

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.

IPR2024-00267
Patent 11,134,722 B2

Before KRISTINA M. KALAN, KIMBERLY MCGRAW, and
AVELYN M. ROSS, *Administrative Patent Judges*.

ROSS, *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, 5, 7, and 9–21 of U.S. Patent No. 11,134,722 B2 (Ex. 1001, “the ’722 patent”). JUUL Labs, Inc. (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 7 (confidential); Paper 8 (redacted) (“Prelim. Resp.”).¹ With Board authorization (Ex. 3001), Petitioner filed a Reply (Paper 11 (confidential); Paper 13 (redacted)), and Patent Owner filed a Sur-reply (Paper 12).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314; 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, Reply, Sur-reply, 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 and do not institute an *inter partes* review.

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 redacted versions of documents and exhibits.

Patent Owner identifies itself as the real party-in-interest. Paper 6, 2.

B. Related Proceedings

The parties identify *Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof*, 337-TA-1368 (ITC) (“the Section 337 Investigation”) and *JUUL Labs, Inc. v. NJOY, LLC*, 23-cv-01204 (D. Ariz.) as related proceedings. Pet. 1; Paper 6, 2.

Patent Owner further identifies IPR2024-00223 (U.S. Patent No. 10,709,173 B2), IPR2024-00231 (U.S. Patent No. 10,130,123 B2), IPR2024-00268 (U.S. Patent No. 11,606,981 B2), IPR2024-00536 (U.S. Patent No. 11,606,981 B2), and IPR2024-00567 (U.S. Patent No. RE49,114 E) as related matters. Paper 6, 2.

C. The '722 patent

The '722 patent, titled “Vaporizer,” issued on October 5, 2021. Ex. 1001, codes (45), (54). The '722 patent describes vaporizers, which may also be referred to as electronic cigarettes. *Id.* at 1:16–17.

Figure 1 is illustrative and reproduced below.

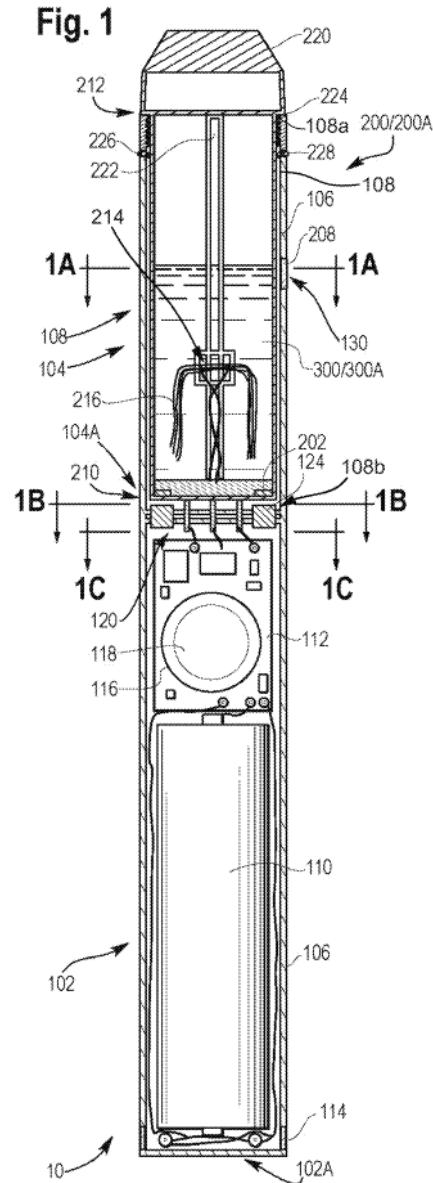


Figure 1 is a front sectional view of an electronic cigarette. *Id.* at 2:15–22. Figure 1 shows electronic cigarette 10 having a cartomizer 200 to hold vaporizable substance 300. *Id.* at 4:46–50. Electronic cigarette 10 includes battery housing segment 102 and second cartomizer receiving segment 104 that may commonly share outer shell 106. *Id.* at 4:50–57, 4:62–63. The '722 patent further describes cartomizer 200 that may be insertable into

cartomizer chamber 108. *Id.* at 4:65–66. Battery 110 may provide electrical power and may be a disposable type or a rechargeable type. *Id.* at 5:4–10.

The '722 patent includes printed circuit board (PCB) 112 to control one or more functions of electronic cigarette 10. *Id.* at 5:15–17. According to the '722 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 6:38–41. The '722 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 6:49–54. In addition, chamber 108 may include at least one magnet 124 to secure and align cartomizer 200 within cartomizer chamber 108. *Id.* at 7:26–30. Cartomizer 200 may in turn include magnet 202 of opposing polarity. *Id.* at 7:30–34.

Electronic cigarette 10 further includes heating element 214 and wicking element 216 to vaporize fluid 300A. *Id.* at 8:47–48. Once fluid 300A has been vaporized, it may be inhaled through mouthpiece 220 provided in body 208 at mouthpiece end 212. *Id.* at 8:53–56. For instance, the vaporized fluid may travel through inhalation tube 222. *Id.* at 8:56–58.

Figure 8 of the '722 patent is reproduced below.

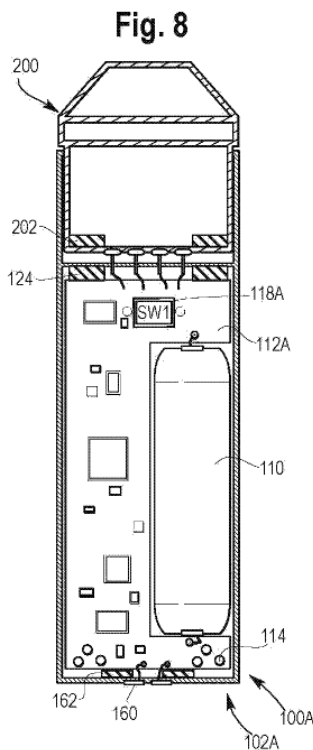


Figure 8 depicts a front sectional view of an electronic cigarette. *Id.* at 2:60–65. Figure 8 shows an embodiment of electronic cigarette 10 having battery portion 100A to receive cartomizer 200. *Id.* at 13:1–3. Electronic cigarette 10 may include magnets 124/202 to retain cartomizer 200. *Id.* at 13:10–11.

Figure 9, which is reproduced below, depicts electronic cigarette 10 with battery charger 400A. *Id.* at 13:15–18.

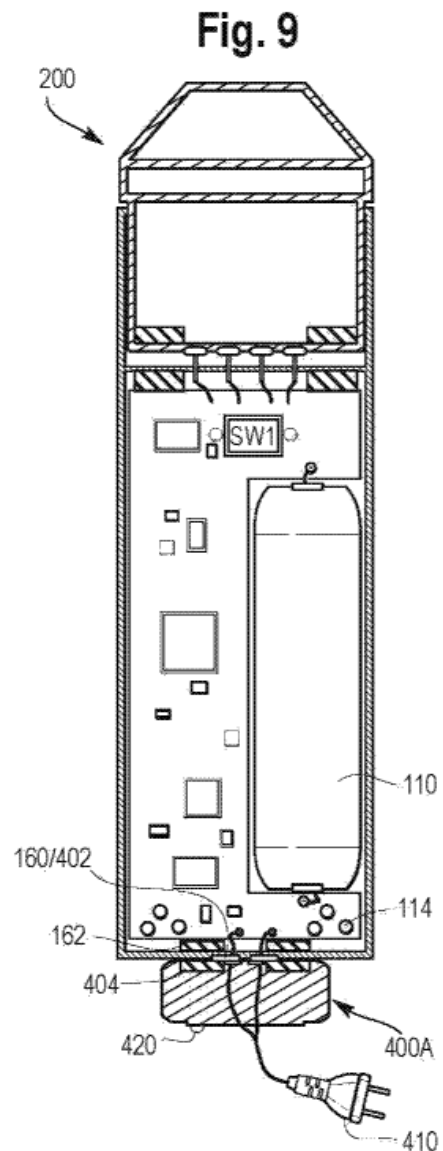


Figure 9 shows an electronic cigarette with a charger attached. *Id.* at 2:66–67. Battery charger 400A has charging contacts 402 that may be attached or connected to charging contacts 160 on outer shell 106. *Id.* at 13:15–17. The '722 patent states that “[i]n one embodiment, charging contacts 160 are positioned at or proximate to battery end 102A.” *Id.* at 13:18–19. According to the '722 patent, one or more magnets 162 may be provided to secure charging contacts 160, 402 together. *Id.* at 13:21–24.

D. Illustrative Claim

Petitioner challenges claims 1, 5, 7, and 9–21 of the '722 patent. Independent claims 1, 10, and 15 are the independent claims challenged. Claim 1 is reproduced below as the illustrative claim.²

[1.A] A vaporizer comprising:

[1.B] a battery portion comprising a battery housing segment and a cartomizer receiving segment,

[1.C] 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,

[1.D] 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,

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

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

[1.G] a body including a structure configured to hold a vaporizable liquid;

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

[1.I] a heating element provided within the body in contact with the wicking element and operable to heat the vaporizable liquid,

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

[1.J] wherein the wicking element is configured to deliver the vaporizable liquid to the heating element, and

[1.K] 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 chamber such that the outer shell protects the heating element.

Ex. 1001, 18:33–61.

E. The Asserted Unpatentability Challenges

Petitioner asserts that claims 1, 5, 7, and 9–21 would have been unpatentable based on the following grounds:

Claims Challenged	35 U.S.C. § ³	References/Basis
1, 5, 7, 9–13, 15, 16, 18–21	103	Pan, ⁴ Levin ⁵
14, 17	103	Pan, Levin, Tucker ⁶
1, 5, 7, 9–13, 15, 16, 18–21	103	Thorens788, ⁷ Thorens231, ⁸ Levin
14, 17	103	Thorens788, Thorens231,

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because applications from which the ’722 patent claims priority were filed after this date, the AIA version of § 103 applies.

⁴ Pan, U.S. Patent No. 8,205,622 B2, issued June 26, 2012 (Ex. 1024, “Pan”).

⁵ Levin et al., U.S. Patent No. 9,427,022 B2, issued Aug. 30, 2016 (Ex. 1003 “Levin”).

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

⁷ Thorens et al., WO 2011/160788 A1, published Dec. 29, 2011 (Ex. 1004, “Thorens788”).

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

Claims Challenged	35 U.S.C. § ³	References/Basis
		Levin, Tucker

Pet. 3. Petitioner also relies on declaration testimony of Dr. Jason Janet (Ex. 1005). Patent Owner relies on declaration testimony of Dr. John Collins (Ex. 2001).

II. ANALYSIS

A. Principles of Law

In an *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).

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 unpatentable as obvious, under 35 U.S.C. § 103, if the differences between the claimed invention and the prior art are such that the subject matter, as a whole, would have been obvious before the effective filing date of the invention to a person having ordinary skill in the art to which the claimed invention pertains. *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). 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). But, 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).

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. *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 that a person of ordinary skill in the art “would have been familiar with electrically powered

vaporizing articles, their components or the underlying technologies.”

Pet. 8.

Patent Owner argues that a person of ordinary skill in the art “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.” Prelim. Resp. 12 (citing Ex. 2001 ¶¶ 12–22). Patent Owner also states that “no issue relevant to this Preliminary Response turns on the level of ordinary skill in the art.” *Id.* at 13 (citing Ex. 2001 ¶ 21).

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 ’722 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 ’722 patent and the prior art. However, our decision would not change if we applied Patent Owner’s definition.

C. Claim Construction

We construe claim terms according to the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc); 37 C.F.R. § 42.100(b). Under *Phillips*, we give claim terms “their ordinary and customary meaning.” *Phillips*, 415 F.3d at 1312. “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313. “Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular

claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.*

Petitioner proposes construction of three terms: “wicking element,” “heating element,” and “window.” Pet. 8–10. 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. *Id.* (citing Ex. 1049). Specifically, Petitioner proposes that “wicking element” “means ‘any material through which liquid may be drawn via capillary action’” Pet. 8 (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. 9 (citing Ex. 1049, 3).⁹ 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.’” Pet. 10 (citing Ex. 1049, 4).

Patent Owner states that it agrees with Petitioner’s proposed constructions. Prelim. Resp. 13 (citing Ex. 2001 ¶¶ 72–75).

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

⁹ Petitioner asserts that in the Section 337 Investigation, “wicking element” and “heating element” are subject to 35 U.S.C. § 112, sixth paragraph. *Id.* But, “Petitioner has not adopted this construction for this Petition.” *Id.* at 9.

(Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

D. Challenges Based on Pan and Levin (and Tucker)

Petitioner alleges that the combination of Pan and Levin, would have rendered obvious claims 1, 5, 7, 9–13, 15–16, and 18–21 of the '722 patent. Pet. 20–56. Petitioner also alleges that the combination of Pan, Levin, and Tucker would have rendered claims 14 and 17 obvious. *Id.* at 56–62. Petitioner relies on the testimony of Dr. Janet to support its arguments. *See id.*

1. Overview of the Prior Art

a) Pan (Ex. 1024)

Pan is titled “Electronic Cigarette.” Ex. 1024, code (54). Pan’s Figure 3 is reproduced below.

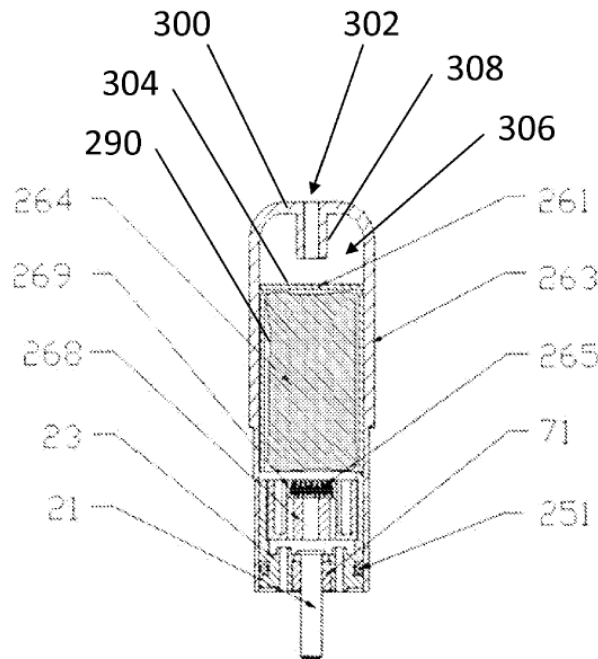


Figure 3

Figure 3 is a sectional view of an integrated electronic atomizer. *Id.* at 3:60–61. Figure 3 depicts an integrated electronic atomizer having atomizer tube 263 and a second electric connector of a plug-socket type that includes DC plug 21 located on plug seat 71. *Id.* at 4:63–5:1. The atomizer further includes leak-proof piece 23, seal washer 251, supporting piece 268, heat equalizer twined with electric heating wire 265, liquid container 261 with liquid-storing media 264, and an air-puffing hole at one end of atomizer tube 263. *Id.* at 5:1–5.

Pan's Figure 5 is reproduced below.

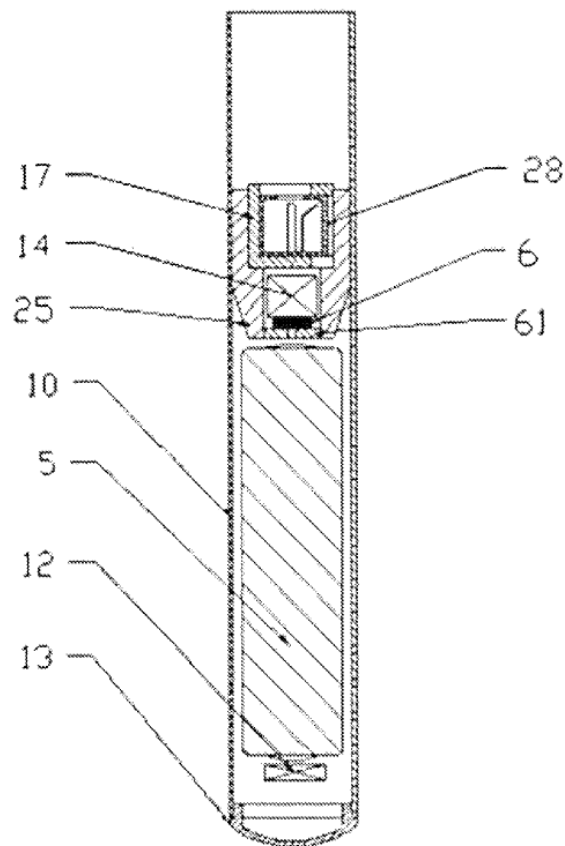


Figure 5

Figure 5 is a sectional view of an electronic inhaler. *Id.* at 3:64–65.

Figure 5 shows an electronic inhaler that includes first electric connector 17

of a DC plug-socket type located on DC socket seat 28. *Id.* at 5:29–30, 5:35–36. The inhaler further includes inhaler tube 10, cigarette cap 13 having small holes for air inflow, electric power source 5, airflow sensor 6, seal piece 25, and integrated circuit board with a CPU processor 14. *Id.* at 5:30–34. Pan states that electric power source 5 connects to circuit board 14, which in turn connects to first electric connector 17 and airflow sensor 6. *Id.* at 5:37–39.

Pan's Figure 7 is reproduced below.

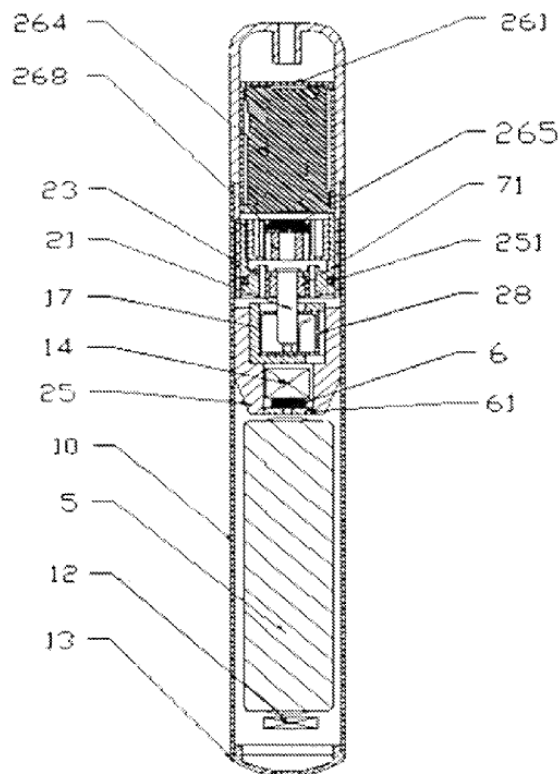


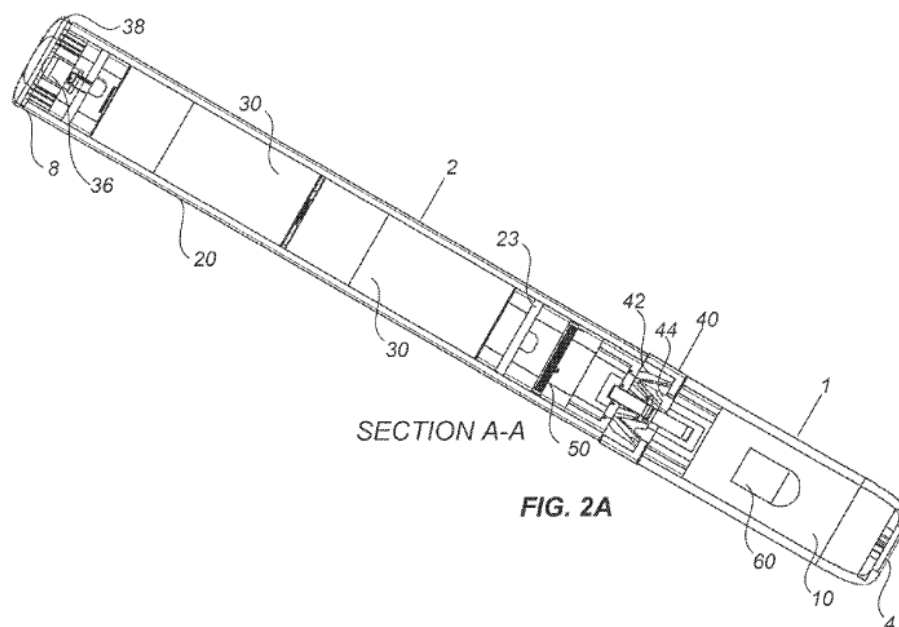
Figure 7

Figure 7 depicts an electronic cigarette. *Id.* at 4:1–2. Pan's Figure 7 shows an electronic cigarette when its electronic inhaler (e.g., the embodiment shown in Figure 5) and an electronic atomizer (e.g., the embodiment shown

in Figure 3) are connected via their respective electric connectors of the DC plug-socket type. *Id.* at 6:1–3. Pan states that such a connection is made via first electronic socket 28 of the inhaler and second electric connector plug 21 of the atomizer. *Id.* at 6:6–9.

b) Levin (Ex. 1003)

Levin is titled “Electronic Vaporizing Device and Methods for Use.” Ex. 1003, code (54). Levin’s Figure 2A is reproduced below.



Levin’s Figure 2A illustrates a cross-sectional view of an electronic vaporizing device. *Id.* at 4:48–50. Levin’s electronic vaporizing device includes distal portion 2 having distal end cap 38 covering distal light source 36. *Id.* at 23:16–22. The device further includes power source 30, light source 36, and heater 50. *Id.* at 23:22–23.

Levin states that such a device may include a power source that uses one or more batteries, such as rechargeable and/or replaceable batteries. *Id.* at 8:66–9:1. According to Levin, the rechargeable batteries may “be

recharged by attaching the device to a power source with a power cord, such as a connector pin or USB device.” *Id.* at 9:2–6. Levin’s Figure 6A depicts such an embodiment and is reproduced below.

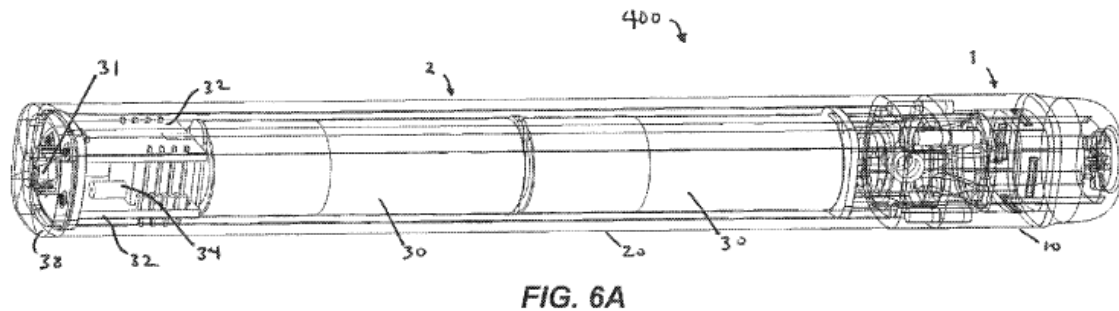


Figure 6A shows a perspective view of a vaporizing device. *Id.* at 5:7–11. According to Levin, the distal end of the device may include “recharging port 31, such as in a USB connector 31 or a pin receptacle” to facilitate recharging of power source 30. *Id.* at 23:58–62.

2. Analysis of Claim 1

Petitioner asserts that claim 1 would have been obvious over the combination of Pan and Levin. Pet. 20. Petitioner asserts that Pan’s electronic vapor cigarette including an electronic inhaler and an electronic atomizer discloses a “vaporizer” as recited in claim 1. *Id.* at 30–31 (citing Ex. 1005 ¶¶ 113–114; Ex. 1024, 2:25–28, 2:30–35, Fig. 7). Petitioner contends that Pan’s electronic inhaler including a portion for a battery and a portion for receiving an electronic atomizer discloses “a battery portion comprising a battery housing segment and a cartomizer receiving segment” as recited in claim 1. *Id.* at 31–33 (citing Ex. 1005 ¶ 117; Ex. 1024, 2:30–35, 3:6–9, 4:63–5:7, 5:20–49, 6:1–28, Figs. 3, 5, 7). Petitioner argues that Pan’s portion for receiving the electronic atomizer discloses “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” as recited in claim 1. *Id.* at 34 (citing Ex. 1005 ¶¶ 118–119; Ex. 1024, Figs. 5, 7).

According to Petitioner, Pan “does not disclose charger electrical contacts” but “Levin discloses an electronic vaporizer device with a micro-USB charging port that has a plurality of electrical contacts to provide electrical charge to a battery in a housing, and which is disposed at a distal end of the device.” *Id.* at 35. Petitioner asserts that incorporating Levin’s charging port into the bottom of Pan’s electronic inhaler teaches “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” as recited in claim 1. *Id.* at 35–36 (citing Ex. 1005 ¶¶ 120–122; Ex. 1024, 2:30–35, 5:29–49, Fig. 5). Petitioner asserts that Pan discloses rechargeable batteries, Levin discloses a battery charging port, and the skilled artisan would have had reason to combine the teachings of Pan and Levin to enable a user to recharge the battery without having to remove the battery from the device and provide benefits such as the convenience of being able to recharge the batteries at any location. *Id.* at 20–25 (citing Ex. 1003, 1:14–15, 8:66–9:6, 14:11–26, 23:58–62, Fig. 14A; Ex. 1005 ¶¶ 97–105; Ex. 1011, 10, 26–27; Ex. 1024, 2:32–35, 5:29–49; Ex. 1026, 6:26–32; Ex. 1027, 6:51–55, Fig. 1; Ex. 1028, Fig. 2; Ex. 1041, 6:23–32; Ex. 1042, 5:57–60).

Petitioner argues that Pan’s electronic inhaler tube and cigarette cap form a shell that contains the portion for the battery and the portion for receiving the electronic atomizer, which discloses “wherein an outer shell is

commonly shared by the battery housing segment and the cartomizer receiving segment” as recited in claim 1. *Id.* at 36–37 (citing Ex. 1005 ¶¶ 123–124; Ex. 1024, 5:21–24, Figs. 5, 7).

Petitioner alleges that Pan’s cartomizer being insertable into the electronic inhaler’s portion for receiving the electronic atomizer discloses “a cartomizer insertable into the chamber at the insertion end” as recited in claim 1. Pet. 37–39 (citing Ex. 1005 ¶¶ 125–126; Ex. 1024, 2:48–50, 6:4–9, Figs. 3, 5, 7). Petitioner contends that Pan’s cartomizer including an electronic atomizer housing that includes a liquid container for being filled with liquid discloses “a body including a structure configured to hold a vaporizable liquid” as recited in claim 1. *Id.* at 39–40 (citing Ex. 1005 ¶¶ 127–128; Ex. 1024, 2:32–35, 4:15–18, 4:40–42, Fig. 3).

Petitioner argues that Pan’s electronic atomizer including a heat equalizer made of fiber that absorbs and transports liquid by capillary action discloses “a wicking element provided within the body and at least partially in contact with the vaporizable liquid” as recited in claim 1. Pet. 40–41 (citing Ex. 1005 ¶¶ 129–132; Ex. 1024, 2:57–60, 4:53–55, 5:2–3, 8:43–45, Fig. 3). Petitioner contends that Pan’s electronic atomizer including an electric heating wire that is twined with the heat equalizer and produces heat for the liquid discloses “a heating element provided within the body in contact with the wicking element and operable to heat the vaporizable liquid” as recited in claim 1. *Id.* at 41–42 (citing Ex. 1005 ¶¶ 133–135; Ex. 1024, 4:55–62, 5:2–3, 5:62–67, Fig. 3). Petitioner also contends that Pan’s heat equalizer absorbing the liquid to allow the heating wire to heat the liquid discloses “wherein the wicking element is configured to deliver the vaporizable liquid to the heating element” as recited in claim 1. *Id.* at 42

(citing Ex. 1005 ¶¶ 136–137; Ex. 1024, 2:57–60, 8:43–45, Fig. 3).

Petitioner argues that Pan’s heating wire is disposed in the electronic inhaler and protected by the inhaler tube, which discloses “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 chamber such that the outer shell protects the heating element” as recited in claim 1. *Id.* at 43–44 (citing Ex. 1005 ¶¶ 138–139; Ex. 1024, Fig. 7).

Patent Owner, at this time, does not challenge many of Petitioner’s allegations regarding the teachings of Pan and Levin. *See generally* Prelim. Resp. Patent Owner argues, however, that Petitioner has not shown (1) that Pan discloses a “wicking element” (*id.* at 14), (2) that Pan’s “wicking element is configured to deliver the vaporizable liquid to the heating element” (*id.* at 16), and (3) that a motivation to combine or a reasonable expectation of success exists in the combination of Pan and Levin (*id.* at 18). Because we agree that Petitioner has failed to show sufficiently that the references teach or suggest a “wicking element . . . configured to deliver the vaporizable liquid to the heating element” and has failed to establish that a reason to combine with a reasonable expectation of success exists, our discussion below focuses on those issues.

a) whether Pan discloses that the wicking element is configured to deliver the vaporizable liquid to the heating element

Patent Owner explains that “Petitioner identifies Pan’s heat equalizer 269 as the claimed ‘wicking element’ and Pan’s heating wire 265 as the claimed ‘heating element.’” Prelim. Resp. 16 (citing Pet. 40–42). Patent Owner asserts that “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.” *Id.* Patent Owner argues that “[t]o the contrary, Pan states that heating wire 265 provides heat to heat equalizer 269, and in turn, the heat equalizer ‘ensures that the heat generated by the electric wire is uniform.’” *Id.* at 16–17 (citing Ex. 1024, 6:55–56). According to Patent Owner, “Pan explicitly states that it is heat equalizer 269, not heating wire 269, that vaporizes any liquid.” *Id.* at 17 (citing Ex. 1024, 2:57–62; Ex. 2001 ¶¶ 84–87). Thus, Patent Owner asserts that vaporizable liquid is not delivered to heating wire 265 (i.e., the claimed “heating element”).

On this record, we agree with Patent Owner. Although Pan’s heat equalizer absorbs liquid and the heat equalizer is coupled to the electric wire (Ex. 1024, 2:57–60, 5:2–3, 8:43–45), we question whether the absorption of liquid by the heat equalizer discloses the delivery of the liquid to the heating wire, i.e., the heating element. Pan clearly describes the relationship between the heat equalizer and the heating wire as follows:

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.

Ex. 1024, 2:57–62 (emphasis added). We acknowledge Petitioner’s position, and Dr. Janet’s testimony, that Pan discloses that “[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.” Pet. 42 (citing Ex. 1024, 2:57–60, 8:43–45); Ex. 1005 ¶¶ 136–137. However, column 2 of Pan states that the heating wire heats the heat equalizer that contains the absorbed liquid. Ex. 1024, 2:57–60. In short, nowhere does

Pan teach that heat equalizer 269 delivers the vaporizable material to heating wire 265 for vaporization.

Thus, Petitioner has not demonstrated that Pan teaches or suggests “wicking element . . . configured to deliver the vaporizable liquid to the heating element.” Accordingly, we determine that Petitioner has not demonstrated a reasonable likelihood that claim 1 would have been obvious over the combination of Pan and Levin.

b) whether the combination of Pan and Levin renders obvious the electrical contacts at the end of the battery portion opposite the insertion end of the chamber of the cartomizer

Patent Owner submits that neither Pan nor the combination of Pan and Levin render obvious “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,” as recited in claim 1. Prelim. Resp. 18. Specifically, Patent Owner argues that the skilled artisan would not have had reason to combine Pan and Levin (*id.* at 19) and further that the skilled artisan would not have had a reasonable expectation of success in the combination (*id.* at 26).

Patent Owner argues that Petitioner’s reasons to modify Pan’s device to include Levin’s charging port are “conclusory and do not withstand scrutiny.” *Id.* at 19. According to Patent Owner, Petitioner’s reasons to combine are not discussed in Pan or Levin as purported advantages. *Id.* at 20, 22. In addition, Patent Owner argues a modification to include a charging port is unnecessary because (1) existing batteries can simply be

swapped for new batteries, (2) the additional charging port would disturb airflow and render the device unusable while charging, (3) a charging port would increase the cost and manufacturing difficulty, and (4) a charging port would add complexities to an otherwise simple device. *Id.* at 19–24 (citing Ex. 1024, 1:55–57, 2:4–7, 2:16–18, 5:29–36; Ex. 2001 ¶¶ 95–102). Patent Owner also argues that “Pan already teaches a connection for a DC circuit located at the middle of its assembled device” and a person of ordinary skill in the art would be motivated to “use the existing contacts” as opposed to adding contacts at one end of the device. *Id.* at 23 (citing Ex. 1024, 5:29–36; Ex. 2001 ¶¶ 99–101).

Patent Owner also argues that Petitioner has not established that an ordinarily skilled artisan would have had a reasonable expectation of success in making the combination because incorporating Levin’s charging port into the bottom of Pan’s device requires modifying Pan’s cigarette cap that is designed for air intake rather than battery recharging. Prelim. Resp. 24–25 (citing Ex. 1024, 5:31–32; Ex. 2001 ¶ 103). According to Patent Owner, Petitioner’s declarant does not remedy the deficiencies in the Petition. *Id.* at 25–26 (citing Ex. 2001 ¶ 101). Patent Owner argues that an ordinarily skilled artisan would not have had a reasonable expectation of success in modifying Pan’s device because the modifications would be complex and require analysis to avoid disturbing the airflow inside Pan’s device. *Id.* at 32–33 (citing Ex. 2001 ¶ 112).

On this record, we agree with Patent Owner that Petitioner’s assertions fail to account for disruptions to the air intake, and that Petitioner’s allegations of reasonable expectation of success are deficient. Pan’s cigarette cap 13 has small holes for airflow (*see* Ex. 1024, 5:9–11,

5:30–32), but Petitioner’s proposed combination requires incorporating Levin’s charging port into the cigarette cap (*see* Pet. 24–25, 35–36). Petitioner, however, does not explain how this modification would be accomplished. Petitioner simply asserts that “[m]icro-USB receptacles were standardized, well-known in the art, and specifically disclosed in prior art e-vapor devices” and that “Levin’s micro-USB charger contacts are installed at its end cap; Pan likewise has an end cap 13.” Pet. 24 (citing Ex. 1005 ¶ 105; Ex. 1026, 6:26–32; Ex. 1042, 5:57–60; Ex. 1003, 23:58–60). Petitioner reasons that a person of ordinary skill in the art “would have expected Levin’s micro-USB charger contacts to work equally well at Pan’s end cap.” *Id.* Dr. Janet offers little more. *See* Ex. 1005 ¶ 105. Petitioner and Dr. Janet imply that including Levin’s micro-USB port is “plug and play” or a matter of simple substitution. Pet. 24; Ex. 1005 ¶ 105. But, Patent Owner explains that modifying Pan’s device to include Levin’s micro-USB port “would also entail adding the associated internal circuitry necessary to support the externally-visible micro-USB connector.” Prelim. Resp. 27 (citing Ex. 2001 ¶ 105). For example, Levin states that “the device includes a port 31 to recharge the power source 30, such as a micro-USB charging port located on a printed circuit board behind a distal lens tip or endcap.” Ex. 1003, 14:10–13 (describing Figures 14A–14C). Petitioner does not sufficiently address how a person of ordinary skill in the art would have modified Pan’s device to account for the changes necessary to incorporate Levin’s micro-USB port.

Furthermore, Petitioner does not account for the disruption of air flow in the Pan device that would occur if the micro-USB port of Levin were positioned at a distal end from the insertion end. *See generally* Pet. As Pan

describes, the holes for air flow through the device are located in the end cap Petitioner proposes to replace. Specifically, Pan states that “[t]he user inhales through the air-puffing hole at an end of the electronic cigarette to create an air inflow, which triggers the atomization process” and that the electronic cigarette includes “cigarette cap 13 with small holes for air inflow.” Ex. 1024, code (57), 5:10–11. According to Dr. Collins, “blocking or otherwise restricting this airflow will impact the performance and functionality of Pan’s device, and adding Levin’s micro-USB connector will naturally affect the airflow” because “air inflow is *critical* to the operation of Pan’s device.” Ex. 2001 ¶ 107 (emphasis added). Dr. Collins further testifies that

a person of ordinary skill in the art would have known that things like changes in pressure inside the device, friction force, the volume and speed of the airflow, and how hard it is to draw air could all affect how well the device works. Therefore, the micro-USB port from Levin could not just be transplanted at the end of Pan’s device without affecting the air inlet holes and the overall way air flows through the device.

Id. Patent Owner, through the testimony of Dr. Collins, further states

None of the changes are straightforward. Instead, these modifications would require completely redesigning the device from scratch, including changing the electrical connections of the battery and the airflow connections to the sensor. . . . Having the correct airflow, connections, and fit are crucial. The draw resistance—how hard you have to pull to inhale the vapor—is a key factor and hard to get right. Among other things, the draw resistance affects how much effort the user needs to inhale; how much vapor is produced; the size of the visible vapor cloud exhaled; the “throat hit” sensation; and the particle size of the inhaled aerosol. All of these factors have to be carefully balanced to provide a satisfying user experience. But the proposed changes to Pan’s device would disrupt all of these interrelated factors. . . . As a result, a person of ordinary skill in

the art would understand that the changes are challenging. So they would not expect to be able to make the suggested changes successfully.

Id. ¶ 112. Petitioner’s conclusory assertions that because Pan has an end cap and Levin’s micro-USB charger contacts are in an end cap, “Levin’s micro-USB charger receptacle would work equally well when placed at Pan’s end cap” (Pet. 24; Ex. 1005 ¶ 105), are insufficient to account for the disruption of air flow in the Pan device.

As a result, Petitioner has not established that an ordinarily skilled artisan would have had reason to incorporate Levin’s charging port into Pan’s end cap where Pan’s airflow holes are positioned. Additionally, Petitioner has not established that a reasonable expectation of success in doing so exists. Accordingly, we determine that Petitioner has not demonstrated a reasonable likelihood that claim 1 would have been obvious over the combination of Pan and Levin.

3. *Remaining Claims 5, 7, and 9–21*

Petitioner asserts that claims 5, 7, 9–13, 15, 16, and 18–21 would have been unpatentable over the combination of Pan and Levin. Pet. 44–56. Petitioner also alleges that the combination of Pan, Levin, and Tucker would have rendered obvious claims 14 and 17 of the ’722 patent. Pet. 56–62. Claims 10 and 14 (as well as claims 5, 7, 9–13, 15, 16, and 18–21 by virtue of dependence from either of claims 1, 10, or 14) recite limitations substantially similar to those discussed above for claim 1 (*see* Ex. 1001, 18:33–20:63). Petitioner’s reliance on Tucker for claims 14 and 17 does not cure the deficiencies discussed above. *Id.* In view of our determination that Petitioner has failed to establish that the combination of Pan and Levin teaches or suggests “the wicking element is configured to deliver the

vaporizable liquid to the heating element,” a reason to modify Pan in view of Levin to include the “electrical contacts disposed at a first end of the battery,” and that the proposed modification would have had a reasonable expectation of success, we reach the same determination for claims 5, 7, and 9–21, that is, Petitioner has failed to establish a reasonable likelihood of prevailing on its assertion that claims 5, 7, and 9–21 would have been obvious over the combination of Pan and Levin with or without the addition of Tucker.

E. Challenges Based on Thorens788, Thorens231, and Levin (and Tucker)

Petitioner alleges that the combination of Thorens788, Thorens231, and Levin would have rendered obvious claims 1, 5, 7, 9–13, 15–16, and 18–21 of the ’722 patent. Pet. 62–101. Petitioner also alleges that the combination of Thorens788, Thorens231, Levin, and Tucker would have rendered claims 14 and 17 obvious. *Id.* at 102–106. Petitioner relies on the testimony of Dr. Janet to support its arguments. *See 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.

Figure 1

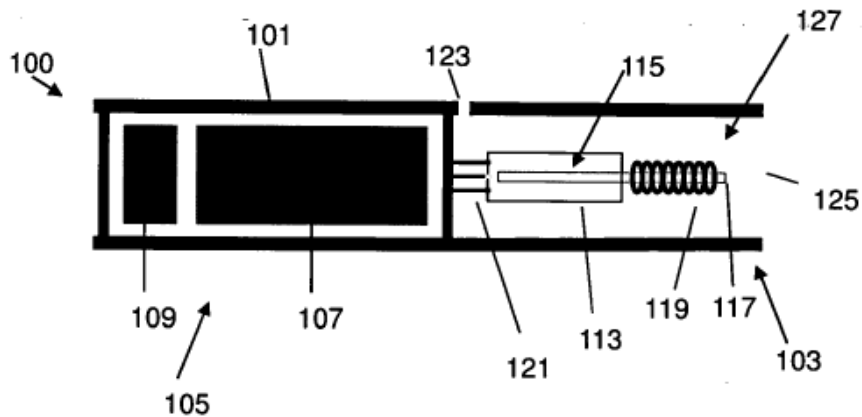


Figure 1 illustrates an aerosol generator. *Id.* at 11:15–16. Thorens788 describes aerosol generating system 100 that includes housing 101 having mouthpiece end 103 and body end 105, which includes battery 107 and circuitry 109. *Id.* at 12:6–11. Mouthpiece end 103 can include a liquid storage portion 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

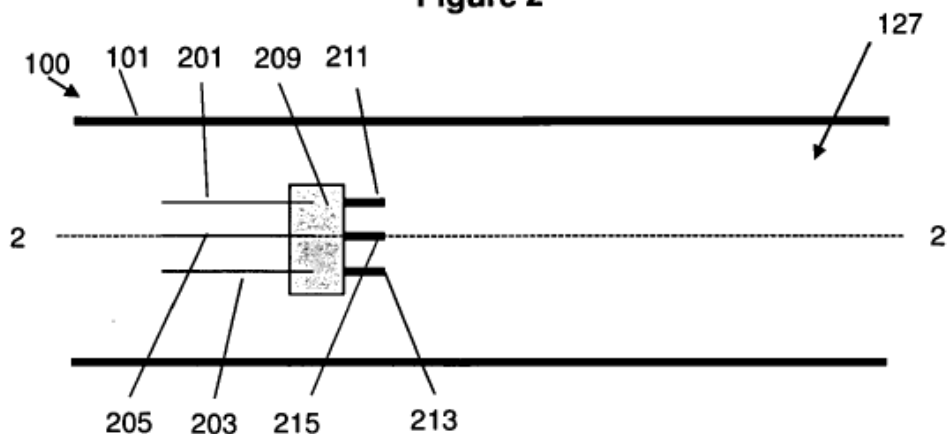


Figure 2 shows an enlarged portion of Figure 1 with liquid storage portion 113 removed. *Id.* at 11:17, 13:13–14. As indicated in Figure 2, first electrically conductive element 201 is electrically connected to first electrical connector 211, second electrically conductive element 203 is electrically 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.

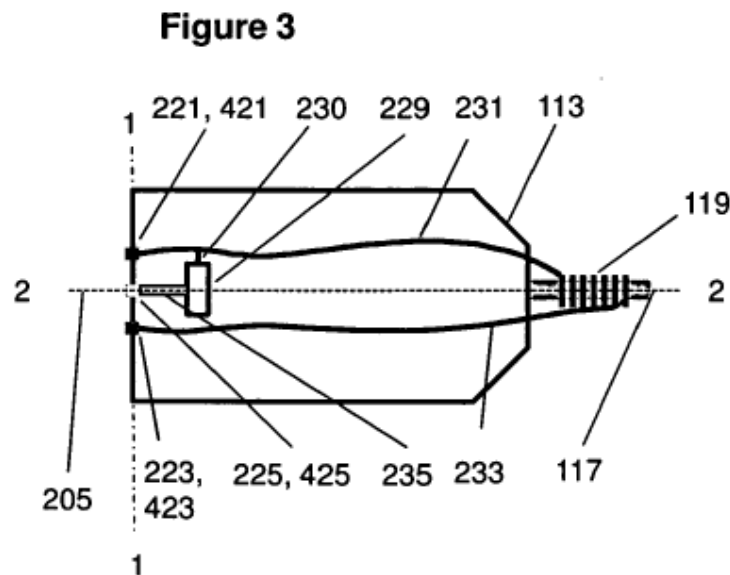


Figure 3 is a sectional view of a liquid storage portion. *Id.* at 11:18. As shown in Figure 3, liquid storage portion 113 includes “first, second and third electrical contacts 221 or 421, 223 or 423, 225 or 425 at a first end.” *Id.* at 14:5–8. The electrical contacts and electrically conductive portions

“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 Figure4 is reproduced below.

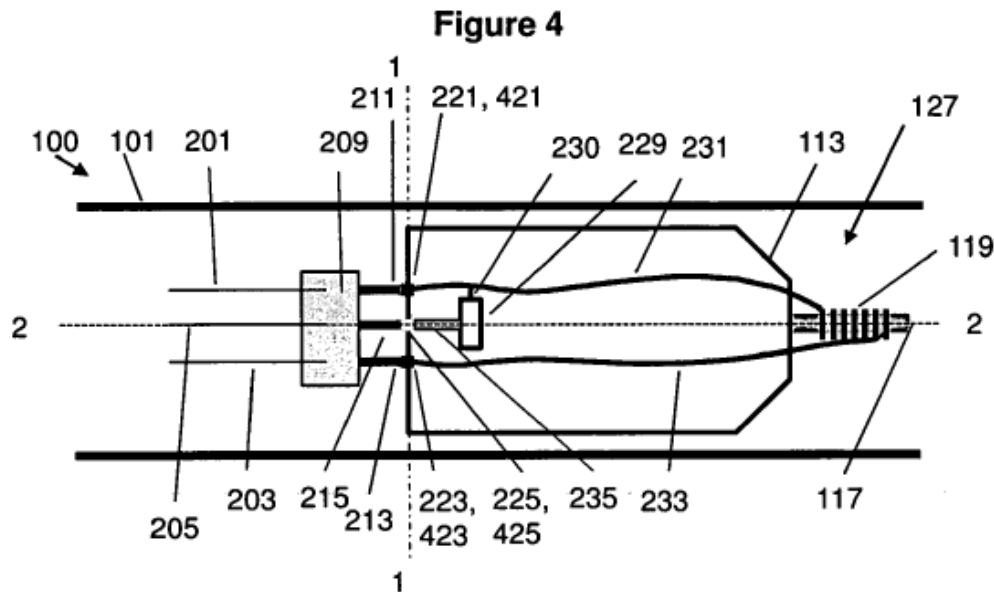


Figure 4 is a sectional view of the liquid storage portion 113 of Figure 3 inserted into the generating system 100 of Figure 2. *Id.* at 11:19–20; 15:15–16. When the liquid storage portion is inserted into the aerosol generating system, “electrical contacts 221, 223 on the liquid storage portion and 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.

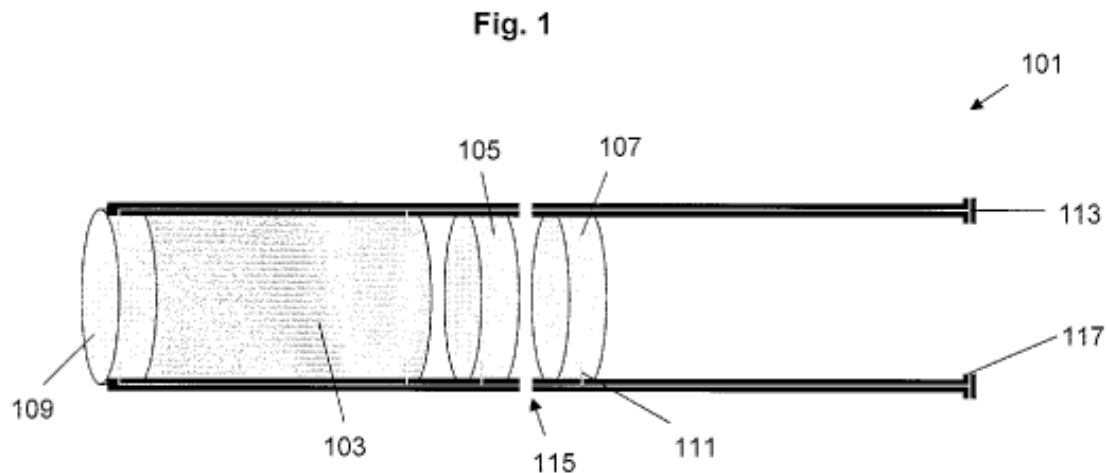


Figure 1 depicts the shell of an electrically heated smoking system. *Id.* at 6:23–24. Shell 101 includes battery 103, circuitry 105, puff detection system 107, puff indicator 109, electrical connections 111, electrical contacts 113, air inlets 115, and lock mechanism 117. *Id.* at 6:34–40. Shell 101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

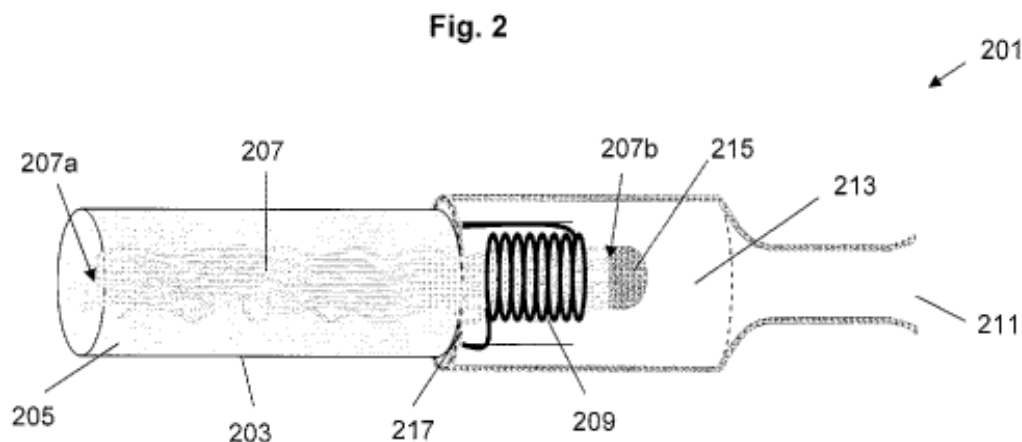


Figure 2 depicts the mouthpiece of an electrically heated smoking system. *Id.* at 6:25–26. Mouthpiece 201 includes cartridge 203 containing liquid 205, capillary wick 207, heating coil 209, air outlet 211, and aerosol forming chamber 213. *Id.* at 6:44–47. The first end 207a of capillary wick 207 extends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

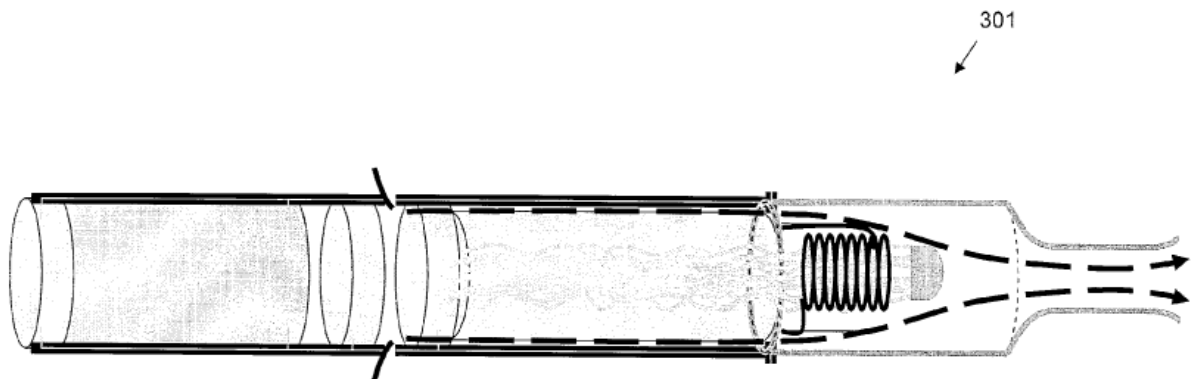


Figure 3 depicts a constructed electrically heated smoking system. *Id.* at 6:27–29. Figure 3 shows shell 101 engaged with mouthpiece 201 to form electrically heated smoking system 301. *Id.* at 6:54–56.

2. Analysis of Claim 1

Petitioner contends that claim 1 would have been obvious over the combination of Thorens788, Thorens231, and Levin. Pet. 62. Petitioner argues that the aerosol generator of Thorens788 discloses a “vaporizer” as recited in claim 1. *Id.* at 70 (citing Ex. 1004, 1:4, 6:22–23; Ex. 1005 ¶¶ 218–219). Petitioner contends that Thorens788 discloses a body end including a battery end and a mouthpiece end for receiving a cartridge, which discloses “a battery portion comprising a battery housing segment and a cartomizer receiving segment” as recited in claim 1. *Id.* at 70–73 (citing Ex. 1004,

12:12–15, Figs. 1–4; Ex. 1005 ¶¶ 220–225). Petitioner asserts that Thorens788 discloses that “[a]erosol generating system 100 includes a chamber for receiving a cartomizer” and that “[t]he chamber includes an insertion end that is distal from the segment housing battery 107 and a base end proximate to the battery 107.” *Id.* at 73–75 (citing Ex. 1005 ¶¶ 226–227; Ex. 1004, Figs. 1, 4).

Petitioner argues that “Thorens788 discloses a rechargeable battery” and that “Levin discloses an external charging port for recharging rechargeable batteries.” Pet. 75–76. Petitioner reasons that it would have been obvious for an ordinarily skilled artisan to modify Thorens788 to incorporate Levin’s charging port to charge the battery in the device of Thorens788 “for the reasons articulated [above] . . . convenience, compatibility, use of the device while charging, possibility of additional features, and ergonomics.” *Id.* at 67; *see also id.* at 65–68 (citing Ex. 1003, 23:58–61, Figs. 14B–C; Ex. 1004, 9:29–33, Fig. 4; Ex. 1005 ¶¶ 208–210; Ex. 1011, 10, 26–27; Ex. 1026, 6:26–32; Ex. 1042, 5:57–60). Petitioner also argues that “locating the charging contacts at the distal [end] minimizes the risk of the consumer touching the contacts during use.” *Id.* at 67. Thus, Petitioner contends that incorporating Levin’s micro-USB charging port into the housing of the device of Thorens788 discloses “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,” as recited in claim 1. Pet. 75–76 (citing Ex. 1003, 8:66–9:6, 23:58–62; Ex. 1004, 9:29–33; Ex. 1005 ¶¶ 228–229).

Petitioner argues that Thorens788 “discloses aerosol generating system 100 having housing 101, which extends to encompass both the battery segment and a cartomizer segment,” and that as shown in Figures 1, 2, and 4, “housing 101 is depicted as a continuous outer shell,” like the “commonly shared” outer shell of claim 1. Pet. 76–77 (citing Ex. 1004, Figs. 1, 2, 4; Ex. 1005 ¶¶ 230–231).

Petitioner contends that Thorens788 discloses a cartomizer cartridge that is insertable into the chamber of the aerosol generator, as recited in claim 1. Pet. 77–78 (citing Ex. 1004, 1:35–36, 12:12–13, 15:15–16, Fig. 4; Ex. 1005 ¶¶ 232–234). Specifically, Petitioner alleges that Thorens788 “discloses cartridge 113 containing liquid 115 and heating coil 119” and that the cartridge is a cartomizer. *Id.* at 78 (citing Ex. 1004, 12:12–13 (“In the mouthpiece end 103, there is provided a liquid storage portion or cartridge 113 containing liquid 115, a capillary wick 117 and a heating element in the form of a heating coil 119.”), 1:35–36 (“The liquid storage portion may further comprise a heating element.”); Ex. 1005 ¶ 233).

Petitioner contends that Thorens788 discloses a mouthpiece “wherein, ‘[p]referably, the liquid storage portion, capillary wick, the at least one heater and the air outlet are contained in the mouthpiece,’” and that Thorens231 discloses that a mouthpiece “include[s] a housing to protect the heating and wicking elements,” thereby suggesting “a body including a structure configured to hold a vaporizable liquid” as claimed. *Id.* at 78–81 (citing Ex. 1002, Fig. 2; Ex. 1004, 10:28–29, 12:12–13, Figs. 2, 3; Ex. 1005 ¶¶ 235–238). Petitioner contends that the skilled artisan would have had reason to modify Thorens788 to have a mouthpiece housing, such as that shown in Thorens231, because “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. 64 (citing Ex. 1005 ¶ 217).

As discussed above, Petitioner asserts that Thorens788 includes a capillary wick that extends into the liquid storage portion to draw the liquid by capillary action, and that Thorens231 illustrates these components, which together disclose “a wicking element provided within the body and at least partially in contact with the vaporizable liquid” as recited in claim 1. Pet. 81–83 (citing Ex. 1002, Fig. 2; Ex. 1004, 7:14–16, 7:32–33, 10:28–29, 10:31–34, 12:19–21; Ex. 1005 ¶¶ 239–243). Petitioner further alleges that Thorens788 discloses that the vaporizable liquid is drawn into the wick by capillary action. *Id.* at 82–83 (citing Ex. 1004, 7:32–33, 12:19–21).

Petitioner contends that the mouthpiece of Thorens788 includes “at least one heater” and Thorens231 illustrates these components. *Id.* at 83–84 (emphasis omitted) (citing Ex. 1002, Figs. 2, 3; Ex. 1004, 10:28–29, 10:31–34). Petitioner explains that “[h]eating coil 119 receives current from the power supply and vaporizes the liquid received from the liquid container.” *Id.* at 85 (citing Ex. 1004, 12:23–25). Thus, Petitioner argues that the combination of Thorens788 and Thorens231 discloses “a heating element provided within the body in contact with the wicking element and operable to heat the vaporizable liquid” as recited by claim 1. *Id.* at 83 (citing Ex. 1005 ¶¶ 244–250).

Petitioner contends that Thorens788 “deliver[s] the vaporizable liquid to the heating element” as claimed. Pet. 85 (citing Ex. 1005 ¶¶ 251–252). In particular, Petitioner alleges that

Thorens788 discloses a wicking element that wicks liquid to heating coil 119. Capillary wick 117 draws liquid by “capillary action from the cartridge 113 from one end of the wick 117 which

extends from the cartridge to another end of the wick 117 which is surrounded by the heating coil 119.” EX1004, 12:19–21. Power is then provided to heating coil 119 to vaporize the liquid delivered by wick 117.

Id. at 85–86 (citing Ex. 1004, 12:19–21, 12:23–27; Ex. 1005 ¶¶ 251–252).

Lastly, Petitioner contends that Thorens788 discloses that “heating element 119 is entirely disposed within the chamber within housing 101,” thus disclosing the final limitation of claim 1. *Id.* at 86–88 (citing Ex. 1003 ¶¶ 253–255; Ex. 1004, Figs. 1, 4).

Patent Owner, at this time, does not challenge many of Petitioner’s allegations regarding the combined teachings of Thorens788, Thorens231, and Levin. *See generally* Prelim. Resp. Instead, Patent Owner argues that Petitioner has not shown (1) a reason to combine Thorens788 with Levin (*id.* at 35, 38) or a reasonable expectation of success in the combination of Thorens788 and Levin (*id.* at 38, 43), (2) a reason to combine Thorens788 with Thorens231 (*id.* at 46, 48), or (3) a reasonable expectation of success in the combination of Thorens788 and Thorens231 (*id.* at 47, 52). Because we agree that Petitioner has failed to show a reasonable expectation of success exists in the combination of Thorens788 with Thorens231, our discussion below focuses on that issue.

Patent Owner contends that “Petitioner has ***no contention that the modification would be performed with a reasonable expectation of success.***” Prelim. Resp. 46. 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 mouthpiece modification to Thorens788’s device with a reasonable expectation of success.” *Id.* at 47–48; *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 combining Thorens788 and Thorens231 in the Petition with respect to this ground. *See e.g.*, Pet. 62–65, 78–85 (discussing the combination of Thorens788 and Thorens231). 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. 64. Petitioner further alleges that a person of ordinary skill in the art “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.” *Id.*; *see also id.* at 62–63 (noting only that the references “share common inventors and [are] directed to substantially the same invention”), Ex. 1005 ¶¶ 214–217, 238 (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 ¶ 217 (testifying that an additional reason to modify Thorens788 is that pulling on the heating element “is inconvenient and unsanitary”); *see id.* ¶¶ 214–217, 238 (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 implicit argument in Petitioner’s arguments directed to common inventors, same alleged invention, and possible injury to the consumer, and the evidence discussed above that supports motivation to combine fails to support a reasonable expectation of success.

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, Thorens231, and Levin.

3. *Remaining Claims 5, 7, and 9–21*

Petitioner also asserts that claims 5, 7, 9–13, 15, 16, and 18–21 would have been unpatentable over Thorens788, Thorens231, and Levin. Pet. 88–101. Petitioner also alleges that the combination of Thorens788, Thorens231, Levin, and Tucker would have rendered obvious claims 14 and 17 of the ’722 patent. *Id.* at 102–106. Claims 10 and 14 (as well as claims 5, 7, 9–13, 15, 16, and 18–21 by virtue of dependence from either of claims 1, 10, or 14) recite limitations substantially similar to those discussed above for claim 1 (*see* Ex. 1001, 18:33–20:63). Petitioner’s reliance on Tucker for claims 14 and 17 does not cure the deficiencies discussed above. Pet. 102–106. In view of our determination that Petitioner failed to establish that the proposed modification of Thorens788 and Thorens231 would have had a reasonable expectation of success, we reach the same determination for claims 5, 7, and 9–21, that is, Petitioner has failed to establish a reasonable likelihood of prevailing on its assertion that claims 5, 7, and 9–21 would have been obvious over the combination of Thorens788, Thorens231, with or without the addition of Tucker.

F. *Objective Indicia of Nonobviousness*

Patent Owner argues that “there is strong and indisputable objective evidence of non-obviousness.” Prelim. Resp. 54; *see also id.* at 55–79 (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 does not demonstrate 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 '722 patent.

IV. ORDER

It is ORDERED that the Petition is denied as to all challenged claims of the '722 patent and no trial is instituted.

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