

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUUL LABS, INC.,

Petitioner,

v.

NJOY, LLC,

Patent Owner.

Inter Partes Review No.

IPR2023-00161

Patent 10,334,881

Title: Electronic Vaporizer

Filing Date: December 13, 2016

Issue Date: November 15, 2022

PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 10,334,881

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PETITIONER’S EXHIBIT LIST

Petitioner’s Exhibit	Description
1001	U.S. Patent No. 10,334,881 (“’881 Patent”)
1002	Patent Prosecution History of the ’881 Patent
1003	<i>NJOY, LLC v. JUUL Labs, Inc.</i> , C.A. No. 1:23-cv-00917 (D. Del.), Complaint filed on August 22, 2023.
1004	Certified English Translation and Chinese Patent Publication No. CN201238610 (“Xia”)
1005	Certified English Translation and Chinese Patent Publication No. CN101366554 (“Wang”)
1006	Certified English Translation and Chinese Patent No. CN 201085044Y (“Fang”)
1007	Declaration of Robert Sturges and CV
1008	Chinese National IP Association (“CNIPA”) Database Search Results (For Xia);
1009	Global Dossier - United States Patent and Trademark Office Search Results for Xia
1010	European Patent Office Search Results Espacenet (For Xia)
1011	Chinese National IP Association (“CNIPA”) Database Search Results for Fang
1012	Global Dossier - United States Patent and Trademark Office Search Results for Fang
1013	European Patent Office Search Results Espacenet for Fang
1014	<i>Fuma International LLC v. R.J. Reynolds Vapor Company</i> , Case No. 1:19-cv-260, D.I. 122 (M.D.N.C., October 20, 2020) (RJR Brief)
1015	<i>Fuma International LLC v. R.J. Reynolds Vapor Company</i> , Case No. 1:19-cv-260, D.I. 139 (M.D.N.C., May 24, 2021) (MSJ Order)

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1016	August 22, 2006 Tariff Classification for Nicotine Inhaler and Parts From China
1017	<i>Fuma International LLC v. R.J. Reynolds Vapor Company</i> , Case No. 1:19-cv-260, D.I. 76-47 (December 20, 20109) (Declaration of Wang Shanhong)
1018	<i>Fuma International LLC v. R.J. Reynolds Vapor Company</i> , Case No. 1:19-cv-260, D.I. 83 (January 13. 2020) (Fuma CC Brief)
1019	1013-2023_NJOY Email_Re_Alleged Priority Date (See <i>In Re Vaporizer Devices, Cartridges Used Therewith, and Components Thereof</i> , before the International Trade Commission, 337-TA-1372)
1020	<i>Fuma International LLC v. R.J. Reynolds Vapor Company</i> , Case No. 1:19-cv-260, D.I. 95 (March 23. 2020) (Markman Order)
1021	<i>Fuma International LLC v. R.J. Reynolds Vapor Company</i> , Case No. 1:19-cv-260, D.I. 133 (November 25. 2020) (Fuma SJ Brief)
1022	<i>In Re Vaporizer Devices, Cartridges Used Therewith, and Components Thereof</i> , 337-TA-1368, NJOY's Initial Invalidity Contentions and Exhibits
1023	<i>Fuma International LLC v. R.J. Reynolds Vapor Company</i> , Case No. 1:19-cv-260, Conley Deposition Transcript
1024	<i>Fuma International LLC v. R.J. Reynolds Vapor Company</i> , Case No. 1:19-cv-260, Conley Deposition Ex. 2A
1025	<i>Fuma International LLC v. R.J. Reynolds Vapor Company</i> , Case No. 1:19-cv-260, Dkt. 120 (Fuma Brief)
1026	Affidavit for Certified English Translation of Chinese Patent Publication No. CN201238610 ("Xia")

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1027	Chinese Patent Publication No. CN201238610 ("Xia")
1028	Affidavit for Certified English Translation and Chinese Patent Publication No. CN101366554 ("Wang")
1029	Chinese Patent Publication No. CN101366554 ("Wang")
1030	Affidavit for Certified English Translation and Chinese Patent No. CN 201085044Y ("Fang")
1031	Chinese Patent No. CN 201085044Y ("Fang")
1032	337-TA-1372 NJOY's Initial Domestic Industry Contentions Ex. 4
1033	337-TA-1372 NJOY's Infringement Allegations Filed With Complaint, Ex. 9

TABLE OF CLAIMS

Claim 1	Claim 1 Shorthand ¹
1[p] An apparatus comprising:	1[p] apparatus
1[a1] a power source,	1[a1] power source
1[a2] wherein the power source includes a battery,	1[a2] battery
1[a3] wherein the power source includes an electrically conductive portion; and,	1[a3] electrically conductive portion of power source
1[b1] a cartridge having a housing that comprises an interior,	1[b1] cartridge housing 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[b2] two ends/two apertures
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[c] central/axial airflow passageway between apertures
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[d] airflow passageway/airflow between apertures
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[e] conductive First End to Power Source
1[f] wherein the housing includes a solution holding medium adapted to hold a solution in the interior of the housing,	1[f] solution holding medium

¹ Shorthand is for convenience only, is not controlling, and is not the basis for the analysis herein.

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[g] heating element in housing, transverse to airflow
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[h] surrounds passageway and heating element
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.	1[i] electrical heating element to vaporize liquid for delivery via second aperture
Claim 2	Claim 2 Shorthand
[2] The cartridge of claim 1, wherein the heating element is a coil having a maximum diameter, the airflow passageway having a length having a circular cross section having a diameter along a majority of the length, the maximum diameter of the coil being smaller than the diameter of the circular cross section of the length of the airflow passageway.	[2] coil diameter less than passageway cross section
Claim 3	Claim 3 Shorthand
[3] The cartridge of claim 2, wherein the first aperture on the first end is located centrally and axially with respect to the housing, the first aperture having a cross-sectional area measured perpendicular to a central longitudinal axis of the housing, the interior of the airflow passageway between the heating element and the second aperture being no smaller in cross-sectional area than the cross-sectional area of the first aperture.	[3] central/axial first aperture equal to or smaller than airflow passageway and second aperture

Claim 4	Claim 4 Shorthand
[4] The cartridge of claim 3, wherein the first aperture on the first end is smaller than the second aperture on the second end.	[4] first aperture smaller than second aperture
Claim 5	Claim 5 Shorthand
[5] The cartridge of claim 1, wherein the solution holding medium includes at least one of an absorbent material and a reservoir.	[5] absorbent material or reservoir
Claim 6	Claim 6 Shorthand
[6] The cartridge of claim 1, further comprising a solution in the solution holding medium, the solution comprising one of propylene glycol and nicotine.	[6] propylene glycol or nicotine solution
Claim 7	Claim 7 Shorthand
[7] The cartridge of claim 1, wherein the airflow passageway has a uniform cross-sectional area measured perpendicular to a central longitudinal axis of the housing between the heating element and the second aperture.	[7] uniform airflow passageway between the heating element and the second aperture
Claim 8	Claim 8 Shorthand
8[p] A cartridge configured to mechanically and electrically couple to a power source of an electronic vaporizer, the cartridge comprising:	8[p] electrical/mechanical cartridge
8[a1] a housing having an interior and a solution holding medium reservoir adapted to hold a solution,	8[a1] reservoir
8[a2] the housing having a first end and a second end that is opposite the first end, the housing having a first aperture on the first end and a second aperture on the second end,	8[a2] two ends/two apertures
8[a3] the first end of the housing having an electrically conductive portion adapted to mechanically and electrically couple to the electrically conductive portion of the power source;	8[a3] conductive first end to power source
8[b1] an airflow passageway in the interior of the housing extending centrally and axially with respect to the housing intermediate of the first aperture on the first end of the housing and the	8[b1] central/axial airflow passageway between apertures,

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second aperture on the second end of the housing,	
8[b2] the airflow passageway being configured to allow an airflow through the cartridge from the first aperture to the second aperture of the housing; and	8[b2] airflow passageway allows airflow between apertures
8[c1] a heating element located in the interior of the housing, the heating element being located within and extending transversely across the airflow passageway, the airflow through the passageway passing on both transverse sides of the heating element,	8[c1] heating element in housing and transverse to airflow
8[c2] both the heating element and the airflow passageway being surrounded by the solution holding medium reservoir,	8[c2] solution holding medium reservoir surrounding airflow passageway and heating element
8[c3] the heating element being electrically configured to vaporize at least a portion of the solution to be contained in the solution holding medium reservoir 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.	8[c3] electrical heating element to vaporize liquid for delivery via second aperture
Claim 9	Claim 9 Shorthand
[9] The cartridge of claim 8, further in combination with the power source including a battery and the electrically conductive portion, the electrically conductive portion of the power source being mechanically and electrically coupled to the electrically conductive portion of the first end of the housing.	[9] power source and first end electrically/mechanically coupled.
Claim 10	Claim 10 Shorthand
[10] The cartridge of claim 9, wherein the heating element is a coil having a maximum diameter, the airflow passage way having a length having a circular cross section having a	[10] coil heating element with max. diameter relative to circular airflow passageway

diameter along a majority of the length, the maximum diameter of the coil being smaller than the diameter of the circular cross section of the length of the airflow passageway.	
Claim 11	Claim 11 Shorthand
[11] The cartridge of claim 10, wherein the first aperture on the first end is located centrally and axially with respect to the housing, the first aperture having a cross-sectional area measured perpendicular to a central longitudinal axis of the housing, the interior of the airflow passageway between the heating element and the second aperture being no smaller in cross-sectional area than the cross-sectional area of the first aperture.	[11] central/axial first aperture equal to or smaller than airflow passageway and second aperture
Claim 12	Claim 12 Shorthand
[12] The cartridge of claim 11, wherein the first aperture on the first end is smaller than the second aperture on the second end.	[12] first aperture smaller than second aperture
Claim 13	Claim 13 Shorthand
[13] 13. The cartridge of claim 8, wherein the solution holding medium reservoir includes an absorbent material.	[13] absorbent material
Claim 14	Claim 14 Shorthand
[14] The cartridge of claim 8, further comprising a solution in the solution holding medium reservoir, the solution comprising one of propylene glycol and nicotine.	[14] propylene glycol and nicotine solution
Claim 15	Claim 15 Shorthand
[15] The cartridge of claim 8, wherein the airflow passageway has a uniform cross-sectional area measured perpendicular to a central longitudinal axis of the housing between the heating element and the second aperture.	[15] uniform airflow passageway between the heating element and the second aperture
Claim 16	Claim 16 Shorthand
16[p] A cartridge configured to mechanically and electrically couple to a power source of an electronic vaporizer, the cartridge comprising:	16[p] electrical/mechanical cartridge:

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16[a1] a housing having an interior and a solution holding medium adapted to hold a solution in the interior of the housing,	16[a1] solution holding medium
16[a2] the housing having a first end and a second end that is opposite the first end, the housing having a central longitudinal axis extending through the first end and the second end, the housing having a first aperture on the first end and a second aperture on the second end,	16[a2] two ends/two apertures and housing with axis
16[a3] the first aperture having a cross-sectional area measured perpendicular to the central longitudinal axis of the housing,	16[a3] first aperture with measurement
16[a4] the first end of the housing having an electrically conductive portion adapted to mechanically and electrically couple to an electrically conductive portion of the power source;	16[a4] conductive first end to power source
16[b1] an airflow passageway in the interior of the housing, the airflow passageway having a length extending 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,	16[b1] central/axial airflow passageway between apertures
16[b2] the airflow passageway being configured to allow an airflow through the cartridge from the first aperture to the second aperture of the housing,	16[b2] airflow passageway/airflow between apertures
16[b3] the airflow passageway having an exterior adjacent to the solution holding medium along a majority of the length of the airflow passageway,	16[b3] airflow passageway with exterior adjacent to the solution holding medium along majority of passageway
16[b4] the airflow passageway having an interior having a uniform cross-sectional area measured perpendicular to the central longitudinal axis of the housing and extending continuously along a majority of the length of the airflow passageway; and	16[b4] uniform airflow passageway between the heating element and the second aperture along a majority of the length of passageway

16[c1] a heating element located in the interior of the housing and extending transversely across the airflow passageway, the airflow through the passageway passing on both transverse sides of the heating element,	16[c1] heating element in housing and transverse to airflow
16[c2] a plane perpendicular to the central longitudinal axis of the housing passing through the heating element and the solution holding medium,	16[c2] plane through the heating element and the solution holding medium
16[c3] the airflow passageway having an interior between the heating element and the second aperture no smaller in cross-sectional area than the cross-sectional area of the first aperture,	16[c3] first aperture equal to or smaller than airflow passageway and second aperture
16[c4] the heating element being connected to the electrically conductive portion of the first end of the housing,	16[c4] heating element electrically connected to first end
16[c5] the heating element being 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 power source through the electrically conductive portion of the cartridge.	16[c5] electrical heating element to vaporize liquid for delivery via second aperture
Claim 17	Claim 17 Shorthand
[17] The cartridge of claim 16, further in combination with the power source including a battery and the electrically conductive portion, the electrically conductive portion of the power source being mechanically and electrically coupled to the electrically conductive portion of the first end of the housing.	[17] power source and first end electrically/mechanically coupled.
Claim 18	Claim 18 Shorthand
[18] The cartridge of claim 16, wherein the heating element is a coil having a maximum diameter and the uniform cross-sectional area of the airflow passageway is a circle having a diameter, the maximum diameter of the coil being smaller than the diameter of the circle of	[18] coil heating element with max. diameter relative to circle airflow passageway

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the uniform cross-sectional area of the airflow passageway.	
Claim 19	Claim 19 Shorthand
[19] The cartridge of claim 18, wherein the first aperture on the first end is located centrally and axially with respect to the housing.	[19] central/axial first aperture
Claim 20	Claim 20 Shorthand
[20] The cartridge of claim 19, wherein the first aperture on the first end is smaller than the second aperture on the second end.	[20] first aperture equal to or smaller than airflow passageway and second aperture
Claim 21	Claim 21 Shorthand
[21] The cartridge of claim 16, wherein the heating element is a coil having a maximum diameter and the uniform cross-sectional area of the airflow passageway is a circle having a diameter, the maximum diameter of the coil being smaller than the diameter of the circle of the uniform cross-sectional area of the airflow passageway.	[21] coil heating element with max. diameter relative to circle airflow passageway
Claim 22	Claim 22 Shorthand
[22] The cartridge of claim 16, wherein the first aperture on the first end is located centrally and axially with respect to the housing.	[22] central/axial first aperture
Claim 23	Claim 23 Shorthand
[23] The cartridge of claim 16, wherein the first aperture on the first end is smaller than the second aperture on the second end.	[23] first aperture equal to or smaller than airflow passageway and second aperture
Claim 24	Claim 24 Shorthand
[24] The cartridge of claim 16, wherein the solution holding medium includes at least one of an absorbent material and a reservoir.	[24] absorbent material or reservoir
Claim 25	Claim 25 Shorthand

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[25] The cartridge of claim 16, further comprising a solution, wherein the solution comprises one of propylene glycol and nicotine.	[25] propylene glycol and nicotine solution
Claim 26	Claim 26 Shorthand
[26] The cartridge of claim 16, wherein the heating element is in operative connection with a wicking material, and the wicking material is operative to attract a portion of the solution from the solution holding medium located immediately adjacent opposite ends of the heating element toward the heating element.	[26] heating element with wicking material between solution holding medium.
Claim 27	Claim 27 Shorthand
[27] The cartridge of claim 16, wherein the airflow passageway has a uniform cross-sectional area measured perpendicular to the central longitudinal axis of the housing between the heating element and the second aperture.	[27] uniform airflow passageway between the heating element and the second aperture

I. INTRODUCTION

Petitioner JUUL Labs, Inc. (“JLI”) respectfully requests *inter partes* review of claims 1-27 of Patent Owner NJOY, LLC’s U.S. Patent No. 10,334,881 (Ex. 1001).

The ’881 patent claims an electronic cigarette (“e-cigarette”) but concedes that most claimed elements were well-known before the alleged invention:

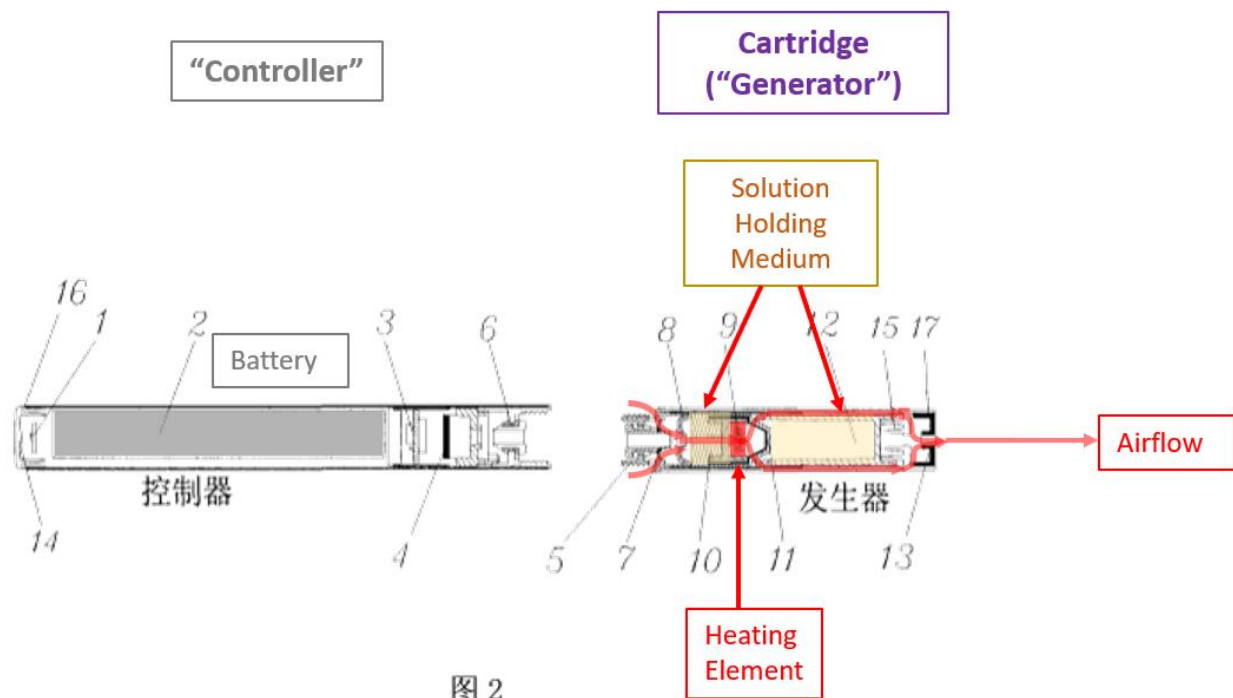
Conventional electronic cigarette designs generally include a battery, a heating element, and a mouthpiece. The mouthpiece includes a liquid solution that comprises nicotine and the battery provides power to the heating element, which in turn operates to vaporize the solution.

Ex. 1001, 1:18-30.

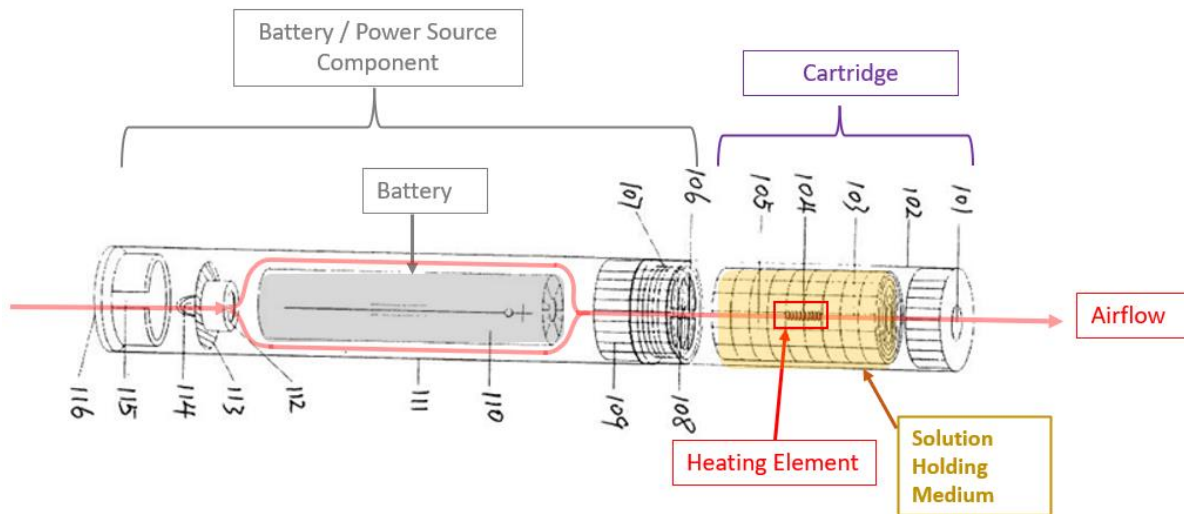
The ’881 patent purports to disclose three inventive modifications to this conventional design. *E.g.*, Ex. 1001, 1:42-2:36. Two of them—an adapter (described in connection with Figures 7-8) and a power harvesting device (described in connection with Figure 9)—are not the subject of the Challenged Claims. Instead, the claims are directed to the third purported invention, in which the conventional design is separated into two coupled parts, one including the battery/power source and another—a “cartridge”—that “may include a heating element” and “a solution that is positioned proximate to the heating element.” Ex. 1001, 1:34-57.

But dividing an e-cigarette like this was already established in the art. For example, each of the prior art references Xia (the primary reference of Ground 1)

and Wang (the primary reference of Ground 2) discloses an e-cigarette that features two coupled parts, one that includes a battery and another comprising a cartridge that includes, among other things, a heating element and a solution positioned proximate that heating element:



Ex. 1004 (Xia), Fig. 2 (annotated).



Ex. 1005 (Wang), Fig. 1 (annotated).

Moreover, Gregory Conley, the first-named inventor and then-president of Patent Owner's predecessor-in-interest, testified that the only possible inventive aspect of his "invention" (as set forth in the similar claim 1 of the '881 patent's parent, U.S. 9,532,604) was that he moved the heating element in or around the airflow passageway so that vaporization occurs "in the airflow" instead of outside it. Ex. 1023 (Conley 12/4/19 Dep. Tr.) at 57:16-59:8; *see also* 24:16-25:4, 33:9-34:8, 38:1-42:15, 47:9-14; Ex. 1024 (Conley Dep. Ex. 2A). But as depicted above and described below, all references asserted herein (and many more in the art) disclose that concept.

And any arguments that these references do not teach or make obvious the specific elements of the challenged claims should fail as contrary to the teachings of

the asserted art and the '881 patent itself. Indeed, most of the potential arguments against these references would be contrary to the infringement positions taken by Patent Owner in parallel ITC litigation, which repeat the positions asserted and then adopted by the district court in granting summary judgment when this patent was asserted in the prior district court case *Fuma v. R.J. Reynolds*.

Accordingly, claims 1-27 are unpatentable under 35 U.S.C. § 103 and the Board should cancel all challenged claims of the '881 patent.

II. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8

As set forth below and pursuant to 37 C.F.R. § 42.8, the following mandatory notices are provided as part of this Petition.

A. Real Parties-in-Interest

JLI is the real party-in-interest. JLI is not controlled by any other entity.

B. Related Matters

Petitioner submits that the '881 patent is the subject of two patent infringement lawsuits brought by Patent Owner NJOY against Petitioner JLI: (1) *NJOY, LLC v. JUUL Labs, Inc.*, in the District of Delaware, Case No. 1-23-cv-00917, filed August 22, 2023, and (2) *In Re Vaporizer Devices, Cartridges Used Therewith, and Components Thereof*, before the International Trade Commission, Case No. 337-TA-1372, filed on the same date.

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The '881 patent was previously the subject of litigation by NJOY'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. Fuma International also previously asserted the '881 patent against Logic Technology Development LLC in the U.S. District Court for the District of Delaware, Case No. 2-23-cv-04093, filed July 31, 2023 and dismissed August 25, 2023.

C. Lead and Back-Up Counsel

Lead Counsel: William A. Meunier (Reg. No. 41,193) MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C. One Financial Center Boston, MA 02111 Telephone: 617-542-6000 WAMeunier@mintz.com	Back Up Counsel: Michael T. Renaud (Reg. No. 44,299) Adam S. Rizk (Reg. No. 66,867) MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C. One Financial Center Boston, MA 02111 Telephone: 617-542-6000 ARizk@mintz.com MTRenaud@mintz.com Reza Dokhanchy (Reg. No. 62,795) Michael D Van Loy (Reg. No. 52,315) MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C. 3580 Carmel Mountain Road, Suite 300 San Diego, CA 92130 Telephone: 858-314-1500 MDVanLoy@mintz.com RDokhanchy@mintz.com
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Petitioner consents to electronic service at the above email addresses.

D. Service Information

Pursuant to 37 C.F.R. §42.8(b)(4), Petitioner identifies the following service information: Petitioner consents to service by electronic mail at the following addresses: WAMeunier@mintz.com; MDVanLoy@mintz.com, RDokhanchy@mintz.com, MTRenaud@mintz.com and ARizk@mintz.com.

Petitioner's Power of Attorney is filed concurrently with this petition.

III. PAYMENT OF FEES

Pursuant to 37 C.F.R. §§ 42.103 and 42.15(a), the filing fee of \$41,500 (*inter partes* review request fee of \$19,000 and *inter partes* review post-institution fee of \$22,500) for a Petition for *Inter Partes* Review is submitted herewith. Claim 1 of the '881 Patent is being reviewed as part of this Petition. The undersigned further authorizes payment from Deposit Account No. 50-0311 for any additional fees or refund that may be due in connection with the Petition.

IV. STANDING

Petitioner certifies that the '881 patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting IPR on the grounds identified herein. The '881 Patent issued on November 15, 2022, and this Petition is filed within one year of service of the Complaint against Petitioner alleging infringement of the '881 Patent and is not barred under 35 U.S.C. § 315(b). *See Ex.*

1003 (*NJOY, LLC v. JUUL Labs, Inc.*, C.A. No. 1:23-cv-00917 (D. Del.) (Complaint filed August 22, 2023)).

V. CHALLENGE AND STATEMENT OF RELIEF REQUESTED

Pursuant to 35 U.S.C. § 311 and 37 C.F.R. § 42.104(b), Petitioner requests institution of *inter partes* review and cancellation of Claims 1-27 (the “Challenged Claims”) under 35 U.S.C. § 103 based on the following prior art and grounds:

Ground	Claims	35 U.S.C.	References
1	1-27	§ 103	Xia alone and in view of Wang and/or Fang
2	1-27	§ 103	Wang alone and in view of Fang

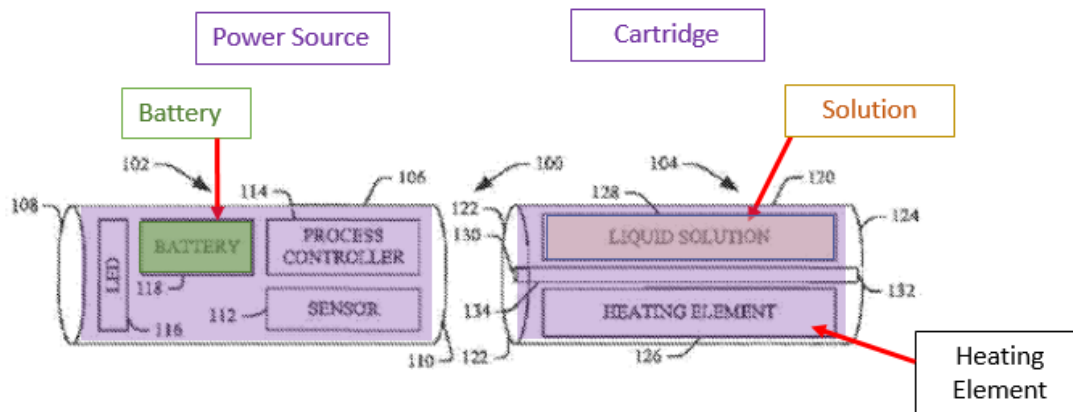
The Petition presents clear evidence of unpatentability for the Challenged Claims and establishes a reasonable likelihood that the Petitioner will prevail in establishing that the Challenged Claims are unpatentable.

This Petition is supported by the Declaration of Robert H. Sturges, Ph.D., PE (Ex. 1007).

VI. THE '881 PATENT

The '881 patent relates to an electronic vaporizer, such as an e-cigarette, that is “configured to deliver a vapor that comprises nicotine to an individual.” Ex. 1001, 1:18-23. As shown below, this vaporizer includes a “power source 102” section that

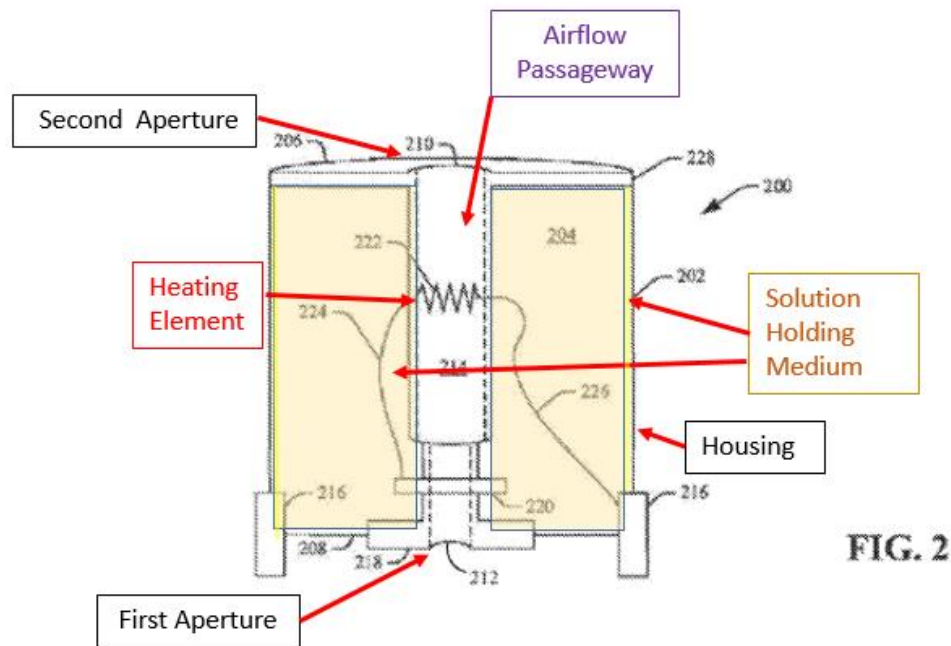
includes a battery and a “cartridge 104” section that includes a heating element and liquid solution:



Ex. 1001, 2:60-61, 3:39-40, 3:63-4:9, Fig. 1 (annotated). “The power source 102 and the cartridge 104 are configured to be mechanically and electrically coupled to one another.” Ex. 1001 at 2:62-3:2.

Also, cartridge 104 “comprises a housing 120 that has an interior,” “a first end 122,” and “a second end 124.” Ex. 1001, 3:44-46, FIG. 1. As shown in annotated Figure 2 below, “[t]he first end 122 of the cartridge 104 comprises a first aperture 130 that is located at approximately the center of the first end 122” and “[t]he second end 124 comprises a second aperture 132 that is located at approximately the center of the second end 124.” Ex. 1001, 4:28-32. “An airflow passageway 134 extends between the first aperture 130 and the second aperture 132 axially proximate to the

center of the housing 120” and is configured to provide for airflow from the first to the second aperture. Ex. 1001, 4:33-35; 17:31-33.



As further shown above, a solution holding medium—depicted as “an absorbent material 204”—stores the solution that is ultimately vaporized. *Id.*, 4:5-9. The patent further describes that heating element 222 may be “in the airflow passageway”; “on the exterior of the airflow passageway”; or “on the interior and the exterior of the airflow passageway.” *Id.*, 5:52-53; 6:62-7:19.

VII. PRIOR LITIGATION

A. Level of Ordinary Skill

In the previous litigation (*Fuma International LLC v. R.J. Reynolds Vapor Company*, Case No. 1:19-cv-260 (M.D.N.C. 2019)), 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 ¶16.

Patent Owner currently asserts the same arguments in parallel ITC litigation that the prior owner did in that case.

B. Prior Constructions

In that prior litigation, the North Carolina District Court construed certain terms of the '881 patent. *See* Ex. 1020 (Markman Order). These constructions are as follows:

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.

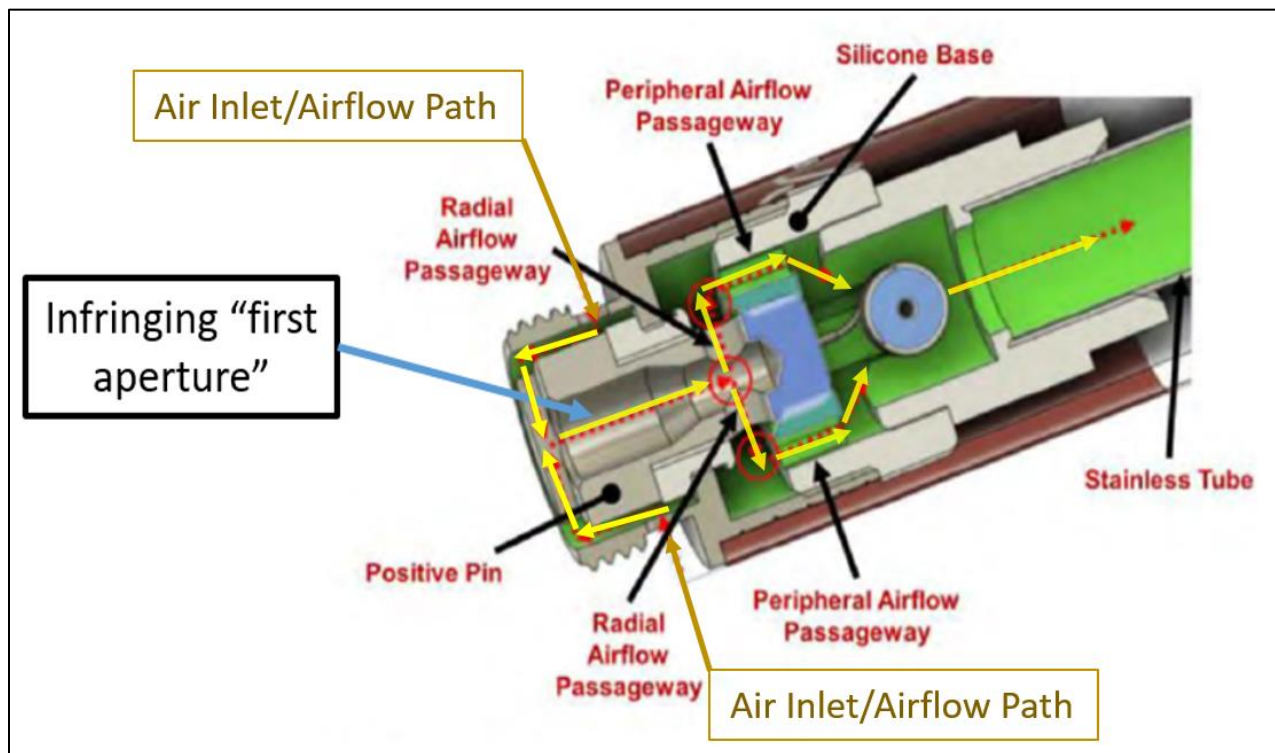
Term	Construction
an electrically conductive portion Claims 1, 8, 16	Ordinary meaning: A portion that is electrically conductive.
wherein the heating element is electrically configured to vaporize at least a portion of the solution to be contained in the solution holding medium Claim 1; claims 8, 16 (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 ² 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

C. Summary Judgment of Infringement

In the prior litigation, the North Carolina District Court granted summary judgment that accused RJR products infringed asserted claims of the '881 patent. Ex. 1015 (MSJ Order), 14-18. In those summary judgment proceedings, the patent owner took—and the District Court adopted—positions relevant to this petition, including positions regarding the claimed first aperture and claimed airflow passageway.

² As described below, the District Court further clarified this term, distinguishing airflow path from the airflow passageway.

Aperture: On summary judgement, the plaintiff/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. Ex. 1021 (Dkt. 133, Fuma Reply Brief), 9-12. The following figure depicts the accused apparatus, including its side inlets (which are located on the exterior of the cartridge and allow air to enter the cartridge), the resulting air flow, and the interior central aperture located inside the cartridge housing:



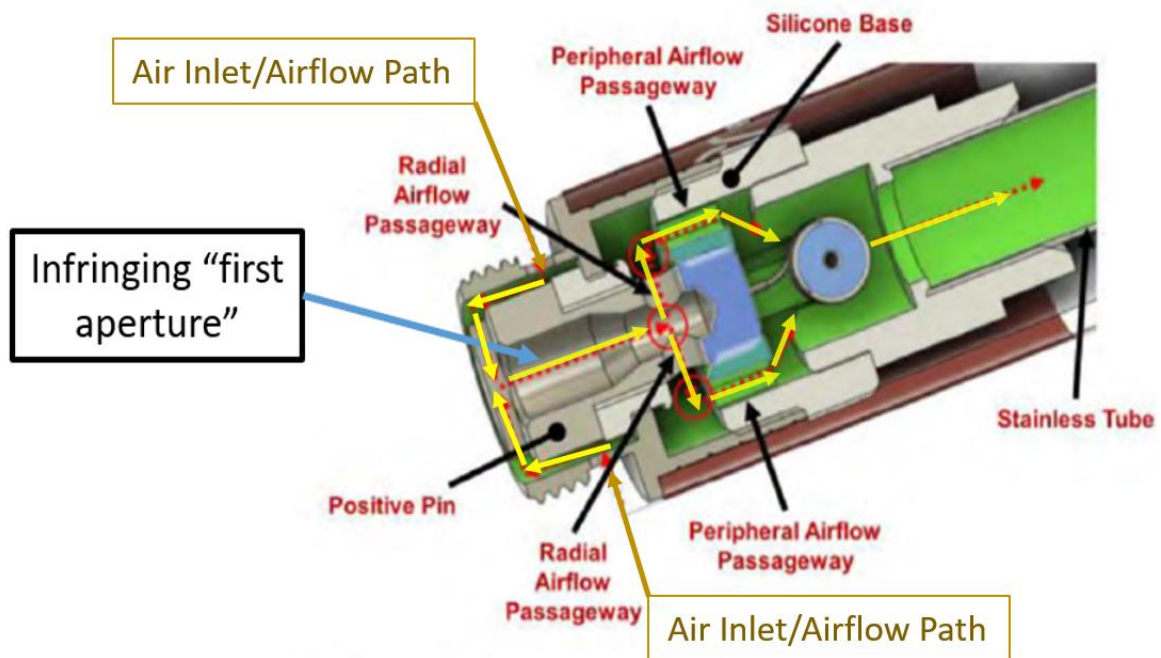
The District Court agreed with plaintiff and explicitly held that the aperture internal to the device, at the beginning of the internal passageway, *i.e.* the hole within

the internally-contained “positive pin” depicted above, meets the requirement for a first aperture “on the first end.” Ex. 1014 (Dkt. 122, RJR Brief), 44; Ex. 1015 (Dkt. 139, MSJ Order), 14-18. The District Court rejected defendant’s argument to the contrary as improperly restricting the scope of the claimed “first aperture” to apertures at the very edge of the cartridge housing, *i.e.*, the side inlets that originally draw in air to the cartridge. The District Court held instead that an aperture **internal** to the device satisfies a first aperture **on** the first end of the housing. *Id.*

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. Ex. 1032, 4-5.

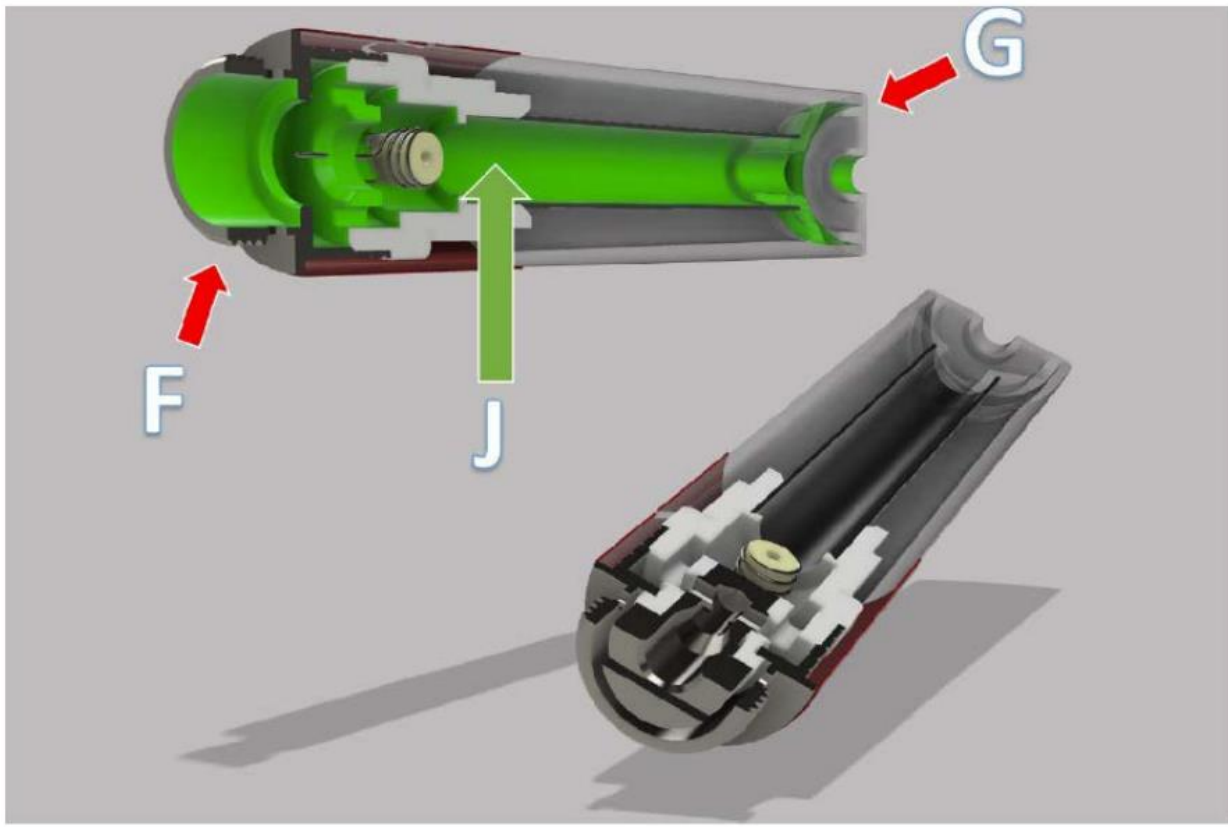
Airflow Passageway: Plaintiff further argued that this accused device included the ’881 patent’s claimed “airflow passageway that extends centrally and axially with respect to the housing” as a matter of law.

The Court agreed, rejecting defendant’s argument that the accused airflow passageway (shown below in green) did not meet this limitation because the passageway obstructed airflow (by among other things the positive pin and silicone base) and directed it away from the center, rather than allowing it to flow along the central axis, making the passageway not centrally and axially located. Ex. 1014, 22-25.



Id., 22 (annotated).

The District Court explained that defendant improperly “conflat[ed] the airflow’s path with the airflow passageway.” Ex. 1015, 14-18. Although “[t]he positive pin and silicone base [in the image above] obstruct airflow and alter the airflow’s path” they do not alter the “interior airflow passageway, which at all times extends straight through the center of the [accused product]’s cartridge to the second end as required by the claim.” Ex. 1015, 14-18. The figure below from that litigation omits some of those obstructions in the accused passageway and shows that, without those obstructions, the passageway itself (highlighted in green) extends straight through the center of the housing, which the Court held demonstrated infringement despite the obstructions:



Ex. 1025, 17.

Again, in the parallel ITC case, Patent Owner asserts this same product and passageway meets the '881 patent claims and this limitation. Ex. 1032, 6.

VIII. PRIOR ART

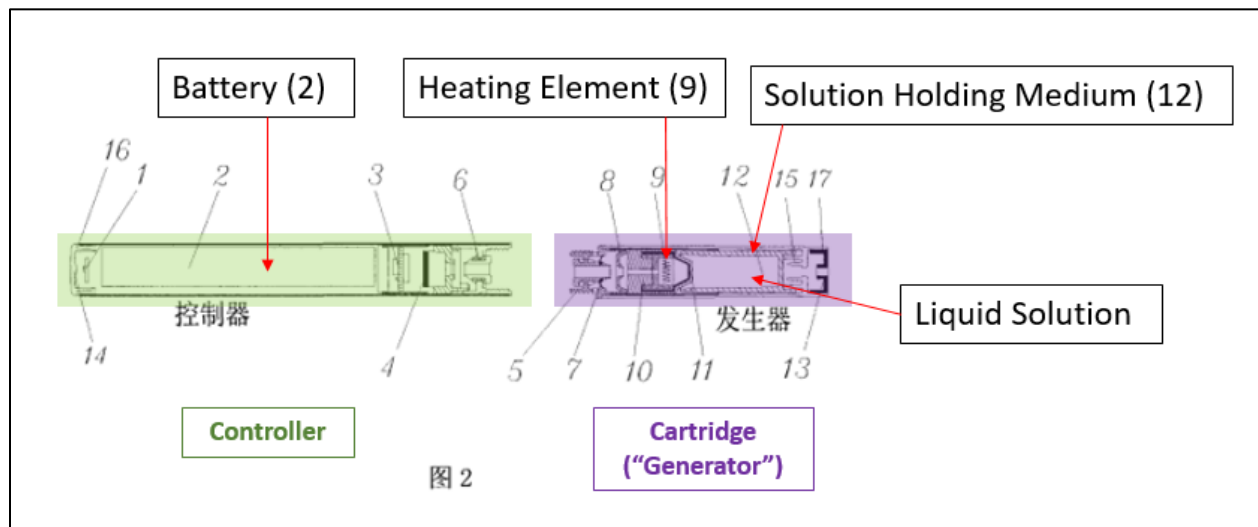
For purpose of this Petition, JLI assumes that the '881 patent's priority date is July 27, 2009, the date of the earliest application to which the patent claims priority.³

³ The '881 patent claims priority to a July 27, 2009, provisional. In the ITC investigation, Patent Owner alleged a date of conception and reduction to practice of July 28, 2009. Ex. 1019 at 1. JLI does not concede that either alleged priority date is correct.

A. Xia

Chinese Patent No. CN 201238610Y to Xia (“Xia”) was published on May 20, 2009 and qualifies as prior art to the ’881 patent under at least pre-AIA 35 U.S.C. 102 (a) and (b). Ex. 1004.⁴

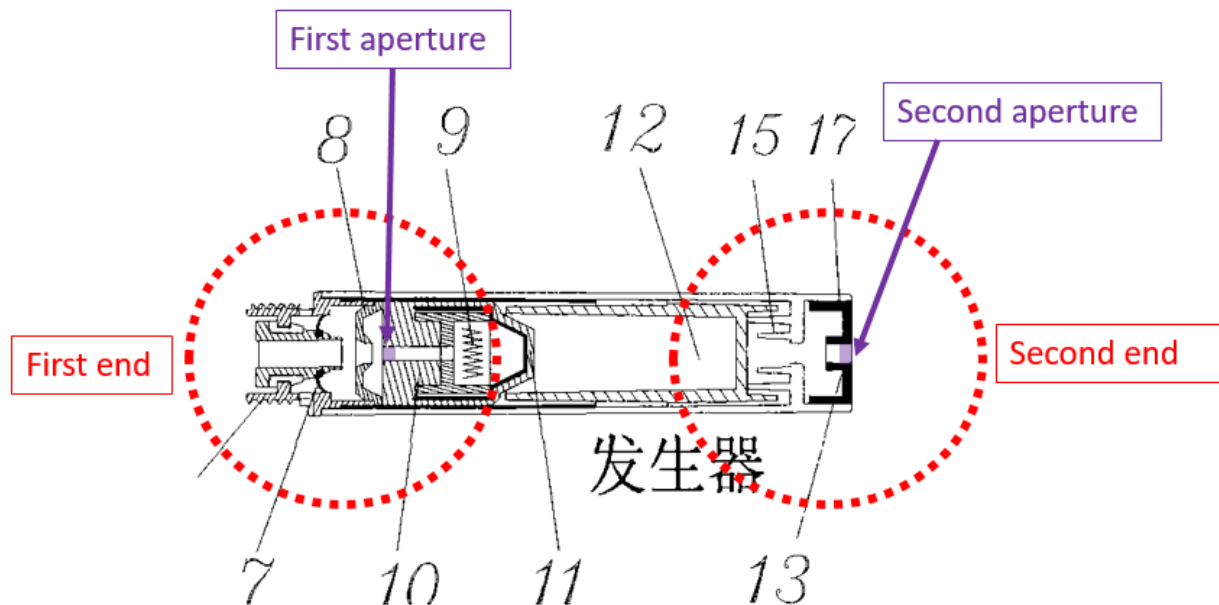
Xia describes an “atomizing electronic cigarette” comprising a cartridge component (on the right in below annotated Figure 2 and including a heater and solution in a solution holding medium) that attaches to a controller component (on the left and including a battery):



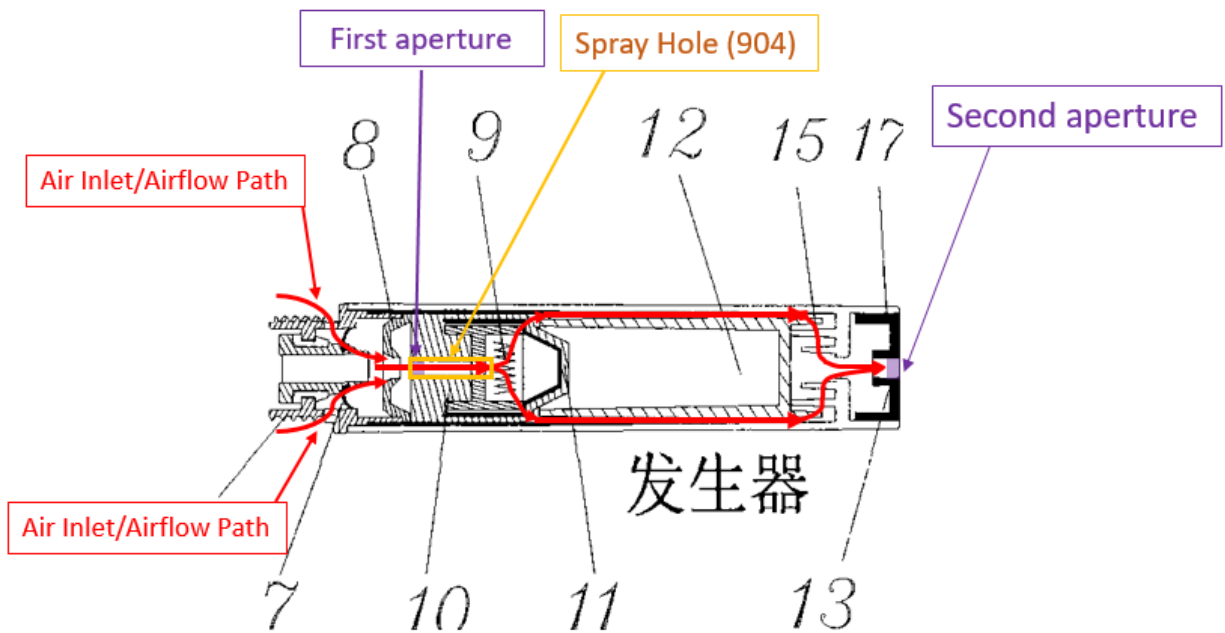
Ex. 1004, Fig. 2.

⁴ Xia identifies May 20, 2009 as its grant date and therefore its publication date. Also, the Chinese National IP Association’s patent application database (Ex. 1008), the U.S.P.T.O’s Global Dossier website (Ex. 1009), and the European Patent Office Search Results Espacenet (Ex. 1010) all identify May 20, 2009 as Xia’s date of publication.

Xia describes that its cartridge (shown in following annotated segment of Xia Figure 2) includes a first aperture on its first end and a second aperture on its second end. Xia's first aperture is inside the cartridge, just like the first aperture in the infringing device in the prior litigation:

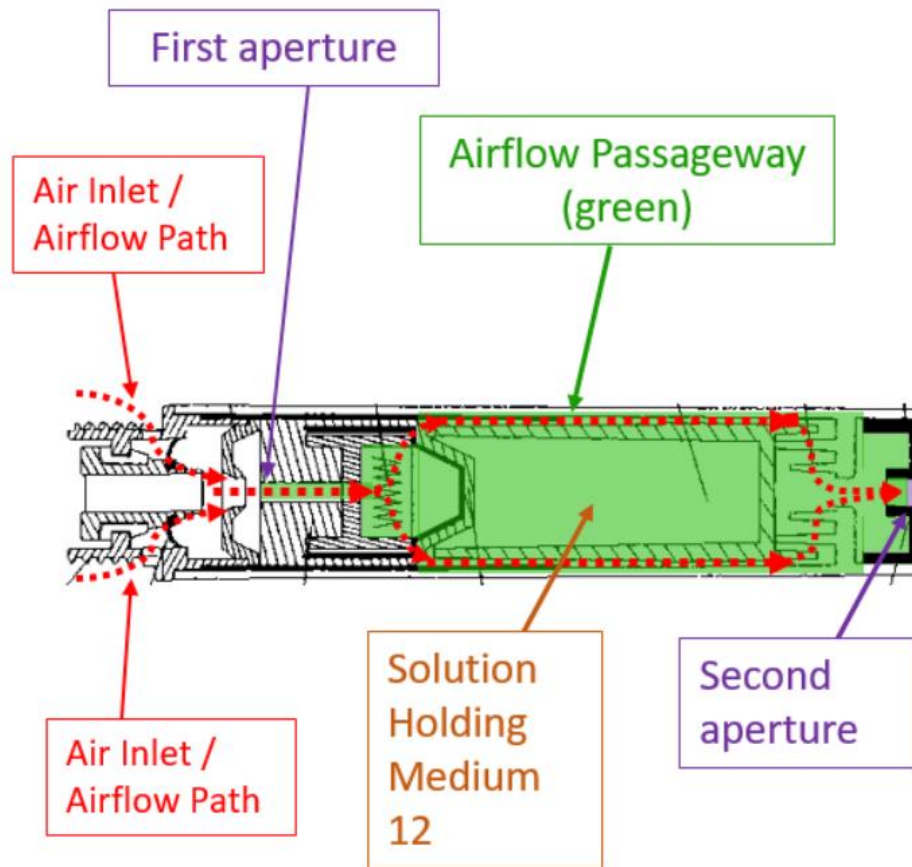


Ex. 1004, Fig. 2 (partial, annotated). The annotated figure below depicts in red the airflow within the Xia device. Air enters the inlets on the exterior of the cartridge, flows through the first aperture at the left end of spray hole 904, into the heating element area, is diverted to the sides by the solution holding medium 12, and flows out the soft suction nozzle 13 to the user.



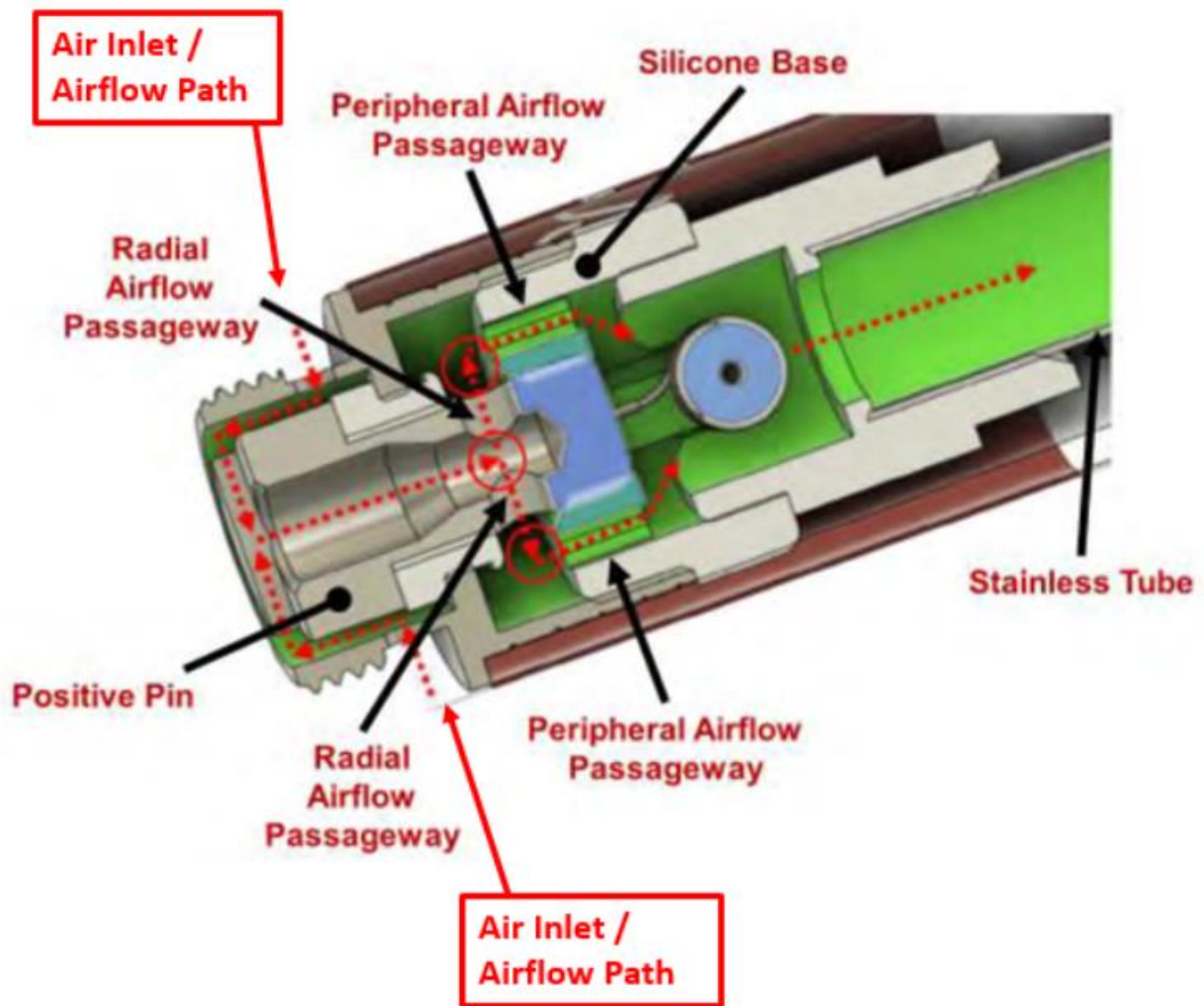
Ex. 1004, Fig. 2 excerpt.

Xia's airflow passageway in Xia is annotated in green below and is a structural component that extends from the first aperture to the second aperture. Consistent with the prior summary judgment decision, this airflow passageway is central and axial with respect to the housing even though it contains obstacles (such as the solution holding medium) that divert the airflow itself away from the center:

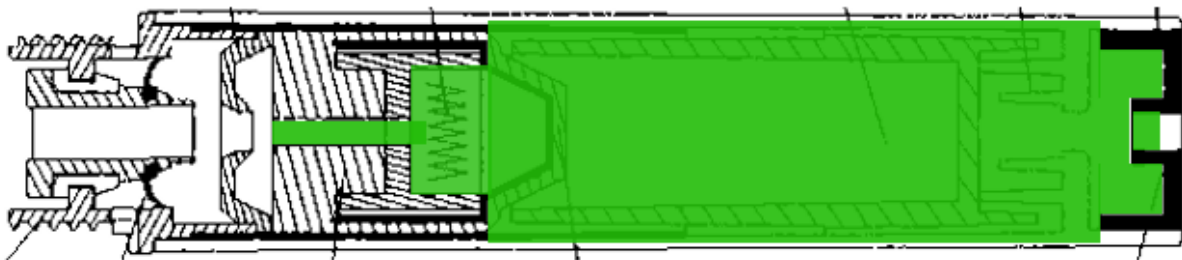


Ex. 1004, Fig. 2.

Thus, Xia's central passageway, which contains objects that divert the airflow away from the center, is substantively the same as that in the infringing RJR device:



As shown above for the product in the district court case, Xia's airflow passageway is depicted below omitting obstructions inside it:



Ex. 1004, Fig. 2.

B. Wang

Chinese Patent Application Publication No. CN 101366554A to Wang (“Wang”) was published on February 18, 2009 and qualifies as prior art under at least pre-AIA 35 U.S.C. § 102 (a) and (b). Ex. 1005, 1.

As shown below, Wang discloses an e-cigarette comprising battery-holding component (left annotated Figure 2) and an attachable cartridge (right annotated Figure 3):

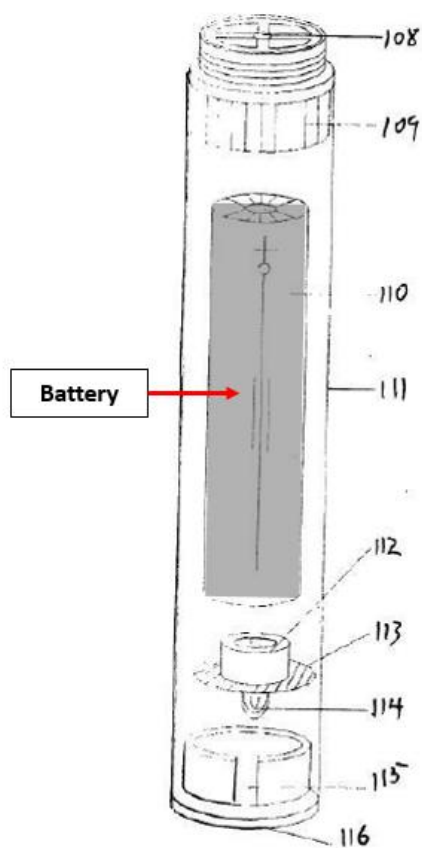


Fig. 2

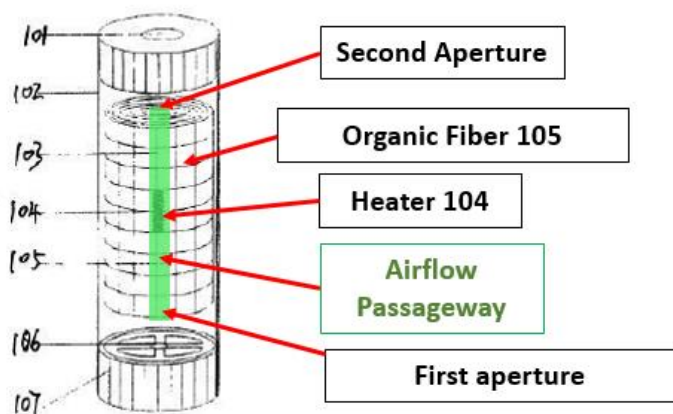


Fig. 3

Ex. 1005, Figs. 2-3 (annotated). As annotated above, the cartridge contains a heater 104 and solution holding medium in the form of an absorbent organic fiber 105, which is positioned around that heater. *Id.*, 6-7, 8.

In the prior North Carolina district court litigation, the inventor Mr. Wang confirmed that his invention's absorbent organic fiber 105 “**surrounds a complete central air passageway**, in which the heater is positioned.” Ex. 1017 (Wang Decl., describing a product he testified embodies the Wang reference invention), 4-5. That central air passageway is annotated in green and extends from a first aperture and a second aperture.

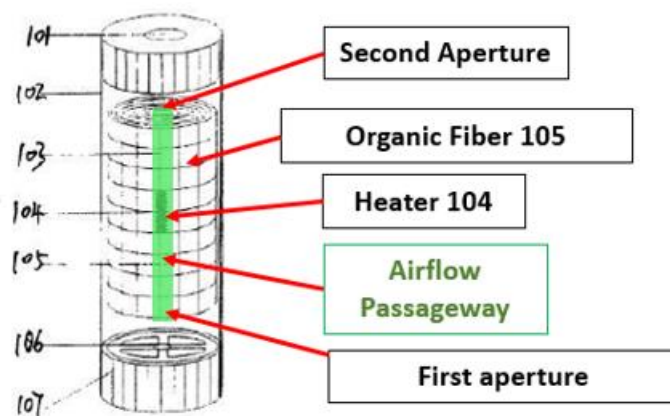


Fig. 3

Wang's central air passageway is also depicted in Wang's Figure 5, which illustrates that the organic fiber 105 comprises fiber or paper that is rolled up so that it defines and contains a central passageway (which in Fig. 3 is where the heater is

shown placed). Ex. 1005, Fig. 5. Again, this passageway is annotated below in green to show what would be understood from this and the other figures and the Wang specification:

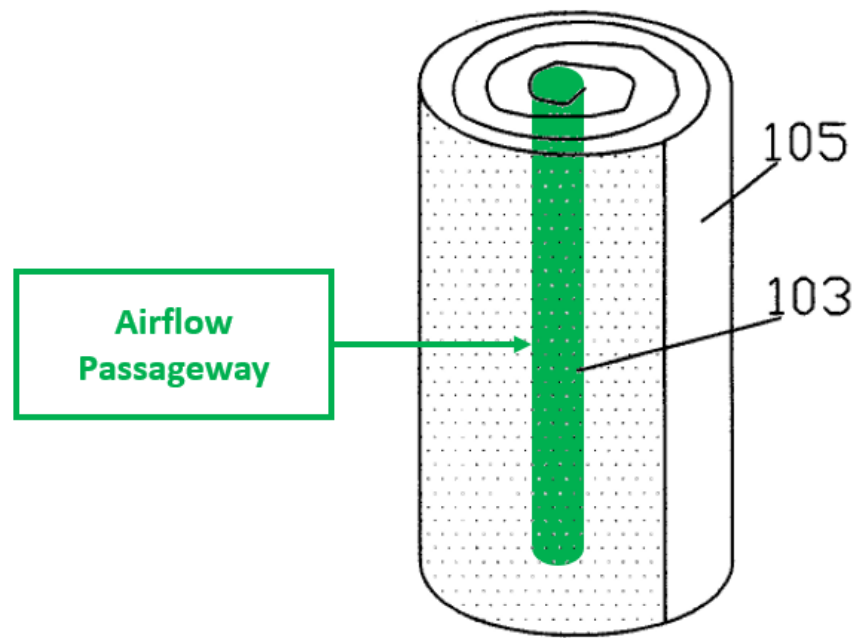


图 5

Ex. 1005, Fig. 5 (annotated), 7-8.

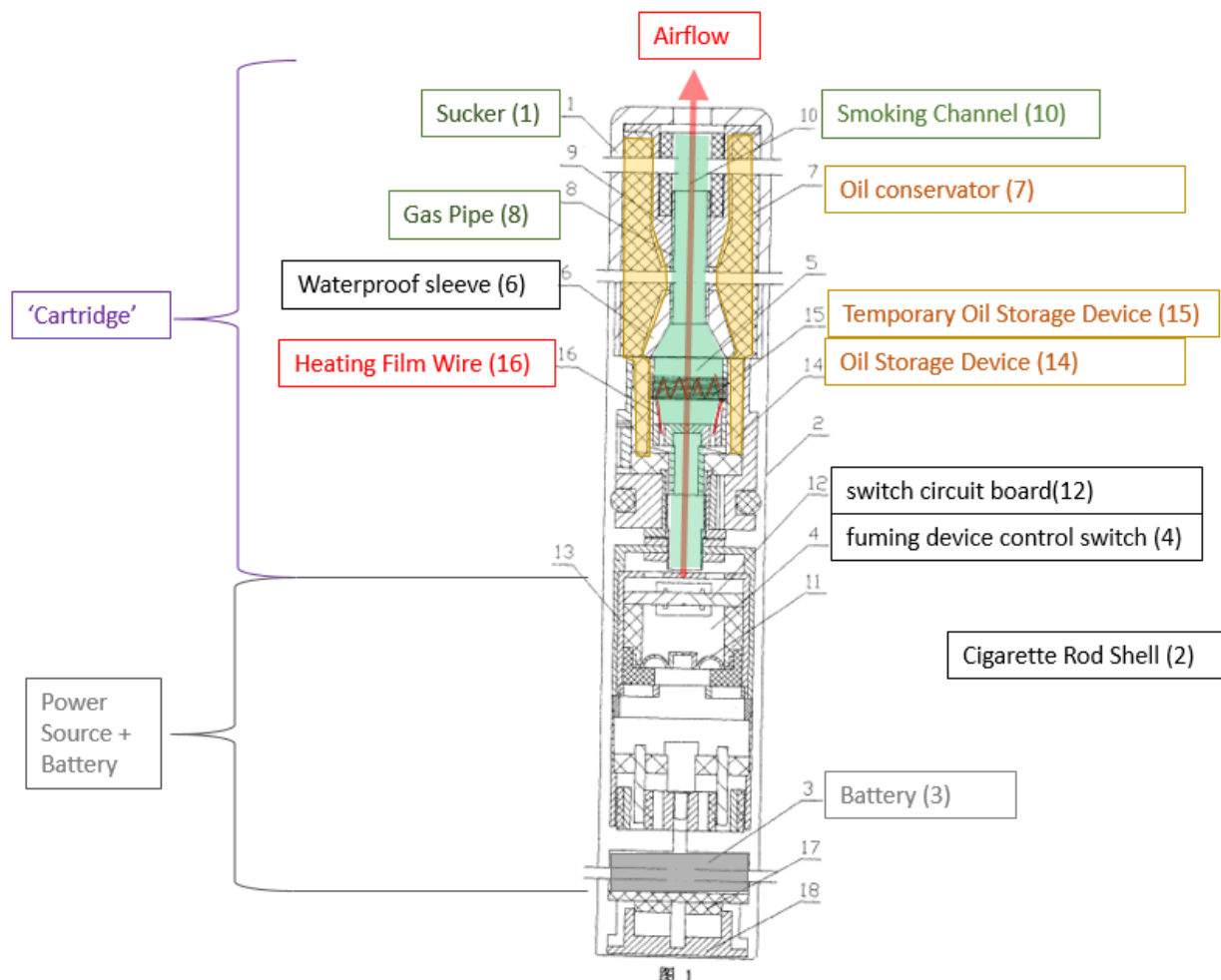
C. Fang

Chinese Patent Application Publication No. CN 201085044Y to Fang (“Fang”) was published on July 16, 2008⁵ and qualifies as prior art under at least pre-AIA 35 U.S.C. § 102 (a) and (b). Ex. 1006, 1. In the parallel ITC litigation,

⁵ Ex. 1011 (CNIPA); Ex. 1013, (Espacenet); Ex. 1012 (US Global Dossier).

NJOY has taken the position that Fang was published on July 16, 2008. Ex. 1022, 14; Ex. A-9, 1.

Fang discloses an e-cigarette comprising a battery 3, heating film wire 16, and a gas pipe 8 that helps form a centrally and axially located airflow passageway (smoking channel 10) from below the heating element to the mouthpiece (translated as “sucker (1)”).



Ex. 1006 (Fang) Fig. 1 (annotated).

The Fang device has two distinct functional areas: (1) a top portion (as oriented above) that can be described as a ‘cartridge,’ with components for storing and vaporizing nicotine oil and; (2) a power source, with a battery, in mechanical and electrical contact with the cartridge portion.

Indeed, in ongoing litigation, NJOY has asserted that Fang has or renders obvious “a cartridge.” Ex. 1022 (337-TA-1368 NJOY’s Initial Invalidity Contentions) Ex. A, 137 (element 43.A, citing “Fang 044 at Abstract; p.4 ¶¶1, 4; p.6 ¶¶1–4; Figs. 1–3”). NJOY also has asserted that Fang has or renders obvious “a power supply portion comprising a rechargeable battery” and that the cartridge is “configured for separable attachment to the power supply portion.” Ex. 1022, Ex. A, 140 (elements 44.B-C, citing “Fang 044 at p.4 ¶4; p.5 ¶3; p.6 ¶¶1, 4–5; p.7 ¶2; Figs. 1–3”).

IX. MOTIVATION TO COMBINE AND REASONABLE EXPECTATION OF SUCCESS

A POSITA would have been motivated to combine Xia with Wang and/or Fang, or Wang with Fang, as identified below in Grounds 1 and 2. Ex.1007 ¶59.

Each reference (and the ’881 patent) is directed to the design of handheld, cylindrical, cigarette-like e-cigarette using a battery to power a heater that heats and vaporizes liquid held within the device. And in each design, when the user sucks at

the mouthpiece, air flows through one end of the device to the other, delivering the produced vapor to the user at the mouthpiece. Ex.1007 ¶59.

And Xia, Wang, and Fang use similar structures and components to achieve similar functions. All three were published within the same eleven-month period—with Xia and Wang publishing within three months of each other—and all from Chinese inventors. Ex.1007 ¶60.

Additionally, a combination of these references would merely result in the substitution of known elements from Wang or Fang for similar elements in Xia (Ground 1) or of known elements from Fang for similar elements in Wang (Ground 2). For example, as discussed with respect to specific limitations, combinations of Xia with Wang and/or Fang merely require known and predictable substitutions of elements to render the Challenged Claims obvious. Because the references are very similar and relate to a predictable subject matter, there would be a high likelihood of success when modifying one reference with the teachings of another. For example, altering the physical arrangement of the known components of the device in Xia, such as a heater or a battery, with similar components such as those in Wang and Fang, would not result in unpredictable results.

Any potentially asserted distinctions between any of the asserted references and the Challenged Claims are basic design choices that any POSITA would consider. Ex.1007 ¶63. Any of the references are anticipatory or at least individually

render the Challenged Claims obvious. However, multiple references and obvious combinations are discussed here solely to address potential NJOY arguments.

X. THE CHALLENGED CLAIMS ARE OBVIOUS⁶

A. Ground 1: Xia alone and in view of Wang and/or Fang

The Challenged Claims are obvious in view of Xia alone and in view of Wang and/or Fang. For at least the reasons discussed below, each identified claim element is disclosed or rendered obvious by Xia alone, Xia in combination with Wang, Xia in combination with Fang, and Xia in combination with Wang and Fang.

1. Claim 1

a. 1[p]: apparatus:

Xia discloses an apparatus described as an “electronic cigarette.” Ex. 1004, 1.

b. 1[a1]: power source

Xia discloses a detachable controller comprising a rechargeable lithium battery 2 (shown in annotated Figure 2 below) and a connecting conductor B6. Ex. 1004, 7, 9-11. The claimed “power source” is satisfied by the battery itself, the “controller” portion of the device (illustrated below), or the battery combined with related components such as the connecting conductor B6. Ex.1007 ¶72.

⁶ Petitioner’s understanding and application of claim scope is based in part on the positions taken in the district court ruling described above and by Patent Owner in parallel 337-TA-1368 and 1372 ITC investigations. Petitioner does not necessarily adopt or concede these positions.

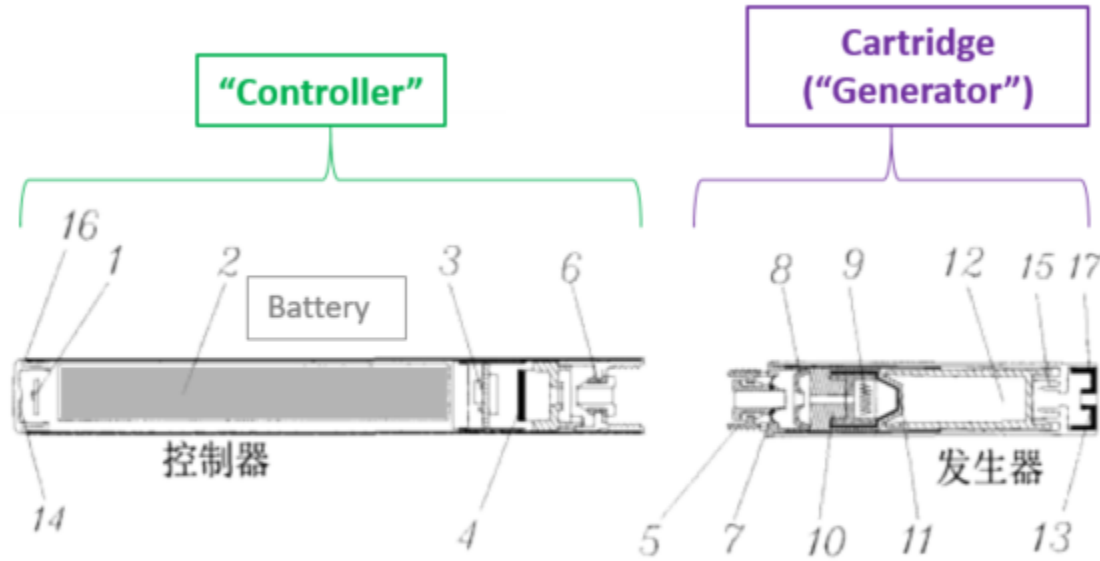


图 2

Ex. 1004, Fig. 2 (annotated).

c. 1[a2]: battery

As discussed above for element 1[a1], the disclosed and obvious power source “includes a battery,” *e.g.*, Xia’s battery 2. Ex.1007 ¶74.

d. 1[a3]: electrically conductive portion of power source

As discussed above for element 1[a1], the disclosed and obvious power source “includes an electrically conductive portion.”

i. Xia

Xia alone discloses multiple instances of this limitation. For example, Xia’s connecting conductor B6, electrodes 601 and 603, circuit “lead-in wires,” and

battery 2's conductive portion are each electrically conductive portions of the power source. Ex.1007 ¶78.

Xia describes that when battery 2 powers Xia's heating wire 9, current flows from the battery 2 to the circuit board 3, from circuit board 3 to connecting conductor B6, and from connecting conductor B6 to connecting conductor A5. Ex. 1004, 10, 12, 16; Ex.1007 ¶78.

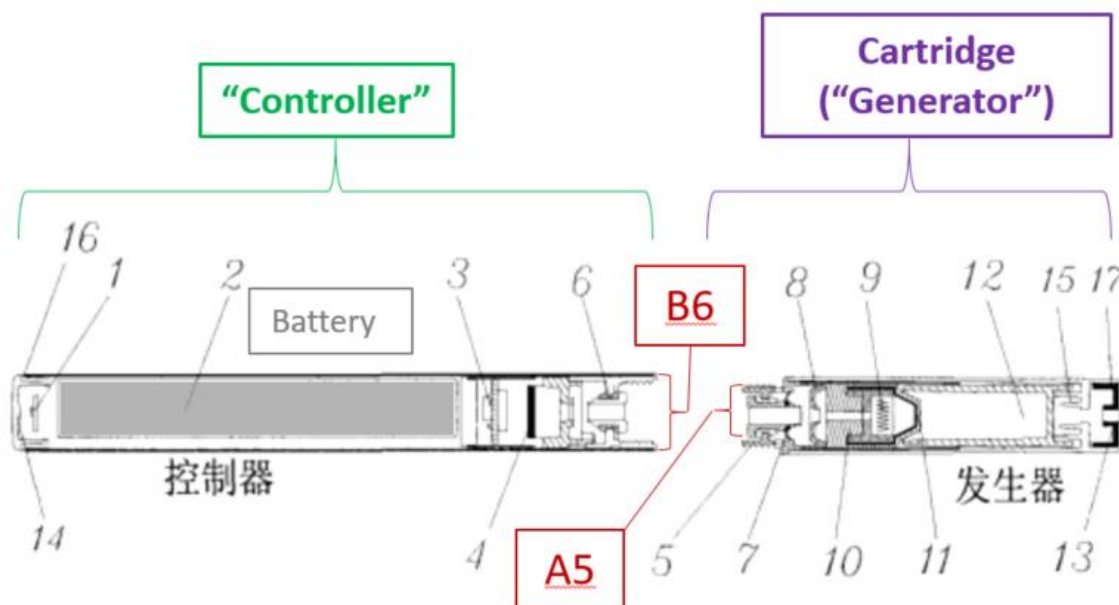
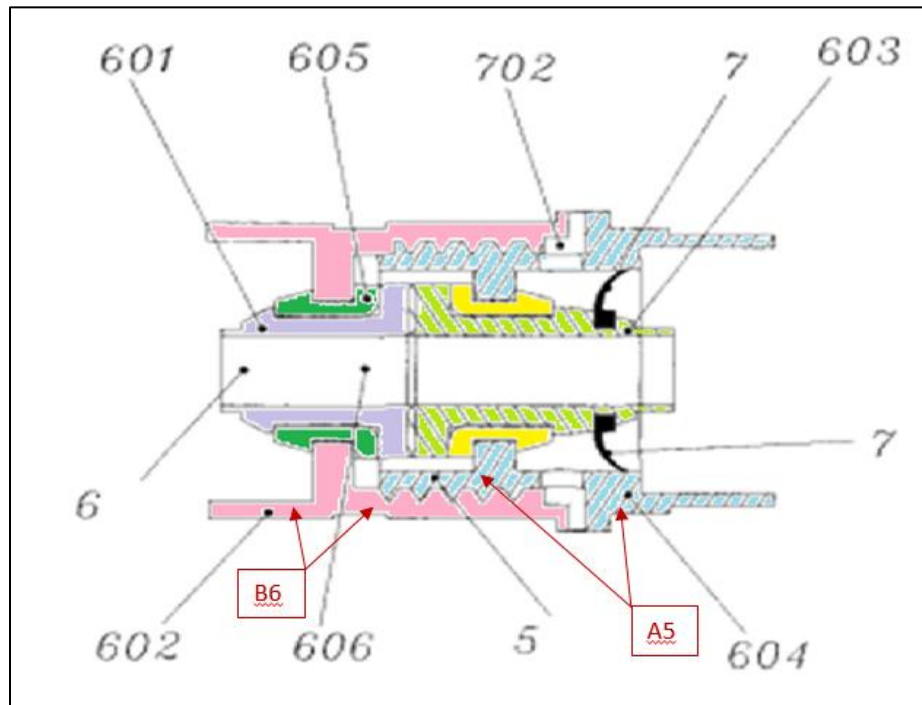


图 2

There are electrically conductive portions of the power source at each of these junctures. These electrically conductive portions include the "lead-in wires" connecting the battery to the circuit board; the circuit board connecting the battery to connecting conductor B6; and connecting conductor B6 itself, including its

electrodes 601 and 603 (illustrated below in Figure 3). Ex. 1004, 7, 12, 13, 14; Ex.1007 ¶77. A POSITA would understand that the battery 2 also necessarily contains an electrically conductive portion, to discharge current. Id.



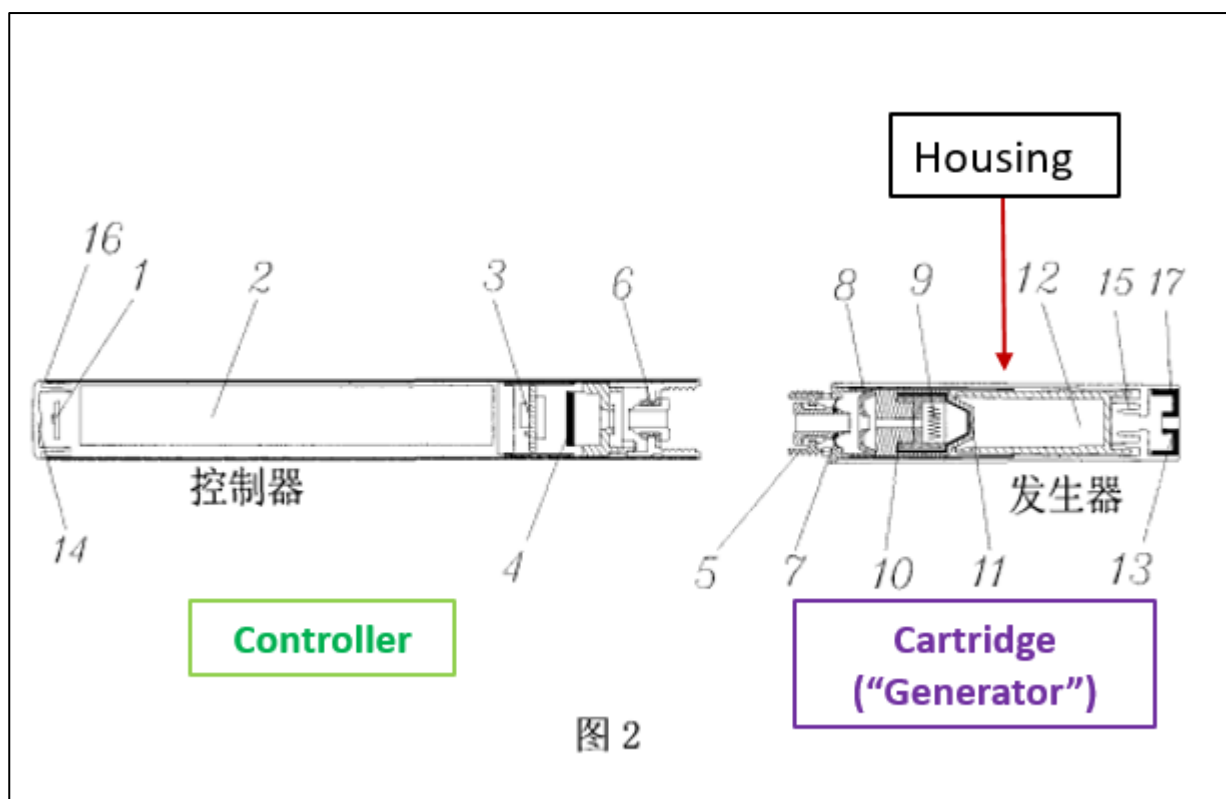
Ex. 1004, Fig. 3 (annotated).

ii. Xia with Wang

The obvious combination of Xia and Wang identified below in 1[c] modifies Xia to include the Wang components that connect Wang's cartridge 102 to its battery-holding component 111 (*i.e.*, the claimed power source). In that combination, Wang discloses this limitation because Wang's power source contains a battery 110 and an electrically conductive portion (*e.g.*, electrode 119) within that battery-holding portion, as described in Ground 2's elements 1[a1]-1[a3].

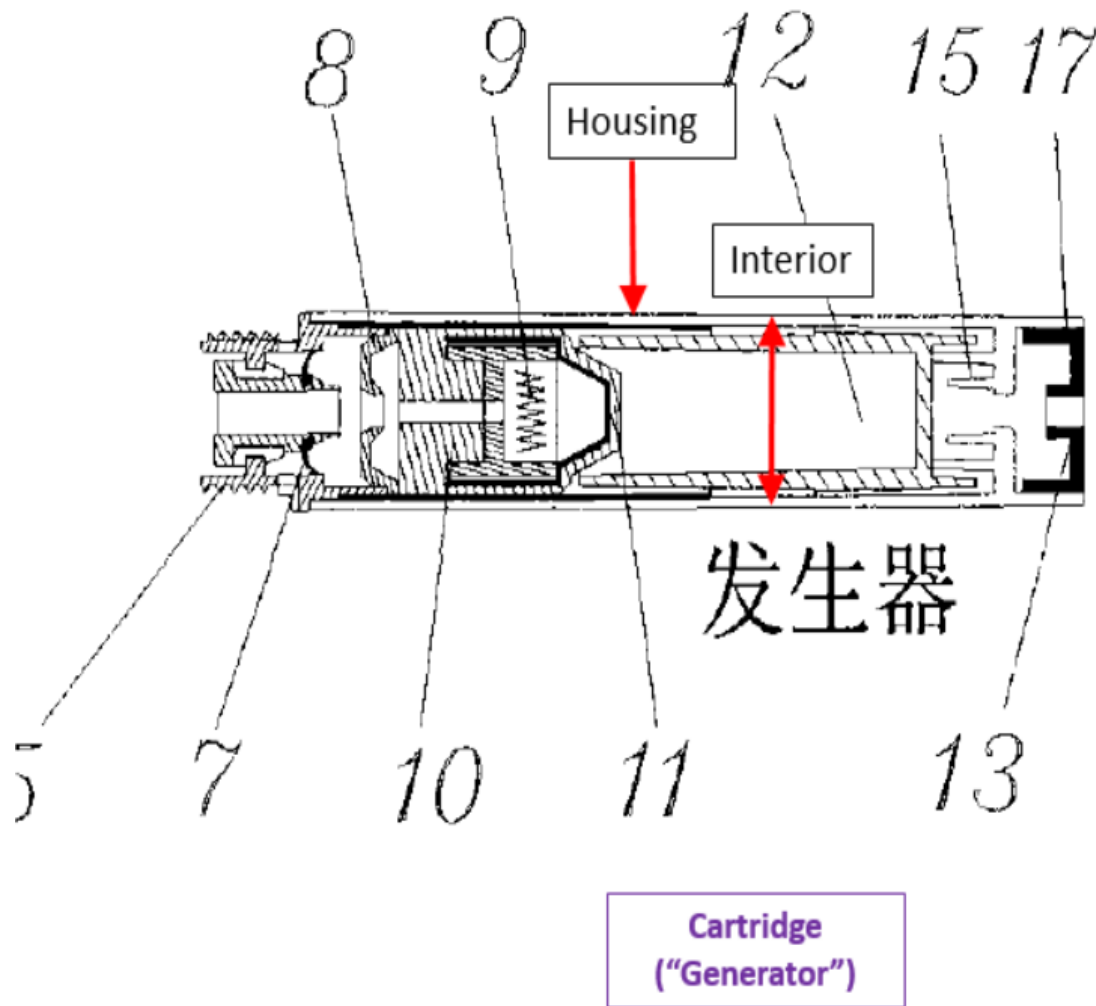
e. 1[b1]: cartridge housing interior

Xia discloses “a cartridge having a housing that comprises an interior.” For example, Xia discloses a “generator” section that connects to the controller and comprises a “stainless steel shell.” *E.g.*, Ex. 1004, 7, Fig. 2. This generator is a cartridge, and its stainless steel shell is its housing. Ex.1007 ¶81.



Ex. 1004, Fig. 2 (annotated).

The shell (housing) of the generator comprises an interior, where, for example, the heating element and solution holding medium are stored, as depicted in Figure 2 below and explained further below in connection with other limitations of claim 1. *See, e.g.*, Ex. 1004, Fig. 2.



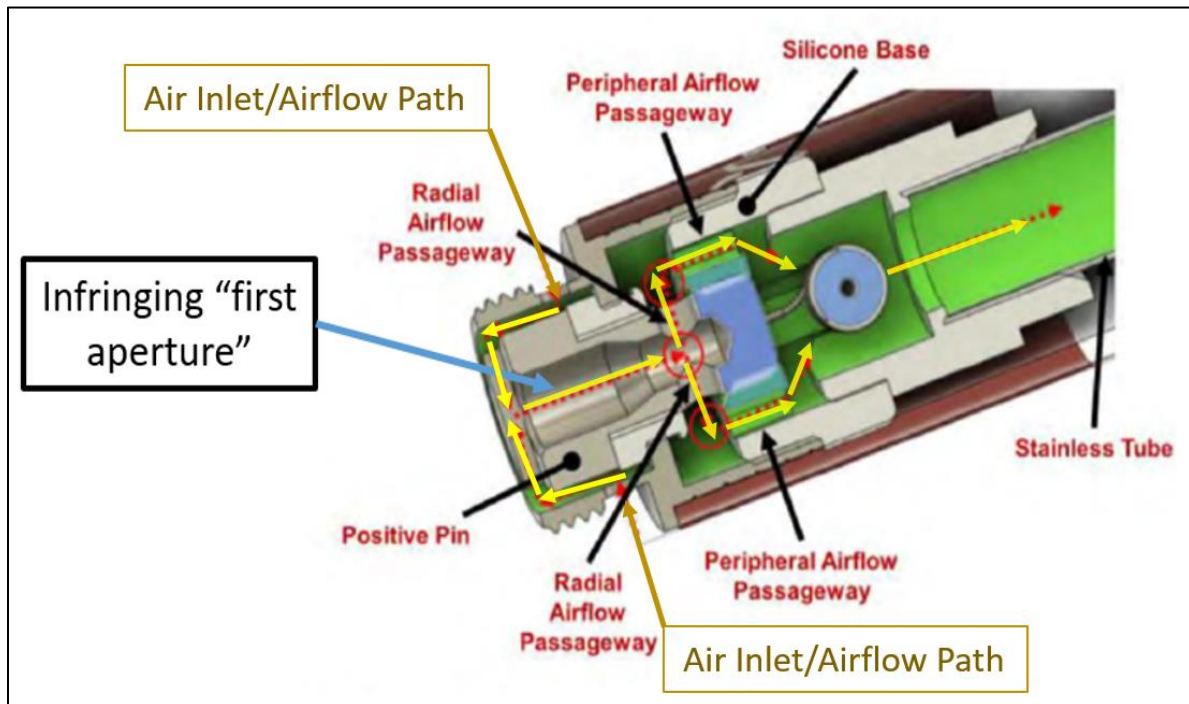
Ex. 1004, Fig. 2 (partial) (annotated).

f. 1[b2]: two ends/two apertures

i. Xia

As discussed above in Section VII.A, the North Carolina District Court granted summary judgment of infringement finding that a device similar to Xia met this limitation as a matter of law. Ex. 1015 (MSJ Order), 17. The following figure

depicts the accused apparatus, with air flowing in through side vents and converging to an internal and central “first aperture”:



Ex. 1014, 44.

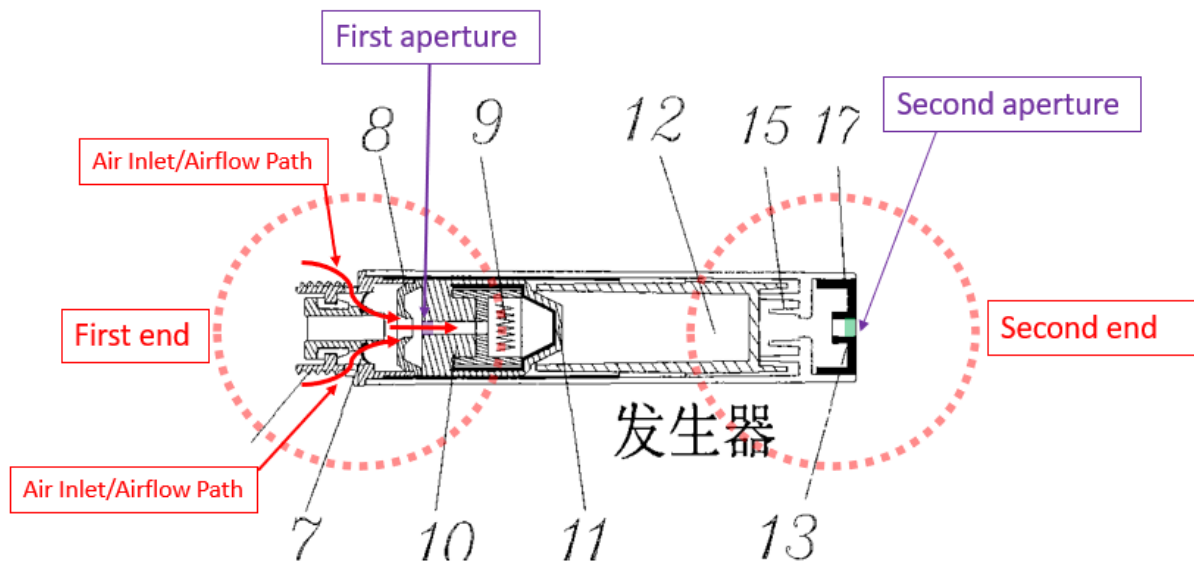
Adopting the plaintiff’s position (which Patent Owner is still asserting in parallel litigation), the District Court explicitly held that the internal aperture, which receives the airflow via side vents on the exterior of the housing, meets the requirement for a first aperture “on the first end.” Ex. 1015, 14-18.

Patent Owner’s infringement contentions against Petitioner in the parallel ITC case also identify a “first end” that is not merely just the very edge of the device:



Ex. 1033 at 11.

Under Patent Owner’s current contentions in the ITC cases and the prior district court analysis, Xia teaches a similar first aperture on the first end to what Patent Owner alleges in parallel litigation, with air flowing in through side vents and converging to an internal and central “first aperture”:



Thus, under the foregoing analysis, the position of a first aperture is not limited to only the very edge or exterior of the device and Xia discloses a first aperture on the first end, with its cartridge's "first end" extending at least to the location of the first aperture 904. Ex.1007 ¶87. Alternatively, a POSITA would know that moving Xia's external air intake to the battery side to have air enter centrally on the end of the cartridge was a simple and obvious modification. Ex.1007 ¶88.

ii. Xia with Wang and/or Fang

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. Ex. 1007 ¶89. For example, as shown below in element 1[c],

it was obvious to modify Xia's cartridge to include a passageway through the center of the solution holding medium as in Wang. In that combination, Wang discloses this limitation because Wang's first and second apertures are "on" the first and second cartridge ends, respectively, as described below and in Ground 2 elements 1[b2]-1[d].

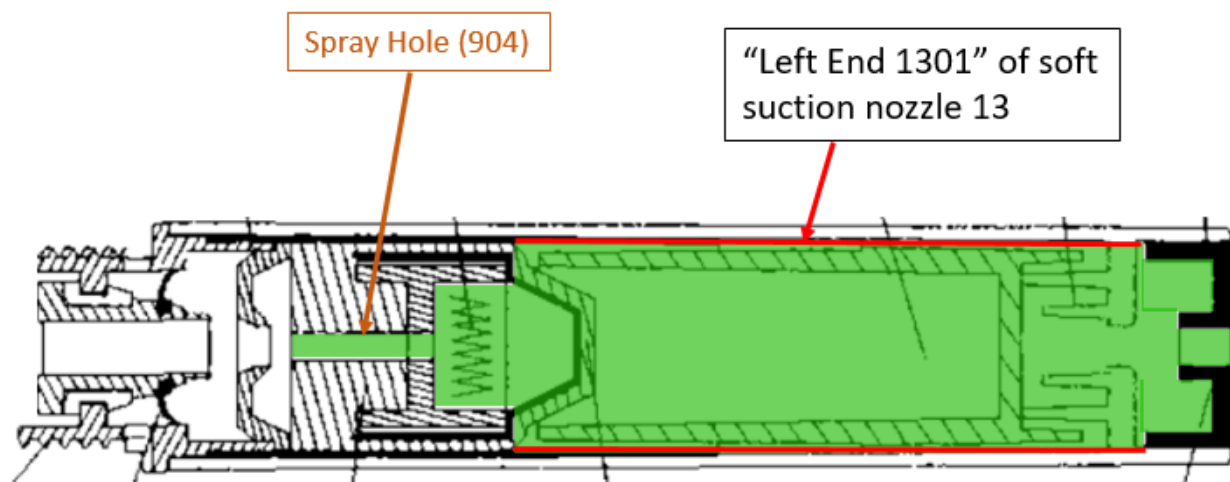
And if the apertures are required to be literally on the very edge of the cartridge, that would be an obvious modification under Xia and/or Wang and/or Fang, as it would merely require extension of the passageway to the very edge of the housing, with a central aperture (already present in Wang and Fang), 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]. Ex.1007 ¶89.

g. 1[c]: central/axial airflow passageway between apertures

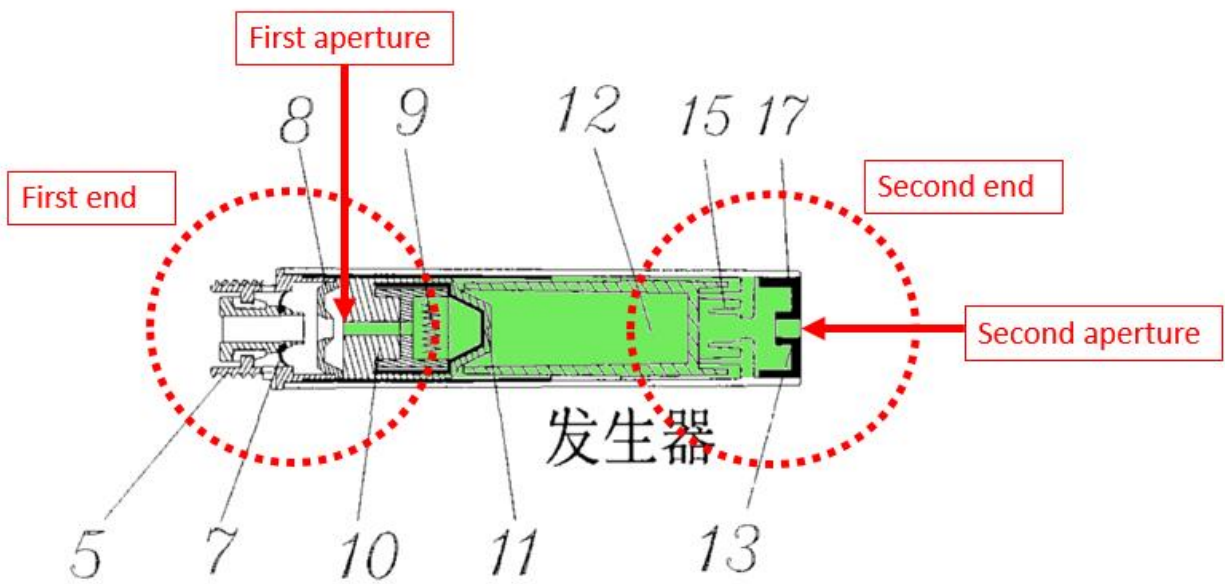
i. Xia

Xia discloses or makes obvious the claimed airflow passageway. As discussed above in Section VII.C, Patent Owner is currently asserting in the parallel ITC investigation—and a District Court previously found on summary judgment—that a central and axial passageway meets this limitation even if there are objects in that passageway that obstruct the airflow and direct it away from the center, rather than allowing it to flow along the central axis.

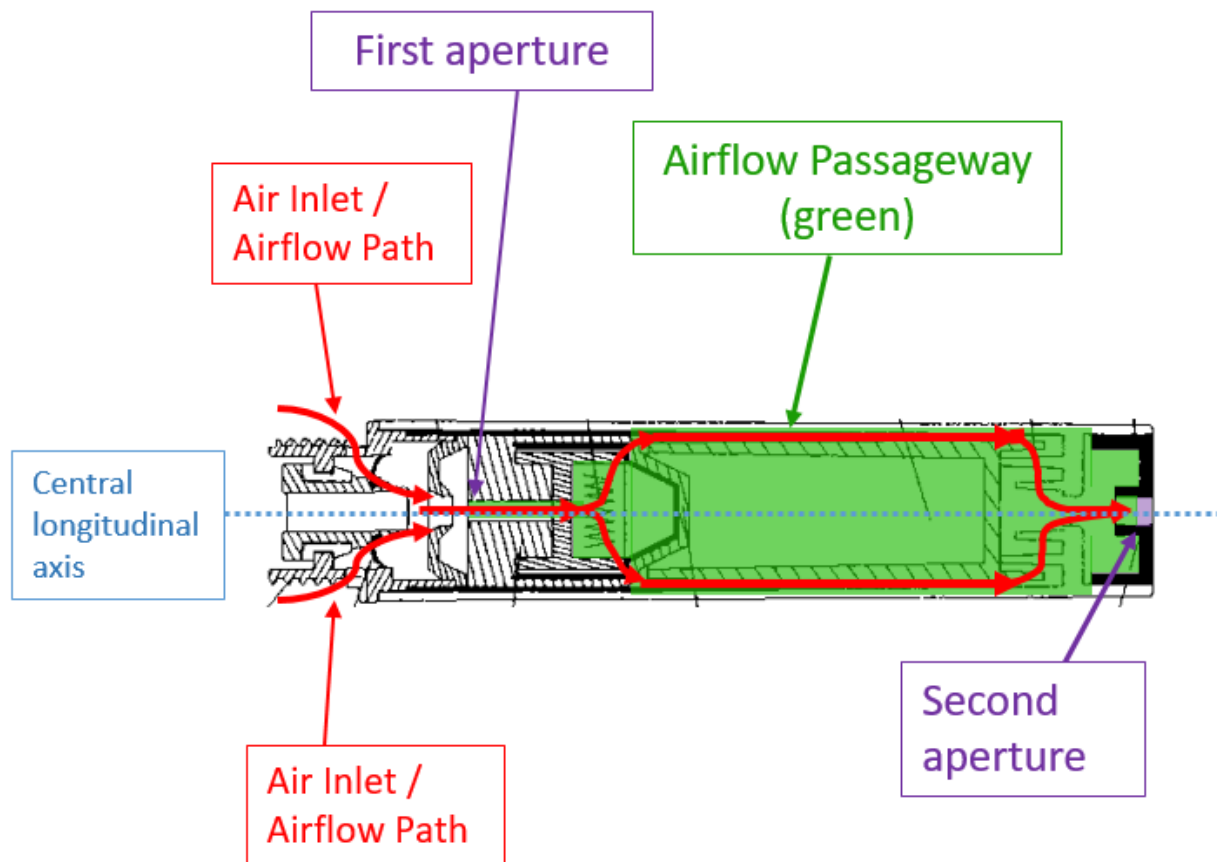
Xia discloses just such an airflow passageway. Ex.1007 ¶97. For example, Xia discloses an airflow passageway through which air flows and that is defined at least in part by spray hole 904 and a layer of material (such as polypropylene PP material) on the inner surface of the housing. Ex. 1004, (“A left end 1301 of the soft suction nozzle 13 extends to the bottom of the liquid stopping sheet 8, and may be made of environmental-friendly materials such as polypropylene PP, which may effectively prevent internal heat from being transmitted out.”) 11, Figs. 2, 5. This airflow passageway is highlighted in green in the modified figure below.



As shown below, Xia’s airflow passageway extends “intermediate of the first aperture...and the second aperture” as claimed.



In addition, this air passageway is also 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:

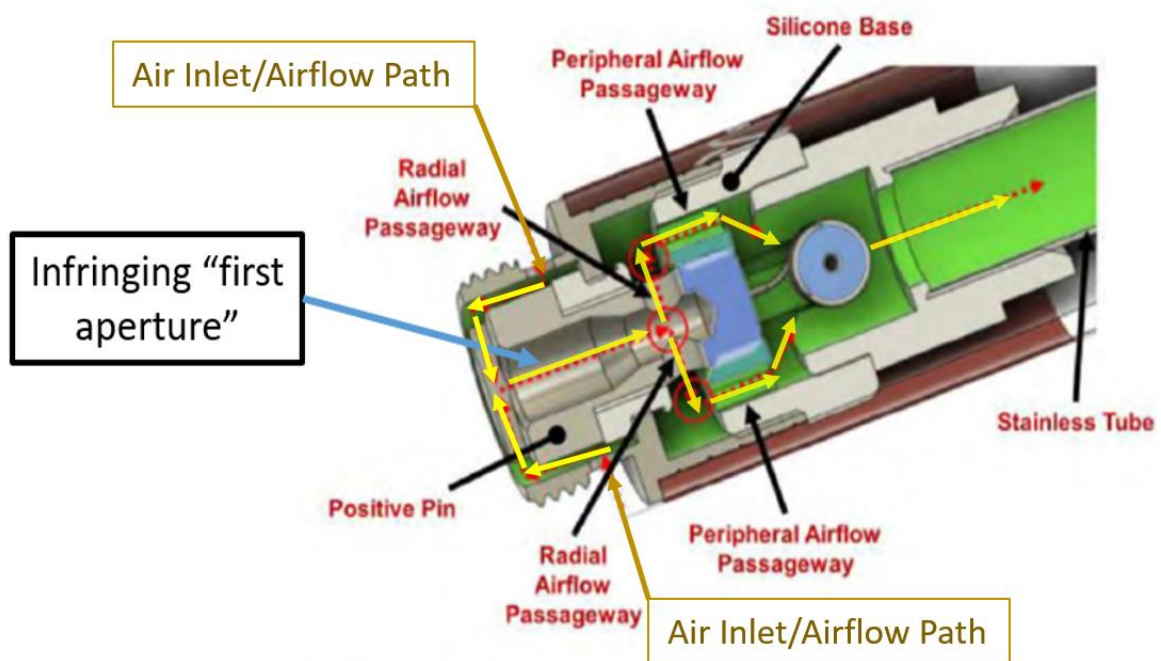


Ex.1007 ¶¶99-101.

If NJOY argues the 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, that argument is inconsistent with the prior summary judgement decision (and the positions taken there by their predecessors-in-interest) and their own assertions in the pending ITC investigation.

Ex.1007 ¶102.

As to the prior summary judgment decision, the District Court rejected just such an argument about the actual airflow itself and instead found that a passageway like Xia's satisfied this limitation as a matter of law. Specifically, the North Carolina District Court rejected defendant's argument that the accused RJR product's airflow passageway (shown below in green) did not meet this limitation because (according to defendant) objects in that passageway obstructed airflow and directed it away from the center, rather than allowing it to flow along the central axis. Ex. 1014, 21-25.



Id., 22. The District Court explained that defendant improperly “conflat[ed] the airflow’s path with the airflow passageway.” Ex. 1015, 14-18. Although “[t]he positive pin and silicone base [in the image above] obstruct airflow and alter the

airflow's path" they do not alter the "interior airflow **passageway**, which at all times extends straight through the center of the [accused] cartridge to the second end as required by the claim." *Id.*

As to Patent Owner's current assertions, it is again contending in the pending ITC investigation that this very same RJR's product and passageway meets the '881 patent claims and this limitation. Ex. 1032, 6.

Consistent with the District Court's ruling, prior patentee Fuma's arguments, and Patent Owner's current ITC investigation assertions, Xia's airflow passageway is also therefore centrally and axially located, despite the fact that the air may flow around objects in the passageway. Ex.1007 ¶105.

ii. Xia with Wang

If NJOY contradicts itself and all of the foregoing to argue that Xia itself does not disclose or suggest this limitation, it was obvious over Xia in view of Wang.

As explained further in connection with 1[h], in at least 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 holding medium 10, surrounding it:

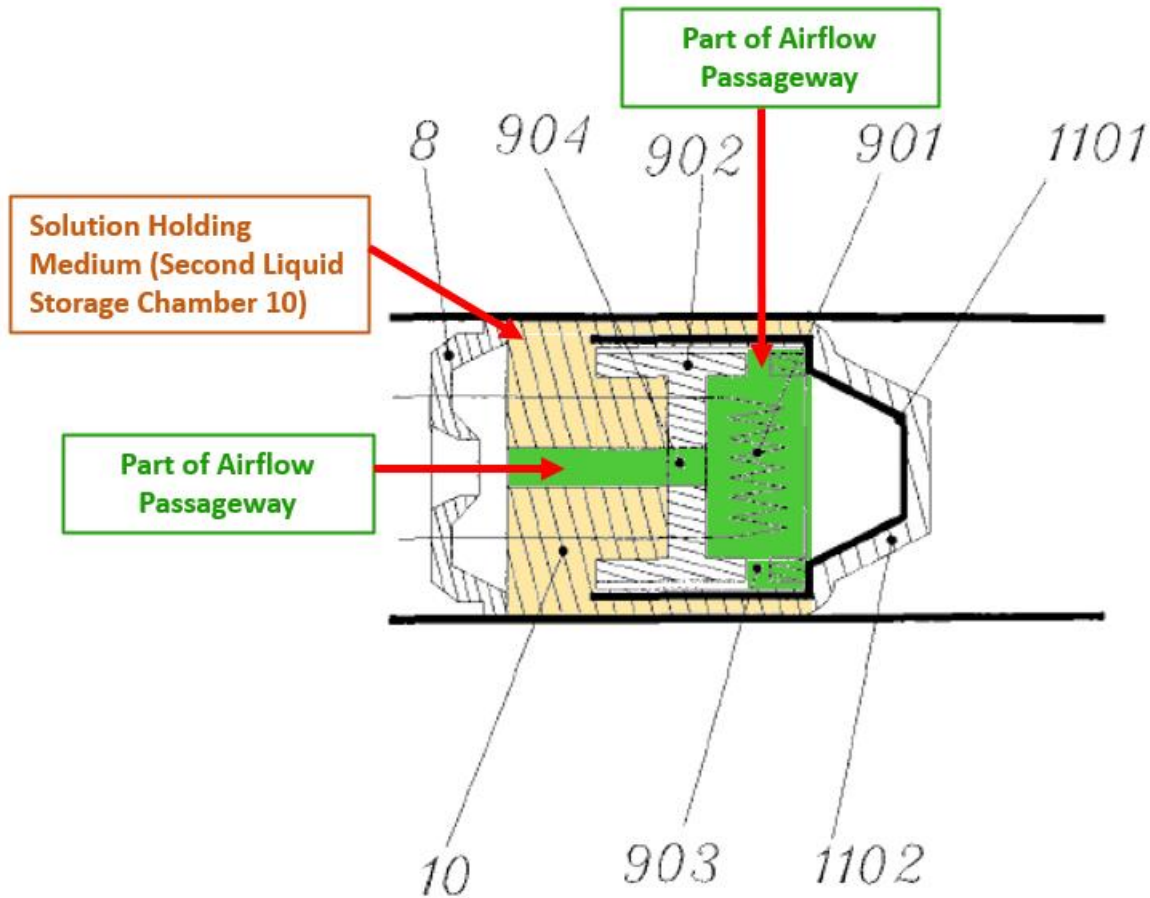
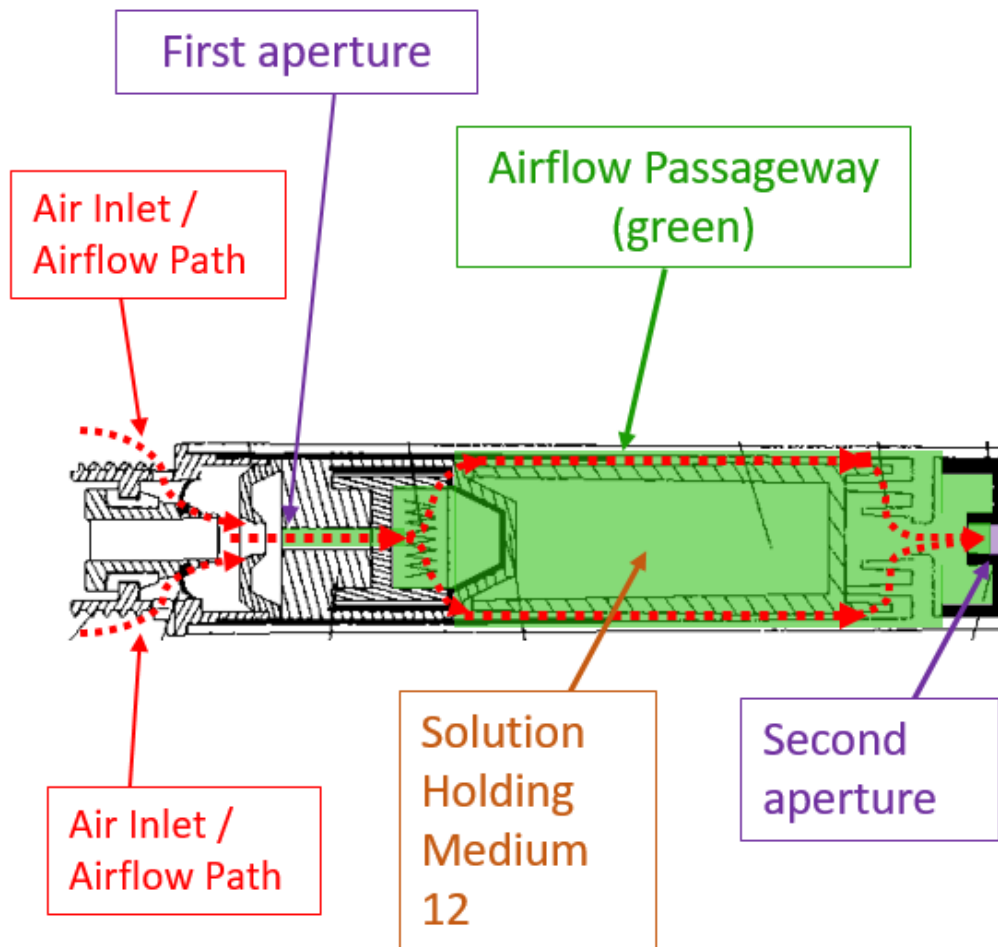


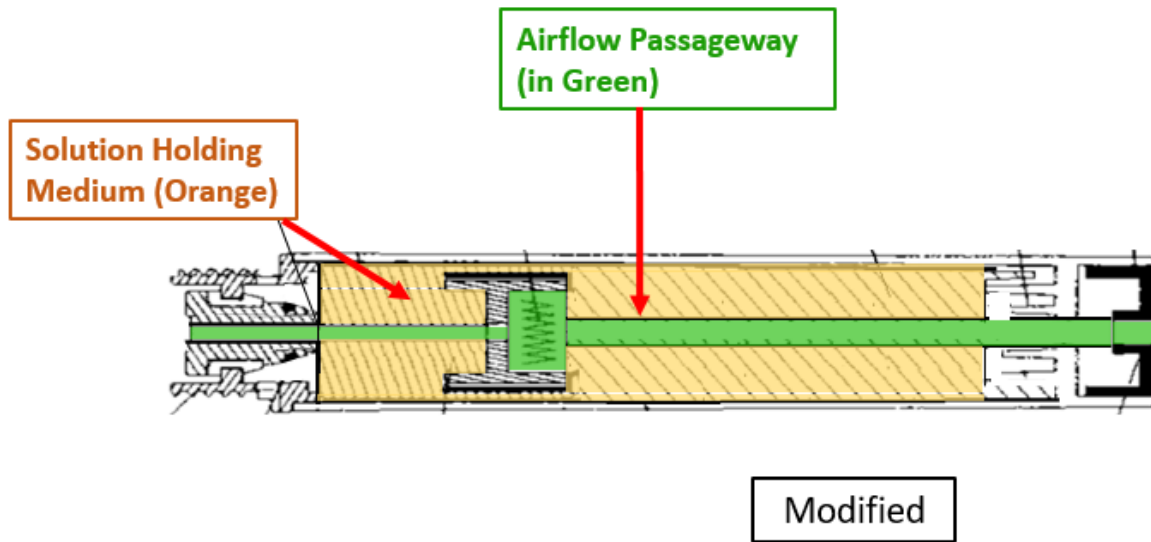
图 4

Ex. 1003, Fig. 4; see 1[h]. Xia's inventors chose to place the remaining storage holding medium, item 12, in the center of the airflow passageway such that the air flows around it:



Ex. 1004, FIG. 2.

But a POSITA would know that another obvious alternative, with obvious benefits, would have been to extend the architecture in the area of the heating element in Figure 4 leftward and rightward, such that airflow passageway extends through the solution holding medium:



Ex. 1004, FIG. 2 (modified).

This obvious modification would make the existing architecture in the heating element area consistent and run along the length of the cartridge. All items would function as they currently do in Xia. Ex.1007 ¶108.

Using such a passageway and solution holding medium design in Xia was obvious because, for example, it was the substitution of a known element for another that yields predictable results and it is the use of a known technique to improve a similar item in the same way to yield predictable results. Ex.1007 ¶109.

That the use of a central passageway extending through a solution holding medium was known is established by, for example, the Wang reference. In the prior North Carolina district court litigation, the inventor Mr. Wang confirmed that his invention's solution holding medium (absorbent organic fiber 105) "surrounds a

complete central air passageway, in which the heater is positioned.” Ex. 1017 (Wang Decl.), 4-5. That central air passageway is annotated below in green and extends from a first aperture and a second aperture.

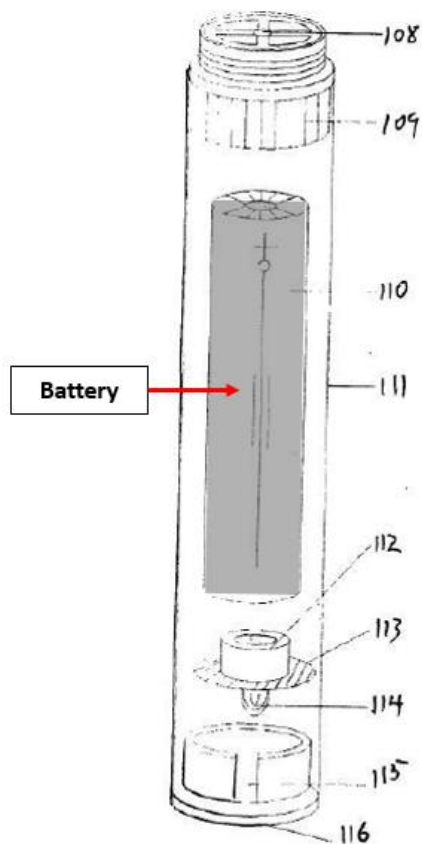


Fig. 2

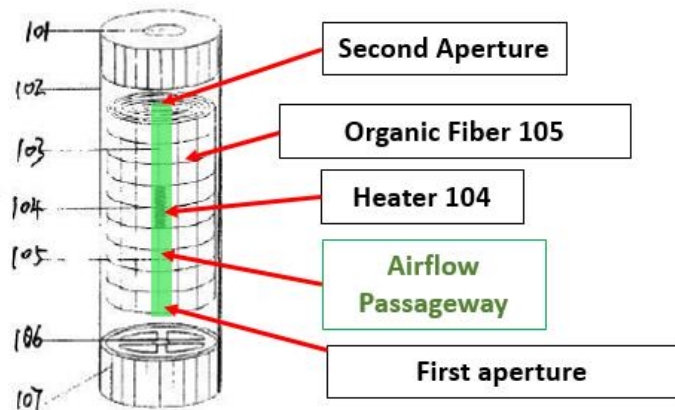


Fig. 3

Ex. 1005, Figs. 2-3 (annotated).

Wang's Figure 5 also depicts Wang's central air passageway as extending through the solution holding medium (absorbent organic fiber 105). As shown below, Figure 5 illustrates that the organic fiber 105 comprises fiber or paper that is

rolled up so that it defines and contains the central passageway (which is annotated here in green). Ex. 1005, Fig. 5.

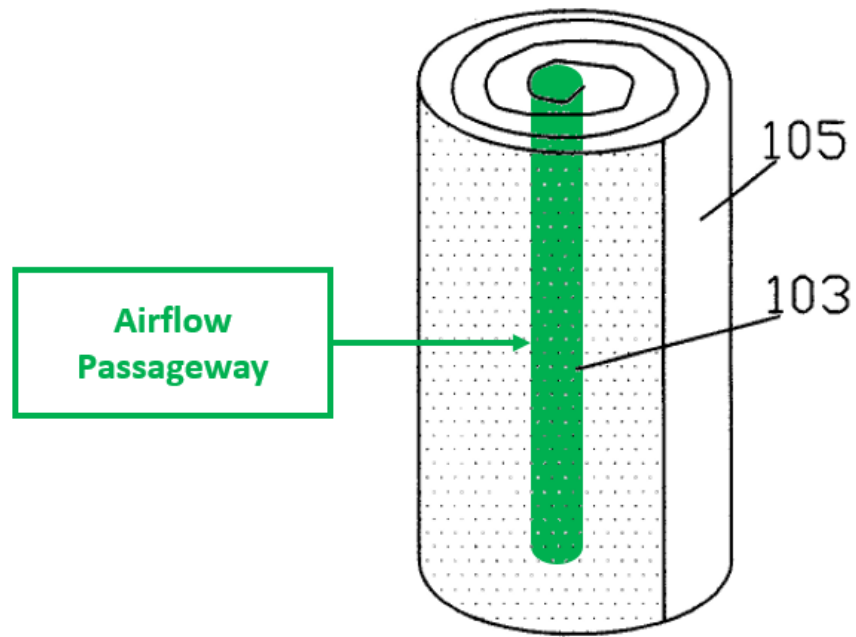
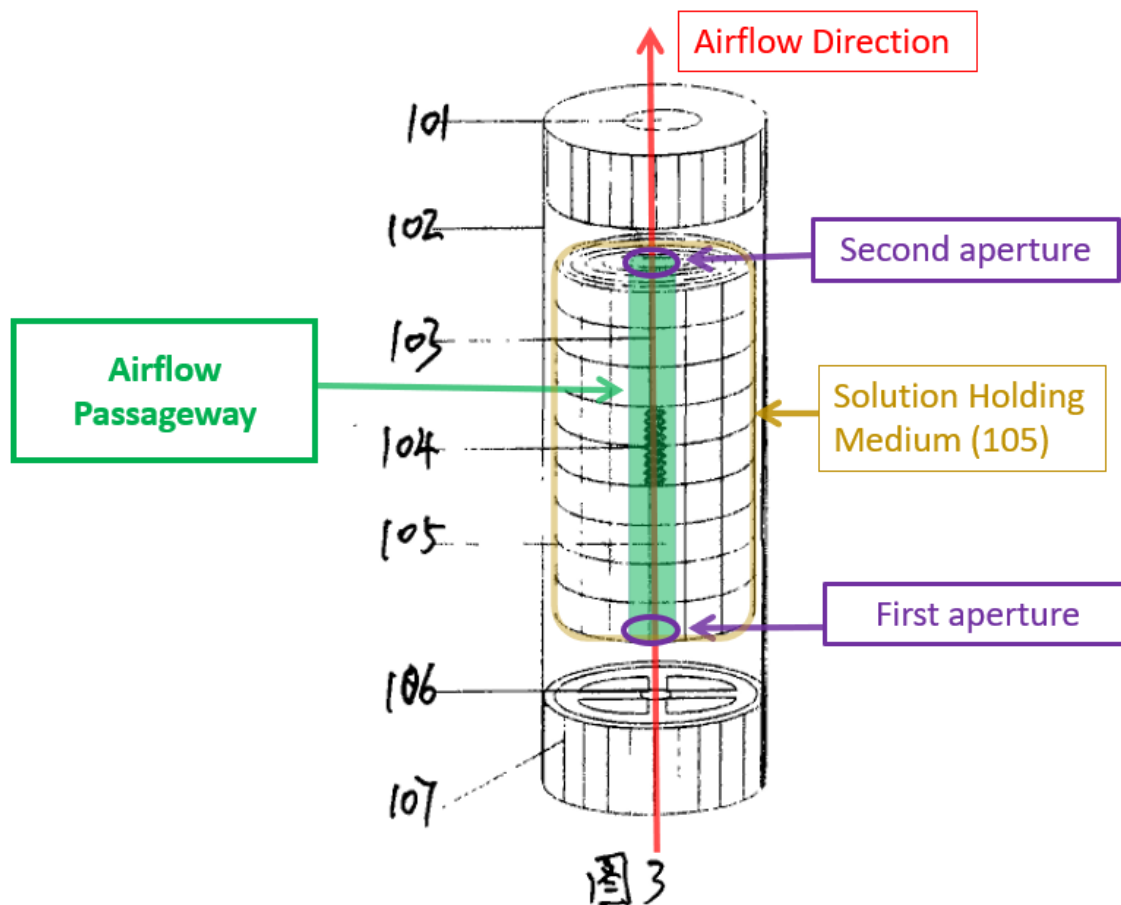


图 5

Ex. 1005, Fig. 5 (annotated), 7.

When viewed in the context of Wang's Figure 3, this passageway 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:



Ex. 1005, Fig. 3, 8 (“the smoke generated by the tobacco extract 103 instantly heated by the heater 104 is partially sucked out from the air outlet 101 of the cigarette holder.”). As seen in Figure 3, the airflow passes directly through the center via the space provided by rolling the organic fiber 105 around the heating element, in order to reach the centrally located heating element 104 and then reach the second aperture. Wang describes air entering the cartridge through “air inlet 106”. Ex. 1005, 8. Air flows into gap in the rolled “organic fiber 105,” flows over the “heater 104,”

and exits to the user via “air outlet 101”). Ex. 1005, 7-8; Ex. 1017 (Wang Decl.), 4-5.

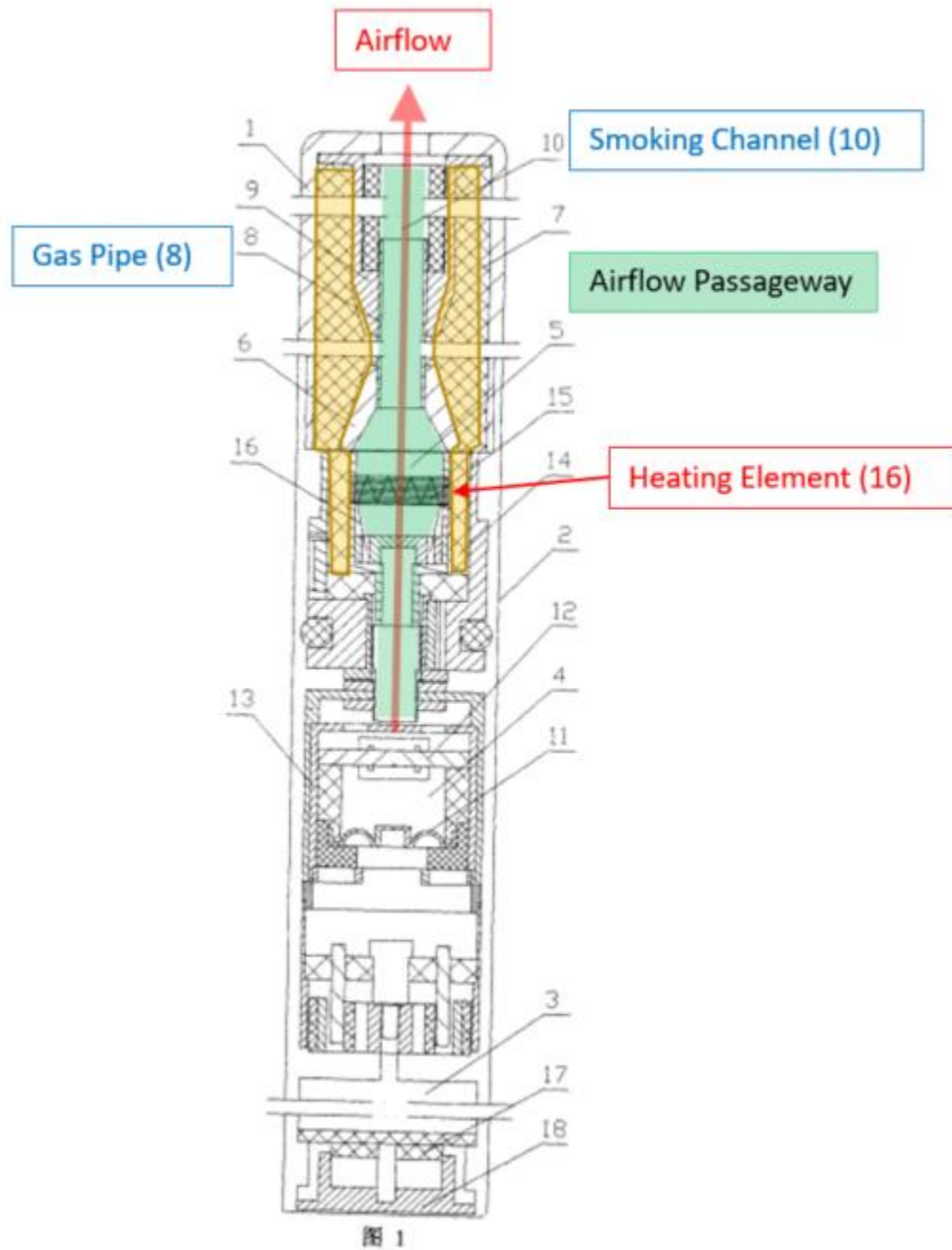
A POSITA would have been motivated to modify Xia’s airflow passageway in light of Wang because, for example, making the obvious change to an airflow passageway located centrally and axially, to the extent it is not already, away from the walls of the housing, with the solution holding medium situated between the passageway and the housing, throughout the length 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. Ex.1007 ¶118. Moreover, improved air flow, temperature, and vapor content 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.*

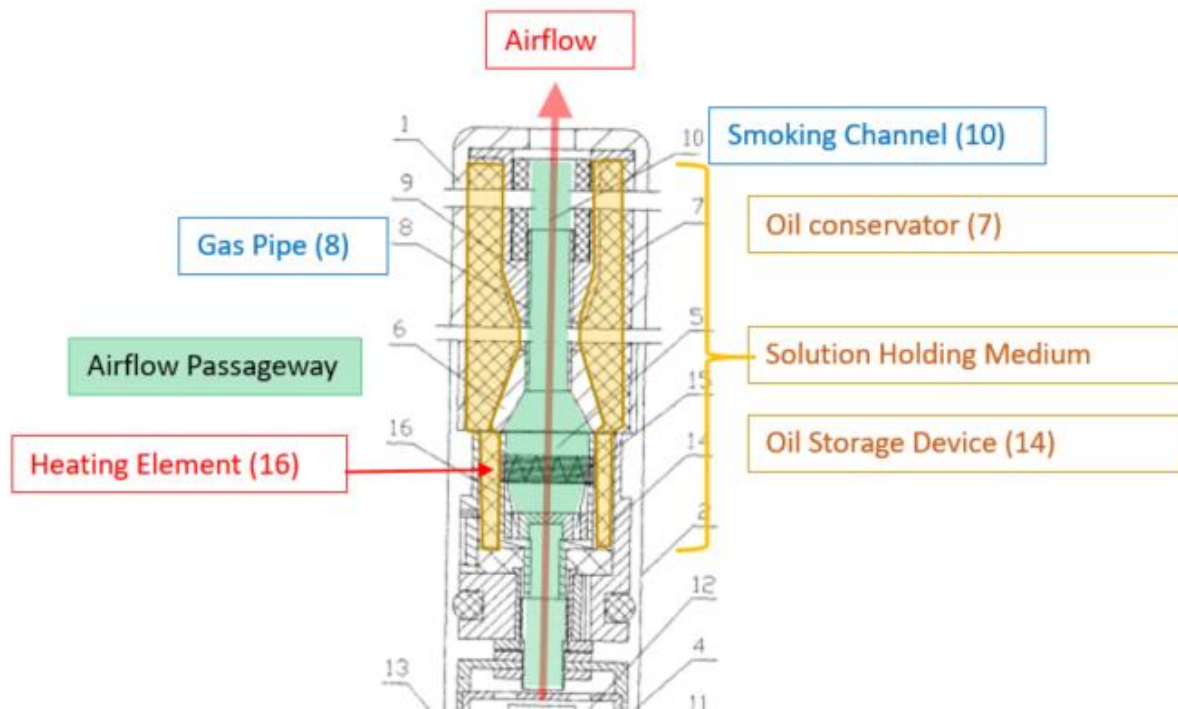
This modification would also simplify the structure of the device, making it (1) have fewer parts, and (2) be more easily manufactured by increasing the use of cylindrical shapes. In doing so, a POSITA would move the portion of the liquid blocking plate 8 that stops the backflow of liquid to the end of the secondary liquid storage chamber. Ex.1007 ¶122; *see* Ex. 1004, 13 (“The liquid-blocking plate 8 may prevent the chemical liquid in the secondary liquid storage chamber 10 from flowing out...”).

iii. Xia and Wang with Fang

To the extent NJOY further argues that this limitation is not obvious in light of Xia and Wang, it is also obvious in light of Fang. Ex.1007 ¶123. Fang confirms that in this field, the use of the claimed central and axial airflow passageway was well known. Using Fang's claimed airflow passageway in place of Xia's or Wang's airflow passageway was obvious because, for example, it was the substitution of a known element for another that yields predictable results and it is the use of a known technique to improve a similar item in the same way to yield predictable results. *Id.*

Fang's claimed central and axial airflow passageway intermediate a first aperture and a second aperture is illustrated below in green:





Ex. 1006 (Fang), Fig. 1 (annotated).

As shown, Fang discloses a “gas pipe (8),” “smoking channel (10),” and other un-numbered hollow portions in the center of the device, indicated in green highlight in the annotated figures, through which air flows directly down the center of the device, which together form an airflow passageway that runs directly through the center of the device and to the tip, where the user places his or her mouth, at the top of the image, where air mixed with vapor exits the device. Ex. 1006 (Fang), 4, 6. The solution holding medium in the form of oil conservator 7 and oil storage device 14 surround the airflow passageway. See 1[h].

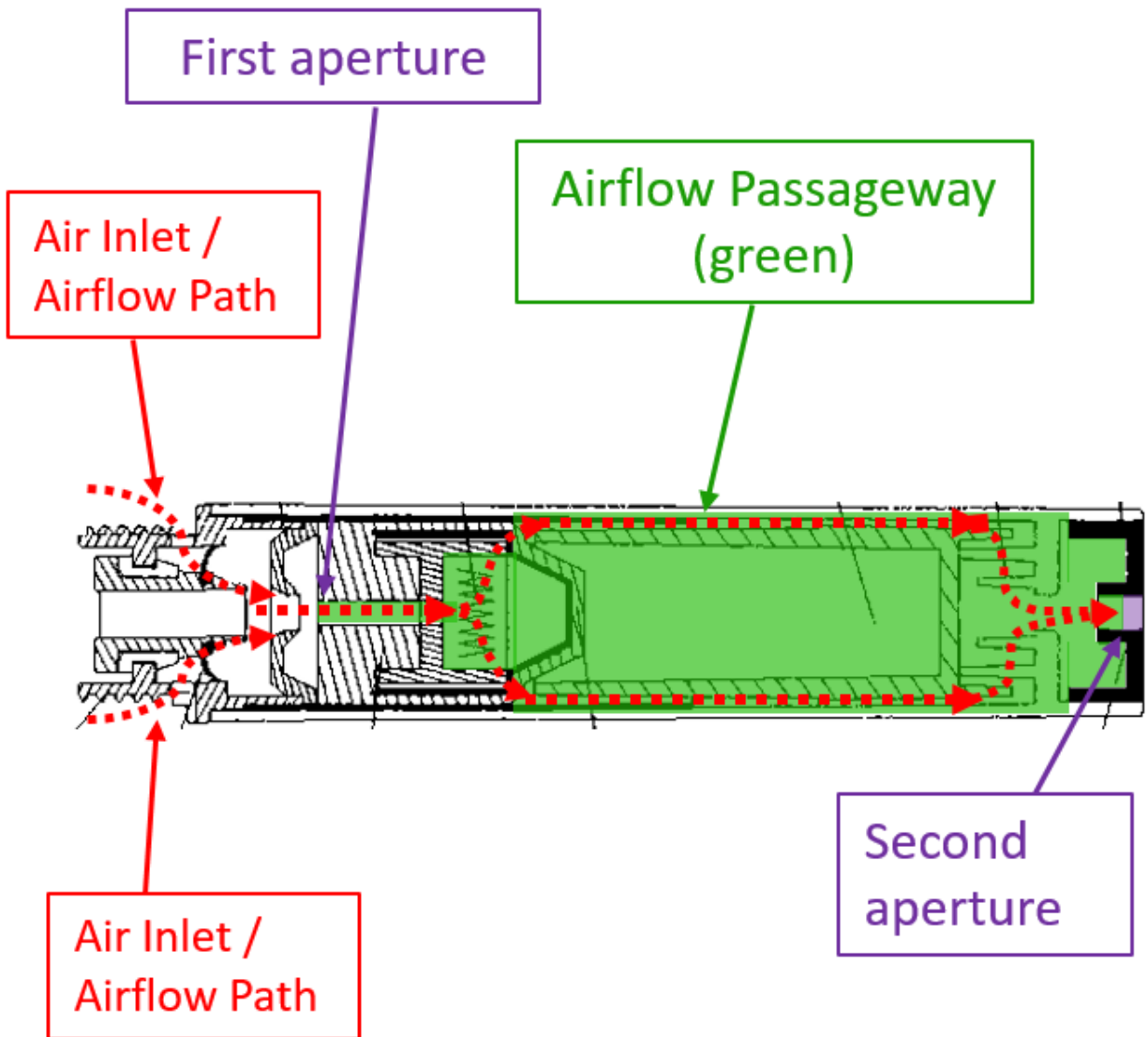
A POSITA would have been motivated to modify Xia’s or Wang’s cartridge to include Fang’s known airflow passageway arrangement for the reasons discussed

above in connection with Wang. Ex.1007 ¶126. Likewise, this obvious substitution and use of Fang's airflow passageway arrangement could be easily achieved using and would result in predictable results for the same reasons discussed above in connection with Wang.

h. 1[d]: airflow passageway/airflow between apertures

i. Xia

See 1[c], demonstrating that the airflow passageway is configured to allow an airflow through the cartridge from the first aperture to the second aperture of the housing; it is how the air flows from one end of Xia's cartridge to the other:



Ex. 1004, Fig. 2 (annotated).

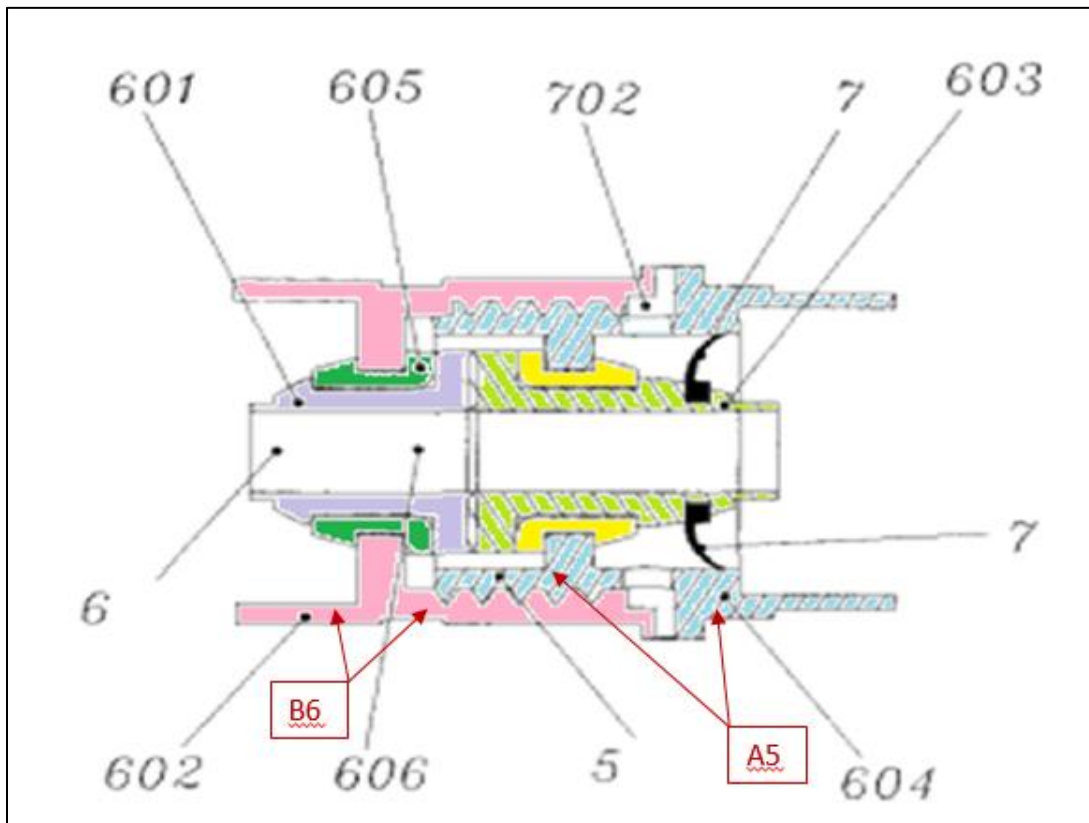
ii. Xia with Wang and/or Fang

Under Patent Owner's own contentions, Xia in combination with Wang and/or Fang, as discussed above, also disclose this limitation, as discussed above in 1[c] and in Ground 2's 1[c]-[d].

i. 1[e]: conductive first end to power source

i. Xia

Xia describes that the cartridge housing includes an electrically conductive portion (conductor A5) that is adapted to be mechanically and electrically coupled to the conductive portion of the power source (*e.g.*, conductor B6):



Ex. 1004, Fig. 3 (annotated), 7, 10, 12; Ex.1007 ¶ 137.

Xia explains the mechanical coupling: the “connecting conductor B6 and the connecting conductor A5 are in threaded connection or clamping groove connection through hollow contact copper caps.” Ex. 1004, 3, 12.

Xia also explains the electrical coupling: “the connecting conductor A5 and the connecting conductor B6 form a connecting outer ring through an inner thread 602 and an outer thread 604, respectively” to electrically couple to the battery. Ex. 1004, 12. Specifically, A5 contains electrodes 603 and 604 that conduct electricity and couple to B5 on the controller. Ex. 1004, 12.

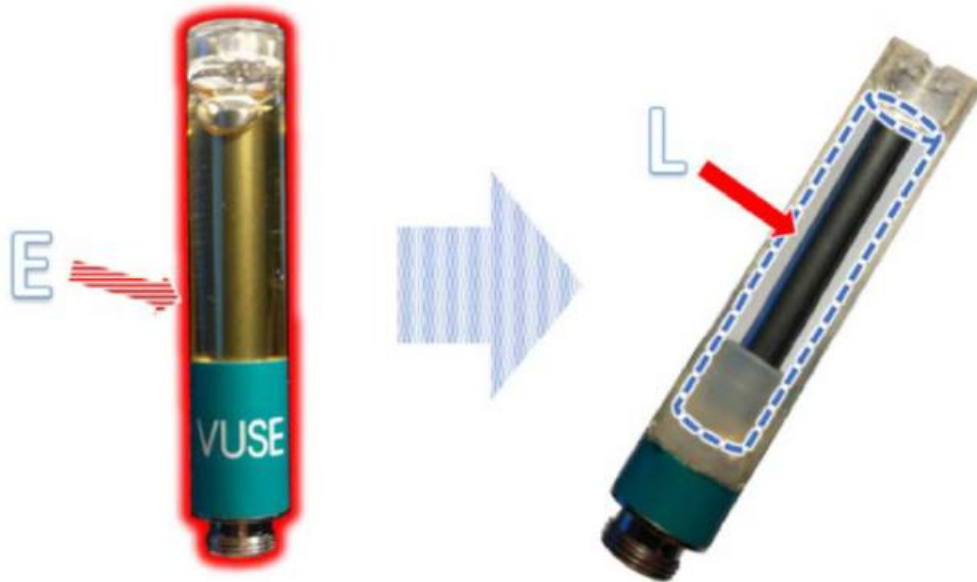
ii. Xia with Wang

The foregoing obvious combination of Xia with Wang (with or without Fang) also renders obvious this limitation. Ex.1007 ¶138. When modifying Xia’s airflow passageway in light of Wang, 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.*; *see also, e.g.*, Ground 2, elements 1[[a1]-1[a3], 1[e]; Ex. 1005, 8.

j. 1[f]: solution holding medium

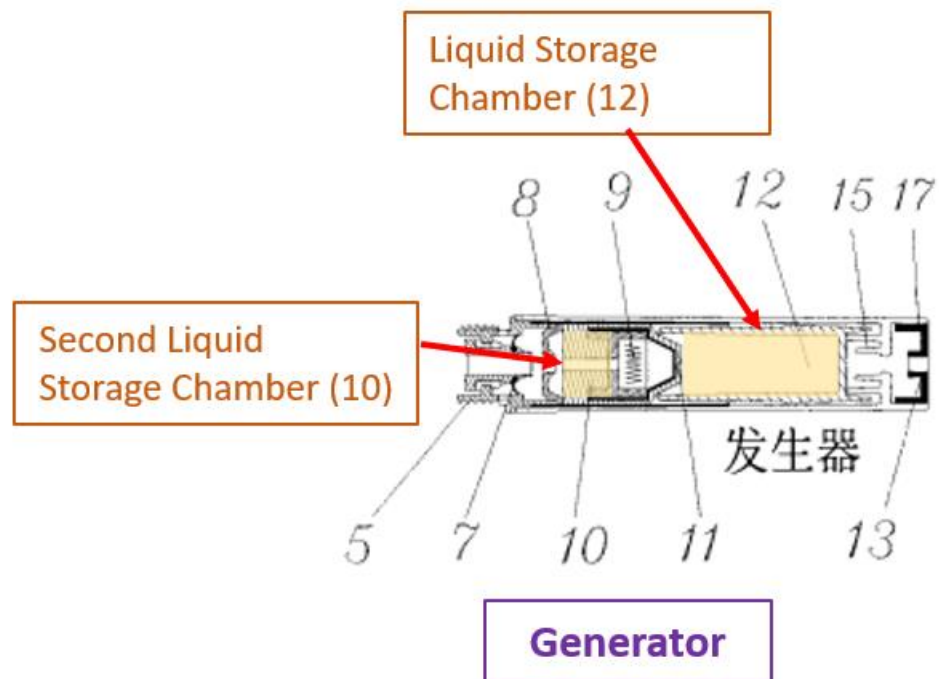
i. Xia

As established, an RJR device was previously found to infringe the ’881 patent and Patent Owner is current asserting that that same RJR device satisfies all of the ’881 patent claims. In doing so, Patent Owner is asserting that a chamber (identified below as L) within housing E satisfies the claimed solution holding medium:



Ex. 1032 at 16.

Under Patent Owner’s own analysis and admissions, Xia discloses similar chambers and thus discloses or makes obvious this limitation. As shown in Figure 2, Xia’s cartridge housing includes therein a “liquid storage chamber 12,” and “second liquid storage chamber 10,” which are individually or collectively a solution holding medium adapted to hold a solution. Ex. 1004, 3, 7, 9, 10, Fig. 2.



Ex. 1004 , Fig. 2 excerpt (annotated).

ii. Xia with Wang and/or Fang

Xia in combination with Wang and/or Fang also features this limitation, as discussed above in 1[c] and in Ground 2’s 1[c]-[d]. For example, Wang’s organic fiber 105 is a solution holding medium. Ex.1007 ¶142.

k. 1[g]: heating element

Limitation 1[g] recites a heating element that “extends transversely across the airflow passageway, wherein the airflow . . . passes on both transverse sides of the element.” But the ’881 Patent specification does not use the words “transversely”

or “transverse,” nor does it describe what is meant by “transversely across the airflow passageway” or “transverse sides” of the heat element.⁷

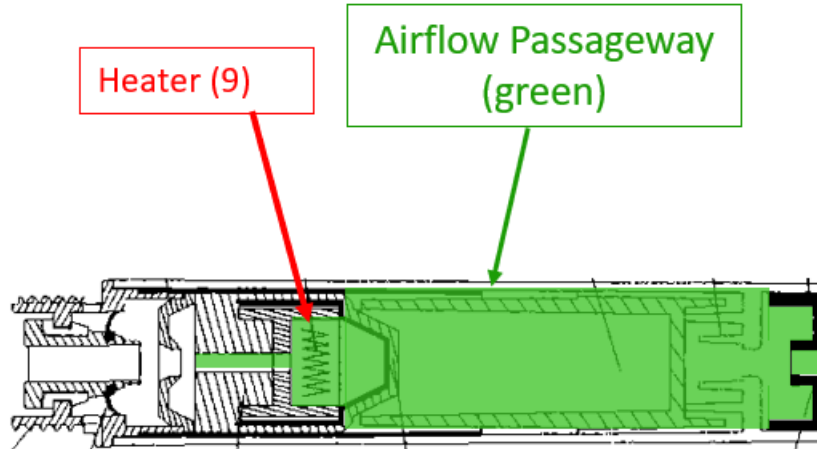
However, the patent does state the following concerning the claimed orientation of the heating element with respect to the passageway: “[w]hile the heating element 222 is shown as residing solely in the airflow passageway 214, it is to be understood that various other configurations of the heating element 222 with respect to the airflow passageway are contemplated and are **intended to fall under the scope of the hereto-appended claims.**” Ex. 1001, 6:62-67. The patent further provides examples of heating element orientations that fall within the scope of the claims, including a heating element that is “in the airflow passageway,” “on the exterior of the airflow passageway,” “on the exterior or interior of the passageway,” “wrap[ped] around the airflow passageway,” and “the airflow passageway 214 itself.” Ex. 1001, 6:62-7:19. The patent states, “it is readily recognized that airflow may pass directly over the heating element, through a chamber that is proximate to the heating element, or other suitable configuration.” *Id.*, 7:17-19. Applying this description, limitation 1[g] is disclosed and obvious.

Patent Owner also argues that a device infringes this limitation if air flows over the heating element in the parallel ITC litigation. Ex. 1033 at 6.

⁷ JLI does not raise herein any Section 112 failures that affect the claims.

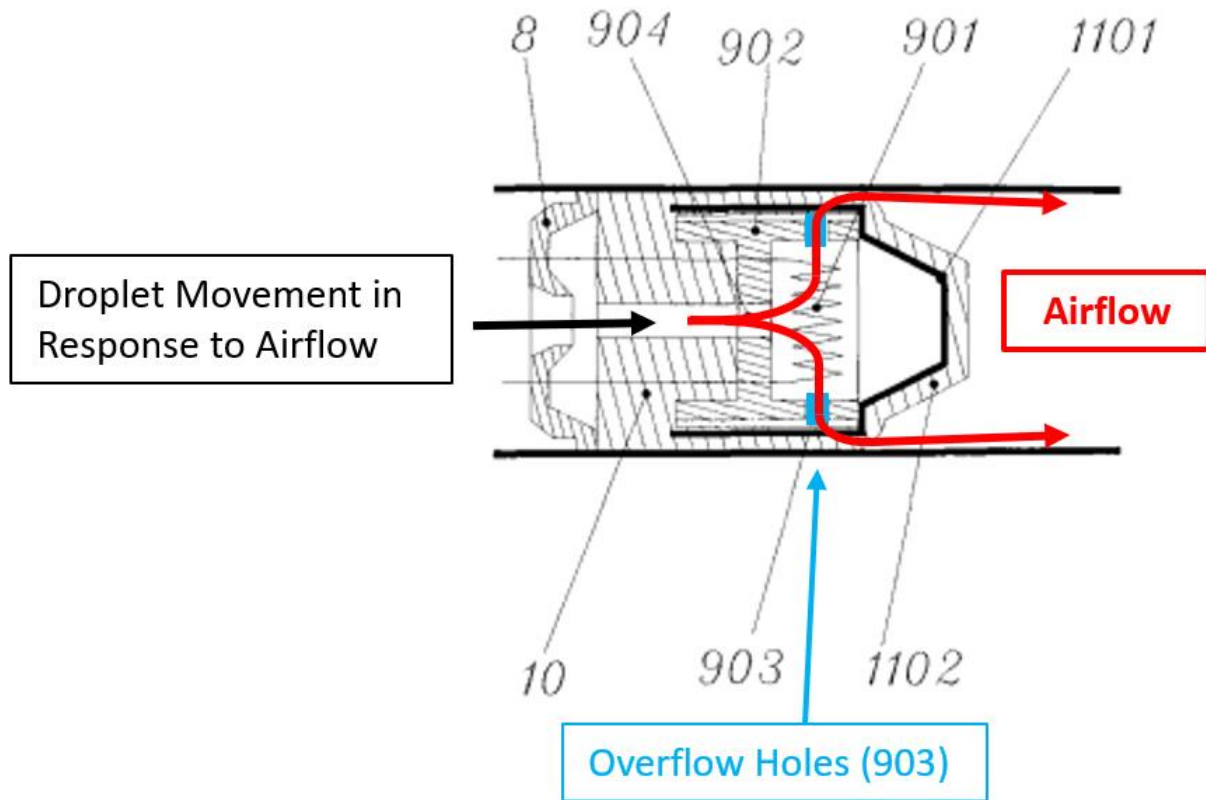
i. Xia

For example, under Patent Owner's own application of the term, Xia discloses a heating element ("heater 9") that is within the airflow passageway and over which airflow may pass directly, and thus teaches element 1[g]. Xia illustrates heating element 9 within the interior of the housing of the generator in Figures 1 and 2 and within the airflow passageway:



Ex. 1004, 9, 10, 12-13, Fig. 2.

Xia explains that airflow flows all around the heater, as illustrated below:

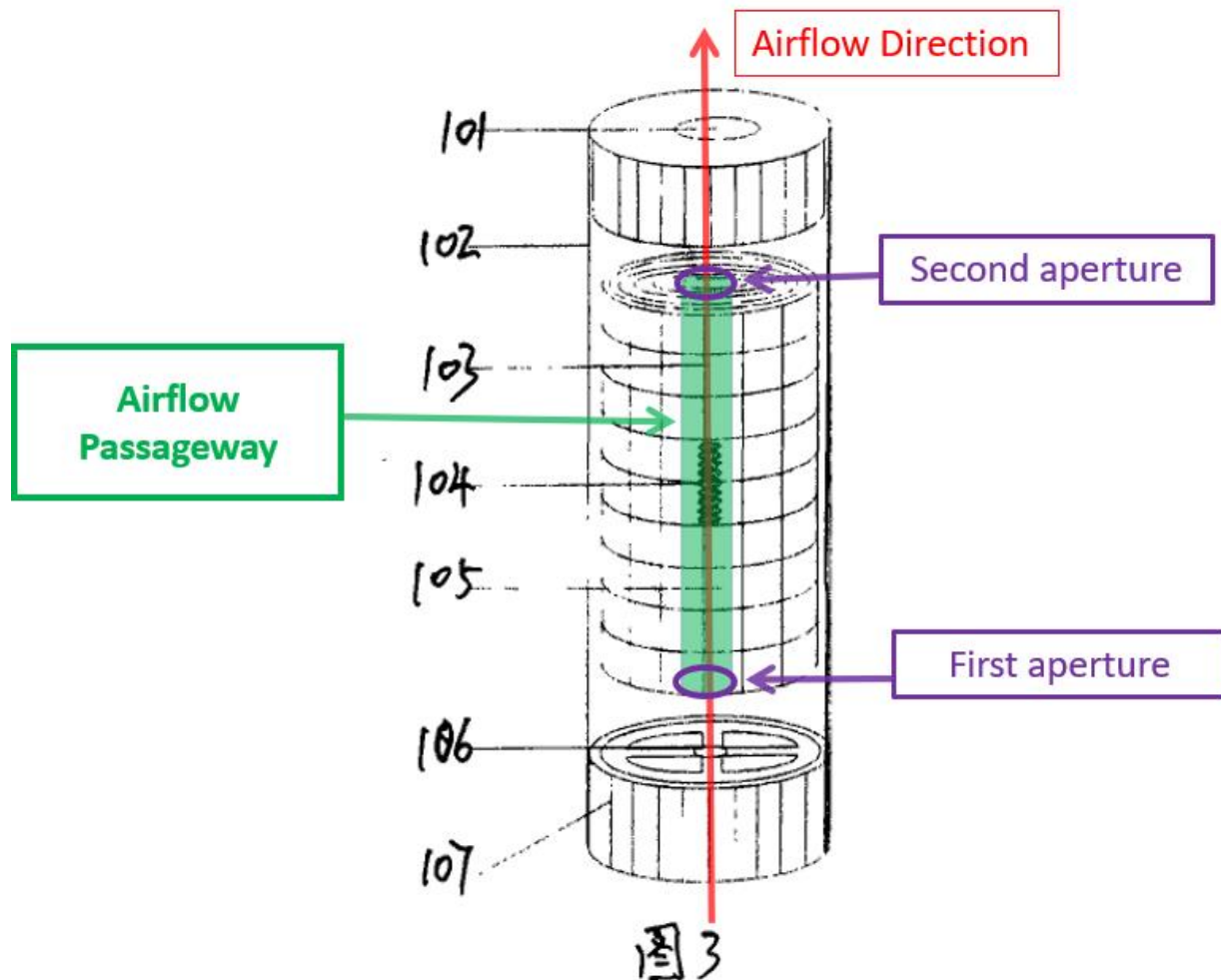


Ex. 1004, 9, 10, 12-13, Fig. 4.

ii. Xia with Wang and/or Fang

Xia in combination with Wang and/or Fang also features this limitation, as discussed above in 1[c] and in Ground 2's 1[c]-[d]. Ex.1007 ¶152.

For example, as discussed, 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:



The same is true if Fang's airway passageway is substituted for Xia's or Wang's because their associated heating elements will still be in the combination's resulting airflow passageway such that airflow may pass directly over it.

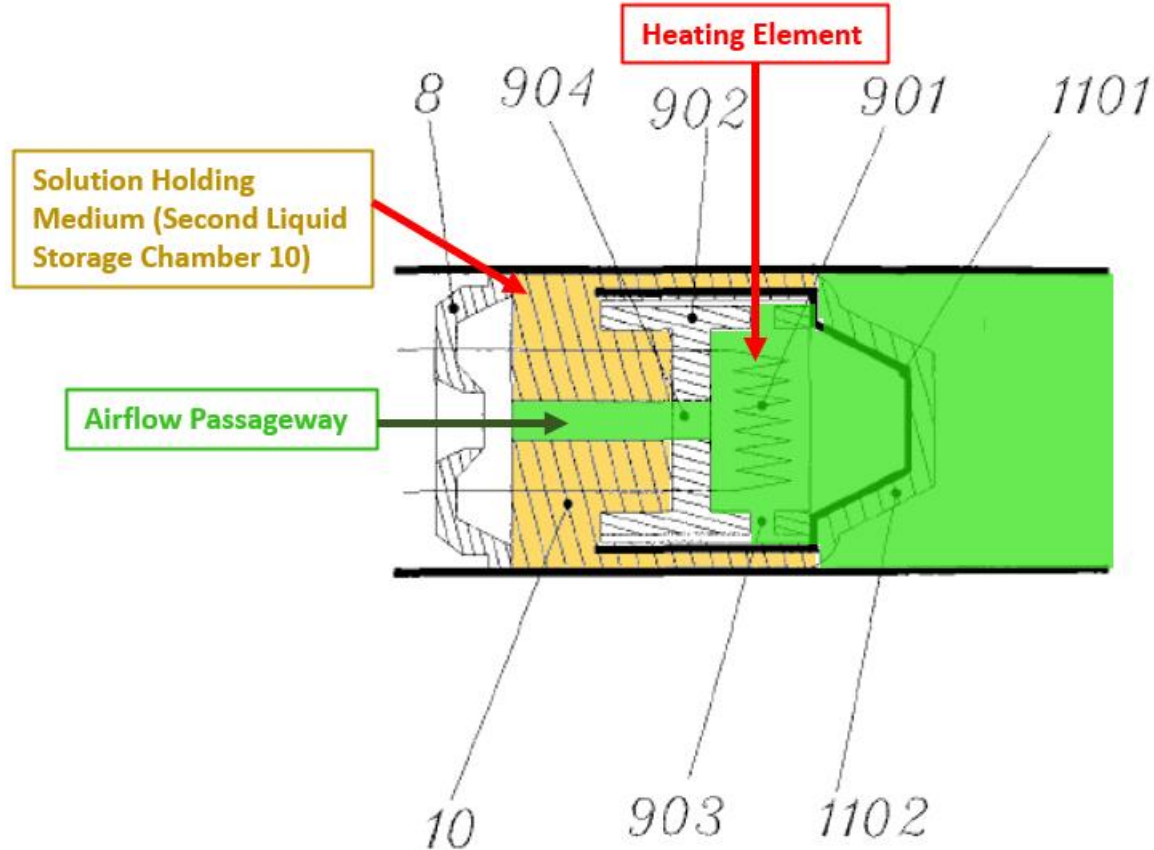
I. 1[h]: solution holding medium surrounds passageway and heating element

i. Xia

JLI understands that NJOY asserts that this limitation is met if the solution holding medium surrounds only a portion of the alleged airflow passageway and not the entire passageway.⁸ Ex.1007 ¶154. Under NJOY's interpretation, Xia discloses this limitation because, as illustrated below in Figure 4, Xia's solution holding medium 10 surrounds the heating element (heater 9) and at least a portion of the airflow passageway (in green) in the interior of the housing and between the first end and the second ends.⁹

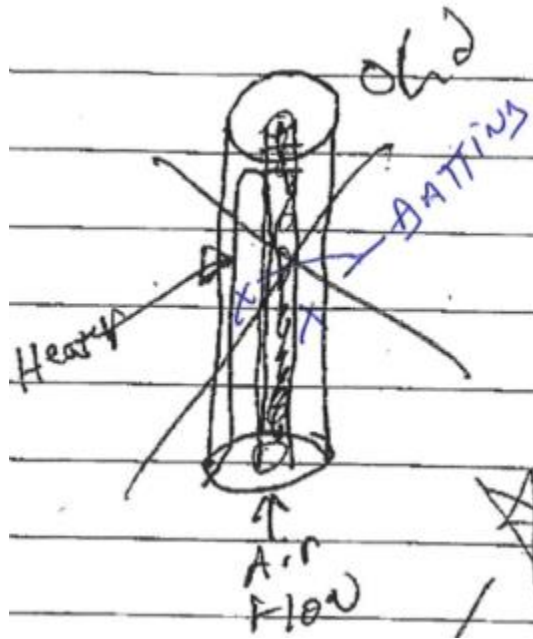
⁸ NJOY asserts this meaning in the pending ITC investigation. Ex. 1033 at 7, 2 (showing liquid does not surround alleged passageway on all sides for whole length); Ex. 1032 at 4-5.

⁹ Petitioner's application of NJOY's apparent constructions here and elsewhere in this Petition is not intended to indicate agreement or adoption of such constructions.



Ex. 1004, Fig. 4 (modified).

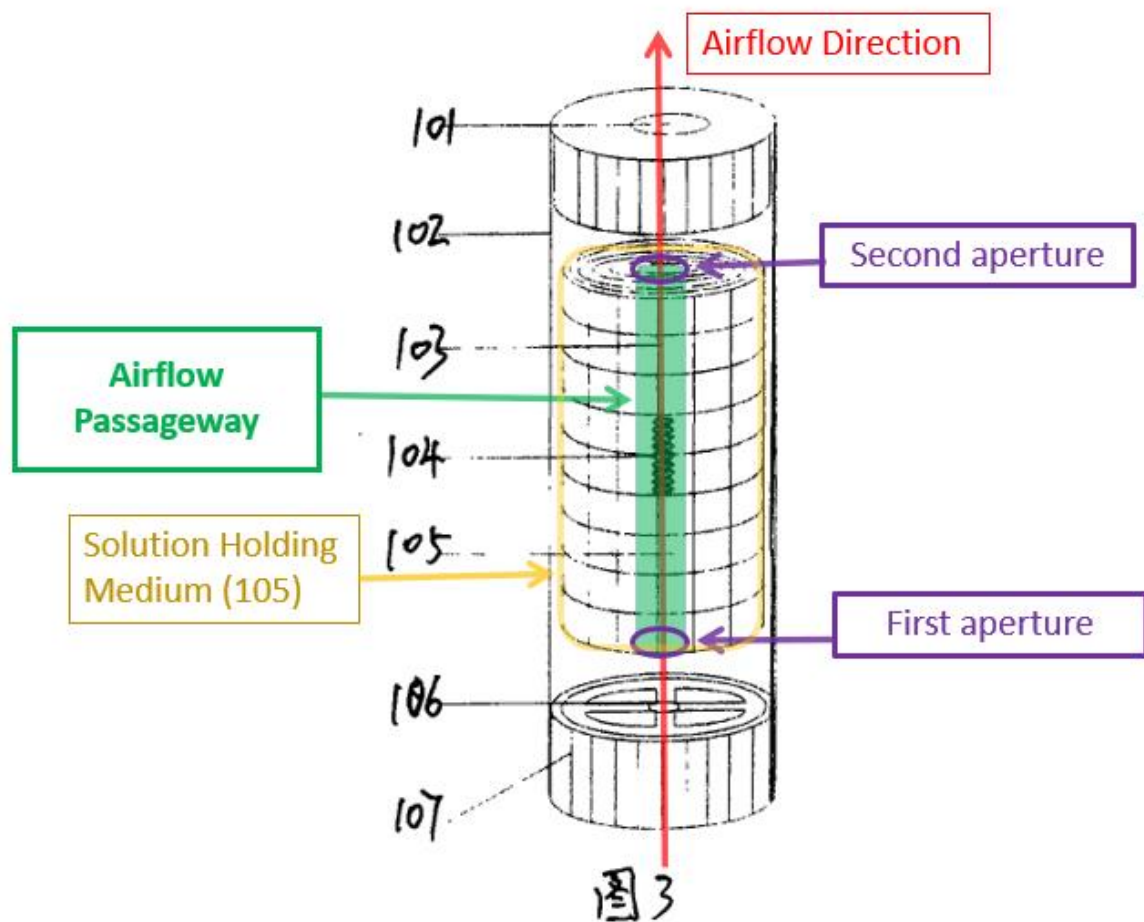
First-named inventor, Gregory Conley, also testified multiple prior art e-cigarettes existed in which the solution-holding medium surrounded the airflow passageway, further confirming this was a well-known concept. Ex. 1023 (Conley Dep. Tr.) at 40:12-14; 42:13-19; 46:11-52:12.



Ex. 1024 (Conley Dep. Tr. Ex. 2A, hand-drawing by Conley admittedly describing prior art “old” device, with solution-holding medium “batting” surrounding airflow passageway).

ii. Xia with Wang

The obvious combination of Xia and Wang (without or without Fang) discussed in 1[c] meets this limitation regardless of whether the solution holding medium must surround the entire airflow passageway because, as shown below, in that combination the solution holding medium 105 surrounds the entire identified airflow passageway and the heating element (and separately is at most a small modification to Fang):



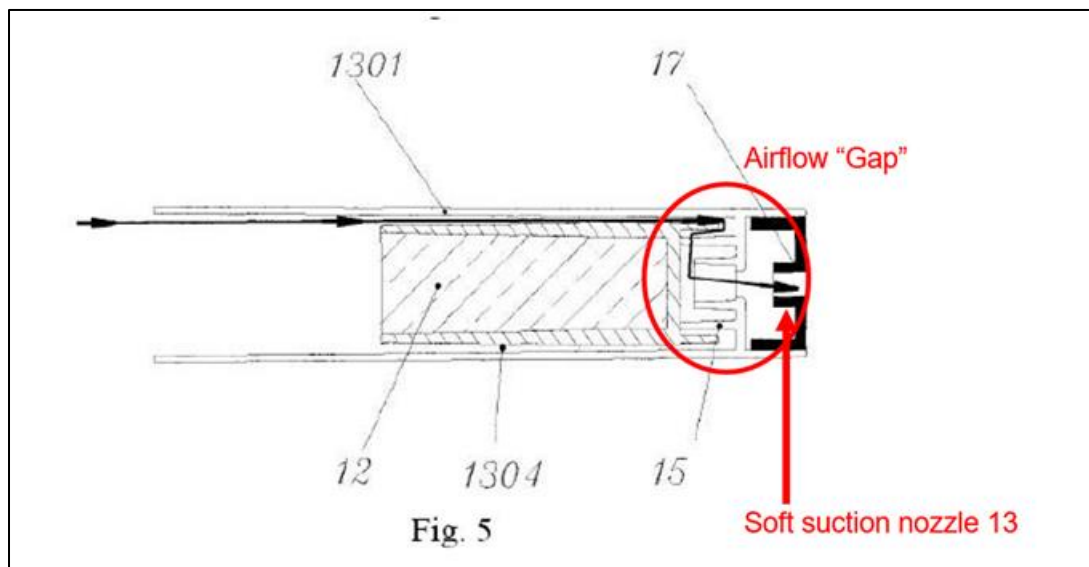
m. 1[i]: electrical heating element to vaporize liquid for delivery via second aperture

Xia alone, Xia in combination with Wang, Xia in combination with Fang, and Xia in combination with Wang and Fang, each alternatively discloses or renders obvious this limitation. Ex.1007 ¶161. Elements 1[c] and 1[d], for example, describe why Xia and the proposed modifications thereof disclose that 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. *See also* Ex. 1004, 10 (“[T]he 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.

Elements 1[a1]-1[a3] and 1[e] explain that the heater’s activity is responsive to electrical power received from the battery through the electrically conductive portions of the cartridge and the power source because, for example, “[t]he heater 9 is powered by the rechargeable lithium battery 2 through the connecting conductor A5, the connecting conductor B6, and the integrated circuit board 3.” Ex. 1004, 10, 14.

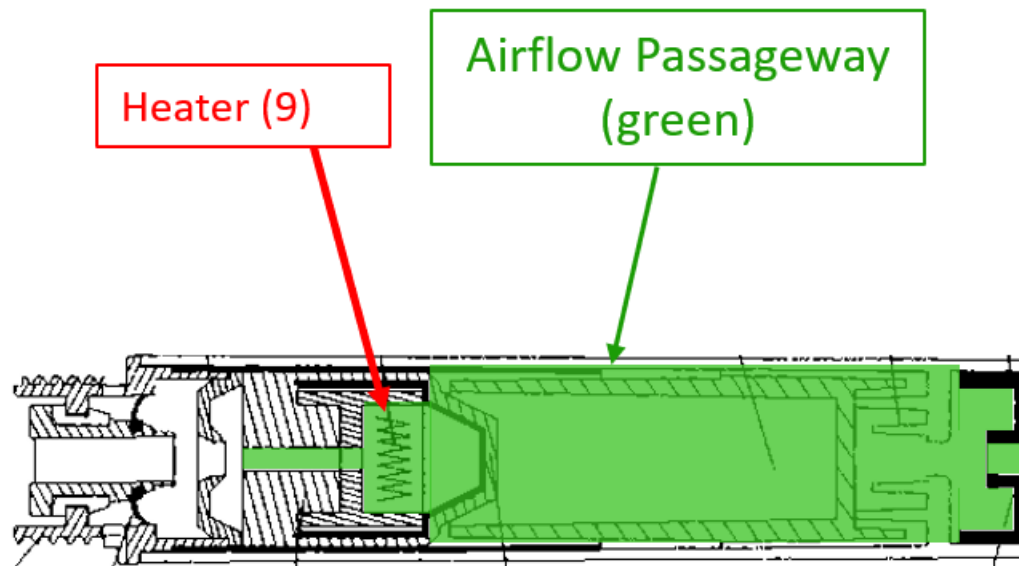
To the extent this element requires mixing of vapor and airflow separately from, or in addition to, air flowing over the heating element, Xia discloses that limitation. For example, in Xia the vapor mixes with existing air in a “gap” before leaving the mouthpiece 13 via inhalation from the user. Ex. 1004, 2, 3, 7, 10, 13 14; see FIG. 5; Ex.1007 ¶163.



2. Claim 2: coil diameter less than passageway cross section

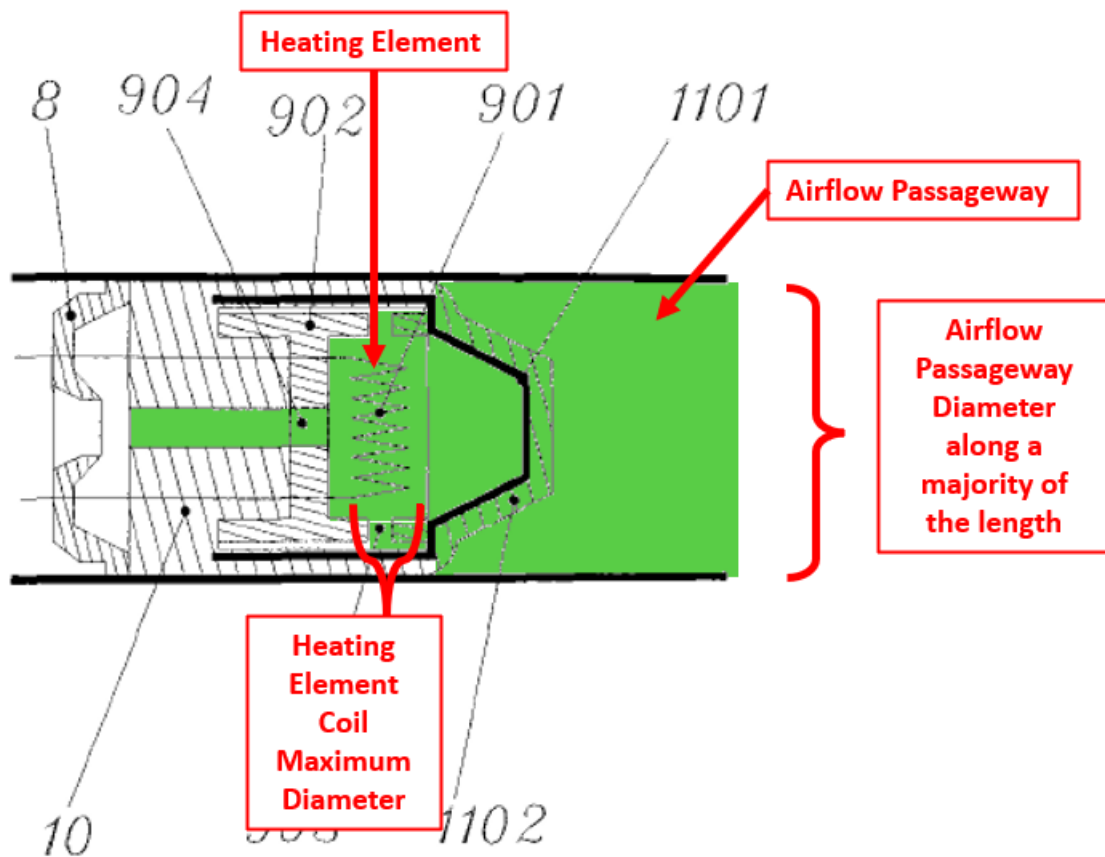
i. Xia

Under Patent Owner's own application of the term, Xia's figures show that heater 9 and its heating filament 901 is a coil that has a maximum diameter smaller than the diameter of the circular¹⁰ cross section of the majority of the length of the airflow passageway, to the right of the coil:



Ex. 1004, FIG. 2 (annotated).

¹⁰ Xia's airflow passageway is a cylinder. Ex.1007 ¶169. For example, the pathway surrounds and contains "liquid storage chamber 12 [which] is a cylindrical object," and it is illustrated within and in the same manner as the airflow passageway. Ex. 1004, 13; Ex.1007 ¶169.



Ex. 1004, Fig. 4 (annotated); *see also* Fig. 2 (showing length of airflow passageway).

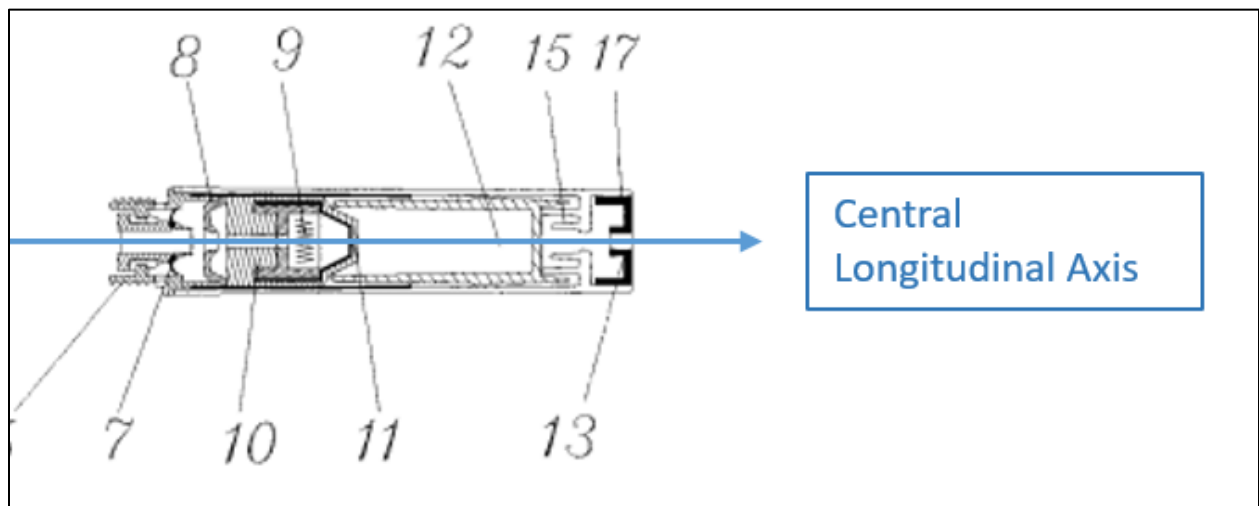
ii. Xia with Wang and/or Fang

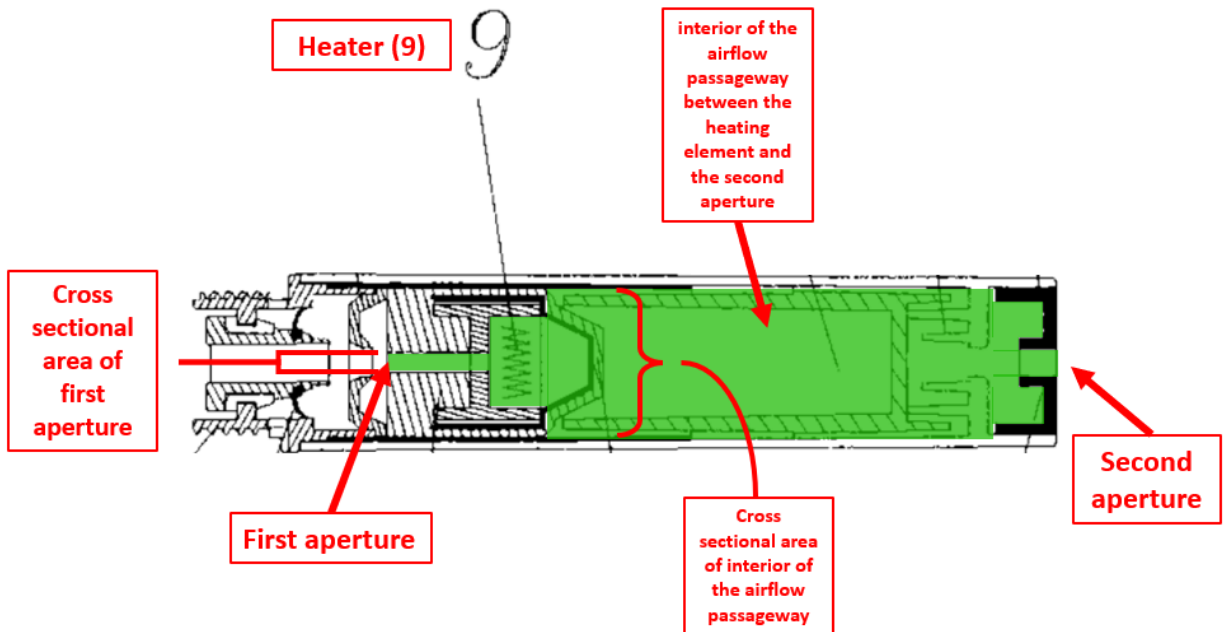
The identified obvious combinations of Xia with Wang and/or Fang also disclose this limitation. Ex.1007 ¶173. In each, the coils of the heating elements of Wang, and Fang are smaller in cross section than their respective airflow passageways as explained in Ground 2, claim 2, and as depicted in elements 1[c] and 1[h] above.

**3. Claim 3: central/axial first aperture equal to or smaller than
airflow passageway and second aperture**

i. Xia

As illustrated in the Xia figures below, the interior of Xia's airflow passageway has a cross sectional area larger than the first aperture. As also shown (and described above), the first aperture is located centrally and axially with respect to the housing.





Ex. 1004, Fig. 2 (partial, annotated).

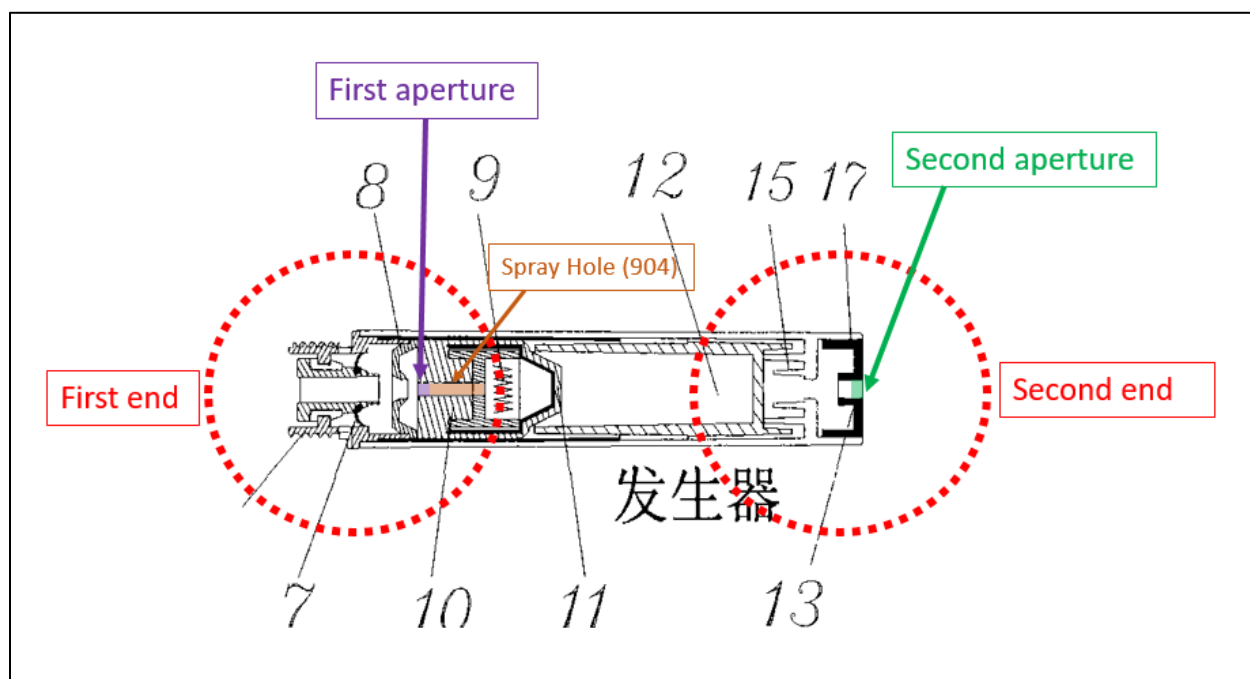
ii. Xia with Wang and/or Fang

The identified obvious combinations of Xia with Wang and/or Fang also disclose this limitation, as explained in Ground 2, claim 3, and as described and depicted in elements 1[b2]-[d] above. Ex.1007 ¶179.

4. Claim 4: first aperture smaller than second aperture

i. Xia

Xia illustrates the first aperture, on the first end, smaller than the second aperture, on the second end:



Ex. 1004, Figs. 1, 2.

ii. Xia with Wang and/or Fang

There would be no need or reason to change the foregoing aperture sizes in the proposed combinations of Xia with Wang and/or Fang, so those combinations disclose this limitation for the reasons above. Ex.1007 ¶182.

5. Claim 5: absorbent material or reservoir

Xia discloses at least a solution holding medium including absorbent material. “The liquid storage chamber 12 is a cylindrical object with one end open, medicinal cotton fibers are placed in the middle, and then raw chemical liquid is charged in.” Ex. 1004, 13. See [8a] regarding reservoir.

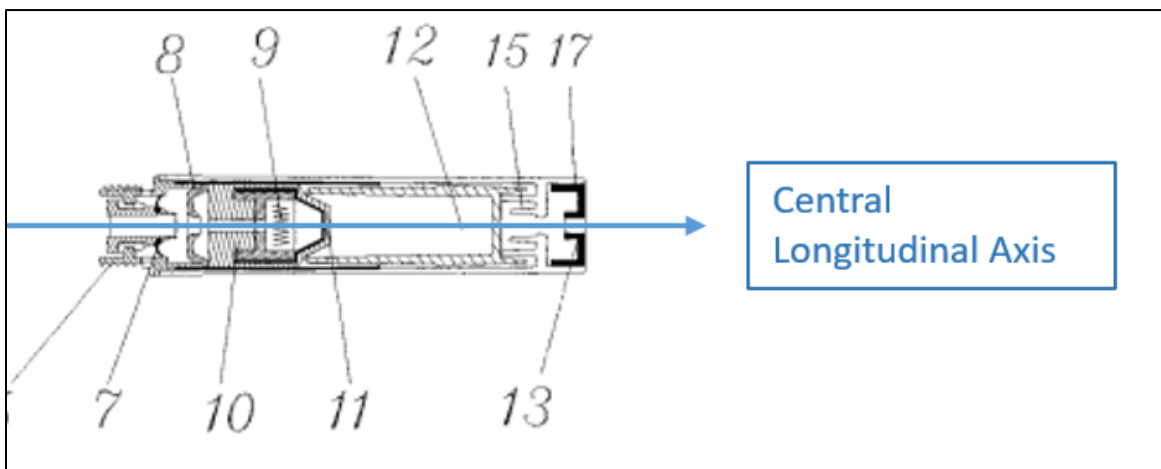
6. Claim 6: propylene glycol or nicotine solution

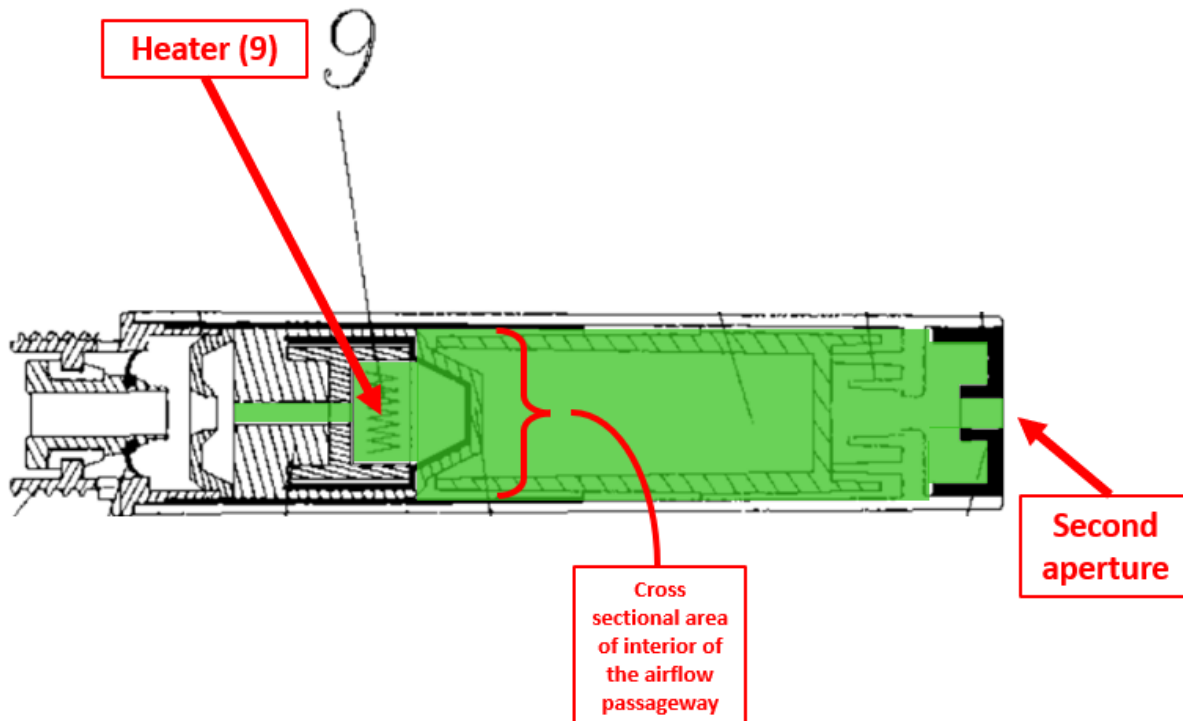
Xia and its obvious combinations with Wang and Fang disclose this limitation. Xia identifies the solution in liquid storage container 10 as “nicotine liquid.” Ex. 1004, 15. Likewise, Wang and Fang both describe the solutions to be vaporized as containing nicotine. See Ex. 1005, 7 Ex. 1006, 4.

7. Claim 7: uniform airflow passageway between the heating element and the second aperture

i. Xia

As depicted below and established above, Xia’s airflow passageway (highlighted in green) between the heating element and the second aperture has a uniform cross-sectional area measured perpendicular to a central longitudinal axis of the housing between the heating element (9) and the second aperture (13):

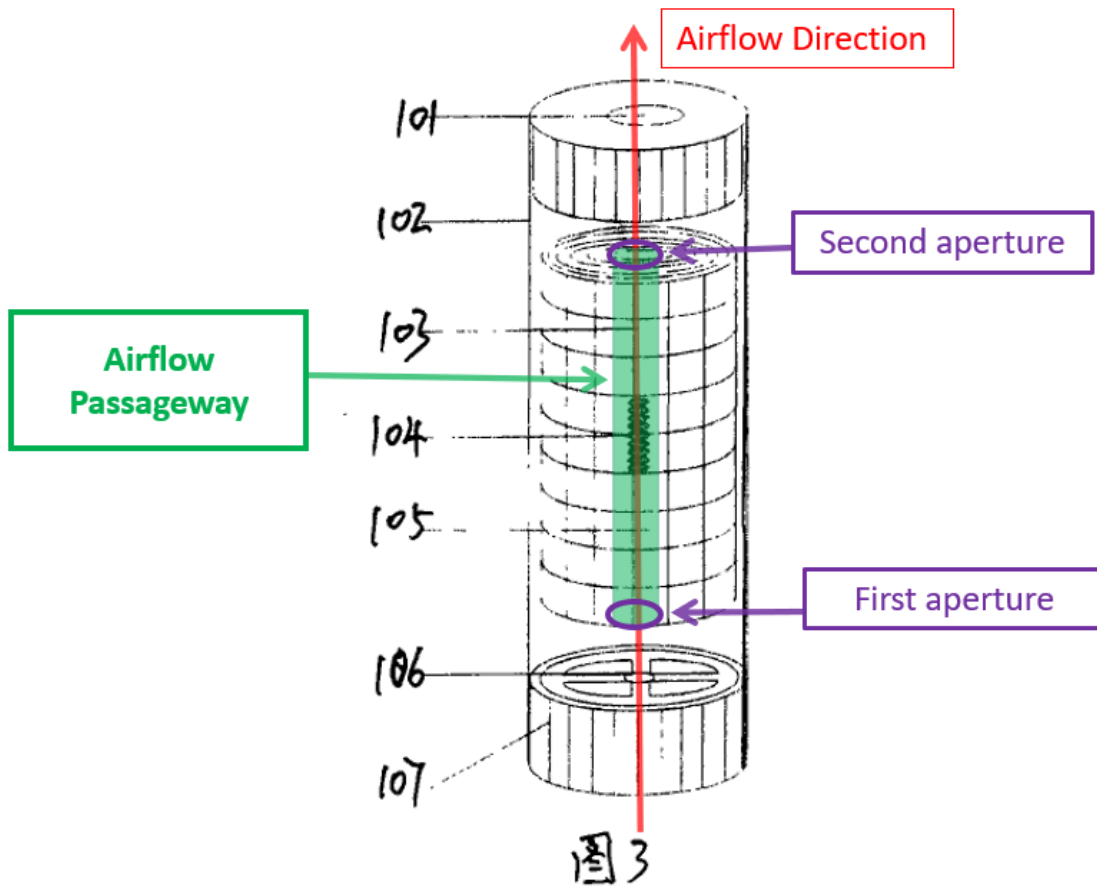




Ex. 1004, Fig. 2 (partial) (annotated).

ii. Xia with Wang

As established above and depicted below, the airflow passageway in Wang meets this limitation, and Xia modified with Fang would maintain Xia's passageway uniformity:



8. Claim 8

a. 8[p]

See 1[e].

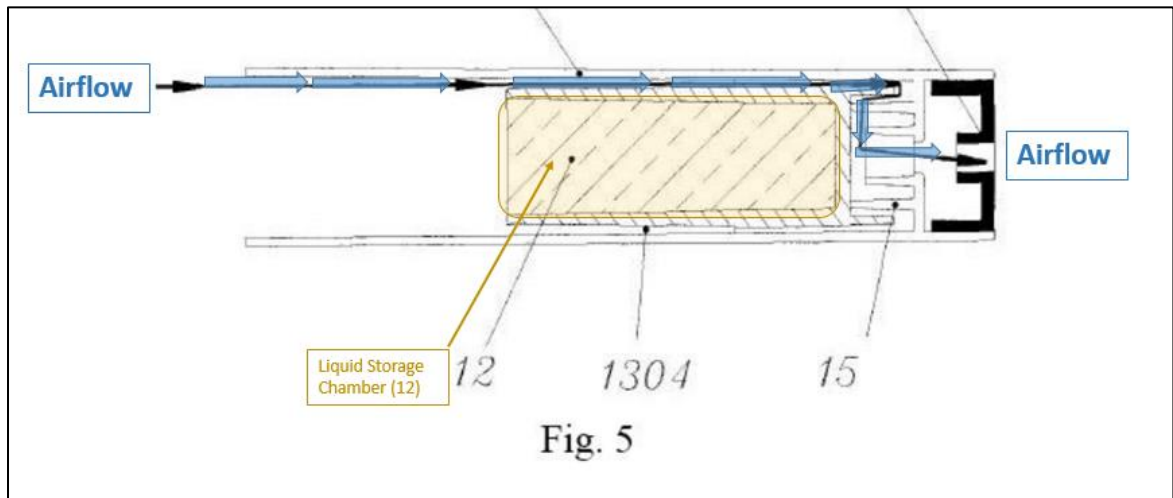
b. 8[a1]: reservoir

See [1f].

i. Xia

Under Patent Owner's own contentions, Xia discloses a liquid storage chamber that acts as a solution holding medium reservoir around which air flows:

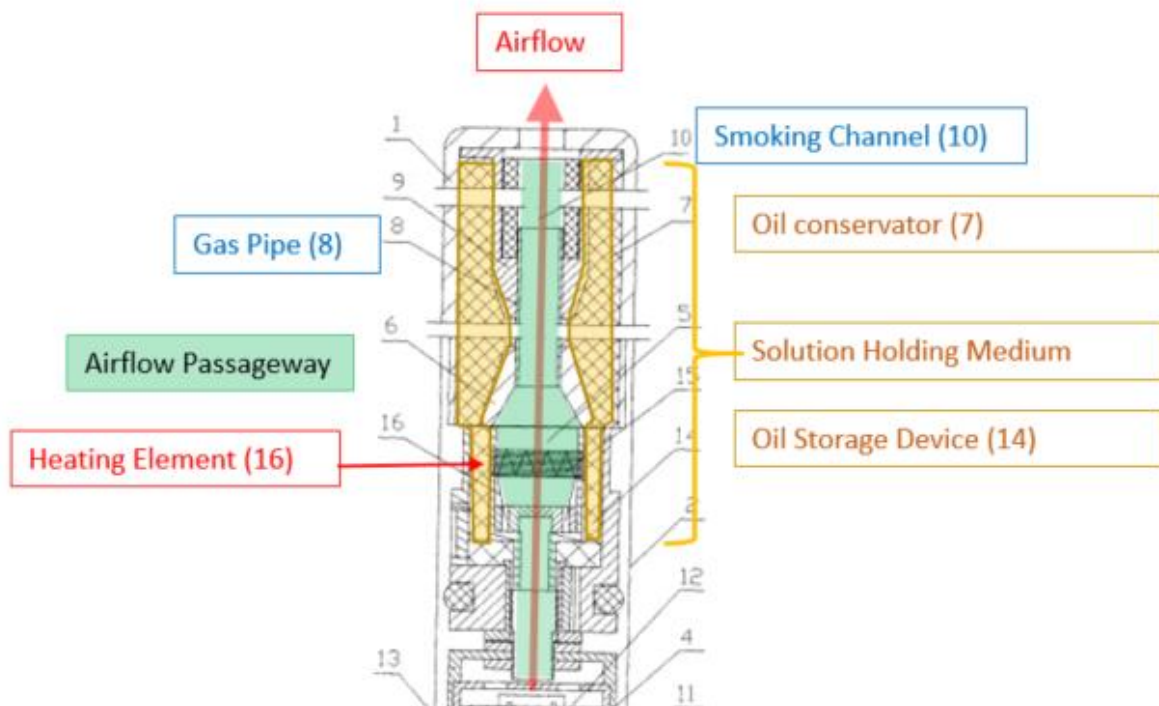
“The liquid storage chamber 12 is a cylindrical object with one end open, medicinal cotton fibers are placed in the middle, and then the raw chemical liquid is charged in.” Ex. 1004, 13; Ex.1007 ¶194.



Ex. 1004, Fig. 5 (annotated).

ii. Xia with Wang and/or Fang

Additionally, this limitation is obvious in light of Fang (with or without Wang). Ex.1007 ¶196. Fang’s solution holding medium, comprised of “[t]he oil conservator 7, the oil storage device 14 and the temporary oil storage device 15,” is surrounded on all sides by a hard material from the housing on exterior, as well as, the gas pipe and a “waterproof bellow mouth” on the interior, which “solve[s] the problem that moisture in the nicotine oil smoke is sucked into the user’s mouth.” Ex. 1006, 6.



Ex. 1006 (Fang), Fig. 1 (partial) (annotated).

NJOY has taken the position that Fang has “a liquid reservoir disposed within said housing and sealably separated from said atomizing chamber” in parallel litigation. Ex. 1022 (NJOY’s Invalidity Contentions) Ex. A, 134-35 (element 1.G-H)] (citing Fang 044 at Abstract; p.5 ¶¶1,3; p.6 ¶¶2,4–5; p.7 ¶1,3; Figs. 1–2).

Therefore, a POSITA would have been motivated to modify Xia’s solution holding medium reservoir with that of Fang’s to include an impermeable material around the outside. Ex.1007 ¶199. This modification serves the dual-purpose of creating an open airflow passageway through the center of the solution holding medium, while preventing the solution from being pulled directly into the airflow, and potentially ingested by the user prior to vaporization. *Id.*

c. 8[a2]

See 1[b2].

d. 8[a3]

See 1[e].

e. 8[b1]

See 1[c].

f. 8[b2]

See 1[d].

g. 8[c1]

See 1[g].

h. 8[c2]

See 1[h].

i. 8[c3]

See 1[i].

9. Claim 9

See 1[a3] (for power source) and 1[e] (for cartridge).

10. Claim 10

See claim 2.

11. Claim 11

See claim 3.

12. Claim 12

See claim 4.

13. Claim 13

See Claim 5.

14. Claim 14

See claim 6.

15. Claim 15

See claim 7.

16. Claim 16

a. 16[p]

See 1[e].

b. 16[a1]

See 1[f].

c. 16[a2]: two Ends/two apertures and housing with axis

See 1[b2]. Further, all references have a housing with a central longitudinal axis extending through the first end and the second end. See claim 3; see also, Ex.1007 ¶216.

d. 16[a3]

See 1[b1], claim 3.

e. 16[a4]

See 1[e].

f. 16[b1]

See 1[c].

g. 16[b2]

See 1[d].

h. 16[b3]: airflow passageway exterior adjacent to solution holding medium along majority of passageway

See 1[h]. Additionally, under Patent Owner's own contentions in the parallel ITC investigation, Xia alone and in view of Wang and/or Fang disclose or renders obvious "the airflow passageway having an exterior adjacent to the solution holding medium along a majority of the length of the airflow passageway." Ex.1007 ¶222.

i. Xia

Xia's airflow passageway has an exterior (annotated below in green) that is the outermost portion of the passageway described in 1[c]. Ex.1007 ¶223. That exterior is adjacent to the solution holding medium (liquid storage chamber 12):

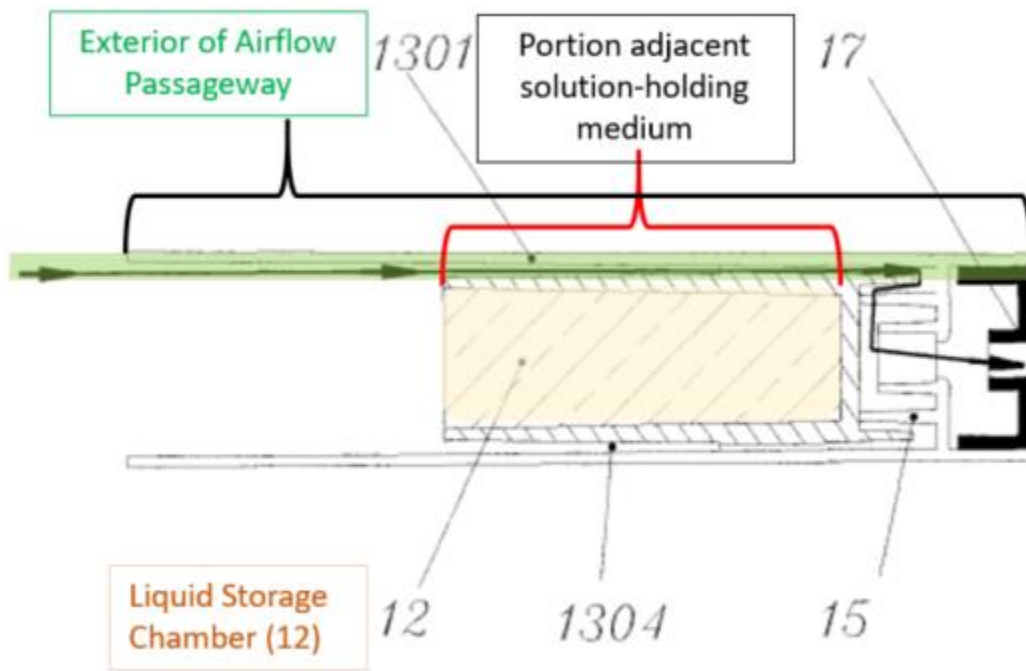
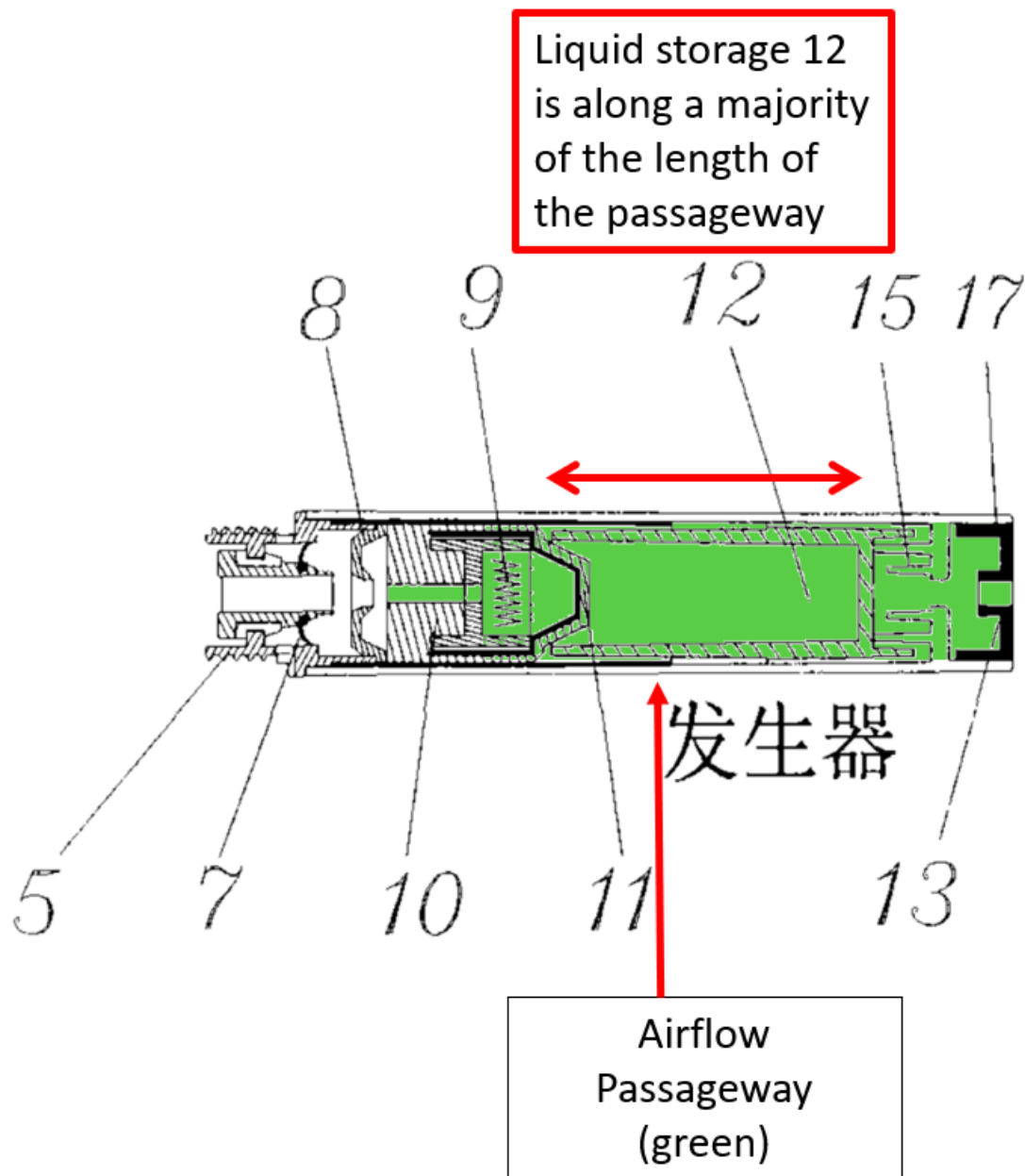


图 5

Ex. 1005, annotated Fig. 5; Ex.1007 ¶223.

As seen in Xia Figure 2, the majority of the exterior of the airflow passageway is adjacent to solution holding medium 12, as seen in Figure 2, where the airflow passageway is annotated in green:



Ex. 1004, Fig. 2, annotated.

ii. Xia combined with Wang and/or Fang

The identified obvious combinations of Xia with Wang and/or Fang also disclose this limitation, as explained in Ground 2's 16[b3], and as described and depicted in elements 1[c], 1[f], and 1[h] above. Ex.1007 ¶228.

i. 16[b4]

See claim 7.

j. 16[c1]

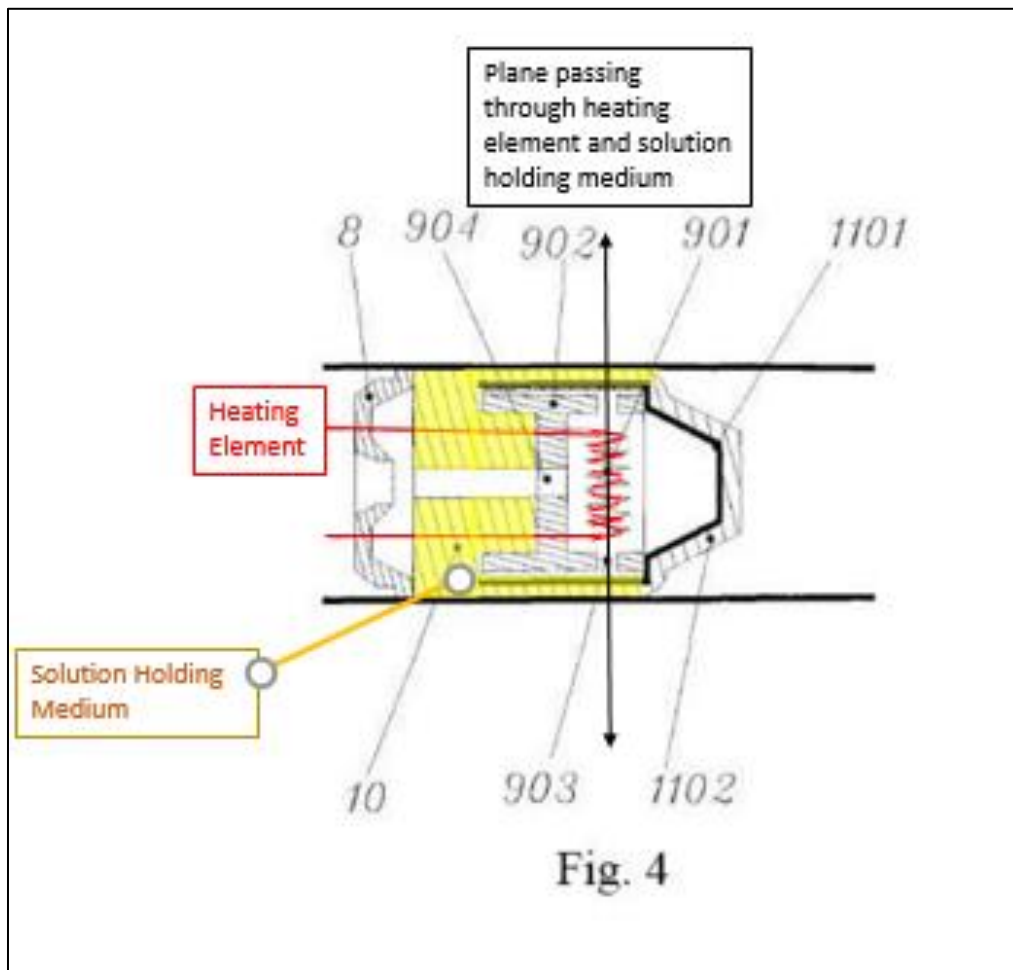
See 1[g].

k. 16[c2]: plane through the heating element and the solution holding medium

See 1[h]. Also, Xia alone, Xia in combination with Wang, Xia in combination with Fang, and Xia in combination with Wang and Fang, each alternatively discloses or renders obvious the limitation of “a plane perpendicular to the central longitudinal axis of the housing passing through the heating element and the solution holding medium.” Ex.1007 ¶231.

i. Xia

Xia's solution holding medium includes secondary liquid storage chamber 10, proximate and surrounding the heater 9/heating wire 901. As seen in annotated Figure 4, below, a plane perpendicular to the central longitudinal axis of the housing medium (the axis being left-to-right and centrally vertically) passes through a portion of the solution holding medium and the coiled part of the heating wire element. Ex.1007 ¶232.



Ex. 1004, Figure 4 (annotated)

ii. Xia with Wang and/or Fang

The identified obvious combinations of Xia with Wang and/or Fang also disclose this limitation, as explained in Ground 2 16[c2], and as described and depicted in elements 1[f]-[h] above. Ex.1007 ¶¶233-234.

I. 16[c3]

See claim 3.

m. 16[c4]

See 1[e] and [i].

n. 16[c5]

See 1[i].

17. Claim 17

See 1[a3] (for power source) and 1[e] (for cartridge).

18. Claim 18

See claims 2 and 3.

19. Claim 19

See claim 3.

20. Claim 20

See claim 4.

21. Claim 21

See claims 2 and 18.

22. Claim 22

See claim 3.

23. Claim 23

See claim 4.

24. Claim 24

See Claim 5.

25. Claim 25

See claim 6.

26. Claim 26: heating element with wicking material between solution holding medium

See 1[h] for solution holding medium component. Xia alone, Xia in combination with Wang, Xia in combination with Fang, and Xia in combination with Wang and Fang, each alternatively discloses or renders this limitation obvious. Ex.1007 ¶247.

i. Xia

Xia discloses or renders obvious this limitation in at least two ways. As explained in 1[h], the solution holding medium surrounds the heating element, and so is immediately adjacent opposite ends of the heating element. Ex.1007 ¶248. Xia's liquid guiding mechanism 11 is a claimed wicking material. For example, Xia discloses that "the chemical liquid flows from the liquid storage chamber 12 into the secondary liquid storage chamber 10 through the liquid-guiding mechanism 11" and "the heater 9 is wrapped with the liquid-guiding mechanism 11." Ex. 1004, 10. Thus liquid-guiding mechanism 11 is operable to draw the solution from liquid storage chambers 10 and 12, solutions holding medium located immediately adjacent opposite ends of the heating element, toward the heating element.

Xia's second liquid chamber 10 is also a claimed wicking material because it continues to draw the liquid from liquid-guiding mechanism 11 and item 1102

extending on opposite sides of the heater toward the airflow passageway and toward the heating element. Ex.1007 ¶248.

ii. Xia with Wang and/or Fang

If Wang is combined with Xia (with or without Fang) as described above, Wang discloses this limitation because organic fiber 105 is wound around the heating element in conjunction with the tobacco extract 103 and acts as a wicking element to draw the solution to the heating element from all ends, including those opposite each other. Ex. 1005, 7; Ex.1007 ¶249.

Xia combined with Fang as discussed above also discloses this limitation. Fang discloses a wicking element in the form of its temporary oil storage 15 that draws the solution from the oil storage device, located adjacent both ends of the heating element. Ex. 1006, 6 (“due to the action of the capillary tubes, the temporary oil storage device 15 sucks in nicotine oil stored in the nicotine oil storage device 14, when the electric heating film wire 16 is powered on to heat, nicotine oil on the temporary oil storage device 15 is fumed to produce nicotine oil smoke.”). NJOY asserts that Fang has “a wick in contact with the liquid in the liquid reservoir” in parallel litigation. Ex. 1022, pg. 147 (element 1.I)] (citing “Fang 044 at p.5 ¶3; p.6 ¶¶4–5; p.7 ¶1; Figs. 1–2.”).

27. Claim 27

See claim 7; *see also*, Ex.1007 ¶250.

B. Ground 2: Wang Alone And In View Of Fang

The Challenged Claims of the '881 Patent are obvious in view of Wang alone or in combination with Fang.

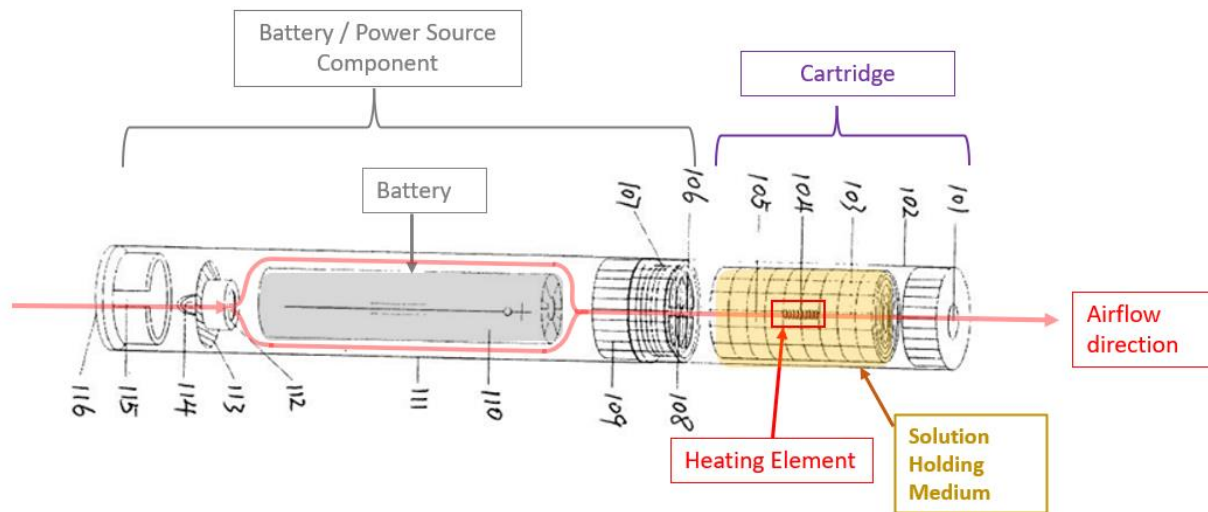
1. Claim 1

a. 1[p]: apparatus

Wang discloses an apparatus, “[a]n electronic pure cigarette.” *E.g.*, Ex. 1005, 5.

b. 1[a1]: power source

Wang’s device includes “Battery 110” on the left in Figure 1 below (also Fig. 2), *i.e.*, in “cigarette rod shell 111.” The battery powers the heating element 104 in the cartridge component (“cigarette holder part,” the right of Fig. 1 below, and Fig. 3), through various connections described below: Wang’s device contains “a device that controls a battery to discharge through smoking motions, thereby driving an electric heater to generate heat, and further atomizing a tobacco extract.” Ex. 1005 at 4.



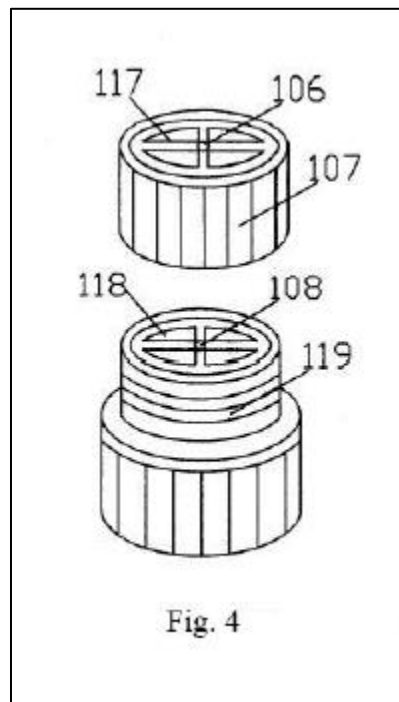
Ex. 1005, Fig. 1 (annotated). The power source may be considered to be the cigarette rod shell 111 and its internals, *e.g.* the battery, the battery itself, or the battery plus some other components, such as electrode 119, within 111, as a POSITA would understand any of these would constitute “a power source.” Ex.1007 ¶254.

c. 1[a2]: battery

See 1[a1].

d. 1[a3]: electrically conductive portion of power source

Wang’s Figure 4 shows the mechanical and electrical connection (as required by element 1[e] below) of “cigarette rod shell 111” (which contains the battery) and the cartridge, “cigarette holder part” / “cigarette holder shell 102:



Ex. 1005, Fig. 4.

Multiple electrically conductive portions within the power source are disclosed. Wang states: “the input end of the cigarette holder matches the output end of the cigarette rod, the two poles are isolated by an insulating material, and are connected with the output end of the cigarette rod, that is, the two poles are connected to the output end, respectively, an electrode 117 is in butt joint with an electrode 107, the electrode 107 is in butt joint with an electrode 119, and the air inlet 106 and the air outlet 108 are also in butt joint, thereby playing the role of fixing the cigarette holder and the cigarette rod as a whole. The input end of the cigarette holder and the output end of the cigarette rod may be of screw-fit structures, may also be of plug-fit structures.” Ex. 1005 at 8.

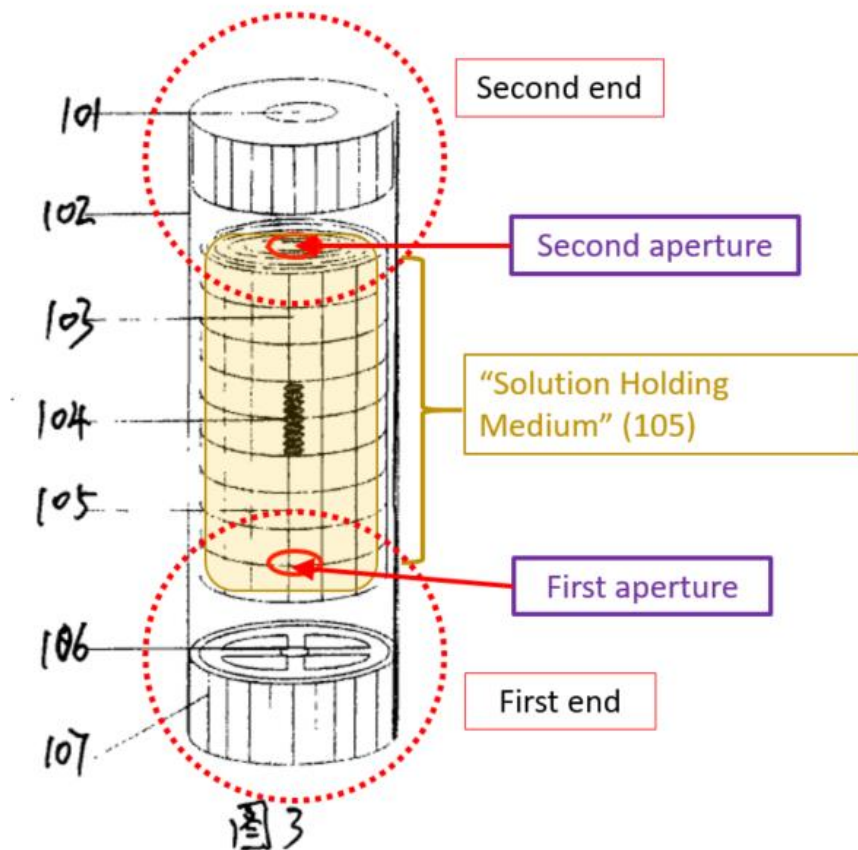
Thus, either connecting electrode 119 and/or another un-shown electrical conductive portion is used to connect the battery 110 in 111 to the heating element 104 in cartridge 102 and is both are an electrically conductive portion. Ex.1007 ¶258. The battery itself also contains an electrically conductive portion, as a POSITA would understand. *Id.*

e. 1[b1]: cartridge housing interior

As shown in Figure 3, Wang's cartridge has a housing ("cigarette holder shell 102," that "is a hollow cylinder"), which has an interior, in which the heating element 104 and solution holding medium 105 are, for example. Ex. 1005, Fig. 3. Wang states that "cigarette holder shell 102 is a hollow cylinder" that "pro-vides a space for smoke produced when the tobacco extract 103 in the organic fiber 105 is heated by the electric heater 104" where the "tobacco extract 103...is natural tobacco absolute oil [that]...is first vaporized into smoke." Ex. 1005, 7.

f. 1[b2]: two ends/two apertures

Under Patent Owner's current contentions in the ITC cases and the prior district court analysis, Wang's cartridge has a first end and a second end that is opposite the first end as well as a first aperture on the first end and a second aperture on the second end, of the housing:



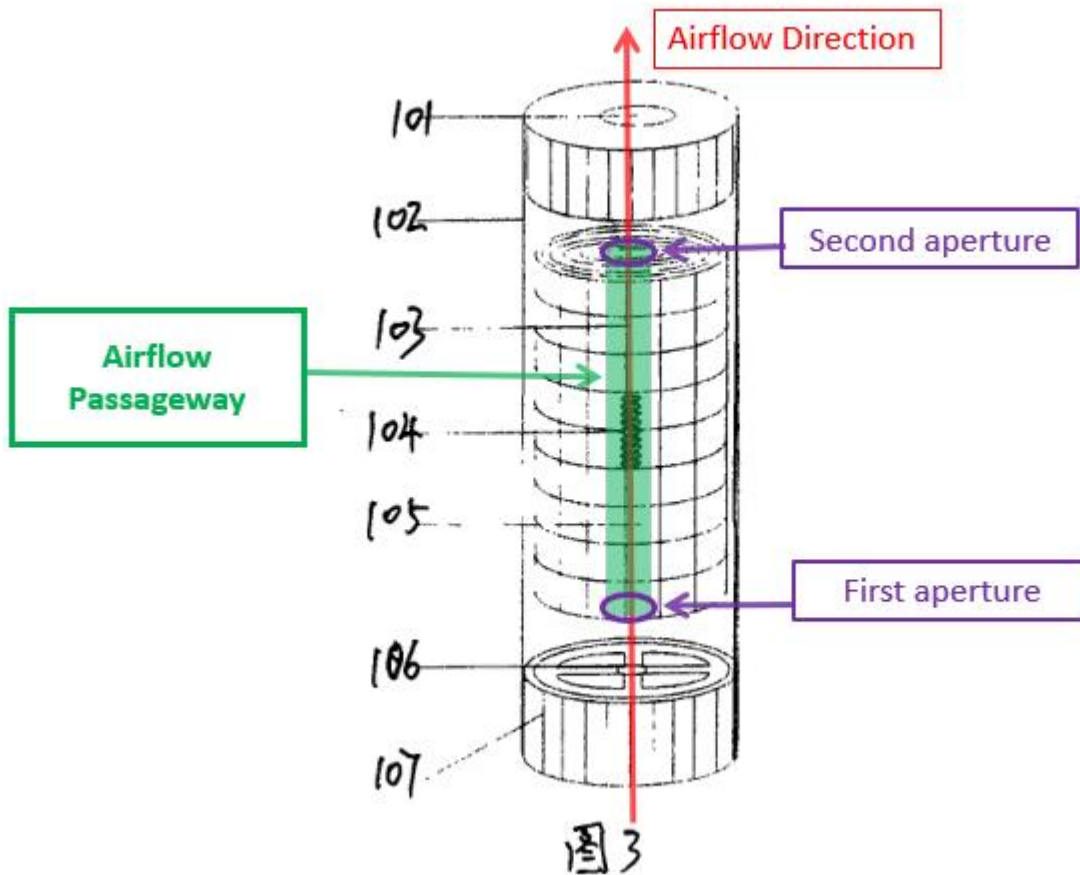
Ex. 1005, Fig. 3. As shown above, the two ends are opposite one another. Ex.1007 ¶260.

g. 1[c]: central/axial airflow passageway between apertures

i. Wang

Wang discloses this element for the same reasons as discussed in Ground 1's

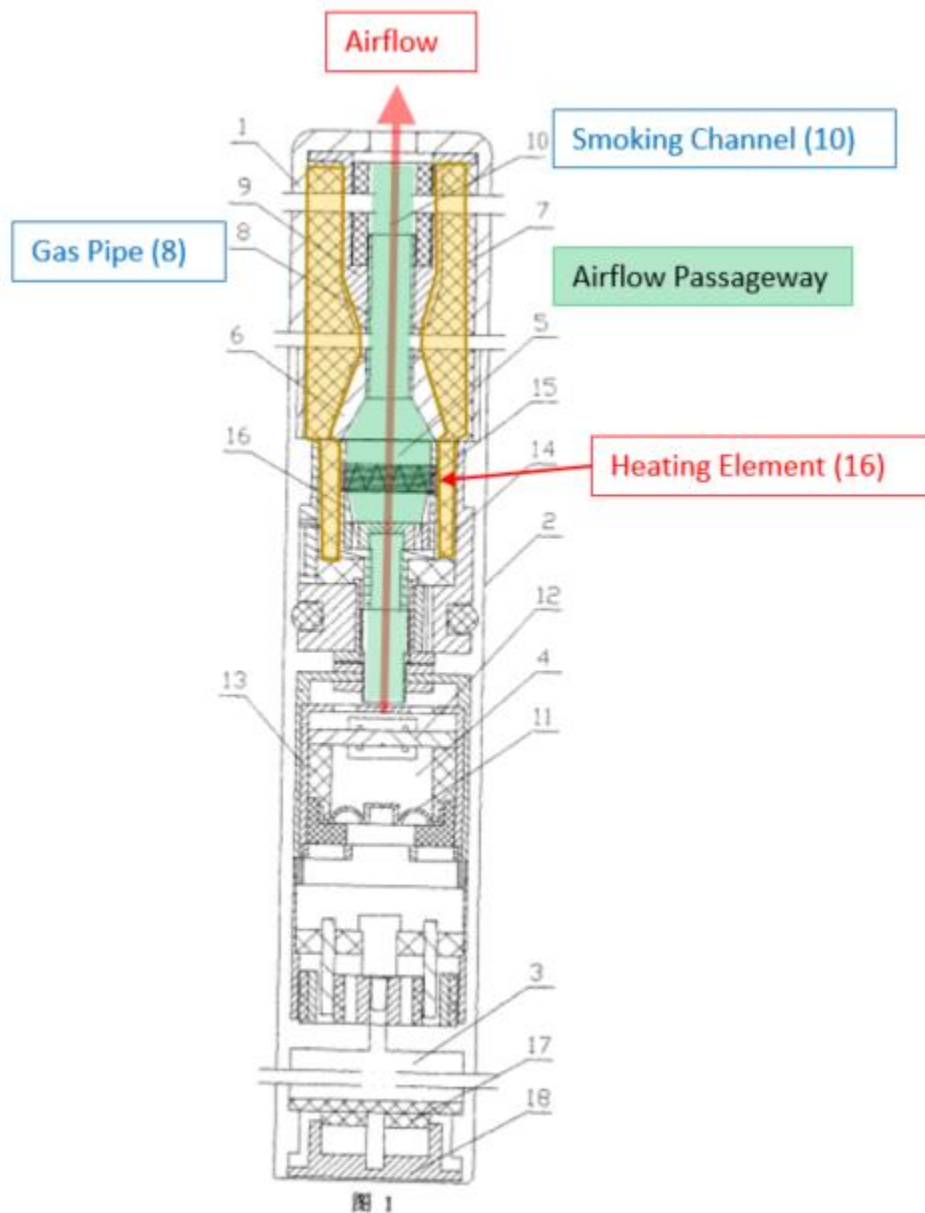
1[c]:



A POSITA would also be motivated to modify the image above so that the solution holding medium and the passageway reached to air inlet 106 and air outlet 101, as it would then allow greater volume for the solution-holding medium 105. Ex.1007 ¶263.

ii. Wang with Fang

If NJOY argues Wang does not teach this limitation, it was obvious over Wang in view of Fang. As explained above in Ground 1's 1[c] and as seen below, Fang teaches a central and axial airflow passageway:



Ex. 1006, annotated Fig. 1; Ex.1007 ¶265.

As established above in Ground 1's 1[c], it was obvious to use Fang's claimed airflow passageway in place of Wang's. A POSITA would be motivated to modify Wang such that it had a central and axial uniform, cylindrical passageway through

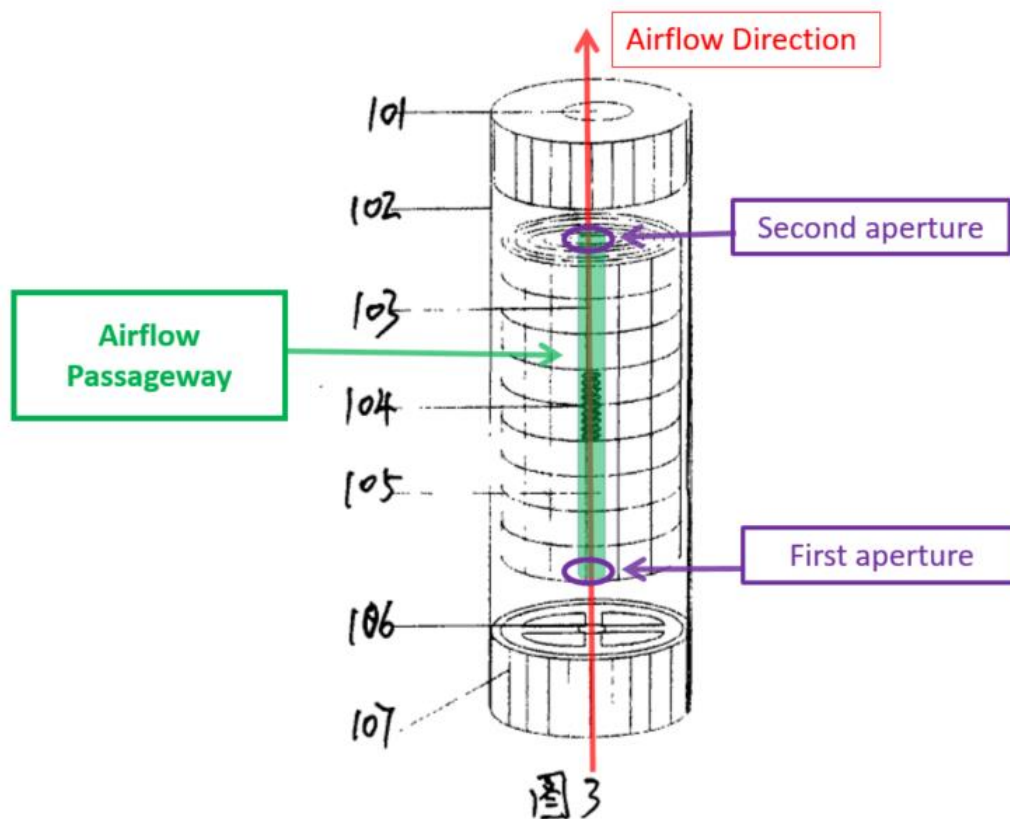
the center of the cylinder of the cartridge by creating a space, to the extent it is not already disclosed, within the solution holding medium 105 for the passageway and extending the passageway from one aperture to the other, with the solution holding medium around it the entire length to maximize liquid storage. Ex.1007 ¶266. Further, a POSITA would know that to connect the liquid to the heating element, one could use the wicking material in the form of item 15 of Fang, which accomplishes that function in Fang, in the middle of the airflow passageway and connecting to the solution holding medium, and the heating element of Wang or that of Fang wrapped around the wicking material 15. Ex.1007 ¶267.

A POSITA would understand the obvious benefits a simple design such as airflow passageway that runs centrally and axially between the two apertures, in creating a uniform, consistent airflow that exists the device at the mouthpiece. Ex.1007 ¶268. The resulting device would: (1) maintain Wang's two-piece system and first aperture, as well as, the electrical components described, but; (2) modify Wang's solution holding medium to wrap around the airflow passageway and heating element and orient the heating element horizontally across the airflow, based on the architecture of these elements in Fang.

h. 1[d]: airflow passageway/airflow between apertures

i. Wang

As established above in Ground 1's 1[c]-[d], Wang discloses that the airflow passageway allows airflow through the cartridge from the first aperture to the second. Air enters Wang's cartridge through "air inlet 106." Ex. 1005, 8. Air flows into gap in the rolled "organic fiber 105," flows over the "heater 104," and exits to the user via "air outlet 101"). Ex. 1005, 7-8. In doing so, the air flow passes through the cartridge from the first aperture to the second:



Ex. 1005, 7-8, annotated Figure 3; Ex.1007 ¶271.

ii. Wang with Fang

As established, it was obvious to use Fang's claimed airflow passageway in place of Wang's airflow passageway. In the resulting combination, the airflow passageway would permit an airflow through the housing from the first aperture to the second aperture. Ex.1007 ¶272.

i. 1[e]: conductive first end to power source

i. Wang

Under Patent Owner's own contentions, Wang discloses that "the output end 109 of the cigarette rod and the input end 107 of the cigarette holder are connected together," thus establishing that item 107 within the housing of the cartridge establishes mechanical connection to the cigarette rod portion 111 and the battery contained therein. Ex.1007 ¶274-275.

Item 107 in the cartridge 102 also provides electrical coupling to the power source via, *e.g.*, electrode 117, as explained in element 1[a3] above, *e.g.*: "the input end [107] of the cigarette holder matches the output end of the cigarette rod, the two poles are isolated by an insulating material, and are connected with the output end of the cigarette rod, that is, the two poles are connected to the output end, respectively, an electrode 117 is in butt joint with an electrode 107, the electrode 107 is in butt joint with an electrode 119, and the air inlet 106 and the air outlet 108 are also in butt joint, thereby playing the role of fixing the cigarette holder and the cigarette rod as a whole."). Ex. 1005, 8.

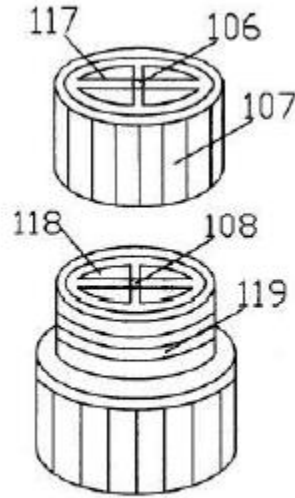


Fig. 4

Id., Fig 4. Thus, Wang makes clear that the “electric heater 104” in the cartridge (“cigarette holder part” containing items 107, 106 and 117 above) is electrically coupled to the “battery 110” in the cigarette rod part, via the “the first end of the housing,” through elements 107 in the cartridge, and 109 in the cigarette holder part (containing items 108, 118, and 119 above), among others that those contain. Though not illustrated in Figure 1, below, a POSITA would understand that the heating element (104) is in contact with, and electrically coupled, to the first end of the housing. Ex.1007 ¶276. *See also* Ex. 1017 (Wang Decl.), 4-5.

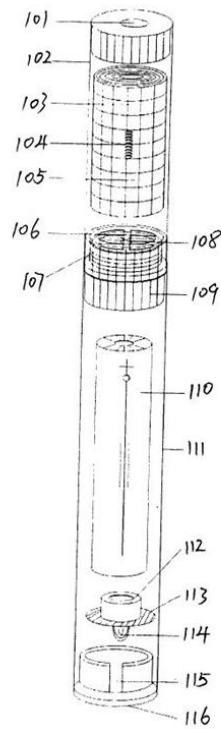


Fig. 1

Ex. 1005, Fig. 1.

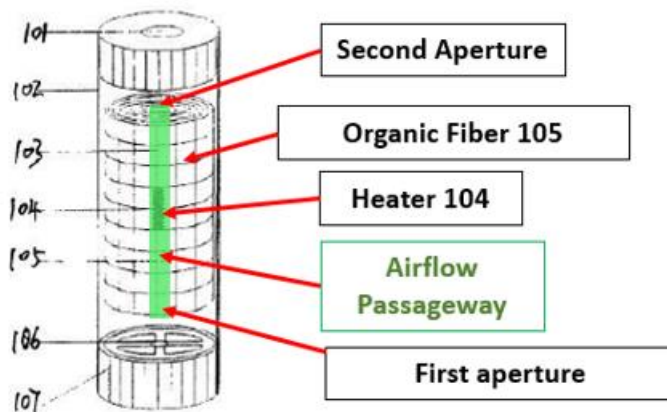
ii. Wang with Fang

The obvious substitution of Fang's passageway for Wang's would not alter Wang's foregoing two-piece system or its electrical and mechanical connections, and this limitation would remain in the resulting combination. Ex.1007 ¶277.

j. 1[f]: solution holding medium

i. Wang

As shown below above, Wang's cartridge contains a solution holding medium in the form of an absorbent organic fiber 105, which is positioned around that heater 104. *Id.*, 6-7, 8.

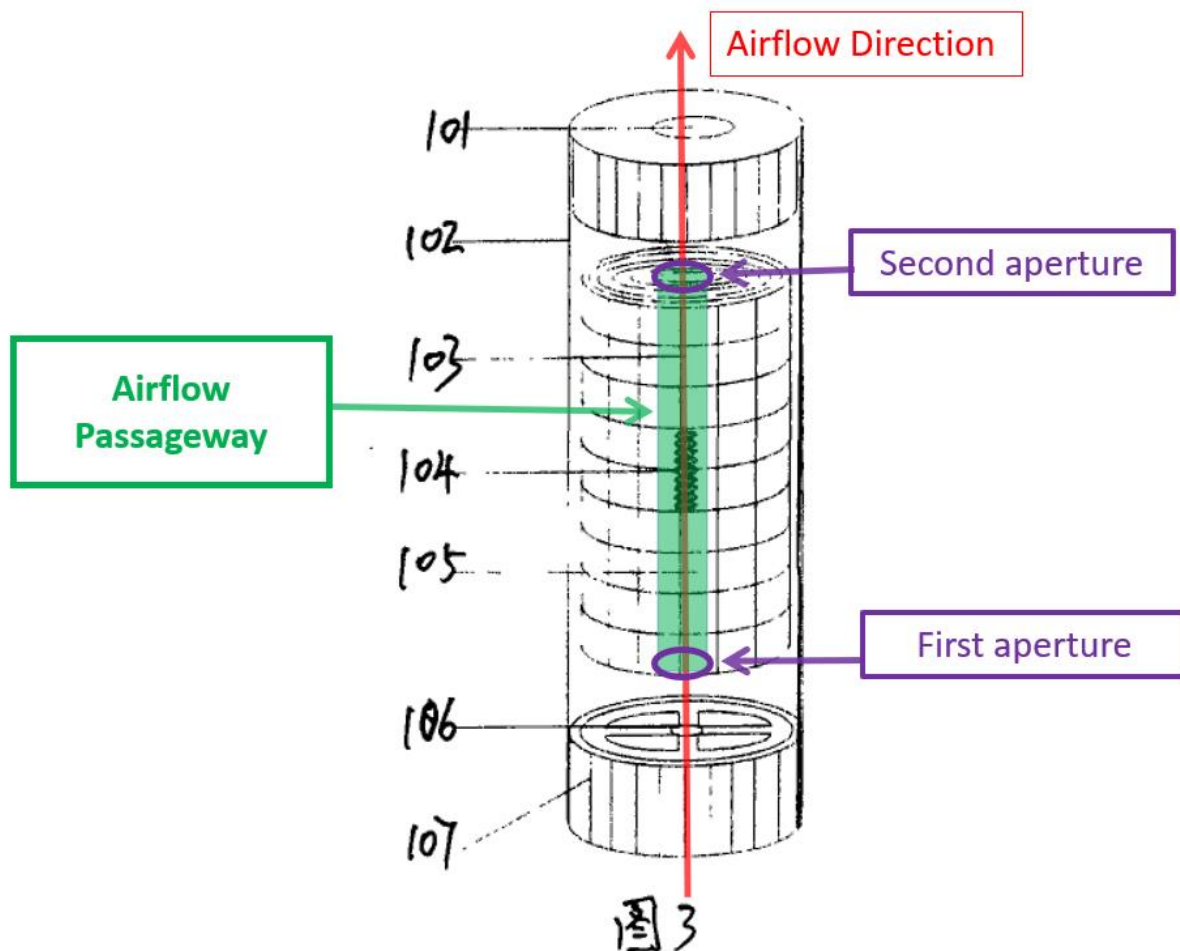


ii. Wang with Fang

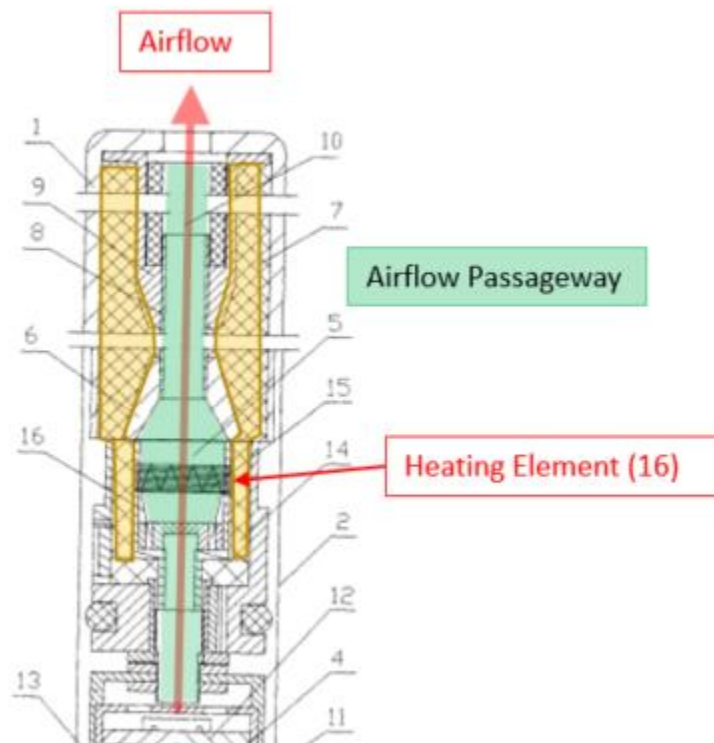
The obvious substitution of Fang's passageway for Wang's need not alter Wang's solution holding medium, and this limitation would remain in the resulting combination. Ex.1007 ¶281.

k. 1[g]: heating element in housing, transverse to airflow

As discussed in Ground 1's 1[g], Wang discloses this limitation. As shown below, Wang's heating element 104 is within the airflow passageway and the airflow flows over and around that heater:



The same is true if Fang's airway passageway is substituted for Wang's because the associated heating element will still be in the combination's resulting airflow passageway such that airflow may pass directly over it. Ex.1007 ¶287. Moreover, Fang's heating element is oriented perpendicularly to the airflow passageway, as shown in Fang's Figure 1:



Ex. 1006, partial, annotated Fig. 1; Ex.1007 ¶ 287.

This orientation increases the surface area of the heater that comes into contact with the airflow and with the nicotine solution and also provide for a wider airflow passageway between the heater and the mouthpiece while simultaneously helping to reduce the length of the electronic cigarette for increased portability. Ex.1007 ¶ 288. The design would more evenly distribute the heat applied to the vapor across the longitudinal axis of the electronic cigarette which may limit the maximum heat of the vapor and result in a more pleasant smoking experience. Accordingly, 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. Ex.1007 ¶ 288. Additionally, designing the heater in this manner is as equally simple of a design as that of Wang, and the choice is not given any particular importance within Wang.

I. 1[h]: solution holding medium surrounds passageway and heating element

i. Wang

As established in Ground 1's 1[h], Wang discloses this limitation regardless of whether the solution holding medium must surround the entire airflow passageway because, as shown below, Wang's solution holding medium 105 surrounds the entire identified airflow passageway and the heating element:

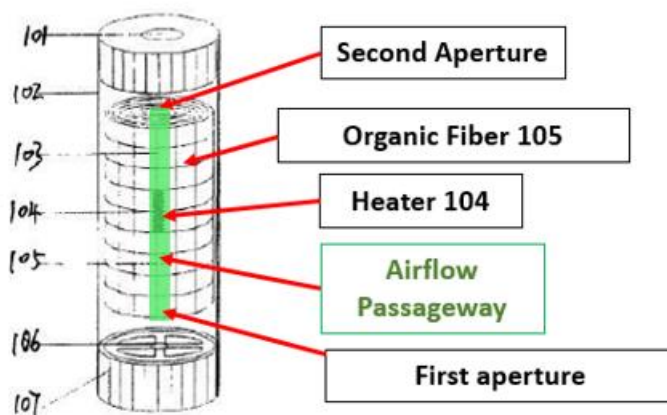


Fig. 3

In the prior litigation, the inventor Mr. Wang confirmed that his invention's absorbent organic fiber 105 "surrounds a complete central air passageway, in which the heater is positioned." Ex. 1017 (Wang Decl.), 4-5.

ii. Wang with Fang

Wang in view of Fang also renders obvious this limitation. Fang discloses this limitation as explained above in Ground's 1[h]. Ex.1007 ¶ 291. The obvious combination of Wang and Fang described in Ground 2's 1[c] would result in the solution holding medium surrounding the airflow passageway and the heating element. A POSITA would have been motivated to make this modification for the reasons identified above in 1[c] and because changing the solution holding medium and airflow passageway as described would prevent the heated vapor from contacting the inner wall of the housing, which is typically, and is in Wang, very thin. Ex.1007 ¶ 291. The solution holding medium acts as a barrier and insulator, which reduces heat loss and the sensation of the device warming. Therefore, the user will not feel the device being heated, as the solution is vaporized. Ex.1007 ¶ 292. Such a solution also maintains the temperature of the vapor in a more predictable and consistent way in colder environments. Id.

m. 1[i]: electrical heating element to vaporize liquid for delivery via second aperture

Wang alone, and Wang in combination with Fang, each alternatively discloses or renders obvious this limitation. Ex.1007 ¶293. Wang discloses a cigarette rod shell 111 with a battery 110, that connects to a cartridge (“the cigarette holder”), containing a heating element 104, which is powered by the battery, as described in 1[a1]-1[a3] and 1[e] above. Ex. 1005, 2-3. Wang also states that “[s]ince the tobacco

extract 103 is in a liquid or paste state, when heated, the tobacco extract 103 is first vaporized into smoke.”) Ex. 1005, 4.

The heating of the heating element is “responsive to electrical power received from the battery through the electrically conductive portions of the cartridge and the power source” as explained in 1[a1]-[a3] and 1[e] above. Ex.1007 ¶ 294.

Additionally, Wang discloses that once the tobacco extract is vaporized it is delivered orally to an individual via its second aperture and then finally via air outlet 101. “[T]he smoke generated by the tobacco extract 103 instantly heated by the heater 104 is partially sucked out from the air outlet 101 of the cigarette holder.” Ex. 1005, 8.

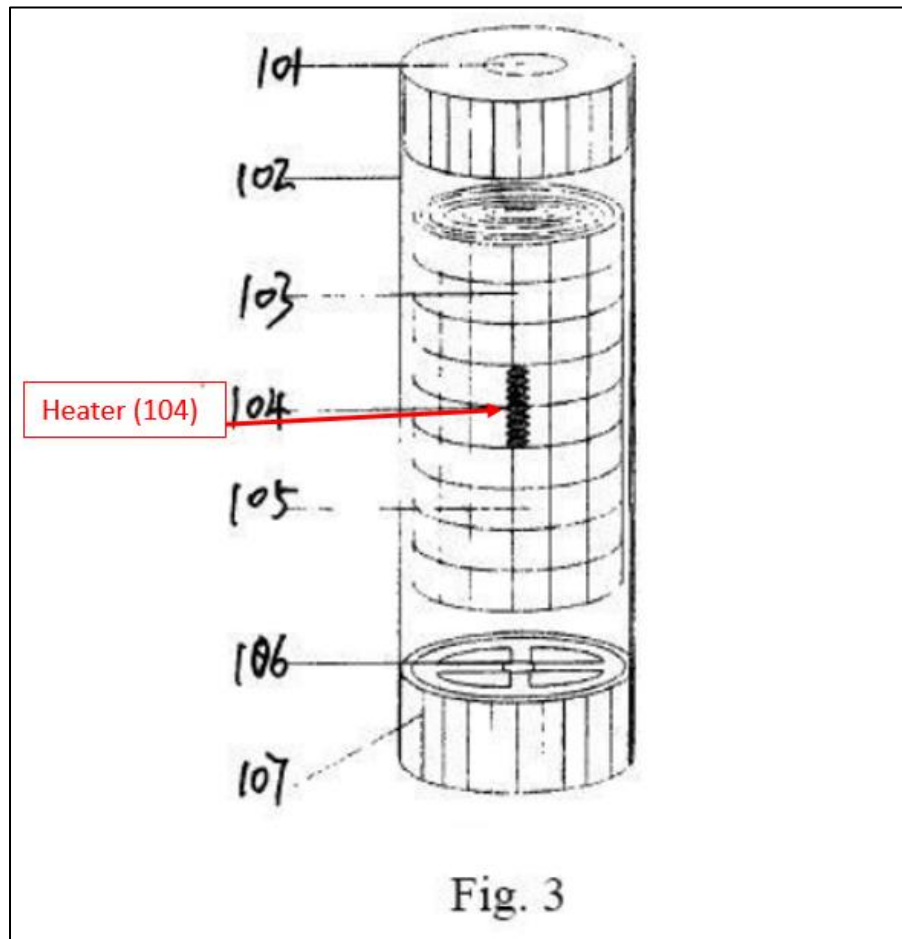
To the extent this element requires mixing of vapor and airflow separately from, or in addition to, air flowing over the heating element, Wang discloses that limitation. For example, in Wang the vapor mixes with existing air in an airflow gap that is between the solution holding medium and the second aperture, through which the combined air and vapor exits. Ex.1007 ¶ 296.

2. Claim 2: coil heating element with max. diameter relative to airflow passageway

a. Wang

As depicted in Figure 3, Wang discloses that heating element 104 can be a coil and the maximum diameter of Wang’s heater is necessarily smaller than the

diameter of the circular cross section of the length of the airflow passageway within which it sits:



Ex. 1005, Fig. 3 (annotated); Ex. 1007 ¶ 298. Moreover, a POSITA would also know that a coil is a very common shape for a heating element, especially within cylindrical shape, such as the electronic cigarette housing of Wang. Ex.1007 ¶ 299.

Furthermore, as described in Ground 1's 1[c] and claim 2, and 1[c] above, the airflow passageway in Wang has a circular cross section having a diameter along a majority of its length. Ex.1007 ¶ 301.

b. Wang with Fang

Wang as modified by Fang as described above also meets this requirement. Using the coil orientation of Fang does not change the size of the coil in Wang, and using Fang's coil also meets the requirement as explained in Ground 1. To the extent the passageway is modified by Fang, the passageway would be uniform and cylindrical in nature, as described above in 1[c] and 1[h]. Ex.1007 ¶ 302.

3. Claim 3: central/axial first aperture equal to or smaller than airflow passageway and second aperture

a. Wang

As depicted in Claim 1 and Ground 1 above, the first aperture is located centrally and axially with respect to the housing. It has a circular cross-sectional area measured perpendicular to a longitudinal axis. See Ground 1, claim 3. As shown in 1[c] above and in Ground 1, Wang's airflow passageway and second aperture are equal to or larger than the first aperture.

To the extent Wang's airflow passageway interior is not seen as equal to or larger than the area of the first aperture, a POSITA would have found it obvious to modify with Fang to ensure that the cross-sectional area of the airflow passageway is not smaller than that of the first aperture to ensure proper pressure drop and airflow exiting the device. Ex.1007 ¶ 301.

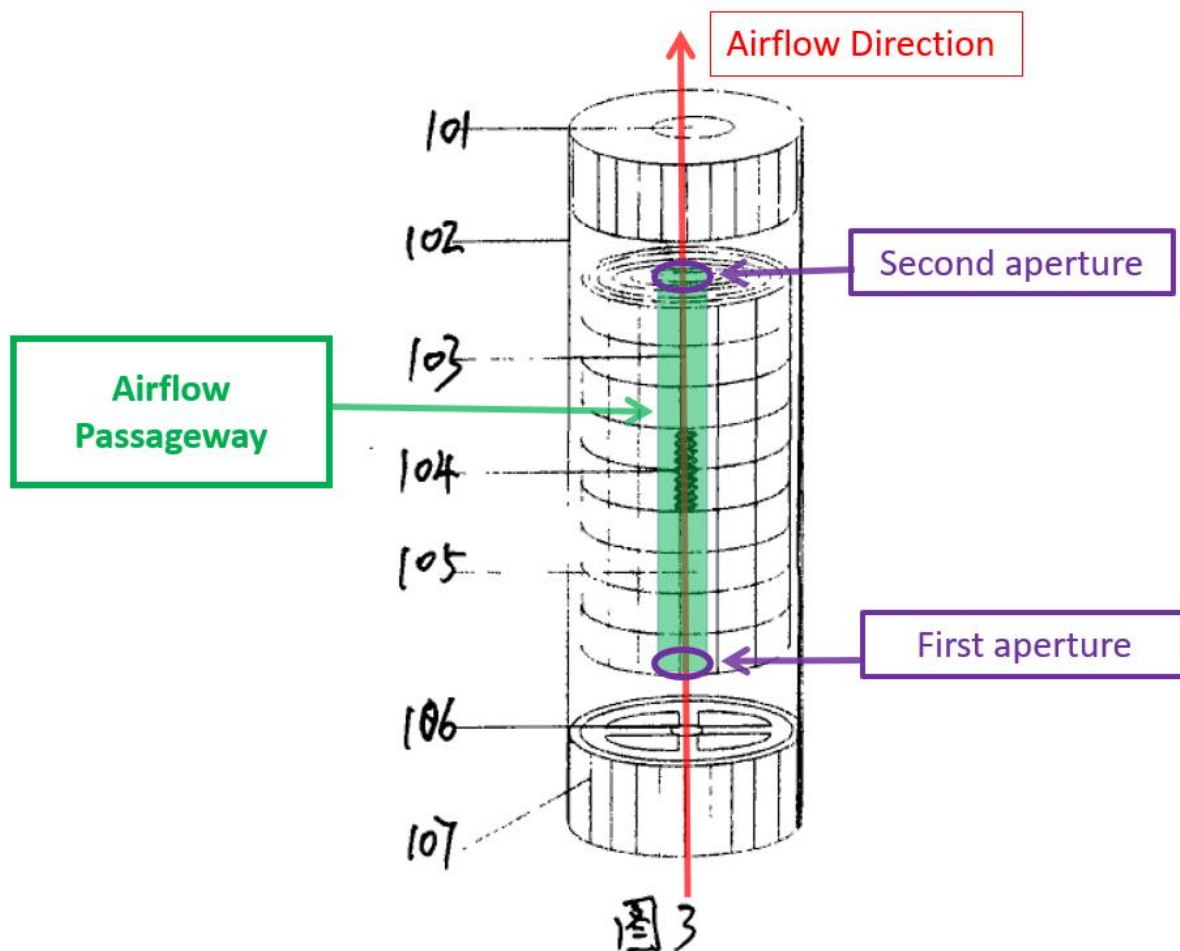
b. Wang with Fang

The modification of Wang with Fang would not affect the presence of this limitation, so the analysis above would remain true. Ex.1007 ¶ 306.

4. Claim 4: first aperture smaller than second aperture

a. Wang

To the extent the first aperture on the first end is not seen as smaller than the second aperture on the second end, in Figure 3 of Wang below, a POSITA would have been motivated to make this change, ensuring that the first aperture was smaller than the second aperture to ensure proper airflow exiting the device, as was known in the art, *e.g.*, in Xia as depicted above in Ground 1. Ex.1007 ¶ 308.



Ex. 1005, Fig. 3.

b. Wang with Fang

The modification of Wang with Fang would not affect this limitation, so the analysis above would remain true. Ex.1007 ¶ 309.

5. Claim 5: absorbent material or reservoir

Wang discloses at least a solution holding medium including absorbent material. Ex.1007 ¶ 310. “[A] a certain proportion of nicotine is mixed in after the

tobacco extract is diluted with alcohols in a certain proportion, and then a mixture quantitatively soaked in the organic fiber 105.” See [8a] regarding reservoir.

6. Claim 6: propylene glycol and nicotine solution

Wang discloses that its solution comprises nicotine: “The tobacco extract 103 of the cigarette holder is natural tobacco absolute oil, a certain proportion of nicotine is mixed in after the tobacco extract is diluted with alcohols in a certain proportion, and then a mixture quantitatively soaked in the organic fiber 105.” Ex. 1005, 4.

7. Claim 7

See claim 2.

8. Claim 8

a. 8[p]

See 1[e].

b. 8[a1]: reservoir

See 1[f].

i. Wang

To the extent that the reservoir is required to be made from a hard, impermeable material, a POSITA would have been motivated to modify the solution holding medium of Wang, described as “organic fiber 105,” with Fang’s. Wang would benefit from such a modification because it would provide a place to hold the fiber, allows for replacement of the fiber if it degrades, prevents leakage of liquid from the fiber, and prevents direct inhalation of the liquid before it is vaporized, as

described in Fang, and it would which would be an obvious variation for a POSITA.
Ex.1007 ¶ 316.

ii. Wang with Fang

As previously described, in Ground 1, element 8[a], Fang’s solution holding medium is flanked on all sides by hard, non-porous material that would hold liquid and satisfy the requirement for a “reservoir.” A POSITA would have been motivated to use a hard tank around Wang’s organic fiber for the reasons described above.
Ex.1007 ¶ 317.

c. 8[a2]

See 1[b2].

d. 8[a3]

See 1[e].

e. 8[b1]

See 1[c].

f. 8[b2]

See 1[d].

g. 8[c1]

See 1[g].

h. 8[c2]

See 1[h].

i. 8[c3]

See 1[i].

9. Claim 9

See [1a3] (for power source) and [1e] (for cartridge).

10. Claim 10

See claim 2.

11. Claim 11

See claim 3.

12. Claim 12

See claim 4.

13. Claim 13

See claim 5.

14. Claim 14

See claim 6.

15. Claim 15

See claim 7.

16. Claim 16

a. 16[p]

See 1[e].

b. 16[a1]

See 1[f].

c. 16[a2]: two ends/two apertures and housing with axis

See element 1[b2]; *see also*, Ex.1007 ¶334. Further, Wang and Fang have a housing with a central longitudinal axis extending through the first end and the second end. See claim 3 above and Ground 1's claim 3.

d. 16[a3]

See 1[b2], claim 2.

e. 16[a4]

See 1[e].

f. 16[b1]

See 1[c].

g. 16[b2]

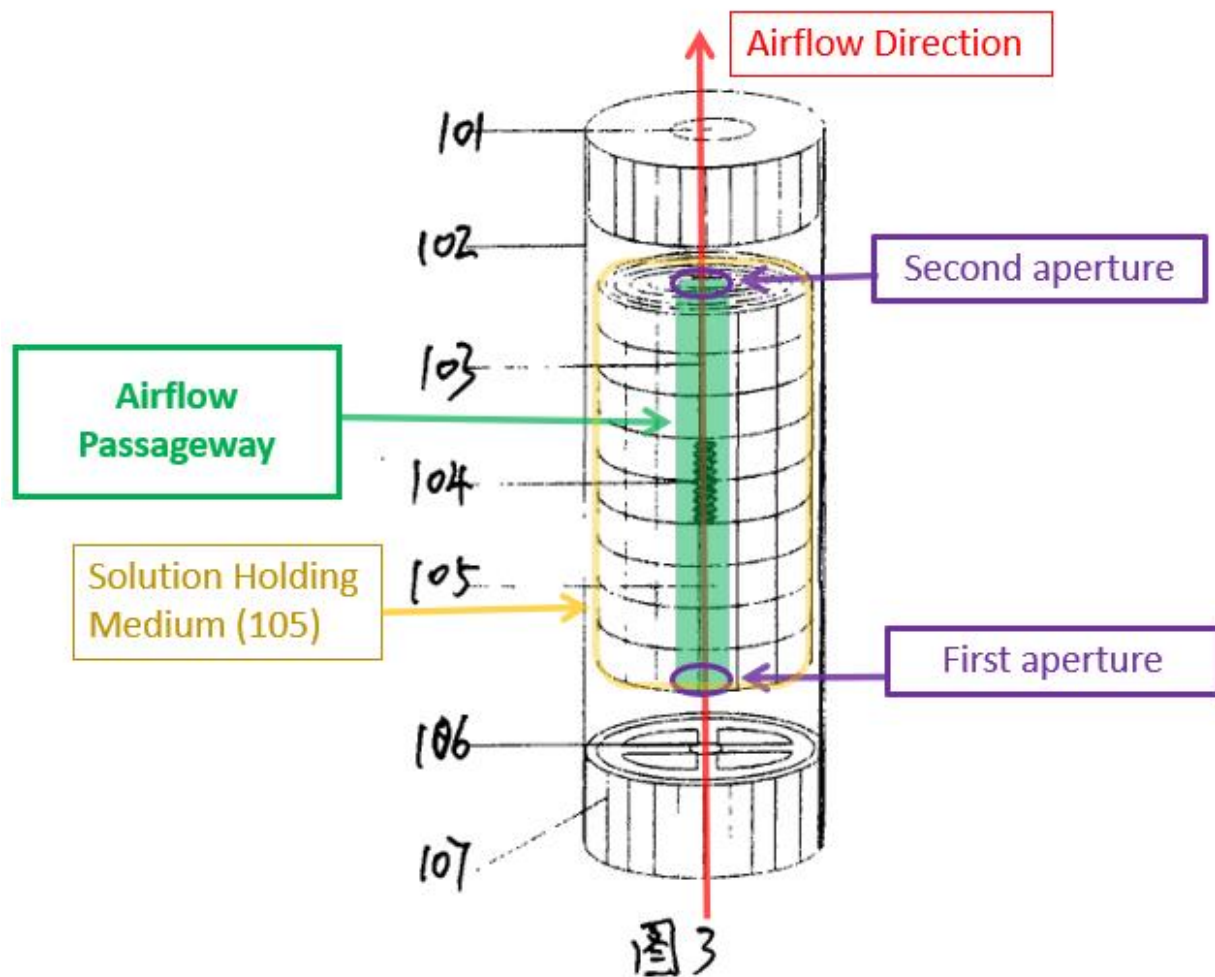
See 1[d].

h. 16[b3]: airflow passageway with exterior adjacent to the solution holding medium along majority of passageway

See 1[h] and Ground 1's 16[b3]. Additionally, under Patent Owner's own contentions in the parallel ITC investigation, Wang alone or in combination with Fang discloses or renders obvious "the airflow passageway having an exterior adjacent to the solution holding medium along a majority of the length of the airflow passageway." Ex.1007 ¶339.

i. Wang

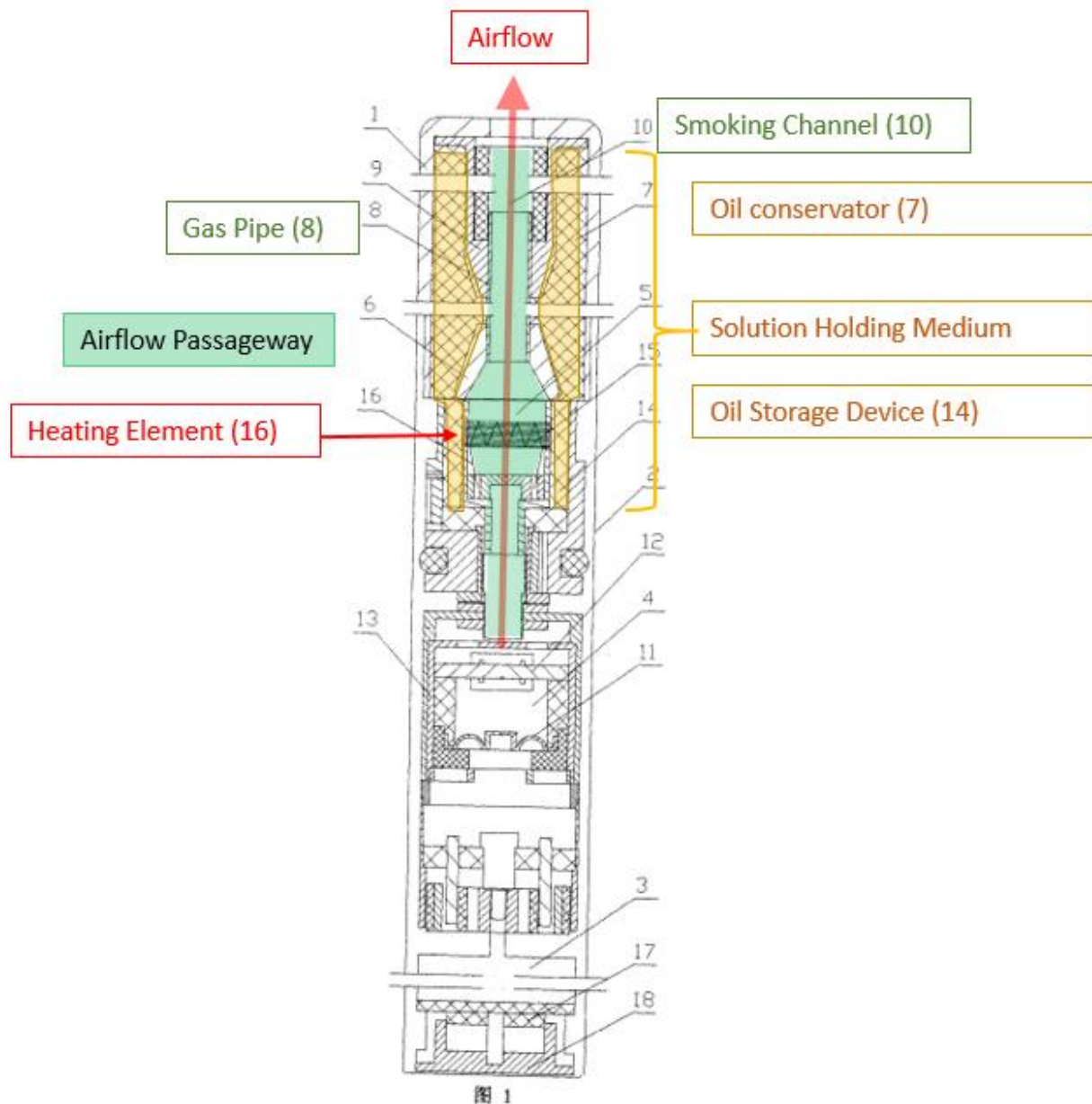
In Wang, the solution holding medium surrounds the airflow passageway along a majority of the length of the passageway and thus an exterior of the airflow passageway is adjacent to the solution storage medium along the majority of its length.



ii. Wang with Fang

Wang as modified with Fang also discloses that the solution holding medium surrounds the airflow passageway along a majority of the length of the passageway,

at least because in Fang the solution holding medium surrounds the airflow passageway along a majority of the length of the passageway and so meets this claim limitation as well. See 1[h], 1[c]; see also, Ex.1007 ¶ 340.



i. 16[b4]

See claims 2, 7.

j. 16[c1]

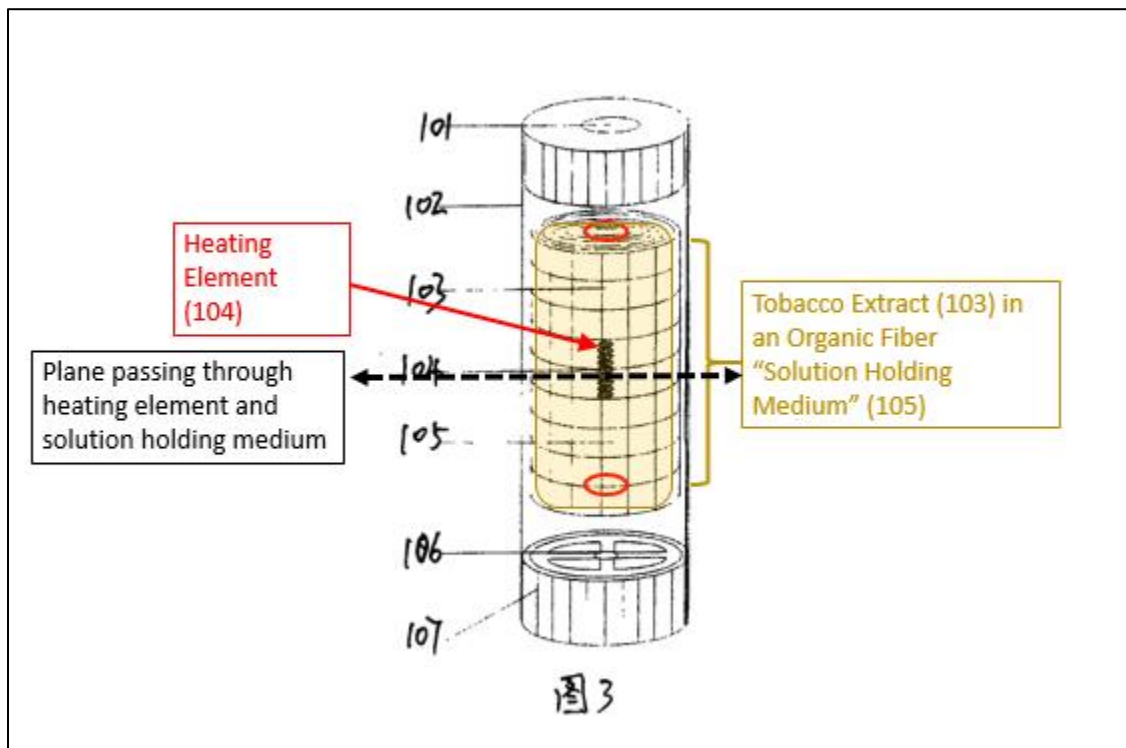
See 1[g].

k. 16[c2]: plane through the heating element and the solution holding medium

See 1[h]. Wang alone, and Wang in combination with Fang, each alternatively discloses or renders obvious this limitation. Ex.1007 ¶ 344.

i. Wang

In Wang, a plane perpendicular through the longitudinal axis passes through both the heating element and solution holding medium.



Ex. 1005, Figure 3 (annotated).

ii. Wang with Fang

Wang as modified with Fang discloses this limitation for the same reasons as above, because in the modification, the solution holding medium continues to surround the heating element. Ex.1007 ¶ 346.

l. 16[c3]

See claim 3.

m. 16[c4]

See 1[e] and [i]; Ex. 1017 (Wang Decl.), 4-5.

n. 16[c5]: electrical heating element to vaporize liquid for delivery via second aperture

See 1[i].

17. Claim 17

See 1[i] (for power source) and 1[e] (for cartridge).

18. Claim 18: coil heating element with maximum diameter relative to circle airflow passageway

See claim 2. Wang alone, and Wang in combination with Fang, each alternatively discloses or renders obvious the additional element recited that “the airflow passageway is a circle having a diameter” as described in claim 2 and in Ground 1, claim 2. For the same reasons described in claim 2, Wang also renders this claim obvious as the cross-sectional area of the airflow passageway is a circle. Ex.1007 ¶ 351.

19. Claim 19

See claim 3.

20. Claim 20

See claim 4.

21. Claim 21

See claims 2, 18.

22. Claim 22

See claim 3.

23. Claim 23

See claim 4.

24. Claim 24

See claim 5.

25. Claim 25

See claim 6.

26. Claim 26: heating element with wicking material between solution holding medium

See element 1[h], for solution holding medium limitation. Wang alone, and Wang in combination with Fang, each alternatively discloses or renders obvious this limitation. Ex.1007 ¶ 359.

a. Wang

Wang discloses the use of organic fiber, soaked with a solution, to deliver the solution to the heating element. Wang states that the “tobacco extract 103...is natural tobacco absolute oil, a certain proportion of nicotine is mixed in after the tobacco extract is diluted with alcohols in a certain proportion, and then a mixture quantitatively soaked in the organic fiber 105. Since the tobacco extract 103 is in a liquid or paste state, when heated, the tobacco extract 103 is first vaporized into smoke.”) Ex. 1005, 4. Thus, a portion of the solution is drawn toward the heating element via element 105, acting as a wicking material, where the portion that holds the solution is located immediately adjacent both opposite ends of the heating element. Ex.1007 ¶ 360.

b. Wang with Fang

As described in Ground 1’s claim 26, Fang’s “oil storage device (14)” flanks both sides, or opposite ends, of the heating element with a portion that extends through the ‘heating film wire (16)’ and draws solution to both ends, and thus in the modification in which the heating element and wicking element 15 of Fang is used in Wang, this limitation is met as well. Ex.1007 ¶ 361.

27. Claim 27

See claim 7.

XI. SECONDARY CONSIDERATIONS CANNOT OVERCOME THE STRONG EVIDENCE OF OBVIOUSNESS

Where, as here, a strong prima facie case of obviousness exists secondary considerations may not disturb the final conclusion of obviousness. *See, e.g., Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007). At the institution stage, in light of the “absence of a complete evidentiary record,” Petitioner need not further address secondary considerations. *Ranir, LLC v. The Procter & Gamble Co.*, IPR2017-01878, Paper 7 at 32 (Feb. 7, 2018); *accord 3Shape A-S v. Align Tech., Inc.*, IPR2019-00160, Paper 9 at 34 (June 11, 2019) (at the institution stage, “it is premature to determine how much weight to give to ... evidence of objective indicia”). This is particularly appropriate here, where the Examiner did not rely on any evidence of secondary considerations in allowing the claims of the ’881 Patent. *See Zip Top, LLC v. Stasher, Inc.*, IPR2018-01216, Paper 14, at 37 (Jan. 17, 2019). Petitioner reserves the right to respond to any evidence of secondary considerations that NJOY may proffer.

XII. NON-INSTITUTION UNDER 35 U.S.C. § 325 WOULD BE IMPROPER

If NJOY asserts redundancy with the art considered by the Patent Office in the prosecution of the challenged patents, non-institution under § 325 would be improper based on weighing the factors in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8, at 17–18 (PTAB Dec. 15, 2017) and

material error on the PTO's part in granting the Challenged Claims. *See Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (Feb. 13, 2020) (designated precedential on March 24, 2020).

Although Fang, Wang, and Xia were all disclosed during examination, the examiner did not substantively review these references or raise any of the arguments Petitioner has made in this petition. Therefore, the examination of the '881 Patent is silent on the consideration of this art. "For example, if the record of the Office's previous consideration of the art is not well developed or silent, then a petitioner may show the Office erred by overlooking something persuasive under factors (e) and (f)." *Advanced Bionics*, IPR2019-01469, Paper 6, at 10. There is no indication that the examiner reviewed Xia, Fang, or Wang, nor is there any substantive discussion of their disclosures. Therefore, non-institution under § 325 would be improper based on weighing the factors in *Becton*.

Regarding factor (e), the Examiner erred in allowing the claims to issue at least because "the Examiner was simply not aware" of the teachings of the most pertinent art. *Oticon Med. AB v. Cochlear Ltd.*, IPR2019-00975, Paper 15 at 19–20 (PTAB Oct. 16, 2019) (precedential) (granting institution). Additionally, the prosecution history is silent as to the disclosures in Wang, Fang, and Xia, which, as described in detail above render the claims of the '881 Patent obvious. *See Section X; see also Advanced Bionics*, IPR2019-01469, Paper 6, at 10.

Factor (f) is inapplicable because none of the asserted combinations were substantively considered by the Examiner. The Board has consistently declined exercising its discretion under Section 325(d) when the only fact a Patent Owner can point to is that a reference was disclosed to the Examiner during the prosecution. *See, e.g., Digital Check Corp. d/b/a ST Imaging v. E-Imagedata Corp.*, IPR2017-00178, slip op. at 12–13 (PTAB Apr. 25, 2017) (Paper 6) (acknowledging that a prior art reference was cited in an IDS, but granting institution because there was no indication that the claims were rejected based on those references or that the Examiner substantively discussed those references during prosecution). Weighing the factors together, non-institution under § 325 would be improper.

XIII. CONCLUSION

For the foregoing reasons, Petitioner respectfully requests that *inter partes* review be instituted and that the Challenged Claims be found unpatentable.

U.S. Patent No. 10,334,881 B1
Petition for *Inter Partes* Review

Dated: November 8, 2023

/s/ William A. Meunier

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), Petitioner hereby certifies, in reliance on the word count of the word-processing system (Microsoft Office Word 2010) used to prepare this petition, that the number of words in this paper is 13,852. This word count excludes the tables of contents, tables of authorities, mandatory notices under 37 C.F.R. § 42.8, certificate of word count, certificate of service, or appendix of exhibits or claim listing. Petitioner certifies that this Petition for *Inter Partes* Review does not exceed the applicable type-volume limit of 37 C.F.R. § 42.24(a).

Dated: November 8, 2023

/s/ William A. Meunier
William A. Meunier (Reg. No. 41,193)

CERTIFICATE OF SERVICE

I certify that copies of the foregoing Petition for *Inter Partes* Review, all referenced exhibits, and the Petitioner's Power of Attorney were served on November 9, 2023, via overnight courier upon the following counsel of record for Patent Owner:

Harnes, Dickey & Pierce-Altria
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Courtesy copies of this Petition and accompanying exhibits were also served via electronic mail on Patent Owner's counsel of record in a related litigation at:

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