

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUUL LABS, INC.,
Petitioner,

v.

NJOY, LLC,
Patent Owner.

IPR2024-00161
Patent 10,334,881 B1

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

KALAN, *Administrative Patent Judge*.

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

I. INTRODUCTION

JUUL Labs, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–27 of U.S. Patent No. 10,334,881 B1 (Ex. 1001, “the ’881 patent”). NJOY, LLC (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 6 (“Prelim. Resp.”). Petitioner filed a Preliminary Reply to the Preliminary Response. Paper 7 (“Prelim. Reply”). Patent Owner filed a Preliminary Sur-Reply to the Preliminary Reply. Paper 8 (“Prelim. Sur-Reply”).

We have authority to determine whether to institute *inter partes* review. 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2023). The standard for instituting *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that *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 parties’ papers and the evidence of record, we determine that Petitioner has established a reasonable likelihood of prevailing with respect to at least one challenged claim. Accordingly, we grant the Petition and institute *inter partes* review.

A. *Real Parties-in-Interest*

Petitioner identifies itself as the real party-in-interest. Pet. 4. Patent Owner identifies NJOY, LLC and Altria Group, Inc. as real parties-in-interest. Paper 5, 2.

B. *Related Proceedings*

The parties identify *Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof*, 337-TA-1372 (ITC) and *NJOY, LLC, v. JUUL Labs, Inc.* 23-cv-00917 (D. Del.) as related proceedings. Pet. 4;

Paper 5, 2. Petitioner also states that the '881 patent was previously the subject of litigation by Patent Owner's "predecessor-in-interest Fuma International LLC as plaintiff against R.J. Reynolds Vapor Company in the U.S. District Court for Middle District of North Carolina, Case Nos. 1-19-cv-00260 and 1-19-cv-00660, both of which were dismissed on December 2, 2021." Pet. 5 (the "M.D.N.C. Litigation").

C. The '881 Patent

The '881 patent, titled "Electronic Vaporizer," issued on July 2, 2019. Ex. 1001, codes (45), (54). The '881 is directed to an "electronic vaporizer includ[ing] a cartridge that facilitates provision of a vaporized solution to an individual." *Id.* at code (57).

The '881 patent states that "[c]onventional electronic cigarette designs generally include a battery, a heating element, and a mouthpiece. The mouthpiece includes a liquid solution that comprises nicotine, and the battery provides power to the heating element, which in turn operates to vaporize the solution." *Id.* at 1:21–26. The '881 patent further states that "manufacturers of vaporizers generally manufacture a power source and a heating element in a proprietary manner, such that only a heating element provided by the manufacturer can be electrically or electronically coupled to a power source provided by the manufacturer." *Id.* at 1:62–66. The '881 patent provides adapters "configured to electrically or electronically couple power sources from a first manufacturer with a heating element from a second manufacturer." *Id.* at 2:5–7.

Figure 1 of the '881 patent is reproduced below.

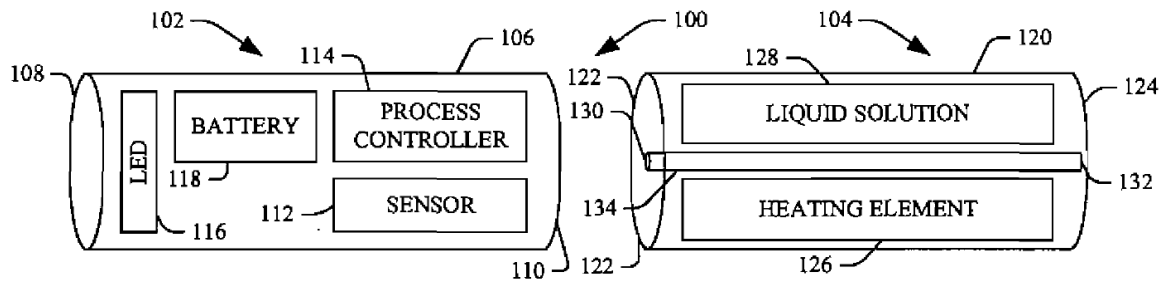


Figure 1 depicts “a functional block diagram of an exemplary electronic vaporizer.” *Id.* at 2:18–19. Electronic vaporizer 100 includes power source 102 and cartridge 104, which are mechanically and electrically coupled. *Id.* at 2:60–63.

Power source 102 includes housing 106 having first end 108, second end 110, and an interior. *Id.* at 3:10, 3:26–28. Second end 110 can include an aperture (not shown) configured to receive airflow from a user. *Id.* at 3:28–30. Cartridge 104 includes housing 120 having first end 122 and second end 124, both of which may be considered as a portion of the housing or apart from the housing, heating element 126 in the interior of housing 120, and solution 128 in the interior of housing 120. *Id.* at 3:44–47, 3:63–64; 4:5–6. First end 122 comprises first aperture 130 that is located approximately the center of first end 122. *Id.* at 4:28–30. Similarly, second end 124 comprises second aperture 132 that is located at approximately the center of second end 124 of cartridge 104. *Id.* at 4:30–32. Airflow passageway 134 extends between first aperture 130 and second aperture 132 axially proximate to the center of housing 120. *Id.* at 4:33–35.

Figure 2 of the '881 patent is reproduced below.

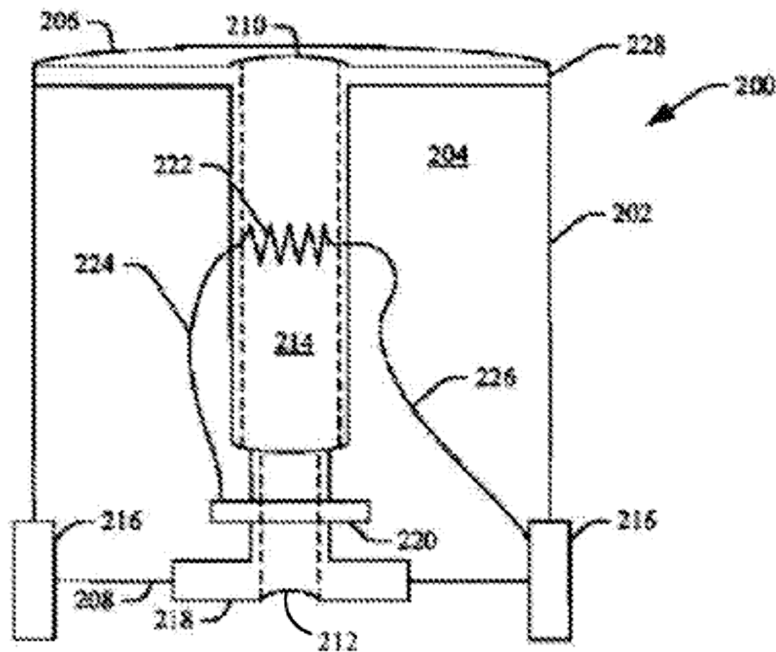


Figure 2 depicts an “exemplary configuration of a cartridge for utilization in an electronic vaporizer.” *Id.* at 2:20–21. Cartridge 200 includes housing 202 having first end 206, second end 208, and liquid solution in absorbent material 204. *Id.* at 5:65–6:4. First and second ends 206, 208 have respective first and second apertures 210, 212; “air passageway 214 begins at the first aperture 210 and extends to the second aperture 212 approximately along the central axis of cartridge 200.” *Id.* at 6:10–22. Cartridge 200 further includes conductive element 216 having metallic threads that facilitate mechanically and electrically coupling the cartridge 200 with a power source (battery). *Id.* at 66:25–29. Conductive lines 224, 226 couple heating element 222 to electrical isolator 220 and conductive element 216. *Id.* at 6:41–44.

D. Illustrative Claims

Petitioner challenges claims 1–27 of the '881 patent. Claims 1, 8, and 16 are the independent claims challenged. Claim 1 is reproduced below as the illustrative claim.

- 1[p]. An apparatus comprising:
 - 1[a1] a power source,
 - 1[a2] wherein the power source includes a battery,
 - 1[a3] wherein the power source includes an electrically conductive portion; and
 - 1[b1] a cartridge having a housing that comprises an interior,
 - 1[b2] wherein the housing includes a first end and a second end that is opposite the first end, wherein the housing includes a first aperture on the first end and a second aperture on the second end,
 - 1[c] wherein the housing includes an airflow passageway that extends centrally and axially with respect to the housing intermediate of the first aperture on the first end of the housing and the second aperture on the second end of the housing,
 - 1[d] wherein the airflow passageway is configured to allow an airflow through the cartridge from the first aperture to the second aperture of the housing,
 - 1[e] wherein the first end of the housing includes an electrically conductive portion that is adapted to mechanically and electrically couple to the electrically conductive portion of the power source,
 - 1[f] wherein the housing includes a solution holding medium adapted to hold a solution in the interior of the housing,
 - 1[g] wherein the housing includes a heating element located in the interior of the housing, wherein the heating element extends transversely across the airflow passageway, wherein the airflow through the passageway passes on both transverse sides of the element,
 - 1[h] wherein the solution holding medium surrounds the airflow passageway and the heating element in the interior of the housing and intermediate of the first end and the second end,
 - 1[i] wherein the heating element is electrically configured to vaporize at least a portion of the solution to be contained in the

solution holding medium for oral provision to an individual in an airflow from the second aperture responsive to electrical power received from the battery through the electrically conductive portions of the cartridge and the power source.

Ex. 1001, 17:16–57 (bracketed annotations added by Petitioner).

E. The Asserted Unpatentability Challenges

Petitioner asserts that claims 1–27 would have been unpatentable based on the following grounds:

Claims Challenged	35 U.S.C. § ¹	References/Basis
1–27	103	Xia, ² Wang, ³ Fang ⁴
1–27	103	Wang, Fang

Petitioner relies on declaration testimony of Robert A. Sturges (Ex. 1007).

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). The burden of persuasion never shifts to Patent Owner.

¹ 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 ’881 patent claims priority were filed before this date, the pre-AIA version of § 103 applies.

² Patent No. CN201238610, issued May 20, 2009 (“Xia”). Ex. 1027; Ex. 1004 (English translation). When referring to foreign references in this decision, we refer to the English translations filed by Petitioner.

³ Patent Publication No. CN101366554, published February 18, 2009 (“Wang”). Ex. 1029; Ex. 1005 (English translation).

⁴ Chinese Patent No. CN 201085044Y, issued July 16, 2008 (“Fang”). Ex. 1031; Ex. 1006 (English translation).

Dynamic Drinkware, LLC v. Nat'l Graphics, Inc., 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A claim is unpatentable under 35 U.S.C. § 103 if “the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” 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) when present, objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

To show obviousness, it is not enough to merely show that the prior art includes separate references covering each separate limitation in a challenged claim. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). “Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.” *Id.* (citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007)). “This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *KSR*, 550 U.S. at 418–19. On the other hand, an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in

the art would employ.” *Id.* at 418; *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007).

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art (“POSITA”) “would have had a mechanical or electrical engineering degree, industrial design degree, or a similar technical degree, or equivalent work experience, and 5 to 10 years of experience in electromechanical devices.” Pet. 10 (citing Ex. 1007 ¶ 16). Patent Owner states that, for “the limited purpose of this Preliminary Response,” it “does not challenge the definition of a POSITA set forth in the Petition.” Prelim. Resp. 9.

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 ’881 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 ’881 patent and the prior art. *See also Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (explaining that specific findings regarding ordinary skill level are not required “where the prior art itself reflects an appropriate level and a need for testimony is not shown”) (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985)).

C. Claim Construction

In an *inter partes* review, 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 identifies a number of claim constructions provided by the district court in the M.D.N.C. Litigation involving terms from the ’881 patent, which are reproduced below. Pet. 10–11 (citing Ex. 1020).

Term	Construction
solution holding medium Claims 1, 16	A location, container, or mechanism to hold the solution, including but not limited to at least one of an absorbent material, a chamber, a reservoir, a capsule, or any combination thereof.
an electrically conductive portion Claims 1, 8, 16	Ordinary meaning: A portion that is electrically conductive.
wherein the heating element is electrically configured to vaporize at least a portion of the solution to be contained in the solution holding medium Claim 1; claims 8, 16 (similar)	Ordinary meaning: The solution can be, but need not be, in the solution holding medium when vaporized by the heating element.
an airflow passageway that extends centrally and axially with respect to the housing intermediate of the first aperture on the first end of the housing and the second aperture on the second end of the housing; wherein the airflow passageway is configured to allow an airflow through the cartridge from the first aperture to the second aperture of the housing Claim 1; claims 8, 16 (similar)	The airflow passageway extends in a straight path [□] through the center of the cartridge from a first opening on the first end to a second opening on the opposite end of the cartridge

Petitioner argues that in Patent Owner’s motion for summary judgment in the M.D.N.C. Litigation, Patent Owner took positions regarding the terms “first aperture” and “airflow passageway,” which were adopted by the district court and are relevant to the present petition. Pet. 11–12.

Below, we address the construction of the term “the housing includes/having a first aperture on the first end” of the housing. For purposes of this Decision, we need not expressly construe any other claim terms. *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.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

1. “the housing includes/having a first aperture on the first end”

a) Parties’ Positions

Claim element 1[b2] recites “the housing includes a first end and a second end . . . , the housing includes a first aperture on the first end.” Ex. 1001, 17:22–25. Corresponding language in independent claims 8 and 16 recites “the housing having a first end and a second end . . . , the housing having a first aperture on the first end.” *Id.* at 18:23–26, 19:25–29.

Petitioner presents no express claim construction of this term, but argues that, in the M.D.N.C. Litigation, Patent Owner “took—and the District Court adopted—positions relevant to this petition, including positions regarding the claimed first aperture.” Pet. 11. Petitioner argues that Patent Owner “asserted that the claimed ‘first aperture on the first end’

of the cartridge housing is met by a single opening **inside** the housing, where air entering the cartridge converges at that opening to pass through to the alleged airflow passageway.” *Id.* at 12 (citing Ex. 1021 (“Fuma Summary Judgment Brief”), 9–12). Petitioner asserts that the district court agreed with Patent Owner when it granted summary judgment of infringement, and that the district court “explicitly held that the aperture internal to the device, at the beginning of the internal passageway, *i.e.*, the hole within the internally-contained ‘positive pin’ depicted above, meets the requirement for a first aperture ‘on the first end.’” Pet. 12–13 (citing Ex. 1014 (“RJR Brief”), 44; Ex. 1015 (“Summary Judgment Order”), 14–18). Petitioner argues that in the parallel ITC case, “Patent Owner is asserting this same product is covered by the ’881 patent claims and that this internal aperture meets the ‘on’ limitation.” *Id.* at 13. Petitioner argues, in connection with Ground 1, that “the position of a first aperture is not limited to only the very edge or exterior of the device.” *Id.* at 35. In arguing the merits of the case, Petitioner asserts that claim element 1[b2] is met by first apertures in Xia and Wang. *See, e.g., id.* at 32–36 (asserting Xia discloses a “first aperture”), 90–91 (asserting Wang discloses a “first aperture”).

Patent Owner responds that the “first apertures” identified by Petitioner in the prior art “are not apertures in the housing as required by the claims but are instead apertures in structures interior to the housing.” Prelim. Resp. 2; *see also id.* at 25–26 (“Petitioner’s ‘first aperture’ is not the ‘first aperture’ required by the claims because it is not in Xia’s stainless steel shell”); *id.* at 27–29 (Wang does not meet the claim limitations because “the first (and second) ‘aperture’ identified by the Petitioner is in the liquid storage material (*i.e.*, organic fiber 105), not the housing”); *see also* Prelim. Sur-

Reply 4 (stating “Petitioner failed to identify a first aperture *in the housing* in any of its prior art references” because the “only apertures identified by Petitioner are apertures internal to the housing”). Patent Owner argues, with respect to Petitioner’s reliance on prior art, that “what Petitioner identifies as the ‘first aperture’ is not a ‘**housing** includes a first aperture on the first end’ as required by the challenged claims because Petitioner’s ‘first aperture’ is not in the housing.” Prelim. Resp. 14 (discussing Xia); *see also id.* at 19 (discussing Wang: “what Petitioner identifies as the ‘first aperture’ and ‘second aperture’ is not a ‘**housing** includes a first aperture on the first end and a second aperture on the second end’ as required by the challenged claims because these apertures are not in the housing”). Regarding the M.D.N.C. Litigation, Patent Owner asserts that the “opening at the base of the positive pin,” which was identified as the aperture, is in fact “the housing’s hole, which can be seen when viewing the exterior of the cartridge.” *See, e.g.,* Prelim. Sur-Reply 2–3 (citing Prelim. Resp. 27). Patent Owner points to the Vuse Ciro⁵ device relied on in the ITC proceeding, and states that its “threaded connector is part of the housing (*i.e.*, the outer structure of the device),” but “even if the threaded connector was not considered part of the housing, the housing has an aperture to accommodate the threaded connector.” *Id.* at 2 (citing Prelim. Reply 1). Thus, Patent Owner appears to construe “housing includes/having a first aperture” to mean that the aperture must be an aperture *in* the housing itself (*i.e.*, the aperture is an opening through the structure of the housing itself as

⁵ Patent Owner states that it “dropped its reliance on the Vuse Ciro in the ITC investigation.” Prelim. Sur-Reply 2.

opposed to an opening through a structure that is located within the interior of the housing).

b) Analysis

We start with the claim language itself. The claims do not recite that the aperture is “in the housing.” Rather, the claims recite a “housing includes/having a first end” and a “housing includes/having a first aperture on the first end.” Thus, the plain and ordinary understanding of the claim language “housing includes/having a first aperture on the first end” does not require that the aperture be “in the housing.”

Claim 1’s use of the term “includes” (and claim 8 and 16’s use of the term “having”) is also instructive to our analysis. Claim 1 also recites “the housing *includes* a solution holding medium adapted to hold a solution.” Ex. 1001, 17:38–40, 18:22–23 (claim 8, “a housing *having* an interior and a solution holding medium reservoir adapted to hold a solution”), 19:23–25 (claim 16, “a housing *having* an interior and a solution holding medium adapted to hold a solution”). The Specification states that a “heating element and liquid solution (e.g., placed in an absorbent material) are caused to be included in the housing.” Ex. 1001, 9:32–34. “The heating element *and the liquid solution* reside *in the interior of the housing*.” *Id.* at 9:36–38 (emphasis added). The use of the same phrase—*housing includes a*—in claim 1 and *housing having a* in claims 8 and 16—creates the presumption that the phrase is used consistently throughout the claim. *See Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001) (“a claim term should be construed consistently with its appearance in other places in the same claim or in other claims of the same patent”). Thus, the term “includes” is used more expansively in claim 1, and the term “having” is

used more expansively in claims 8 and 16, than urged by Patent Owner. The particular term “housing includes/having a first end” appears to encompass a housing having that claim element located *within* the housing, and is not limited to a housing that has the recited claim element as part of the housing itself.

Regarding the extrinsic evidence of Patent Owner’s statements made during the M.D.N.C. Litigation and ITC proceeding, we agree with Petitioner that these statements could be also be understood to support construction of the term a “housing includes/having a first aperture on the first end” that encompasses a first aperture that is located within the housing as opposed to an aperture located in the housing itself. For example, Petitioner asserts that Patent Owner mapped the “first aperture” claimed in the ’881 patent to an aperture within a threaded connector, not the housing, in the Vuse Ciro device. Prelim. Reply 1–2 (citing Ex. 1032, 3, 6, 10; Ex. 1014, 14, 37; Ex. 1015, 16–17). Petitioner has provided sufficient argument that Patent Owner’s mapping of apertures that are arguably located within the interior of a housing, as opposed to located in the housing itself, supports a construction that does not require the “first aperture” of the ’881 patent to be located in the housing itself.

Patent Owner’s arguments to the contrary are not sufficiently developed to be persuasive at this stage of the proceeding. For example, Patent Owner asserts that the accused aperture in the Vuse Ciro device can be seen from the outside of the cartridge. Prelim. Resp. 26–27; Prelim. Sur-Reply 2. However, whether or not the aperture can be seen from outside the cartridge does not clearly address whether or not the asserted aperture is necessarily located in the housing of the cartridge or is merely located within

the interior of the housing. Additionally, in response to Petitioner’s argument that the asserted aperture of the Vuse Ciro device is “within a threaded connector, not the housing” (Prelim. Reply 1 (citing Ex. 1032, 3, 6)), Patent Owner asserts that “even if the threaded connector was not considered part of the housing, the housing has an aperture to accommodate the threaded connector.” Prelim. Sur-Reply 2. It is unclear from the record before us whether Patent Owner is asserting that the Vuse Ciro device has two apertures, i.e., one aperture in the housing and a second aperture in the threaded connector, and which of these apertures satisfies the “first aperture” limitation claimed in the ’881 patent.

Having considered the parties’ arguments and the intrinsic and extrinsic evidence of record, we construe the term “the housing includes/having a first aperture on the first end” of the housing to encompass apertures that are located within the first end of the housing. The term does not require that the first aperture be located in the housing itself. Our construction is preliminary and the parties are invited to address claim construction of this term during trial.

2. Additional Terms

The parties do not present express constructions for the remaining terms in the M.D.N.C. Litigation table (Pet. 10–11), but do discuss throughout the briefing the interpretation of certain claim terms vis-a-vis the related proceedings. For example, Petitioner discusses the term “airflow passageway” (*id.* at 36–41) as does Patent Owner (PO Resp. 30). The parties are invited to address claim construction of this or any additional terms during trial.

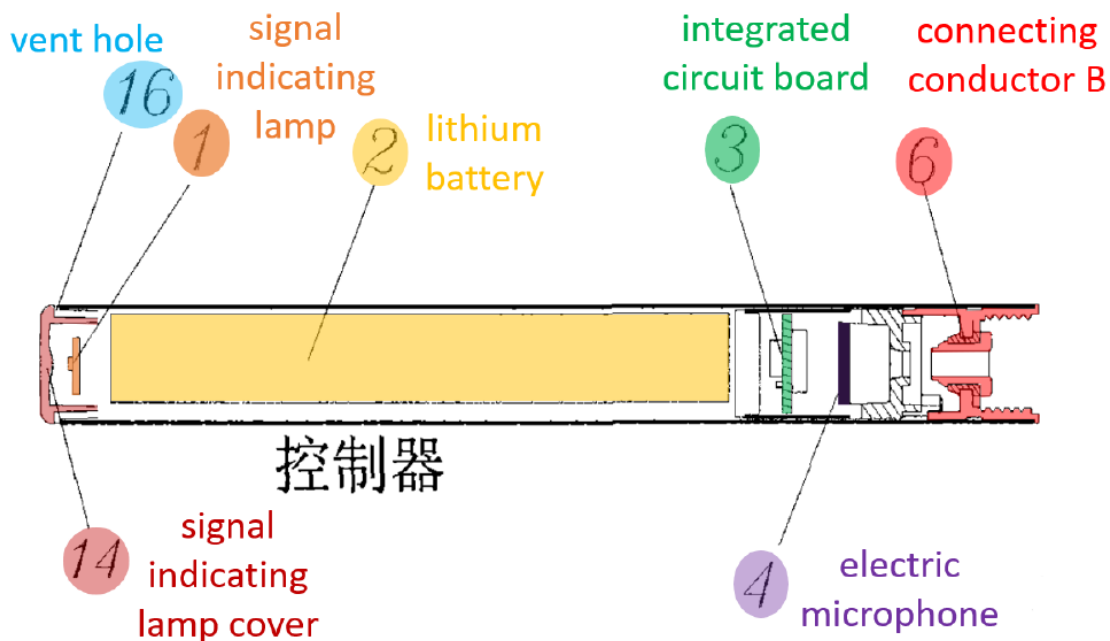
D. Challenges Based on Xia (Petitioner’s Ground 1)

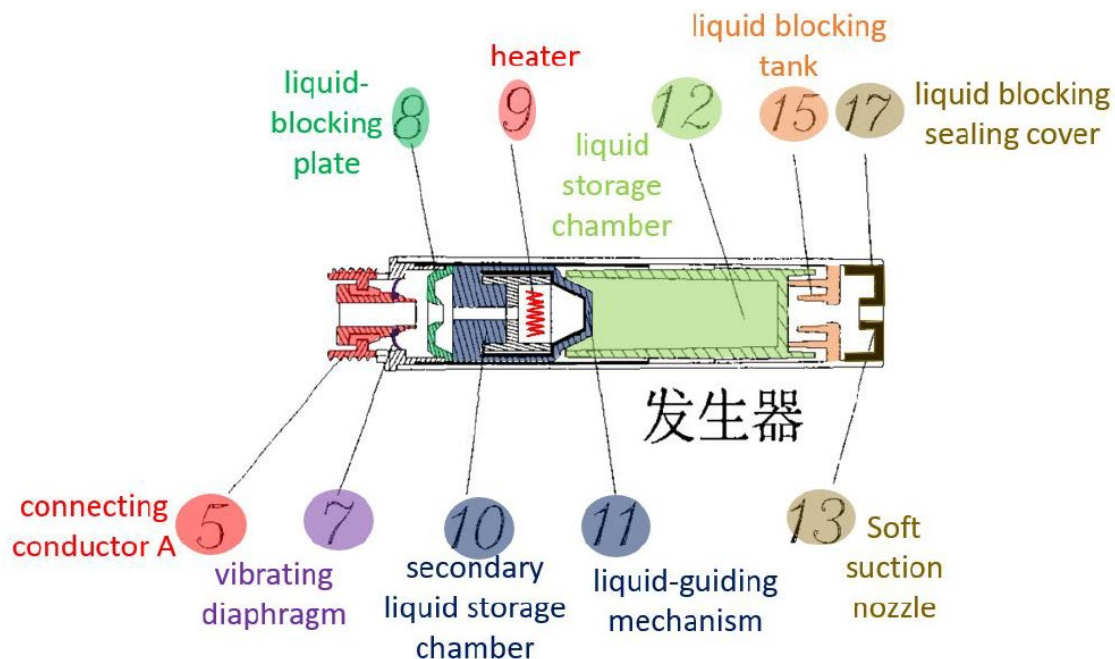
Petitioner argues that claims 1–27 would have been obvious in view of Xia, Wang, and Fang. Pet. 27–86. Patent Owner disputes Petitioner’s arguments. Prelim. Resp. 24–43.

1. Overview of the Prior Art

a) Xia (Ex. 1004)

Xia is a Chinese patent titled “Environmental-protecting Type Incombustible Atomizing Electronic Cigarette with Function of Cigarette Substitute” and discloses an electronic cigarette including a “detachable controller and a generator.” Ex. 1004, codes (11), (54), (57); *see also id.* at 7 (“the technical solution . . . [is an] electronic cigarette with a function of a cigarette substitute, comprising a detachable controller and a generator”). Patent Owner’s annotated version of Xia’s Figure 2 from Ex. 1027 (foreign language version) is reproduced below:





Prelim. Resp. 10–11. Xia’s Figure 2 is a “detachment schematic structural diagram of the . . . atomizing electronic cigarette” comprising a detachable controller (top) and a generator (bottom) Ex. 1004, 9, 17; Ex. 1027, 15. Xia provides the following listing of the illustrated features:

1 signal indicating lamp, 2 rechargeable lithium battery, 3 integrated circuit board, 4 electret microphone, 5 connecting conductor A, 6 connecting conductor B, 7 vibrating diaphragm, 8 liquid-blocking plate, 9 heater, 10 secondary liquid storage chamber, 11 liquid-guiding mechanism, 12 liquid storage chamber, 13 soft suction nozzle, 14 indicating lamp cover, 15 liquid blocking tank, 16 vent hole, 17 liquid blocking sealing cover.

Ex. 1004, 9.

b) Wang (Ex. 1005)

Wang is a Chinese patent publication titled “Electronic Pure Cigarette,” and discloses an electronic cigarette including a “cigarette holder part and a cigarette rod part.” Ex. 1005, codes (11), (54), (57); *see also id.* at 4 (“technical solution” is an electronic cigarette that “comprises a

cigarette holder part and a cigarette rod part”). Figures 2 and 3 of Wang are reproduced below.

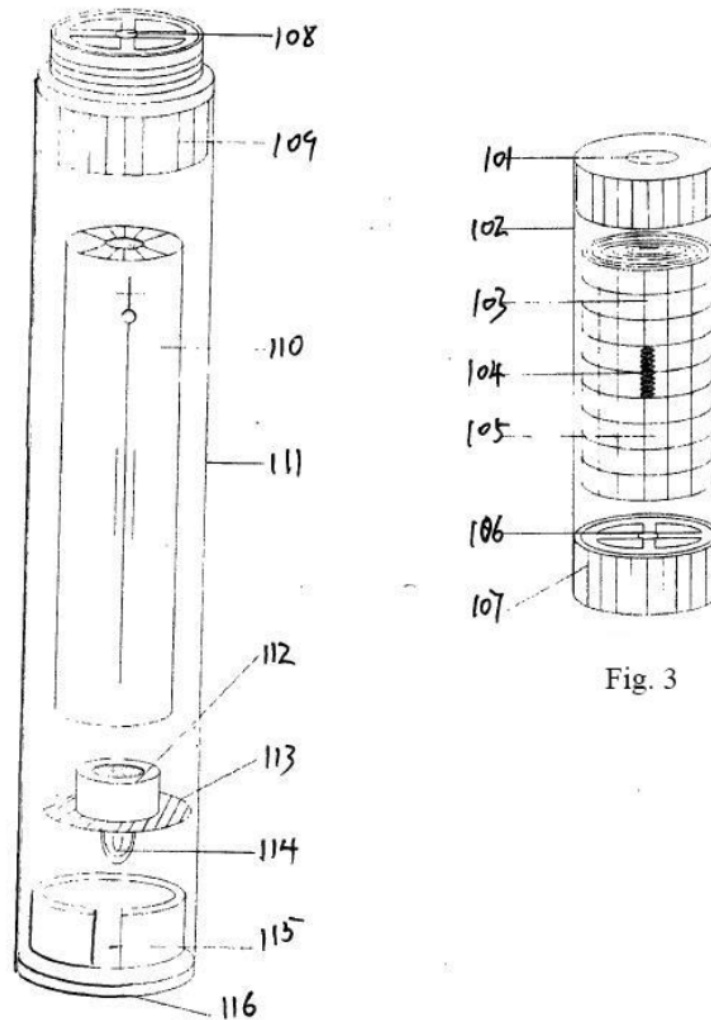


Fig. 2

Fig. 3

Figures 2 and 3, shown above, are schematic structural diagrams of a cigarette rod part (Figure 2) and of a cigarette holder part (Figure 3).

Id. at 5.

Wang provides the following listing of the illustrated features:

an electronic pure cigarette comprises a cigarette rod consisting of a cigarette rod shell 111, a battery 110, a sensor 112, an indicating lamp 114, a circuit control board 113, an indicating

lamp cover 116, an air inlet 115, an air outlet 108, an output end 109, and the like; and a cigarette holder consisting of a cigarette holder shell 102, an electric heater 104, a tobacco extract 103, an organic fiber 105, an air inlet 106, an air outlet 101, an input end 107, and the like.

Id.

Rod shell 111 “is a hollow cylinder, providing a space for the battery 110, the sensor 112, the indicating lamp 114, the circuit control board 113 and wires to solder them.” *Id.* at 5–6. At one end of the shell “is one end of the air outlet 108 . . . connected to the input end of the cigarette holder along with the output end 109.” *Id.* at 6. At the other end of the shell “is one end of the air inlet 115 on the indicating lamp cover 116” and “forms an uninterrupted airflow channel together with a gap inside the shell 111.” *Id.*

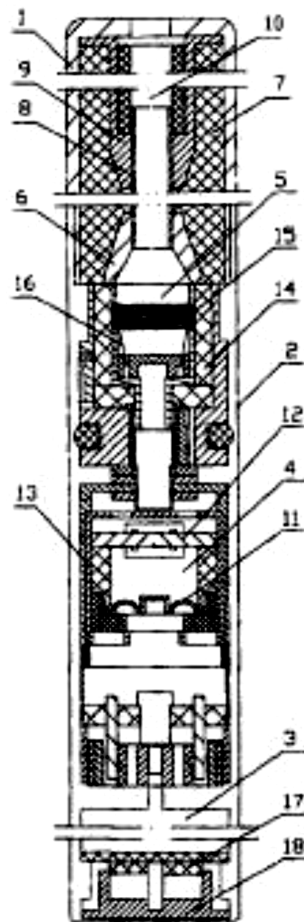
“The cigarette holder shell 102 is a hollow cylinder with one end being one end of the air inlet 106, and is connected to the output end 109 of the cigarette rod together with the input end 107.” *Id.* at 7. “The other end is one end of the air outlet 101.” *Id.* “The interior of the shell 102 provides a space for the electric heater 104 and the tobacco extract 103 and organic fiber 105 wound around it.” *Id.*

The “air inlet 115 of the cigarette rod, an internal gap of the cigarette rod, the air outlet 108 of the cigarette rod, the air inlet 106 of the cigarette holder, an internal gap of the cigarette holder and the air outlet 101 of the cigarette holder form the complete airflow channel.” *Id.* at 8. “The air inlet 115 of the cigarette rod may be placed in the middle or on a side of the indicating lamp cover 116, and may also be opened in the side of the shell 111.” *Id.* at 6. “The air outlet 108 of the cigarette rod is placed in the middle or on a side of the output end 109.” *Id.* “The air inlet 106 of the

cigarette holder is placed in the middle or on a side of the input end 107 of the cigarette holder.” *Id.* at 7. “The air outlet 101 of the cigarette holder may be integrated with the cigarette holder shell 102 or may be separated.” *Id.* at 8.

c) Fang (Ex. 1006)

Fang is a Chinese patent titled “Electronic Cigarette,” and discloses an electronic cigarette including a “fuming device control switch” and “nicotine oil fuming device” that are “sequentially nested in the cigarette rod shell.” Ex. 1006, code (54), 4, 6 (“to increase a storage amount of nicotine oil, the oil conservator 7 is nested”). Figure 1, reproduced below, is a “schematic diagram of the utility model.” *Id.* at 5.



Fang provides the following listing of the illustrated features:

1 sucker, 2 cigarette rod shell, 3 battery, 4 fuming device control switch, 5 nicotine oil fuming device, 6 waterproof sleeve with bell mouth, 7 oil conservator, 8 gas pipe, 9 gas pipe support, 10 smoking channel, 11 silicon film-coated tablet, 12 switch circuit board, 13 support, 14 oil storage device, 15 temporary oil storage device, 16 electric heating film wire, 17 luminous display panel, 18 lamp cover.

Id. Fang describes the assemblage of the components as follows:

A nicotine oil storage sleeve 7 is nested in the sucker 1, a gas pipe 8 is nested in the center of the evaporation oil storage sleeve 7, the gas pipe 8 is connected with a gas pipe support 9, the gas pipe 8 and the gas pipe support 9 form a smoking channel 10 with the center of the sucker 1 being separated and closed from the oil conservator 7, and the other end of the smoke sucking pipe 8 is communicated with the nicotine oil fuming device 5.

Id.

2. Analysis of Claim 1

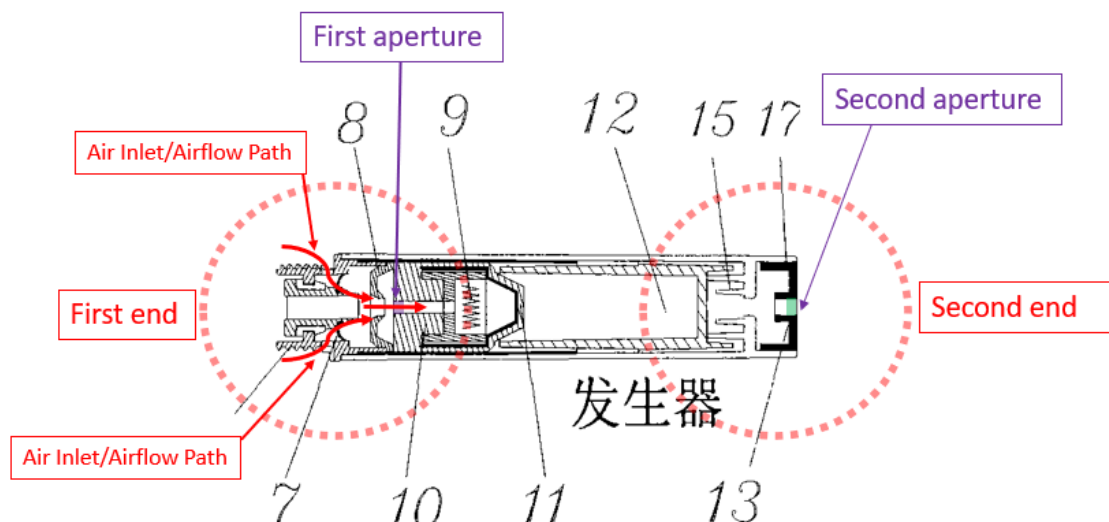
a) Petitioner's Arguments

The preamble and first limitations of claim 1 recite: “1[p] An apparatus comprising: 1[a1] a power source, 1[a2] wherein the power source includes a battery, 1[a3] wherein the power source includes an electrically conductive portion, and 1[b1] a cartridge having a housing that comprises an interior.” Ex. 1001, 17:16–21 (bracketed claim elements added). Petitioner argues that Xia, or the combination of Xia and Wang, teaches the preamble and these first limitations. Pet. 27–30. Patent Owner does not materially dispute this argument. *See generally* Prelim. Resp. Xia discloses an “electronic cigarette” with rechargeable lithium battery 2 and connecting conductor B6, powering heating wire 9. Pet. 27–30 (citing

Ex. 1004, 1, 7, 9–11, 12, 16, Figs. 2, 3 (annotated), Ex. 1007 ¶¶ 72–78). Xia also depicts a “generator” section that Petitioner asserts is the cartridge, and a “stainless steel shell” that Petitioner asserts is the housing. *Id.* at 31 (citing Ex. 1004, 7, Fig. 2 (annotated); Ex. 1007 ¶ 81).

Claim 1[b2] recites “wherein the housing includes a first end and a second end that is opposite the first end, wherein the housing includes a first aperture on the first end and a second aperture on the second end.”

Ex. 1001, 17:22–25. Petitioner argues that Xia, or Xia with Wang or Fang, teaches or suggests this limitation. Pet. 32–36. Petitioner presents an annotated version of a portion Figure 2 of Xia, reproduced below, to argue that all elements of this limitation are met.



A truncated portion of Xia Figure 2 depicting the “generator” portion of the electronic cigarette, with Petitioner’s annotations added, is reproduced above. Pet. 35; Ex. 1004, 9, 17; Ex. 1027, 15. Annotated Figure 2 of Xia, according to Petitioner, demonstrates the location of the first end, first aperture, air inlet/airflow path, second aperture, and second end. Pet. 35 (citing Ex. 1004, Fig. 2 (annotated); Ex. 1007 ¶¶ 87–88). Annotated

Figure 2 of Xia appears to show two ends opposite one another, and a housing including a first aperture on the first end and a second aperture on the second end, as we have discussed those terms *supra* in the context of the parties' interpretations, the M.D.N.C. Litigation, and Patent Owner's ITC position. Ex. 1004, Fig. 2 (annotated). Petitioner also argues that if "the claimed first aperture must be closer to the edge and surface of the first cartridge end, it was obvious to reposition Xia's 'first aperture' to meet such an additional requirement." Pet. 35 (citing Ex. 1007 ¶ 89); *see also* Prelim. Reply 3 (stating either "Xia alone or with Wang and/or Fang renders obvious 'extension of the passageway to the very edge of the housing, with a central aperture'"). Petitioner asserts that it would have been obvious to modify Xia's cartridge to include a "a passageway through the center of the solution holding medium as in Wang." Pet. 35–36. Petitioner also asserts that "if the apertures are required to be literally on very edges of the cartridge, that would be an obvious modification under Xia and/or Wang and/or Fang, as it would merely require extension of the passageway to the very edge of the housing." *Id.* at 36 (citing Ex. 1007 ¶ 89).

Claim 1[c] recites "wherein the housing includes an airflow passageway that extends centrally and axially with respect to the housing intermediate of the first aperture on the first end of the housing and the second aperture on the second end of the housing." Ex. 1001, 17:26–30. Petitioner argues that Xia discloses "an airflow passageway through which air flows and that is defined at least in part by spray hole 904 and a layer of material (such as polypropylene PP material) on the inner surface of the housing." Pet. 36–41 (citing Ex. 1004, 11, Figs. 2, 5 (annotated); Ex. 1007 ¶¶ 97–102). Petitioner also argues that Xia with Wang discloses this

limitation. *Id.* at 41–48 (citing Ex. 1003, Fig. 4 (annotated, modified); Ex. 1004, Fig. 2 (annotated, modified); Ex. 1007 ¶¶ 108–109, 118–122). Petitioner argues that a POSITA would have known that an “obvious alternative, with obvious benefits, would have been to extend the architecture in the area of the heating element in Figure 4 [of Wang] leftward and rightward, such that airflow passageway extends through the solution holding medium” in Xia’s modified Figure 2. *Id.* at 43–44 (citing Ex. 1007 ¶¶ 108–109). Petitioner also argues that the “obvious change” to the airflow passageway away from the walls of the housing “would provide “improved, smoother air flow without pinch points, better temperature control, and vapor content, as well as being simpler and cheaper to design and manufacture” and “can improve the device’s appeal to users, for example by making the user experience more similar to a traditional cigarette, and by making the vapor more palatable.” *Id.* at 48 (citing Ex. 1007 ¶118). Finally, Petitioner argues that Fang confirms that use of a “central and axial airflow passageway was well known” and a POSITA would have been motivated to “include Fang’s known airflow passageway arrangement for the reasons discussed above in connection with Wang.” Pet. 49–52 (citing Ex. 1006, Fig. 1 (annotated), 4, 6; Ex. 1007 ¶ 126).

Claim 1[d] recites “wherein the airflow passageway is configured to allow an airflow through the cartridge from the first aperture to the second aperture of the housing.” Ex. 1001, 17:31–33. Petitioner refers to its arguments for claim 1[c] to show the airflow path in Xia, or Xia with Wang and/or Fang. Pet. 52–53 (citing Ex. 1004, Fig. 2 (annotated)).

Claim 1[e] recites “wherein the first end of the housing includes an electrically conductive portion that is adapted to mechanically and

electrically couple to the electrically conductive portion of the power source.” Ex. 1001, 17:34–37. Petitioner argues that Xia, or Xia with Wang, discloses this limitation. Pet. 54–55 (citing Ex. 1004, 3, 7, 10, 12, Fig. 3 (annotated); Ex. 1005, 8; Ex. 1007 ¶¶ 137–138). Particularly, Petitioner points to Xia’s electrically conductive portion (conductor A5) connecting with connecting conductor B6 and containing electrodes 603 and 604 “that conduct electricity and couple to B5 on the controller.” *Id.* at 54–55 (citing Ex. 1004, 12). Petitioner also argues that “a POSITA would know it could use Wang’s connections between cartridge and power source, which also contain, on the cartridge, an electrically conductive portion that is adapted to mechanically and electrically couple to the electrically conductive portion of the power source.” *Id.* at 55.

Claim 1[f] recites “wherein the housing includes a solution holding medium adapted to hold a solution in the interior of the housing.” Ex. 1001, 17:38–40. Petitioner argues that Xia discloses similar chambers, such as “liquid storage chamber 12” and “second liquid storage chamber 10.” Pet. 56 (citing Ex. 1004, 3, 7, 9, 10, Fig. 2). Petitioner also argues that Xia with Wang and/or Fang discloses this limitation. *Id.* at 57 (citing Ex. 1007 ¶ 142).

Claim 1[g] recites “wherein the housing includes a heating element located in the interior of the housing, wherein the heating element extends transversely across the airflow passageway, wherein the airflow through the passageway passes on both transverse sides of the element.” Ex. 1001, 17:41–45. Petitioner argues that Xia’s heater 9 is within the airflow passageway. Pet. 59–60 (citing Ex. 1004, 9, 10, 12–13, Figs. 2, 4 (annotated)). Petitioner also argues that Xia with Wang and/or Fang

discloses this limitation, because “when substituting Wang’s cartridge configuration for Xia’s, the resulting heating element 104 is within the airflow passageway and the airflow flows over and around that heater.” Pet. 60–61 (citing Ex. 1007 ¶ 152). Generally, Petitioner argues that its interpretation of “transverse” encompasses the airflow over Xia’s heater 9, and otherwise, the combination of Xia with Wang and/or Fang results in airflow passing over Wang’s or Fang’s heating element. *Id.* at 57–61.

Claim 1[h] recites “wherein the solution holding medium surrounds the airflow passageway and the heating element in the interior of the housing and intermediate of the first end and the second end.” Ex. 1001, 17:46–49. Petitioner argues that “Xia’s solution holding medium 10 surrounds the heating element (heater 9) and at least a portion of the airflow passageway,” or, in the alternative, relies on the “combination of Xia with Wang (with or without Fang) discussed in 1[c].” Pet. 61–65 (citing Ex. 1004, Fig. 4 (annotated, modified); Ex. 1007 ¶ 154).

Claim 1[i] recites “wherein the heating element is electrically configured to vaporize at least a portion of the solution to be contained in the solution holding medium for oral provision to an individual in an airflow from the second aperture responsive to electrical power received from the battery through the electrically conductive portions of the cartridge and the power source.” Ex. 1001, 17:50–57. Petitioner points to the elements of Xia alone that it alleges disclose this limitation. Pet. 65–66 (citing Ex. 1004, 2, 3, 7, 10 (“the chemical liquid is instantly vaporized in an atomizing working room of the heater 9, and the vaporized chemical liquid is sucked out by the smoker from the soft suction nozzle 13”), 13, 14; Ex. 1007 ¶ 163).

b) Patent Owner's Arguments

Patent Owner argues that “Petitioner fails to identify in any of Xia, Wang, or Fang (1) a ‘**housing includes a first aperture** on the first end’ and (2) ‘housing includes a first aperture **on the first end**’ and that “Petitioner fails to articulate an adequate motivation for a POSITA to combine these references to arrive at the claimed invention.” Prelim. Resp. 24.

With respect to Xia alone, Patent Owner argues that Petitioner identified Xia’s stainless steel shell as the “housing,” but “Petitioner’s ‘first aperture’ is not the ‘first aperture’ required by the claims because it is not in Xia’s stainless steel shell,” nor “is that aperture at the first end of the housing.” *Id.* at 25–26.

With respect to Wang, Patent Owner argues that “the first (and second) ‘aperture’ identified by Petitioner is in the liquid storage material (*i.e.*, organic fiber 105), not the housing” identified by Petitioner as cigarette holder shell 102, nor “are the apertures at their respective first and second ends of the housing.” *Id.* at 28. Moreover, Patent Owner argues, “what Petitioner identifies as ‘apertures’ are not apertures,” because Wang’s “organic fiber 105 is wound around electric heater 104,” but “there is no central and axial channel having first and second apertures.” *Id.* at 28–29.

With respect to Fang, Patent Owner argues that “Fang does not have a cartridge – this is a unitary device,” and, thus, Petitioner’s “‘first aperture’ is not in the housing much less in the first end of the housing.” *Id.* at 31–32.

With respect to the proposed combination of references, Patent Owner argues that Petitioner fails to account “for the significant differences between these devices,” because each device “has substantially different mechanisms for transporting and vaporizing liquid.” *Id.* at 36. “These

different mechanisms necessitate substantially different physical arrangements,” and a “POSITA cannot simply swap one element for another.” *Id.* at 39. “By extending the aperture to the very edge of the housing, Petitioner is altering the entire air intake system of Xia,” which Patent Owner alleges “results in an inoperable device.” *Id.* at 41–42.

c) Analysis

On this record, we are persuaded that Petitioner meets its burden to demonstrate a reasonable likelihood of prevailing on its Xia-based obviousness arguments. With reference to our claim construction of the “first aperture on the first end” of the housing, *supra*, we agree that Petitioner has demonstrated, on this record, Xia’s (1) “**housing includes/having a first aperture** on the first end” and (2) “housing includes/having a first aperture **on the first end**,” more particularly, that Xia’s first aperture is sufficiently located on the first end of Xia’s housing. Pet. 10–13, 32–35. Notwithstanding Patent Owner’s arguments to the contrary, namely, that Petitioner’s “first aperture” “is not in Xia’s stainless steel shell,” nor “is that aperture at the first end of the housing” (Prelim. Resp. 25–26), the record before us supports Petitioner’s position and claim construction at this stage in the proceeding.

We have concerns as to whether Petitioner sufficiently shows a reason to modify Xia in view of Wang/Fang, including showing *why* a POSITA would have extended Xia’s passageway to the very end of the housing (as in limitations 1[b2] and 1[c]), and whether Mr. Sturges provides sufficient support for his contentions. *See generally* Pet.; *see also* 37 C.F.R. § 42.22(a)(2) (stating that the petition must contain a full statement of the reasons for the relief requested, including a detailed explanation of the

significance of the evidence); *see, e.g.*, Ex. 1007 ¶ 90 (stating that a POSITA would have been motivated to modify Xia’s cartridge “to be a simpler design, which is easier and cheaper to manufacture”). However, we are sufficiently persuaded on this record that Petitioner has met its burden of demonstrating a reasonable likelihood of prevailing on its contentions of obviousness of claim 1. Because we institute *inter partes* review on at least one claim, we institute on all claims. *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348, 1353 (2018) (“The agency cannot curate the claims at issue but must decide them all.”).

3. *Remaining Claims*

Petitioner presents additional arguments for obviousness of claims 2–27 based on Xia alone, and based on the combination of Xia with Wang with Fang. Pet. 67–86. In view of our determination that Petitioner establishes a reasonable likelihood for claim 1, and because Petitioner’s arguments and evidence for remaining claims 2–27 (Pet. 67–86) are similar to Petitioner’s arguments and evidence for claim 1 (Pet. 27–66), we determine that it is unnecessary to provide an express analysis of Petitioner’s challenges to the remaining claims in order to provide guidance to the parties for the upcoming trial. Consolidated Trial Practice Guide November 2019 (“CTPG”)⁶ at 64; *see* 37 C.F.R. § 42.108(a) (“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”); *see also SAS*, 138 S. Ct. at 1359–60 (holding that 35 U.S.C. § 314 forbids the Board’s prior “partial institution” practice).

⁶ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

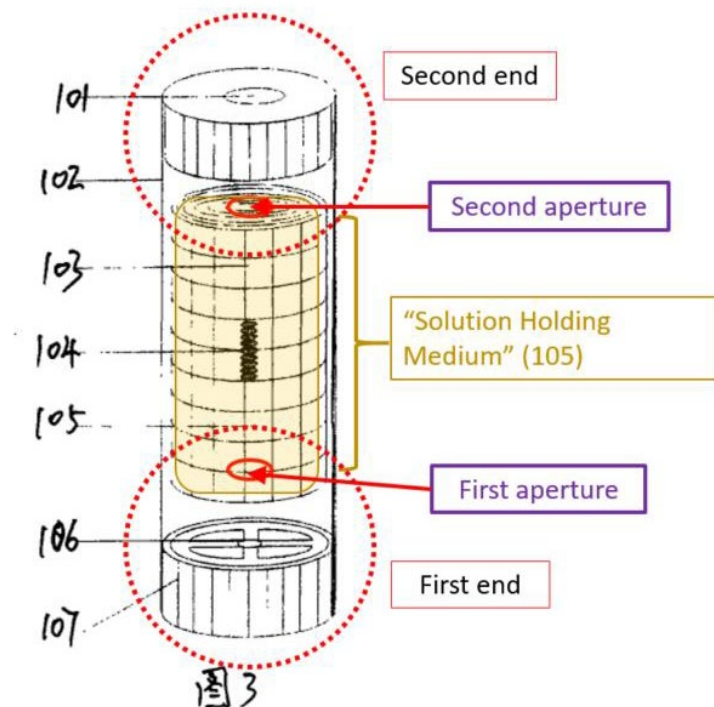
E. Challenges Based on Wang and Fang (Petitioner's Ground 2)

Petitioner contends claims 1–27 would have been obvious in view of Wang alone and in view of Fang. Pet. 87–118. Patent Owner disputes Petitioner's arguments. Prelim. Resp. 43–46.

1. Petitioner's Arguments

Petitioner argues that Wang teaches the preamble and limitations 1[a1], 1[a2], 1[a3], and 1[b1]. Pet. 87–90. Wang discloses an “electronic pure cigarette” with “Battery 110” powering heating element 104, and depicts a mechanical and electrical connection of “cigarette rod shell 111” with cartridge 102, or hollow “cigarette holder shell 102.” Pet. 87–90 (citing Ex. 1005, 4, 5, 7, 8, Fig. 1 (annotated), Fig. 4; Ex. 1007 ¶¶ 254–258).

Petitioner argues that Wang, or Wang with Fang, teaches or suggests claim 1[b2]. Pet. 90–91. Petitioner presents an annotated version of Figure 3 of Wang, reproduced below, to support its arguments.



Annotated Figure 3 of Wang, according to Petitioner, demonstrates the location of the first end, first aperture, solution holding medium 105, second aperture, and second end. Pet. 91 (citing Ex. 1005, Fig. 3 (annotated); Ex. 1007 ¶ 260). Annotated Figure 3 of Wang appears to show two ends opposite one another, and a housing including a first aperture on the first end and a second aperture on the second end, as we have discussed those terms *supra* in the context of the parties’ interpretations, the district court claim construction, and Patent Owner’s ITC position. Ex. 1005, Fig. 3.

Petitioner refers to its Ground 1 argument for claim 1[c] to argue that Wang, and also that Wang in view of Fang, discloses this limitation. Pet. 91–94 (citing Ex. 1005, Fig. 3 (annotated); Ex. 1006, Fig. 2 (annotated); Ex. 1007 ¶¶ 263–268). Petitioner further argues that “a POSITA would understand the obvious benefits” of “a simple design such as airflow passageway that runs centrally and axially between the two apertures, in creating a uniform, consistent airflow.” *Id.* at 94 (citing Ex. 1007 ¶ 268).

Petitioner refers to its Ground 1 arguments for claim 1[d], and also argues that Wang in view of Fang discloses this limitation. Pet. 94–96 (citing Ex. 1005, 7–8; Fig. 3 (annotated); Ex. 1007 ¶¶ 271–272).

Petitioner argues that Wang, or Wang in view of Fang, discloses claim 1[e]. Pet. 96–98 (citing Ex. 1005, 8; Fig. 4, Fig. 1; Ex. 1017, 4–5; Ex. 1007 ¶¶ 274–277). Particularly, Petitioner points to Wang’s output end 109 and input end 107 as establishing mechanical connection to cigarette rod portion 111 and its battery, and refers back to its limitation 1[a3] argument for further support. *Id.* at 96.

Petitioner argues that Wang’s absorbent organic fiber 105 meets claim 1[f], and also that Wang in view of Fang discloses this limitation. Pet. 98–99 (citing Ex. 1005, 6–8; Fig. 3 (annotated); Ex. 1007 ¶ 281).

Petitioner refers to its Ground 1 arguments for claim 1[g] to argue that Wang discloses this limitation, and also that Wang in view of Fang discloses this limitation. Pet. 99–102 (citing Ex. 1005, 7–8; Fig. 3 (annotated); Ex. 1006, Fig. 1 (annotated); Ex. 1007 ¶¶ 287–288). More particularly, Petitioner argues that its interpretation of “transverse” encompasses the airflow over Wang’s heating element 104, and otherwise, the combination of Wang and Fang results in airflow passing over Fang’s perpendicularly oriented heating element. *Id.* Petitioner opines that “it would have been obvious to a POSITA designing an electronic cigarette to include a heating element that is perpendicular with respect to the housing’s central and longitudinal axis.” *Id.* at 101–102 (citing Ex. 1007 ¶ 288).

Petitioner argues that “Wang’s solution holding medium 105 surrounds the entire identified airflow passageway and the heating element” and discloses claim 1[h] or, in the alternative, relies on the modification of Wang with Fang as in its claim 1[c] arguments. Pet. 98–99 (citing Ex. 1005, Fig. 3 (annotated); Ex. 1017, 4–5; Ex. 1007 ¶¶ 291–292).

Petitioner points to the elements of Wang alone that it alleges disclose claim 1[i], or, in the alternative, refers to the modification of Wang with Fang as in its claim 1[c] arguments. Pet. 103–104 (citing Ex. 1005, 2–4, 8; Ex. 1007 ¶¶ 293–296).

2. *Patent Owner’s Arguments*

Patent Owner argues that “Petitioner fails to identify (1) a ‘**housing includes a first aperture** on the first end’ and (2) ‘housing includes a first

aperture ***on the first end***’ in either Fang or Wang” and, thus, “Wang cannot anticipate the challenged claims.” Prelim. Resp. 43. We understand Petitioner’s Ground 2 to be an obviousness ground. Pet. 7. Although Patent Owner characterizes this argument as “Wang anticipates the challenged claims” (Prelim. Resp. 43), we do not apply principles of anticipation.

With respect to Wang alone, Patent Owner argues that Petitioner has failed to carry its burden, because Petitioner “does not argue that it would have been obvious for ***the housing*** to have first or second apertures,” but rather “argues that it would have been obvious to extend the liquid storage of Wang to the cartridge ends.” Prelim. Resp. 44 (citing Pet. 92). Patent Owner also argues that Wang does not have a “heating element extending transversely to a central longitudinal axis,” as Petitioner argues. Prelim. Resp. 44–45 (citing Pet. 58).

3. *Analysis*

On this record, we are persuaded that Petitioner meets its burden to demonstrate a reasonable likelihood of prevailing on its Wang-based obviousness arguments. With reference to our claim construction of the “first aperture on the first end” of the housing, *supra*, we agree that Petitioner has demonstrated, on this record, that Wang satisfies the different portions of the limitation (1) “***housing includes/having a first aperture*** on the first end” and (2) “housing includes/having a first aperture ***on the first end***,” more particularly, that Wang’s first aperture is sufficiently located on the first end of Wang’s housing. Pet. 10–12, 90–91. Notwithstanding Patent Owner’s arguments to the contrary, namely, that it would not have been “obvious for ***the housing*** to have first or second apertures” in Wang (Prelim. Resp. 44), the record before us supports Petitioner’s position and claim

construction at this stage in the proceeding. Petitioner argues, with sufficient support, that it would have been obvious to modify Wang so the passageway reaches to air inlet 106 and air outlet 101, “as it would then allow greater volume for the solution-holding medium 105.” Pet. 92 (citing Ex. 1007 ¶ 263; Ex. 1005, Fig. 3 (annotated)).

With respect to Petitioner’s argument that Wang’s heating element is transverse to airflow, we acknowledge Patent Owner’s argument that Petitioner’s interpretation of the term “transverse” “seemingly argues that every heating element has a transverse dimension. Prelim. Resp. 46. In the absence of evidence or additional argument from Patent Owner, however, we find sufficient on this record Petitioner’s argument and evidence supporting its interpretation of “transverse” and Wang’s alleged disclosure of a transverse heating element. Pet. 57–58 (citing Ex. 1001, 6:62–7:19; Ex. 1033, 6); 99–102 (citing Ex. 1007 ¶¶ 287–288; Ex. 1005, Fig. 3 (annotated); Ex. 1006, Fig. 1 (annotated)).

With respect to Wang and Fang, Patent Owner argues that not only has Petitioner failed to identify a “housing includes a first aperture” in Wang and Fang, but also that Petitioner’s claim 1[c] argument (Pet. 93–94) replaces Wang’s “entire internal structure” with Fang’s central channel, which fails to demonstrate obviousness. Prelim. Resp. 45–46. We have previously addressed the “housing includes a first aperture” argument as it relates to Wang, and that analysis applies equally to Patent Owner’s concern with the Wang/Fang combination. We also have concerns as to whether Petitioner sufficiently shows a reason to modify Wang, or Wang in view of Fang, including showing *why* a POSITA would have extended Wang’s passageway to the very end of the housing (as in limitation 1[c]), and

whether Mr. Sturges provides sufficient support for his contentions. *See generally* Pet.; *see also* 37 C.F.R. § 42.22(a)(2); Ex. 1007 ¶ 263 (stating that a POSITA would have been motivated to modify Wang to “allow greater volume for the solution-holding medium”). However, we are sufficiently persuaded on this record that Petitioner has met its burden of demonstrating a reasonable likelihood of prevailing on its contentions of obviousness of claim 1. Because we institute *inter partes* review on at least one claim, we institute on all claims. *SAS*, 138 S. Ct. at 1353 (“The agency cannot curate the claims at issue but must decide them all.”).

4. *Remaining Claims*

Petitioner presents additional arguments for obviousness of claims 2–27 based on Wang alone, and based on the combination of Wang with Fang. Pet. 104–118. In view of our determination that Petitioner establishes a reasonable likelihood for claim 1, and because Petitioner’s arguments and evidence for remaining claims 2–27 (Pet. 104–118) are similar to Petitioner’s arguments and evidence for claim 1 (Pet. 87–104), we determine that it is unnecessary to provide an express analysis of Petitioner’s challenges to the remaining claims in order to provide guidance to the parties for the upcoming trial. CTPG 64; 37 C.F.R. § 42.108(a) (“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”); *see also SAS*, 138 S. Ct. at 1359–60 (holding that 35 U.S.C. § 314 forbids the Board’s prior “partial institution” practice).

F. *Word Count*

We also consider Patent Owner’s argument that the Petition should be denied because a column providing a “shorthand description of each claim

limitation” in Petitioner’s listing of claims puts the total word count of the Petition above the 14,000-word limit. Prelim. Resp. 46–47 (citing Pet. 7–23; 37 C.F.R. § 42.24); *see also* Pet. vi–xiv (providing a table of challenged claims).

We decline to deny the Petition for this reason. Although the text in the shorthand column does bring the total number of words to over the 14,000-word limit, the column does not contain any substantive argument. Rather, the column merely provides a shorthand notation of how Petitioner refers to the claim elements within the Petition’s headings. Because the table and the Petition also refer to claim element numbers (i.e., claim element 1[a1]), the shorthand notations were not necessary to Petitioner’s arguments or to understand the Petition’s headings. As such, it is not necessary to consider the shorthand column to render this decision. Moreover, we determine that shorthand column was added to aid the Board’s review of the Petition and for this additional reason, the additional text in the shorthand column does not warrant denial of the Petition.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition. Accordingly, we institute *inter partes* review of the ’881 patent.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review of claims 1–27 of U.S. Patent No. 10,334,881 B1 is instituted with respect to all grounds set forth in the Petition; and

IPR2024-00161

Patent 10,334,881 B1

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which will commence on the entry date of this Decision.

IPR2024-00161
Patent 10,334,881 B1

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