

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUUL LABS, INC.,
Petitioner,

v.

NJOY, LLC,
Patent Owner.

IPR2024-00160
Patent 11,497,864 B2

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

McGRAW, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

JUUL Labs, Inc. (“JLI” or “Petitioner”) filed a petition for an *inter partes* review (Paper 3 (“Pet.”)) challenging claims 1–48 of U.S. Patent No. 11,497,864 B2 (Ex. 1001 (“the ’864 Patent”)). NJOY, LLC (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). After receiving authorization from the Board, Petitioner filed a Reply to the Preliminary Response (Paper 8, “Reply”) and Patent Owner filed a Sur-reply (Paper 9, “Sur-reply”).

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 1 of the claims challenged in the petition.”

For the reasons set forth below, we determine the information presented in the Petition establishes a reasonable likelihood that Petitioner would prevail with respect to at least one of the challenged claims. Accordingly, we institute an *inter partes* review of all challenged claims of the ’864 patent on all grounds asserted in the Petition. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (stating that a decision to institute is “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

B. Real Parties-in-Interest

Petitioner asserts that JUUL Labs, Inc. (“JLI”) is the real party-in-interest. Pet. 1, 4. Petitioner further asserts that JLI is not controlled by any other entity. Pet. 4. Patent Owner asserts that the real parties-in-interest are “Patent Owner, NJOY, LLC, and Patent Owner’s parent corporation, Altria Group, Inc.” Paper 6 (“Patent Owner’s Mandatory Notices”), 1.

C. Related Matters

The parties identify a number of ITC and district court proceedings as related to the ’864 patent. Pet. 4; Paper 6 (Patent Owner’s Mandatory Notices), 1. Both parties identify a co-pending district court litigation as a related matter as involving the ’864 patent:

- *NJOY, LLC v. JUUL Labs, Inc.*, No. 1:23-cv-00917 (D. Del.), filed August 22, 2023. Pet. 5; Paper 6, 1.

Both parties also identify two district court proceedings, now dismissed, which were filed by Patent Owner’s predecessor in interest, Fuma International LLC, as involving the ’864 patent:

- *Fuma International LLC v. Logic Technology Development LLC*, No. 2:23-cv-04093 (D.N.J.), filed July 31, 2023 and dismissed August 25, 2023;
- *Fuma International LLC v. Altria Group, Inc.*, No. 2:23-cv-00231 (E.D. Va.), filed May 26, 2023 and dismissed August 14, 2023.

Pet. 5; Paper 6, 1.

Patent Owner further identifies as a related matter a third dismissed district court proceeding (the “M.D.N.C. Litigation”), in which Patent Owner’s predecessor in interest asserted infringement of U.S. Patent No. 10,334,881 (“the ‘881 patent”), the parent to the ’864 patent.

- *Fuma International LLC v. RJ Reynolds Vapor Company*, No. 1:19-cv-00660 (M.D.N.C.), filed July 2, 2019 and dismissed December 2, 2021. Paper 6, 1.

Although Petitioner does not identify the M.D.N.C. Litigation as a related matter (*see* Pet. 4–5), the Petition does discuss this proceeding. *See, e.g.*, Pet. 11–12.

Petitioner identifies the following co-pending ITC proceeding as a related matter:

- *In Re Vaporizer Devices, Cartridges Used Therewith, and Components Thereof*, Case No. 337-TA-3961¹, filed August 22, 2023. Pet. 4.

Patent Owner identifies a different ITC proceeding as a related matter:

- *Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof*, USTIC Inv. No. 337-TA-1372, filed August 22, 2023. Paper 6, 1.

D. The '864 Patent (Ex. 1001)

The '864 patent, titled “Electronic Vaporizer,” is directed to an “electronic vaporizer includ[ing] a cartridge that facilitates provision of a vaporized solution to an individual.” Ex. 1001, codes (22), (45), (54), (57). The '864 patent claims priority to a number of US applications, including the '881 patent. *Id.* at code (63).

The '864 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

¹ Although not identified as a related matter, the Petition also cites to exhibits from ITC proceedings *In re Vaporizer Devices, Cartridges Used Therewith, and Components Thereof*, 337-TA-1368 (Ex. 1022) (Pet. 28) and *In re Vaporizer Devices, Cartridges Used Therewith, and Components Thereof*, 337-TA-1372 (Ex. 1019) (Pet. 17–18 n.4).

battery provides power to the heating element, which in turn operates to vaporize the solution.” *Id.* at 1:23–30. The ’864 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 1:64–2:1. The ’864 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 2:7–9.

Figure 1 of the ’864 patent is reproduced below.

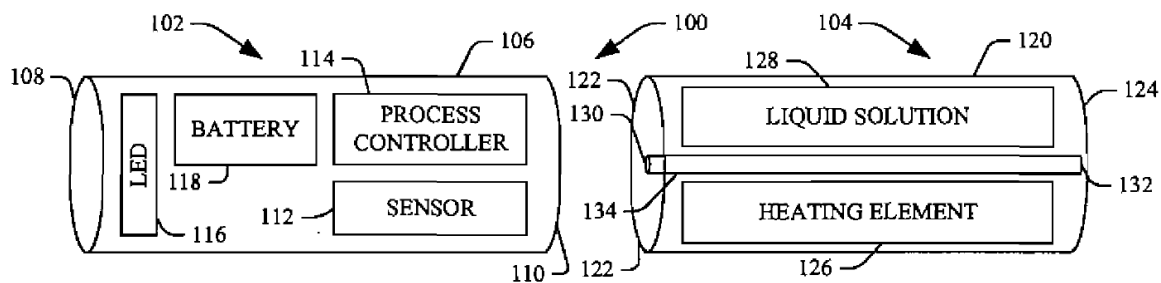


Figure 1 depicts “a functional block diagram of an exemplary electronic vaporizer.” *Id.* at 2:20–21. Electronic vaporizer 100 includes power source 102 and cartridge 104, which are mechanically and electrically coupled, e.g., by a respective electrically-conductive threaded fastener and receiver.

Id. at 2:62–3:11.

Power source 102 includes cylindrical housing 106 having first end 108, opposing second end 110, and an interior. *Id.* at 3:12–13, 3:26–30. Second end 110 can include an aperture (not shown) configured to receive airflow from a user. *Id.* at 3:30–32. Power source 102 further includes battery 118 and switch/sensor 112, both residing on the interior of housing 106.

Cartridge 104 includes cylindrical housing 120 having first end 122 and opposing second end 124, both of which may be considered as a portion of the housing or apart from the housing. *Id.* at 3:46–59. Cartridge 104 further includes a heating element 126 in the housing 120 and a liquid solution 128 in the housing 120. *Id.* at 3:65–66, 4:7–8. First end 122 comprises first aperture 130 that is located approximately the center of first end 122. *Id.* at 4:30–32. Similarly, second end 124 comprises second aperture 132 that is located at approximately the center of second end 124 of cartridge 104. *Id.* at 4:32–34. Airflow passageway 134 extends between first aperture 130 and second aperture 132 axially proximate to the center of housing 120. *Id.* at 4:35–37.

A user can mechanically couple power source 102 to cartridge 104, thereby electrically coupling battery 118 to heating element 126. *Id.* at 4:40–42. When the user places second end 124 of cartridge 104 in their mouth and draws air through airflow passageway 134, the switch/sensor 112 in power source 106 detects the drawing of air through the airflow passageway 134, an electric circuit is closed between the battery 118 and the heating element 126, and the process controller 114 controls an amount of voltage/current to be received by the heating element 126 from the battery 118. *Id.* at 4:42–51. The heating element 126 vaporizes a portion of the solution 128, which is received by the user. *Id.* at 4:52–54.

Figure 2 of the '864 patent is reproduced below.

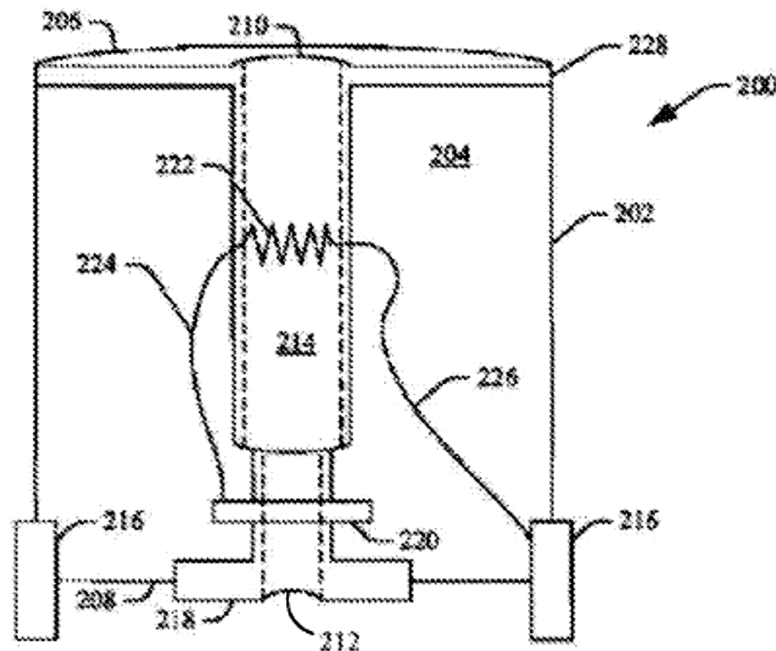


Figure 2 depicts an “exemplary configuration of a cartridge for utilization in an electronic vaporizer.” *Id.* at 2:22–23. The cartridge 200 includes a housing 202 having a first end 206, opposing second end 208, and liquid solution in absorbent material 204 spanning the ends. *Id.* at 5:67–6:6. The first and second ends 206, 208 have respective first and second apertures 210, 212 that form an airflow passageway 214 (also formed by a hollow center post 218) enclosing a heating element 222; these elements operate similarly to their counterparts 122, 124, 126, 130, 132, 134 of the cartridge 104 described for Figure 1. *Id.* at 6:12–24, 6:32–36, 6:53–58.

The cartridge further includes a conductive element 216 having metallic threads that facilitate mechanically and electrically coupling the cartridge 200 with a power source (battery). *Id.* at 6:27–31. Conductive lines 224, 226 respectively couple the heating element 222 to an electrical isolator 220 and the conductive element 216. *Id.* at 6:43–46. When the cartridge 200 is coupled to a power source, the conductive element 216 is electrically coupled to a negative terminal of the power source and the center

post 218 (and also, thus, the electrical isolator 220) is electrically coupled to a positive terminal of the power source. *Id.* at 6:49-53.

E. Illustrative Claims

Petitioner challenges all claims of the '864 patent (i.e., claims 1–48). Claims 1, 9, 21, 25, 29, 38, and 45 are independent. Claim 1 is representative and is reproduced below.

Claim 1:

1[p] A cartridge configured to couple to a power source of an electronic vaporizer, the cartridge comprising:

1[a1] a housing having an interior and a solution holding medium adapted to hold a solution,

1[a2] the housing having a first end and a second end that is opposite the first end, the housing having a first aperture proximate the first end and a second aperture proximate the second end,

1[a3] the first end of the housing being adapted to electrically couple to the power source,

1[a4] the first aperture and the second aperture being in communication with one another to permit an airflow through the housing from the first aperture to the second aperture;

1[b1] a heating element located in the interior of the housing, the heating element extending transversely to a central longitudinal axis of the housing and being at least partially exposed to the airflow,

1[b2]: the heating element being configured to vaporize at least a portion of the solution for oral provision to an individual in the airflow, the heating element being responsive to electrical power received from the power source; and

1[c] an airflow passageway in the housing, at least a portion of the airflow passageway extending centrally and axially with respect to the housing,

1[d] wherein the airflow passageway extends centrally and axially from the first aperture to the second aperture.

Ex. 1001, 17:19–17:43 (labels and formatting added to correspond with Petitioner’s designation of claim limitations (*see* Pet. i-ii)).

F. Asserted Unpatentability Challenges

Petitioner asserts that claims 1–48 would have been unpatentable based on the following challenges:

	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1A ²	1–48	103 ³	Xia ⁴
1B	1–48	103	Xia, Wang ⁵
1C	1–48	103	Xia, Fang ⁶
1D	1–48	103	Xia, Wang, Fang
2A	1–48	103	Wang
2B	1–48	103	Wang, Fang

Pet. 17. Petitioner relies on the declaration of Mr. Robert H. Sturges (Ex. 1007).

II. ANALYSIS

² Although the Petition only refers to Grounds 1 and 2, we refer to the grounds as Grounds 1A through 1D and Grounds 2A through 2B for clarity.

³ Although Petitioner asserts that “[a]ny of the references are anticipatory,” (Pet. 30), Petitioner’s arguments address unpatentability under § 103, not § 102, and we analyze Petitioner’s arguments accordingly.

⁴ 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.

⁵ Patent Publication No. CN101366554, published February 18, 2009 (“Wang”). Ex. 1029; Ex. 1005 (English translation).

⁶ Chinese Patent No. CN 201085044Y, issued July 16, 2008 (“Fang”). Ex. 1031; Ex. 1006 (English translation).

A. Discretionary Denial – § 325(d)

Patent Owner asserts the Petition should be denied under 35 U.S.C. § 325(d) because the Petition relies on “prior art that was before the Examiner during prosecution and because the Petition rehashes arguments that were overcome by the applicant during prosecution.” Prelim. Resp. 47; *see also id.* at 47–53; Sur-reply 4–5. Petitioner opposes. *See* Pet. 122–123; Reply 4–5.

The Director has the discretion to deny a petition that presents the same or substantially the same prior art or arguments as previously presented to the Office. The Board uses the following two-part framework in determining whether to exercise discretion under § 325(d) to deny institution.

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and
- (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6, 8 (PTAB Feb. 13, 2020) (precedential). In applying the two-part framework, we consider the following non-exclusive factors:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;
- (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
- (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;

(d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art;

(e) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and

(f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson & Co. v. B. Braun Melsungen AG, IPR2017-01586, Paper 8, 17–18 (PTAB Dec. 15, 2017) (precedential as to Section III.C.5, first paragraph). Factors (a), (b), and (d) relate to whether the art or arguments presented in the Petition are the same or substantially the same as those previously presented to the Office. *Advanced Bionics*, Paper 6 at 10. Factors (c), (e), and (f) relate to whether the petitioner has demonstrated a material error by the Office. *Id.* If a condition of the first part of the framework is satisfied and the petitioner fails to make a showing of material error under the second part of the framework, the Director generally will exercise discretion not to institute *inter partes* review. *Id.* at 9.

1. Part One of the Advanced Bionics Analysis

In the first part of the *Advanced Bionics* framework, we consider whether the same or substantially the same art or arguments previously were presented to the Office. *Advanced Bionics*, Paper 6 at 8. *Becton, Dickinson* factors (a), (b), and (d) inform the analysis. *Id.* at 9–10.

Patent Owner contends, and Petitioner does not dispute, that all three of the asserted references—Xia, Wang, and Fang—were disclosed during examination. Prelim. Resp. 47; Pet. 122. As clarified in the Notice of Proposed Rule Making, however, mere prior citation of prior art in an IDS will not automatically satisfy the first prong of the analytical framework set

forth in *Advanced Bionics*. Patent Trial and Appeal Board Rules of Practice for Briefing Discretionary Denial Issues, and Rules for 325(d) Considerations, Instituting Parallel and Serial Petitions, and Termination Due to Settlement Agreement, 89 FR 28693, 28702 (Apr. 19, 2024). Patent Owner provides no other argument that Xia itself was materially considered by the Office.

With respect to Wang and Fang, Patent Owner contends these references were discussed in significant detail in an expert report that was submitted to the Examiner during prosecution. Prelim. Resp. 47–48. Patent Owner, however, fails to provide any citation to the prosecution history to show that the expert report was submitted or considered. Thus, Patent Owner has not sufficiently shown that Wang or Fang were substantively or materially considered by the Examiner.

Patent Owner also states that the Examiner substantively considered Han, which Patent Owner asserts is “nearly identical” to Xia. Prelim. Resp. 48; *see also id.* at 48–51 (discussing similarities of Xia and Han). Patent Owner contends that “Petitioner rehashes exactly the same argument that was already decided by the Examiner in exactly the same context with respect [to] Xia,” namely, “whether the liquid bottle is an obstruction or defines the airflow passageway.” *Id.* at 52 (emphasis omitted). Patent Owner, however, does not provide persuasive argument as to how Han’s airflow passageway is identical or substantially similar to Xia’s airflow passageway. Indeed, Patent Owner does not expressly assert that Xia fails to disclose or suggest the claimed airflow passageway. Thus, Patent Owner has not sufficiently shown that the Examiner already considered the same, or substantially the same, argument set forth in the Petition or that Han is the

same or substantially the same as Xia. Accordingly, we determine that Patent Owner has not shown that the first part of the *Advanced Bionic* framework is met. As such, we need not address the second part of that framework.

Thus, we decline to exercise our discretion to deny institution under § 325(d).

B. 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) (requiring *inter partes* review petitions to identify “with particularity ... the evidence that supports the grounds for the challenge to each claim”)); *see also* 37 C.F.R. § 42.104(b) (requiring a petition for *inter partes* review to identify how the challenged claim is to be construed and where each element of the claim is found in the prior art patents or printed publications relied upon).

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter 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 skill in the art; and (4) when in evidence, objective evidence of obviousness or nonobviousness, i.e., secondary considerations. *See*

Graham v. John Deere Co., 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2016) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)). Furthermore, Petitioner does not satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

C. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of invention. *Graham*, 383 U.S. at 17. Petitioner does not provide its own definition of the level of ordinary skill in the art. Instead, Petitioner asserts:

In previous litigation involving the ’881 patent – the parent patent to the ’864 patent (*Fuma International LLC v. R.J. Reynolds Vapor Company*, Case No. 1:19-cv-260 (M.D.N.C. 2019)) with an identical specification – Patent Owner’s predecessor-in-interest asserted that a person of ordinary skill in the art (“POSITA”) at the time of the purported invention 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. Ex. 1007, ¶¶14-17.

Pet. 11–12; *see also* Ex. 1007 ¶ 16 (Mr. Sturges testifying that he meets “that qualification” without affirmatively providing a definition for a

POSITA). Patent Owner “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 the level of ordinary skill in the art set forth in the above block-quote of the Petition as this definition appears to comport with the qualifications a person would have needed to understand and implement the teachings of the ’864 patent and the prior art.

D. Claim Construction

We interpret claim terms using “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b). In this context, claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (citations omitted) (en banc). The “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 parent ’881 patent, which are reproduced below.

Term	Construction
“wherein the airflow passageway extends centrally and axially from	A location, container, or mechanism to hold the

the first aperture to the second aperture”	solution, including but not limited to at least one of an absorbent material, a chamber, a reservoir, a capsule, or
an electrically conductive portion ’881 patent, 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 ’881 patent, 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 ’881 patent, 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

Pet. 12–13. Petitioner argues that in Patent Owner’s motion for summary judgment in the M.D.N.C. Litigation, which asserted that the accused products infringed the ’881 patent, Patent Owner took positions regarding the terms “first aperture” and “airflow passageway” that were adopted by the district court and that are relevant to the present petition. Patent Owner disputes Petitioner’s assertions. *See generally* Prelim. Resp.

Below, we address the construction of the terms (1) “the housing having a first aperture proximate the first end” of the housing and

(2) “wherein the airflow passageway extends centrally and axially from the first aperture to the second aperture.” We determine that no other claim terms require construction for purposes of this Decision. *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 having a first aperture proximate the first end” of the housing

a) Parties’ Positions

Claim element 1[a2] recites “the housing having a first end and a second end . . . , the housing having a first aperture proximate the first end.” 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. 13. Petitioner asserts that a construction of claim element 1[a2] that encompasses a first aperture located within the interior of the housing is supported by Patent Owner statements made during the related M.D.N.C. Litigation involving the parent ’881 patent, and adopted by the district court, as well as Patent Owner statements made during the related ITC proceeding involving the ’864 patent. *Id.*

For example, Petitioner asserts that in the M.D.N.C. Litigation, Patent Owner asserted that the claimed “first aperture on the first end” of the cartridge housing recited in the parent ’881 patent 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. Pet. 13–14 (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. 14 (citing Ex. 1014 (“RJR Brief”), 44; Ex. 1015 (“Summary Judgment Order”), 14–18). Petitioner also maps structures that are *within* the asserted housing of the asserted prior art to claimed “first aperture.” *See, e.g.*, Pet. 35–39 (asserting Xia discloses a “first aperture”), 93–94 (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 14 (stating Xia does not disclose a “housing having a first aperture” because Xia’s “‘first aperture’ is not in the housing” (emphasis omitted)); *id.* at 19 (stating Wang does not meet the “housing having a first aperture . . . and second aperture” limitations because the first and second apertures identified by the Petitioner “are not in the housing” (emphasis omitted)); *see also* Sur-reply 4 (stating Petitioner fails to identify “a first aperture in the housing in any of its prior art references” as the “only apertures identified by Petitioner are apertures *internal* to the housing” (emphasis omitted and added)).

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.” Sur-reply 2–3 (citing Prelim. Resp. 28). Patent Owner points to “threaded connector” in the Vuse Ciro⁷ device and states that this “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.* Thus, Patent Owner’s proposed construction of “housing having a first aperture” appears to use the phrase “*in* the housing” 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 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 recites a “housing having a first end” and a “housing having a first aperture proximate the first end.” The plain and ordinary meaning of “proximate” is near or close to, not on. Thus, the plain and ordinary understanding of the claim language “housing having a first aperture proximate the first end” of the housing is that the first aperture is near, though not necessarily on, the first end of the housing.

This, however, does not resolve whether or not a “housing having an aperture” proximate the first end of the housing means that the aperture may be located *within* the inside of the housing (as asserted by Petitioner) or must

⁷ Patent Owner also states that it “dropped its reliance on the Vuse Ciro in the ITC investigation.” Sur-reply 2.

be *in* the housing itself, i.e., a part of the housing itself (as asserted by the Patent Owner).

Significantly, claim 1 also recites a “a housing *having* an interior and *a solution holding medium adapted to hold a solution.*” Ex. 1001, 17:21–22. Both parties appear to agree that the phrase “housing having . . . a solution holding medium” is met by a solution holding medium that is located *within* the housing, and located in the housing. *See* Pet. 31–35 (asserting Xia’s liquid storage chambers 10 and 12, located within the interior of Xia’s housing, meets the limitations of claim element 1[a1]); Prelim. Resp. (not disputing Petitioner’s assertion). The use of the same phrase—*housing having a*—to refer to a housing having a first aperture as well as to a housing having a solution holding medium, creates the presumption that the phrase “housing having a” is used consistently throughout the claim and that the first aperture, like the solution holding medium, may be located within the interior of the housing. *See Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001) (“claim term should be construed consistently with its appearance in other places in the same claim or in other claims of the same patent,”); *but see Mircorprocessor Enhancement Corp. v. Texas Instruments, Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008) (holding that, while there is a presumption that a claim term will be construed consistently when used throughout the claims, there is no requirement that a claim term be construed uniformly, particularly if it would lead to a “nonsensical reading”). Thus, the term “having” is used more expansively in claim 1 than urged by Patent Owner. We note that at this stage of the proceedings, the parties do not present any argument that the multiple recitations of the term a “housing having a . . .” should be construed differently.

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 having a first aperture proximate 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. *See, e.g.*, Pet. 13–14; Reply 1–2 (citing Ex. 1032, 3, 6; Ex. 1014, 14, 37; Ex. 1015, 16–17). We agree with Petitioner that Patent Owner's statements regarding the scope of claims of the '881 patent are relevant to the construction of the '864 patent. 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, supports a construction that does not require the "first aperture" of the '864 patent to be located in the housing.

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. 27–28; 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" (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.” 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 on the housing and a second apertures in the threaded connector and which of these apertures satisfies the “first aperture” limitation claimed in the ’881 patent and how those arguments apply to the relevant limitations in the ’864 patent.

Having considered the parties’ arguments and the intrinsic and extrinsic evidence of record, we construe the term “the housing having a first aperture proximate the first end” 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. *“wherein the airflow passageway extends centrally and axially from the first aperture to the second aperture”*

a) *Parties’ Positions*

Claim element 1[c] recites “wherein the airflow passageway extends centrally and axially from the first aperture to the second aperture.” Ex. 1001, 17:42–43. Petitioner maps this claim element to an airflow passageway in Xia that Petitioner asserts is “both interior to the inner surface of the cartridge housing and centrally and axially located with respect to the housing along the length of the cartridge.” Pet. 51 (citing Ex. 1007 ¶ 132).

Petitioner acknowledges that there are objects located in Xia’s airflow passageway. Pet. 52. Petitioner, however, asserts that if Patent Owner argues that Xia does not meet this claim limitation because air within Xia’s passageway flows around certain items rather than in a straight line, that any

such argument is inconsistent with Patent Owner’s own assertions in the M.D.N.C. Litigation and the co-pending ITC investigation. Pet. 52 (citing Ex. 1007 ¶ 133).

For example, with respect to the M.D.N.C. Litigation, Petitioner asserts that the district court there found the accused Viro Cuse device met a related limitation in the ’881 patent as a matter of law even though the defendant there had argued that the airflow in the accused device was obstructed “by among other things the positive pin and silicone base” and that these structures directed the airflow “away from the center, rather than allowing it to flow along the central axis, making the passageway not centrally and axially located.” Pet. 15–16 (citing Ex. 1014 (Defendant RJR Br.), 22–25; Ex. 1015, 14–18; Ex. 1025 (Fuma SJ Br), 17; Ex. 1007 ¶¶ 31–32). Petitioner further states that the district court determined that that this claim element is met “even if there are objects in the passageway that obstruct the airflow and direct it away from the center, rather than allowing the airflow to flow along the central axis” of the housing. Pet. 49 (citing Ex. 1007 ¶ 128). Petitioner also argues that in the co-pending ITC proceeding, Patent Owner contends that the Viro Cuse device “meets the ’881 patent⁸ claims and this limitation.” Pet. 53 (citing Pet. § VII.C).

Patent Owner does not provide an express construction of this term. *See generally* Prelim. Resp.; Sur-reply. Nor does Patent Owner expressly state that the asserted art does not teach this limitation under Petitioner’s

⁸ We understand Petitioner’s reference to the ’881 patent to be in error and that Petitioner intended to state that Viro Cuse device meets the ’864 patent claims. Pet. 17 (citing Ex. 1032, 3–4). The Board requests clarification if the Board’s understanding is in error.

proposed construction. *See generally* Prelim. Resp.; Sur-reply. Rather, Patent Owner responds that the district court in the M.D.N.C. Litigation merely stated that “small items that ‘do not alter the direction of the Ciro’s airflow passageway any more than the heating element’ are obstructions.” Sur-reply 5 (citing Ex. 1015, 16). Patent Owner does not address how any assertions that it made in the M.D.N.C. Litigation, or in the ITC Investigation before dropping its reliance on the Vuse Ciro device, relate to claim construction this claim element.

Patent Owner does, however, point to statements made during prosecution regarding airflow passageway to support its contention that the Board should exercise its discretion to deny institution under § 325(d). During prosecution, Patent Owner distinguished a prior art reference (i.e., “Han”) by asserting that Han’s shell (b) “does not include a central airflow passageway and instead places the perforated component for liquid storage (9) in the middle of shell (b), thereby forcing the airflow around the peripheral surface of perforated component for liquid storage (9) as described in paragraph [0070] of Han and shown in FIG. 3.” Ex. 1002, 273–274. In its Preliminary Response, Patent Owner states that the statements made during prosecution “directly addresses Petitioner’s argument whether the liquid bottle is an obstruction or defines the airflow passageway. Petitioner rehashes exactly the same argument that was already decided by the Examiner in exactly the same context with respect to Xia”). Prelim. Resp. 52 (emphasis omitted).

b) Analysis

The plain and ordinary meaning of “wherein the airflow passageway extends centrally and axially from the first aperture to the second aperture”

requires that the airflow passageway extend through the center and along the axis of the housing from the first aperture to the second aperture.

As explained more fully below, at this stage of the proceeding, we do not construe this claim element to further require the airflow passageway be unobstructed through its center or along its axis. Thus, our preliminary construction of claim element 1[c] encompasses an airflow passageway that encompasses obstacles located in the center and along the axis of the housing that force airflow around these obstacles.

We recognize that this construction may be inconsistent with arguments made by Patent Owner during prosecution to distinguish the Han reference, which Patent Owner asserted does not include a central airflow passageway because it places the perforated component for liquid storage in the middle of the shell, thereby forcing airflow around the peripheral surface of perforated component for liquid storage. *See* Ex. 1002, 273–274; Prelim. Resp. 52.

However, neither party has provided a full claim construction analysis of this term, including addressing Patent Owner's statements during prosecution. Although Patent Owner discusses these statements in its request that the Board deny institution under § 325(d), Patent Owner does not affirmatively state how these statements should be used for claim construction. Additionally, Patent Owner has asserted in the M.D.N.C. Litigation and the ITC proceeding that this claim element would encompass an airflow passageway having at least some obstruction present in the center of the passageway that diverts airflow in the airflow passageway away from the center axis of the passageway. As such, we are reluctant to adopt a

preliminary construction that is inconsistent with positions taken by Patent Owners in the related proceedings.

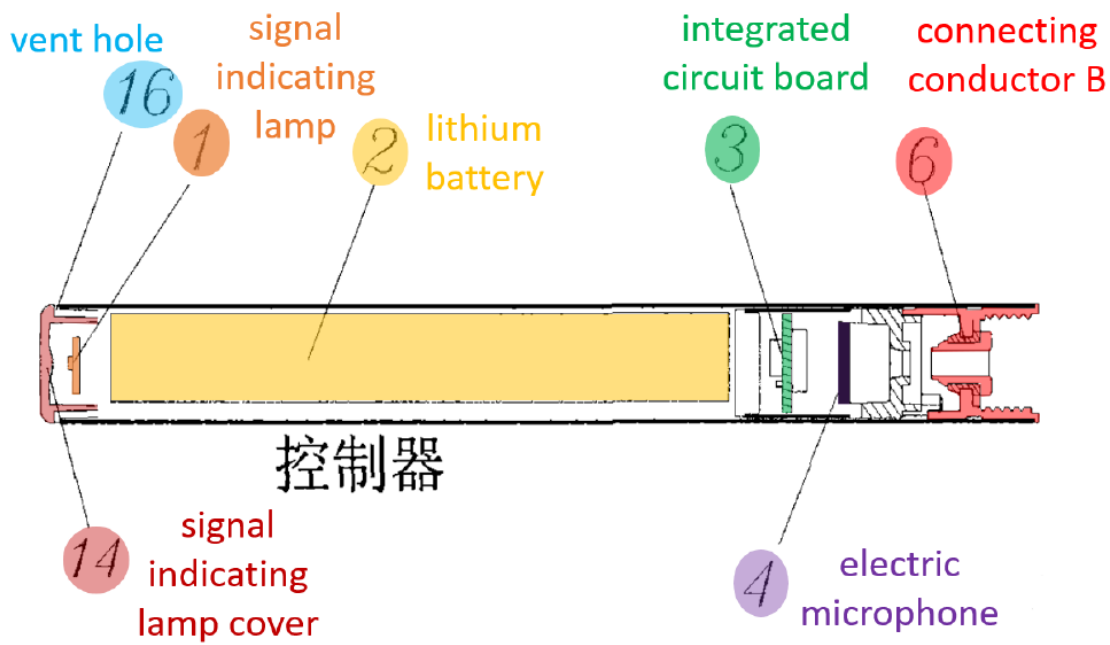
The parties are invited to more fully address the proper claim construction of this claim element during trial.

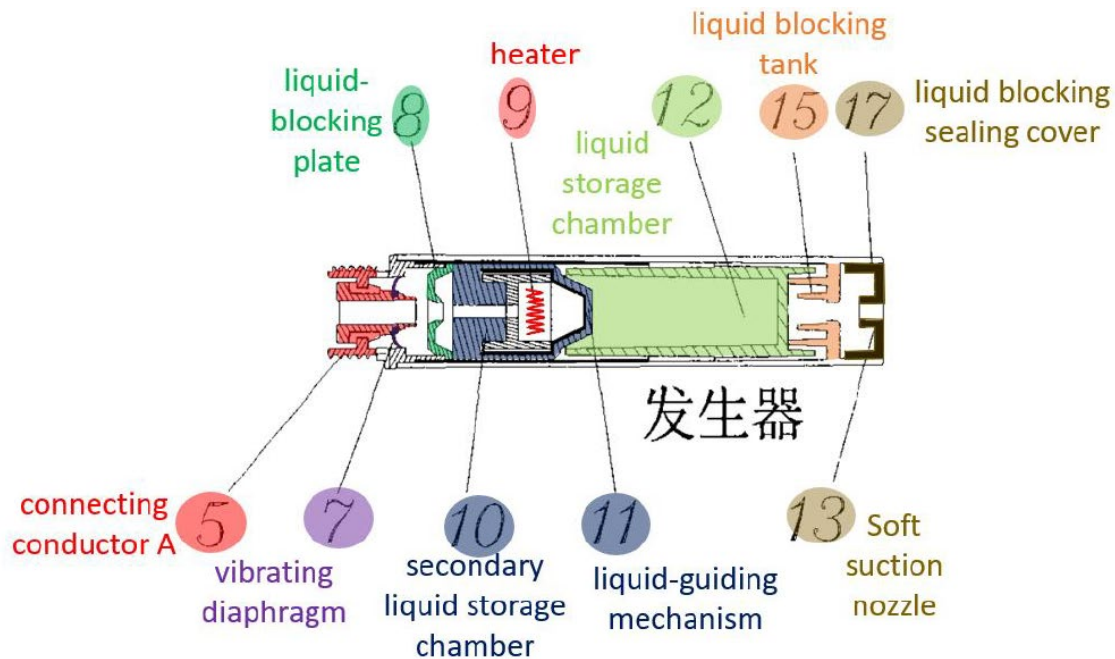
E. Overview of Asserted Prior Art

1. Xia (Ex. 1004)

Xia is a Chinese patent, titled “Environmental-protecting Type Incombustible Atomizing Electronic Cigarette with Function of Cigarette Substitute,” that 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[and] comprising a detachable controller and a generator”).

Patent Owner’s annotated versions of Xia’s Figure 2 are reproduced below:





Prelim. Resp. 10–11. Xia’s Figure 2 is a “schematic structural diagram of the . . . atomizing electronic cigarette.” Ex. 1004, 9. 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.

Id.

2. Wang (Ex. 1005)

Wang, is a Chinese patent publication, titled “Electronic Pure Cigarette,” that 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 “compris[ing] a cigarette holder part and a cigarette rod part”).

Figures 2 and 3 of Wang are reproduced below.

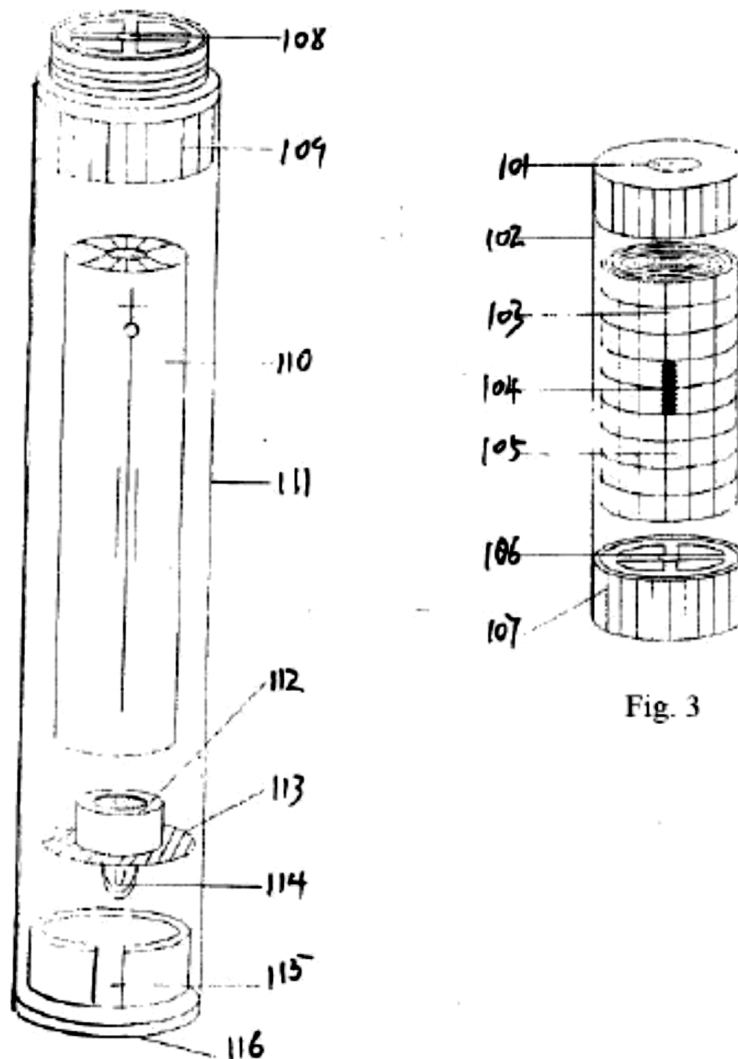


Fig. 3

Figures 2–3, shown above, are “schematic structural diagram[s] of a cigarette rod part in [the first embodiment]” (Figure 2) and “a cigarette holder part in [the first embodiment]” (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.* Sensor 112 “is a switch device that drives the circuit control board 113 and then drives the discharge output of the battery 110.” *Id.* “The sensor is used to collect airflow and pressure changes generated by smoking motions.” *Id.*

“The circuit control board judges a switching signal through the sensor 112, so as to supply power to the output end 109 and the indicating lamp 114, manage a voltage and current of the battery 110, and give corresponding prompts through the indicating lamp 114.” *Id.* “A core of the circuit control board 113 of the cigarette rod is an embedded chip.” *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, and also provides a space for smoke produced when the tobacco extract 103 in the organic fiber 105 is heated by the electric heater 104.” *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 outlet 101 of the cigarette holder is placed at the other end of the air inlet 106 of the cigarette holder . . . is a channel for finally sucking out smoke.” *Id.* at 8.

The inlets and outlets of the airflow channel can be varied. *Id.* at 6–7. “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.

3. *Fang* (Ex. 1006)

Fang is a Chinese patent publication, titled “Electronic Cigarette,” that discloses an electronic cigarette including a “fuming device control switch and . . . nicotine oil fuming device . . . sequentially nested in the cigarette rod shell.” Ex. 1006, codes (11), (54), 4; *id.* at 4 (“technical solution”), 6 (“to increase a storage amount of nicotine oil, the oil conservator 7 is nested”).

Figure 1 of Fang is reproduced below.

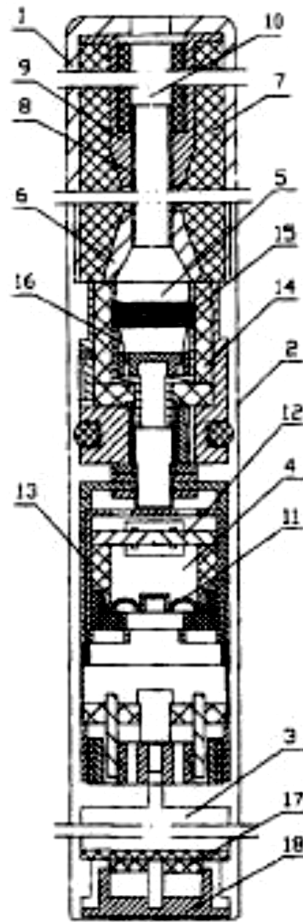


Figure 1 of Fang above depicts a “schematic diagram of the utility model.” *Id.* at 5.

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.

F. Claims 1–48 – Alleged Obviousness over Xia alone, Xia and Wang, or Xia, Wang, and Fang

Petitioner contends claims 1–48 of the '864 patent are unpatentable as obvious over Xia alone, over Xia in view of Wang, or over Xia in view of Wang and Fang. Pet. 30–90; Reply 1–4. Patent Owner opposes. Prelim. Resp. 25–44; Sur-reply 1–4.

1. Claim 1

a) Petitioner's Contentions

The preamble and claim elements 1[a1] and [1a2] recite:

1[p] A cartridge configured to couple to a power source of an electronic vaporizer, the cartridge comprising:

1[a1] a housing having an interior and a solution holding medium adapted to hold a solution,

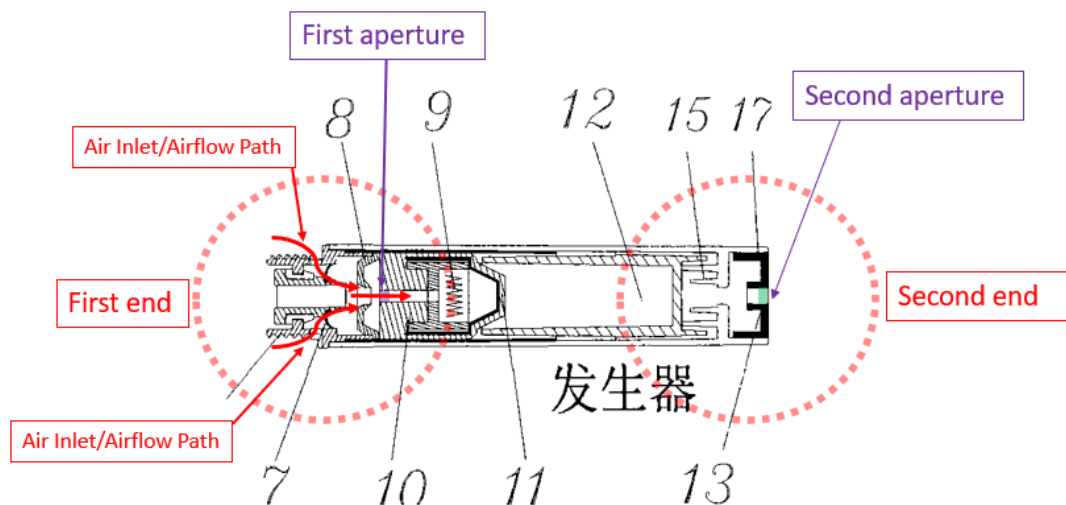
Petitioner asserts that Xia's "generator" shown in Xia Figure 2 is a cartridge that is configured to couple (through connectors A5 and B6) to a power source (i.e., battery) as recited in the preamble. Pet. 30–31 (citing Ex. 1004, Fig. 2; Ex. 1007 ¶¶ 71–72). Petitioner further asserts that Xia's generator (cartridge) has a stainless steel shell (housing) that has liquid storage chambers 10 and 12 (individually or collectively a "solution holding medium adapted to hold a solution"), thus disclosing the housing having an

interior and solution holding medium of claim element 1[a1]. Pet. 34–35 (citing Ex. 1004, 3, 6–10, Fig. 2; Ex. 1007 ¶¶ 76, 78).

Claim element 1[a2] recites:

1[a2] the housing having a first end and a second end that is opposite the first end, the housing having a first aperture proximate the first end and a second aperture proximate the second end.

Petitioner argues that Xia, or Xia with Wang or Fang discloses or suggests this claim element. Pet. 35–39. Petitioner first asserts that Xia’s Figure 2, shown below with Petitioner’s annotations added, discloses or suggests element 1[a2]. Pet. 38 (citing Ex. 1004, Fig. 2).



A portion of Xia Figure 2, shown above with Petitioner’s annotations added, depicts a schematic structural diagram of a portion of an electronic cigarette. Ex. 1004, 9; Pet. 38.

According to Petitioner, annotated Figure 2 demonstrates the location of the first end (circled in red dotted line), first aperture (purple), air inlet/airflow path, second end, and second aperture as required by claim element 1[a2]. Pet. 37–38. Petitioner also states that if the claimed first

aperture must be closer to the edge and surface of the first cartridge end, that it would have been obvious to reposition Xia's first aperture to do so.

Pet. 38–39. Petitioner states that that it would have been obvious to modify Xia's cartridge to include the known airflow passageway of Wang. *Id.*

Petitioner further asserts that in this combination, Wang discloses this limitation because Wang's first and second apertures are proximate the first and second cartridge ends. Pet. 39 (citing Pet. "Ground 2 elements 1[a2] and 1[c]").

Petitioner further 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, with a central aperture (already present in Wang, and in Fang), which would also allow the solution holding medium to be extended to the edge of the housing as well, increasing liquid storage capacity as explained in Ground 2, 1[c]." Pet. 39 (citing Ex. 1007 ¶¶ 91–100, 137–160, 307–317).

Claim element 1[a3] requires that "the first end of the housing being adapted to electrically couple to the power source." Petitioner asserts that Xia's disclosure of cartridge housing that includes an electrically conductive portion (conductor A5) that is mechanically and electrically coupled to the conductive portion of the power source (e.g., conductor B6) discloses this limitation. Pet. 39–41 (citing Ex. 1004, 7, 9, 10, 12, Fig. 3; Ex. 1007 ¶ 104).

Claim element 1[a4] requires that the first aperture and the second aperture being in communication with one another to permit an airflow through the housing from the first aperture to the second aperture. Petitioner asserts that first and second apertures of Xia, or the modified devices of Xia

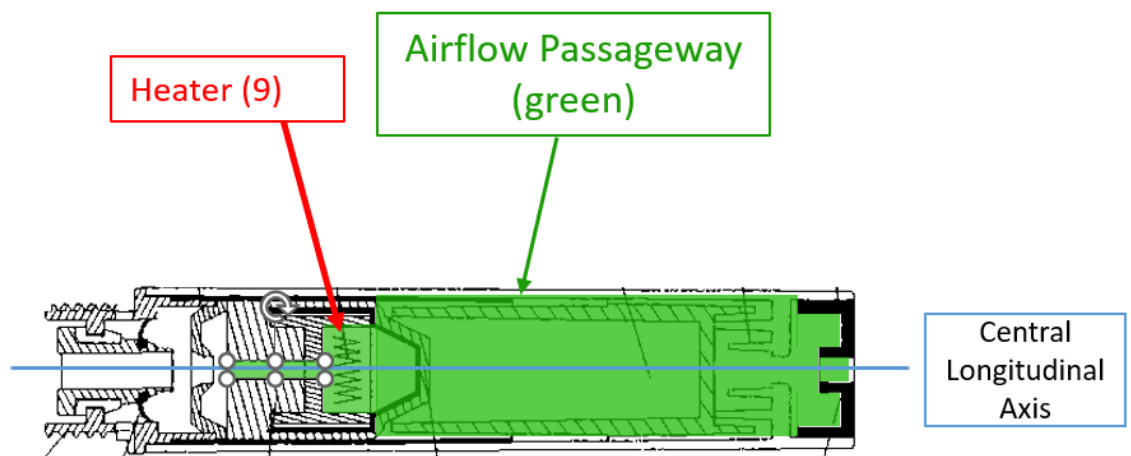
with Wang and/or Fang are in communication with each other, because this is how air flows from one end of Xia's cartridge to the other. Pet. 42–43 (citing Ex. 1007 ¶¶ 107–110; Ex. 1004, Fig. 2).

Claim elements 1[b1] and 1[b2] recite:

1[b1] a heating element located in the interior of the housing, the heating element extending transversely to a central longitudinal axis of the housing and being at least partially exposed to the airflow,

1[b2]: the heating element being configured to vaporize at least a portion of the solution for oral provision to an individual in the airflow, the heating element being responsive to electrical power received from the power source

Petitioner maps Xia's heater 9 to these claim elements, asserting that heater 9, shown below in Xia's Figure 2, with annotations added, is located in the interior of Xia's housing of the generator and within the airflow passageway, identified below in green. Pet. 42–45 (citing Ex. 1004, Fig. 2, 9–10, 13–14; Ex. 1007 ¶¶ 107–111, 113–115).



A portion of Xia Figure 2, shown above, depicts a schematic structural diagram of a portion of an electronic cigarette, with Petitioner's annotations of heater (9), airflow passageway (green) and central longitudinal axis (blue) added. Ex. 1004, 9; Pet. 45.

Petitioner asserts that Xia's heating element vaporizes the solution as required by claim element 1[b2]. Pet. 48–49 (citing Ex. 1004, 5, 8–10, 13–14, 16, Fig. 5; Ex. 1007 ¶¶ 123–128).

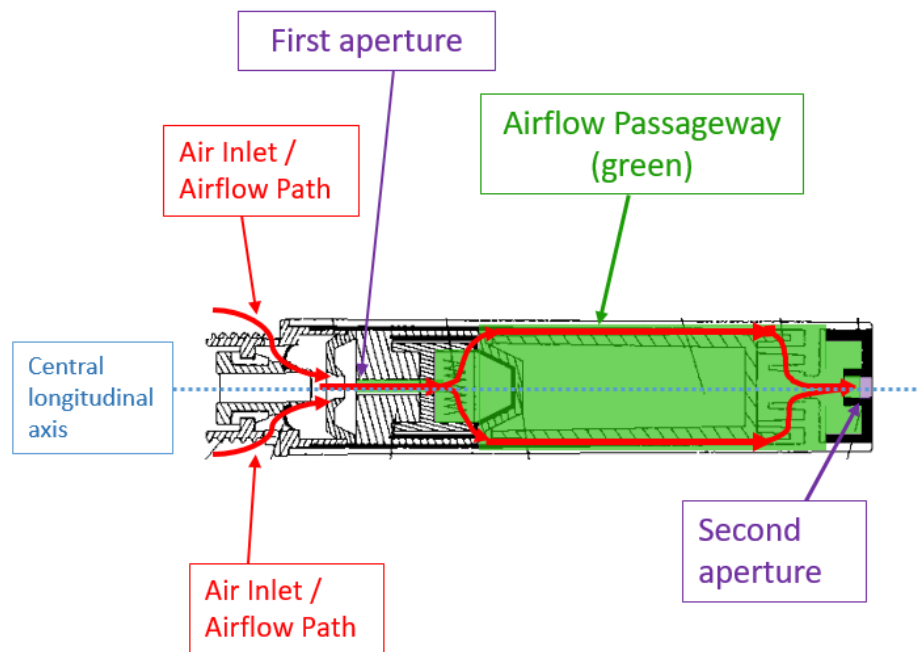
Claim elements 1[c] and 1[d] recite:

1[c] an airflow passageway in the housing, at least a portion of the airflow passageway extending centrally and axially with respect to the housing;

1[d] wherein the airflow passageway extends centrally and axially from the first aperture to the second aperture.

Petitioner asserts that Xia (Pet. 49–54, 65–66), Xia and Wang (Pet. 54–62, 66), or Xia and Wang with Fang (Pet. 62–66) teach these claim elements.

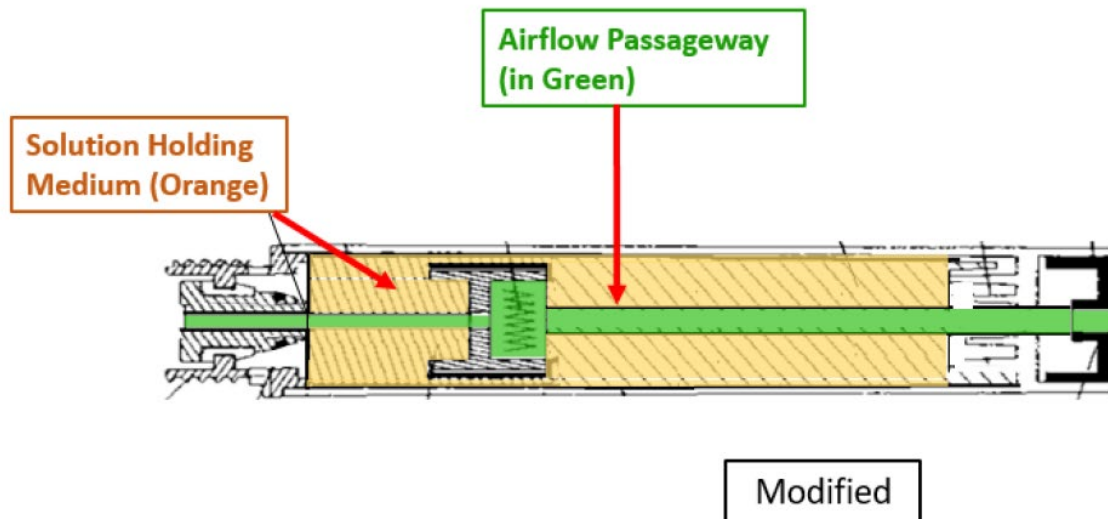
Petitioner first contends that Xia Figure 2, shown below with Petitioner's annotations added, discloses an airflow passageway (green), at least a portion of which extends centrally and axially with respect to the housing, as required by claim element 1[c] (Pet. 51–52) and centrally and axially from first to second aperture as required by claim element 1[d] (Pet. 66).



A portion of Xia Figure 2, shown above depicts a schematic structural diagram of a portion of an electronic cigarette, with Petitioner's annotations of first aperture (purple), air inlet/airflow path (red), airflow passageway (green) and central longitudinal axis (blue) added. Ex. 1004, 9; Pet. 52, 66.

Petitioner states that if Patent Owner contends that Xia's airflow passageway is not centrally and axially located because air within the passageway flows around certain items, such as the liquid storage container 12, rather than in a straight line, then Patent Owner's argument would be inconsistent with Patent Owner's assertions in the co-pending ITC investigation and the M.D.N.C. Litigation. Pet. 52 (citing Ex. 1007 ¶ 133). Petitioner also points to the summary judgment decision the M.D.N.C. Litigation as stating the presence of certain structures (i.e., a "positive pin and silicon base") that may obstruct airflow and alter the airflow's path, do not alter the interior airflow passageway, which at all times extends straight through the center of the accused cartridge to the second end. Pet. 53 (citing Ex. 1015, 14–18; Ex. 1007 ¶ 136).

Petitioner also asserts that in Xia, at least in the part of the device near the heating element, the airflow passageway is inset from the walls of the housing centrally and axially, with the solution medium 10 surrounding it. Pet. 54–55 (citing Ex. 1004, 4, Fig. 4; Ex. 1007 ¶¶ 136–137). Petitioner contends that although Xia’s inventors chose to place the remaining storage holding medium (i.e., element 12) in the center of the airflow passageway such that air flows around it, that another obvious alternative would have been the modified device shown in Xia’s modified Figure 2 reproduced below.



A portion of Xia Figure 2, shown above, depicts a schematic structural diagram of a portion of an electronic cigarette, with Petitioner’s modifications to show modified solution holding medium (orange) and airflow passageway (green). Ex. 1004, 9; Pet. 57.

Petitioner asserts that this obvious modification would make the existing architecture in the heating element consistent and run along the length of the cartridge. Pet. 57 (citing Ex. 1007 ¶¶ 136–137).

Petitioner also asserts that Xia teaches use of a central passageway extending through a solution holding medium. Pet. 57–60. Petitioner

contends it would have been obvious to modify Xia to include Wang’s passageway arrangement, which “extends centrally and axially with respect to the housing intermediate of the first aperture on the housing’s first end and the second aperture on the housing’s second end,” to provide smoother airflow without pinch points, better temperature control, and vapor content, as well as being simpler and cheaper to design and manufacture. Pet. 59–61 (citing, *inter alia*, Ex. 1007 ¶¶ 137, 141); *see also* Pet. 61–62 (stating such a modification would move the liquid blocking plate to the end of the secondary liquid storage chamber, and that the modification would result in predictable results with a reasonable expectation of success, would have fewer parts, and would be easier to manufacture (citing Ex. 1007 ¶¶ 145–150; Ex. 1004, 13)).

Petitioner also asserts that it would have been obvious to use Fang’s passageway—in which air flows directly down the center of the device through, *inter alia*, gas pipe (8) and smoking channel (10)—in place of Xia’s or Wang’s airflow passageway as a simple substitution of a known element to yield predictable results. Pet. 62–65 (citing Ex. 1007 ¶¶ 152, 155–160; Ex. 1004, 4, 6, Fig. 1).

b) Patent Owner’s Arguments

Patent Owner argues that none of Xia, Wang, or Fang disclose a “housing having a first aperture.” Prelim. Resp. 25. Patent Owner further asserts that Petitioner fails to articulate an adequate motivation to combine. *Id.*

With respect to Xia alone, Patent Owner argues that Petitioner identified Xia’s stainless steel shell as the housing, but points to the hole in

“secondary liquid storage chamber 10” for the claimed “first aperture.” *Id.* at 26.

With respect to Wang, Patent Owner asserts that the first (and second) aperture identified by Petitioner is organic fiber 105, which is in the liquid storage material, not the housing. *Id.* at 29. Patent Owner also asserts that the organic fiber does not have any aperture at all, but is merely wound around an electric heater. *Id.* at 29–31 (citing Ex. 1005, 7, Fig. 5; Ex. 1029, Fig. 5; Ex. 1017 (“Wang declaration”) ¶ 10).

With respect to Fang, Patent Owner asserts that Fang is a single, not two-piece device, and thus does not have a separate cartridge as required by the claims. *Id.* at 32–33.

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 37. “These different mechanisms necessitate substantially different physical arrangements,” and a “POSITA cannot simply swap one element for another.” *Id.* at 40. “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 42–44.

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, that Xia has (1) a “**housing**

having a first aperture on the first end” and that Xia’s (2) “housing 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. 10–12, 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. 25–27), the record before us supports Petitioner’s position and claim construction at this stage in the proceeding. Again, the parties are invited to address claim construction of “housing having a first aperture” during trial.

We have concerns as to whether Petitioner sufficiently shows a reason to modify Xia in view of Wang and/or Fang, including showing *why* a POSITA would have extended Xia’s passageway to the very end of the housing. *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). We also have concerns as to whether Mr. Sturges provides sufficient support for his contentions. *See, e.g.*, Ex. 1007 ¶ 91 (stating that a POSITA would have been motivated to modify Xia’s cartridge “to be simpler, thereby making its manufacturing process easier to conduct and cheaper to fund”). However, 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.”).

2. Claims 2–48

Petitioner presents additional arguments for obviousness of claims 2–48 based on Xia alone, and based on the combination of Xia with Wang with Fang. Pet. 67–90. In view of our determination that Petitioner establishes a

reasonable likelihood for claim 1, and because Petitioner’s arguments and evidence for remaining claims 2–48 (Pet. 67–90) are similar to Petitioner’s arguments and evidence for claim 1 (Pet. 30–66), 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”)⁹ 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).

*G. Claims 1–48 – Wang alone or in combination
with Fang (Ground 2)*

Petitioner contends claims 1–48 of the ’864 patent are unpatentable as obvious over Wang alone or in combination with Fang. Pet. 91–121; Reply 1–4. Patent Owner opposes. Prelim. Resp. 44–47; Sur-reply 1–4.

1. Claim 1

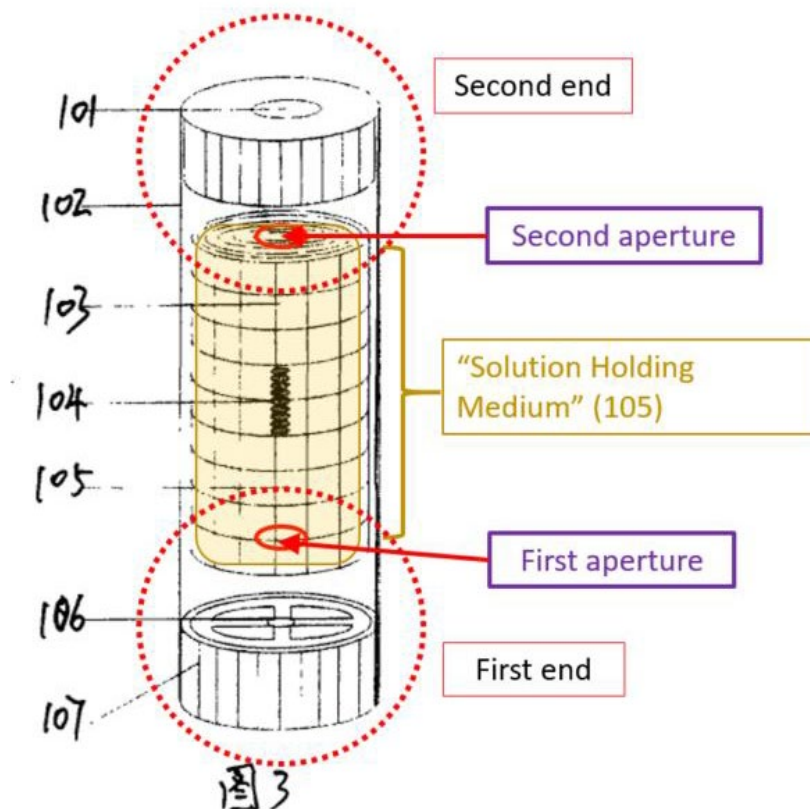
a) Petitioner’s Arguments

Petitioner argues that Wang or Wang in combination with Fang teaches or suggests all of the limitations of claim 1. In particular, Petitioner asserts that Wang discloses a cartridge (“cigarette holder part” 102) as recited in the preamble. Pet. 91 (citing Ex. 1005, Fig. 1). Petitioner also asserts that Wang’s cigarette holder shell 102 is a housing having organic fiber 105 (an interior solution holding medium) adapted to hold a solution as recited in claim element 1[a1]. Pet. 91–92 (citing, *inter alia*, Ex. 1005,

⁹ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

Fig. 3; Ex. 1007 ¶¶ 272–274). Petitioner asserts that Fang also discloses a solution holding medium as required by claim element 1[a1]. Pet. 92 (citing Ex. 1007 ¶ 279).

Regarding claim element 1[a2], Petitioner asserts that, as shown in annotated Figure 3 of Wang below, Wang’s housing has first and second ends, a first aperture proximate the housing’s first end and a second aperture proximate the housing’s second end. Pet. 91–92 (citing Ex. 1005, Fig. 3; Ex. 1007 ¶ 280).



Wang’s Figure 3, with annotations added by Petitioner, depicts an amplified schematic structural diagram of a cigarette holder. Ex. 1005, 12.

Petitioner asserts that Wang’s element 107 in cartridge 102 provides electrical coupling to the power source (e.g., electrode 117) as required by

claim element 1[a3]. Pet. 94–95 (citing Ex. 1005, 9; Ex. 1017, 4–5; Ex. 1007 ¶¶ 281–284).

Petitioner asserts that Wang teaches the airflow through the housing from the first to the second aperture as required by claim element 1[a4] because air enters Wang’s cartridge through air inlet 106, flows into the gap in the rolled organic fiber, which contains tobacco extract, draws liquid in toward the heater, flows over heater 104, combines with the vaporized tobacco extract from heater 104 and exits to the user via air outlet 101. Pet. 95 (citing Ex. 1005, 7–8; Ex. 1007 ¶¶ 286–290). Petitioner also states that “[a]s established,” it would have been obvious to use Fang’s claimed airflow passageway in place of Wang’s passageway. Pet. 96 (citing Ex. 1007 ¶ 291).

Petitioner further asserts that Wang’s heater 104 is a heating element that is located interior of the housing and extends transversely to a central longitudinal axis as required by claim elements 1[b1] and 1[b2]. Pet. 96–97 (citing Ex. 1005, Fig. 3; Ex. 1007 ¶¶ 292–294), 99–100 (citing Ex. 1005, 8, Fig. 3; Ex. 1007 ¶¶ 301–302, 305–306). Petitioner further asserts that to the extent Wang does not disclose a heating element that extends transversely to a central longitudinal axis of the housing that is at least partially exposed to the airflow, as required by claim element 1[b1], Wang in view Fang does. Pet. 97–99. Citing to its arguments set forth regarding claim element 1[c] in its Xia based grounds, Petitioner asserts that Fang’s heating element 16 is a transverse heating element that is at least partially exposed to airflow. Pet. 97–98 (citing Ex. 1006, Fig. 1; Ex. 1007 ¶¶ 295–296). Petitioner asserts that it would have been a simple design choice to modify Wang to contain Fang’s heating element and solution holding medium to increase the heater’s

surface area contacting the airflow and nicotine solution and to provide a wider airflow passageway, and reduce length of the electronic cigarette for increased portability. Pet. 98–99 (citing Ex. 1007 ¶¶ 298–298). Petitioner further asserts that a POSITA would have known of the benefits of adopting Fang’s wick and heating element. Pet. 99 (citing Ex. 1007 ¶ 300).

Petitioner asserts that Wang discloses the airflow passageway in the housing that extends centrally and axially from the first aperture to the second aperture as required by claim elements 1[c] and 1[d]. Pet. 101, 104 (citing to its Ground 1 arguments). For example, Petitioner asserts that Wang’s central air passageway extends through absorbent organic fiber 105 (solution holding medium). Pet. 57–61 (citing, *inter alia*, Ex. 1005, Figs. 2–3, 5; Ex. 1007 ¶¶ 138–139; Ex. 1017, 4–5; Ex. 1029, Figs. 2–3). Petitioner asserts that the airflow passes directly through the center via the space provided by rolling the organic fiber around the heating element, in order to reach the centrally located heating element and then reach the second aperture. Pet. 60 (citing Ex. 1005, 8, Fig. 3).

b) Patent Owner’s Arguments

Patent Owner argues that “Petitioner fails to identify (1) a “***housing having a first aperture*** on the first end” in either Fang or Wang” and, thus, “Wang cannot anticipate the challenged claims.” Prelim. Resp. 44. 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. 44), we do not apply principles of anticipation.

Patent Owner also argues that Petitioner has failed to carry its burden regarding “Wang as single reference obviousness,” because “Petitioner does

not argue that it would have been obvious for *the housing* to have first or second apertures,” and “at most, Petitioner argues that it would have been obvious to extend the liquid storage of Wang to the cartridge ends” but does not suggest “moving its ‘first aperture’ to the housing.” Prelim. Resp. 44–45. Patent Owner also argues that Wang does not have a “heating element extending transversely to a central longitudinal axis” as required by claim element 1[b1]. Prelim. Resp. 45; *see also id.* at 19–21 (stating that Wang does not expressly disclose an airflow passageway through the organic fiber); *see also id.* at 21–22 (stating the Wang declaration should be disregarded as Mr. Wang is not a credible declarant)

c) Analysis

On this record, we are persuaded that Petitioner meets its burden to demonstrate a reasonable likelihood of prevailing on its Wang-based obviousness argument. As explained above, at this stage of the proceeding, we construe the term “housing having a first aperture” to encompass an aperture that is located within the interior of the housing, and the term does not require that the aperture be located in the housing itself. Thus, Patent Owner’s arguments that Petitioner fails to suggest moving Wang’s first aperture to the housing (Prelim. Resp. 45) and that Fang does not remedy this deficiency is not persuasive at this stage of the proceeding. We agree that Petitioner has demonstrated, on this record, that Wang teaches a housing having a first aperture proximate the first end of the housing because the asserted first aperture of Wang, located within the asserted housing, is located proximate the first end of Wang’s housing. Pet. 93–94.

Petitioner has also provided sufficient argument that a POSITA would have understood that Wang’s wound organic fiber has a central channel that

acts as an airflow passageway. *See, e.g.*, Pet. 57–61; Ex. 1029, Figs. 3, 5; Ex. 1005, Figs. 3, 5). Patent Owner’s arguments to the contrary raise issues best resolved on a full record.

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. 45), but in the absence of evidence or additional argument from Patent Owner, 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. 95–96 (citing Ex. 1001, 6:64–7:2; Ex. 1005, Fig. 3; Ex. 1007 ¶¶ 293–294). We have reviewed, and agree with, Petitioner’s remaining contentions regarding claim 1, which are not disputed at this stage of the proceeding. Accordingly, we determine that Petitioner has sufficiently shown a reasonable likelihood that it will prevail in showing that claim 1 would have been obvious over Wang.

Regarding Patent Owner’s arguments that Petitioner has not sufficiently shown that the combination of Wang and Fang teach the apertures of claim element 1[a2] or the airflow passageway of claim element 1[c] (Prelim. Resp. 46–47), these arguments are not persuasive at this stage of the proceeding. As explained above, Petitioner sufficiently shows that Wang teaches these claim elements.

2. *Remaining Claims*

Petitioner presents additional arguments for obviousness of claims 2–48 based on Wang alone, and based on the combination of Wang with Fang. Pet. 105–121. In view of our determination that Petitioner establishes a

reasonable likelihood for claim 1, and because Petitioner’s arguments and evidence for remaining claims 2–48 (Pet. 105–121) are similar to Petitioner’s arguments and evidence for claim 1 (Pet. 91–104) and are unopposed at this stage by Patent Owner, 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).

H. Word Count

We also consider Patent Owner’s argument that the Petition should be denied because a column providing a “short hand 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. 53–54 (citing Pet. 7–23; 37 C.F.R. § 42.24); *see also* Pet. i–xvii (providing a table of challenged claims).

We decline to deny the Petition for this reason. Although the text in the shorthand column of Petitioner’s claim listing table does bring the total number of pages to over 14,000, 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. As the table and the Petition’s headings also refer to claim element numbers (i.e., claim element 1[a1]), the shorthand notations are not necessary to understand the Petition’s headings. As such, the text recited in

the shorthand column was not necessary to render this decision. Additionally, 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

Because Petitioner has demonstrated a reasonable likelihood that at least one challenged claim of the '864 patent is unpatentable over the prior art of record, we institute an *inter partes* review of all challenged claims on all asserted grounds.

At this stage of the proceeding, we have not made a final determination with respect to the patentability of any challenged claim or any underlying factual or legal issue, including claim construction.

IV. ORDER

For the reasons given, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–48 of the '864 patent is instituted with respect to all grounds of unpatentability asserted in the Petition; and

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 trial, which will commence on the entry date of this Decision.

IPR2024-00160
Patent 11,497,864 B2

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