

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NJOY, LLC and NJOY HOLDINGS, INC.,
Petitioner,

v.

JUUL LABS, INC.,
Patent Owner.

IPR2024-00536
Patent 11,606,981 B2

Before CHRISTOPHER M. KAISER, KIMBERLY McGRAW, and
AVELYN M. ROSS, *Administrative Patent Judges*.

McGRAW, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

NJOY, LLC and NJOY Holdings, Inc. (collectively, “Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1, 2, 5, 8–11, and 13–18 of U.S. Patent No. 11,606,981 B2 (Ex. 1001, “the ’981 patent”). JUUL Labs, Inc. (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 6 (confidential); Paper 7 (redacted)¹ (“Prelim. Resp.”). With our authorization, Petitioner filed a Reply (Paper 12 (confidential); Paper 13 (redacted)), and Patent Owner filed a Sur-reply (Paper 15).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless the Director determines . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least [one] of the claims challenged in the petition.”

For the reasons set forth below, upon considering the Petition, Preliminary Response, and evidence of record, we determine that Petitioner has not established a reasonable likelihood of prevailing with respect to at least one challenged claim. Accordingly, we deny the Petition.

A. *Real Parties-in-Interest*

Petitioner identifies NJOY, LLC, NJOY Holdings, Inc. Altria Group, Inc., Altria Group Distribution Company, Altria Client Services LLC, and Shenzhen Smoore Technology Limited as real parties-in-interest. Pet. 1.

¹ In this Decision, we refer to the public, redacted versions of documents and exhibits.

Patent Owner identifies themselves as the real party-in-interest.

Paper 5, 2.

B. Related Proceedings

The parties identify *Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof*, 337-TA-1368 (ITC), and *JUUL Labs, Inc. v. NJOY, LLC et al.*, 23-cv-01204 (D. Ariz.) as related proceedings.

Pet. 1; Paper 5, 2.

Patent Owner further identifies IPR2024-00223 (U.S. Patent No. 10,709,173), IPR2024-00231 (U.S. Patent No. 10,130,123), and IPR2024-00267 (U.S. Patent No. 11,134,722 B2), as related matters. Paper 5, 2.

C. The '981 patent

The '981 patent, titled "Vaporizer," issued on March 21, 2023. Ex. 1001, code (45), (54). The '981 patent describes vaporizers, which may also be referred to as electronic cigarettes. *Id.* at 1:16–17.

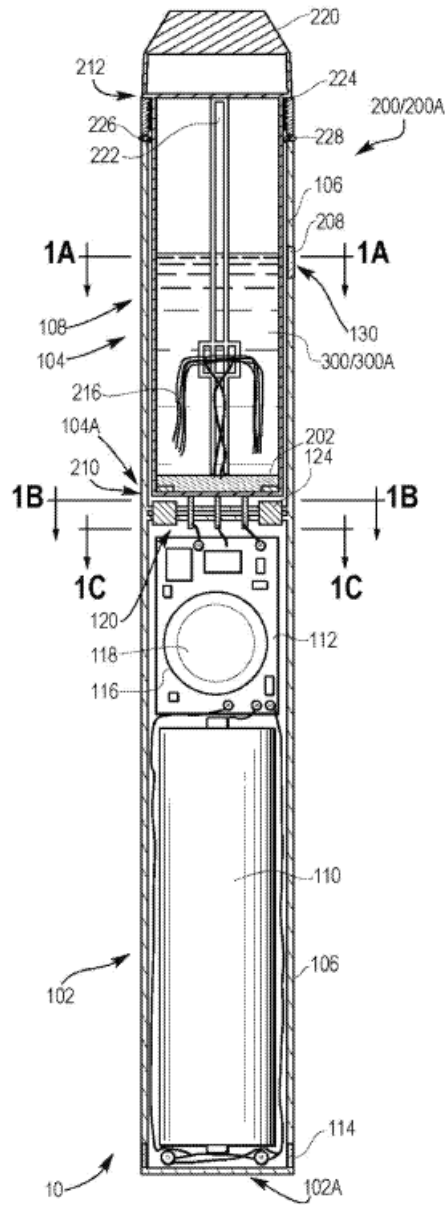


Figure 1 is a front sectional view of an electronic cigarette. *Id.* at 2:42–49.

Figure 1 shows electronic cigarette 10 with battery portion connecting to a cartomizer 200, to hold vaporizable substance 300. *Id.* at 5:63–65.

Electronic cigarette 10 includes battery housing segment 102 and second cartomizer receiving segment 104, which may commonly share outer shell 106. *Id.* at 5:65–6:2, 6:10–12. The '981 patent further describes cartomizer 200 that may be insertable into cartomizer chamber 108. *Id.* at 6:13–15.

Battery 110 may provide electrical power, and may be a disposable type or a rechargeable type. *Id.* at 6:19–27.

The '981 patent includes printed circuit board (PCB) 112 to control one or more functions of electronic cigarette 10. *Id.* at 6:30–32. According to the '981 patent, electrical connector 120 may provide an electrical connection between PCB 112 and cartomizer 200, such as via a plurality of pogo pins 120. *Id.* at 7:52–55. The '981 patent states that “[e]ach pogo pin 122 may be connected to PCB 112, which may control current outputted to pogo pins 122,” such as by intermittently activating current flow to connector 120, which regulates the activation of a heating element in cartomizer 200. *Id.* at 7:63–8:1. In addition, chamber 108 may include at least one magnet 124 to secure and align cartomizer 200 within cartomizer chamber 108. *Id.* at 8:42–44. Cartomizer 200 may in turn include magnet 202 of opposing polarity. *Id.* at 8:44–48.

Electronic cigarette 10 further includes heating element 214 and wicking element 216 to vaporize fluid 300A. *Id.* at 8:61–63. Once fluid 300A has been vaporized, it may be inhaled through mouthpiece 220 provided in body 208 at mouthpiece end 212. *Id.* at 9:67–10:3. For instance, the vaporized fluid may travel through inhalation tube 222. *Id.* at 10:3–5.

Figure 8 of the '981 patent is reproduced below.

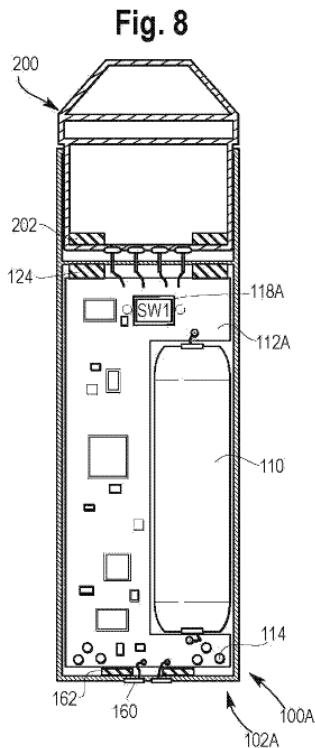


Figure 8 depicts a front sectional view of an electronic cigarette. *Id.* at 3:13–18. Figure 8 shows an embodiment of electronic cigarette 10 having battery portion 100A to receive cartomizer 200. *Id.* at 12:45–48. Electronic cigarette 10 may include magnets 124/202 to retain cartomizer 200. *Id.* at 12:54–56.

Figure 9, which is reproduced below, depicts electronic cigarette 10 with battery charger 400A. *Id.* at 12:59–62.

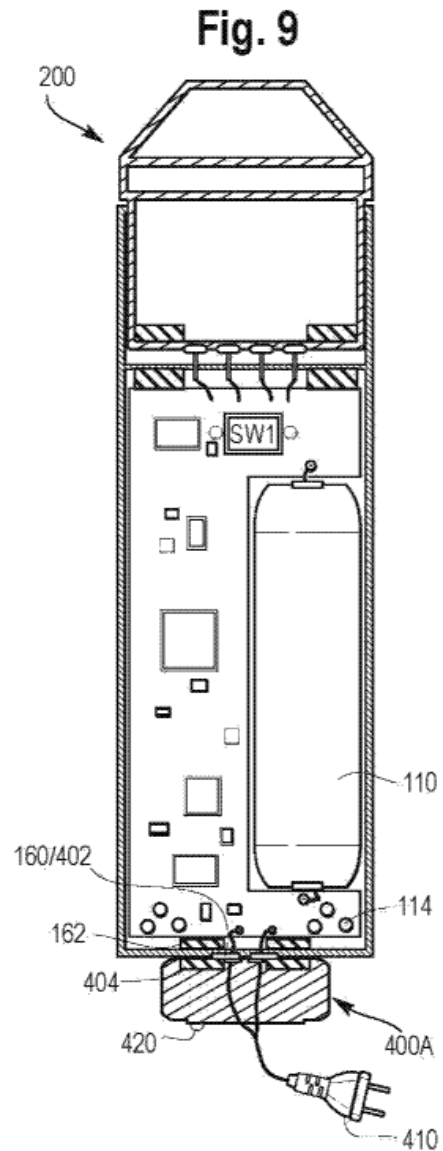


Figure 9 shows an electronic cigarette with a charger attached. *Id.* at 3:18–22. Battery charger 400A has charging contacts 402 that may be attached or connected to charging contacts 160 on outer shell 106. *Id.* at 12:59–62. The '981 patent states that “[i]n one embodiment, charging contacts 160 are positioned at or proximate to battery end 102A.” *Id.* at 12:62–63. According to the '981 patent, one or more magnets 162 may be provided to secure charging contacts 160 and 402 together. *Id.* at 12:65–13:1.

D. Illustrative Claim

Petitioner challenges claims 1, 2, 5, 8–11, and 13–18 of the '981 patent. Pet. 2–4. Independent claims 1, 9, 13, and 17 are the independent claims challenged. Claim 1 is representative and is reproduced with formatting and bracketed material added.²

[1.A] A vaporizer device comprising:

[1.B] a battery portion having an outer shell and a chamber defined by the outer shell; and

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

[1.D] a cartomizer body having a volume defined therein, the volume configured to hold a fluid vaporizable substance, [1.E] wherein at least a portion of the cartomizer body comprises a translucent material configured to allow viewing of the fluid vaporizable substance, [1.F] wherein the cartomizer body is configured for insertion into the chamber such that at least part of the volume is positioned in the chamber when the cartomizer body is inserted into the chamber;

[1.G] a heating element and a wicking element within the cartomizer body;

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

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

[1.J] a plurality of cartomizer electrical contacts on an exterior of the insertion end, [1.K] wherein the plurality of cartomizer electrical contacts is positioned to contact a plurality of battery electrical contacts at a base end of the

² For convenience, we adopt Petitioner's annotated claim format.

chamber when the cartomizer body is inserted into the chamber.

Ex. 1001, 18:10–37.

E. The Asserted Unpatentability Challenges

Petitioner asserts that claims 1, 2, 5, 8–11, and 13–18 would have been unpatentable based on the following grounds:

Claim(s) Challenged	35 U.S.C. § ³	Reference(s)/Basis
1, 2, 5, 13–16	103	Liu783 ⁴ and Liu438 ⁵
9–11, 17, 18	103	Liu783, Liu438, Tucker ⁶
8	103	Liu783, Liu438, Zheng ⁷
1, 2, 13–16	103	Thorens788 ⁸ , Thorens231 ⁹
5	103	Thorens788, Thorens231, Levin ¹⁰

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103, effective Mar. 16, 2013. Because applications from which the ’981 patent claims priority were filed after this date, the AIA version of § 103 applies.

⁴ Liu, U.S. Patent App. Pub. No. 2014/0150783 A1, published June 5, 2014 (Ex. 1013, “Liu ’783”).

⁵ Liu, U.S. Patent App. Pub. No. 2013/0319438 A1, published Dec. 5, 2013 (Liu ’438”).

⁶ Tucker et al., U.S. Patent Pub. No. 2013/0192623 A1, published Aug. 1, 2013 (Ex. 1034, “Tucker”).

⁷ Zheng, et al., U.S. Patent No. 9,060,548 B2, issued June 23, 2015 (Ex. 1050, “Zheng”).

⁸ Thorens et al., WO 2011/160788 A1, published Dec. 29, 2011 (Ex. 1004, “Thorens788”).

⁹ Thorens et al., U.S. Patent No. 8,794,231 B2, issued Aug. 5, 2014 (Ex. 1002, “Thorens231”).

¹⁰ Levin, et al., U.S. Patent No. 9,427,022 B2, issued Aug. 30, 2016 (Ex. 1003, “Levin”).

Claim(s) Challenged	35 U.S.C. § ³	Reference(s)/Basis
9–11, 13–16	103	Thorens788, Thorens231, Tucker
8	103	Thorens788, Thorens231, Zheng

Pet. 2–4. Petitioner also relies on declaration testimony of Jason Janet, Ph.D. (Ex. 1005). Patent Owner relies on declaration testimony of John Collins, Ph.D (Ex. 2001¹¹).

II. ANALYSIS

A. Principles of Law

“In an IPR [(*inter partes* review)], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to the patent owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review). Furthermore, a petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Obviousness is a question of law based on underlying determinations of fact. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966); *Richardson-Vicks, Inc. v. Upjohn Co.*, 122 F.3d 1476, 1479 (Fed. Cir. 1997). A claim is

¹¹ Patent Owner filed both a confidential and a public version of Ex. 2001. The citations in this decision are to the public version.

unpatentable as obvious, under 35 U.S.C. § 103, if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time of the invention to a person having ordinary skill in the art. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham*, 383 U.S. at 17–18. Consideration of the *Graham* factors “helps inform the ultimate obviousness determination.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc). To prevail in an *inter partes* review, Petitioner must explain how the proposed combinations of prior art would have rendered the challenged claims unpatentable. Subsumed within the *Graham* factors are the requirements that all claim limitations be found in the prior art references and that the skilled artisan would have had a reasonable expectation of success in combining the prior art references to achieve the claimed invention. *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007). “Obviousness does not require absolute predictability of success . . . all that is required is a reasonable expectation of success.” *In re O’Farrell*, 853 F.2d 894, 903–04 (Fed. Cir. 1988) (citations omitted).

At this preliminary stage, we determine whether the information presented shows a reasonable likelihood that Petitioner would prevail in establishing that at least one of the challenged claims would have been obvious over the proposed prior art.

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of the invention (“POSITA” or “POSA”). *Graham*, 383 U.S. at 17.

Petitioner contends that a person of ordinary skill in the art “would have 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 such POSA would have been familiar with electrically powered vaporizing articles, their components, or the underlying technologies.” Pet. 6–7.

Patent Owner argues that a person of ordinary skill in the art “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,” and that “[m]ore education can substitute for practical experience and vice versa.” Prelim. Resp. 8 (citing Ex. 2001 ¶¶ 17–22).

In light of the record before us, and for purposes of this Decision, we adopt Petitioner’s proposal regarding the level of ordinary skill in the art. Based on our review of the ’981 patent and the prior art of record, we determine that the definition offered by Petitioner comports with the qualifications a person would have needed to understand the ’981 patent and the prior art. However, our decision would not change if we applied Patent Owner’s definition.

C. Claim Construction

We interpret claim terms using “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b). In this context, claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (citations omitted) (en banc).

Petitioner proposes construction of three terms: “wicking element,” “heating element,” and “window.” Pet. 7–8. Petitioner states that “[s]olely for purposes of this Petition, Petitioner has adopted Patent Owner’s construction[s]” for the above terms in the related Section 337 Investigation. Pet. at 7 (citing Ex. 1049). Specifically, Petitioner proposes that “wicking element” “means ‘any material through which liquid may be drawn via capillary action’” *Id.* (citing Ex. 1049, 3). Petitioner also contends that “heating element” means a “conductive material shaped into a wire, coil, or flat ribbon that generates heat in response to current.” Pet. 8 (citing Ex. 1049, 3). And lastly, Petitioner asserts that “the term ‘window’ should be construed as an ‘opening or slit on or proximate to the shell through which the cartomizer is viewed.’” *Id.* (citing Ex. 1049, 4).

Patent Owner states that it agrees with Petitioner’s proposed constructions. Prelim. Resp. 9 (citing Ex. 2001 ¶¶ 63–68).

None of the constructions proffered by Petitioner is dispositive of the issue of whether to institute *inter partes* review. We determine that it is not necessary to provide an express construction for any term. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding

that “only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

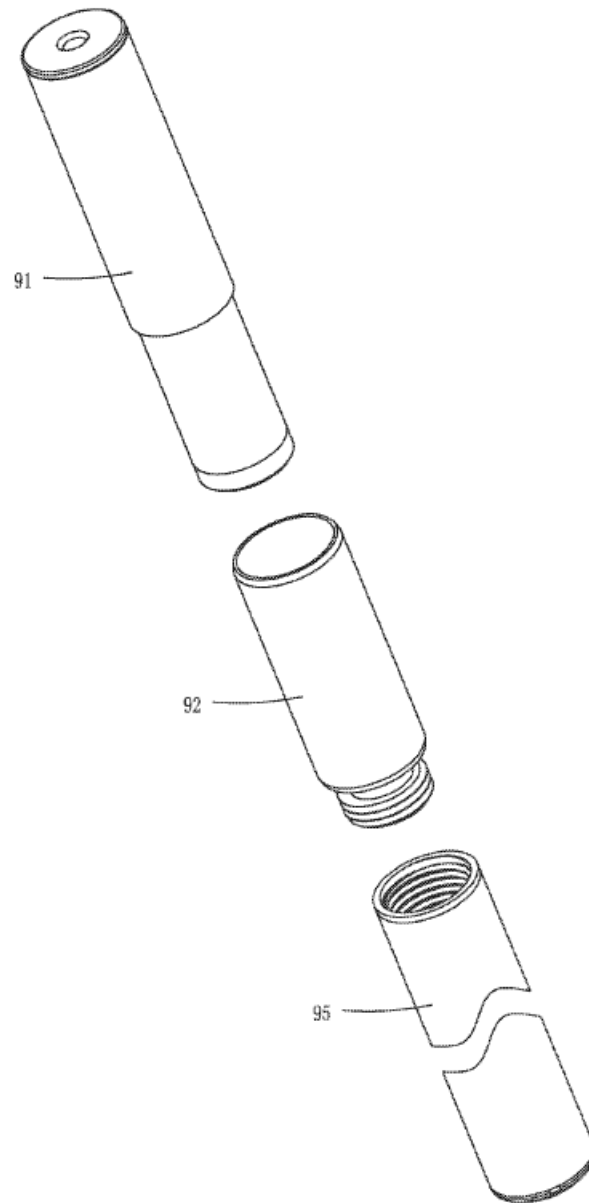
D. Challenge based on Liu783 and Liu438 (Ground 1), with Tucker (Ground 2) or Zheng (Ground 3)

Petitioner alleges that claims 1, 2, 5, and 13–16 of the ’981 patent would have been obvious over the combination of Liu783 and Liu438. Pet. 20–46. Petitioner also alleges that claims 9–11 and 17–18 would have been obvious over Liu783, Liu438, and Tucker and that claim 8 would have been obvious over Liu783, Liu438, and Zheng. Pet. 46–68. Petitioner relies on the testimony of Dr. Janet to support its arguments. *See id.*

1. Overview of the Prior Art

a) Liu783 (Ex. 1010)

Liu783 is titled “Electronic Cigarette Having a Connector for Magnetic Connection.” Ex. 1010, code (54). Liu783 seeks “to provide an electronic cigarette having a connector for magnetic connection, to decrease manufacture and use cost of the electronic cigarette, and facilitate the installation, detachment and replacement of the electronic cigarette.” *Id.* ¶ 3. Liu783’s Figure 2 is reproduced below.



Liu783 Figure 2 is an exploded view of the electronic cigarette, showing atomizer 91, connector 92, and power rod 95. *Id.* ¶ 30. Connector 92 is located between atomizer 91 and power rod 95, for transporting the electricity of the power rod 95 to the atomizer 91. *Id.*

Liu783 s Figure 3, reproduced below, is a cross-sectional view of the electronic cigarette.

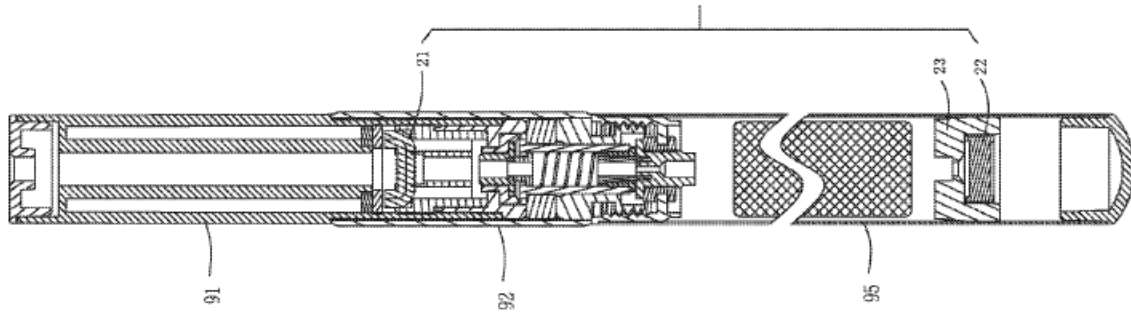


Figure 3 shows, beyond what is identified in Figure 2, above, atomizing mechanism 21, a control board 22 and aboard bracket 23 for accommodating and fixing the control board 22. *Id.* ¶ 33.

Liu783's Figure 5 shows a cross-sectional view of the atomizer of the electronic cigarette, and is reproduced below.

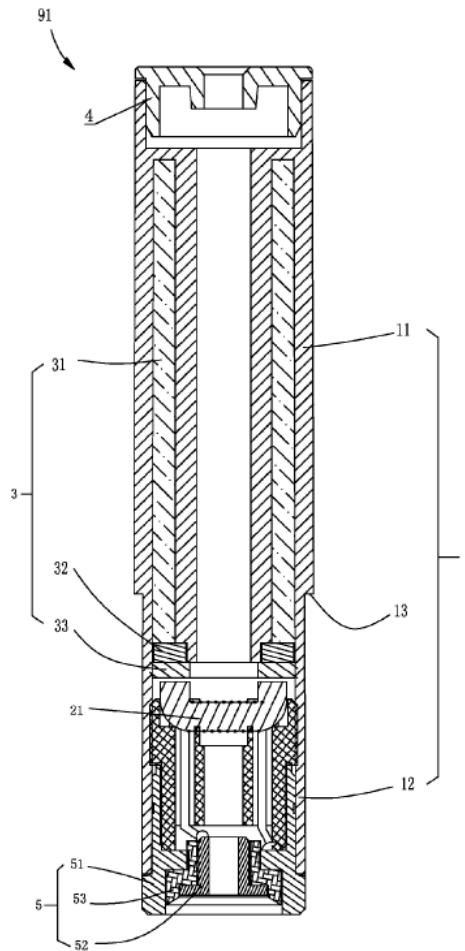


Figure 5 shows sucking cylinder 1, which includes main portion 11, inserting portion 12, inserted into connector 92 (see Fig. 3), and a restraining step 13 between the main portion 11 and the inserting portion 12. *Id.* ¶ 31.

b) Liu438 (Ex. 1013)

Liu438 is titled “Electronic Cigarette and its Sucking Rod.” Ex. 1013, code (54).

Liu438 discloses an electronic cigarette, which comprises an electronic cigarette sucking rod 90 and a power rod 91. *Id.* ¶ 43. Liu438 further discloses that the electronic cigarette sucking rod 90 “comprises a sucking cylinder 1, an atomizing device 2, a liquid guiding component 3 including a liquid separation seat 31 and a liquid reservoir 32, a nozzle cover 4, a conduit 5 and a decorative sleeve 6.” *Id.* ¶ 44. Liu438 further discloses that “sucking cylinder 1 is a wholly transparent shell or at least partially transparent, or at least a portion thereof where the liquid smoke compartment 11 is configured is transparent, to facilitate to observe the amount of the liquid smoke in the liquid smoke compartment 11.” *Id.* ¶ 46.

c) Tucker (Ex. 1034)

Tucker is titled “Electronic Cigarette.” Ex. 1034, code (54). Tucker’s Figure 10 is reproduced below.

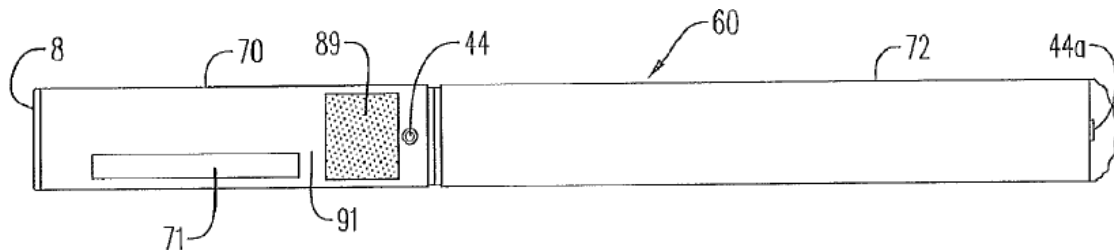


Figure 10 is a top view of an electronic cigarette including an aroma strip on an outer surface thereof. *Id.* ¶ 12. Figure 10 illustrates that the outer tube of the electronic cigarette can include a clear (transparent) window 71,

formed of a transparent material, so as to allow a smoker to see the amount of liquid material remaining in the liquid supply reservoir. *Id.* ¶ 38.

d) *Zheng (Ex. 1050)*

Zheng is titled “Fast Connector of Electronic Cigarette.” Ex. 1050, code (54). Zheng’s Figure 2 is reproduced below.

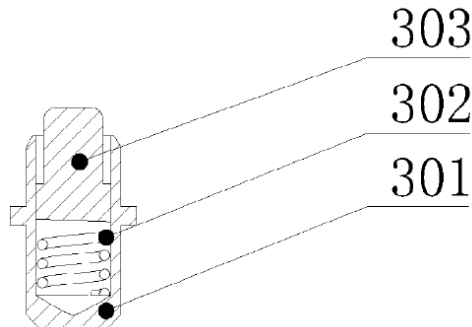


Figure shows a side-view of a “battery column,” a pair of which are welded to a battery adapter plate, to create conductive paths from the battery to a vaporizer. *Id.* at 2:55–67. The battery column consists of a bottom shell 301, with a hollow cavity whose opening faces up, a spring 302 inside the hollow cavity, and a movable probing head 303 at the opening of the hollow cavity. *Id.* at 3:7–14.

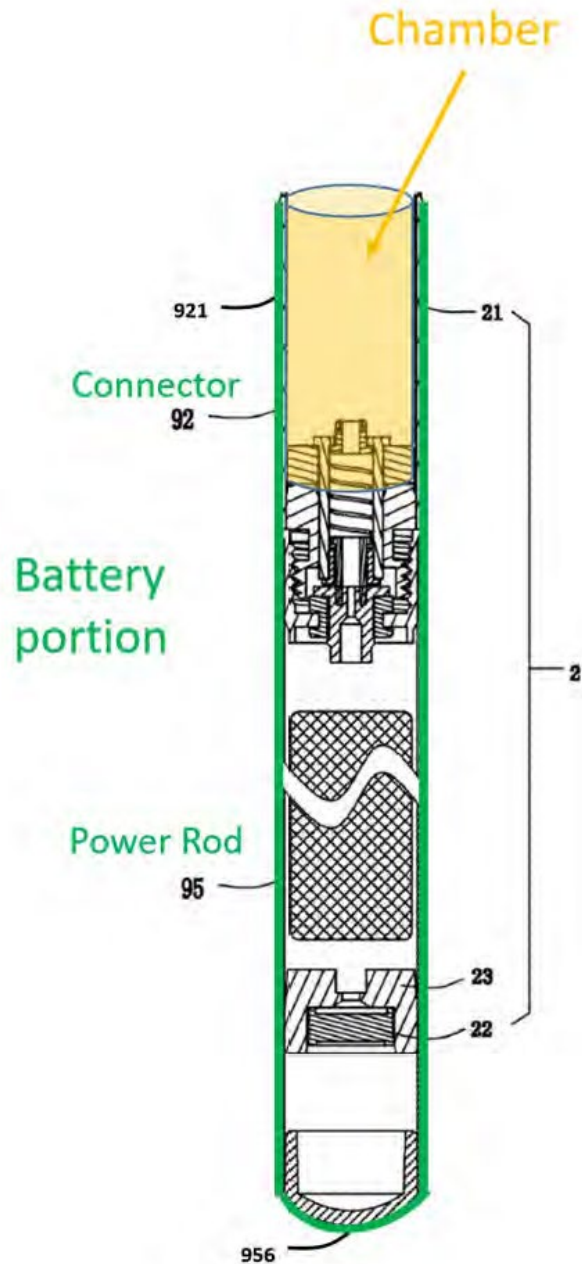
2. *Claim 1*

a) *The Parties’ Contentions*

In general, claim 1 is directed to a vaporizer device comprising (1) a battery portion and (2) a cartomizer portion. Ex. 1001, 18:10–37. The claim further requires, *inter alia*, that the battery portion have an outer shell and a chamber defined by the outer shell. *Id.* at 18:11–12 (claim element [1.B]). The also requires that the cartomizer have a cartomizer body, at least a portion of which “comprises a translucent material.” *Id.* at 18:16–24 (claim element [1.E]).

Petitioner asserts that claim 1 would have been obvious over the combination of Liu783 and Liu438. Pet. 2, 20–41. Petitioner asserts that Liu783 discloses, *inter alia*, a vaporizing device comprised of three portions, namely (1) a battery component (i.e., power rod 95), (2) a cartomizer component (atomizer 91), and (3) a connector for connecting the two (i.e., connector 92). *See, e.g.*, Pet. 22, 25–28. Petitioner relies on Liu438 for disclosing the transparent liquid cartridge. Pet. 20, 30–31 (citing Ex. 1013 ¶ 46; Ex. 1005 ¶ 348).

With respect to claim element [1.B], Petitioner asserts that the combination of Liu783's power rod 95 and connector 92 teaches the limitation requiring a battery portion having an outer shell and a chamber defined by the outer shell. Pet. 26–28. Petitioner provides an annotated image depicting Liu783's power rod and connector.



The figure above is Petitioner’s color-annotated depiction of Liu783’s power rod and connector combined. Pet. 27.

Petitioner further states that, to the extent Liu783’s battery component (power rod 95) and connector (connector 92) “do not share a common housing or shell because they are two pieces, it would have been within the

knowledge of a POSA to integrate the battery component with the connector.” Pet. 22; *see also* Pet. 28 (citing Pet. § IX.A.1 (pp. 20–25)).

To support its argument that a POSITA would have been motivated combine Liu783’s battery housing with the connector, Petitioner asserts that the prior art is “replete with teachings” that an e-cigarette device connector can be integrally formed with the battery portion. Pet. 22–23 (citing Ex. 1005 ¶ 332; Ex. 1035 ¶ 92; Ex. 1022 ¶ 46; Ex. 1036, 3:46–49). Petitioner further asserts that a POSITA would have been motivated to adapt Liu783 to include an integrated batter/connector component (1) to reduce components and therefore the complexity and expense of manufacturing the device, (2) as a matter of design choice as whether a connector is a separate component or integrated with the battery component is one of a finite number of options, (3) integrating the connector with the battery would be beneficial to consumer as they would have fewer pieces to assemble and misplace, (4) by integrating the connector with the battery component, there is less possibility that the consumer damages the device during assembly/disassembly, because removing the connector exposes the battery electrodes that would otherwise be protected in an integrated component. Pet. 23–24 (citing Ex. 1005 ¶¶ 332–333). Petitioner further asserts that a POSITA would have had a reasonable expectation of success in making the modification because the connector is simply an extension of the battery component and integrating the connector would not interfere with the operation of the battery component or the connector. Pet. 24 (citing Ex. 1010 ¶ 19; Ex. 1005 ¶ 334). Finally, Petitioner asserts that it was well-known and common practice for the battery component to connect director to the atomizer and that another patent application listing the same inventors

as Liu783 discloses a one piece power shell 91 having a battery and a chamber for receiving the cartomizer (inhaling shell 90). Pet. 24 (citing Ex.1025 ¶ 28).

Petitioner also asserts Liu783's atomizer 19 is a cartomizer having a mouthpiece end (nozzle cover 4) and an opposite insertion end as required by claim element [1.C]. Pet. 28–29 (citing Ex. 1010 ¶¶ 4, 30–31, 44). Petitioner also states Liu783's atomizer 91 (cartomizer) has cylinder 1, comprising liquid smoke cup 3 having cup tube 31 for storing liquid, which discloses a cartomizer having a volume configured to hold a fluid vaporizable substance as required by claim element [1.D]. Pet. 29–30 (citing Ex. 1010 ¶¶ 31, 35). Petitioner relies on the combination of Liu783 and Liu438 for teaching a portion of the cartomizer body comprising a translucent material configured to allow viewing of the fluid vaporizable substance recited in claim element [1.E]. Pet. 30–31 (citing Ex. 1005 ¶ 348). Petitioner asserts that it would have been obvious to modify Liu783's sucking cylinder 1 to include a translucent material in order to view the remaining liquid. *Id.* Petitioner further asserts that Liu783's atomizer 91 is configured to be inserted into the chamber of connector 92 such that a portion of liquid smoke cup 3 is positioned within the chamber of connector 92, thus meeting the limitations recited in claim element [1.F]. Pet. 31–32 (citing Ex. 1010, Fig. 3). Petitioner asserts that Liu783's heating wire 211, fiber member 212, and vent of cylinder meet the heating element, wicking element, and inhalation tube recited in claim elements [1.G–1.H]. Pet. 32–35 (citing Ex. 1005 ¶¶ 352–356; Ex. 1010 ¶¶ 15, 31, 34–35, 44, Fig. 5). Liu783's mouthpiece (nozzle cover 4) is in fluid communication with the

inhalation tube (vent of sucking cylinder 1). Pet. 35–36 (citing Ex. 1005 ¶¶ 360–362; Ex. 1010 ¶ 44).

Petitioner also asserts that Liu783’s first seat 51 and first pole 52 are the cartomizer electrical contacts recited in claim element [1.J] and Liu783’s second pole 622 and conductive portion of casing 921 are the battery electrical contacts at the base end of the chamber as recited in claim element [1.K]. Pet. 38–40 (citing Ex. 1010 ¶¶ 18, 42). Petitioner relies on its arguments for claim 1 for the corresponding limitations of claim 13. Pet. 43–44.

Patent Owner, at this time, does not challenge many of Petitioner’s allegations regarding the teachings of Liu783 and Liu438. *See generally* Prelim. Resp. Patent Owner argues, however, that Petitioner has not shown that (1) Liu783 discloses or suggests a “battery portion having an outer shell and a chamber defined by the outer shell” as recited in independent claims 1 and 13 and (2) Liu783 does not disclose cartomizer electrical contacts at the base of the chamber as recited in claim 1. Prelim. Resp. 11–24.

Because we agree that Petitioner has failed to show that the reference teach or suggest a battery portion having an outer shell and a chamber defined by the outer shell, and has failed to establish that a reason to modify the references to arrive at this limitation with a reasonable expectation of success exists, our discussion below focuses on these issues.

b) Whether Petitioner has sufficiently shown Liu783 discloses a “battery portion having an outer shell and a chamber defined by the outer shell”?

Patent Owner responds that Liu783 does not disclose a “battery portion having an outer shell and a chamber defined by the outer shell” as required by claim element [1.B] because the chamber identified by Petitioner

is located in Liu783's connector 92, which is separate from power rod 95, the asserted battery portion. Prelim. Resp. 12.

We agree with Patent Owner. The claim language requires that the outer shell be part of the battery portion and that it is the *outer shell of the battery portion* that defines the chamber. In Liu783, however, the outer shell identified by Petitioner, is part of connector 92, not the asserted battery portion (power rod 95). Accordingly, Liu783 does not disclose this limitation.

c) Whether Petitioner has sufficiently shown a reason to modify Liu783 with a reasonable expectation of success?

Patent Owner also asserts that Petitioner does not articulate a sufficient motivation for a POSITA to modify Liu783's three-piece device to provide a two-piece device in which the connector (connector 92) is combined with the battery portion (power rod 95). Prelim. Resp. 20–22 (citing Ex. 2001 ¶¶ 75–80). Patent Owner asserts that Petitioner's contentions—that (1) providing a connector as a separate component or integrated with the battery component is a matter of design choice, (2) that integrating the connector would result in less possibility of consumer damage, and (3) a two-piece device is more beneficial to the consumer—are conclusory and unsupported. *Id.* at 20–21 (citing Ex. 1036; Ex. 2001 ¶¶ 75–78; Ex. 1010 ¶¶ 3, 19). Patent Owner further asserts that Petitioner oversimplified both its simple “design choice” and “reasonable expectation of success” analysis by failing to consider the different technical considerations that go into designing connections between components of electronic nicotine delivery system devices, including airflow, electrical and

physical connections, and heat dynamics. Pet. 20, 21 (citing Ex. 2001 ¶¶ 76, 79).

On this record, we agree with Patent Owner that Petitioner has not sufficiently shown that a POSITA would have had a reason to modify Liu783's three-piece design to a two-piece design by integrating Liu783's connector with its battery portion with a reasonable expectation of success.

Petitioner states that a POSITA would have been motivated to integrate Liu783's connector with its battery component in order to decrease the possibility of damage to the device during assembly/disassembly. Pet. 23. Petitioner, however, does not provide any evidence that such damage was a point of concern. *See generally* Pet. Nor does Petitioner sufficiently explain how the integrated battery component/connector would result in less damage. *See id.* (failing to quantify the alleged benefit nor providing any evidence to support its contention that an integrated connector/battery component would decrease damage to the device). Nor does Petitioner sufficiently support its contention that the modified Liu783 device would be more beneficial to the consumer because there are fewer pieces to assemble or misplace. *See id.* Indeed, Petitioner's argument runs directly counter to Liu783's own disclosure which asserts that its three-piece design is more convenient than the previous two-piece design. *See, e.g.,* Ex. 1005 ¶ 19 (stating "assembly and detachment of the atomizer and the connector become very convenient"), ¶ 3 (stating an "object of the present invention is to . . . facilitate the installation, detachment, and replacement of the electronic cigarette). Similarly, Petitioner does not sufficiently support its contention that integrating the components would reduce the complexity and expense of manufacturing the device (Pet. 23), which is counter to

Liu783’s statement that the object of its invention is to “decrease manufacture and use cost” (Ex. 1010 ¶ 3). Conclusory statements by an expert that do not disclose the underlying facts or data on which the opinion is based are entitled to little or no weight. 37 C.F.R. § 42.65(a).

Petitioner also states that “it would have been within the knowledge of a POSA to integrate the battery component with the connector” and that doing so was a design choice. Pet. 22–23 (citing Ex. 1005 ¶ 332; Ex. 1035 ¶ 92; Ex. 1022 ¶ 46; Ex. 1036, 3:46–49). We are not persuaded by Petitioner’s argument on the present record. Liu783 itself discusses the advantages and disadvantages of three-piece versus two-piece e-cigarette designs. Ex. 1010 ¶¶ 2–3. As such, we disagree that providing a two-piece e-cigarette instead of a three-piece cigarette is merely a design choice.

Therefore, we determine that, on the record currently before us, Petitioner has not sufficiently shown that the assert art teaches or suggest a battery portion having an outer shell and a chamber fined by the outer shell as required by claim 1 or articulated a reason why a person of ordinary skill in the art would have modified the art to arrive at this limitation. Accordingly, Petitioner has not established a reasonable likelihood that claim 1 would have been obvious over the combination of Liu783 and Liu438.¹²

3. *Remaining Claims 2, 5, 8–11, 13–18*

As noted above, Petitioner also asserts that claims 2, 5, and 13–16 would have been obvious over the combination of Liu783 and Liu438

¹² Because we determine Petitioner did not sufficiently show claim 1 would have been obvious for the reasons stated above, we need not, and do not, address Patent Owner’s remaining arguments regarding claim 1. *See, e.g.*, Prelim. Resp. 22–24.

(Ground 1); that claims 9–11 and 17–18 would have been obvious over Liu783, Liu438, and Tucker (Ground 2); and that claim 8 would have been obvious over Liu783, Liu438, and Zheng (Ground 3). Pet. 2–3, 41–68. Independent claims 9, 13, and 17, as well as claims 2, 5, 8, 14–16, and 18, recite limitations the same or similar to those disclosed above for claim 1. See Ex. 1001, 18:38–20:57. Petitioner’s arguments directed to these claims do not cure the deficiencies discussed above. Accordingly, Petitioner also fails to establish a reasonable likelihood of prevailing on its assertions that claims 2, 5, 8–11, and 13–18 would have been obvious over the combination of Liu783 and Liu438 with or without the addition of Tucker or Zheng.¹³

E. Challenge based on Thorens788 and Thorens231 (Ground 4)

Petitioner alleges that claims 1, 2, and 13–16 of the ’981 patent would have been obvious over the combination of Thorens788 and Thorens231. Pet. 68–94. Petitioner cites to declaration testimony of Dr. Janet to support its arguments. *Id.*

1. Overview of the Prior Art

a) Thorens788 (Ex. 1004)

Thorens788 is titled “An Improved Aerosol Generator and Liquid Storage Portion for Use With the Aerosol Generator.” Ex. 1004, code (54). Thorens788’s Figure 1 is reproduced below.

¹³ Because we determine Petitioner did not sufficiently show claims 2, 5, 8–11, and 17–18 would have been obvious for the reasons stated above, we need not, and do not, address Patent Owner’s additional arguments directed to these claims. See, e.g., Prelim. Resp. 24–37.

Figure 1

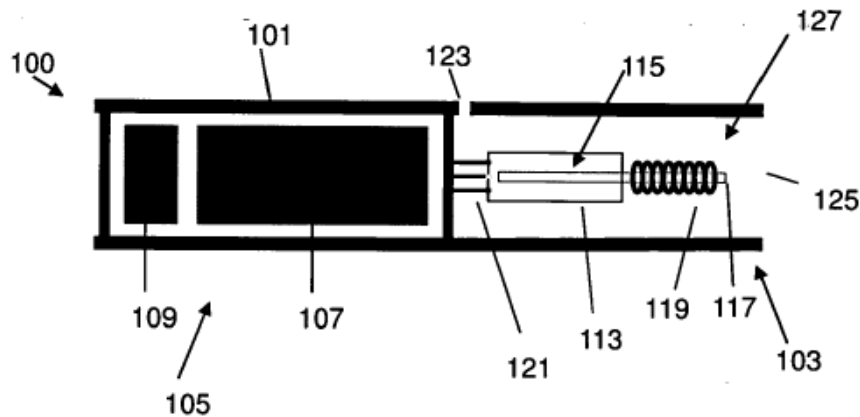


Figure 1 illustrates an aerosol generator. *Id.* at 11:15–16. Thorens788 describes aerosol generating system 100 that includes housing 101 having mouthpiece end 103 and body end 105, which includes battery 107 and circuitry 109. *Id.* at 12:6–11. Mouthpiece end 103 can include a liquid storage portion 113 further containing liquid 115, capillary wick 117, and a heating element in the form of heating coil 119 that is connected to electrical circuitry via connections 121. *Id.* at 12:12–17. Housing 101 can also include air inlet 123, air outlet 125 at mouthpiece end 103, and aerosol forming chamber 127. *Id.* at 12:17–18.

Thorens788's Figure 2 is reproduced below.

Figure 2

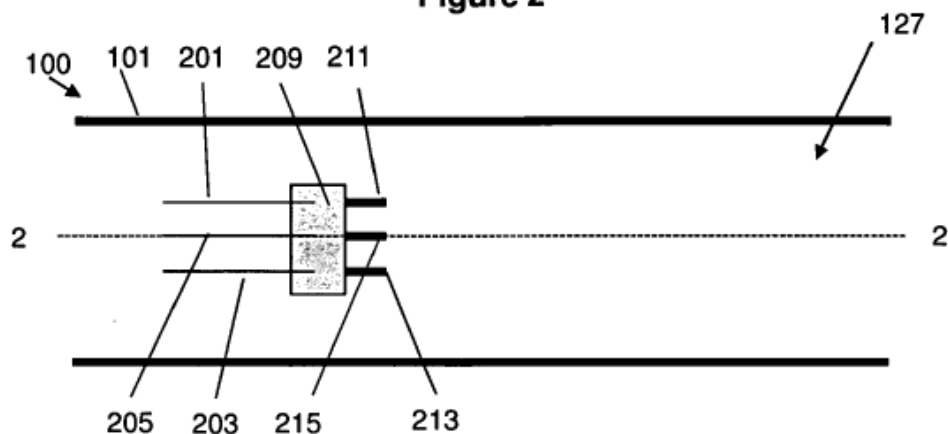


Figure 2 shows an enlarged portion of Figure 1 with liquid storage portion 113 removed. *Id.* at 11:17, 13:13–14. As indicated in Figure 2, first electrically conductive element 201 is electrically connected to first electrical connector 211, second electrically conductive element 203 is electrically connected to second electrical connector 213, and third electrically conductive element 205 is electrically connected to third electrical connector 215. *Id.* at 13:19–23. Electrically conductive elements 201, 203, 205 are electrically connected to circuitry 109 so that electrical signals may pass between circuitry 109 and liquid storage portion 113. *Id.* at 13:23–27. In addition, electrically conductive elements 201, 203, 205 are electrically connected to controller or processor 309. *Id.* at 13:27–28.

Thorens788's Figure 3 is reproduced below.

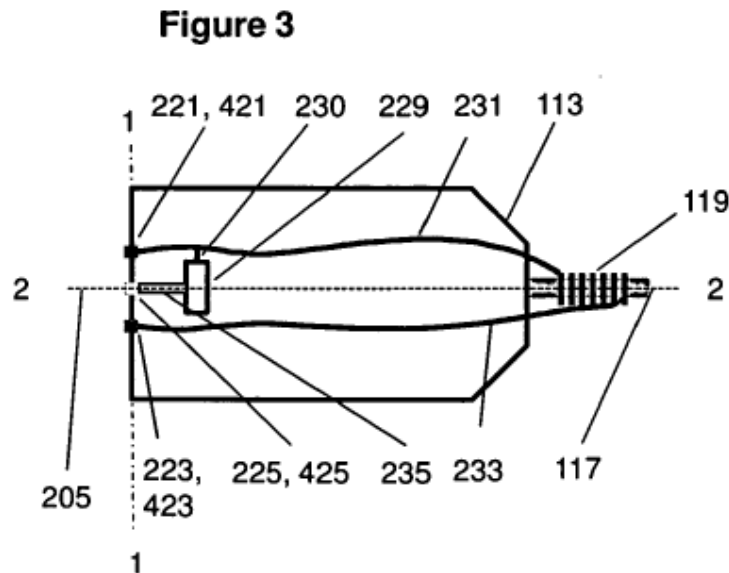


Figure 3 is a sectional view of a liquid storage portion. *Id.* at 11:18. As shown in Figure 3, liquid storage portion 113 includes “first, second and third electrical contacts 221 or 421, 223 or 423, 225 or 425 at a first end.” *Id.* at 14:5–8. The electrical contacts and electrically conductive portions

“allow electrical energy to be supplied to the heating element 119 from a battery or other power source [107].” *Id.* at 14:14–18.

Thorens788’s Figure 4 is reproduced below.

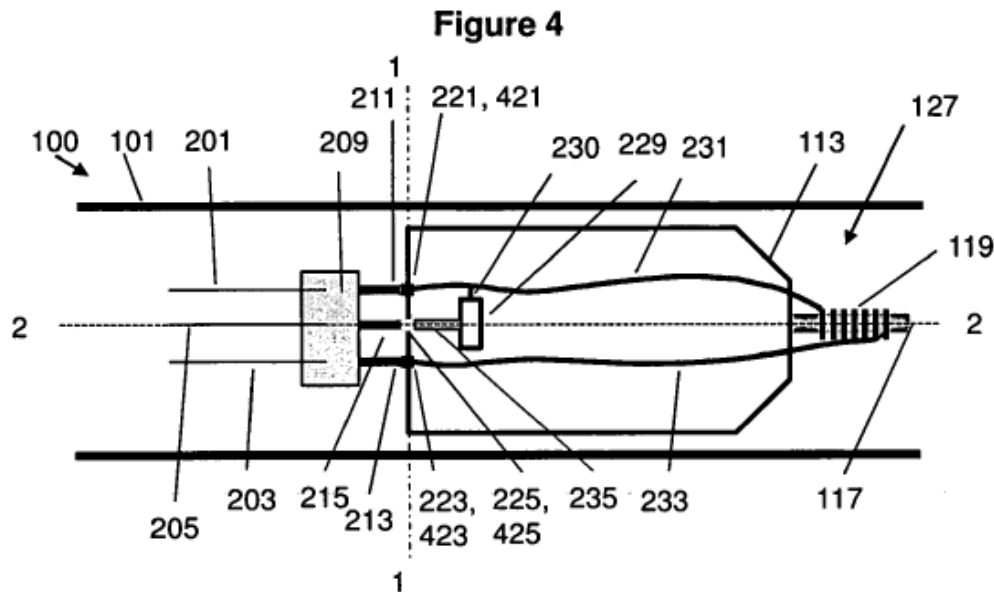


Figure 4 is a sectional view of the liquid storage portion 113 of Figure 3 inserted into the generating system 100 of Figure 2. *Id.* at 11:19–20; 15:15–16. When the liquid storage portion is inserted into the aerosol generating system, “electrical contacts 221, 223 on the liquid storage portion and two electrical contacts 211, 213 on the aerosol generating system 100 allow electrical energy to be transmitted to the heating element 119.” *Id.* at 15:5–7. In addition, “an electrical contact 225 on the liquid storage portion 113 and an electrical contact 215 on the aerosol generating system 100 allow electrical signals to be exchanged between the liquid storage portion 113 and the aerosol generating system 100.” *Id.* at 15:8–10.

b) *Thorens231 (Ex. 1002)*

Thorens231 is titled “Electrically Heated Smoking System Having a Liquid Storage Portion” and describes an electrically heated smoking system for receiving an aerosol-forming substrate. Ex. 1002, code (54), 1:14–15.

Figure 1 is reproduced below.

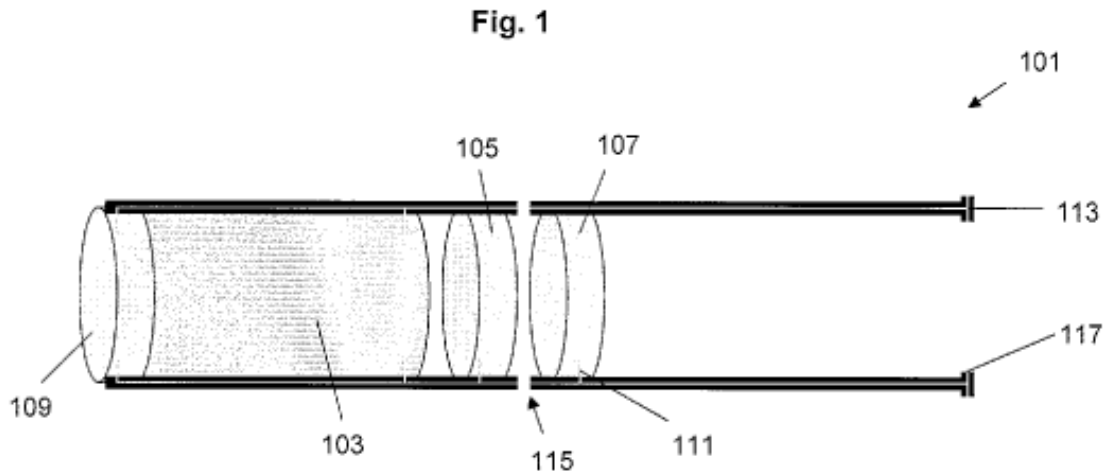


Figure 1 depicts the shell of an electrically heated smoking system. *Id.* at 6:23–24. Shell 101 includes battery 103, circuitry 105, puff detection system 107, puff indicator 109, electrical connections 111, electrical contacts 113, air inlets 115, and lock mechanism 117. *Id.* at 6:34–40. Shell 101 is designed to releasably engage with mouthpiece 201, which is shown in Figure 2. *Id.* at 6:40–41. Figure 2 is reproduced below.

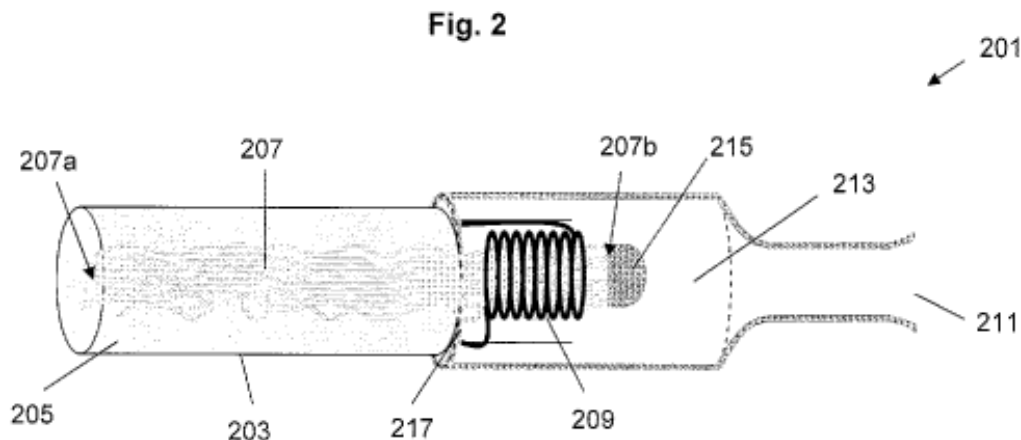


Figure 2 depicts the mouthpiece of an electrically heated smoking system. *Id.* at 6:25–26. Mouthpiece 201 includes cartridge 203 containing liquid 205, capillary wick 207, heating coil 209, air outlet 211, and aerosol forming chamber 213. *Id.* at 6:44–47. The first end 207a of capillary wick 207 extends into cartridge 203 and second end 207b of capillary wick 207 is surrounded by heating coil 209. *Id.* at 6:47–50.

Thorens231's Figure 3 is reproduced below.

Fig. 3

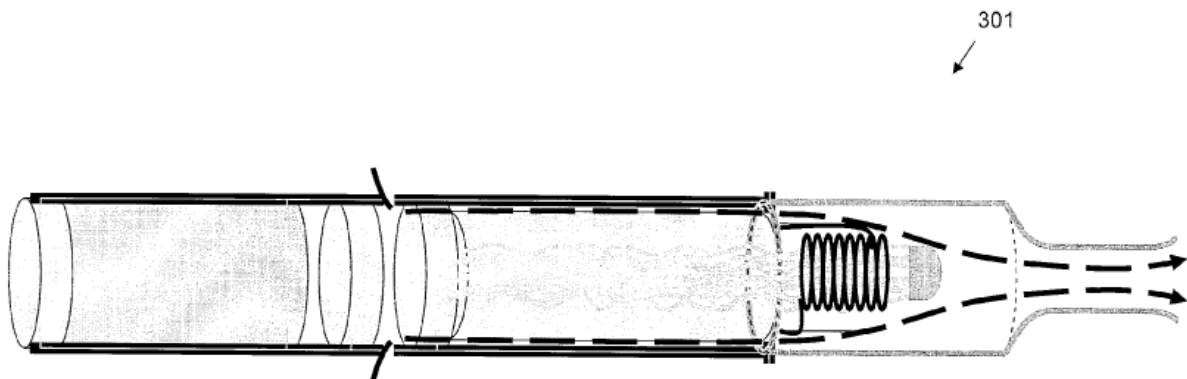


Figure 3 depicts a constructed electrically heated smoking system. *Id.* at 6:27–29. Figure 3 shows shell 101 engaged with mouthpiece 201 to form electrically heated smoking system 301. *Id.* at 6:54–56.

2. *Claim 1*

a) *The Parties Contentions*

Petitioner contends that claim 1 would have been obvious over the combination of Thorens788 and Thorens231. Pet. 70–90. Petitioner asserts that the asserted references disclose or suggest each limitation recited in claim 1.

For example, Petitioner asserts that the aerosol generator of Thorens788 is a “vaporizer” as recited in the preamble of claim 1. Pet. 70–71 (citing Ex. 1004, 1:4, 6:22–23). Petitioner asserts that Thorens788’s

housing 101 has one end (body end 105) with a battery (battery 107) and another end (mouthpiece end 103) that has a chamber for receiving a cartridge, thus meeting the limitations of [1.B] requiring a battery portion having a chamber defined by the outer shell of the battery portion. Pet. 71–73 (citing Ex. 1005 ¶¶ 471–474; Ex. 1004, 12:8–11, 12:12–15, Figs. 1–4). Petitioner asserts that Thorens788’s cartridge 113, which has liquid 115 and heating coil 119, is a “cartomizer” as required by claim element [1.C]. Pet. 73–74 (citing Ex. 1005 ¶¶ 475–479; Ex. 1004, 12:12–13). Petitioner states that although Thorens788 does not illustrate a mouthpiece, Thorens788 does describe a mouthpiece having a heating element and liquid container (Pet. 68 (citing Ex. 1004, 10:25–11)) and that it would have been obvious to modify Thorens788’s cartridge 113 to incorporate Thorens231’s mouthpiece, which also has a heating element and liquid container, to provide the cartomizer recited in claim element [1.C]. Pet. 74–75 (citing Pet. § IX.D.1 (Pet. 68–70)). Petitioner further asserts that the modified cartomizer of Thorens788 and Thorens231 has a mouthpiece end (right-most end) an insertion end (left-most end) as recited by claim element [1.C]. Pet. 73–75 (citing Ex. 1005 ¶¶ 475–479; Ex. 1004, 12:12–13; Ex. 1002, 7:8–12). Petitioner asserts that Thorens788 in combination with Thorens231 teaches a cartomizer body (collectively the mouthpiece housing and liquid container) having a volume to hold fluid (liquid storage portion 113) as required by claim element [1.D]. Pet. 76 (citing Ex. 1005 ¶¶ 480–483; Ex. 1004, 12:12–13).

Petitioner also asserts that (1) because Thorens788 states that “[p]referably, [its] container is opaque, thereby limiting degradation of the liquid by light,” that Thorens788 discloses that the container may also be not

opaque (i.e., translucent) and (2) that Thorens213 further provides a separate disclosure that the cartridge may be made of glass. Pet. 77. Petitioner asserts that because glass is translucent and allows viewing of liquid, that Thorens788 alone, as well as Thorens788 in combination with Thorens231, discloses or suggests a cartomizer body comprising a translucent material to allow viewing of fluid vaporizable substances, as required by claim element [1.E]. Pet. 77–79. Petitioner also asserts that Thorens788’s cartomizer body can be positioned within the receiving chamber as required by claim element [1.F] and has electrical contacts positioned to contact the battery electrical contacts as required by claim elements [1.J–K]. Pet. 77–79, 86–90.

Petitioner also asserts that the modified cartomizer of Thorens788, having the mouthpiece of Thorens231, teaches a heating element with a wicking element within the cartomizer body as recited by claim element [1.G] and the inhalation time in fluid communication with the heating and wicking elements as recited by claim element [1.H]. Pet. 80–84 (citing Ex. 1002, 7:9–12, Fig. 2; Ex. 1004, 7:32–33, 10:28–29, 10:31–34, 12:19–21, 12:23–25, 12:27–30; Ex. 1005 ¶¶ 490–498).

Patent Owner, at this time, does not challenge many of Petitioner’s allegations regarding the combined teachings of Thorens788 and Thorens231. *See generally* Prelim. Resp. Instead, Patent Owner argues that Petitioner has not shown that Thorens788 alone or in combination with Thorens231 teaches a “mouthpiece at or proximate to the mouthpiece end, the mouthpiece in fluid communication with the inhalation tube” (*id.* at 38–46 (claim element [1.I])), a translucent cartomizer body (*id.* at 46–49 (claim element [1.E]), or “an inhalation tube in fluid communication with the heating element and the wicking element” as recited in claim 1 and similarly

in claim 13. *Id.* at 49–51. Patent Owner also asserts that Petitioner has not provided a sufficient reason to combine Thorens788 with Thorens231 or a reasonable expectation of success in the combination of Thorens788 and Thorens231 (*Id.* at 37–46).

Because we agree that Petitioner has failed to sufficiently show that a POSITA would have modified Thorens788’s cartridge to incorporate Thorens231’s mouthpiece housing with a reasonable expectation of success, our discussion below focuses on that issue.

b) Whether Petitioner Has Sufficiently Shown a Reason to Modify Thorens788 to Incorporate Thoren231’s Mouthpiece Housing with a Reasonable Expectation of Success?

Patent Owner asserts that “Petitioner has no contention that the modification would be performed with a reasonable expectation of success.” Prelim. Resp. 38 (emphasis omitted). Specifically, “neither the Petition nor its supporting expert declaration contain any allegation that [a person of ordinary skill in the art] could have made the proposed mouth piece modification to Thorens788’s device with a reasonable expectation of success.” *Id.* at 40 (emphasis omitted); *see generally* Pet.; Ex. 1005. “An obviousness determination requires finding that [an ordinarily skilled artisan] 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.” *Regents of Univ. of Cal. v. Broad Inst., Inc.*, 903 F.3d 1286, 1291 (Fed. Cir. 2018) (emphasis added); *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016) (explaining

that these are “two different legal concepts—reasonable expectation of success and motivation to combine”). “[A] reasonable expectation of success, not absolute predictability’ supports a conclusion of obviousness.” *Yamanouchi Pharm. Co. v. Danbury Pharmacal, Inc.*, 231 F.3d 1339, 1343 (Fed. Cir. 2000). The burden of proving a reasonable expectation of success is on Petitioner. *See Eli Lilly & Co. v. Teva Pharms. Int’l GmbH*, 8 F.4th 1331, 1348–49 (Fed. Cir. 2021) (explaining that it is “at all times, [petitioner’s] burden to show that the claims would have been obvious, including that the skilled artisan would have had a reasonable expectation of success in achieving the claimed invention”).

We agree with Patent Owner that Petitioner never mentions a reasonable expectation of success of modifying Thorens788 to incorporate the mouthpiece of Thorens231 in the Petition. *See e.g.*, Pet. 68–70 (discussing the combination of Thorens788 and Thorens231), 84–86 (discussing claim element [1.I]). Instead, Petitioner argues that a person of ordinary skill in the art would have had a reason to look to the teachings of Thorens231 because Thorens231 and Thorens788 share common inventors and are directed to “substantially the same invention.” Pet. 68. Petitioner further alleges that a person of ordinary skill in the art would have been motivated to modify Thorens788 to have a mouthpiece such as that illustrated in Thorens231 that protects the heating and wick elements. Pet. 69–70 (citing Ex. 1005 ¶¶ 464–467). Petitioner further asserts a POSITA “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 the mouthpiece” which “could lead to injury if the heating coil is still hot.”

Pet. 70 (citing Ex. 1005 ¶ 467); *see also id.* at 70 (noting that the references “share common inventors and [are] directed to substantially the same invention”), Ex. 1005 ¶¶ 464–467 (same).

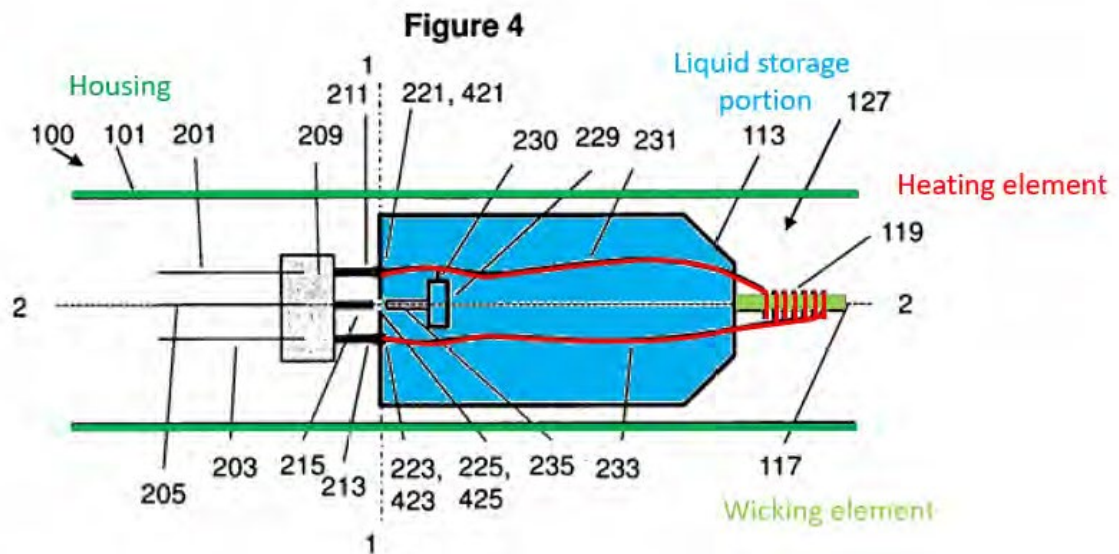
Noticeably absent from Petitioner’s contentions is any persuasive discussion of an explicit or implicit reasonable expectation of success. Though Dr. Janet does provide additional testimony not referenced in the Petition concerning this combination, that testimony addresses additional reasons to combine and is silent as to whether a reasonable expectation of success exists in the combination of Thorens231 and Thorens788. Ex. 1005 ¶ 467 (testifying that an additional reason to modify Thorens788 is that pulling on the heating element “is inconvenient and unsanitary”); *see id.* ¶¶ 464–468 (no discussion of a reasonable expectation of success).

We acknowledge that a reasonable expectation of success can be “implicit” and may be “intertwined” with motivation to combine. *See Elekta Ltd. v. ZAP Surgical Sys., Inc.*, 81 F.4th 1368, 1376 (Fed. Cir. 2023) (“Unlike a motivation to combine determination, which requires an explicit analysis, a finding of reasonable expectation of success can be implicit.”). Here, however, we cannot reasonably discern any persuasive implicit argument in Petitioner’s arguments directed to common inventors, same alleged invention resulting in substantially the same device, and possible injury to the consumer, and the evidence discussed above that supports motivation to combine fails to support a reasonable expectation of success.

For example, Petitioner asserts that Thorens788 and Thorens231, which share common inventors, are directed to substantially the same device. *See, e.g.*, Pet. 68–69. Neither Petitioner nor its declarant, Dr. Janet, however, persuasively account for several dissimilarities existing between

the two references. For example, Petitioner states that the only differences between Thorens788 and Thorens231 include: (1) “Thorens788 describes a ‘mouthpiece’ . . . [but] does not provide an illustration of the mouthpiece” and “Thorens231, however, provides such an illustration” and (2) “Thorens788 discloses that its heating element is fully contained within the shell” where “Thorens231, in contrast, discloses that the heating element is outside the shell.” Pet. 68.

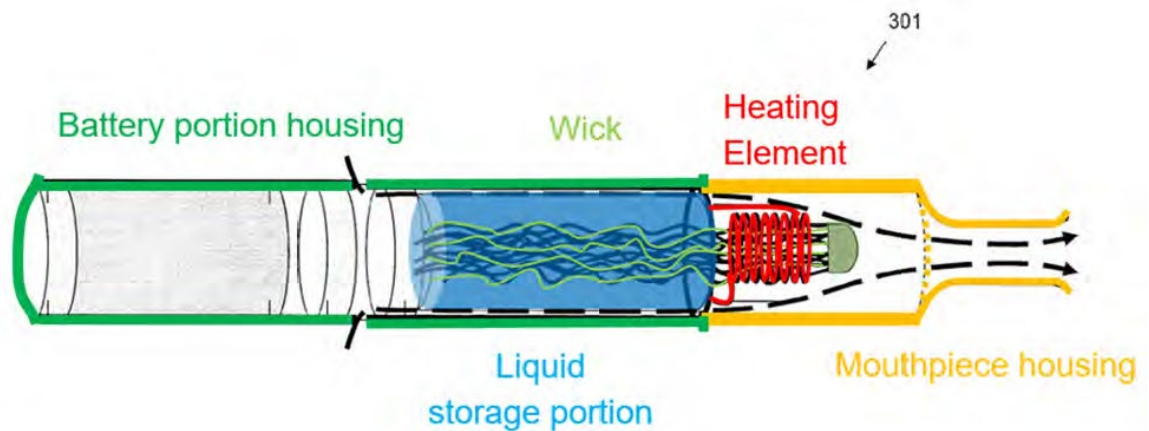
We disagree with Petitioner. Consideration of Petitioner’s illustrations further shows the differences between Thorens788 and Thorens231. Petitioner’s annotated version of Thorens788 Figure 4 is reproduced below.



Pet. 73 (“Annotated Figure 4” or “Ann. Fig. 4”). Annotated Figure 4 is a sectional view of a liquid storage portion inserted into an aerosol generator. Ex. 1004, 11:19–20. As shown in Annotated Figure 4, “liquid storage portion 113 [(light blue)], wick 117 [(light green)], heating element 119 [(red)], [electrical] contacts 221, 223, 225, 421, 423, 425 and electrically

conductive portions 230, 231, 233, 235, and subsystem 229 may form a single unit which is disposable. *Id.* at 16:4–6. These electrical contacts and electrically conductive portions “allow electrical energy to be supplied to the heating element 119 from a battery or other power source [107].” *Id.* at 14:14–18. Annotated Figure 4 shows liquid storage portion 113 and heating element 119 are contained within housing 101.

Petitioner’s annotated version of Thorens231 Figure 3 is reproduced below.



Pet. 69 (“Annotated Figure 3” or “Ann. Fig. 3”). Annotated Figure 3 of Thorsens231 depicts constructed electrically heated smoking system 301. Ex. 1002, 6:27–29, 6:54–57. Annotated Figure 3 shows shell (dark green), divided into a battery portion (left) and a liquid storage portion (blue, center) with mouthpiece housing (yellow, right), attached to the end of the liquid storage portion, to form electrically heated smoking system 301. *Id.* at 6:54–56.

A comparison of Annotated Figure 4 of Thorens788 and Annotated Figure 3 of Thorens231, above, shows additional differences. Specifically, the size, placement, and structure of the heating elements and the wicks,

differ between Annotated Figure 4 and Annotated Figure 3. *Compare* Ann. Fig. 4, *with* Ann. Fig. 3; *see also* Prelim. Resp. 42 (same). According to Patent Owner, “[t]he 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” and “wick placements . . . alters the characteristics of the device, such as the airflow path, draw resistance, and placement of components.” Prelim. Resp. 42–43. Therefore, while Thorens788 and Thorens231 have some similarities, the references have additional dissimilarities that impact the overall function and performance of the device that neither Petitioner, nor its declarant, take into account.

Given the substantial differences between the disclosures of the mouthpieces of Thorens788 and Thorens231, which are not addressed by Petitioner, we are not persuaded that a POSITA would have been motivated to modify Thorens788 with a reasonable expectation of success as asserted by Petitioner.

Moreover, we note that Petitioner does not propose a simple substitution to include the mouthpiece housing of Thorens231 in the device of Thorens788 in the same manner as used in Thorens231. Rather, Petitioner proposes including the mouthpiece housing of Thorens231 in the device of Thorens788 and then further modifying its placement by inserting it into the housing. *See* Combined Fig. 4. Neither Petitioner nor Dr. Janet explain why this arrangement would be expected to be successful nor do they allege that such a modification would have been within the skill set of the ordinarily skilled artisan. In contrast, Patent Owner explains that:

Petitioner’s [Combined] Figure 4 appears to block any airflow through the device and out of the mouthpiece. Petitioner

and its expert do not account for how the mouthpiece would be secured to the liquid storage portion in Thorens788. Moreover, as drawn by Petitioner, the wick touches what is presumably the air inlet for the mouthpiece (although Petitioner does not discuss where the air inlet is), which could adversely impact performance or user experience, such as draw resistance[.]

Prelim. Resp. 43. Because Petitioner did not direct our attention to any argument or testimony to account for whether or how the modified device would function, Petitioner does not meet its initial burden of proof of showing that a person of ordinary skill in the art would have had an expectation of success in the combination. *See Eli Lilly & Co. v. Teva Pharms. Int’l GmbH*, 8 F.4th 1331, 1348–49 (Fed. Cir. 2021) (explaining that it is “at all times, [petitioner’s] burden to show that the claims would have been obvious, including that the skilled artisan would have had a reasonable expectation of success in achieving the claimed invention”).

Thus, Petitioner has not established a reasonable expectation of success in modifying Thorens788 with the mouthpiece of Thorens231 to achieve the recited invention of claim 1. Accordingly, we determine that Petitioner has not demonstrated a reasonable likelihood that claim 1 would have been obvious over the combination of Thorens788 and Thorens231.

3. *Remaining Claims 2 and 13–16*

Petitioner alleges that independent claim 13 and dependent claims 2 and 14–16 would have been obvious over the combination of Thorens788 and Thorens231. Pet. 90–94. Independent claim 13 (and dependent claims 2 and 14–16 by virtue of their dependency) include the same “mouthpiece at or proximate to the mouth piece end, the mouthpiece in fluid communication with the inhalation tube” discussed above Ex. 1001, 19:52–54. None of Petitioner’s arguments directed to these claims remedy the deficiencies

discussed above regarding claim 1. Consequently, Petitioner has not demonstrated a reasonable likelihood that it will prevail on its assertion that claims 2, and 13–16 would have been obvious over Thorens788 and Thorens231.¹⁴

F. Challenges based on Thorens788, Thorens231 and either Levin (Ground 5) or Zheng (Ground 7)

Petitioner alleges in Ground 5 that claim 5 would have been obvious over the combination of Thorens788, Thorens231, and Levin (Pet. 94–98) and in Ground 7, that claim 8 would have been obvious over Thorens788, Thorens231, and Zheng (Pet. 111–114). Petitioner relies upon Levin or Zheng to teach the limitations recited in claims 5 and 8 respectively. Pet. 94–98, 111–114.

Petitioner’s arguments do not address the deficiencies noted above regarding independent claim 1, from which claims 5 and 8 depend. *See id.* As such, for the same reasons set forth above, Petitioner has not demonstrated a reasonable likelihood that claim 5 would have been obvious over the combination of Thorens788, Thorens231, and Levin or that claim 8 would have been obvious over the combination of Thorens788, Thorens231, and Zheng.

¹⁴ Because we determine that Petitioner did not show a reasonable likelihood that it would prevail in showing that claims 2 and 13–16 would have been obvious over Thorens788 and Thorens231 for the same reasons set forth with respect to claim 1, we need not, and do not, address Patent Owner’s remaining arguments regarding this ground. *See* Prelim. Resp. 46–49) (asserting the prior art does not teach or suggest a translucent cartomizer body), 49–51 (asserting the prior art does not teach the recited “inhalation tube”).

G. Challenge based on Thorens788, Thorens231, and Tucker (Ground 6)

Petitioner contends that independent claims 9 and 17, and claims 10–1 and 18, which depend from claim 9, would have been obvious over Thorens788, Thorens231, and Tucker. Pet. 98–111. Petitioner relies on the declaration testimony of Dr. Janet in support of these contentions. *Id.*

1. Claim 9

a) The Parties' Contentions

Petitioner relies on its arguments directed to claim 1, Ground 4 for many of the limitations recited in claim 9. *See* Pet. 100–102 (referring to its claim 1 arguments for the preamble [9.A] as well as claim elements [9.B]–[9.F] and [9.J]). Petitioner additionally asserts that Thorens788 discloses the limitations relating to the battery portion recited in claim elements [9.G]–[9.I]. Pet. 101–104 (citing Ex. 1005 ¶¶ 546–553).

Claim 9 also requires, *inter alia*, that the outer shell of the battery portion have a “window” that aligns with “the translucent portion of the cartomizer body” when the cartomizer body is inserted into the chamber defined by an outer shell of the battery portion. *Id.* at 19:14–20. For this limitation, Petitioner asserts:

Thorens788 in view of Thorens 231 discloses that the liquid storage container 113 is made of glass and may be translucent. *See* IX.F.1. [Pet. 98–99]. As discussed in IX.F.1 it would have been obvious to a POSA to include a window in Thorens788 to permit viewing of the liquid based on the teachings of Tucker.

Pet. 104. In Section IX.F.1 of the Petition (Pet. 98–99), Petitioner admits that Thorens788’s battery portion does not have a window that aligns with a translucent portion of a cartomizer body. Pet. 98. Indeed, Petitioner asserts

that while Thorens788 and Thorens213 may suggest a translucent cartomizer body, “the advantages of a translucent container [i.e., the cartomizer body], however, are mitigated by Thorens788’s housing 101 [i.e., the outer shell of the battery component], which extends to cover the entirety of the liquid container [i.e., cartomizer body] when the cartomizer is inserted into the housing.” *Id.*

Petitioner goes on, however, to state that Tucker teaches providing a window in an outer tube to allow a smoker to see the amount of liquid material remaining. Pet. 99 (citing Ex. 1034 ¶ 38). Petitioner asserts that a POSA would have been motivated to modify Thorens788’s housing 101 to see through the housing and into the glass cartridge. *Id.* (citing Ex. 1005 ¶¶ 537–539). Petitioner asserts that a “POSA would have been so motivated and expected success for the same reasons articulated in IX.B.1 in the context of Liu783.” *Id.*

Patent Owner, at this time, does not challenge many of Petitioner’s allegations regarding the combined teachings of Thorens788, Thorens231, and Tucker. *See generally* Prelim. Resp. Instead, Patent Owner argues that Petitioner has not shown that these asserted reference render obvious a translucent cartomizer body recited in claim element [9.D] for the same reasons set forth with respect to claim 1, ground 4. Prelim. Resp. 52.

Patent Owner also asserts that Petitioner fails to show the asserted references render obvious a window in the outer shell of the battery portion as recited in claim element [9.K]. *Id.* at 53–54. Patent Owner also asserts that Petitioner has not provided any motivation to combine or a reasonable expectation of success, other than a cross reference to another reference (Liu783) asserted in a different ground and that, for the same reasons set

forth in ground 2, the proposed combination lacks both a motivation to combine and a reasonable expectation of success. *Id.* at 54 (citing Pet. 99).

Because we agree that Petitioner has failed to show that Thorens788 teaches or suggests a window in the outer shell wherein the translucent portion of the cartomizer body aligns with the window when the cartomizer body is inserted into the chamber, and has failed to establish that a reason to modify the references to arrive at this limitation with a reasonable expectation of success exists, our discussion below focuses on these issues.

b) Whether Petitioner has sufficiently shown a reason to modify Thorens788 to provide a window in the outer shell of battery portion with a reasonable expectation of success?

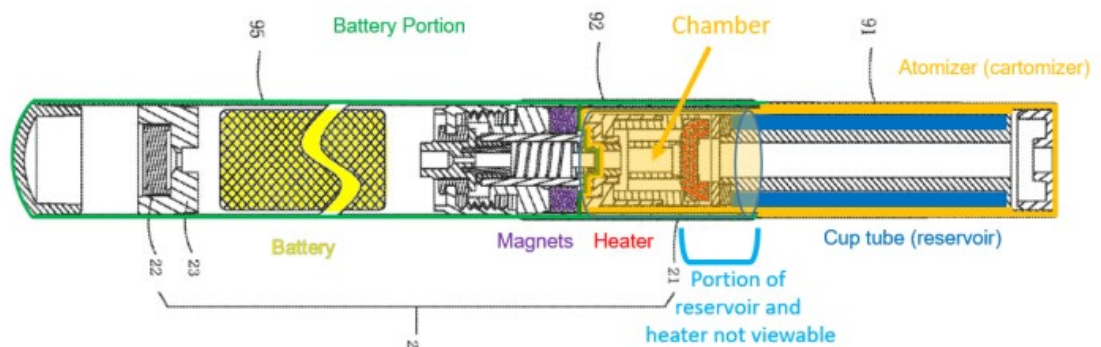
Patent Owner asserts Petitioner has not sufficiently shown a reason to modify the outer shell of Thorens788's battery portion to provide the window recited in claim element [9.K]. Prelim. Resp. 52–54.

We agree with Patent Owner. Petitioner does not dispute that Thorens788 does not disclose a window in the outer shell of the battery portion (housing 101). *See* Pet. 98. Dr. Janet states that it is his opinion that a POSA “would have been motivated” to modify Thorens788's housing 101 such that a consumer could see through the housing and into the glass cartomizer, and “would have had a reasonable expectation of success for the same reasons I discussed above in Section IX.D.1.a.” Ex. 1005 ¶ 539; *see also* Pet. 99 (making similar statement). Dr. Janet's testimony in Section IX.D.1.a., however, relates to Liu783, not to Thorens788. Petitioner's and Dr. Janet's conclusory assertions that a POSITA would have had a reasonable expectation of success to provide a window in Thorens788 “for

the same reasons” applicable to Liu783 are not persuasive. *See* Pet. 99; Ex. 1005 ¶ 539.

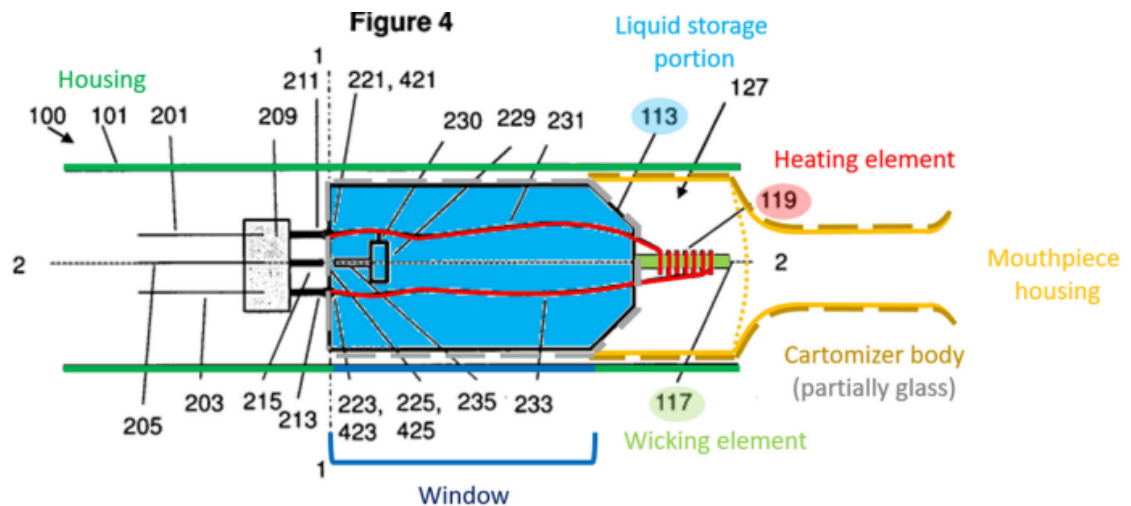
Dr. Janet testifies that the “addition of a window simply requires making a portion or [Liu783’s] shell transparent or translucent (and plastic can be either) or cutting an opening on the connector wall. *Neither modification would affect the functioning of Liu783’s device.*” Ex. 1005 ¶ 399 (emphasis added). Significantly however, Dr. Janet fails to make the corresponding argument that modifying Thorens788’s housing 101, by either making a portion of the housing transparent, or by cutting an opening on the housing wall, would not affect the functioning of Thorens788’s device. *See* Ex. 1005 ¶¶ 537–539. Nor does Petitioner make any argument comparing the devices of Thorens788 with that of Liu783 or provide any persuasive argument that the Thorens788 device would function following the proposed modification. *See e.g.*, Pet. 98–99.

Indeed, even a cursory comparison of Liu783 and Thorens788 Figures demonstrates that the two devices are not similar. Petitioner’s annotated Figures of Liu783 and Thorens788 purported to show where the window would be added to each device, are reproduced below.



EX1010, Fig. 3

Petitioner states that Figure 3 of Liu783 above “illustrates the portion of Liu783 that a POSA would be motivated to make transparent in order to view liquid in the liquid container. Pet. 47 (citing Ex. 1010, Fig. 3 (color annotations added)).



Petitioner provides the above Figure 4 of Thorens788 and states that a POSA would have been motivated to modify Thorens788’s housing 101 so that a consumer could see the housing and into the glass cartridge. Pet. 99 (citing Ex. 1004, Fig. 4).

Given the differences between the Liu783 device and the Thorens788 device, Petitioner’s failure to address the differences between the devices, and Petitioner’s failure to assert, let alone provide any testimony or evidence, that modification of Thorens788’s device to would not affect the functioning of the device, Petitioner’s conclusory assertion that a POSITA would have been motivated to modify Thorens788’s housing “and expected success” for the same reasons set forth regarding the different Liu783 reference, are not persuasive.

Because Petitioner did not direct our attention to any argument or testimony to account for whether or how the modified device would

function, Petitioner does not meet its initial burden of proof of showing that a person of ordinary skill in the art would have had an expectation of success in the combination. *See Eli Lilly & Co. v. Teva Pharms. Int’l GmbH*, 8 F.4th 1331, 1348–49 (Fed. Cir. 2021) (explaining that it is “at all times, [petitioner’s] burden to show that the claims would have been obvious, including that the skilled artisan would have had a reasonable expectation of success in achieving the claimed invention.

As such, based on the present record, Petitioner has not provided sufficient evidence that a POSA would have been motivated to modify the outer shell Thorens788’s battery portion to include a window that aligns with the translucent portion of the cartomizer body.

Accordingly, Petitioner has not shown a reasonable likelihood that it would prevail is showing that claim 9 would have been obvious over Thorens788, Thorens231, and Tucker.

2. *Remaining Claims*

As noted above, Petitioner also asserts that dependent claims 10, 11, and 18, which depend from claim 9, and independent claim 17, would have been obvious over the combination of Thorens788, Thorens231, and Tucker. Like claim 9, independent claim 17 (and dependent claims 10, 11, and 18 by virtue of their dependency) also require a window in the outer shell of the battery portion that aligns with a translucent portion of the cartomizer body. None of Petitioner’s arguments directed to these claims remedy the deficiencies discussed above regarding claim 9. Consequently, Petitioner has not demonstrated a reasonable likelihood that it will prevail on its assertion that claims 10, 11, 17, and 18 would have been obvious over Thorens788, Thoresns231, and Tucker.

Additionally, claim element [17.G] also recites “a mouthpiece at or proximate to the mouthpiece end, the mouthpiece in fluid communication with the inhalation tube,” the same “mouthpiece” limitation as recited in claim element [1.J] and discussed above. Petitioner relies on its arguments directed to claim 1 for this limitation. *See* Pet. 107. None of Petitioner’s arguments directed to claim 17 remedy the deficiencies discussed above regarding the mouth piece limitations of claim 1 discussed above. Thus, for this additional reason, Petitioner has not demonstrated a reasonable likelihood that it will prevail on its assertion that claim 17 would have been obvious over Thorens⁷⁸⁸, Thorens²³¹, and Tucker.

H. Objective Indicia of Nonobviousness

Patent Owner argues that “there is strong and indisputable objective evidence of non-obviousness.” Prelim. Resp. 55; *see also id.* at 56–79 (providing detail of such evidence); PO Sur-reply 1–5. Petitioner, for its part, argues in reply that Patent Owner’s evidence is inapplicable. Reply 1–5. Because we determine Petitioner has not shown a reasonable likelihood that any of the claims would have been unpatentable, we need not, and do not, address Patent Owner’s arguments relating to objective indicia of non-obviousness.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition. Accordingly, we deny the Petition and do not institute an *inter partes* review of the ’981 patent.

IV. ORDER

It is ORDERED that the Petition is denied as to all challenged claims of the '981 patent and no trial is instituted.

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Patent 11,606,981 B2

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