

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NJOY, LLC, NJOY HOLDINGS, INC.,
Petitioners,

v.

JUUL LABS, INC.,
Patent Owner

PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 10,709,173

TABLE OF CONTENTS

	Page
Contents	
I. MANDATORY NOTICES	1
A. Real Party-in-Interest	1
B. Related Matters.....	1
C. Lead and Back-up Counsel and Service Information	1
II. GROUNDS FOR STANDING.....	2
III. THE '173 PATENT.....	2
A. Overview	2
B. Prosecution History of the '173 Patent	4
IV. STATUTORY GROUNDS FOR THE CHALLENGES	5
V. LEVEL OF ORDINARY SKILL IN THE ART.....	5
VI. CLAIM CONSTRUCTION	6
A. “mouthpiece”.....	6
VII. OVERVIEW OF THE PRIOR ART	6
A. Verleur (EX1005) (Primary Reference).....	6
B. Plojoux (EX1016) (Secondary Reference).....	11
VIII. IDENTIFICATION OF HOW THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	13
A. Ground 1: Verleur in view of the knowledge of a POSA renders obvious claims 1-4, 6-7, 15-16, 18-25, 28 and 30	13

Petition for *Inter Partes* Review of U.S. Patent No. 10,709,173

1.	Claim 1	13
a.	[1.A] An apparatus comprising:	13
b.	[1.B] a cartridge comprising.....	13
c.	[1.C] [a cartridge comprising] a mouthpiece,.....	14
d.	[1.D] [a cartridge comprising] a storage compartment configured to hold a vaporizable material, and	15
e.	[1.E] [a cartridge comprising] a heater chamber comprising a resistive heating element configured to heat the vaporizable material, wherein the heating of the vaporizable material generates an aerosol comprising the vaporizable material and air passing along an airflow path; and	16
f.	[1.F] a body comprising a receptacle configured to insertably receive and couple to the cartridge,	22
g.	[1.G] wherein the heater chamber [of the cartridge] is disposed within the receptacle [of the body] when the receptacle insertably receives and couples to the cartridge,	24
h.	[1.H] wherein the airflow path comprises: an air inlet passage having a first side formed by an exterior surface of the cartridge and a second side formed by an internal surface of the receptacle when the receptacle insertably receives and couples to the cartridge,	26
i.	[1.I] wherein the air inlet passage is configured to deliver the air to the heater chamber; and	36
j.	[1.J] a fluid connection in the cartridge, the fluid connection connecting the heater chamber and the mouthpiece.....	37

2. Claim 2: The apparatus of claim 1, wherein the cartridge further comprises a protrusion extending from the exterior surface of the cartridge, and wherein at least part of the protrusion is disposed within the receptacle when the receptacle insertably receives and couples to the cartridge.
.....38

3. Claim 3: The apparatus of claim 1, wherein the cartridge has a proximal end and a distal end opposite the proximal end, wherein the mouthpiece is disposed at the proximal end, and wherein the heater chamber is disposed proximate to the distal end.....40

4. Claim 4: The apparatus of claim 3, wherein the receptacle terminates in a proximal edge, wherein the air inlet passage extends from the proximal edge of the receptacle towards the distal end of the cartridge when the receptacle insertably receives and couples to the cartridge.43

5. Claim 6: The apparatus of claim 3, wherein the cartridge has a longitudinal dimension extending from the proximal end of the cartridge to the distal end of the cartridge, and wherein the exterior surface of the cartridge and the internal surface of the receptacle are substantially parallel to the longitudinal dimension when the receptacle insertably receives and couples to the cartridge.57

6. Claim 7: The apparatus of claim 3, wherein the storage compartment comprises the exterior surface of the cartridge forming the first side of the air inlet passage.58

7. Claim 15: The apparatus of claim 1, wherein the cartridge comprises a first electrical contact and a second electrical contact at a distal end of the cartridge, the mouthpiece disposed at a proximal end of the cartridge opposite the distal end, wherein the first electrical contact and the second electrical contact are electrically isolated and disposed in a plane substantially parallel to the distal end of the cartridge.59

8. Claim 16: The apparatus of claim 15, wherein the receptacle comprises a third electrical contact and a fourth electrical contact disposed in a second plane, the second plane substantially parallel to the distal end of the cartridge when the cartridge is received within the receptacle.62
9. Claim 18: The apparatus of claim 1, wherein the body has a top end and a bottom end opposite the top end, wherein the receptacle is disposed at the top end, wherein a body longitudinal axis extends from the top end to the bottom end, and wherein a first body transverse axis and a second body transverse axis extend substantially perpendicular to the body longitudinal axis, the body having a greater dimension along the first body transverse axis than along the second body transverse axis.65
10. Claim 19: The apparatus of claim 1, wherein the storage compartment comprises the vaporizable material, and wherein the vaporizable material comprises a nicotine formulation.66
11. Claim 20:67
 - a. [20.A] An apparatus comprising:67
 - b. [20.B] a cartridge comprising67
 - c. [20.C] a mouthpiece,67
 - d. [20.D] a storage compartment configured to hold a vaporizable material, and.....67
 - e. [20.E] a resistive heating element configured to heat the vaporizable material, wherein the heating of the vaporizable material generates an aerosol comprising the vaporizable material and air passing along an airflow path; and68
 - f. [20.F] a body comprising a receptacle configured to insertably receive and couple to the cartridge,68

- g. [20.G] wherein the resistive heating element is disposed within the receptacle when the receptacle insertably receives and couples to the cartridge,68
 - h. [20.H] wherein the airflow path comprises: an air inlet passage having a first side formed by an exterior surface of the cartridge and a second side formed by an internal surface of the receptacle when the receptacle insertably receives and couples to the cartridge,68
 - i. [20.I] wherein the air inlet passage is configured to deliver the air towards the resistive heating element; and.....68
 - j. [20.J] a fluid connection in the cartridge, the fluid connection connecting the resistive heating element and the mouthpiece.68
- 12. Claim 21: The apparatus of claim 20, wherein the cartridge further comprises a protrusion extending from the exterior surface of the cartridge, and wherein at least part of the protrusion is disposed within the receptacle when the receptacle insertably receives and couples to the cartridge.69
 - 13. Claim 22: The apparatus of claim 20, wherein the cartridge has a proximal end and a distal end opposite the proximal end, wherein the mouthpiece is disposed at the proximal end, and wherein the resistive heating element is disposed proximate to the distal end.69
 - 14. Claim 23: The apparatus of claim 22, wherein the receptacle terminates in a proximal edge, wherein the air inlet passage extends from the proximal edge of the receptacle towards the distal end of the cartridge when the receptacle insertably receives and couples to the cartridge.69

15.	Claim 24: The apparatus of claim 22, wherein the cartridge has a longitudinal dimension extending from the proximal end of the cartridge to the distal end of the cartridge, and wherein the exterior surface of the cartridge and the internal surface of the receptacle are substantially parallel to the longitudinal dimension when the receptacle insertably receives and couples to the cartridge.	69
16.	Claim 25: The apparatus of claim 22, wherein the storage compartment comprises the exterior surface of the cartridge forming the first side of the air inlet passage.	69
17.	Claim 28: The apparatus of claim 20, wherein the body has a top end and a bottom end opposite the top end, wherein the receptacle is disposed at the top end, wherein a body longitudinal axis extends from the top end to the bottom end, and wherein a first body transverse axis and a second body transverse axis extend substantially perpendicular to the body longitudinal axis, the body having a greater dimension along the first body transverse axis than along the second body transverse axis.	70
18.	Claim 30: The apparatus of claim 20, wherein the storage compartment comprises the vaporizable material, and wherein the vaporizable material comprises a nicotine formulation.	70
B.	Ground 2: Verleur in view of Plojoux and the knowledge of POSA renders obvious claims 2, 4 and 21, 23	70
1.	Motivation to Combine Verleur and Plojoux	70
2.	Claims 2/21: The apparatus of claim [1/20], wherein the cartridge further comprises a protrusion extending from the exterior surface of the cartridge, and wherein at least part of the protrusion is disposed within the receptacle when the receptacle insertably receives and couples to the cartridge.	77

Petition for *Inter Partes* Review of U.S. Patent No. 10,709,173

3.	Claims 4/23: The apparatus of claim [3/22], wherein the receptacle terminates in a proximal edge, wherein the air inlet passage extends from the proximal edge of the receptacle towards the distal end of the cartridge when the receptacle insertably receives and couples to the cartridge.	77
IX.	SECONDARY CONSIDERATIONS	78
X.	THE BOARD SHOULD REACH THE MERITS OF THIS PETITION	79
A.	The Board Should Not Exercise Its Discretion to Deny Institution Under § 325(d)	79
B.	35 U.S.C. § 314(a) Denial is Not Warranted	80
XI.	CONCLUSION.....	80

PETITIONERS' EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 10,709,173 to Monsees et al. (“the ’173 patent”)
1002	File History for U.S. Patent 10,709,173
1003	Declaration of William Singhose in Support of Petition for <i>Inter Partes</i> Review of U.S. Patent 10,709,173
1004	Curriculum Vitae of William Singhose
1005	U.S. Patent Publication No. 2015/0128971 (“Verleur”)
1006	U.S. Provisional Application No. 61/903,344 (“Verleur-Prov”)
1007	U.S. Patent Publication No. 2009/0272379 (“Thorens 379”)
1008	U.S. Patent Publication No. 2016/0021933 (“Thorens 933”)
1009	<i>JUUL Labs, Inc. v. NJOY, LLC</i> , No. 23-cv-01204 (D. Ariz.) Docket (retrieved Nov. 13, 2023)
1010	U.S. Patent No. 8,205,622 (“Pan 622”)
1011	<i>Reserved</i>
1012	U.S. Patent No. 3,200,819 (“Gilbert”)
1013	U.S. Patent Publication No. 2013/0228191 (“Newton 191”)
1014	U.S. Patent No. 5,388,594 (“Counts 594”)
1015	U.S. Patent Publication No. 2012/0199663 (“Qiu 663”)
1016	International Application No. WO 2013/076098A2 (“Plojoux”)
1017	U.S. Patent No. 8,499,766 (“Newton”)
1018	U.S. Patent No. 9,332,787 (“Liu 787”)
1019	KR200457694 (“Youm”)
1020	Certified Translation of KR200457694 (“Youm”)
1021	KR200453424 (“Yeom”)
1022	Certified Translation of KR200453424 (“Yeom”)

Petition for *Inter Partes* Review of U.S. Patent No. 10,709,173

Exhibit No.	Description
1023	U.S. Patent No. 11,606,981 (“Verleur 981”)
1024	U.S. Patent No. 11,134,722 (“Verleur 722”)
1025	U.S. Patent Publication No. 2011/0094523 (“Thorens 523”)
1026	U.S.I.T.C. Investigation No. 337-TA-1368, Joint Claim Construction Chart
1027	Aug. 22, 2006 Tariff Classification Ruling M85579, <i>available at</i> https://rulings.cbp.gov/search?term=m85579
1028	U.S. Patent Publication No. 2014/0174458 (“Katz”)
1029	U.S. Patent No. 5,144,962 (“Counts 962”)
1030	U.S. Patent Publication No. 2013/0037041 (“Worm”)
1031	U.S. Patent No. 9,516,899 (“Plojoux 899”)

I. MANDATORY NOTICES

A. Real Party-in-Interest

NJOY, LLC, NJOY Holdings, Inc. (collectively, “Petitioners”), Altria Group, Inc., Altria Group Distribution Company, Altria Client Services LLC, and Shenzhen Smoore Technology Limited are the real parties-in-interest.

B. Related Matters

U.S. Patent No. 10,709,173 (“’173 Patent”), along with U.S. Patent Nos. RE49,114 (“’114 Patent”), 10,130,123 (“’123 Patent”), 11,134,722 (“’722 Patent”), 11,606,981 (“’981 Patent”), are all subject to a Section 337 Investigation before the International Trade Commission, *Certain Vaporizer Devices, Cartridges Used Therewith, and Components Thereof*, 337-TA-1368, initiated by Patent Owner and co-Complainant VMR Products LLC. The ’123 Patent, the ’173 Patent, the ’114 Patent, the ’722 Patent, and the ’981 Patent are also part of the civil litigation matter filed by Patent Owner and VMR Products LLC against Petitioners, *JUUL Labs, Inc. v. NJOY, LLC*, Case No. 23-cv-01204 (D. Ariz.). Both matters were filed on June 30, 2023.

Petitions for *inter partes* review for the ’123 Patent, the ’114 Patent, the ’722 Patent, and the ’981 Patent will be filed shortly after this Petition.

C. Lead and Back-up Counsel and Service Information

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II. GROUNDS FOR STANDING

Petitioners certify that the '173 Patent is available for *inter partes* review and that Petitioners are not barred or estopped from requesting *inter partes* review challenging the patent claims on the grounds identified in this Petition.

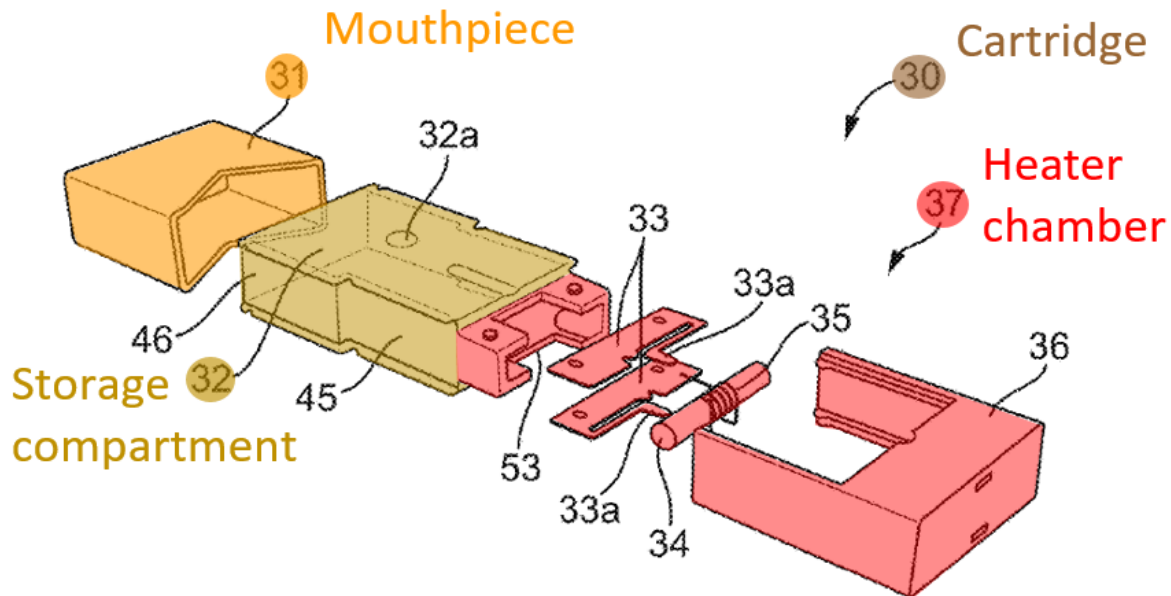
III. THE '173 PATENT

A. Overview

The '173 Patent was filed on July 10, 2018 as U.S. Patent Application No. 16/032,009 (“the 009 application”) and claims priority to four provisional

applications, the earliest of which was filed on February 10, 2014.¹

The '173 Patent generally relates to an e-cigarette device comprising a cartridge and a body, wherein the cartridge comprises a mouthpiece, a storage compartment, and a heater chamber. EX1001, Abstract.



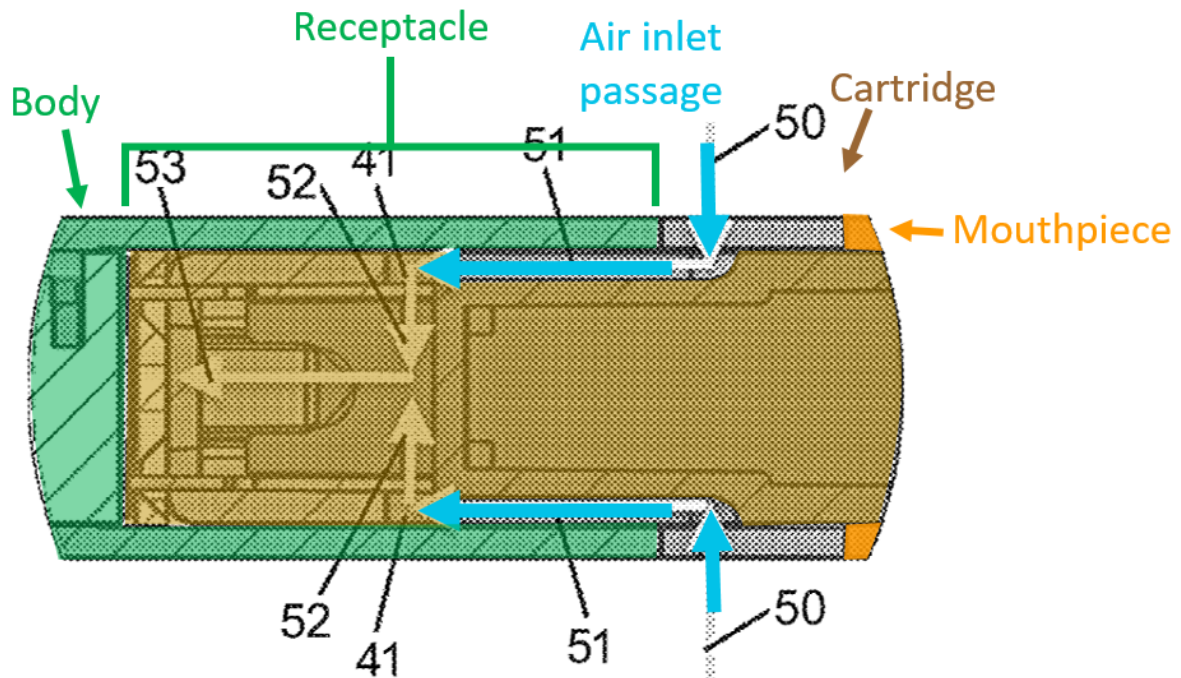
EX1001, Fig. 7B²

The body comprises a receptacle configured to insertably receive the cartridge

¹ Petitioners take no position on the priority date of the '173 Patent. The prior art set forth below predates February 10, 2014 and therefore predates any potential priority date of the '173 Patent.

² Unless otherwise noted, all color annotations to the Figs. throughout this Petition are added by Petitioner.

with the heater chamber disposed within the receptacle. EX1001, Abstract. When the cartridge is inserted into the receptacle, an air inlet passage is formed by an exterior surface of the cartridge and an internal surface of the receptacle. EX1001, Abstract.



EX1001, Fig. 10A

B. Prosecution History of the '173 Patent

The '009 application was filed on July 10, 2018. The Examiner, in a First Action Interview Pilot Program Pre-Interview Communication dated December 4, 2018, rejected the claims as having the same subject matter as claimed in Application No. 15/815,643 ("the '643 application"), noting that the "air flow path appears to be the only unique feature being claimed over the prior art," and therefore, "if claims

21 and 40 are allowable for the same reasons as application 15/815,643, a terminal disclaimer is required.” EX1002.0193. In response, the Applicant filed a Terminal Disclaimer with respect to the ’643 application to overcome the obviousness-type double patenting rejection. EX1002.0248. The ’173 Patent issued on July 14, 2020.

IV. STATUTORY GROUNDS FOR THE CHALLENGES

Ground 1	Claims 1-4, 6-7, 15-16, 18-25, 28, and 30 of the ’173 Patent are obvious under 35 U.S.C. § 103 based on U.S. Patent Publication No. 2015/0128971 (“Verleur”; EX1005) in view of the knowledge of a POSA.
Ground 2	Claims 2, 4, 21, and 23 of the ’173 Patent are obvious under 35 U.S.C. § 103 based on Verleur in view of the knowledge of a POSA and International Publication No. WO 2013/076098 (“Plojoux”; EX1016).

V. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSA”) would have at least a B.S. degree in Mechanical Engineering, Electrical Engineering, Industrial Design, Product Design, or similar field, with at least two years of industry experience in one of these fields, and such POSA would have been familiar with electrically powered vaporizing articles, their components, or the underlying technologies.

VI. CLAIM CONSTRUCTION

Petitioners are unaware of any prior claim construction determination related to the '173 Patent. See 37 C.F.R. §42.100(b).

A. “mouthpiece”

In the co-pending ITC investigation, the parties have exchanged proposed constructions for the term “mouthpiece” in the '173 Patent. Patent Owner contends that “mouthpiece” means “portion to be used by a mouth.” EX1026.002. Petitioners contend the term “mouthpiece” means a “separate component from the storage compartment to be used by a mouth.” Throughout the specification of the '173 Patent, the mouthpiece is shown and described as a separate structure secured to the reservoir or storage compartment. The asserted prior art in this Petition renders the claims obvious under either interpretation of “mouthpiece.” Accordingly, the parties’ claim construction dispute regarding “mouthpiece” is not material to the grounds in this Petition.

VII. OVERVIEW OF THE PRIOR ART

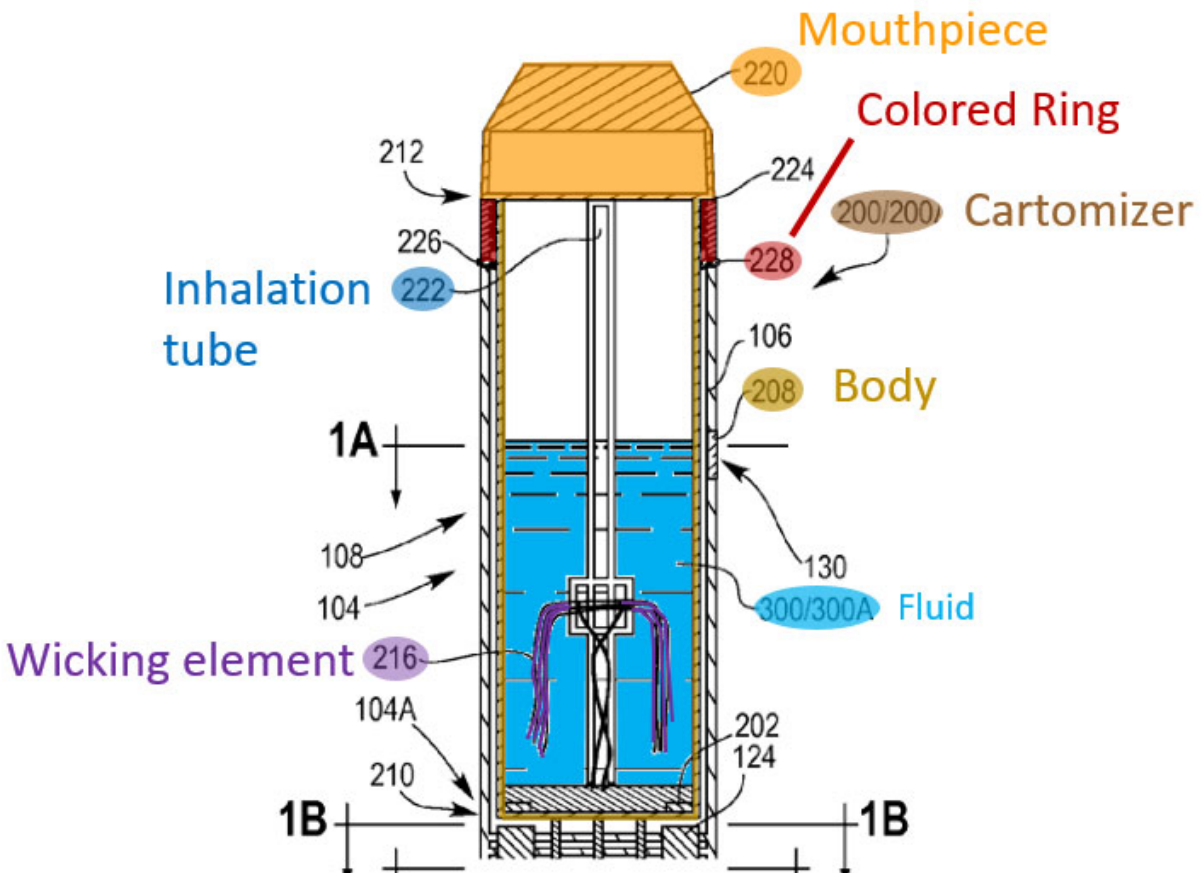
A. Verleur (EX1005) (Primary Reference)

U.S. Patent Publication No. 2015/0128971 to Verleur, et al. (“Verleur”; EX1005), titled “Vaporizer” was filed on March 4, 2014, claims priority to Provisional 61/903,344 (“Verleur-Prov”; EX1006) filed November 12, 2013 and is prior art under at least 35 U.S.C. §102(a)(2). Patent Owner disclosed Verleur—along with nearly 500 other references—during prosecution but it was not discussed.

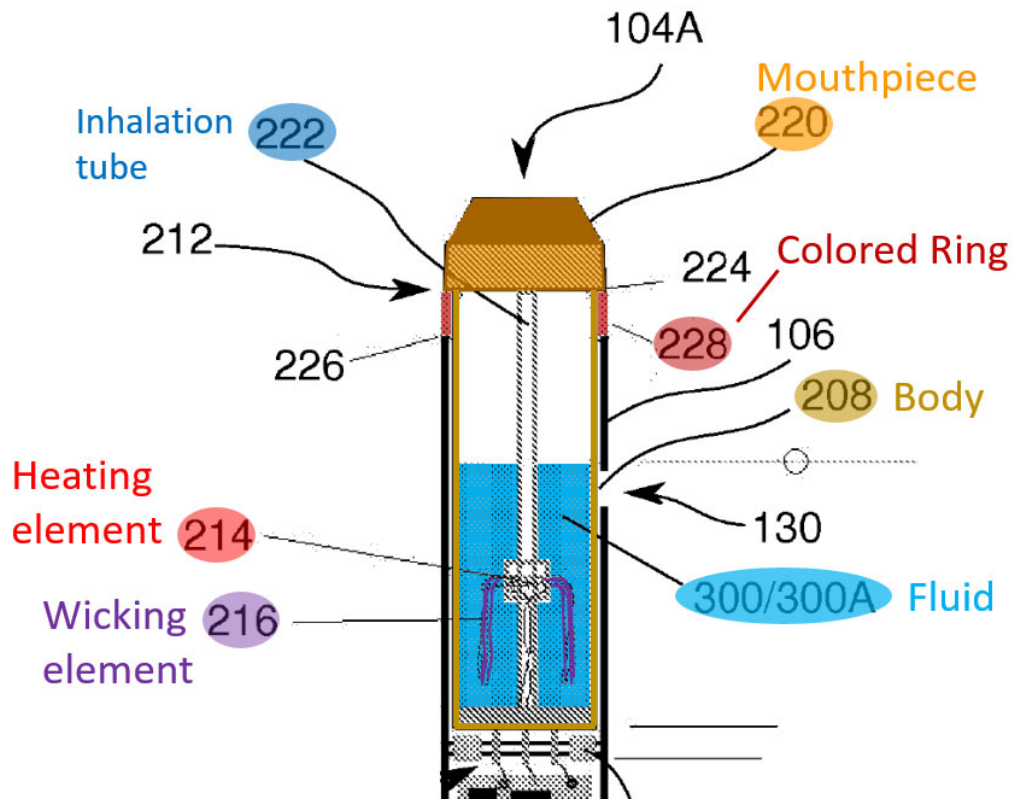
Verleur is entitled to an effective filing date as of Verleur-Prov's filing date. Under 35 U.S.C. §102(a)(2), a published patent application is prior art as of its effective filing date. An application is considered to have been effectively filed, with respect to any subject matter described in the application, as of the filing date of the earliest application describing the subject matter to which the application is entitled to claim a right of priority. 35 U.S.C. §102(d)(2); MPEP §2154.01(b). Therefore, for a priority application to support an effective filing date, it "must 'describe[] the subject matter' relied upon in the reference patent document as prior art." *Penumbra, Inc. v. RapidPulse, Inc.*, IPR2021-01466, Paper 34, 32 (PTAB Mar. 10, 2023) (*precedential*) (citing MPEP § 2154.01(b)); see also *Apple Inc. v. Telefonaktiebolaget LM Ericsson*, IPR2022-00341, Paper 10, 14-22 (PTAB Sept. 14, 2022). Verleur was filed no later than 12 months after the filing of Verleur-Prov, and contains a specific reference to Verleur-Prov. See EX1005 at (22), (60), [0001]. Petitioners provide cross-cites to Verleur-Prov throughout to demonstrate the subject matter relied upon from Verleur is disclosed in Verleur-Prov.

Verleur discloses "[a]n electronic cigarette or vaporizer" that includes "a shell and a cartomizer receivable within a chamber within a portion of the shell." EX1005, Abstract. EX1006, [0022]. The cartomizer includes detachable mouthpiece 220, a liquid storage compartment for storing liquid (body 208 for holding fluid 300A), heating element 214, wicking element 216, a colored ring 228, and inhalation tube

222. EX1005, [0038]-[0040]; EX1006, [0029]-[0031]. Colored ring 228 is described as being “provided about a portion of cartomizer body 208 in order to identify the type or cartomizer being used.” EX1005, [0040]; EX1006, [0031].

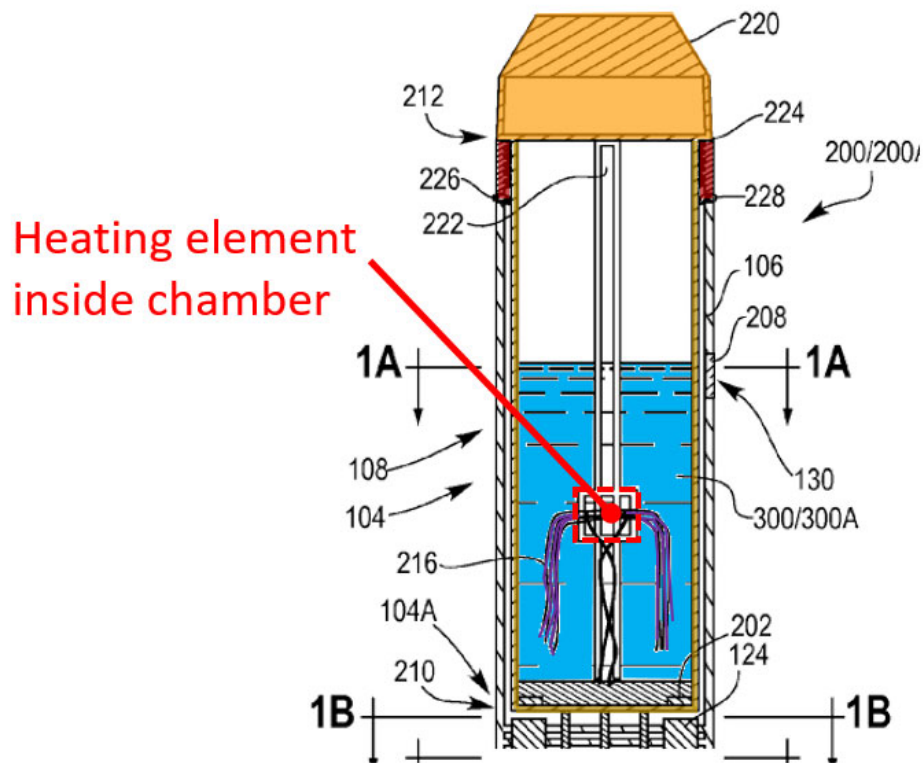


EX1005, Fig. 1



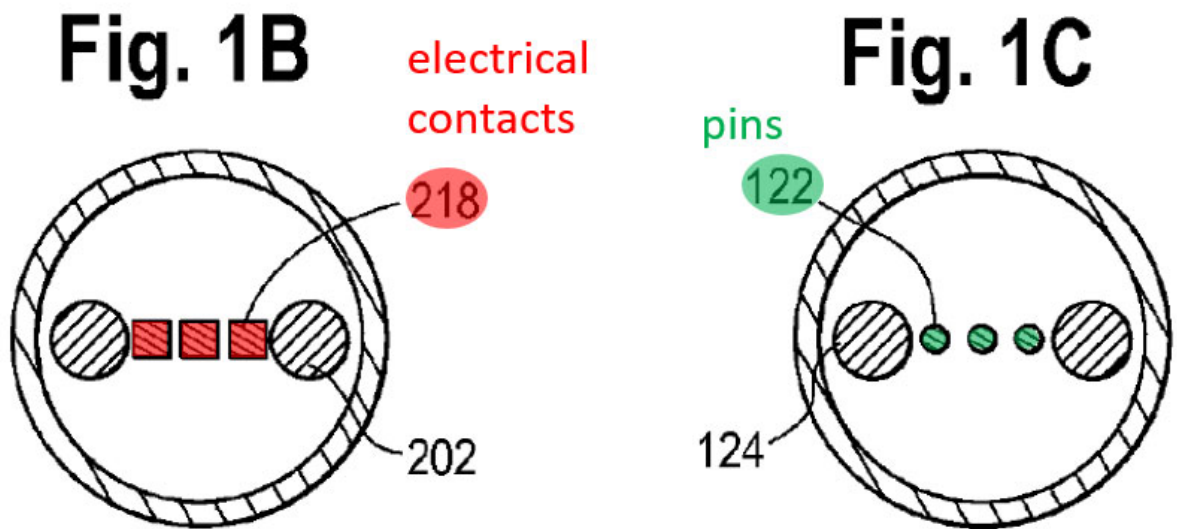
EX1006, Fig. 1

Based on the description of heating element 214, the element would be within the chamber as annotated below. EX1003, ¶ 81. Moreover, Verleur-Prov labels the heating element as heating element 214 in Figure 1, as shown above. EX1003, ¶ 82.



EX1005, Fig. 1

Electrical contacts 218 on the distal end of the cartomizer electrically couple to pins 122 provided in the cartomizer chamber of the shell. EX1005, [0006], [0033]; EX1006, [0025], [0030]; EX1003, ¶ 83.



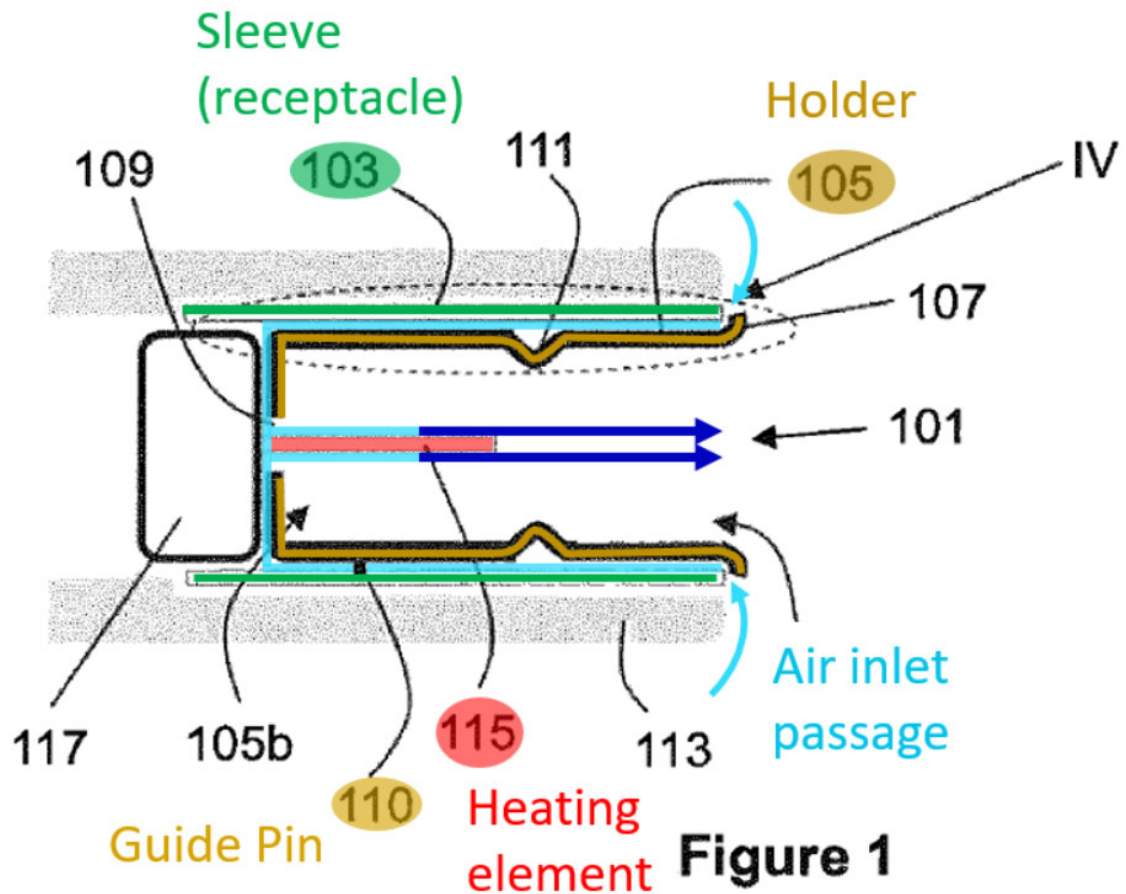
EX1005, Figs. 1B and 1C; EX1006, Figs. 1A and 1B

Electrical current is transmitted to the heating element to vaporize fluid. EX1005, [0039]; EX1006, [0030]. Verleur discloses that air is drawn in through holes or ducts on the shell, between the chamber and cartomizer, passes the heating element, and continues along an inhalation tube to exit the mouthpiece. EX1005, [0039] (“Inhalation tube 222 may also be in fluid communication with one or more holes or ducts provided, for instance, in sides of outer shell 106 in order to permit air flow through cartomizer body 208.”); EX1006, [0030]; EX1003, ¶ 83.

B. Plojoux (EX1016) (Secondary Reference)

International Publication No. WO 2013/076098 (“Plojoux”), titled “Extractor for an Aerosol-Generating Device,” was filed on November 20, 2012 and published on May 30, 2013. Plojoux is prior art under at least 35 U.S.C. § 102(a)(2).

Plojoux is relied upon for its disclosure of an aerosol-forming device having an air inlet passage that extends from a proximal end of a receptacle to a distal end of a cartridge. EX1016, 13:29-33; EX1003, ¶ 87. Plojoux is also relied upon for its disclosure of a “guide pin 110 which protrudes out of the holder 105” (protrusion on a cartridge) that aligns with “slot or groove (not shown) in the inside wall of sleeve 103” (slot or groove on receptacle). EX1016, 14:22-23; EX1003, ¶ 87.



EX1016, Fig. 1

VIII. IDENTIFICATION OF HOW THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. Ground 1: Verleur in view of the knowledge of a POSA renders obvious claims 1-4, 6-7, 15-16, 18-25, 28 and 30

1. Claim 1

a. [1.A] An apparatus comprising:

To the extent the preamble is limiting, Verleur discloses this limitation. EX1003, ¶¶ 88-89.

Verleur discloses an apparatus. Specifically, Verleur discloses “[a]n electronic cigarette or vaporizer,” which is an apparatus. EX1005, Abstract; EX1006, [0001], [0022].

b. [1.B] a cartridge comprising

Verleur discloses this limitation. EX1003, ¶¶ 90-91.

The ’173 Patent recites that cartridges may be referred to as cartomizers. EX1001, 2:51-55 (“Generally, the cartridges (which may also referred to as cartomizers)...”).

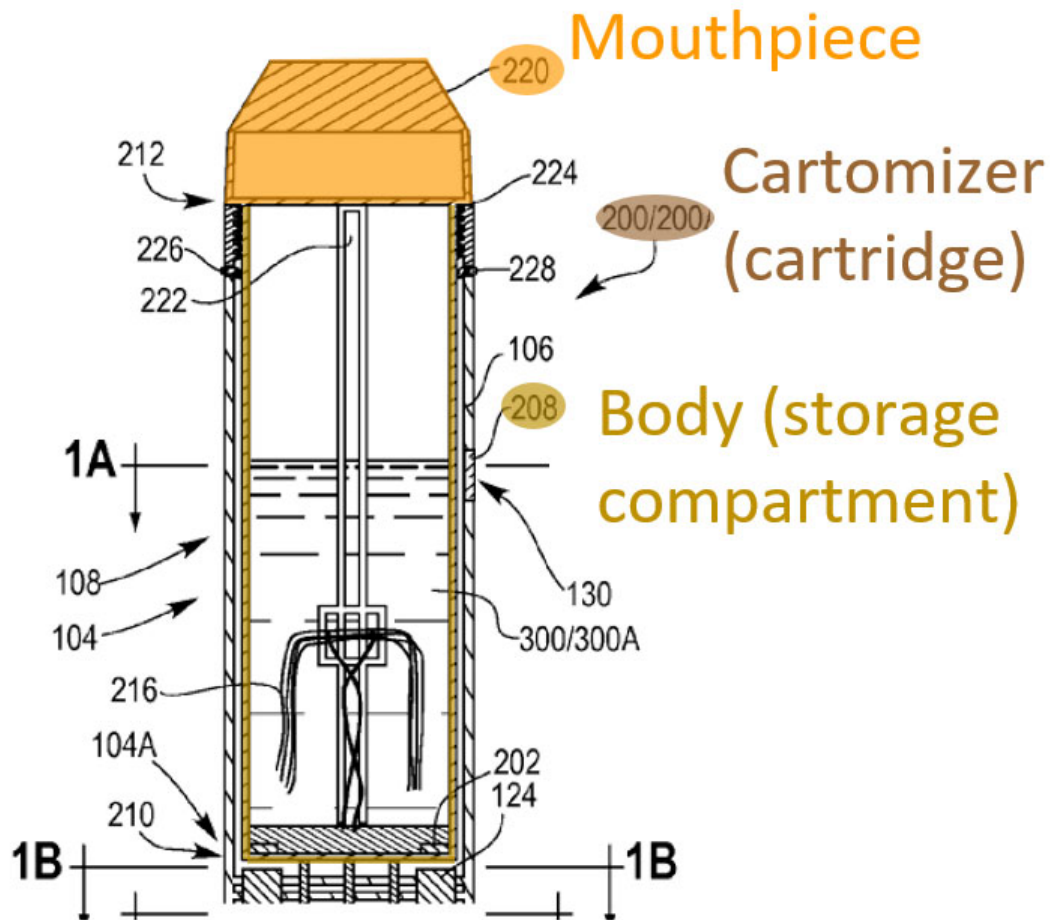
Verleur discloses electronic cigarette 10, which includes cartomizer 200 (cartridge). EX1005, [0030] (“Electronic cigarette 10 may include a battery portion connectable with a vaporization unit or cartomizer 200 for holding a vaporizable substance 300.”); EX1006, [0022]. As described for the remaining limitations of claim 1, the cartomizer 200 comprises mouthpiece 220, a liquid storage compartment for storing liquid 300, and a heater chamber comprising heating

element 214. Cartomizer 200 is insertable into body 102 having receiving segment 104.

c. [1.C] [a cartridge comprising] a mouthpiece.

Verleur discloses this limitation. EX1003, ¶¶ 92-95.

Verleur discloses cartomizer 200 (cartridge), which comprises mouthpiece 220 that is used by a mouth. *See, e.g.*, EX1005, [0039] (“Once fluid 300A is heated to an optimal vaporizing temperature, the user may inhale the vaporized fluid 300A through a mouthpiece 220 provided on body 208”). Verleur discloses that mouthpiece 220 is a separate, distinct component. *Id.* at [0040] (“So that a user may refill fluid 300A held in body 208, mouthpiece 220 may be removable from body 208 ...”); EX1006, [0030], [0031]. Thus, Verleur discloses a mouthpiece under either party’s construction.



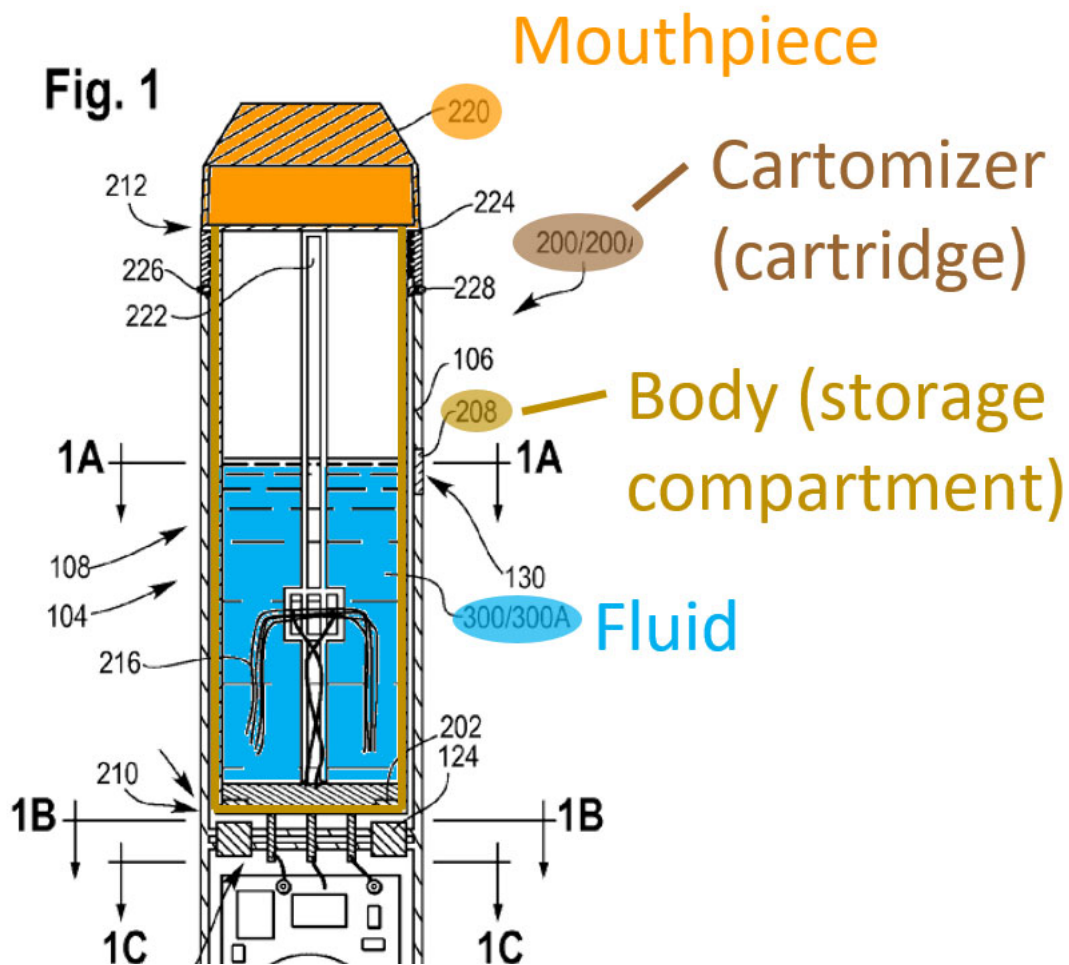
EX1005, Fig. 1; EX1006, Fig. 1

- d. [1.D] [a cartridge comprising] a storage compartment configured to hold a vaporizable material, and**

Verleur discloses this limitation. EX1003, ¶¶ 96-98.

Verleur discloses cartomizer 200A includes a body 208 (storage compartment) that is configured to hold vaporizable fluid 300A (vaporizable material). EX1005, [0038] (“One embodiment of cartomizer 200 for holding vaporizable material 300 is cartomizer 200A for holding a vaporizable fluid 300A.... cartomizer 200A may include a body 208 for holding fluid 300A.”); EX1006,

[0029], [0030], [0031].



EX1005, Fig. 1; EX1006, Fig. 1

e. [1.E] [a cartridge comprising] a heater chamber comprising a resistive heating element configured to heat the vaporizable material, wherein the heating of the vaporizable material generates an aerosol comprising the vaporizable material and air passing along an airflow path; and

Verleur renders this limitation obvious. EX1003, ¶¶ 99-112.

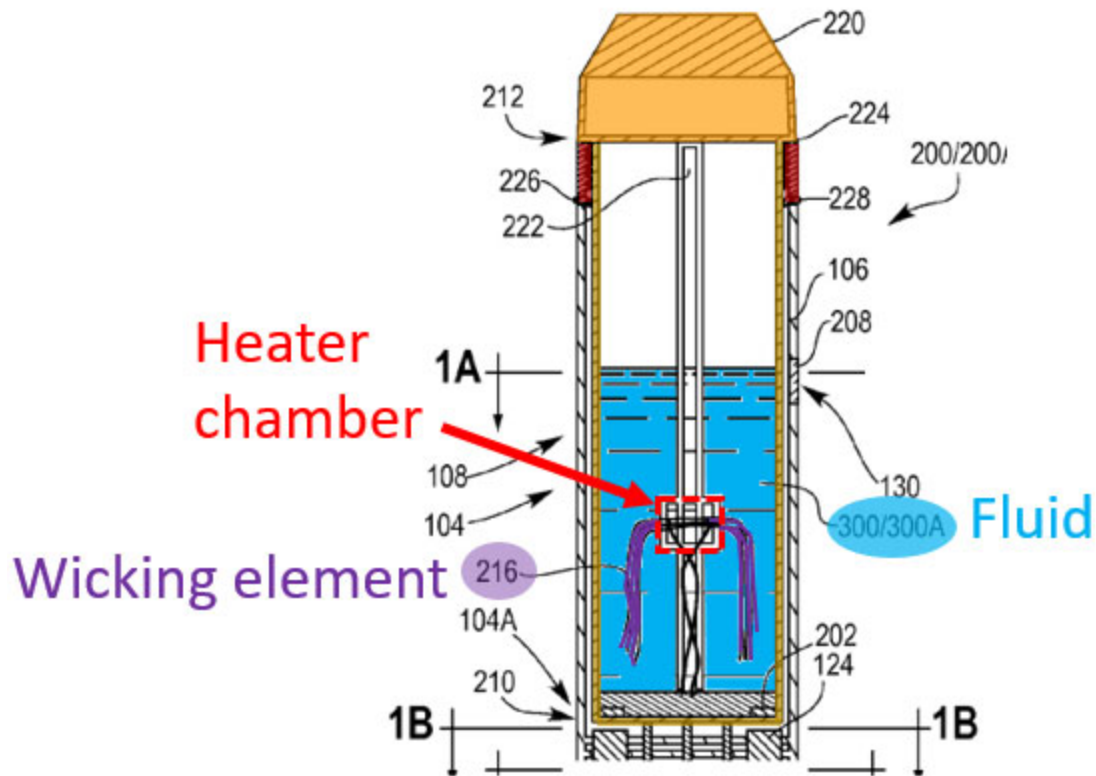
Verleur discloses a cartomizer (cartridge) comprising a heater chamber.

Exemplary embodiments are illustrated in Figs. 4, 5, 12, and 15. Each embodiment

depicts a wick extending from an enclosed area (chamber). Fluid in the liquid compartment is drawn into that chamber by a wick. EX1003, ¶ 101. Verleur does not include an express statement that the heater chamber includes a heating element that is a resistive heating element.

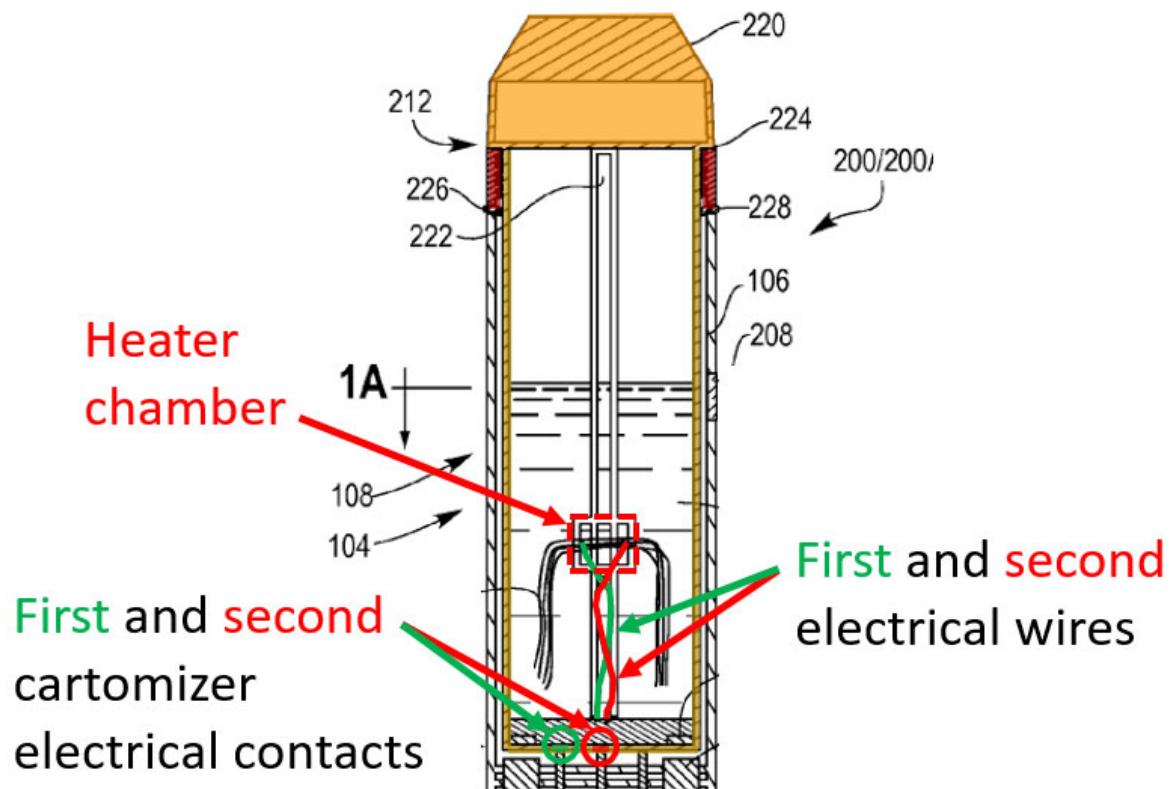
Verleur discloses that “[i]n order to vaporize fluid 300A, a heating element 214 and a wicking element 216 may be provided within cartomizer body 208,” and further discloses that “[a]n electrical current may be transmitted to heating element 214 through circuitry in electrical communication with electrical contacts, which contact pins 122).” EX1005, [0039]; EX1006, [0030].

A POSA would have understood that wicking element 216 draws liquid into the chamber shown in annotated Fig. 1 below, which includes heating element 214. EX1003, ¶¶ 101-102.



EX1005, Fig. 1; EX1006, Fig. 1

As shown below, electrical wires connect the heating element to electrical contacts 218 (which are connected to the battery portion via pins 122). EX1005, [0033], Figs. 1, 1B, 1C; EX1006, [0025], Figs. 1, 1B, 1C; EX1003, ¶ 103.



EX1005, Fig. 1; EX1006, Fig. 1

Although the description of Fig. 1 only recites a heating element, it would have been obvious to a POSA to utilize a *resistive* heating element. EX1003, ¶ 104. A POSA would have understood that a resistive heating element generates heat when a current is passed through it. EX1003, ¶ 104. And Verleur discloses that “electrical current is transmitted to the heating element 214”; thus motivating a POSA to use a resistive heating element. EX1005, [0041]; EX1006, [0030]; EX1003, ¶ 104.

Moreover, as of 2014, it was well-known and common to use a resistive heating element in an electronic vaporizer device. Thorens379, for example,

discloses an e-cigarette with a heating element that “preferably comprises an electrically resistive material.” EX1007, [0010]; *see also, e.g.*, EX1008, [0053], [0074] (“The heater is in the form of a resistive heating element, such as a coil heater, in contact with the capillary wick.”); EX1030, [0013] (“The heating member can specifically be a resistance wire that generates heat as an electrical current passes therethrough.”), [0087]; EX1031, 3:53-54; EX1014, 3:34-35; EX1010, 2:57-60; EX1003, ¶ 105.

A POSA would have been motivated to use a resistive heating element because this configuration provides several benefits. EX1003, ¶¶ 106-112. For example, Thorens³⁷⁹ discloses that resistive heating elements have advantages such as controlling the operating temperature to ensure that there are no undesirable degradations of the vaporizable liquid. EX1007, [0008]. Thorens³⁷⁹, for example, describes that using a resistive heating element offers other benefits such as providing a rapid response time (time between the consumer puffing on the system and the aerosol entering the consumer’s mouth). EX1007, [0051]; *see also* EX1030, [0087] (“Useful heating elements can be those having low mass, low density, and moderate resistivity and that are thermally stable at the temperatures experienced during use. Useful heating elements heat and cool rapidly, and thus provide for the efficient use of energy. Rapid heating of the element also provides almost immediate volatilization of the aerosol-forming substance. Rapid cooling prevents substantial

volatilization (and hence waste) of the aerosol-forming substance during periods when aerosol formation is not desired.”).

A POSA would have been motivated to use a resistive heating element because minimal response time is desirable to consumers. EX1003, ¶¶ 107, 111. Consumers want immediate vapor production upon activating the device. Resistive heating elements are also efficient, converting most of the electrical energy they consume into heat. EX1003, ¶ 108. A POSA would also have been motivated to use a resistive heating element because the design and function is simple and straightforward, uses fewer components that can fail, and is inexpensive to manufacture. EX1003, ¶¶ 109-110.

A POSA would have had a reasonable expectation of success modifying Verleur to include a resistive heating element, as it is a predictable use of an electronic vaporizer component according to its established function and would have been routine to implement, particularly given that Verleur discloses that electrical current is passed through heating element 214. EX1003, ¶ 110.

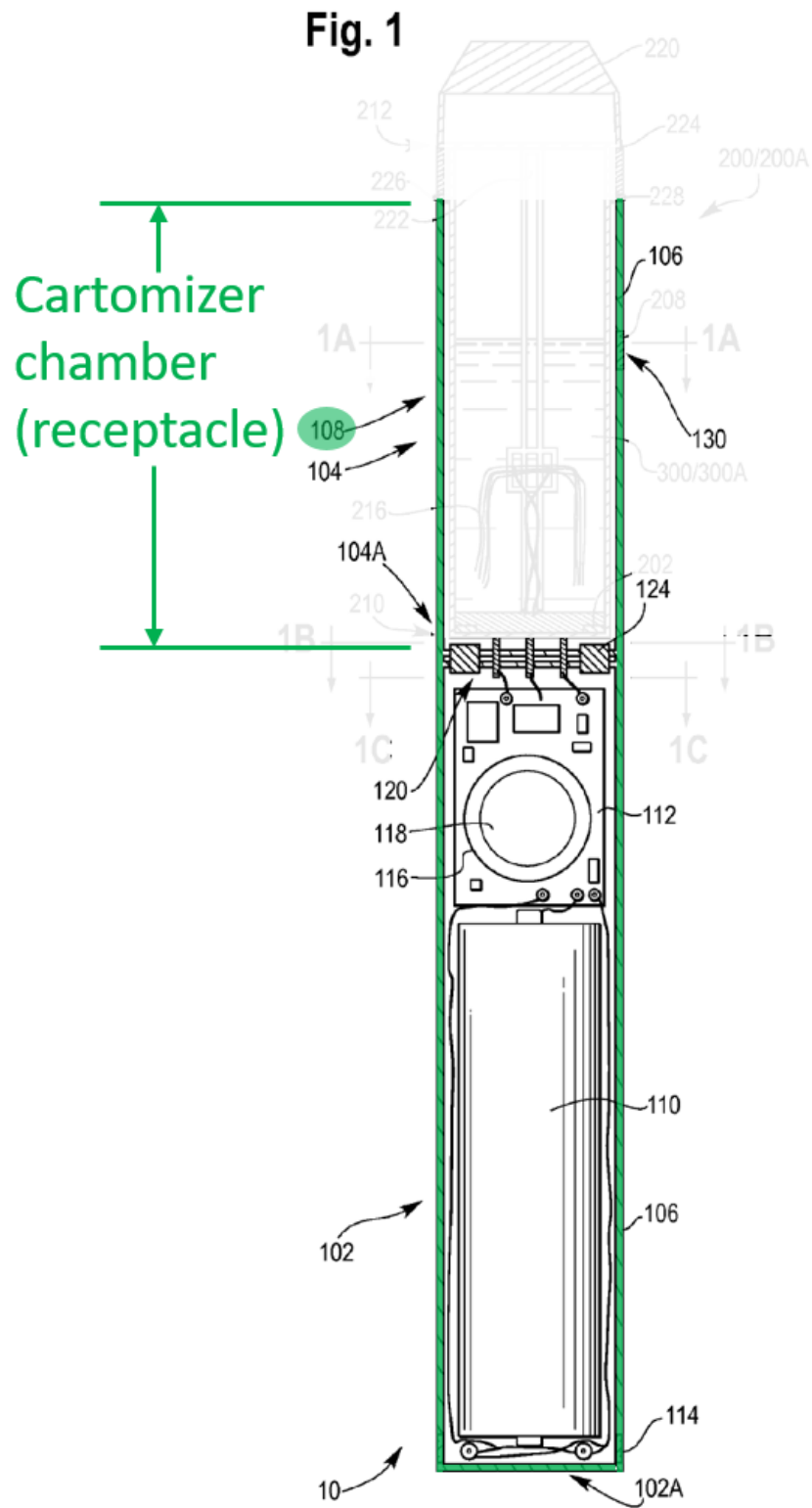
Verleur discloses that heating element 214 is energized to vaporize liquid which generates an aerosol when combined with the airflow. EX1005, [0039]; EX1006, [0023], [0030]. A POSA would have understood that, upon heating the vaporizable liquid to its vaporizing temperature, an aerosol is immediately generated as the vaporized liquid mixes with the airflow. EX1003, ¶ 111; EX1005, [0039]

(“Once fluid 300A is heated to an optimal vaporizing temperature, the user may inhale the vaporized fluid 300A through a mouthpiece 220 provided on body 208 at or proximate to mouthpiece end 212. The vaporized fluid may travel through an inhalation tube 222 in fluid connection with heating element 214 and wick 216. Inhalation tube 222 may also be in fluid communication with one or more holes or ducts provided, for instance, in sides of outer shell 106 in order to permit air flow through cartomizer body 208.”); EX1006, [0029], [0030].

f. **[1.F] a body comprising a receptacle configured to insertably receive and couple to the cartridge,**

Verleur discloses this limitation. EX1003, ¶¶ 113-115.

Verleur discloses battery portion 122 (body) comprising a cartomizer receiving segment 104 having cartomizer chamber 108 (receptacle) for receiving cartomizer 200 (cartridge). EX1005, [0030] (“The battery portion may include a battery housing segment 102 provided proximate to the first end 102A of the battery portion, and a second cartomizer receiving segment 104 provided proximate a second end 104A of the battery portion.... A cartomizer chamber 108 may be provided within at least a portion of cartomizer receiving segment 104. A cartomizer 200 may be insertable into the cartomizer chamber 108....”); EX1006, [0030].



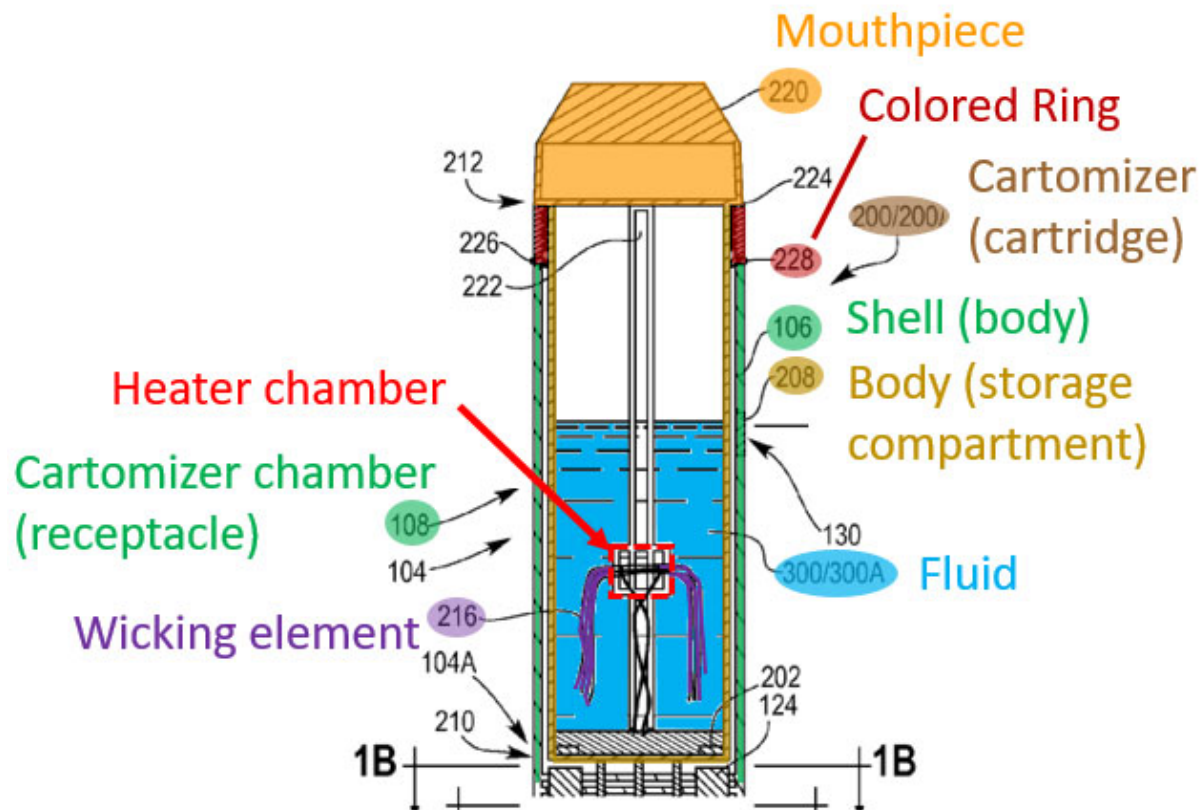
EX1005, Fig. 1; EX1006, Fig. 1

The cartomizer chamber 108 (receptacle) is configured to magnetically couple to cartomizer 200 (cartridge). Verleur discloses that the “cartomizer may be securable within the chamber as a cartomizer surface and a magnetically attracted chamber surface are placed adjacent to one another.” EX1005, [0005]. The cartomizer chamber 108 (receptacle) is also configured to electrically couple to cartomizer 200 (cartridge). Verleur discloses battery electrical contacts provided at a base end of the chamber that are configured to couple to contacts provided on the cartomizer in order to transmit electrical current to the heating element 214. EX1005, [0028]; EX1006, [0022], [0025], [0027], [0028]; EX1003 ¶ 115.

- g. **[1.G] wherein the heater chamber [of the cartridge] is disposed within the receptacle [of the body] when the receptacle insertably receives and couples to the cartridge,**

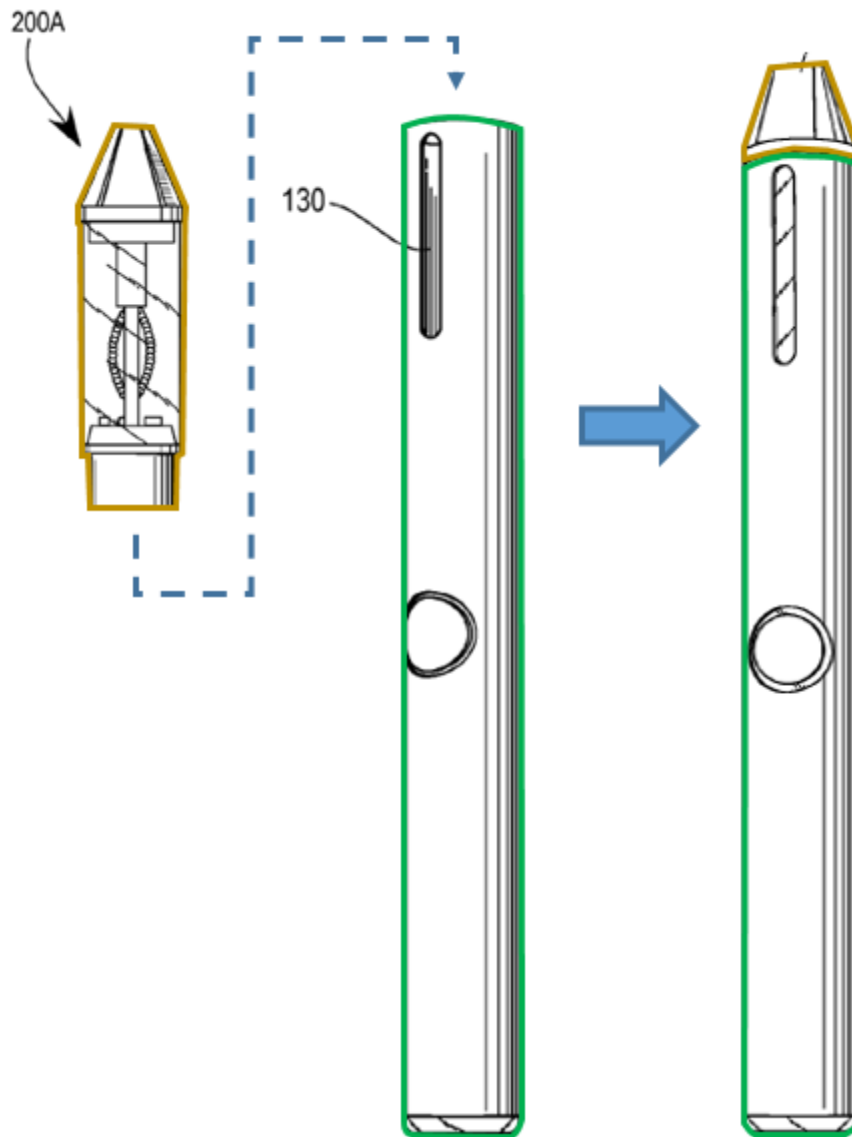
Verleur discloses this limitation. EX1003, ¶¶ 116-118.

As described in [1.E], Verleur discloses a cartomizer having a heater chamber including heating element 214. When the cartomizer is inserted into Verleur’s cartomizer chamber 108 (receptacle), the heater chamber in cartomizer 200/200A is disposed within cartomizer chamber 108. EX1005, [0030] (“A cartomizer 200 may be insertable into the cartomizer chamber 108 in accordance with embodiments of the disclosure. Shell 106 may cover cartomizer chamber 108 thereby protecting an inserted or received cartomizer 200.”); EX1006, [0022]; EX1003, ¶ 117.



EX1005, Fig. 1; EX1006, Fig. 1

As shown below, cartomizer 200A (cartridge) is inserted into cartomizer chamber 108 (receptacle) of shell 106 (body). EX1003, ¶ 118.



EX1005, Fig. 4; EX1006, Fig. 4

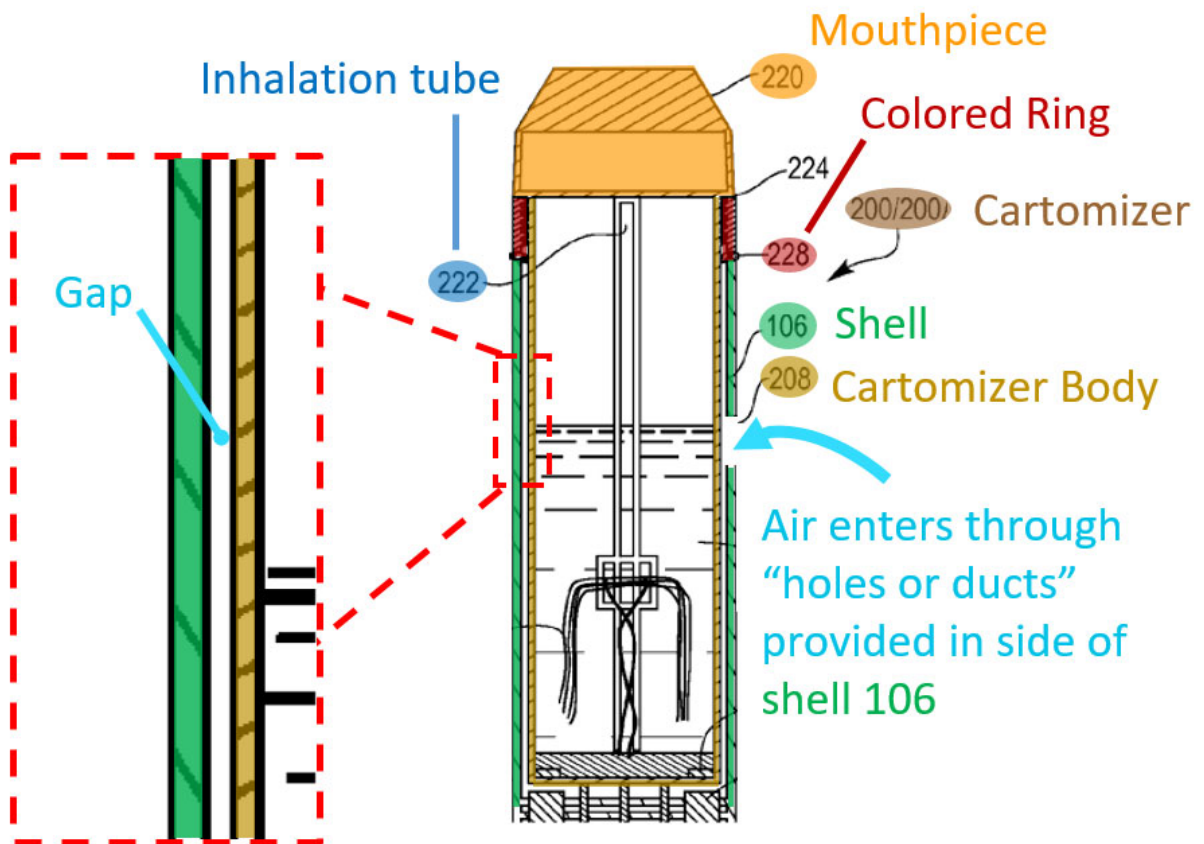
- h. **[1.H] wherein the airflow path comprises: an air inlet passage having a first side formed by an exterior surface of the cartridge and a second side formed by an internal surface of the receptacle when the receptacle insertably receives and couples to the cartridge,**

Verleur discloses this limitation. EX1003, ¶¶ 119-127.

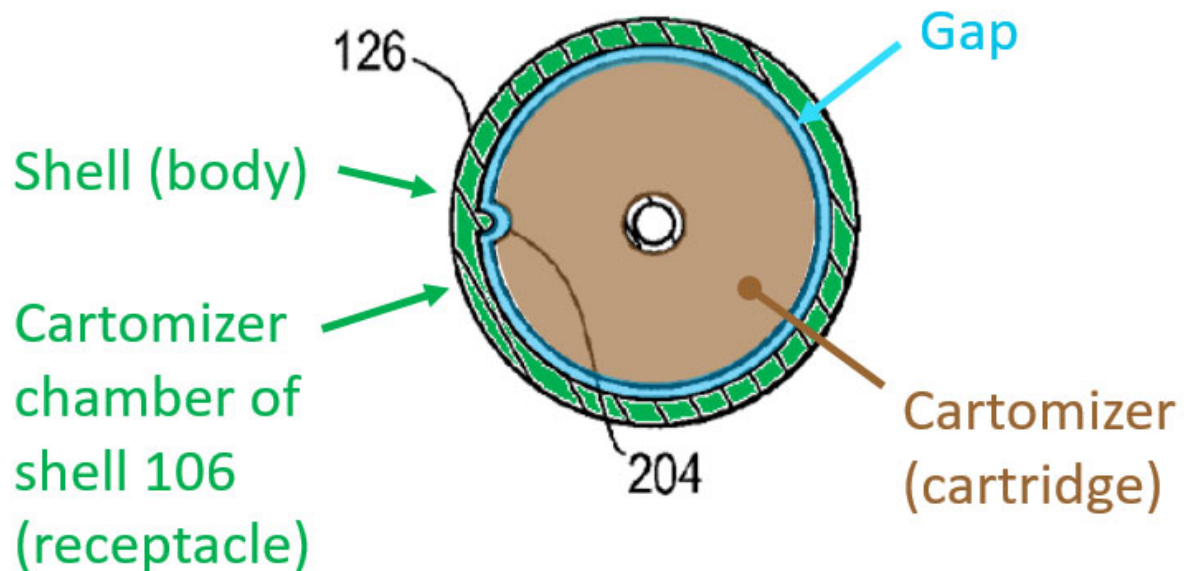
Verleur discloses two embodiments, a first embodiment wherein fluid is

vaporized and a second embodiment wherein solid matter is heated. Petitioners rely on the first embodiment, which is depicted at, *e.g.*, Fig. 1, and not the second embodiment, which is depicted at, *e.g.*, Fig. 2.

In the first embodiment, Verleur discloses that air flows in from outside the apparatus, through the heater chamber to inhalation tube 222, and out mouthpiece 220. EX1003, ¶ 121. More specifically, Verleur discloses that air flows in from outside the apparatus by way of holes or ducts in the outer shell of the battery portion (body). EX1005, [0039] (“Inhalation tube 222 may also be in fluid communication with one or more holes or ducts provided, for instance, in sides of outer shell 106 in order to permit air flow through cartomizer body 208.”); EX1006, [0029], [0030]. Clear from Verleur at Figs. 1 and 1A (below), a gap exists between cartomizer 200/200A and outer shell 106 that permits airflow through the cartomizer body and fluid communication between inhalation tube 222 and the holes or ducts provided in outer shell 106. EX1003, ¶¶ 121-122.



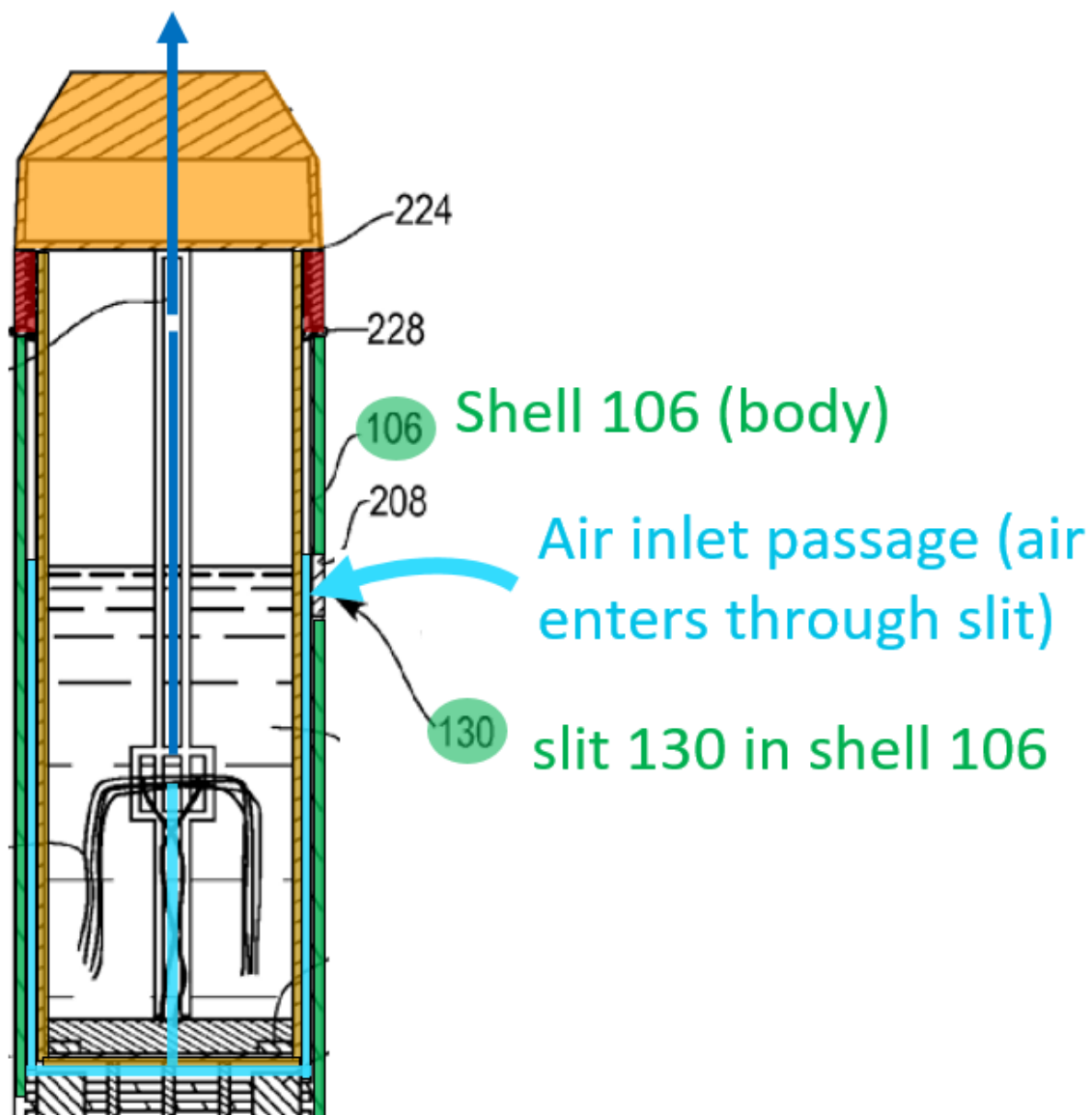
EX1005, Fig. 1 (edited to show hole or duct in shell); EX1006, Fig. 1



EX1005, Fig. 1A; EX1006, Fig. 1A

Verleur further depicts, on the right side of Fig. 1, window 130. EX1005, [0037] (“One or more windows 130 may be provided in outer shell 106 (see FIG. 1). Windows 130 may be made of a translucent material, such as glass or substantially clear plastic, in order to view internal components of battery portion 100.”); EX1006, [0028]. Verleur further describes that the window can be a “slit cut into [the] shell.” EX1005, [0037] (“Window 130 may also be a slit cut into shell 106.”); EX1006, Fig. 1. And in the co-pending ITC investigation, the parties have agreed that “window,” in the context of patents related to Verleur with the same disclosure (EX1023 and EX1024), means “*opening or slit* [on or proximate to] / [in] the shell through which the cartomizer is viewed.” EX1026.004. Thus, window 130 may

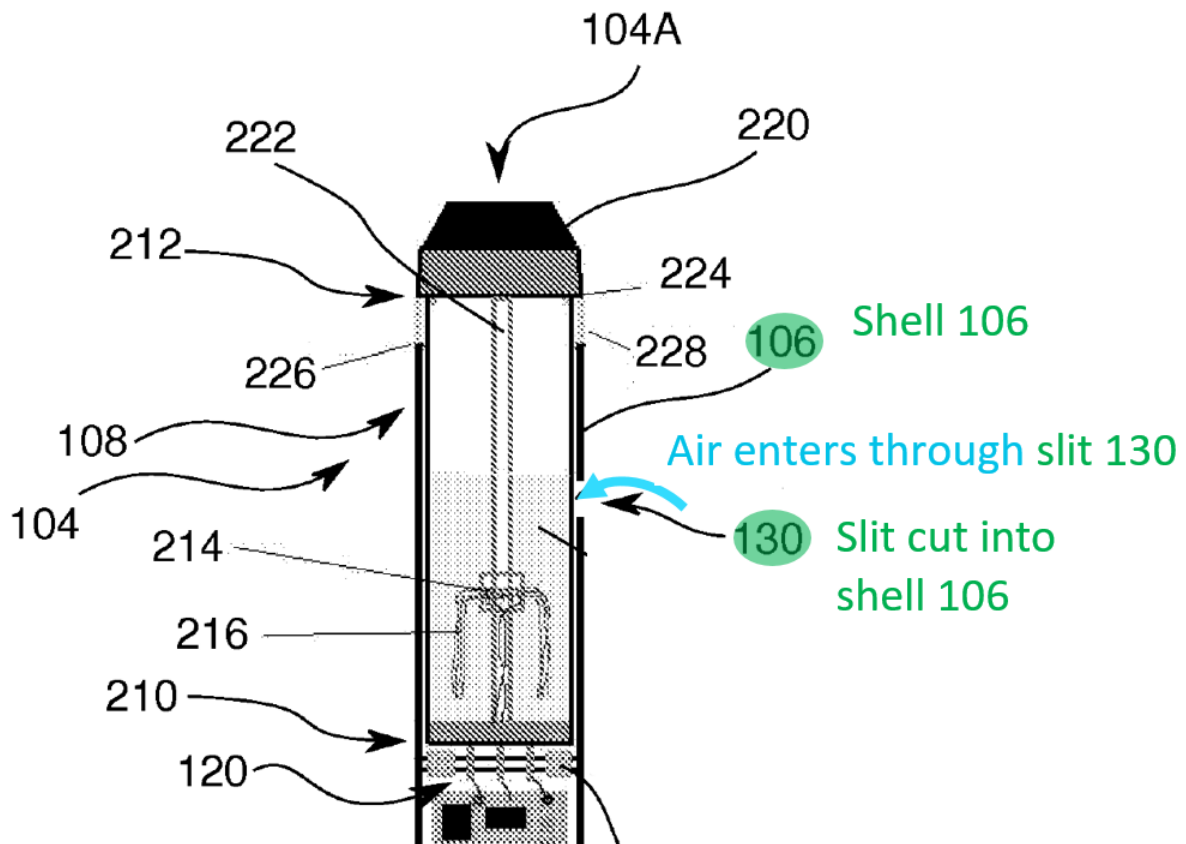
provide the “one or more holes or ducts... to permit air flow through cartomizer body 208” recited by Verleur. EX1005, [0039]; EX1006, [0030]; EX1003, ¶¶ 124-125.



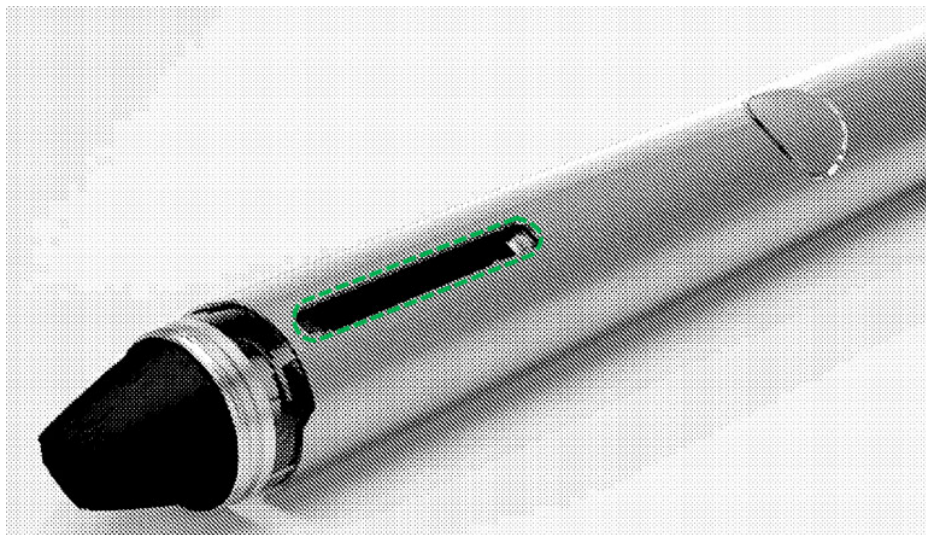
EX1005, Fig. 1

Verluer-Prov similarly depicts window 130 and the airflow gap at Figs. 1, 4,

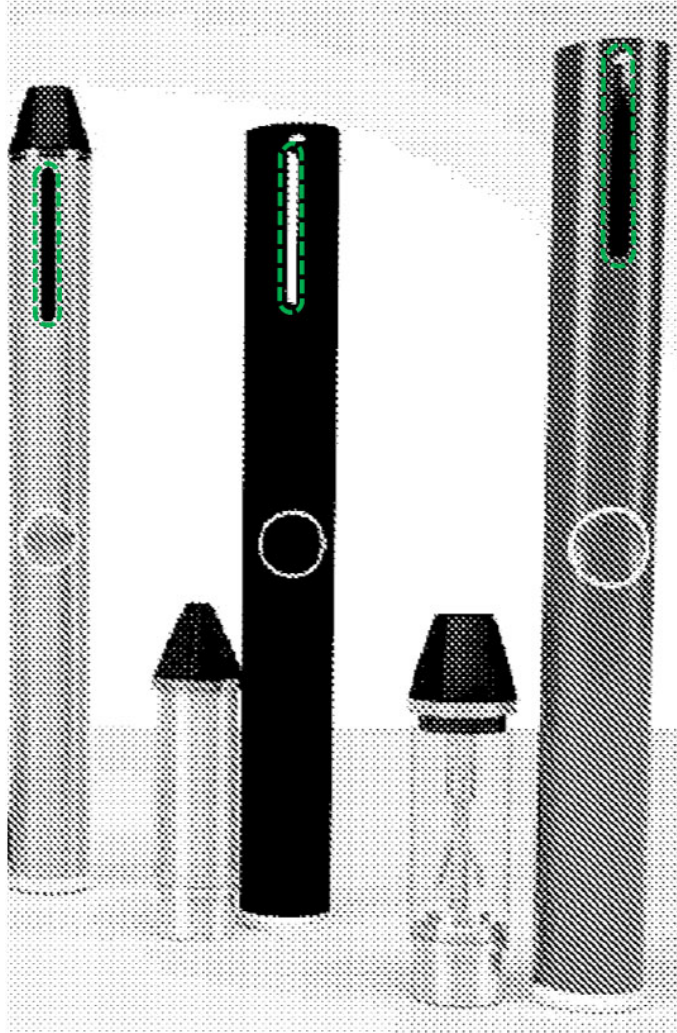
and 6.



EX1006, Fig. 1

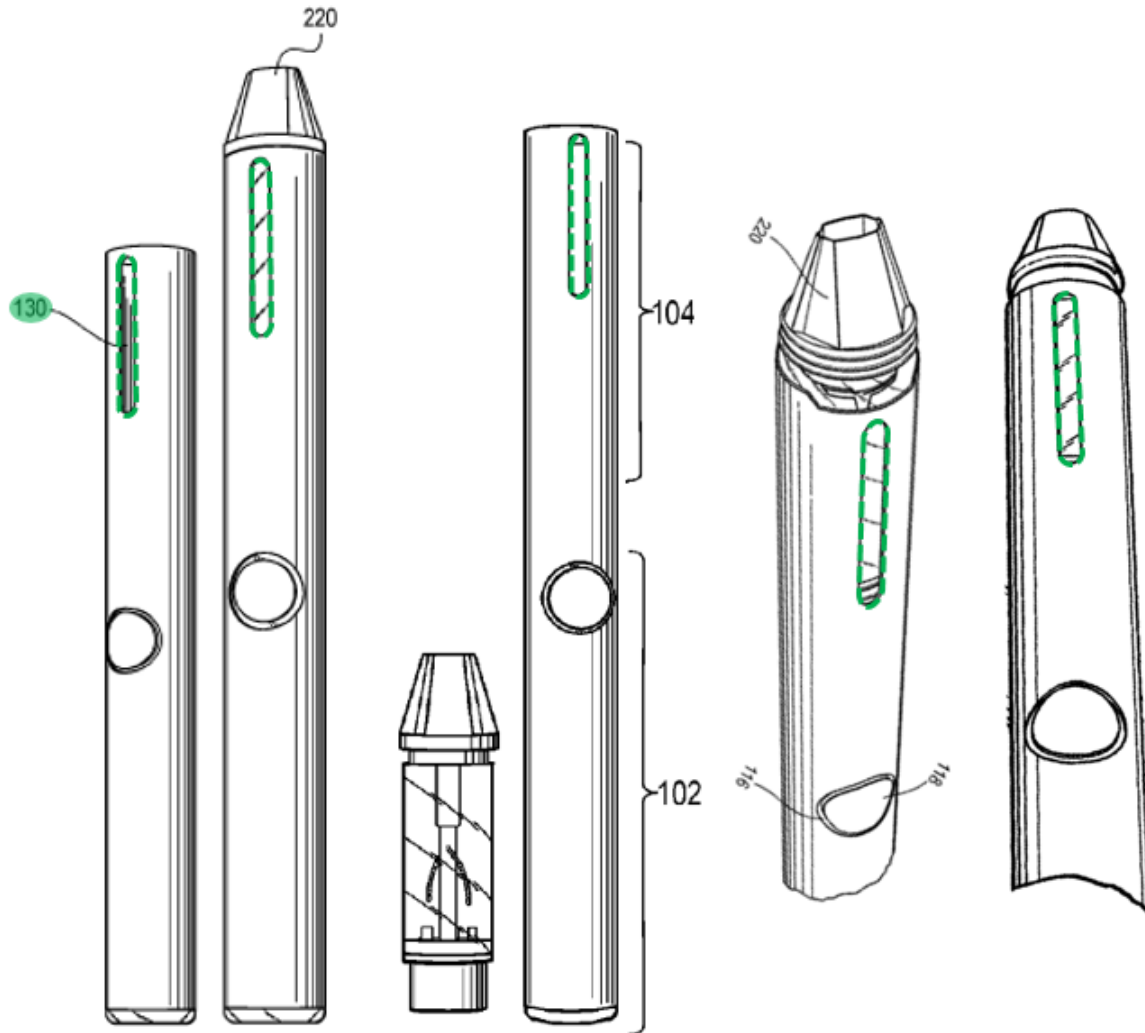


EX1006, Fig. 4



EX1006, Fig. 6

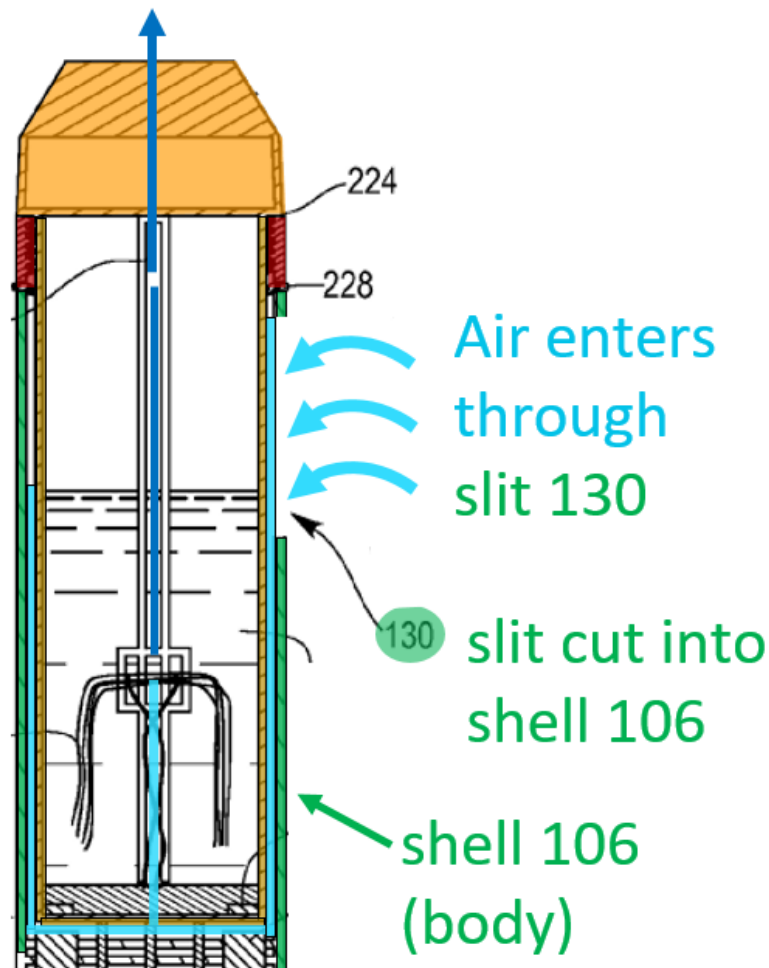
Verleur also depicts at Figs. 4-7 long slits along the outer shell that permit air into the gap:



EX1005, Figs. 4-7³

In sum, air enters at window 130 (inlet passage), travels down a gap (channel) formed by the exterior surface of 200/200A and the interior surface of outer shell 106, passes the heater chamber, travels up the inhalation tube, and exits through the mouthpiece. EX1003, ¶¶ 124-126.

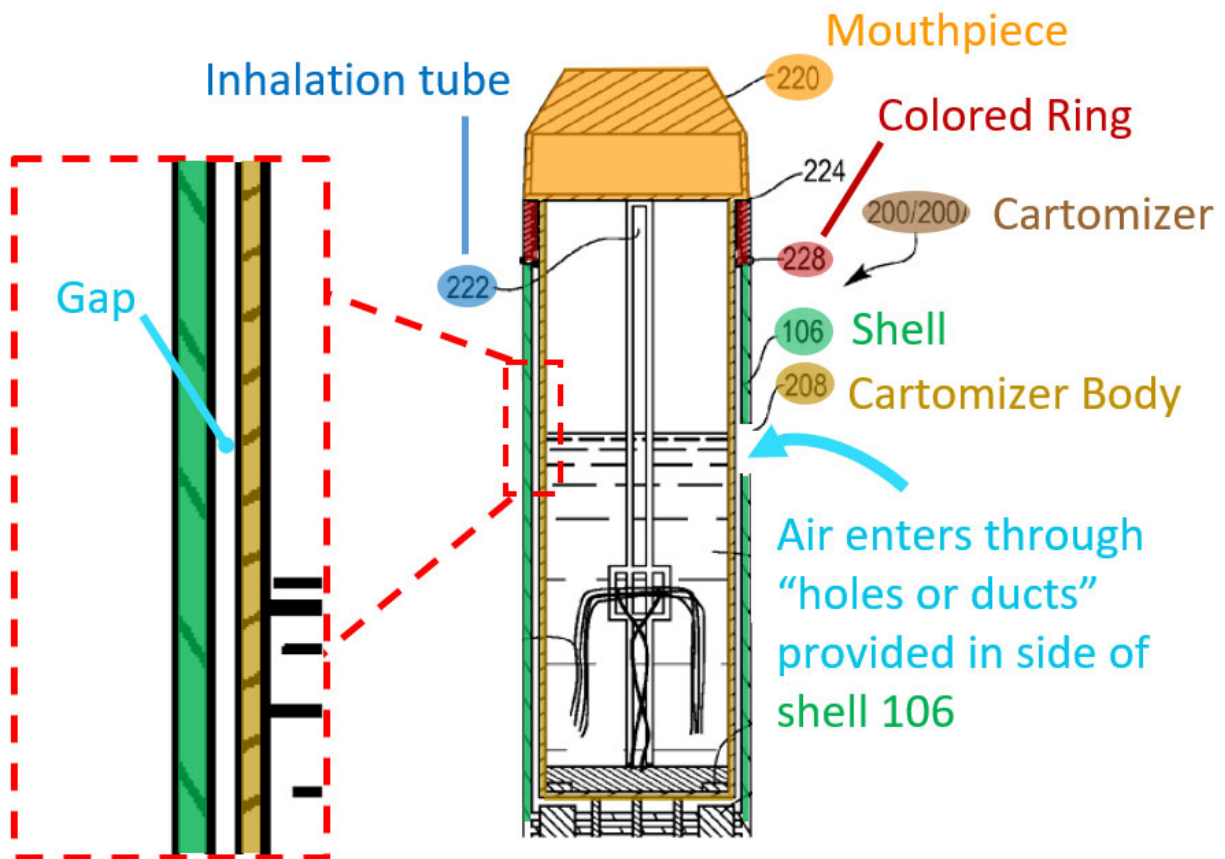
³ The cross-hatching in the slit indicates the cartridge.



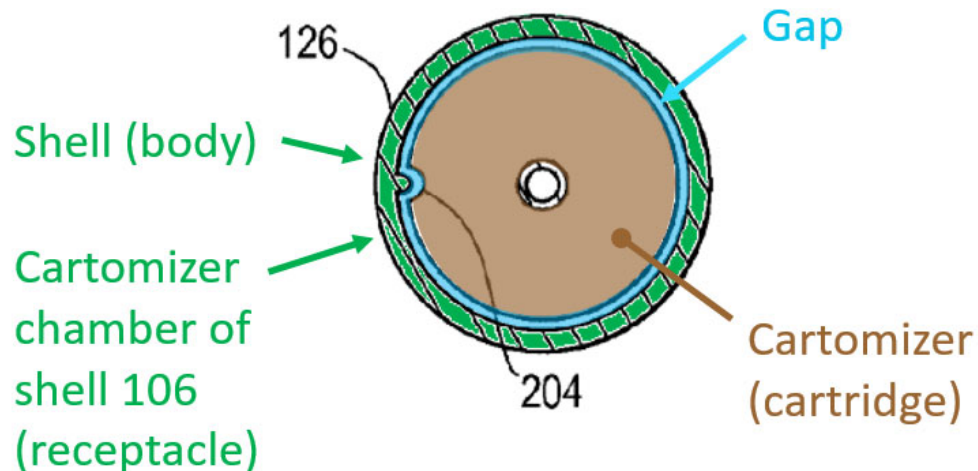
EX1005, Fig. 1 (edited to roughly match the slit depicted in Fig. 4); *see also* EX1006, Fig. 1

To the extent that window 130 is not a slit, but instead comprises glass or plastic, a hole would nonetheless be needed elsewhere in the shell to permit air into the gap between cartomizer 200/200A and outer shell 106. EX1003, ¶ 124; EX1005, [0039] (“Inhalation tube 222 may also be in fluid communication with one or more holes or ducts provided, for instance, in sides of outer shell 106 in order to permit air flow through cartomizer body 208.”); EX1006, [0029], [0030].

Because the gap runs the length of the interface between cartomizer 200/200A and outer shell 106, a POSA would have recognized that the one or more holes or ducts could be provided anywhere along the length of the outer shell. EX1003, ¶ 123; *see, e.g.*, EX1017, 5:1-2 (“The air inlet openings 16 can be located elsewhere on the electronic cigarette 2, and is a matter of design choice.”). Meaning that air still enters at the one or more holes or ducts, travels down a gap (channel) formed by the exterior surface of 200/200A and the interior surface of outer shell 106 passes the heater chamber, travels up the inhalation tube, and exits through the mouthpiece. EX1003, ¶¶ 121-123.



EX1005, Fig. 1 (edited to show hole or duct in shell); EX1006, Fig. 1



EX1005, Fig. 1A; EX1006, Fig. 1A

Note that Petitioners do not rely on Verleur's second embodiment, the solid matter embodiment. That embodiment, at Fig. 2, does not depict a gap, but instead provides access to external air through holes 252 by aligning holes 252 with corresponding holes on the outer shell. EX1005, [0043]. No similar disclosure requiring alignment is made with respect to Verleur's first embodiment.

i. **[1.I] wherein the air inlet passage is configured to deliver the air to the heater chamber; and**

Verleur discloses this limitation. EX1003, ¶¶ 128-129.

Verleur discloses an air inlet passage. *See* Limitation [1.H]. When a consumer inhales on mouthpiece 220, air is drawn in through the holes, ducts, or window slits on outer shell 106, passes heating element 214 within the heater chamber, and

continues along inhalation tube 222 to exit mouthpiece 220. EX1005, [0039] (“Once fluid 300A is heated to an optimal vaporizing temperature, the user may inhale the vaporized fluid 300A through a mouthpiece 220 provided on body 208 at or proximate to mouthpiece end 212. The vaporized fluid may travel through an inhalation tube 222 in fluid connection with heating element 214 and wick 216. Inhalation tube 222 may also be in fluid communication with one or more holes or ducts provided, for instance, in sides of outer shell 106 in order to permit air flow through cartomizer body 208.”); EX1006 [0030], Figs. 1, 4, 6. Accordingly, the air inlet passage is configured to deliver the air to the heater chamber.

j. **[1.J] a fluid connection in the cartridge, the fluid connection connecting the heater chamber and the mouthpiece.**

Verleur discloses this limitation. EX1003, ¶¶ 130-132.

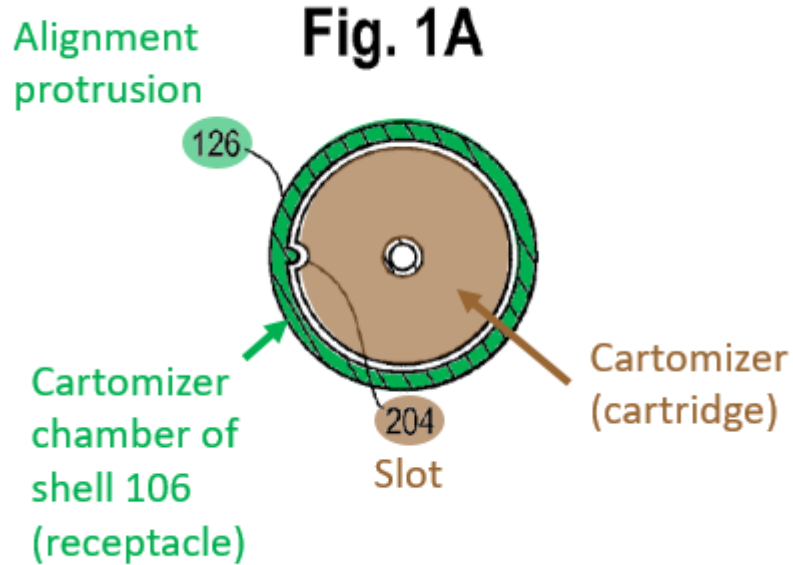
Verleur discloses that inhalation tube 222 in body 208 fluidly connects heating element 214 (within the heater chamber) with mouthpiece 220. EX1005, [0039] (“Once fluid 300A is heated to an optimal vaporizing temperature, the user may inhale the vaporized fluid 300A through a mouthpiece 220 provided on body 208 at or proximate to mouthpiece end 212. The vaporized fluid may travel through an inhalation tube 222 in fluid connection with heating element 214 and wick 216.”); EX1006 [0030]; EX1003, ¶¶ 131-132.

2. **Claim 2: The apparatus of claim 1, wherein the cartridge further comprises a protrusion extending from the exterior surface of the cartridge, and wherein at least part of the protrusion is disposed within the receptacle when the receptacle insertably receives and couples to the cartridge.**

Verleur discloses this limitation. EX1003, ¶¶ 133-138.

Verleur discloses an alignment protrusion provided on the cartomizer (cartridge) to align with a slot provided on the cartomizer receiving segment (receptacle) of the battery portion when the cartridge is disposed within the receptacle. EX1005, [0036] (“In another embodiment, a slit, crevice, or cutout may be provided on a portion of shell 106, with a matching protrusion provided on a portion cartomizer 200. For instance, a cutout may be provided on an upper rim of shell 106 at cartomizer receiving segment 104, while a matching protrusion may be provided on a portion of cartomizer 200 proximate to insertion end 210, with battery portion cutout engageable with the cartomizer protrusion when the cartomizer is properly aligned so as to ensure proper orientation of cartomizer 200 within chamber 108.”).

Verleur does not provide a figure depicting this arrangement; but it does provide at Fig. 1A the inverse configuration (a protrusion on the shell that matches a notch on the cartridge). EX1005, [0036]; EX1006 [0027].

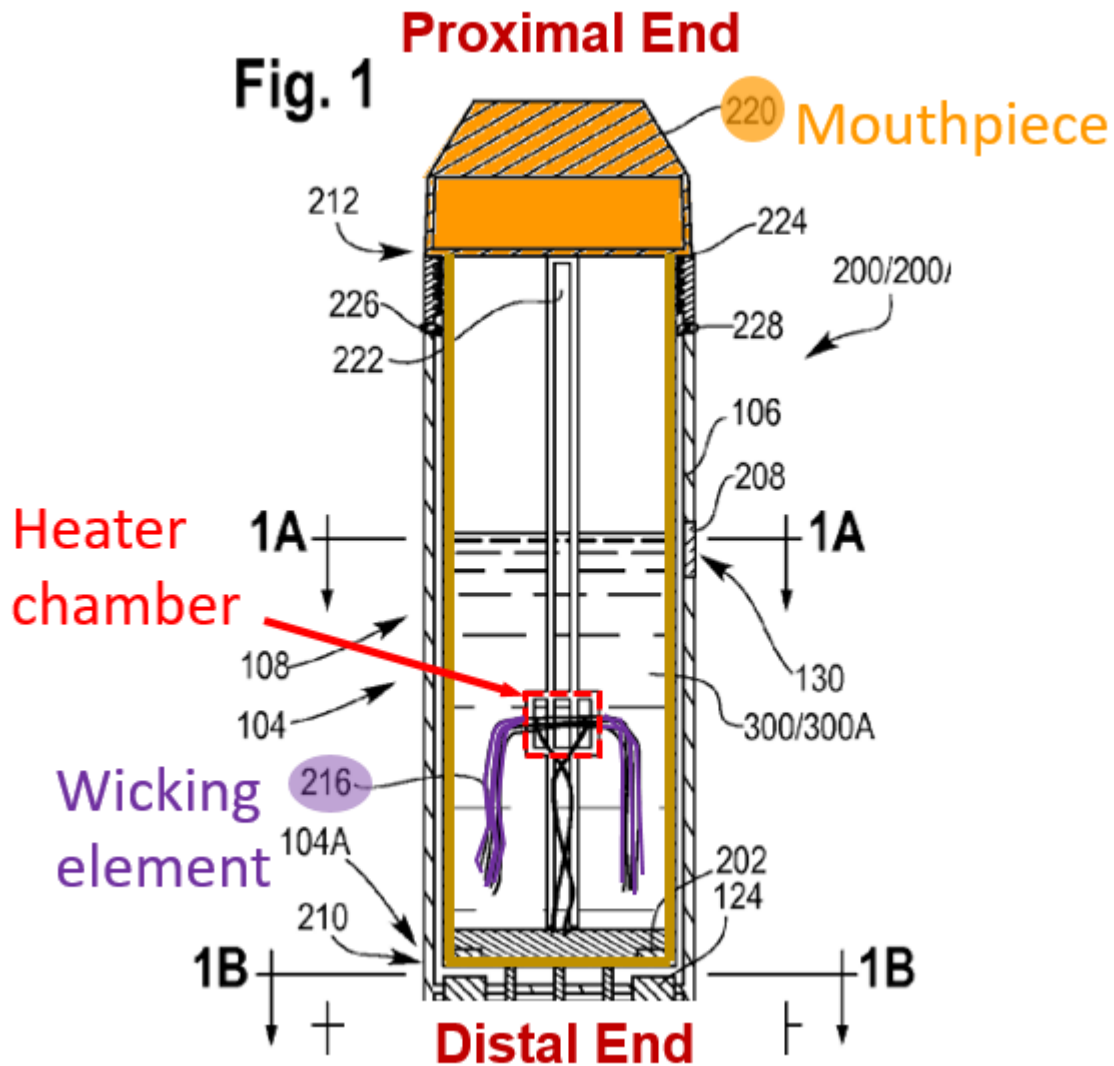


EX1005, Fig. 1A

To the extent it is argued that Verleur only discloses the inverse embodiment (Fig. 1A), it would nevertheless have been obvious in view of the knowledge of a POSA to reverse the configuration. EX1003, ¶¶ 136-138. A POSA would have recognized that there are only a finite number of ways to align and orient a cartridge within a receptacle, including swapping the locations of the alignment protrusion and alignment slit/slot. EX1003, ¶ 138. It is merely a design choice of how these features are arranged and reversing those features would be trivial to implement and have predictable results. EX1003, ¶ 138.

3. **Claim 3: The apparatus of claim 1, wherein the cartridge has a proximal end and a distal end opposite the proximal end, wherein the mouthpiece is disposed at the proximal end, and wherein the heater chamber is disposed proximate to the distal end.**

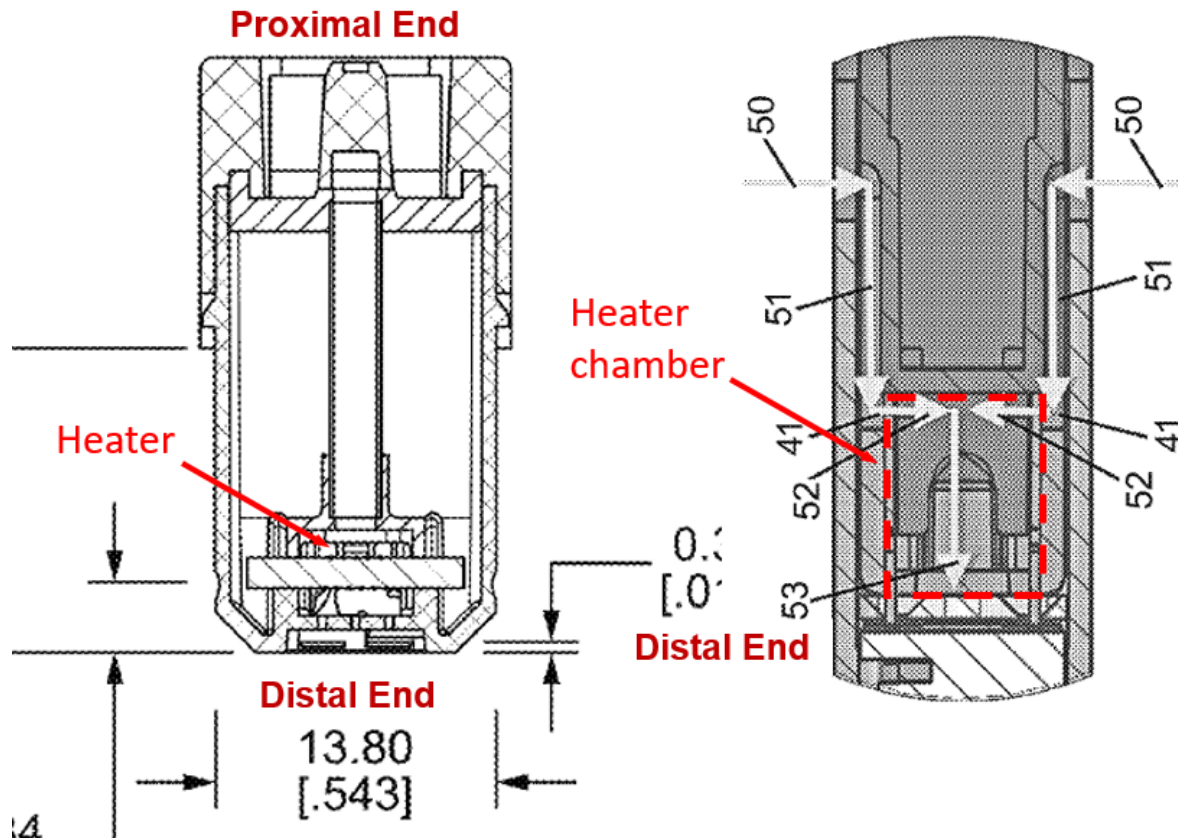
Verleur discloses this limitation. EX1003, ¶¶ 139-148.



EX1005, Fig. 1; EX1006, Fig. 1

As seen in Fig. 1, mouthpiece 220 is disposed at the proximate end while the heater chamber is disposed proximate to the distal end. Note that this limitation

requires that the mouthpiece is *disposed at the proximal end*, while the heater chamber must only be located *proximate to the distal end*. Indeed, the 173 Patent depicts its heater chamber not *at* the distal end, but *proximate to* the distal end. See EX1001, Fig. 26A.



EX1001, Figs. 26A and 10A

And as depicted in Verleur at Fig. 1, Verleur's heating chamber is near the distal end and thus proximate the distal end.

To the extent it is argued that Verleur's heater chamber is not close enough to the distal end to be "proximate" as required by Claim 3, it would have been obvious to a POSA to locate the heater chamber proximate the distal end. As of 2014, it was

well-known and common to position the heater chamber proximate to the distal end of the cartridge. *See, e.g.*, EX1010, Fig. 3 (showing heater chamber with heating wire 265 proximate to the distal end of the cartridge); EX1015, Fig. 1 (showing heater chamber with heater (311, *see* Figure 2) proximate the distal end of the cartridge); EX1020, Fig. 3 (showing heater chamber with heater 52 proximate to the distal end of the cartridge); EX1022, Fig. 3 (showing heater chamber with heater 28 proximate to the distal end of the cartridge); EX1003, ¶ 143.

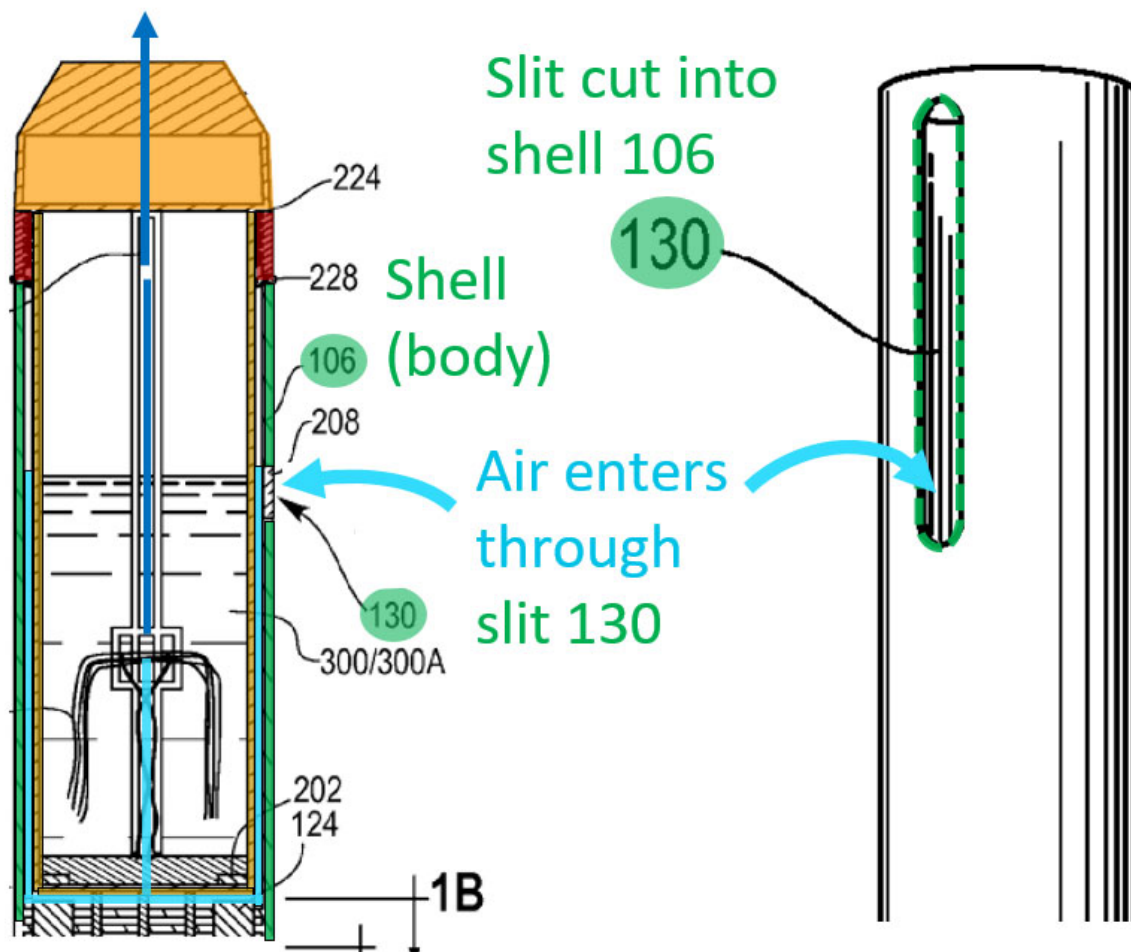
First, positioning the heater chamber proximate the distal end of the cartridge gives the aerosol more time to cool by the time it reaches the outlet, thus preventing the consumer from being scalded by hot aerosol. EX1003, ¶ 145. Second, placing the heater chamber (and its heating element) near the distal end reduces the length of the electrical contacts needed to connect the heating element to the power source. This reduces cost and complexity to manufacture the cartridge. EX1003, ¶ 146. Third, positioning the heater chamber at the proximate end enables the aerosol particles to mix more uniformly with the airflow resulting in greater homogeneity and stability of the vapor. EX1003, ¶ 147.

A POSA would have had a reasonable expectation of success modifying Verleur to move the heater chamber closer to the distal end of the cartomizer, as it is a predictable use of electronic vaporizer components according to its established function and would have been routine to implement. EX1003, ¶ 148.

- 4. Claim 4: The apparatus of claim 3, wherein the receptacle terminates in a proximal edge, wherein the air inlet passage extends from the proximal edge of the receptacle towards the distal end of the cartridge when the receptacle insertably receives and couples to the cartridge.**

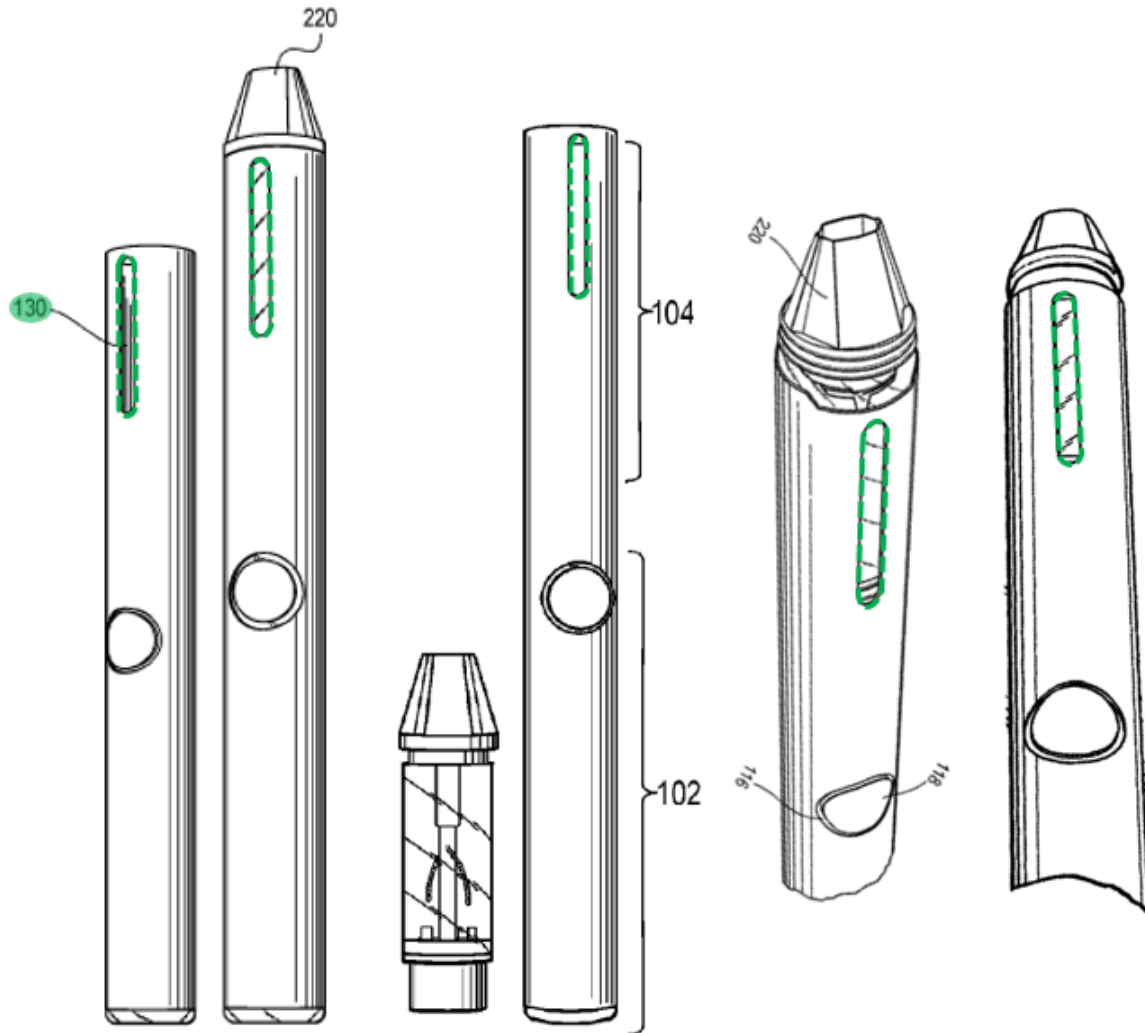
Verleur discloses this limitation. EX1003, ¶¶ 149-167.

As described in [1.H], Verleur describes an airflow path (blue, below) beginning at window 130, which provides a hole or duct in the sides of outer shell 106, continuing through the heater chamber and inhalation tube 222, and ending at mouthpiece 220. EX1003, ¶¶ 124-126; EX1005, [0039]; EX1006, [0029], [0030]. The airflow path comprises an air inlet passage having a first side formed by an exterior surface of the cartomizer (cartridge, in brown) and a second side formed by an internal surface of the cartomizer chamber (receptacle, in green) when the cartomizer chamber (receptacle) insertably receives and couples to the cartomizer (cartridge).



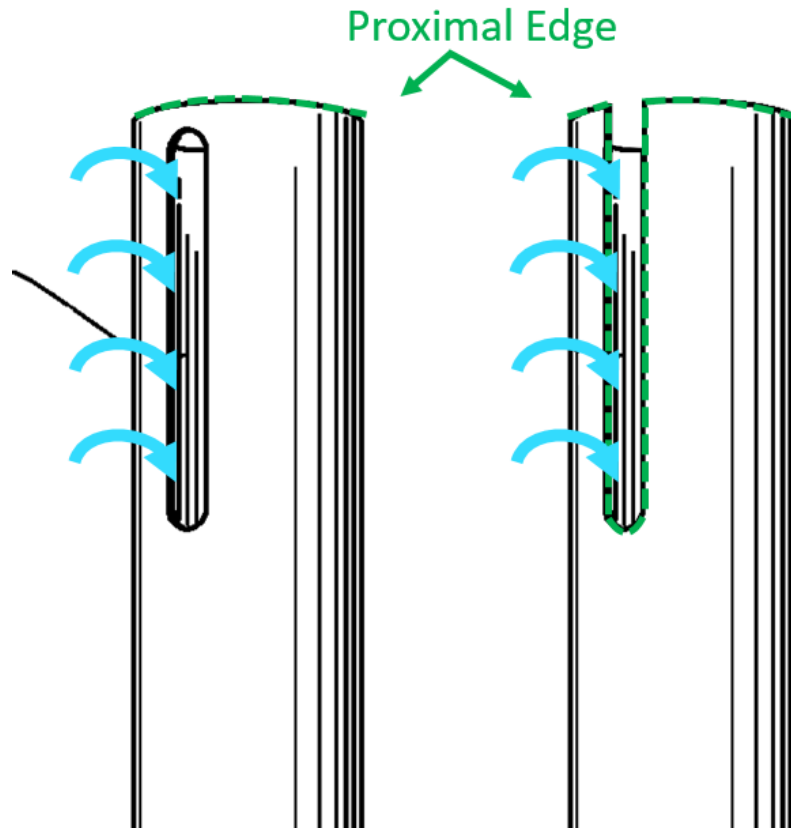
EX1005, Figs. 1, 4

Verleur provides several depictions of window 130, including embodiments depicting window 130 at or near the proximal edge of the outer shell.



EX1005, Figs. 4-7

To the extent it is argued that Verleur does not disclose an air inlet “at” the proximal edge, it would have been obvious based on Verleur in view of the knowledge of a POSA. It would be trivial, for example, to extend any of these slits to the proximal edge. EX1003, ¶ 153.

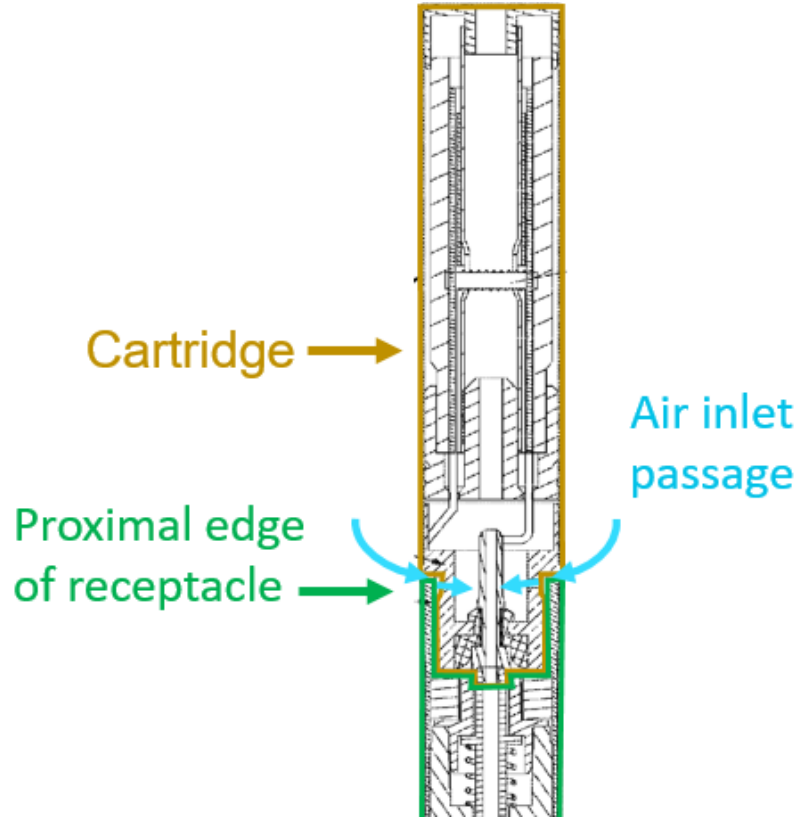


EX1005, Fig. 4 (modified).

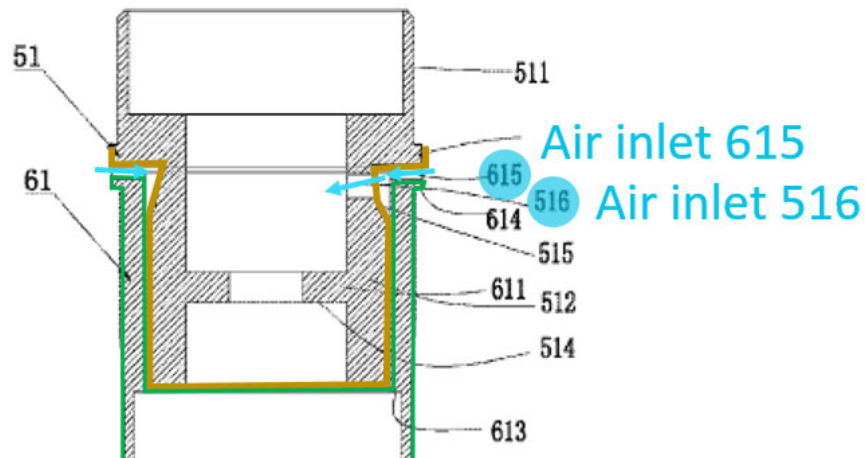
A POSA would have recognized that there are a multitude of different ways to admit outside air into the cartridge of an e-cigarette and the placement of the air inlet openings for the air inlet passage is a design choice. *See, e.g.*, EX1017, 5:1-2 (“The air inlet openings 16 can be located elsewhere on the electronic cigarette 2, and is a matter of design choice.”); EX1003, ¶ 155.

Having an air inlet passage extending from a proximal edge of a receptacle towards the distal end of the cartridge was well-known and common. EX1003, ¶ 157. Liu 787, for example, discloses a system that includes a receptacle

that insertably receives a cartridge (**brown**) and an air inlet passage extending from the proximal edge of the receptacle (**green**). EX1018 at 6:64-67 (“fixed flange 614 radially extends outwards from an end sidewall of the second connector 6, and the fixed flange 614 radially defines a thorough air inlet 615.”); EX1018 at 4:56-58 (“The lower shell 512 defines an annular air groove 515 near the positioning flange 513, and an air inlet 516 is defined radially through the annular air groove 515.”); EX1003, ¶¶ 161-162.



EX1018, Fig. 2



EX1018, Figs. 7 and 8 (modified); *see also* EX1003, ¶ 162.

Plojoux, as another example, discloses a system having an air inlet passage that extends from a proximal end of the receptacle (**green**) to the distal end of the cartridge (**brown**). EX1016, 15:20-22 (“*air may flow from the right side, entering in the space between the housing 113 and the sleeve 103 or in the space between the sleeve 103 and the holder 105, passing to the left and then entering the inner end 105b through aperture 109.*”).

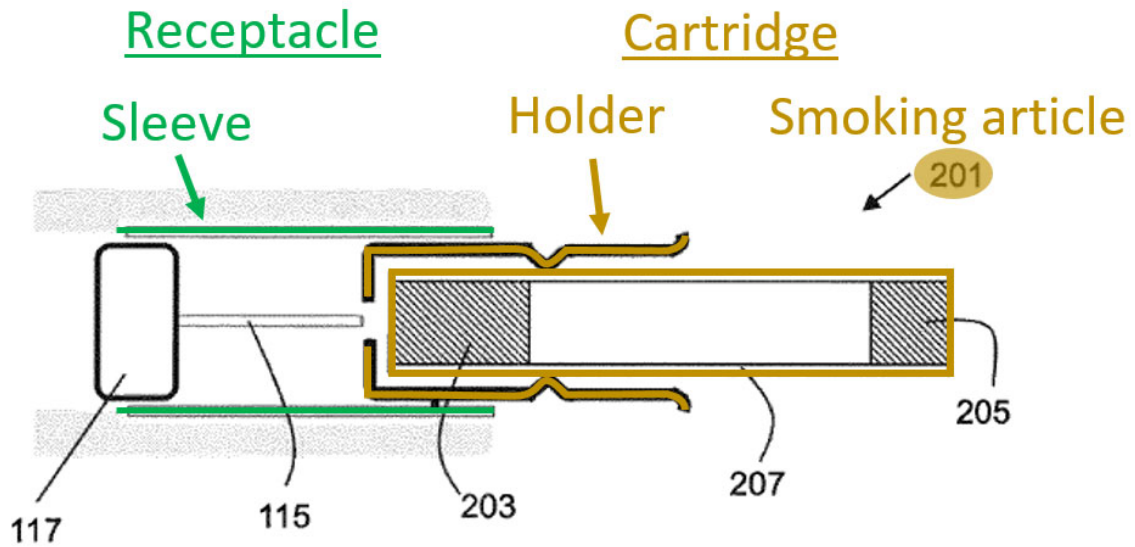


Figure 3

EX1016, Fig. 3

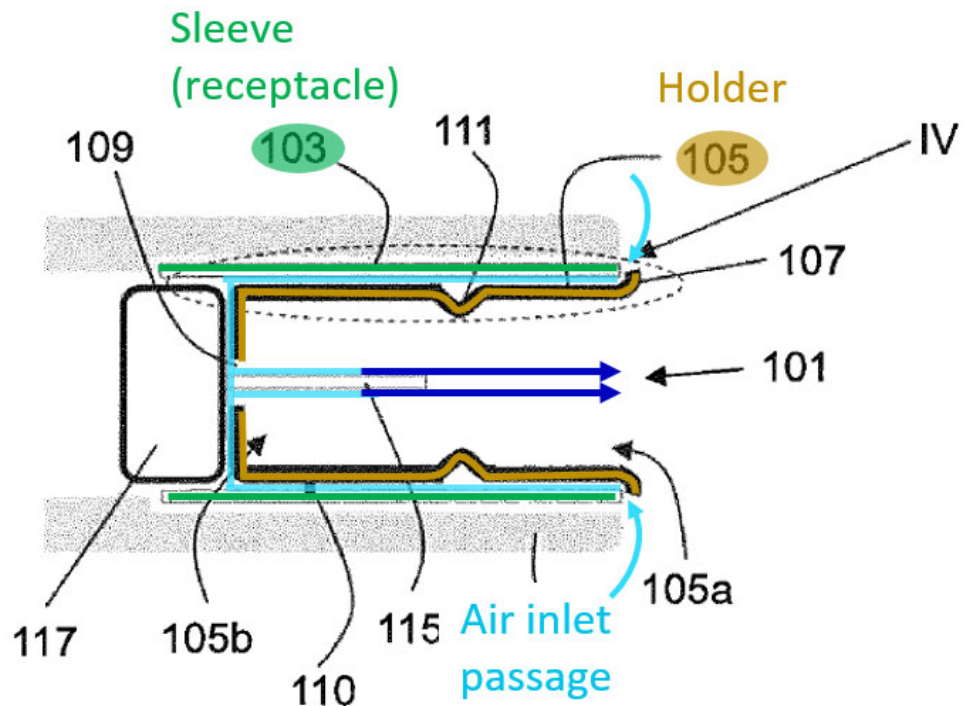


Figure 1

EX1016, Fig. 1

Plojoux describes this configuration having desirable results, including “manag[ing] the air flow and consequently the characteristics of the aerosol.” EX1016, 15:27.

Counts 594 is another example of a system having an air inlet passage that extends from a proximal end of the receptacle (**heater fixture 39**) to the distal end of the cartridge (**cigarette 23**) – see Figure below.

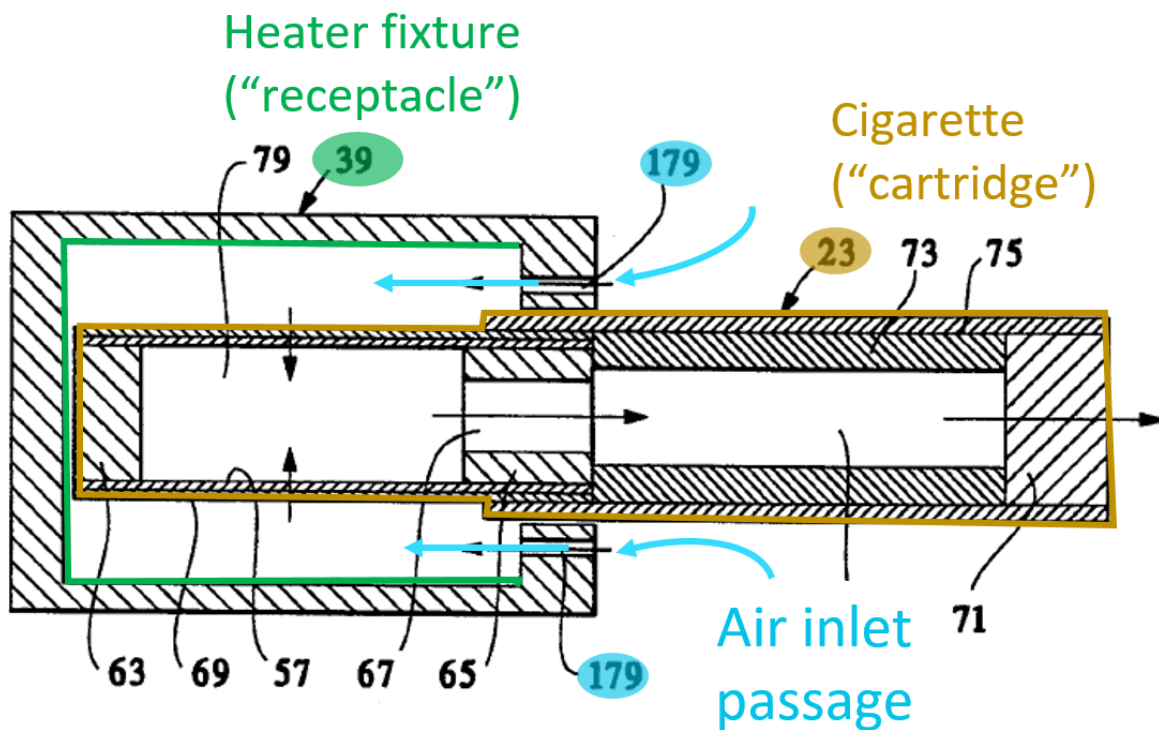


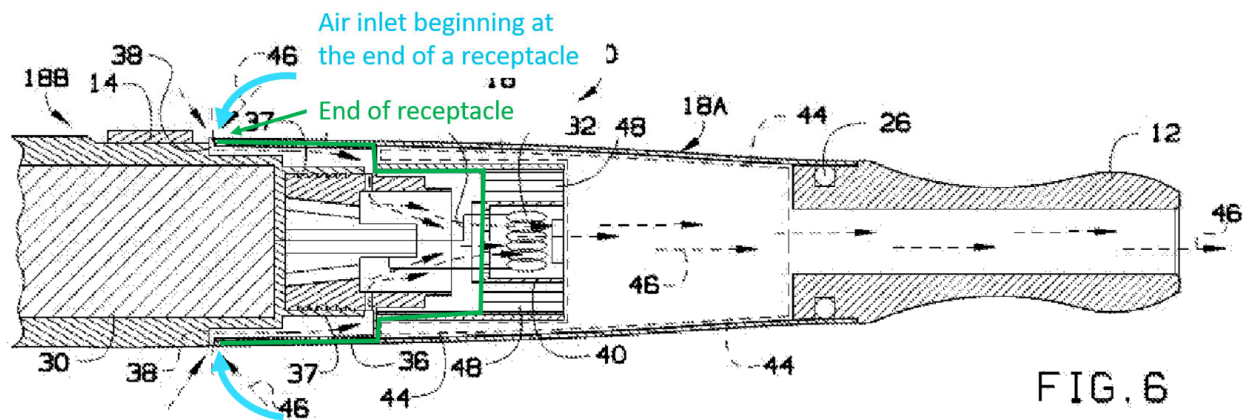
Fig. 16

EX1014, Fig. 16.

See also EX1014, 19:65-20:5 (“The cap 83A is formed with a plurality longitudinal holes or passages 179A extending through the cap from the rounded or beveled

forward end 93A to a rear face 181A for providing a flow of air into the space in the heater fixture 39A for receiving the cigarette 23, between the cigarette and the air channel sleeve 87 so that a transverse (i.e., radially inward) flow of air passes through the tobacco web 57 by the footprints 131 of the heater elements 43.”); EX1003, ¶ 159.

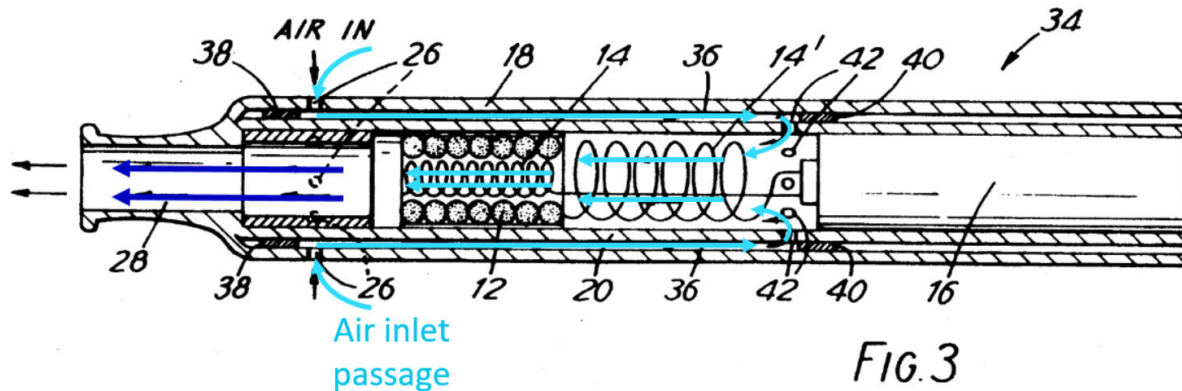
It was well-known and common to have an air inlet passage that begins at the end of a receptacle and extends down and between the receptacle and the component received into the receptacle. EX1003, ¶ 155. For example, Katz teaches an air inlet passage beginning at the end of a receptacle (in Katz, end of the cartridge) that extends between the receptacle and component received into the receptacle (in Katz, end of the battery).



EX1028, Fig. 6

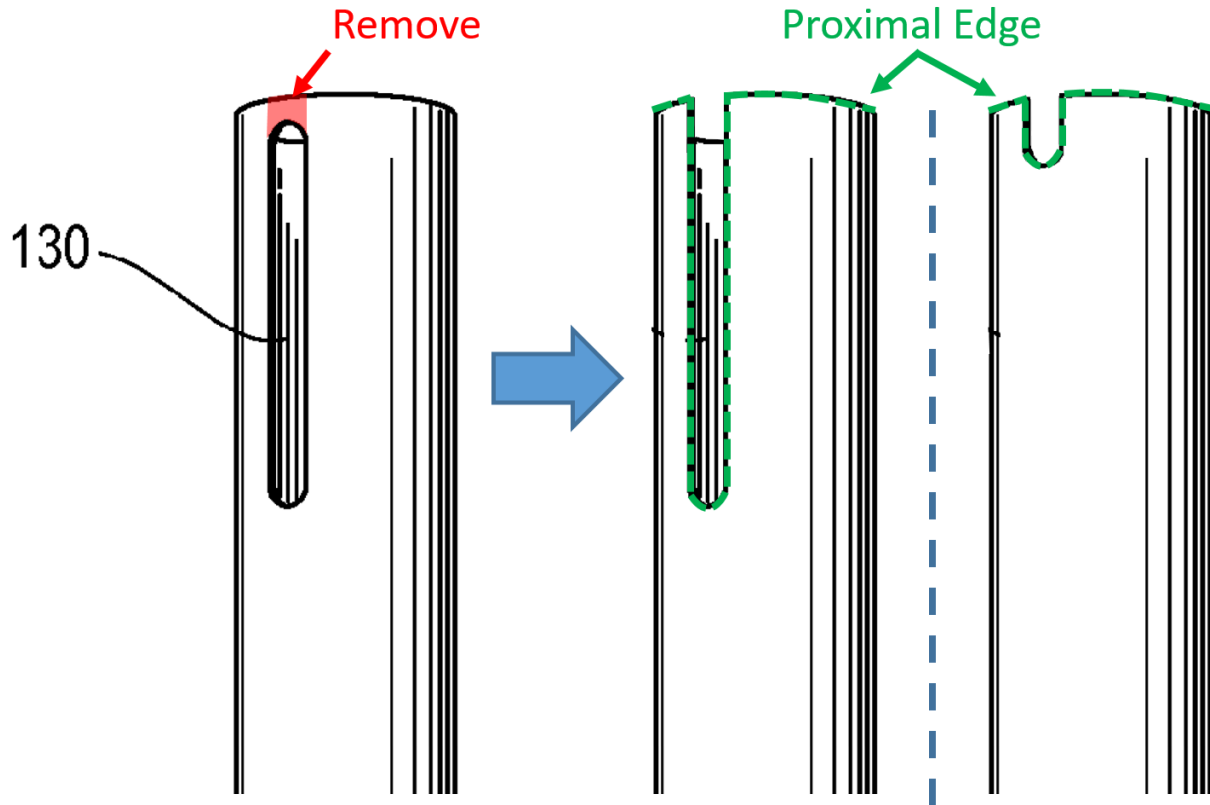
It was also well-known and common to have an air inlet passage extending from a proximal end of the device towards the distal end of the cartridge.

EX1003, ¶ 156. For example, Counts 962 discloses an air inlet passageway extending from a proximal end of the device to a distal end of the cartridge.



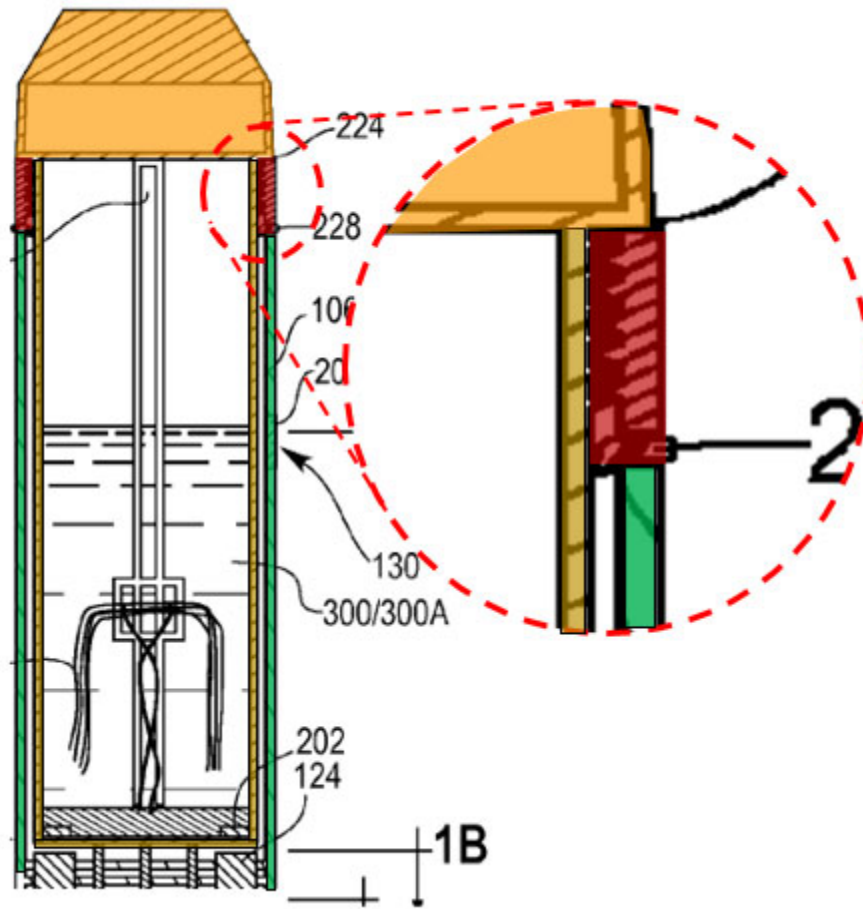
EX1029, Fig. 3

Accordingly, it would have been well known to a POSA that Verleur could be modified to include an air inlet at the proximal edge of the receptacle. Indeed, Verleur discloses that a slit may be cut into outer shell 106, which would provide an inlet to the gap. EX1005, [0039]; EX1006, Fig. 1; EX1003, ¶ 163. A POSA would have understood that having a slit extending from a proximal edge of the shell has advantages, such as allowing the consumer to see the entirety of the liquid storage portion. If seeing the liquid storage portion is not an important consideration, the slit could be sized only to permit air to enter the device. EX1003, ¶ 163.

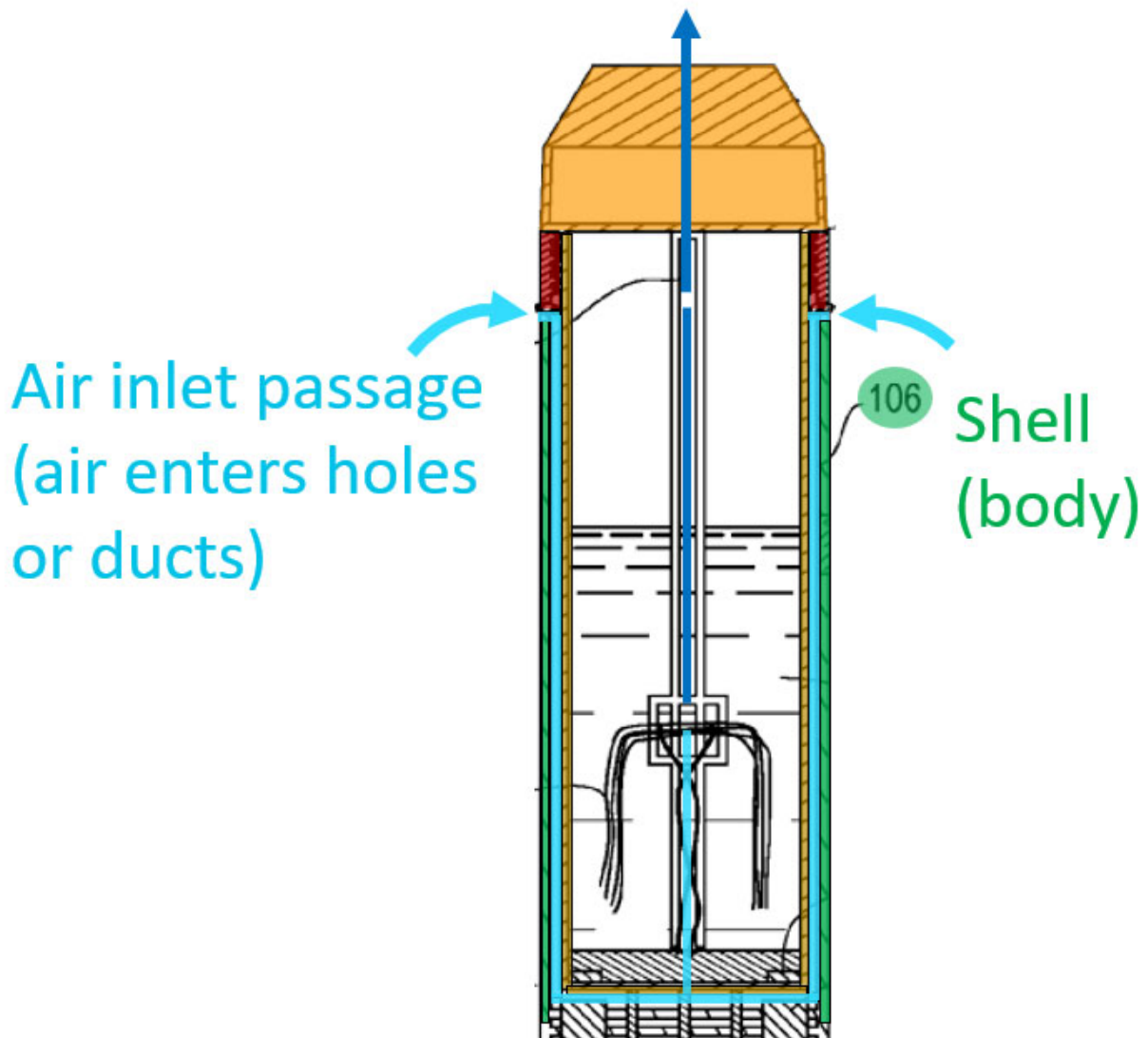


EX1005, Fig. 4 (modified)

And to the extent that window 130 is glass or plastic, Verleur still requires a hole or duct through outer shell 106. EX1005, [0039]; EX1006, [0029], [0030]. As the gap extends the length of the interface, the hole or duct could have been placed anywhere along the outer shell, including at the proximal edge. EX1003, ¶¶ 123-124, 151-153, 163-164.



EX1005, Fig. 1



EX1005, Fig. 1; EX1006, Fig. 1

Moreover, Verleur does not rely on a threaded or friction connection to secure cartomizer 200/200A to outer shell 106 because Verleur uses magnets. EX1005, [0005]. Thus, there is nothing preventing an air inlet at the proximal edge. EX1003, ¶¶ 164, 208.

A POSA would have been motivated to have Verleur's airflow passage extend

from the proximal edge of the cartomizer chamber (receptacle) to the distal end of the cartomizer (cartridge) because this configuration provides several benefits. EX1003, ¶¶ 165-167.

First, having the airflow passage extend from the proximal edge of the cartomizer chamber (receptacle) towards the distal end of the cartomizer (cartridge) would make it less likely for the consumer to block the air inlet passage during usage (*e.g.*, with their fingers). EX1003, ¶ 166.

Second, there is a reduced risk of vaporizable material back-flowing out the air inlet the farther the inlet is from the entrance into the liquid cartridge. In contrast, if the air inlet channel was near the bottom of the outer shell, hot vapor would have a shorter distance to back-flow out the device. Hot vapor and/or condensation on the apparatus could be dangerous and would reduce customer satisfaction. EX1003, ¶ 166.

Third, having the airflow passage extend from the proximal edge of the cartomizer chamber (receptacle) towards the distal end of the cartomizer (cartridge) allows for more precise control over airflow. This design choice facilitates a more controlled and customizable draw resistance for the consumer. The gap, for instance, has more length to better size the width of the gap to better mimic the drawing sensation from a traditional cigarette. EX1003, ¶ 166.

Fourth, by placing the air inlet at the proximal edge, the air inlet is effectively

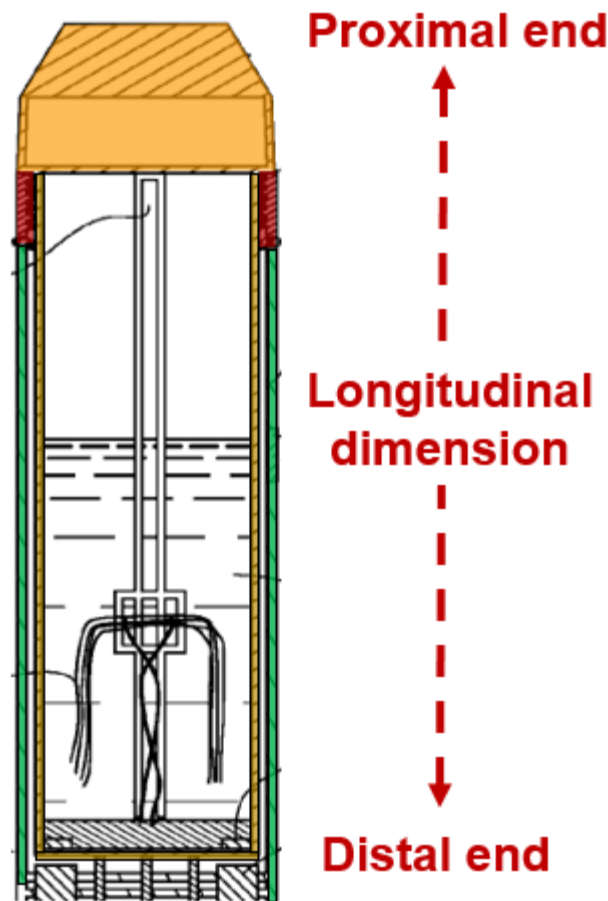
self-cleaning each time the cartridge is replaced. If the air inlet is not at the proximal edge, it can become (depending on its size) clogged over time, which would affect air flow. EX1003, ¶ 166.

A POSA would have had a reasonable expectation of success modifying Verleur to include such an air inlet passage as the gap between the cartridge and the receptacle already extends the length of the receptacle. Moreover, it would be trivial to include such an air inlet as an air inlet is already contemplated by Verleur. EX1003, ¶ 167.

5. **Claim 6: The apparatus of claim 3, wherein the cartridge has a longitudinal dimension extending from the proximal end of the cartridge to the distal end of the cartridge, and wherein the exterior surface of the cartridge and the internal surface of the receptacle are substantially parallel to the longitudinal dimension when the receptacle insertably receives and couples to the cartridge.**

Verleur discloses this limitation. EX1003, ¶¶ 168-169.

Verleur discloses that cartomizer 200/200A (cartridge) has a longitudinal dimension extending from the proximal end of the cartomizer to the distal end of the cartomizer, and wherein the exterior surface of the cartomizer and the internal surface of the cartomizer chamber (receptacle) are substantially parallel (*see below*) to the longitudinal dimension when the receptacle insertably receives and couples to the cartomizer.

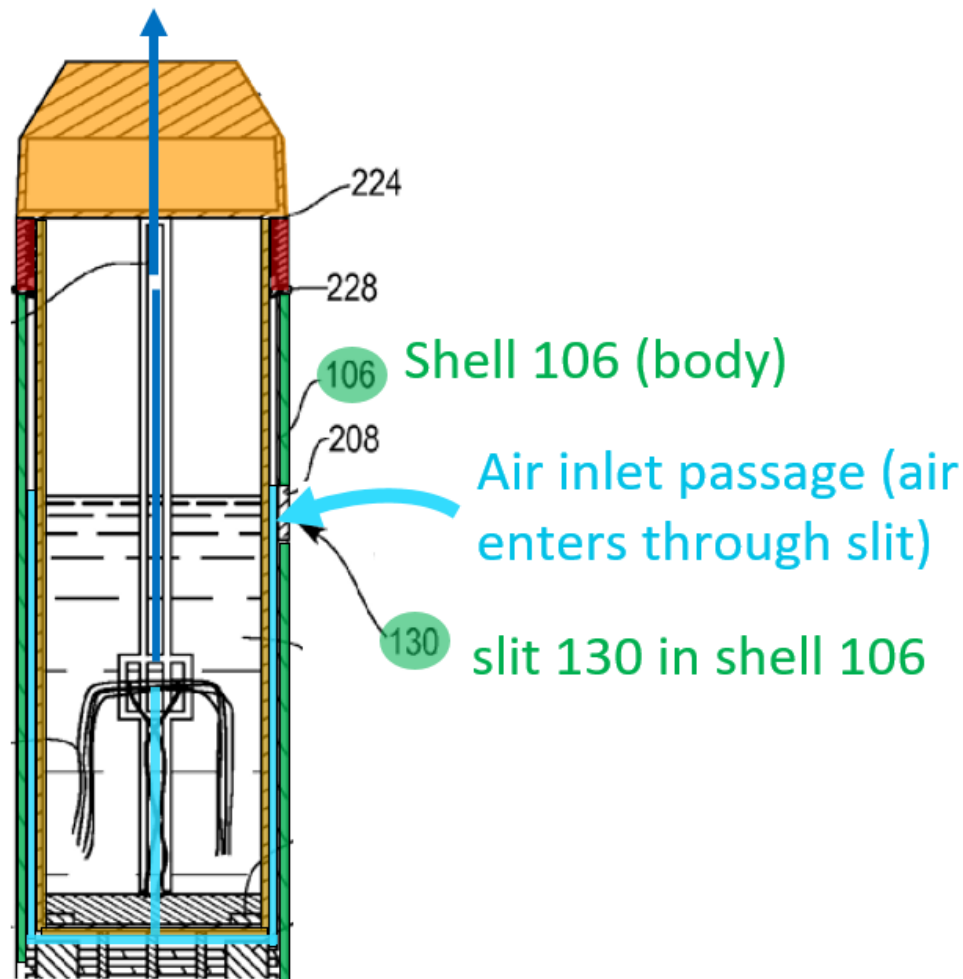


EX1005, Fig. 1; EX1006, Fig. 1

6. **Claim 7: The apparatus of claim 3, wherein the storage compartment comprises the exterior surface of the cartridge forming the first side of the air inlet passage.**

Verleur discloses this limitation. EX1003, ¶¶ 170-171.

As described with respect to [1.H], Verleur discloses an airflow path through the apparatus that comprises an air inlet passage having a first side formed by an exterior surface of the cartomizer (cartridge), which is the external surface of the storage compartment, and a second side formed by an internal surface of the cartomizer chamber (receptacle).



EX1005, Fig. 1; EX1006, Fig. 1

7. **Claim 15: The apparatus of claim 1, wherein the cartridge comprises a first electrical contact and a second electrical contact at a distal end of the cartridge, the mouthpiece disposed at a proximal end of the cartridge opposite the distal end, wherein the first electrical contact and the second electrical contact are electrically isolated and disposed in a plane substantially parallel to the distal end of the cartridge.**

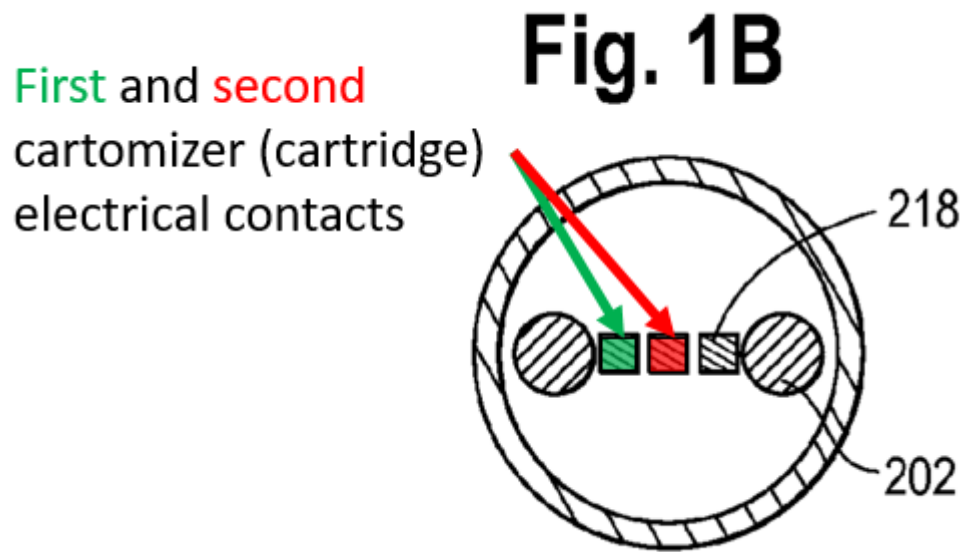
Verleur discloses this limitation. EX1003, ¶¶ 172-176.

Verleur discloses cartomizer 200/200A (cartridge) comprises “cartomizer

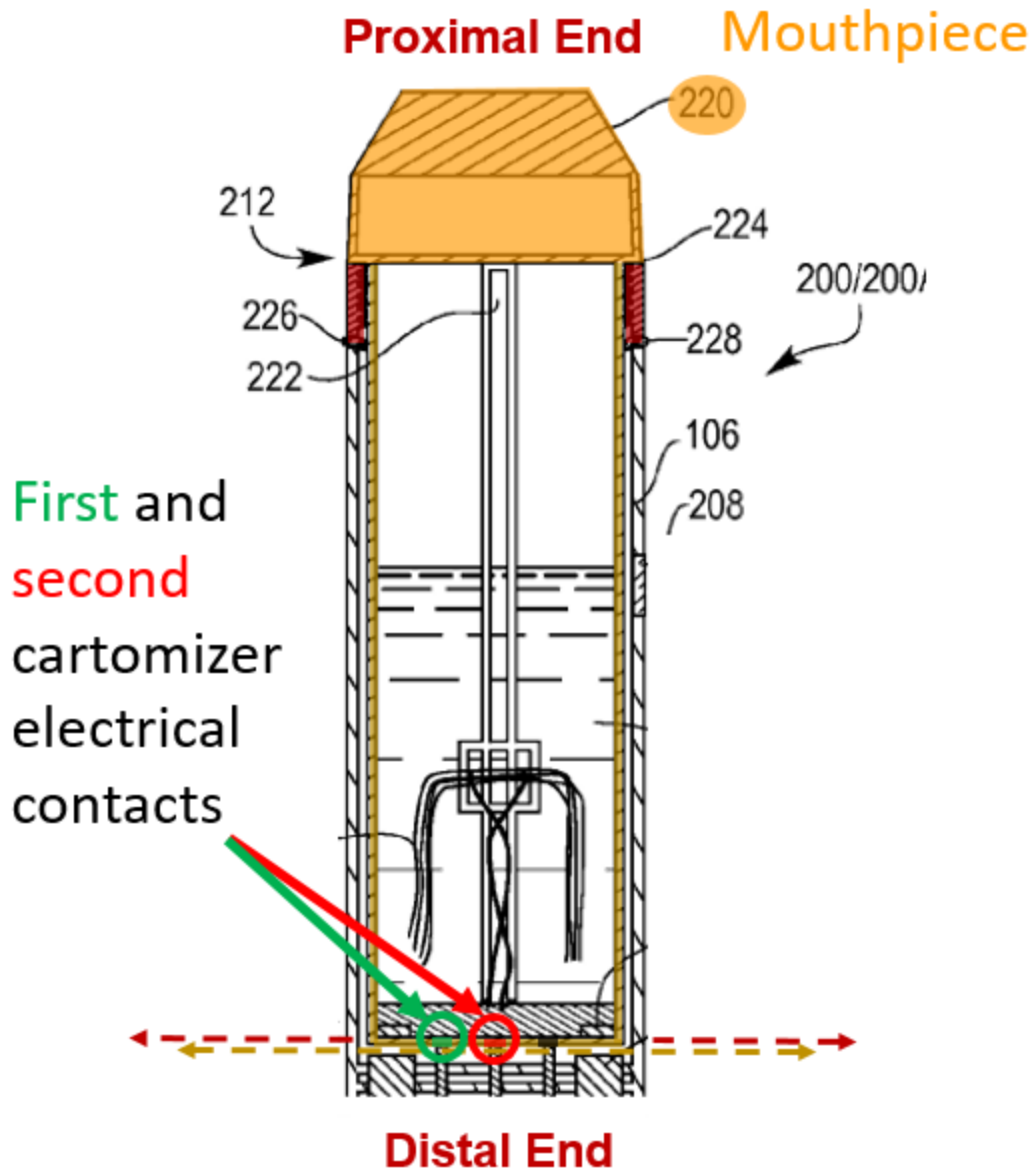
electrical contacts” at the distal end of the cartridge. EX1005, [0006]. *See also* EX1005, [0005] (“electrical contacts provided between the base end of the chamber and the battery portion, the electrical contacts including a positive contact and a negative contact insulated from the positive contact.”); EX1005, [0006] (“the cartomizer may include ... cartomizer electrical contacts.”); EX1005, [0039] (“An electrical current may be transmitted to heating element 214 through circuitry in electrical communication with electrical contacts, which contact pins 122 (see FIG. 1A) when cartomizer 200A is inserted into chamber 108.”).

Verleur discloses that the first and second contacts are electrically isolated. EX1005, [0005] (“electrical contacts provided between the base end of the chamber and the battery portion, the electrical contacts including a positive contact and a negative contact insulated from the positive contact.”); EX1006, [0025]; EX1003, ¶ 174.

Verleur further discloses that the first and second electrical contacts on the cartomizer are disposed in a plane substantially parallel to the distal end of the cartomizer (cartridge) – *see* figure below – and Verleur discloses mouthpiece 220 disposed at a proximal end of the cartomizer (*i.e.*, cartridge) opposite the distal end – *also see* figure below. EX1003, ¶¶ 175-176.



EX1005, Fig. 1B; EX1006, Fig. 1B

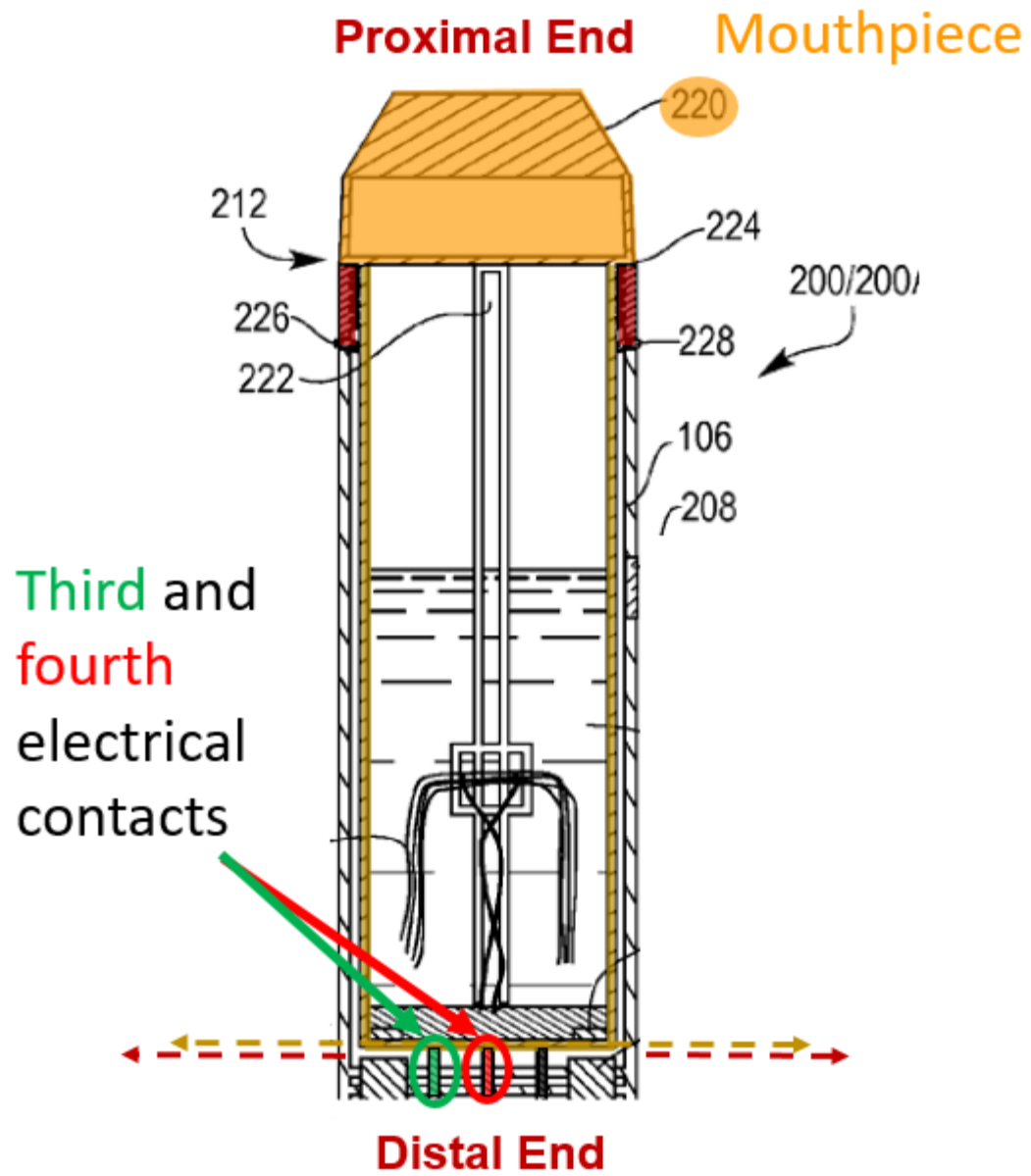


EX1005, Fig. 1; EX1006, Fig. 1

8. **Claim 16: The apparatus of claim 15, wherein the receptacle comprises a third electrical contact and a fourth electrical contact disposed in a second plane, the second plane substantially parallel to the distal end of the cartridge when the cartridge is received within the receptacle.**

Verleur discloses this limitation. EX1003, ¶¶ 177-178.

Verleur discloses battery electrical contacts. EX1005, [0006] (“The vaporizer may also include battery electrical contacts provided between the base end of the chamber and the battery segment, the battery electrical contacts positioned to contact the cartomizer electrical contacts when the cartomizer is inserted in the chamber.”). The battery electrical contacts may include a plurality of pogo pins 120, that are “used to establish connections between two circuits ... each retractable upon compression, for instance by cartomizer 200 when it is inserted in cartomizer chamber 108.” EX1005, [0033]; EX1006, [0025], [0030]. The pogo pins (third and fourth electrical contacts) are disposed in a second plane substantially parallel to the distal end of the cartomizer (cartridge) to engage the cartomizer contacts when cartomizer 200 is inserted into the cartomizer chamber. EX1003, ¶ 178.

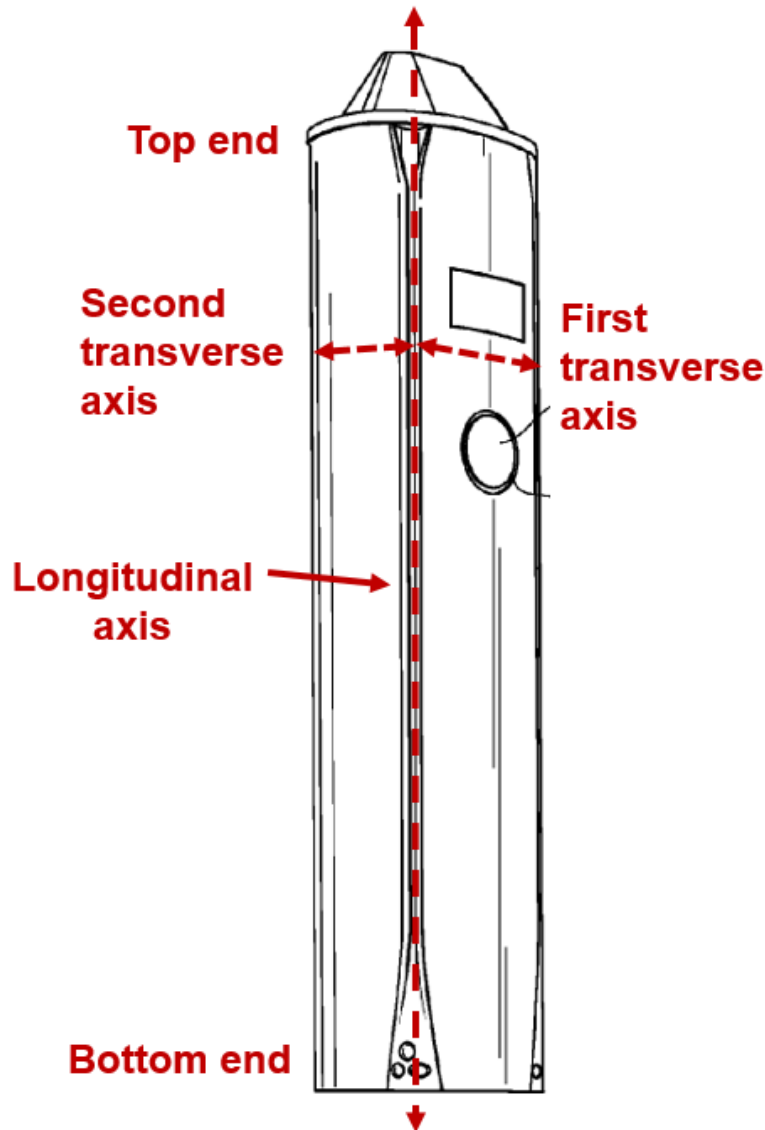


EX1005, Fig. 1; EX1006, Fig. 1

9. **Claim 18: The apparatus of claim 1, wherein the body has a top end and a bottom end opposite the top end, wherein the receptacle is disposed at the top end, wherein a body longitudinal axis extends from the top end to the bottom end, and wherein a first body transverse axis and a second body transverse axis extend substantially perpendicular to the body longitudinal axis, the body having a greater dimension along the first body transverse axis than along the second body transverse axis.**

Verleur discloses this limitation. EX1003, ¶¶ 179-180.

Verleur discloses the body has a top end and a bottom end opposite the top end, wherein the receptacle is disposed at the top end, wherein a body longitudinal axis extends from the top end to the bottom end, and wherein a first body transverse axis and a second body transverse axis extend substantially perpendicular to the body longitudinal axis, the body having a greater dimension along the first body transverse axis than along the second body transverse axis. EX1003, ¶ 180.



EX1005, Fig. 15; *see also* EX1006, Fig. 15.

10. **Claim 19: The apparatus of claim 1, wherein the storage compartment comprises the vaporizable material, and wherein the vaporizable material comprises a nicotine formulation.**

Verleur discloses this limitation. EX1003, ¶¶ 181-182.

Verleur discloses cartomizer 200A (cartridge) includes body 208 (storage compartment) configured to hold vaporizable fluid 300A, wherein the vaporizable

material comprises a nicotine formulation. EX1005, [0038] (“Vaporizable fluid 300A may be, for example, any known or to be developed fluid useful to vaporize, for inhalation nicotine, flavor or other desired ingredients in an electronic cigarette, such fluids include propylene glycol (PG), vegetable glycerin (VG), or polyethylene glycol 400 (PEG400), as well as their mixtures to which a flavor and/or nicotine has been added.”); EX1006, [0002], [0003].

11. Claim 20:

Claim 20 is virtually the same as Claim 1, with the primary distinction being that where Claim 1 specifies a “heater chamber comprising a resistive heating element,” Claim 20 only requires a “resistive heating element.” EX1003, ¶ 183. Claims 20-25, 28, and 30 of the ’173 Patent are obvious for the reasons set forth above for Claims 1-4, 6-7, and 18-19. EX1003, ¶¶ 88-171, 179-182, 184-200.

a. [20.A] An apparatus comprising:

Disclosed. *See* [1.A].

b. [20.B] a cartridge comprising

Disclosed. *See* [1.B].

c. [20.C] a mouthpiece,

Disclosed. *See* [1.C].

d. [20.D] a storage compartment configured to hold a vaporizable material, and

Disclosed. *See* [1.D].

- e. [20.E] a resistive heating element configured to heat the vaporizable material, wherein the heating of the vaporizable material generates an aerosol comprising the vaporizable material and air passing along an airflow path; and

Disclosed. *See* [1.E].

- f. [20.F] a body comprising a receptacle configured to insertably receive and couple to the cartridge,

Disclosed. *See* [1.F].

- g. [20.G] wherein the resistive heating element is disposed within the receptacle when the receptacle insertably receives and couples to the cartridge,

Disclosed. *See* [1.G].

- h. [20.H] wherein the airflow path comprises: an air inlet passage having a first side formed by an exterior surface of the cartridge and a second side formed by an internal surface of the receptacle when the receptacle insertably receives and couples to the cartridge,

Disclosed. *See* [1.H].

- i. [20.I] wherein the air inlet passage is configured to deliver the air towards the resistive heating element; and

Disclosed. *See* [1.I].

- j. [20.J] a fluid connection in the cartridge, the fluid connection connecting the resistive heating element and the mouthpiece.

Disclosed. *See* [1.J].

12. Claim 21: The apparatus of claim 20, wherein the cartridge further comprises a protrusion extending from the exterior surface of the cartridge, and wherein at least part of the protrusion is disposed within the receptacle when the receptacle insertably receives and couples to the cartridge.

Disclosed. *See* Claim 2.

13. Claim 22: The apparatus of claim 20, wherein the cartridge has a proximal end and a distal end opposite the proximal end, wherein the mouthpiece is disposed at the proximal end, and wherein the resistive heating element is disposed proximate to the distal end.

Disclosed. *See* Claim 3.

14. Claim 23: The apparatus of claim 22, wherein the receptacle terminates in a proximal edge, wherein the air inlet passage extends from the proximal edge of the receptacle towards the distal end of the cartridge when the receptacle insertably receives and couples to the cartridge.

Disclosed. *See* Claim 4.

15. Claim 24: The apparatus of claim 22, wherein the cartridge has a longitudinal dimension extending from the proximal end of the cartridge to the distal end of the cartridge, and wherein the exterior surface of the cartridge and the internal surface of the receptacle are substantially parallel to the longitudinal dimension when the receptacle insertably receives and couples to the cartridge.

Disclosed. *See* Claim 6.

16. Claim 25: The apparatus of claim 22, wherein the storage compartment comprises the exterior surface of the cartridge forming the first side of the air inlet passage.

Disclosed. *See* Claim 7.

17. **Claim 28: The apparatus of claim 20, wherein the body has a top end and a bottom end opposite the top end, wherein the receptacle is disposed at the top end, wherein a body longitudinal axis extends from the top end to the bottom end, and wherein a first body transverse axis and a second body transverse axis extend substantially perpendicular to the body longitudinal axis, the body having a greater dimension along the first body transverse axis than along the second body transverse axis.**

Disclosed. *See* Claim 18.

18. **Claim 30: The apparatus of claim 20, wherein the storage compartment comprises the vaporizable material, and wherein the vaporizable material comprises a nicotine formulation.**

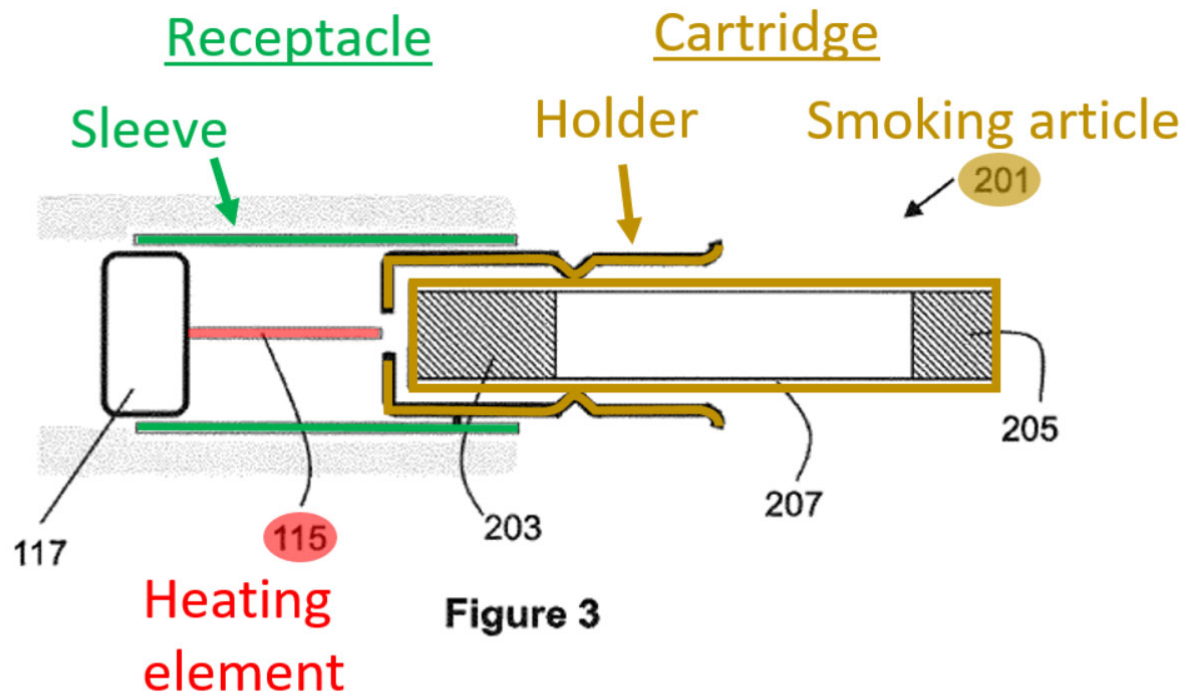
Disclosed. *See* Claim 19.

B. Ground 2: Verleur in view of Plojoux and the knowledge of POSA renders obvious claims 2, 4 and 21, 23

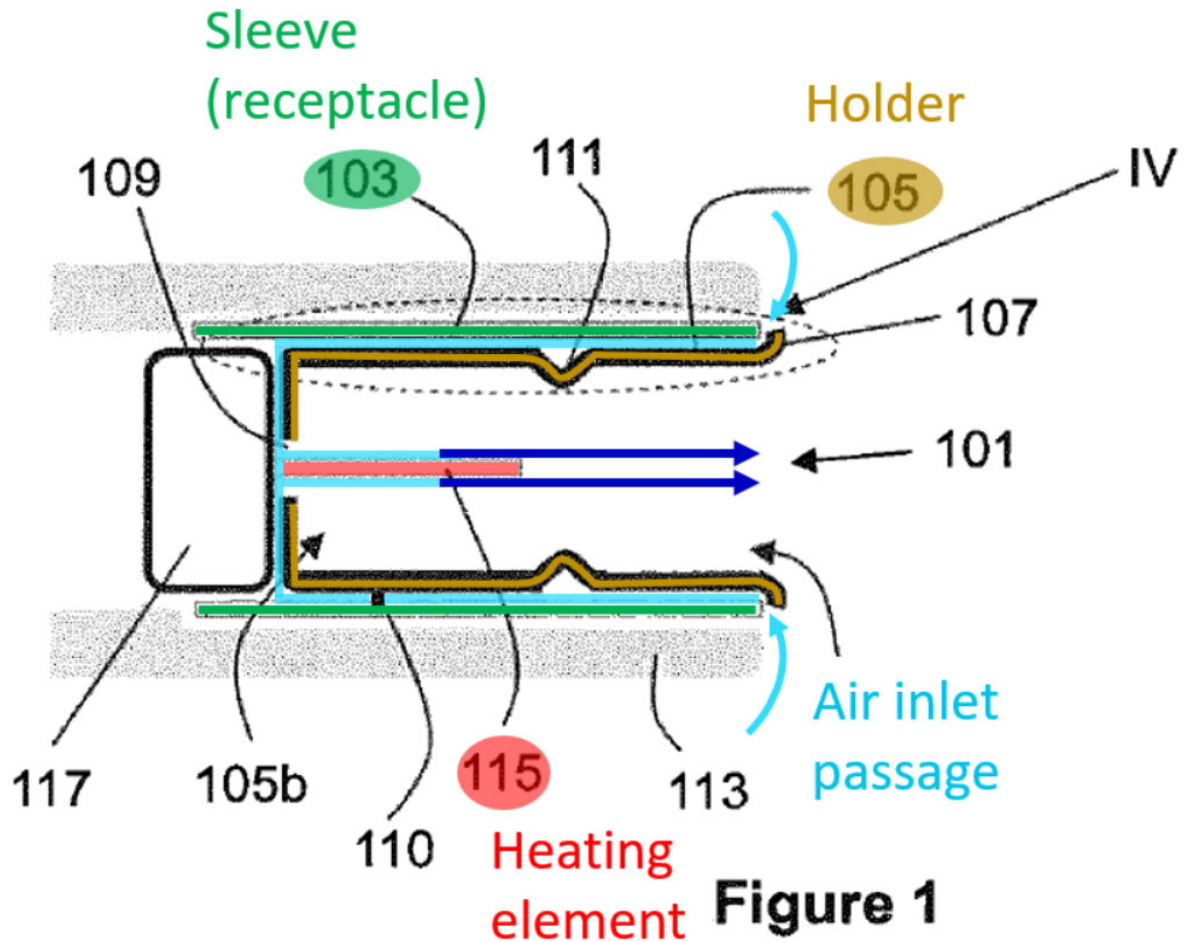
1. Motivation to Combine Verleur and Plojoux

To the extent it is argued that it was not within the knowledge of a POSA to provide an air inlet at the proximal edge of the body, Plojoux discloses this limitation. EX1016, 15:20-22 (“*air may flow from the right side, entering* in the space between the housing 113 and the sleeve 103 or *in the space between the sleeve 103 and the holder 105*, passing to the left and then entering the inner end 105b through aperture 109.”); EX1003, ¶ 201. Plojoux discloses a system having an air inlet passage that extends from a proximal end of the receptacle (**green**) to the distal

end of the cartridge (**brown**).



EX1016, Fig. 3



EX1016, Fig. 1

Plojoux discloses a “smoking article [that] is a heated smoking article, which is a smoking article comprising an aerosol-forming substrate that is intended to be heated rather than combusted in order to release volatile compounds that can form an aerosol.” EX1016, 2:7-9. Plojoux further discloses that, “[t]he aerosol-generating device may be an electrically heated smoking system comprising an electric heater.” *Id.*, 4:22-23.

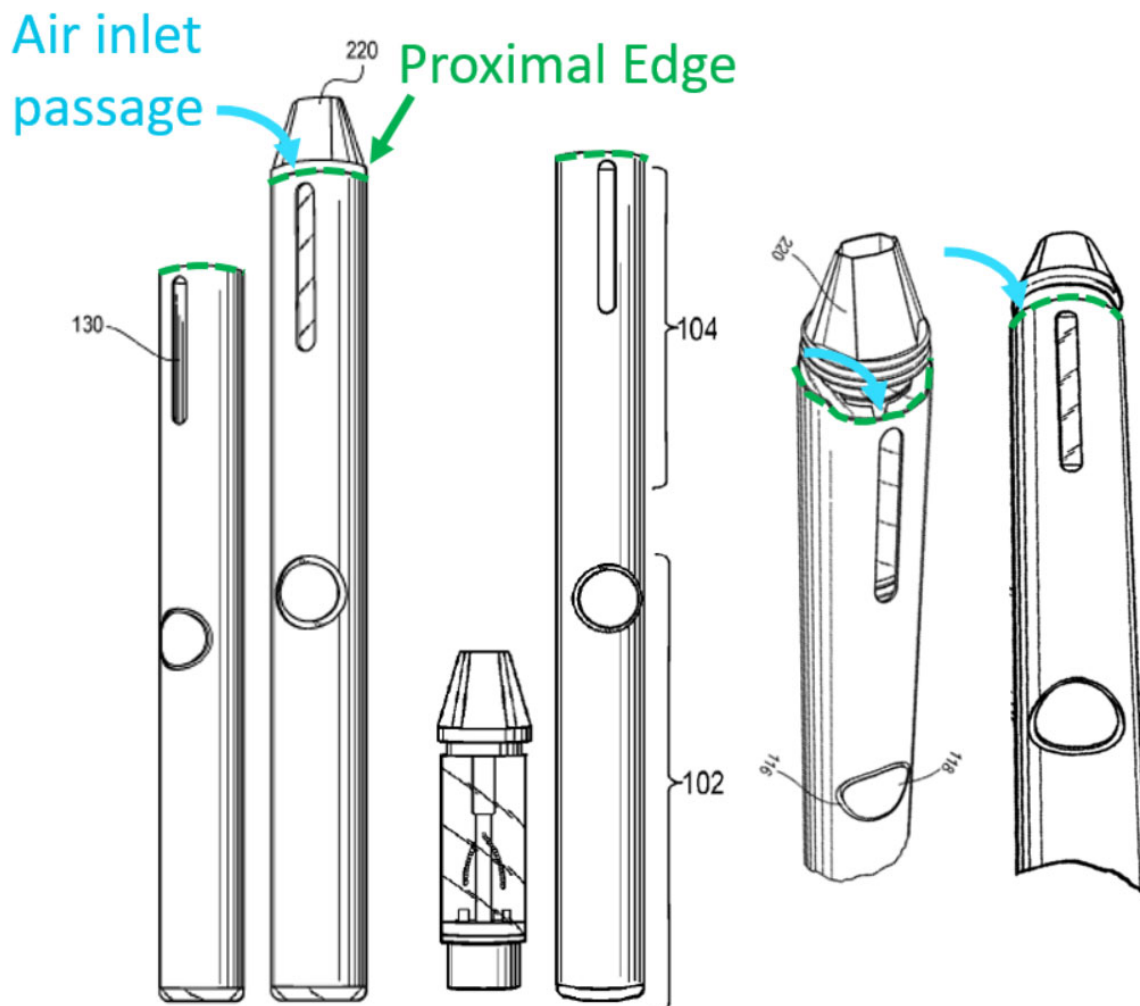
In operation, smoking article 201 is inserted into holder 105. EX1016, 14:17-

19. Holder 105 and smoking article 201, having a diameter slightly smaller than the receptacle, is then inserted into receptacle 103. *Id.*, 14:14-17. At insertion, heating element 115 on receptacle 103 stabs smoking article 201. *Id.*, 15:16-17. During inhalation, air is drawn in at the proximal edge of receptacle 103, travels down a gap between receptacle 103 and holder 105, passes heating element 115, and then exits into the consumer's mouth. *Id.*, 15:18-27; EX1003, ¶¶ 202-205.

A POSA would have been motivated to modify Verleur based on the teachings of Plojoux for the same reasons set forth in Section VIII.A.4 (Ground 1, claim 4) – practicality, safety, and precise airflow control. EX1003, ¶¶ 165-167, 206. A POSA would have been further motivated to modify Verleur to provide an air inlet passage at the proximal edge of the body because it makes the manufacturing of Verleur less expensive. EX1003, ¶ 206. Specifically, an air inlet hole or duct in Verleur's outer shell would not be needed because the air would come in at the proximal edge. EX1003, ¶ 206.

A POSA would have looked to Plojoux because Plojoux shares many similarities with Verleur. EX1003, ¶ 207. In both cases, air travels through a gap between the cartridge and the receptacle, flows around the bottom of the device, enters an inlet into the cartridge and the base of the cartridge, travels past a heating element, and then exits into the consumer's mouth. *Compare* Plojoux's Figs. 1 and 3 with Verleur's Figs. 1 and 1A; EX1003, ¶ 207. Plojoux also discloses the same

cartridge-receptacle type alignment disclosed by Verleur: a protrusion mating with a groove. EX1016, 14:22-23 (“The holder 105 also includes a guide pin 110 which protrudes out of the holder 105 and into a slot or groove (not shown) in the inside wall of sleeve 103.”); *see* Verleur, Fig. 1A. Given the similarities between the devices, a POSA would have been motivated to apply the teachings of Plojoux to Verleur. EX1003, ¶ 207.

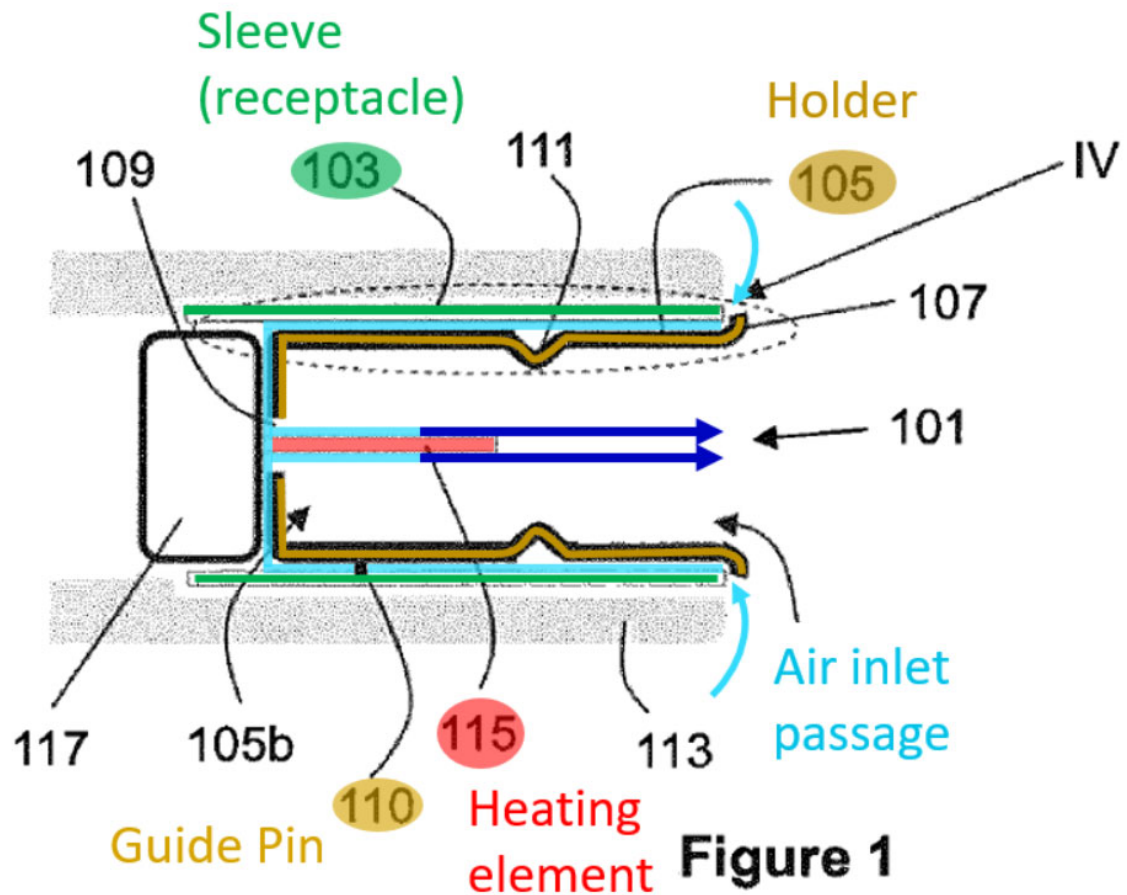


EX1005, Figs. 4, 5, 6, 7

A POSA would have a reasonable expectation of success making this

modification. EX1003, ¶ 208. Verleur already discloses a gap between cartomizer 200/200A and outer shell 106. It would have been trivial to provide access to that gap at the proximal edge of outer shell 106. EX1003, ¶ 208. Because Verleur uses magnetics to couple cartomizer 200/200A to the outer shell 106, there is no threaded connection needed at the proximal edge, which would have interfered with an air inlet passage. EX1003, ¶ 208.

To the extent it is argued that Verleur does not disclose a protrusion on cartomizer 200/200A that is disposed within the receptacle when the receptacle insertably receives the cartomizer, Plojoux provides such a disclosure. EX1003, ¶ 209. Plojoux discloses a guide pin 110 on holder 105 (cartridge) that extends into a slot or groove in sleeve 103 (receptacle). EX1016, 14:22-23 (“The holder 105 also includes a guide pin 110 which protrudes out of the holder 105 and into a slot or groove (not shown) in the inside wall of sleeve 103.”).



EX1016, Fig. 1

A POSA would have been motivated to modify Verleur to include such a protrusion for several reasons. EX1003, ¶ 210. First, Verleur and Verleur-Prov already disclose the inverse arrangement. EX1005, [0036]; EX1006 [0027]. A POSA would have recognized from Plojoux that the features could easily be reversed. Moreover, there are a limited number of arrangements for pins and grooves and accordingly, it would have been a design choice from a limited field of choices. EX1003, ¶ 210.

A POSA would have had a reasonable expectation of success making such a

modification because it would have been trivial to reverse the features. EX1003, ¶ 211. Plojoux also demonstrates that air would be able to flow unimpeded between the cartridge and the receptacle in this configuration.

2. **Claims 2/21: The apparatus of claim [1/20], wherein the cartridge further comprises a protrusion extending from the exterior surface of the cartridge, and wherein at least part of the protrusion is disposed within the receptacle when the receptacle insertably receives and couples to the cartridge.**

Verleur in view of Plojoux renders this limitation obvious. EX1003, ¶¶ 212, 214.

As discussed above, Plojoux discloses a protrusion extending from its cartridge that engages with a groove on its sleeve (receptacle). EX1016, 14:22-23 (“The holder 105 also includes a guide pin 110 which protrudes out of the holder 105 and into a slot or groove (not shown) in the inside wall of sleeve 103.”). It would have been obvious to modify Verleur for the reasons discussed in Sections VIII.B.1. *See also*, EX1003, ¶¶ 201-207, 209-211.

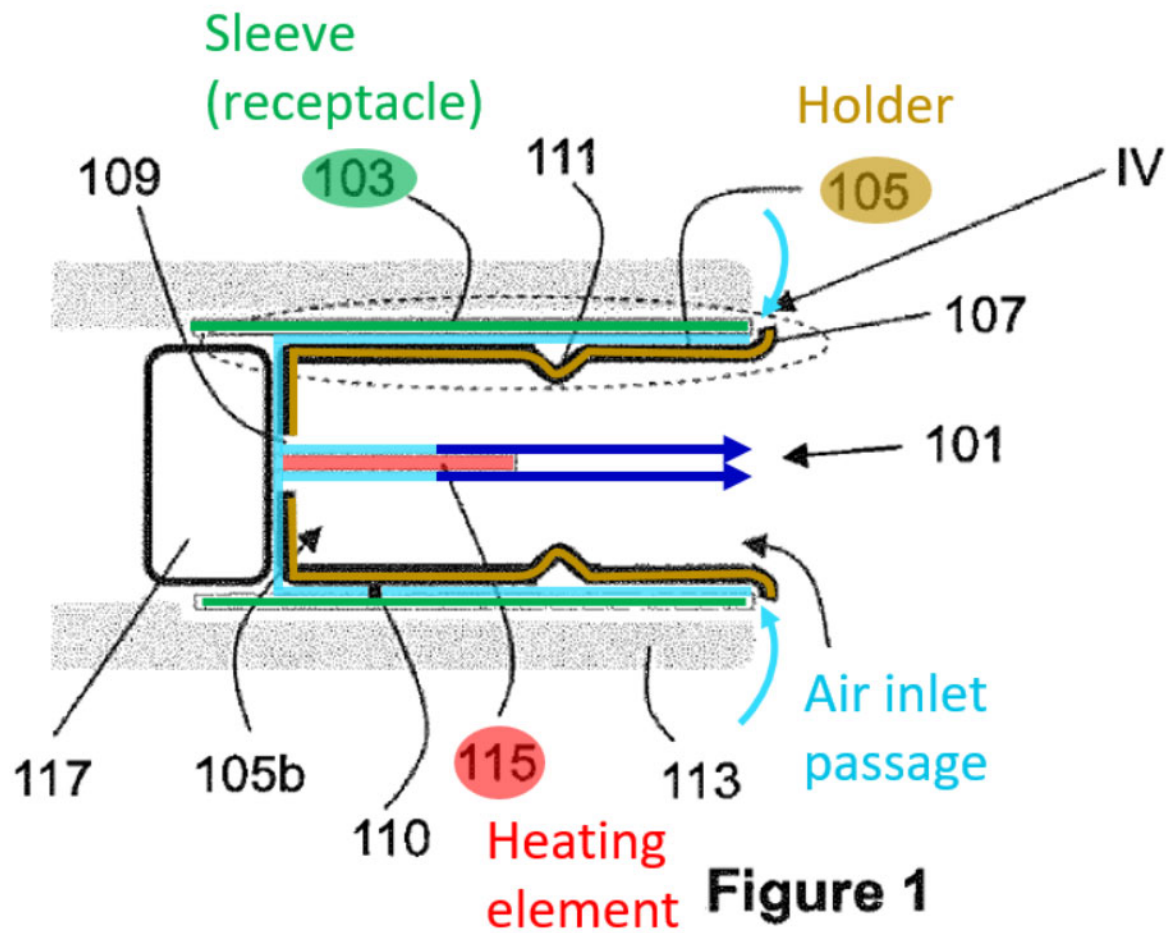
3. **Claims 4/23: The apparatus of claim [3/22], wherein the receptacle terminates in a proximal edge, wherein the air inlet passage extends from the proximal edge of the receptacle towards the distal end of the cartridge when the receptacle insertably receives and couples to the cartridge.**

Verleur in view of Plojoux renders this limitation obvious. EX1003, ¶¶ 213, 215.

As discussed above, Plojoux discloses an air inlet passage that extends from

the proximal edge of the receptacle towards the distal end of the cartridge. It would have been obvious to modify Verleur for the reasons discussed in Section VIII.B.1.

See also, EX1003, ¶¶ 201-208.



EX1016, Fig. 1

IX. SECONDARY CONSIDERATIONS

Although Patent Owner presents alleged evidence of secondary indicia of nonobviousness in its October 3, 2023 first supplemental response to Petitioner's Interrogatory No. 3 in the ITC Investigation, Patent Owner did not even attempt to

establish a nexus between the alleged evidence and the challenged claims.⁴ Petitioners are unaware of any evidence of secondary considerations that would support a nonobviousness finding.

X. THE BOARD SHOULD REACH THE MERITS OF THIS PETITION

A. The Board Should Not Exercise Its Discretion to Deny Institution Under § 325(d)

In deciding whether to exercise its discretion to deny institution under 35 U.S.C. § 325(d), the Board applies a two-part framework that considers six non-exclusive factors. *See Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (P.T.A.B. Feb. 13, 2020) (precedential), *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17-18 (P.T.A.B. Dec. 15, 2017) (precedential).

Although Verleur was disclosed by the applicant in IDSs, nothing in the record suggests the examiner evaluated or appreciated the relevance of this reference. This reference was among nearly 500 references cited during prosecution. Among this sea of references, the examiner did not identify Verleur as the basis for any rejection, and did not otherwise discuss Verleur during prosecution. Plojoux was not a reference before the examiner during prosecution. As such, the Board should

⁴ Patent Owner's Interrogatory Responses are marked confidential. Petitioner will work with Patent Owner to submit their Interrogatory Responses.

not exercise its discretion to deny institution under § 325(d).

B. 35 U.S.C. § 314(a) Denial is Not Warranted

Discretionary denial under 35 U.S.C. § 314(a) is not warranted because *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB. Mar. 20, 2020) (“*Fintiv*”) does not apply to the ITC Investigation, and the *Fintiv* factors weigh against discretionary denial over the Arizona Litigation.

First, the ITC Investigation is not a basis for denial under *Fintiv* because the Director proclaimed the Board “will not discretionarily deny petitions based on applying *Fintiv* to a parallel ITC proceeding.” Director Memorandum, *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation*, at 7 (June 21, 2022).

Second, applied to the Arizona Litigation, the *Fintiv* factors favor institution. *See Fintiv*, IPR2020-00019, Paper 11 at 6-16. The Arizona Litigation was stayed pursuant to 28 U.S.C. § 1659 on August 18, 2023. EX1009. Because the Arizona Litigation was stayed early—even before the defendants filed a responsive pleading—the court and the parties have made minimal investments, and the trial would likely occur long after a final written decision in this proceeding. *See id.*

Accordingly, discretionary denial under 35 U.S.C. § 314(a) is not warranted.

XI. CONCLUSION

For the reasons stated above, review should be instituted.

Petition for *Inter Partes* Review of U.S. Patent No. 10,709,173

Respectfully submitted,

Dated: November 21, 2023

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CERTIFICATE OF COMPLIANCE

1. The undersigned certifies that this brief complies with the type volume limitations of 37 CFR § 42.24(a)(1)(i). This brief contains 9,322 words (excluding the table of contents, the table of authorities, mandatory notices under 37 CFR § 42.8, the certificate of service, certificate of compliance, and appendix of exhibits), as calculated by the “Word Count” feature of Microsoft Word 2016, the word processing program used to create it.

2. The undersigned further certifies that this brief complies with the typeface requirements of 37 CFR § 42.6(a)(2)(ii) and typestyle requirements of 37 CFR § 42.6(a)(2)(iii). This brief has been prepared in a proportionally spaced typeface using Microsoft Word 2016 in Times New Roman 14 point font.

Respectfully submitted,

WEIL, GOTSHAL AND MANGES LLP

Dated: November 21, 2023

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.105 and § 42.6(e), the undersigned certifies that on November 21, 2023, a complete and entire copy of this **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,709,173, PETITIONERS' POWER OF ATTORNEY, and all supporting exhibits** were sent via FedEx next business day delivery to the following:

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