s device because the device has holes at the bottom for

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air inflow. Blocking or restricting this airflow will impact the performance and functionality of Pan's device. Ex. 2001 ¶107. Pan teaches that "the user inhales through the air-puffing hole at the end of the electronic cigarette to create an air inflow, which triggers the atomization process." Pan at Abstract. Pan also teaches that there is a "cigarette cap 13 with small holes for air inflow." *Id.* at 5:10-11. A POSITA would know that variables such as the pressure changes within the device, friction force, airflow volume, airflow velocity, draw resistance, and the like could all impact the functionality and performance of the device. Thus, Levin's micro-USB port could not simply be dropped into the distal end of Pan's device without side effects on the air inlet holes and the overall airflow characteristics of the device, all of which Petitioner and its expert ignore entirely. Ex. 2001 ¶¶107-08; *see also Orthopedic Equipment Co, Inc. v. U.S.*, 702 F.2d 1005, 1013 (Fed. Cir. 1983) ("The fact that features of one reference cannot be substituted into the structure of a second reference may indicate that the claims were nonobvious in view of the combined teachings of the two references."). LED indicator 12 is another component at the distal end of Pan's device (Pan at 4:23-26) and Petitioner also ignores the impact on that component from its proposed modification.

Petitioner's misleading annotation of Pan's Figure 5 highlights how it failed to account for the air inflow holes and LED indicator in Pan:

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EX1010, Fig. 5

Pet. 25. Elements 12 and 13 are an LED indicator and the cigarette cap with small holes for air inflow, respectively. However, as shown in the image, Petitioner simply ignores these existing components, and superimposes a “Levin micro-USB port” **on top of them**. This configuration is not physically possible, which is an indication (although not dispositive by itself) that the challenged claims are not obvious. *Orthopedic Equip.*, 702 F.2d at 1013.

Fourth, since there were already contacts for a cartridge, a POSITA would have known that it was more economical to use those rather than adding more

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components such as a micro-USB port. Additionally, the circuit board with processor 14 in Pan is located in the middle of the device. To add a micro-USB, the circuit board 14 would either have to move or an additional circuit board would need to be added to the tip of the device to accommodate a micro-USB connector and wires would need to be connected between the two. Ex. 2001 ¶109. This adds cost and complexity. This is another reason that Pan teaches away from being modified with Levin micro-USB port. *Tec Air, Inc. v. Denso Mfg. Michigan Inc.*, 192 F.3d 1353, 1360 (Fed. Cir. 1999) (“There is no suggestion to combine, however, if a reference teaches away from its combination with another source.”).

Fifth, Petitioner’s proposed modification of Pan would result in undesirable redundancy. Incorporating the micro-USB port from Levin into Pan’s device would also entail adding the associated internal circuitry necessary to support the externally-visible micro-USB connector, such as Levin’s PCB. The printed circuit board (PCB) 32 in Levin has LEDs mounted to it, along with the micro-USB connector. But Pan already has LEDs in another component. Levin also describes PCB 32 as having firmware for, among other things, “controlling the heating unit.” Levin at 18:58-63. Like Levin, Pan also has circuitry for activating the atomizer when a puff is detected. Pan at 3:25-31. That Pan already possesses the same functionality that is taught by Levin, in a separate component that Petitioner ignores,

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and which would be redundant in Petitioner's proposed combination, counsels against a POSITA combining the teachings from these two references. Ex. 2001 ¶110.

Sixth, modifying Pan to charge a battery in situ has significant disadvantages over replacing a battery. Replacing a battery can happen very quickly, while recharging a battery takes time. A user does not need to carry a recharging unit and has the choice to replace a battery with one that is rechargeable or disposable. The user can make the choice based on preference or the convenience of the availability of commodity batteries. Ex. 2001 ¶111.

Seventh, a POSITA would not have a reasonable expectation of success in making the proposed changes to Pan's device. The changes require re-engineering the device from the ground up, including the electrical connections of the battery and airflow connections to the sensor. These changes would require a significant analysis and design 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. In particular, draw resistance is an important consideration, and is very difficult to get correct. Draw resistance impacts user effort, vapor production, the size of the visible vapor cloud, the throat hit, and the

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particle size of the aerosol. But changing Pan's device as Petitioner suggests would throw all of these 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 have understood that these are not simple changes but, instead, are complex, and provide no clear benefit. Therefore, 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 ¶112.

VI. The Petition Fails to Demonstrate a Reasonable Likelihood Claims 14 and 17 Are Obvious Based on Pan and Levin in View of Tucker (Ground 2)

Petitioner relies solely on the combination of Pan and Levin to render obvious independent claims 10 and 15, from which claims 14 and 17 respectively depend. Pet. 56. For the reasons given in the previous section, Pan in view of Levin does not render the independent claims obvious. The addition of Tucker cannot remedy the deficiencies of Pan and Levin with respect to claims 10 and 15. Therefore, the petition also fails to demonstrate a reasonable likelihood claims 14 and 17 are obvious in light of Pan, Levin, and Tucker.

PUBLIC VERSION**VII. The Petition Fails to Demonstrate a Reasonable Likelihood Claims 1, 5, 7, 9-13, 15-16, or 18-21 Are Obvious Based on Thorens788 in View of Thorens231 and Levin (Ground 3)**

Petitioner has not established a cognizable motivation to combine Thorens788 with Thorens231, or to combine Thorens788 with Levin, or to combine all three references, in order to modify Thorens788's device to achieve the challenged independent claims. Petitioner has also not established a reasonable expectation of success in making the proposed combination.

A. Petitioner Has Not Established that Thorens788 in View of Levin Renders Obvious Electrical Contacts at the End of the Battery Portion Opposite the Cartomizer

Independent claim 1 of the '722 patent requires "the battery portion further comprising a plurality of charger electrical contacts to provide electrical charge to a battery housed in the battery housing segment, the charger electrical contacts disposed at a first end of the battery portion opposite the insertion end of the chamber of the cartomizer receiving segment."

Similarly, independent claim 10 of the '722 patent requires a battery portion partially comprising "a plurality of charger electrical contacts disposed at a first end of the battery portion opposite the insertion end of the cartomizer chamber, the insertion end of the cartomizer chamber being at a second end of the battery portion."

Independent claim 15 of the '722 patent requires a battery portion partially comprising "a plurality of charger electrical contacts disposed at a first end of the

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battery portion” and “one or more battery electrical contacts in or proximate [to] the chamber of the cartomizer receiving segment.”

Petitioner concedes that Thorens788, the base reference for Ground 3, does not meet these limitations. Pet. 65 (“Thorens788 discloses a rechargeable battery, but it does not disclose charging contacts on the housing 101.”). Petitioner instead asserts that a POSITA would have found it obvious to adapt Thorens788 to include Levin’s micro-USB charging port. Pet. 65-68, 75-76; Ex. 1005¶¶ 206-10. However, a POSITA would not have found it obvious to combine Thorens788 and Levin in the manner suggested by Petitioner. In particular, Petitioner has not established either a motivation to combine Thorens788 with Levin, or a reasonable expectation of success.

1. Petitioner Has Not Established a Motivation to Combine Thorens788 with Levin to Achieve Electrical Contacts at the End of the Battery Portion Opposite the Cartomizer, or a Reasonable Expectation of Success in Doing So

Petitioner’s articulated motivations to combine and justifications for a reasonable expectation of success are conclusory and do not withstand scrutiny. Petitioner relies almost entirely on a *separate* section of the Petition, addressing the modification of a *different* reference, Pan, for a motivation to combine:

A POSA would have been motivated to modify Thorens788 to include the micro-USB charging contacts at the distal end of Thorens788 housing 101 for the reasons articulated for Pan: e.g., convenience,

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compatibility, use of the device while charging, possibility of additional features, and ergonomics. See IX.A.1. Further, locating the charging contacts at the distal minimizes the risk of the consumer touching the contacts during use.

Pet. 67.

This is the entirety of the Petition’s argument on a motivation to combine Thorens788 with Thorens231 and Levin to achieve the claimed electrical contacts. This recitation of generic advantages that are not articulated in the prior art references themselves constitutes quintessential hindsight bias. *E.g., Sensonics, Inc. v. Aerosonic Corp.* 81 F.3d 1566, 1570 (Fed. Cir. 1996) (“To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction—an illogical and inappropriate process by which to determine patentability.”). Petitioner fails to address the different structures and configurations of the base references, Pan and Thorens788. Petitioner’s half-hearted attempt to cross-apply different arguments about a different base reference without meaningfully distinguishing between the references is lacking as a matter of law, and cannot establish a reasonable likelihood that a POSITA would be motivated to make the proposed modification of Thorens788 with a reasonable expectation of success.

Dr. Janet’s declaration fails to correct the deficiencies in the Petition. *See generally* Ex. 1005 ¶¶ 206-10. As with the Petition, Dr. Janet fails to address the

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differences in the base references, instead only opining that “[i]n my opinion, a POSA would have been motivated to modify Thorens788 to include the micro-USB charging contacts for the reasons I articulated above for Pan: *e.g.*, more ergonomic, micro-USB chargers were ubiquitous, micro-USB chargers permit additional features to be added to the device.” *Id.* ¶ 209. There could not be a more conclusory, insufficient expert opinion.

The Petition’s only elaboration beyond this attempt to cross-apply arguments about motivations to combine a different base reference with Levin is a single-sentence assertion that “locating the charging contacts at the distal [sic] minimizes the risk of the consumer touching the contacts during use.” Pet. 67. Dr. Janet adds: “Placing the contacts on the side could lead to premature corrosion of the contacts (oil from the consumer’s fingers), increased dirt on the contacts, and possible shorting of the device if the consumer was wearing jewelry.” Ex. 1005 ¶ 209. Neither Thorens788 nor Thorens231 mention this purported advantage. The motivation only applies to the location of the contacts, not to why to add contacts in the first place. Additionally, this analysis assumes that the contacts are on the exterior of the device, but the contacts could be placed at the middle of the assembled device, at the junction between the battery and the cartomizer, and only exposed when the device is not assembled. In addition, Thorens788 discloses existing

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contacts that are at the base of the aerosol forming chamber 127 within the housing 101, so they are well-protected from a user's touch. Thorens788 at 15:5-13. Ex. 2001 ¶119.

The Petition's analysis for a reasonable expectation of success is two sentences, and does not even attempt to cross-apply material from Pan. Pet. 68 ("A POSA would have had a reasonable expectation of success incorporating a micro-USB receptacle at the distal end of Thorens788's housing 101. Micro-USB receptacles were standardized, well-known in the art, and regularly used in e-vapor devices for charging and other purposes. EX1005 ¶210; *see, e.g.*, EX1026, 6:26-32; EX1042, 5:57-60; EX1003, 23:58-60."). Cited paragraph 210 of Dr. Janet's expert declaration has no analysis and parrots the Petition. Ex. 1005 ¶210. As with Petitioner's position on a motivation to combine, this is conclusory and insufficient as a matter of law to meet Petitioner's burden at the institution stage.

2. A POSITA Would Not Have Been Motivated to Combine Thorens788 with Levin to Achieve Electrical Contacts at the End of the Battery Portion Opposite the Cartomizer, and Would Not Have a Reasonable Expectation of Success in Doing So

Beyond the deficiencies in Petitioner's arguments, which are fully addressed immediately above, and also in the context of Ground 1, there are several additional reasons why a POSITA would not have been motivated to modify Thorens788's

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device to add Levin's micro-USB port, and would not have a reasonable expectation of success in doing so.

First, Petitioner and its expert generally fail to address the implications of incorporating a micro-USB connector from Levin in Thorens788's device, such as additional component cost, complexity, space, or effects on airflow. Incorporating the micro-USB port from Levin into Thorens788's device would also entail adding the associated internal circuitry necessary to support the externally-visible micro-USB connector, such as Levin's PCB. Ex. 2001 ¶122. Petitioner and its expert do not address where this additional circuitry would go, or the component cost or complexity of the circuitry. By ignoring these considerations, Petitioner has failed to meet its burden at the institution stage to show a reasonable likelihood that that a POSITA would have been motivated to perform the proposed modification of Thorens788's device.

Second, Petitioner and its expert fail to account for the form factor of Levin's device versus that of Thorens788's device. Petitioner and its expert fail to explain how Levin's micro-USB connector could fit into Thorens788's device. They do not address whether the additional required circuitry, such as Levin's PCB, would fit within Thorens788's device. Adding length to accommodate the micro-USB connector would necessarily reduce the space for other components, such as liquid

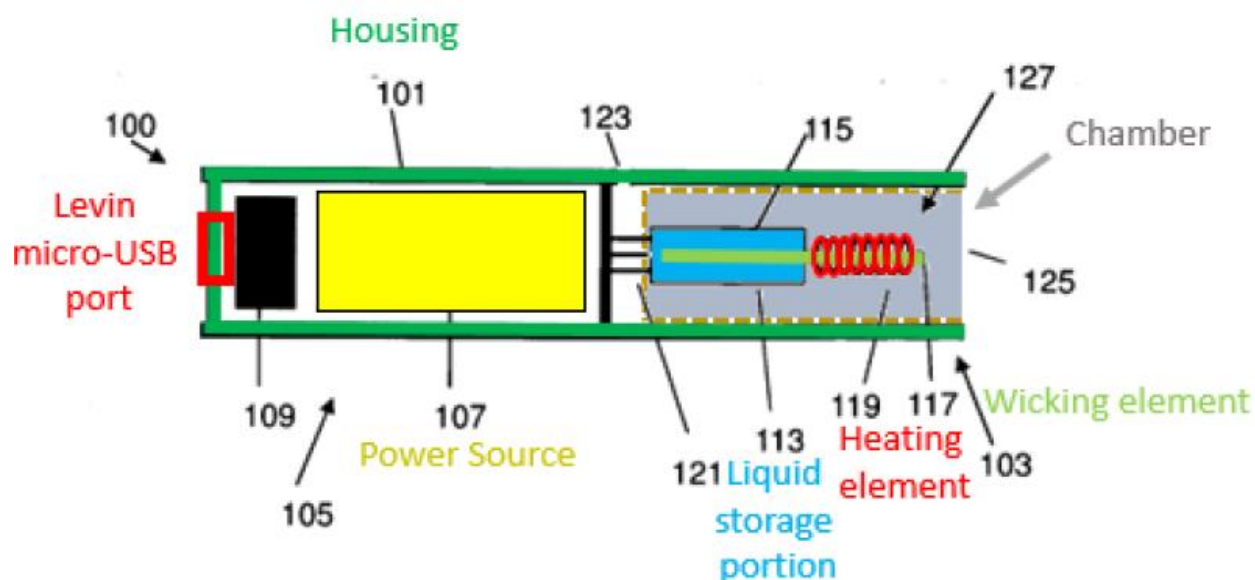
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or battery. Petitioner and its expert do not address reduction in size of other components (in particular, the battery) or expansion in size of additional components (such as the housing) to accomplish the suggested structural and electrical changes. They do not address the width or overall dimensions of a micro-USB connector compared to Thorens788's device. A POSITA would also know that at the time of the invention there was a strong preference in the industry to make products that modeled the height, weight, look and feel of a real cigarette, which has a typical diameter of 7.5-8 mm. Ex. 2001 ¶123.

Third, a POSITA would not want to place the micro-USB connectors from Levin at the bottom of Thorens788's device because that part already has electronic circuitry 109. *Id.* at Fig. 1; 12:10-11. For example, Petitioner annotated Figure 1 of Thorens788 to purportedly show where Levin's micro-USB port would be added:

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Figure 1



EX1002, Fig. 1

Pet. 68. Electric circuitry 109 is depicted as directly abutting the added micro-USB port, but Petitioner and its expert fail to address the impact on existing circuitry of modifying Thorens788's device in the proposed manner. Petitioner does not explain how the new port could connect to the power source 107 through the intervening electric circuitry 109, or whether there is sufficient space for a micro-USB connector plug (and Petitioner's annotated figure suggests there is not). The dimensions of Petitioner's annotated figure are also inaccurate and misleading. Petitioner draws the micro-USB receptacle much smaller than it would appear relative to an 8 mm diameter device, even smaller than it would be in a 5 mm device. Additionally,

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Petitioner does not address how the micro-USB receptacle will be secured to the device. Further, Petitioner and its expert do not consider that by modifying the device in Thorens788 to include charging contacts, this will create holes in the device, which could change the pressure or air flow within the device. Indeed, if this is not accounted for, it will impact the device's performance and functionality, for example, the sensitivity of any puff detection sensor. A POSITA would know that variables such as the pressure changes within the device, friction force, airflow, airflow velocity, draw resistance, and the like could all impact the functionality and performance of the device. Thus, Levin's micro-USB port could not simply be dropped into the distal end of Thorens788's device without potentially deleterious side effects and additional required engineering changes, which Petitioner and its expert ignore entirely. Ex. 2001 ¶¶124-25.

Fourth, although Petitioner contends that micro-USBs were well-known at the time of the invention, the cost of manufacturing and using them was high compared to the common contact disclosed by Pan. A POSITA would know that micro-USBs were not meant for the devices where cost was a significant driving factor, as there were cheaper connectors on the market. A POSITA would not exacerbate the issues surrounding cost, and unnecessarily make the device in Thorens788 more expensive. Ex. 2001 ¶126.

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Fifth, Petitioner's proposed modification of Thorens788 would result in undesirable redundancy. Incorporating the micro-USB port from Levin into Thorens788's device would also entail adding the associated internal circuitry necessary to support the externally-visible micro-USB connector, such as Levin's PCB 32. Levin describes PCB 32 with a memory module that triggers a heating element when a puff is detected. Levin at 18:58-63. Like Levin, Thorens788 also has memory modules that detect a puff and activate a heating element. Thorens788 at 10:17-19. That Thorens788 already possesses the same functionality that is taught by Levin, in separates component that Petitioner ignores, and which would be redundant in Petitioner's proposed combination, counsels against a POSITA combining the teachings from these two references. Ex. 2001 ¶127.

Sixth, a POSITA would not have a reasonable expectation of success in making the proposed changes to Thorens788's device. The changes require re-engineering the device from the ground up, including the electrical connections of the battery and airflow connections to the sensor. These changes would require a significant analysis and design 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. In particular, draw resistance is an important

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consideration, and is very difficult to get correct. Draw resistance impacts user effort, vapor production, the size of the visible vapor cloud, the throat hit, and the particle size of the aerosol. All of these 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 parameters into flux, potentially ruining the user experience, and at a minimum requiring significant analysis to get the balance right after any changes. Therefore, 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 ¶128.

B. Petitioner Has Not Established that Thorens788 in View of Thorens231 Renders Obvious a Cartomizer Body Containing the Required Elements

Independent claims 1, 10, and 15 of the '722 patent each require a cartomizer comprising “a body including a structure configured to hold a vaporizable liquid” (elements 1.G, 10.H, and 15.I), “a wicking element provided within the body and at least partially in contact with the vaporizable liquid” (elements 1.H, 10.I, and 15.J), “a heating element provided within the body in contact with the wicking element and operable to heat the vaporizable liquid” (elements 1.I, 10.J, and 15.K), and additionally specifies that the “entire heating element is disposed between the

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insertion end of the [cartomizer] chamber and the base end of the [cartomizer] chamber when the cartomizer is inserted into the [cartomizer] chamber such that the outer shell protects the heating element” (elements 1.K, 10.L, and 15.M).

Petitioner identifies Thorens788’s cartridge 113 as the claimed “cartomizer.”

Pet. 78. Petitioner identifies a combination of Thorens788’s cartridge 113 and Thorens231’s “mouthpiece housing” as the claimed cartomizer “body.” Pet. 80.

Petitioner concedes Thorens788 does not have a mouthpiece (*i.e.*, part of the identified claimed “body”) that would protect a heating element or a capillary wick, and instead relies on a modification of Thorens788 according to the teachings of Thorens231 to render obvious elements 1.G, 1.H, 1.I, 10.H, 10.I, 10.J, 15.I, 15.J, and 15.M. Pet. 62-65, 78-85, 94, 100. Petitioner contends that elements 1.K, 10.L, and 15.M are disclosed by Thorens788. Pet. 86-88, 94, 100. However, the claimed “heating element” in 1.K, 10.L, and 15.M must be “provided within the body” as specified in 1.I, 10.J, and 15.K, which Petitioner concedes is not disclosed by Thorens788. Hence, Petitioner’s contention that 1.K, 10.L, and 15.M are disclosed by Thorens788 is inconsistent with its concession elsewhere that Thorens788 does not disclose 1.I, 10.J, or 15.K. Thus, the Petition should properly be understood as also relying on obviousness for 1.K, 10.L, and 15.M.

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However, a POSITA would not have found it obvious to combine Thorens788 and Thorens231 in the manner suggested by Petitioner.

1. **Petitioner Has Not Established a Motivation to Combine Thorens788 with Thorens231 to Achieve a Cartomizer Body Containing the Required Elements, or a Reasonable Expectation of Success in Doing So**

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*.

First, Petitioner argues that “Thorens788 already discussing [sic] a mouthpiece housing and a POSA would have looked to Thorens231, which shares common inventors and is directed to substantially the same invention.” Pet. 64. 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 ¶¶132-33.

Second, Petitioner argues that “a POSA would have been motivated to provide a mouthpiece housing for Thorens788 because the cartridge is replaceable, and without a housing, a consumer would be forced to grip the heating element to remove

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the mouthpiece. That could lead to injury if the heating coil is still hot.” Pet. 64. 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 ¶134.

Dr. Janet’s declaration fails to correct the deficiencies in the Petition. Ex. 1005 ¶¶214-17. 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.* ¶¶214-16. But these paragraphs simply cite portions of the two references without analysis. And Dr. Janet’s remaining paragraph parrots the Petition’s unfounded contention (reviewed above) that Thorens788 device has a danger of user injury from a hot heating coil, without additional analysis. *Id.* ¶215.

Crucially, neither the Petition nor its supporting expert declaration contain **any allegation** that a POSITA could have made the proposed mouthpiece

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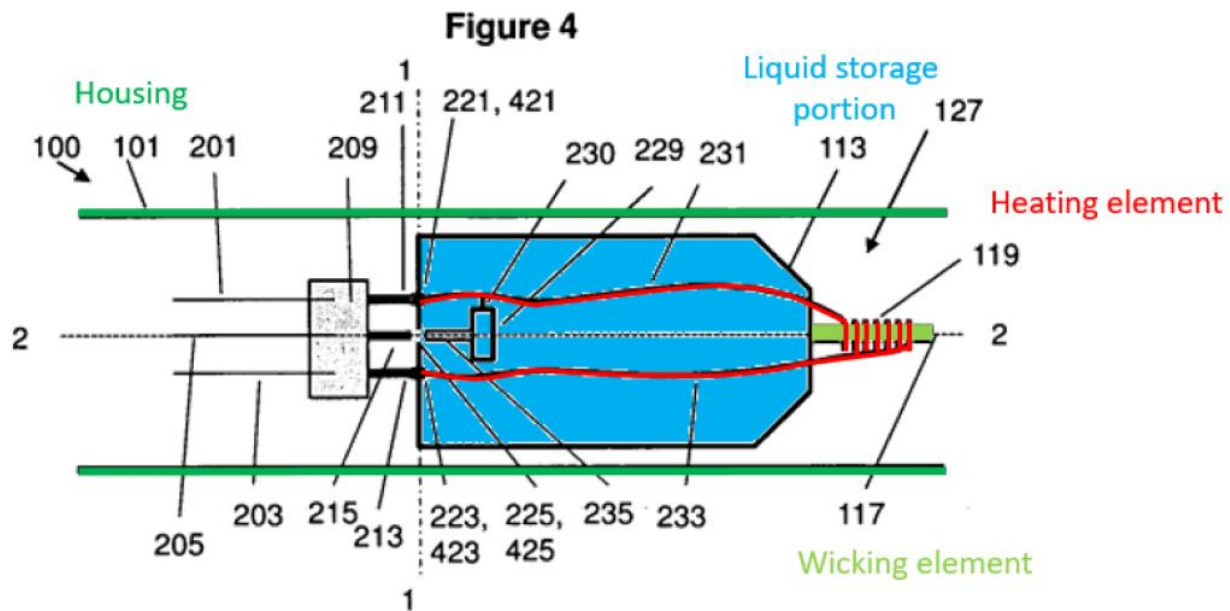
modification to Thorens788’s device with a reasonable expectation of success. A reasonable expectation of success is a necessary and indispensable element of showing obviousness. *Regents of Univ. of Cal. v. Broad Inst., Inc.*, 903 F.3d 1286, 1291 (Fed. Cir. 2018) (“An obviousness determination requires finding that a person of ordinary skill in the art 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. Grounds 3 and 4 fail for this reason alone.

2. **A POSITA Would Not Have Been Motivated to Combine Thorens788 with Thorens231 to Achieve a Cartomizer Body Containing the Required Elements, and Would Not Have a Reasonable Expectation of Success in Doing So**

Beyond the deficiencies in Petitioner’s arguments, there are several additional reasons why a POSITA would not have been motivated to modify Thorens788’s device to add Thorens231’s mouthpiece body, and would not have a reasonable expectation of success in doing so.

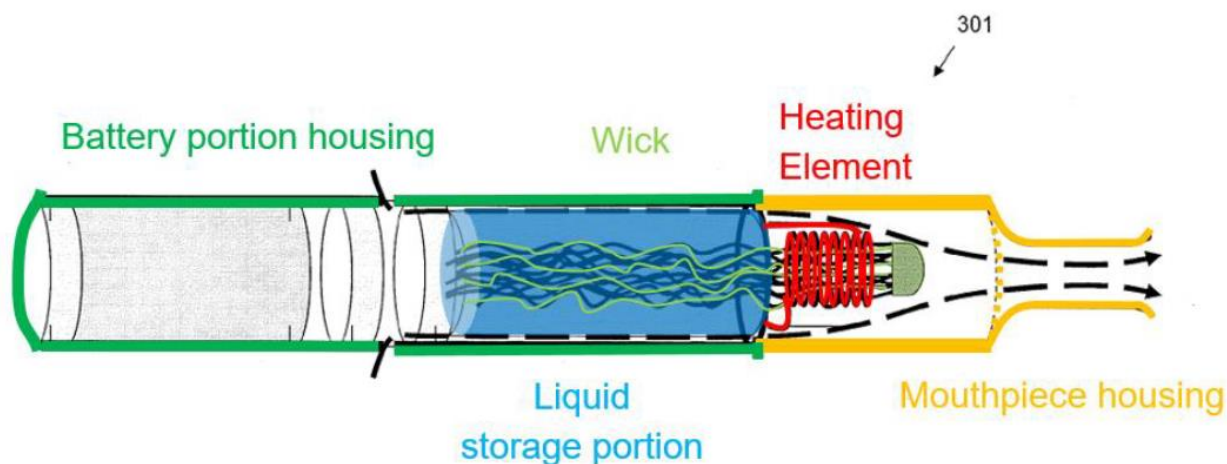
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First, Petitioner and its expert fail to account for the differing form factors and structural configurations of the distinct devices taught in Thorens788 and Thorens231. Petitioner does not discuss what modifying Thorens788's device to include a mouthpiece would do to the performance or functionality of the modified device. 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. This difference is readily apparent from Petitioner's own annotations to the figures for each reference:



EX1004, Fig. 4

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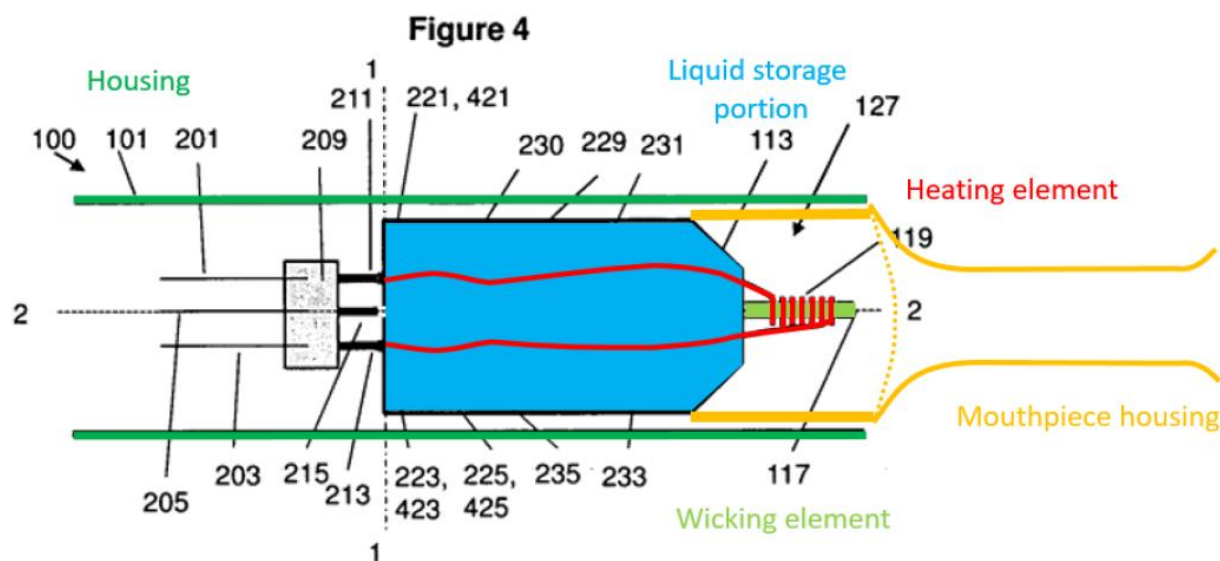


EX1002, Fig. 3.

Pet. 63-64. 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 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 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

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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:



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 ¶¶137-38.

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

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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 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 ¶139.

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

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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 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 ¶140.

VIII. The Petition Fails to Demonstrate a Reasonable Likelihood Claims 14 and 17 Are Obvious Based on Thorens788, Thorens231, and Levin in View of Tucker (Ground 4)

Petitioner relies solely on the combination of Thorens788, Thorens231, and Levin to render obvious independent claims 10 and 15, from which claims 14 and 17 respectively depend. Pet. 102. For the reasons given in the previous section, Thorens788, Thorens231, and Levin do not render the independent claims obvious. The addition of Tucker cannot remedy the deficiencies of Thorens788, Thorens231, and Levin with respect to claims 10 and 15. Therefore, the petition also fails to

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demonstrate a reasonable likelihood claims 14 and 17 are obvious in light of Thorens788, Thorens231, Levin, and Tucker.

IX. Objective Evidence Further Demonstrates That the '722 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, ¶¶142-43. 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) products (the “JUUL System”). These products practice, and are coextensive with, at least claim 1 of the '722 patent.

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

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There is a strong nexus here because the JUUL System is coextensive with the claims of the '722 patent. Ex. 2001, ¶144. The claimed invention is not merely a subcomponent of the products sold, but rather encompasses the entire apparatus. As shown below, the JUUL System practices every limitation of at least claim 1 of the '722 patent.

1. 1[pre]: A vaporizer comprising:

To the extent the preamble is limiting, the JUUL System comprises a vaporizer. The JUUL System is an apparatus that [REDACTED]

[REDACTED]

[REDACTED]

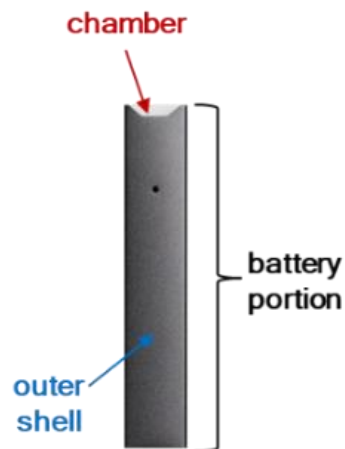
[REDACTED]

Ex. 2003, 9, 11; Ex. 2001, ¶¶145-46.

The JUUL System is depicted below:

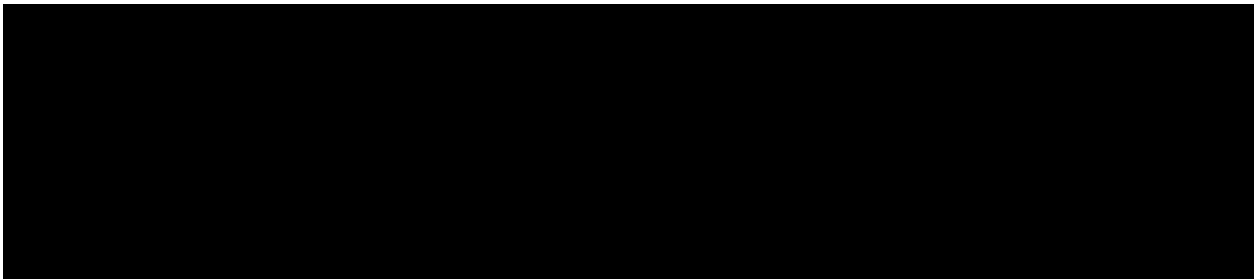


Ex. 2054 (annotated).

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Ex. 2055 (annotated).

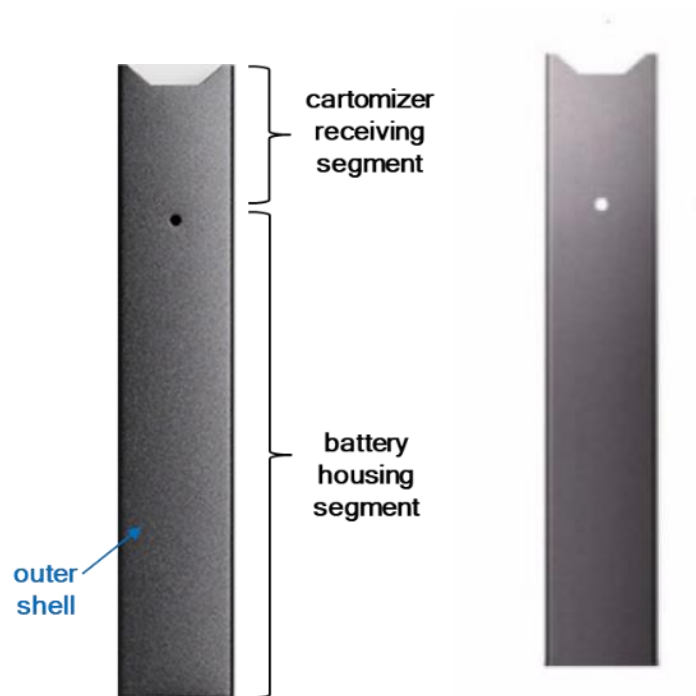
In addition, the JUUL System is a vaporizer:



2. **1[a]: a battery portion comprising a battery housing segment and a cartomizer receiving segment,**

The JUUL System's battery portion is shown below:

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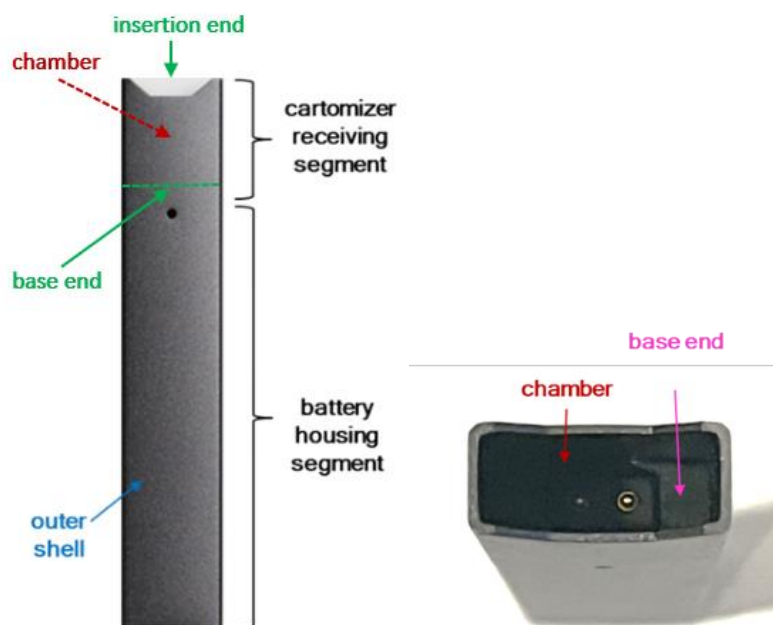


Ex. 2055 (annotated); Ex. 2003, 11.

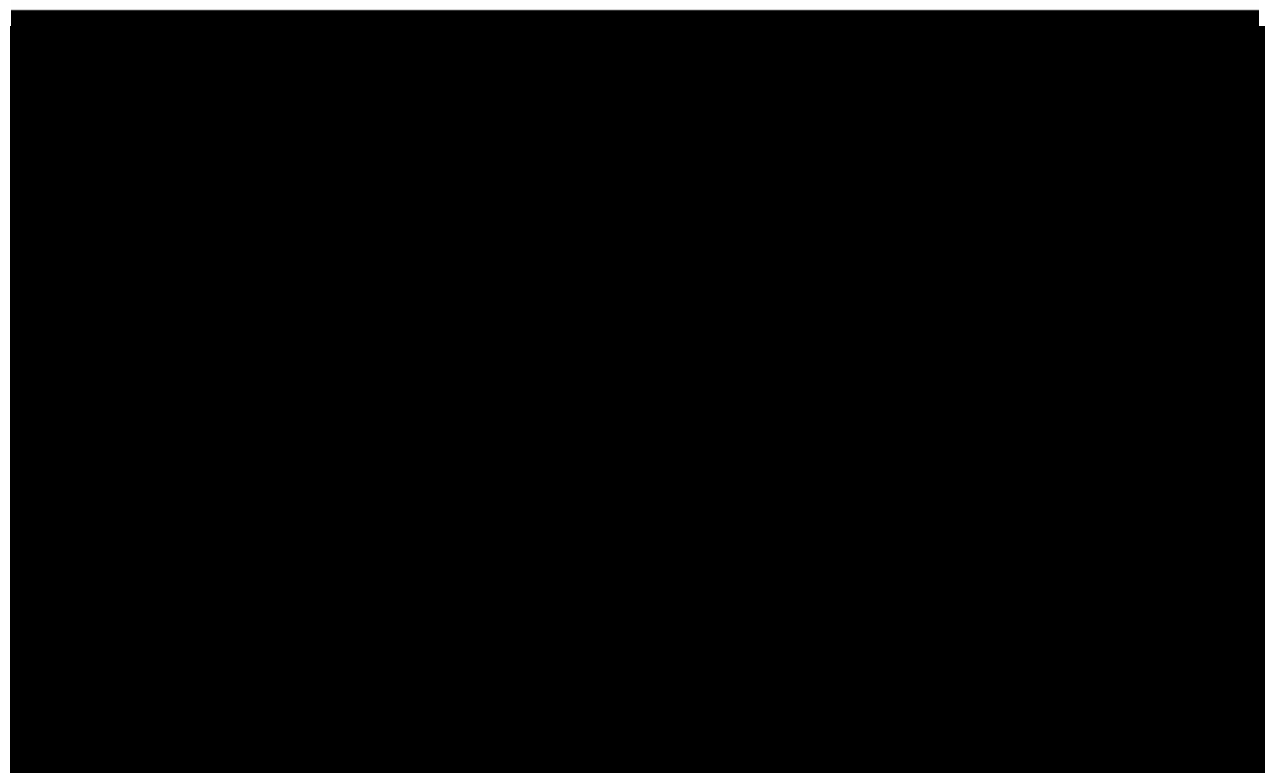
- (a) **1[b]: the cartomizer receiving segment defining a chamber having an insertion end distal from the battery housing segment and a base end proximate to the battery housing segment,**

The JUUL System's cartomizer receiving segment is depicted below:

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Ex. 2055 (annotated); Ex. 2057 (annotated).

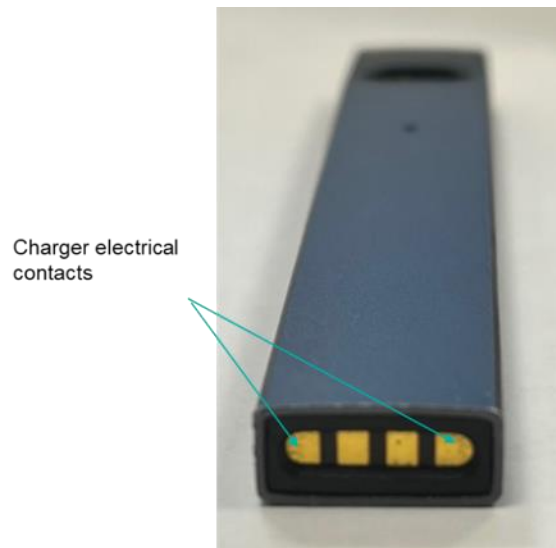


Ex. 2003, 13.

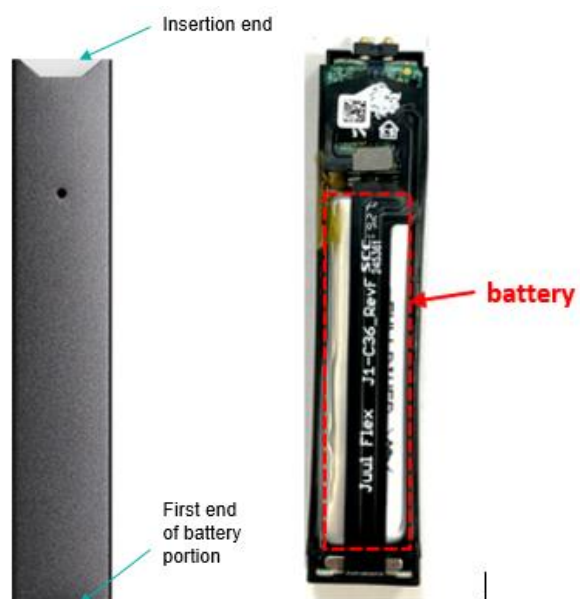
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3. **1[c]: the battery portion further comprising a plurality of charger electrical contacts to provide electrical charge to a battery housed in the battery housing segment, the charger electrical contacts disposed at a first end of the battery portion opposite the insertion end of the chamber of the cartomizer receiving segment,**

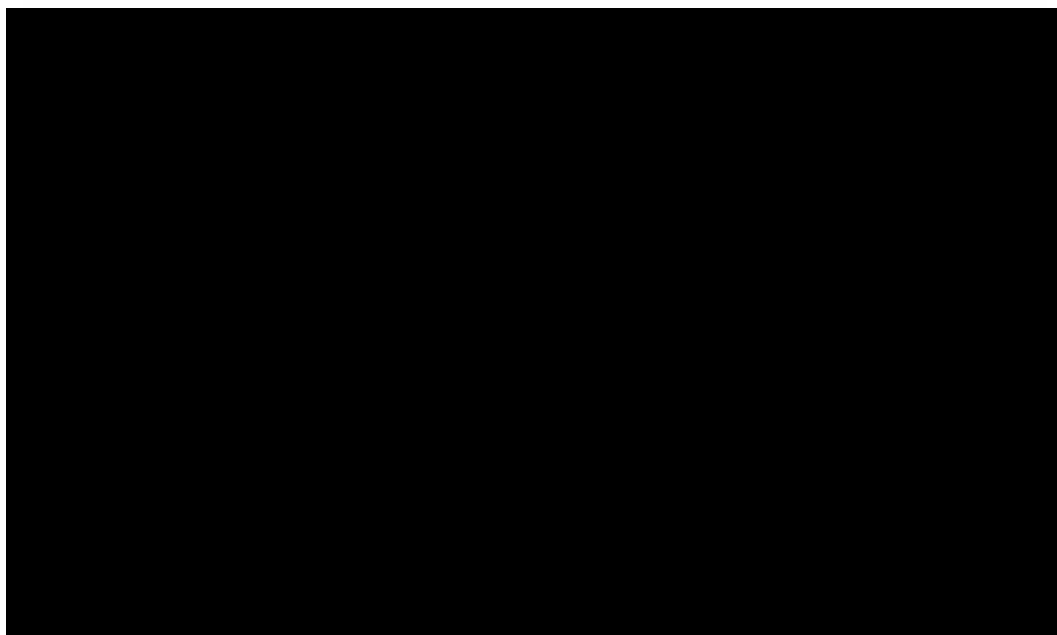
The JUUL system's battery portion with charger electrical contacts are depicted below:



Ex. 2052 (annotated).

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Ex. 2058 (annotated); Ex. 2048 (annotated).



Ex. 2003, 13.

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4. **1[d]: wherein an outer shell is commonly shared by the battery housing segment and the cartomizer receiving segment; and**

The JUUL System comprises an outer shell that is commonly shared by the battery housing segment and the cartomizer receiving segment, as described earlier in the context of element 1[a], above.

5. **1[e]: a cartomizer insertable into the chamber at the insertion end, the cartomizer comprising:**

The JUUL System's cartomizer is depicted below:



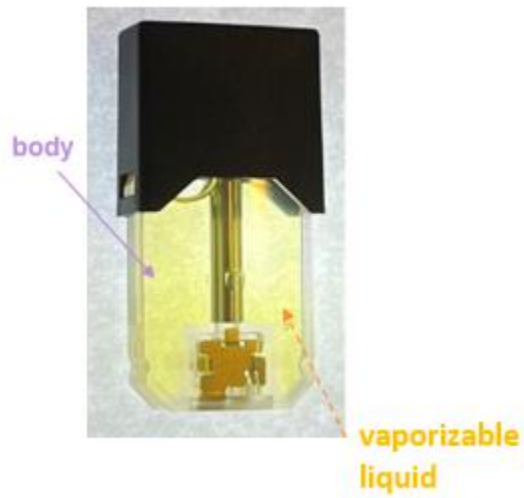
Ex. 2053 (annotated); Ex. 2056 (annotated).

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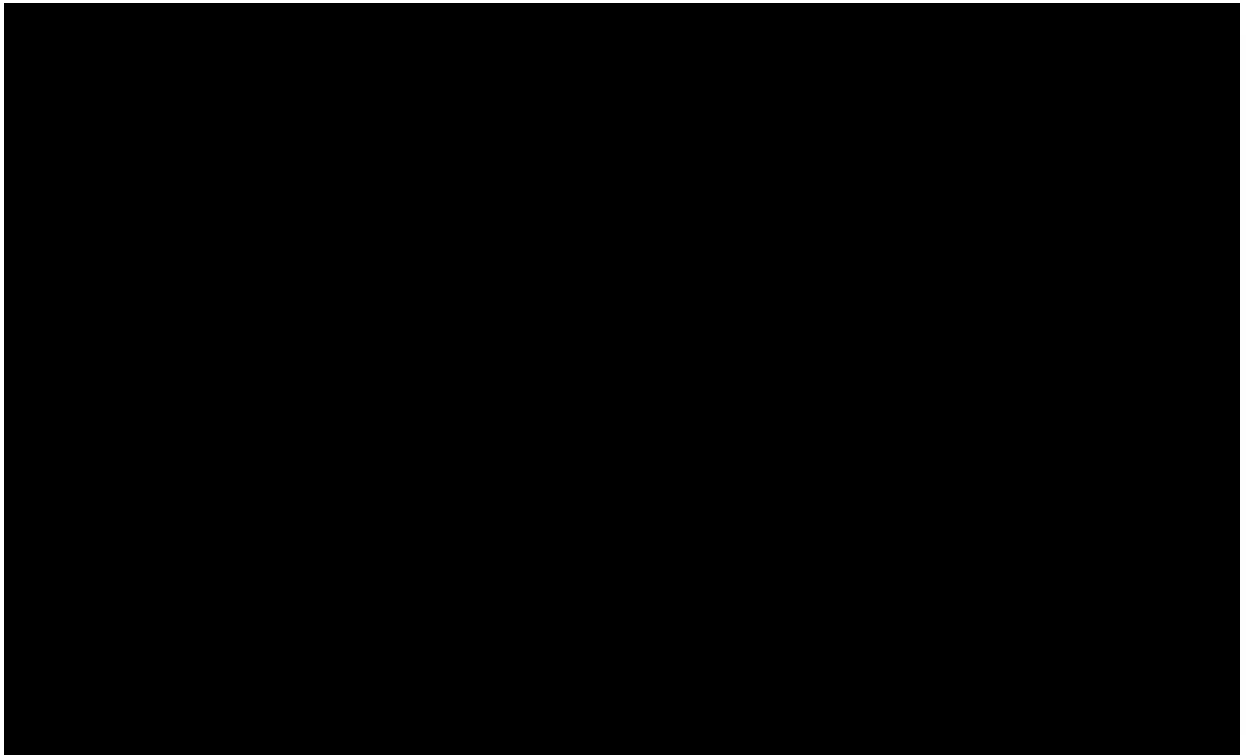
Ex. 2003, 9.

6. **1[f]: a body including a structure configured to hold a vaporizable liquid;**

The JUUL System's cartomizer body is shown below:



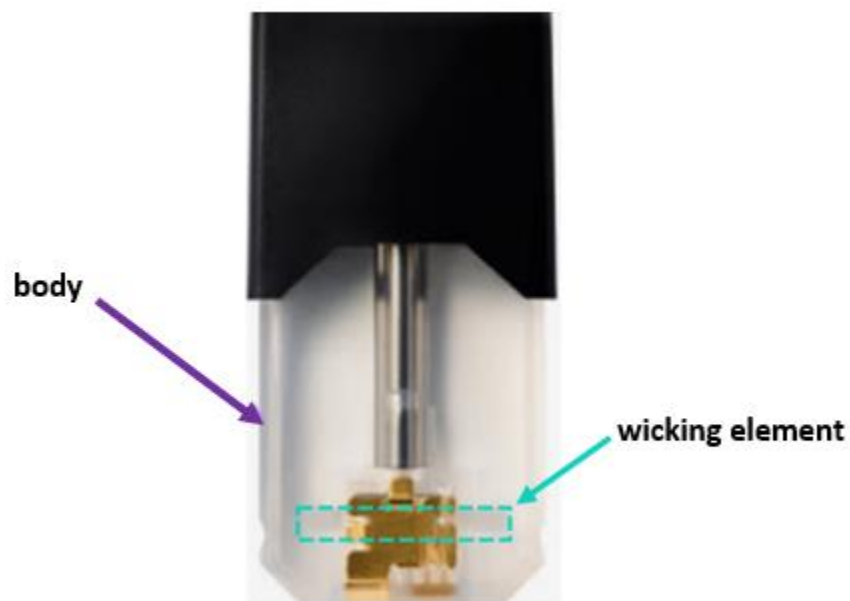
Ex. 2054 (annotated).

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Ex. 2003, 26.

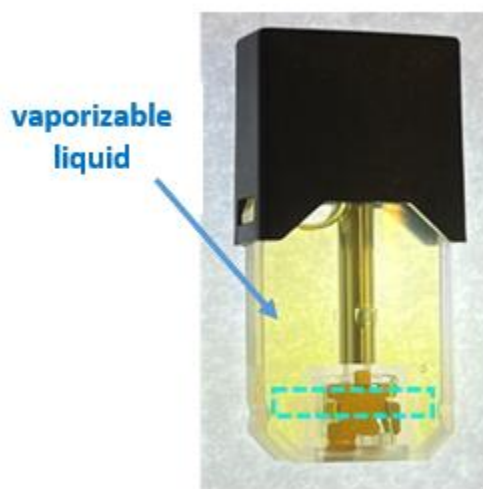
7. **1[g]: a wicking element provided within the body and at least partially in contact with the vaporizable liquid; and**

The JUUL System's wicking element is shown below:

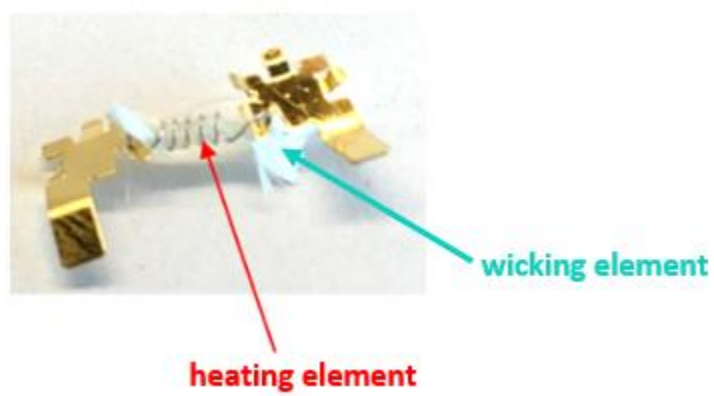


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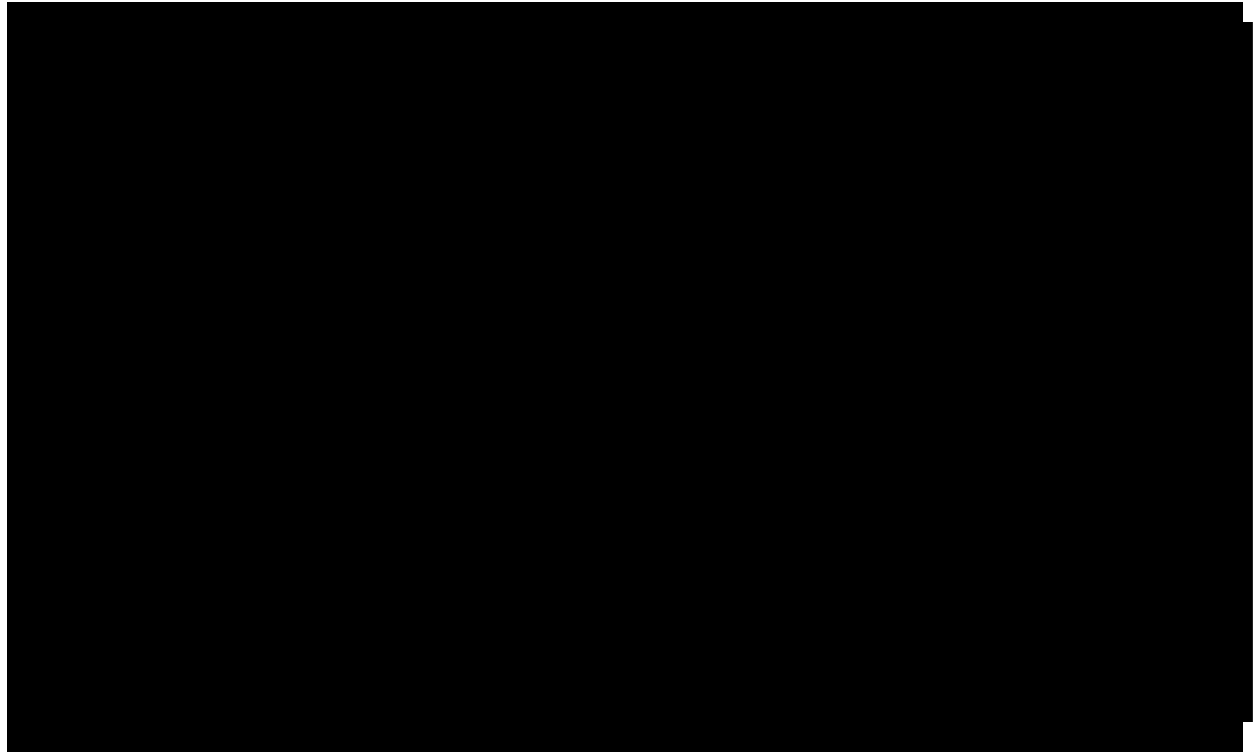
Ex. 2005 (annotated).



Ex. 2054 (annotated).



Ex. 2006 (annotated).

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Ex. 2003, 26.

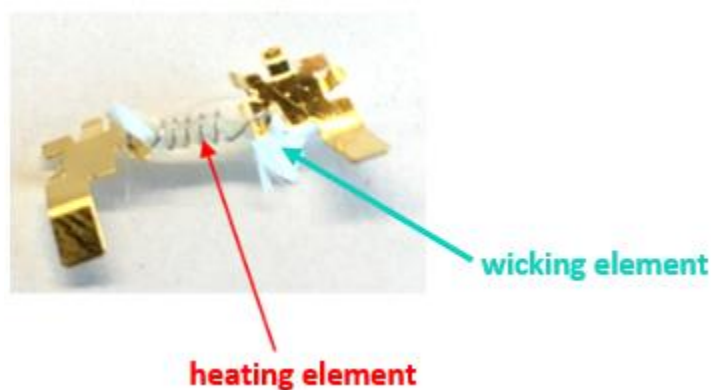
Specifically, the wicking element in the JUUL System delivers the vaporizable liquid to the heating element. Liquid is transferred by capillarity (also known as capillary action). The wick draws the atomization liquid to the heating element such that it is contact with the heating element.

8. **1[h]: a heating element provided within the body in contact with the wicking element and operable to heat the vaporizable liquid, wherein the wicking element is configured to deliver the vaporizable liquid to the heating element, and wherein the entire heating element is disposed between the insertion end of the chamber and the base end of the chamber when the cartomizer is inserted into the**

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chamber such that the outer shell protects the heating element.

The JUUL System's wicking element, heating element, cartomizer, and outer shell are shown below:



Ex. 2006 (annotated).



Ex. 2053 (annotated); Ex. 2056.

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[REDACTED]

Ex. 2003, 9.

The heating element is operable to heat the vaporizable material to generate an aerosol that is the combination of the vaporizable material and air. Ex. 2003, 23

[REDACTED]); *id.*, 26-

27 [REDACTED]

[REDACTED]

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, ¶157.

Before the JUUL System was first introduced in 2015, smoking tobacco cigarettes had long been known to have significant health risks. *Id.*, ¶158. 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.*

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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, ¶159. 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. 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, ¶160. 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.

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2001, ¶161. 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, ¶162. 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, ¶163.

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, ¶164. The JUUL System’s inventive design provided the user with a fundamentally

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different user experience, including with respect to vapor production and nicotine delivery that satisfied smokers' cravings and that were enabled through practice of the '722 patent. Ex. 2025, 39:8-41:5 [REDACTED]

[REDACTED]); Ex. 2026, 25:6-30:8 ([REDACTED])

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]); *id.*, 137:23-143:4 ([REDACTED])

[REDACTED]

[REDACTED]

[REDACTED]); *id.*, 33:24-35:6 ([REDACTED])

[REDACTED]

[REDACTED]); *id.*, 116:15-117:14. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Ex. 2025, 39:8-41:5, 65:9-66:19, 81:22-82:18, 84:8-85:4, 87:21-88:2.

The industry recognized that the JUUL System products were unique and abandoned the industry norms of emulating the iconography of traditional cigarettes.

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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 '722 patent. Ex. 2001, ¶165. Within a few years of the JUUL System launch, JLI 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, ¶167.

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Designing a reliable, user-satisfying ENDS system that could be manufactured in a cost-efficient manner was also unexpected. Ex. 2025, 39:8-41:5

([REDACTED]

[REDACTED] Ex. 2026, 25:6-30:8 ([REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]); 137:23-143 ([REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]); 33:24-35:6 ([REDACTED]

[REDACTED]);

116:15-117:14; Ex. 2001, ¶168.

RPI Altria also made considerable investments in the e-cigarette space before it invested in JUUL. Ex. 2001, ¶169. 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.

PUBLIC VERSION**D. Industry Praise**

The JUUL System received widespread recognition from its customers and others in the industry. Ex. 2001, ¶170. 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.

RPI Altria praised the JUUL System as revolutionary and fueled by a strong innovation pipeline. Ex. 2001, ¶171. 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

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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, ¶172. 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 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, ¶173. 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*

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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, ¶174.

RPI Altria also recognized the commercial success of the JUUL System in its offers to potentially license JLI's intellectual property. Ex. 2001, ¶175. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Ex. 2041, 106:5-107:7.

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, ¶177. For example, the ITC observed that “[a] number of competitors, including some

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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, ¶178. 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 “[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

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projects, many of which were the subject of ‘years’ of effort, none ever ‘yielded fruit.’” *Id.* ¶191; Ex. 2001, ¶179.

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 pod products that were available.’” *Id.* ¶302. Internally, Altria referred to this project as “Project Mule.” *Id.*, ¶303; Ex. 2001, ¶180.

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, ¶181.

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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, ¶182.

Like its parent company Altria, Petitioners’ products prior to the release of the JUUL System were cig-a-like products. Ex. 2001, ¶183. 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.

X. Conclusion

For the reasons reviewed above, institution should be denied.

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Date: March 14, 2024

Respectfully submitted,

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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 13,947 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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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 March 14, 2024 by e-mailing copies to counsel for Petitioner at:

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