

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NU MARK LLC
Petitioner

v.

Fontem Holdings 1 B.V.
Patent Owner

Case IPR. No. **Unassigned**
U.S. Patent No. 9,326,548
Title: ELECTRONIC CIGARETTE

**Petition for *Inter Partes* Review of U.S. Patent No. 9,326,548
Under U.S.C. §§ 311-319 and 37 C.F.R. §§ 42.1-.80, 42.100-.123**

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[1.P] An electronic cigarette, comprising:	39
[1.1] a battery assembly having a cylindrical battery and an operating indicator;	39
[1.2] an atomizer assembly in an elongated cylindrical housing,	42
[1.3] with the battery assembly electrically connected to the atomizer assembly, and with the cylindrical battery coaxial with the atomizer assembly;	45
[1.4] a liquid storage component in the housing,	47
[1.5] the atomizer assembly including a porous component set on a frame having a run-through hole;	48
[1.6] a heating wire coil electrically connected to the battery,	55
[1.7] an air flow path in the atomizer assembly parallel to a longitudinal axis of the housing, with the air flow path through the run-through hole to an outlet,	59
[1.8] with the heating wire coil wound on the porous component and in the air flow path and with the heating wire coil oriented perpendicular to the longitudinal axis; and	62
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[8.P] An electronic cigarette, comprising:	81
[8.1] a battery assembly having a cylindrical battery and an operating indicator;	82
[8.2] an atomizer assembly in an elongated cylindrical housing having a longitudinal axis,	82
[8.3] with the battery assembly electrically connected to the atomizer assembly, and with the cylindrical battery coaxial with the atomizer assembly;	82
[8.4] the atomizer assembly including a porous component having a first section perpendicular to the longitudinal axis and a second section parallel to the longitudinal axis, with the porous component set on a frame having a run-through hole;	82
[8.5] a heating wire coil wound on the first section of the porous component and electrically connected to the battery;	83
[8.6] an air flow path in the atomizer assembly parallel to the longitudinal axis, with the air flow path through the run-through hole to an outlet,	83
[8.7] and the heating wire coil in the air flow path and oriented perpendicular to the longitudinal axis;	83

[8.8] and a liquid storage component in the housing in contact with the porous component.	84
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[11.P] An electronic cigarette, comprising:	86
[11.1] an atomizer assembly and a liquid storage component in an elongated cylindrical housing having a longitudinal axis:	86
[11.2] battery assembly electrically connected to the atomizer assembly, and with the battery assembly including a cylindrical battery coaxial with the atomizer assembly;.....	87
[11.3] the atomizer assembly including: a frame comprising a cylindrical base having a run-through hole;.....	87
[11.4] [the atomizer assembly including] ... a fiber member in contact with the liquid storage component;	88
[11.5] [the atomizer assembly including] ... a heating wire coil wound on the fiber member and oriented perpendicular to the longitudinal axis;.....	89
[11.6] and the heating wire coil electrically connected to the battery,.....	90
[11.7] with the fiber member moving liquid from the liquid storage component to the heating wire coil by capillary action;	90
[11.8] and an air flow path parallel to the longitudinal axis through the atomizer assembly, with the air flow path passing through the run-through hole,	91
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Exhibit List

<i>Exhibit #</i>	<i>Description</i>
Ex.1001	U.S. Patent No. 9,326,548 (the “548 Patent”)
Ex.1002	File History for U.S. Patent No. 9,326,548 (excerpts)
Ex.1003	Declaration of Dr. John M. Collins (“Collins Decl.”)
Ex.1004	WO 2005/099494 to Hon Lik (“Hon 494”) (Int’l App. No. PCT/CN2005/000337, which is the PCT application equivalent of CN 2719043Y, “Hon 043”)
Ex.1005	Certified Translation of WO 2005/099494 (“Hon 494”)
Ex.1006	U.S. Patent No. 2,057,353 (“Whittemore”)
Ex.1007	U.S. Patent No. 5,894,841 (“Voges”)
Ex.1008	U.S. Patent No. 6,155,268 (“Takeuchi”)
Ex.1009	U.S. Patent No. 4,947,874 (“Brooks”)
Ex.1010	IPR2013-00387, Final Written Decision, Paper 43
Ex.1011	IPR2015-00859, Institution Decision, Paper 9
Ex.1012	<i>Fontem Ventures, B.V., et al. v. NJOY, Inc. et al.</i> , Case 2:14-cv-01645-GW-MRW, Rulings on Claims Construction (DI-65)
Ex.1013	RANDOM HOUSE WEBSTER’S COLLEGE DICTIONARY, 1226 (1991)
Ex.1014	U.S. Patent No. 2,461,664 (“Smith”)
Ex.1015	U.S. Patent No. 3,234,357 (“Seuthe”)
Ex.1016	U.S. Patent No. 1,084,304 (“Vaughn”)
Ex.1017	IPR2016-01297, Patent Owner’s Preliminary Response, Paper 8
Ex.1018	IPR2016-01288, Ex.2009 to Patent Owner’s Preliminary Response
Ex.1019	IPR2013-00387, Institution Decision, Paper 7

Petition for *Inter Partes* Review of U.S. Pat. No. 9,326,548

<i>Exhibit #</i>	<i>Description</i>
Ex.1020	IPR2016-01268, Patent Owner's Preliminary Response, Paper 8
Ex.1021	Certified Translation of CN 201018927Y ("Wang")
Ex.1022	WIPO Publication No. WO 2007/078273 ("Liu")

1. INTRODUCTION

Nu Mark LLC (“Petitioner”), in accordance with 35 U.S.C. § 311-319 and 37 C.F.R. § 42.100, hereby requests *inter partes* review of claims 1-14 of United States Patent No. 9,326,548, titled “Electronic Cigarette” (Ex.1001, the “548 Patent”). According to USPTO records, the 548 Patent is assigned to Fontem Holdings 1 B.V. (“Patent Owner”).

Petitioner previously filed a petition for *inter partes* review of the 548 Patent, IPR2016-01641, contending, in part, that the 548 Patent is not entitled to the priority date of its U.S. parent application, which was filed May 15, 2007. The instant Petition presents prior art that is prior art regardless of whether the 548 Patent is entitled to the foreign priority date listed on its face, which is May 16, 2006.

2. REQUIREMENTS FOR PETITION FOR INTER PARTES REVIEW

2.1. Grounds for Standing (37 C.F.R. § 42.104(a))

Petitioner certifies that the 548 Patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting *inter partes* review of the challenged claims of the 548 Patent on the grounds identified herein.

2.2. Notice of Lead and Backup Counsel and Service Information

Pursuant to 37 C.F.R. §§ 42.8(b)(3), 42.8(b)(4), and 42.10(a), Petitioner provides the following designation of Lead and Back-Up counsel.

Lead Counsel	Back-Up Counsel
Elizabeth Stotland Weiswasser Registration No. 55,721 (elizabeth.weiswasser@weil.com) Postal & Hand-Delivery Address: Weil, Gotshal & Manges LLP 767 Fifth Avenue New York, NY 10153 T: 212-310-8022; F: 212-310-8007	Adrian Percer Registration No. 46,986 (adrian.percer@weil.com) Jeremy Jason Lang Registration No. 73,604 (jason.lang@weil.com) Brian C. Chang Registration No. 74,301 (brian.chang@weil.com) Postal & Hand-Delivery Address: Weil, Gotshal & Manges LLP 201 Redwood Shores Parkway Redwood Shores, CA 94065 T: 650-802-3000; F: 650-802-3100 Anish Desai Registration No. 73,760 (anish.desai@weil.com) Postal & Hand-Delivery Address: Weil, Gotshal & Manges LLP 1300 Eye Street NW, Suite 900 Washington, DC 20005-3314 T: 202-682-7103; F: 202-812-6186

Pursuant to 37 C.F.R. § 42.10(b), a Power of Attorney for the Petitioner is attached.

2.3. Notice of Real-Parties-in-Interest (37 C.F.R. § 42.8(b)(1))

For purposes of 35 U.S.C. § 312(a)(2) and 37 C.F.R. § 42.8(b)(1) only, Petitioner, Nu Mark LLC, identifies the real-parties-in-interest as Nu Mark LLC

and Altria Client Services LLC. Nu Mark LLC further discloses that it is an indirect wholly owned subsidiary of Altria Group, Inc., and states that under the governing standard Altria Group, Inc. is not a real-party-in-interest. *See* Patent Trial Practice Guide 77 Fed. Reg., Vol. 77, No. 157 (2012) at 48759-60. Altria Group, Inc. nevertheless agrees to be bound by any final written decision in these proceedings. *See* 35 U.S.C. § 315(e).

2.4. Notice of Related Matters (37 C.F.R. § 42.8(b)(2))

U.S. Application No.14/244,376, issued as the 548 Patent, is a continuation of U.S. Application No.13/740,011, which is a continuation of U.S. Application No.13/079,937, which is a division of U.S. Application No.12/226,818, which was filed as application No. PCT/CN2007/001575. The 548 Patent on its face claims priority to Chinese Patent Application No. CN 2006 2 0090805 U.

Fontem has asserted against Nu Mark LLC U.S. Patent Nos. 8,490,628, 8,393,331, 8,893,726, 8,899,239, 8,365,742, 8,689,805, 8,375,957, and 8,863,752 in *Fontem Ventures B.V. et al. v. Nu Mark LLC*, 2:16-cv-02291 (C.D. Cal.) and U.S. Patent Nos. 9,364,027, 9,326,548, 9,326,549, 9,326,550, 9,326,551, 9,339,062, 9,370,205, and 9,320,300 in *Fontem Ventures B.V. et al v. Nu Mark LLC*, 2:16-cv-04537 (C.D. Cal.), and each case was recently transferred to the Middle District of North Carolina, docketed there as 1-16-cv-01259 and 1-16-cv-01261 (collectively, the “Co-Pending Litigations”).

Fontem or its predecessors-in-interest have also asserted one or more of the patents asserted in the Co-Pending Litigations (the “Asserted Patents”), or patents related to the Asserted Patents, in the following actions:

- a. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. NJOY, Inc.*, Civil Action No. 2:14-cv-1645 (C.D. Cal.);
- b. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. LOEC, Inc.*, Civil Action No. 2:14-cv-1648 (C.D. Cal.);
- c. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. CB Distributors, Inc. and DR Distributors, LLC*, Civil Action No. 2:14-cv-1649 (C.D. Cal.);
- d. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Vapor Corp.*, Civil Action No. 2:14-cv-1650 (C.D. Cal.);
- e. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. FIN Branding Group, LLC and Victory Electronic Cigarettes Corporation*, Civil Action No. 2:14-cv-1651 GW (C.D. Cal.);
- f. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Ballantyne Brands, LLC*, Civil Action No. 2:14-cv-1652 (C.D. Cal.);
- g. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Spark Industries, LLC*, Civil Action No. 2:14-cv-1653 (C.D. Cal.);

- h. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Logic Technology Development LLC*, Civil Action No. 2:14-cv-1654 (C.D. Cal.);
- i. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. VMR Products, LLC, dba V2Cigs*, Civil Action No. 2:14-cv-1655 (C.D. Cal.);
- j. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. NJOY, INC.*, Civil Action No. 2:14-cv-8144 (C.D. Cal.);
- k. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. LOEC, INC.*, Civil Action No. 2:14-cv-8149 (C.D. Cal.);
- l. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. CB Distributors, Inc., et al*, Civil Action No. 2:14-cv-8154 (C.D. Cal.);
- m. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Vapor Corp.*, Civil Action No. 2:14-cv-8155 (C.D. Cal.);
- n. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. FIN Branding Group, LLC and Electronic Cigarettes International Group, Ltd.*, Civil Action No. 2:14-cv-8156 (C.D. Cal.);
- o. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Ballantyne Brands, LLC*, Civil Action No. 2:14-cv-8157 (C.D. Cal.);
- p. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Spark Industries, LLC*, Civil Action No. 2:14-cv-8158 (C.D. Cal.);

- q. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Logic Technology Development LLC*, Civil Action No. 2:14-cv-8160 (C.D. Cal.);
- r. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. VMR Products, LLC, dba V2CIGS*, Civil Action No. 2:14-cv-8161 (C.D. Cal.);
- s. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. NJOY, INC.*, Civil Action No. 2:14-cv-9263 (C.D. Cal.);
- t. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. LOEC, INC.*, Civil Action No. 2:14-cv-9265 (C.D. Cal.);
- u. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. CB Distributors, Inc., and DR distributors, LLC, dba 21st Century Smoke, LLC*, Civil Action No. 2:14-cv-9266 (C.D. Cal.);
- v. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Vapor Corp.*, Civil Action No. 2:14-cv-9267 (C.D. Cal.);
- w. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. FIN Branding Group, LLC and Electronic Cigarettes International Group, Ltd.*, Civil Action No. 2:14-cv-9268 (C.D. Cal.);
- x. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Ballantyne Brands, LLC*, Civil Action No. 2:14-cv-9269 (C.D. Cal.);
- y. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Spark Industries, LLC*, Civil Action No. 2:14-cv-9270 (C.D. Cal.);

- z. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. Logic Technology Development LLC*, Civil Action No. 2:14-cv-9271 (C.D. Cal.);
- aa. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. VMR Products, LLC, dba V2CIGS*, Civil Action No. 2:14-cv-9273 (C.D. Cal.);
- bb. *Ruyan Investment (Holdings) Limited v. Sottera, Inc.*, Civil Action No. 2:12-cv-5454 (C.D. Cal.);
- cc. *Ruyan Investment (Holdings) Limited v. LOEC, Inc.*, Civil Action 2:12-cv-5455 (C.D. Cal.);
- dd. *Ruyan Investment (Holdings) Limited v. CB Distributors, Inc., an Illinois corporation and DR Distributors, LLC, dba 21st Century Smoke, LLC*, Civil Action No. 2:12-cv-5456 (C.D. Cal.);
- ee. *Ruyan Investment (Holdings) Limited v. The Safe Cig, LLC*, Civil Action No. 2:12-cv-5462 (C.D. Cal.);
- ff. *Ruyan Investment (Holdings) Limited v. Vapor Corp.*, Civil Action No. 2:12-cv-5466 (C.D. Cal.);
- gg. *Ruyan Investment (Holdings) Limited v. Finiti Branding Group, LLC*, Civil Action No. 2:12-cv-5468 (C.D. Cal.);
- hh. *Ruyan Investment (Holdings) Limited v. Barjan LLC*, Civil Action No. 2:12-cv-5470 (C.D. Cal.);

ii. *Ruyan Investment (Holdings) Limited v. Spark Industries, LLC*, Civil Action No. 2:12-cv-5472 (C.D. Cal.);

jj. *Ruyan Investment (Holdings) Limited v. Nicotek LLC*, Civil Action No. 2:14-cv-5477 (C.D. Cal.);

kk. *Ruyan Investment (Holdings) Limited v. Logic Technology Development LLC*, Civil Action No. 2:14-cv-5482 (C.D. Cal.);

ll. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. R.J. Reynolds Vapor Company*, Civil Action No. 2:16-cv-2286 (C.D. Cal.);

mm. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. R.J. Reynolds Vapor Company*, Civil Action No. 2:16-cv-3049 (C.D. Cal.); and

nn. *Fontem Ventures B.V. and Fontem Holdings 1 B.V. v. R.J. Reynolds Vapor Company*, Civil Action No. 2:16-cv-04534 (C.D. Cal.).

In addition to the present Petition, Petitioner has filed the following petitions for *inter partes* review of patents asserted in the Co-Pending Litigation: Petitions 1 and 2 for *Inter Partes* Review of U.S. Patent No. 8,490,628, IPR2016-01283, -01285; Petitions 1 and 2 for *Inter Partes* Review of U.S. Patent No. 8,893,726, IPR2016-01288, -01297; Petitions 1 and 2 for *Inter Partes* Review of U.S. Patent No. 8,393,331, IPR2016-01299, -01438; Petition for *Inter Partes* Review of U.S. Patent No. 8,899,239, IPR2016-01302; Petition for *Inter Partes* Review of U.S. Patent No. 8,365,742, IPR2016-01303; Petition for *Inter Partes*

Review of U.S. Patent No. 8,689,805, IPR2016-01298; Petition for *Inter Partes* Review of U.S. Patent No. 8,375,957, IPR2016-01307; Petition for *Inter Partes* Review of U.S. Patent No. 8,863,752, IPR2016-01309; Petition for *Inter Partes* Review of U.S. Patent No. 9,326,548, IPR2016-01641; Petition for *Inter Partes* Review of U.S. Patent No. 9,370,205, IPR2016-01642; Petition for *Inter Partes* Review of U.S. Patent No. 9,326,549, IPR2016-01664; Petition for *Inter Partes* Review of U.S. Patent No. 9,364,027, IPR2016-01668; Petition for *Inter Partes* Review of U.S. Patent No. 9,339,062, IPR2016-01705; Petition for *Inter Partes* Review of U.S. Patent No. 9,326,551, IPR2016-01706; Petition for *Inter Partes* Review of U.S. Patent No. 9,326,550, IPR2016-01707; and Petition for *Inter Partes* Review of U.S. Patent No. 9,320,300, IPR2016-01773.

Petitioner also plans to file, substantially concurrently with the present Petition, additional petitions with respect to U.S. Patent Nos. 9,326,550 and 9,370,205.

In addition to the *inter partes* review petitions above, Petitioner identifies the following related *inter partes* review proceedings and administrative matters:

a. Petition for *Inter Partes* Review of U.S. Patent No. 8,375,957, Case No. IPR2015-00098, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed October 21, 2014 by Petitioner Logic Technology Development, LLC;

b. Petition for *Inter Partes* Review of U.S. Patent No. 8,375,957, Case No. IPR2015-01513, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed June 26, 2015 by Petitioner JT International S.A.;

c. Petition for *Inter Partes* Review of U.S. Patent No. 8,863,752, Case No. IPR2015-01604, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed July 20, 2015 by Petitioner JT International S.A.;

d. Petition for *Inter Partes* Review of U.S. Patent No. 8,863,752, Case No. IPR2015-01301, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed May 29, 2015 by NJOY, Inc.; CB Distributors, Inc.; DR Distributors, LLC; FIN Branding Group, LLC; Electronic Cigarettes International Group, Ltd. f/k/a Victory Electronic Cigarettes Corporation; and, Logic Technology Development LLC;

e. Petition for *Inter Partes* Review of U.S. Patent No. 8,490,628, Case No. IPR2014-01300, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed August 15, 2014 by NJOY, Inc.;

f. Petition for *Inter Partes* Review of U.S. Patent No. 8,893,726, Case No. IPR2015-01302, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed May 29, 2015 by NJOY, Inc.; CB Distributors, Inc.; DR Distributors, LLC; FIN Branding Group, LLC; Electronic Cigarettes International Group, Ltd.

f/k/a Victory Electronic Cigarettes Corporation; and, Logic Technology Development LLC;

g. Petition for *Inter Partes* Review of U.S. Patent No. 8,899,239, Case No. IPR2015-01304, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed May 29, 2015 by NJOY, Inc.; CB Distributors, Inc.; DR Distributors, LLC; FIN Branding Group, LLC; Electronic Cigarettes International Group, Ltd. f/k/a Victory Electronic Cigarettes Corporation; and, Logic Technology Development LLC;

h. Petition for *Inter Partes* Review of U.S. Patent No. 8,365,742, Case No. IPR2015-01587, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed July 14, 2015 by Petitioner JT International S.A.;

i. Petition for *Inter Partes* Review of U.S. Patent No. 8,365,742, Case No. IPR2015-00859, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed March 10, 2015 by Petitioner VMR Products, LLC;

j. Petition for *Inter Partes* Review of U.S. Patent No. 8,689,805, Case No. IPR2014-01529, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed September 22, 2015 by Petitioner CB Distributors, Inc. and DR Distributors, LLC;

k. Petition for *Inter Partes* Review of U.S. Patent No. 8,689,805, Case No. IPR2015-01578, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed July 15, 2015 by Petitioner JT International S.A.;

l. Petition for *Inter Partes* Review of U.S. Patent No. 8,689,805, Case No. IPR2015-01027, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed April 10, 2015 by Petitioner NJOY, Inc.;

m. Petition for *Inter Partes* Review of U.S. Patent No. 8,393,331, Case No. IPR2014-01289, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed August 14, 2014 by NJOY, Inc.;

n. Petition for *Inter Partes* Review of U.S. Patent No. 8,365,742, Case No. IPR2016-01268, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed July 2, 2016 by R.J. Reynolds Vapor Company;

o. Petition for *Inter Partes* Review of U.S. Patent No. 8,893,726, Case No. IPR2016-01270, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed July 2, 2016 by R.J. Reynolds Vapor Company;

p. Petition for *Inter Partes* Review of U.S. Patent No. 8,899,239, Case No. IPR2016-01272, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed July 2, 2016 by R.J. Reynolds Vapor Company;

q. Petition for *Inter Partes* Review of U.S. Patent No. 8,490,628, Case No. IPR2016-01527, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed August 3, 2016 by R.J. Reynolds Vapor Company;

r. Petition for *Inter Partes* Review of U.S. Patent No. 8,365,742, Case No. IPR2016-01532, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed August 5, 2016 by R.J. Reynolds Vapor Company;

s. Petition for *Inter Partes* Review of U.S. Patent No. 9,326,548, Case No. IPR2016-01691, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed August 30, 2016 by R.J. Reynolds Vapor Company;

t. Petition for *Inter Partes* Review of U.S. Patent No. 9,326,548, Case No. IPR2016-01692, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed August 30, 2016 by R.J. Reynolds Vapor Company; and

u. Petition for *Inter Partes* Review of U.S. Patent No. 9,326,549, Case No. IPR2016-01859, before the Patent Trial and Appeal Board at the U.S. Patent Office, filed September 23, 2016 by R.J. Reynolds Vapor Company.

2.5. Fee for Inter Partes Review

The Director is authorized to charge the fee specified by 37 C.F.R. § 42.15(a), and any other required fees, to Deposit Account No. 506499.

2.6. Proof of Service

Proof of service of this Petition on the Patent Owner at the correspondence address of record for the 548 Patent is attached.

**3. IDENTIFICATION OF CLAIMS BEING CHALLENGED
(§ 42.104(b))**

The following grounds are explained herein and supported by the declaration of Dr. John M. Collins (Ex.1003).

Ground #1:

Claims 1-14 of the 548 Patent are invalid under (pre-AIA) 35 U.S.C. § 103 as rendered obvious by WO 2005/099494 to Hon Lik (Ex.1004, “Hon 494,” Int’l App. No. PCT/CN2005/000337, certified translation at Ex.1005) in view of U.S. Patent No. 2,057,353 to Whittemore (Ex.1006, “Whittemore”). Ex.1003, ¶¶67-69.

Hon 494 is prior art under at least each of 35 U.S.C. § 102(a) and § 102(b) because it was published October 27, 2005, which is more than one year before the earliest listed U.S. priority date of the 548 Patent (May 15, 2007) and before the earliest purported foreign priority date on the face of the 548 Patent (May 16, 2006). Whittemore is prior art under at least each of § 102(a) and § 102(b) because it was published October 13, 1936, which is more than one year before any purported priority date on the face of the 548 Patent.

Statement of Non-Redundancy:

As noted above, Petitioner previously filed a petition for *inter partes* review of the 548 Patent (IPR2016-01641). The present Petition is not redundant of that prior petition, which contended that the 548 Patent is not entitled to the priority date of its U.S. parent application and asserted unpatentability under 35 U.S.C. § 102. In contrast, the present Petition assumes (without concession) that the 548 Patent is entitled to the earliest potential priority date listed on the face of the 548 Patent (May 16, 2006), and asserts unpatentability under 35 U.S.C. § 103 based on prior art references different than the reference relied on in IPR2016-01641.

4. THE PRIOR CB DISTRIBUTORS PETITION

In IPR2013-00387, the Board found unpatentable based on Hon 494 certain claims of U.S. Patent No. 8,156,944 (the “944 Patent”), which is the great-grandparent of the 548 Patent. Ex.1010, IPR2013-00387, Final Written Decision, Paper 43. As further discussed below, certain of the Board’s findings in that IPR support the present challenges based on Hon 494.

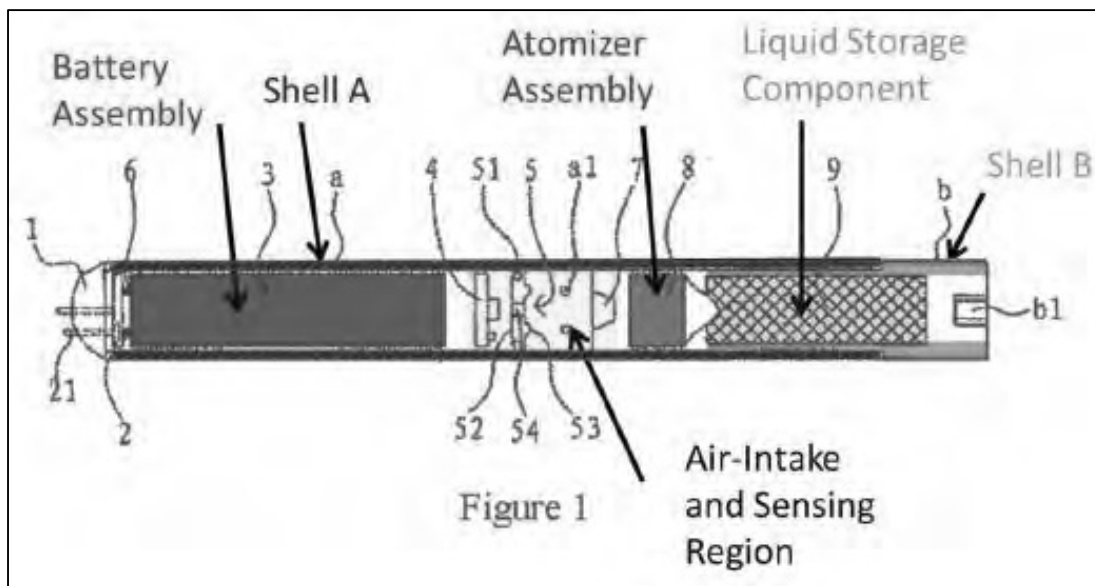
5. OVERVIEW OF THE 548 PATENT

The 548 Patent issued from U.S. App. No. 14/244,376 filed April 3, 2014, which was a continuation of U.S. App. No. 13/740,011 filed Jan. 11, 2013, which was a continuation of U.S. App. No. 13/079,937 filed April 5, 2011 (now the

grandparent U.S. Pat. No. 8,365,742, the “742 Patent”), which was a division of U.S. App. No. 12/226,818 filed as U.S. App. No. PCT/CN2007/001575 on May 15, 2007 (now the great-grandparent 944 Patent). The face of the 548 Patent lists as foreign application priority data CN 2006 2 0090805 U, filed May 16, 2006.

The 548 Patent describes an electronic cigarette that, when a person inhales on the cigarette, atomizes a nicotine liquid to provide the person an experience similar to that provided by a combustible cigarette. Ex.1003, ¶16. The 548 Patent acknowledges the existence of prior art “electronic cigarettes currently available on the market,” but notes that such products allegedly were complicated in structure, did not provide ideal aerosol effects, and lacked sufficient atomizing efficiency. Ex.1001, 1:35-38; Ex.1003, ¶16.

The electronic cigarette proposed by the 548 Patent comprises two shells (labeled ‘a’ and ‘b’ in the figure below) with shell ‘a’ containing a battery assembly, an air-intake and sensing region, and an atomizer assembly, and shell ‘b’ containing a cigarette bottle assembly including a perforated component for liquid storage. Ex.1003, ¶17.



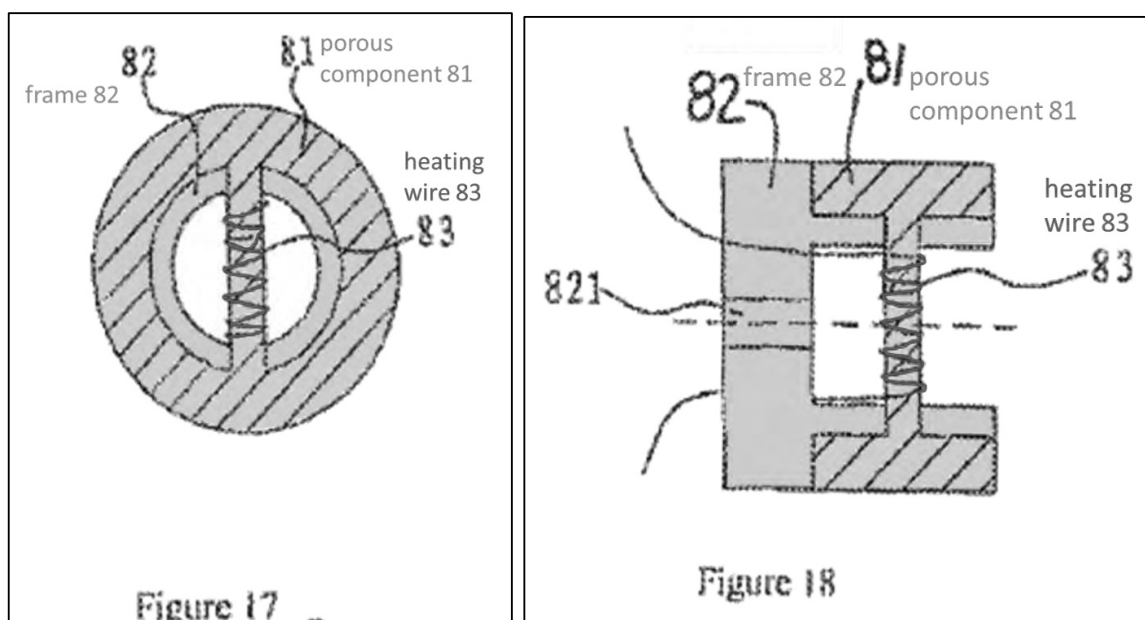
Ex.1001, 548 Patent, Fig.1 (annotated)

The electronic cigarette is activated by a person inhaling through the mouthpiece (depicted in the figure on the right-hand side). Ex.1003, ¶18. Inhalation creates a negative pressure in the device and air is drawn in through inlets (labeled a1 in Fig. 1) and through a valve (labeled 7 in Fig. 1). *Id.* The negative pressure is detected by a sensor (labeled 5 in Fig. 1), which energizes the circuit on an electronic circuit board (labeled 4 in Fig. 1). Ex.1001, 4:19-30. This causes the battery (labeled 3 in Fig. 1) to power the atomizer (labeled 8 in Fig. 1). *Id.*, 4:30-31. The atomizer contacts the perforated liquid storage component (labeled 9 in Fig. 1). *Id.*, 4:55-59; Ex.1003, ¶18.

As shown in Figs. 17 and 18 below, the atomizer includes a porous component 81 set on a frame 82. Ex.1001, Figs.17-18, 5:61-65; Ex.1003, ¶19.

The porous component, which is in contact with the liquid supply, absorbs liquid from the liquid supply. Ex.1001, Fig.1, 4:15-18, 4:55-59, 6:1-4; Ex.1003, ¶19.

A heating wire 83 is wound around a portion of the porous component that is aligned with a run-through hole 821 in the frame. Ex.1001, Figs.17-18, 5:61-6:2; Ex.1003, ¶19. The run-through hole enables air to be pulled past the heating wire. Ex.1003, ¶19.



Ex.1001, Figs.17, 18 (annotated)

See also Ex.1003, ¶19.

When the person inhales, liquid in the porous component 81 is heated and atomized by the heating wire, becoming suspended in the airflow as an aerosol, which is then inhaled by the person through the air channel b1. Ex.1001, 4:42-51; Ex.1003, ¶20.

6. PROSECUTION HISTORY OF THE 548 PATENT

In an Office Action dated August 20, 2015, the Examiner rejected then-pending claims 1-15 based upon Susa (EP 845220) alone or in combination with U.S. 4,922,901. Ex.1002.001-.009. In an Amendment dated November 20, 2015, the Applicant amended claims 1-7, canceled claims 8-15, and added new claims 16-22. Ex.1002.010-.027. In that Amendment, Applicant discussed IPR2015-00859 – apparently to support their argument that the present claims distinguish Susa. Following that Amendment, the Applicant and the Examiner had an interview. In the Interview Summary prepared by the Applicant, the Applicant stated that IPR2015-00859 was discussed. Ex.1002.038. It is not clear from the record, however, whether the Applicant discussed Hon 494 in view of Whittemore, which was one of several grounds set forth in IPR2015-00859. Based on Applicant’s November 20, 2015 Amendment, the interview was ostensibly about Susa. *Id.* Regardless, the Examiner did not have the benefit of Petitioner’s analysis of Hon 494 in view of Whittemore as set forth below.

Following that Interview, the Examiner issued a Notice of Allowance on March 15, 2016 that stated that “[n]one of the prior art of record teaches nor reasonably suggests an electronic cigarette which includes a heating wire coil wound around a porous component (set on a frame having a run-through hole), provided in an air flow path, wherein the heating wire coil is oriented

perpendicularly to the longitudinal axis of the housing of the electronic cigarette.”

Ex.1002.046.

7. CLAIM CONSTRUCTION

7.1. Applicable Law

For a non-expired patent, a claim subject to *inter partes* review is given the “broadest reasonable construction in light of the specification of the patent in which it appears.” 37 C.F.R. § 42.100(b). Any ambiguity regarding the “broadest reasonable construction” is resolved in favor of the broader construction absent amendment by the patent owner. Final Rule, 77 Fed. Reg. 48680, 48699 (Aug. 14, 2012).

7.2. Construction of Claim Terms

7.2.1. “frame” (all claims)

In IPR2015-00859 concerning the grandparent 742 Patent (having the same specification as the 548 Patent), the Board determined that the broadest reasonable interpretation of “frame” in light of the specification is “rigid structure.” Ex.1011, IPR2015-000859, Paper 9, pp.7-8. In doing so, the Board observed that while the porous component of the atomizer is set on the frame in one embodiment of the 742 Patent, this single embodiment was not enough to limit “frame” to a structure that is designed to hold up another component, as suggested by Patent Owner in that proceeding. *Id.* The Board further found that “rigid structure” was consistent

with the use of the term “frame” in the specification and the claims. *Id.* This same construction was adopted by the U.S. District Court for the Central District of California in *Fontem Ventures, B.V., et al. v. NJOY, Inc. et al.*, Case 2:14-cv-01645-GW-MRW. Ex.1012, Rulings on Claims Construction (DI-65), pp.5-7.

For the purposes of this Petition, Petitioner applies this construction of “frame” as a “rigid structure.”

7.2.2. “porous component” (claims 1-10)

The Board in IPR2015-00859 construed “porous component” as recited in the claims of the grandparent 742 Patent to mean “a component of the atomizer assembly in the electronic cigarette that includes pores and is permeable to liquid, such as cigarette solution from the cigarette solution storage area.” Ex.1011, IPR2015-00859, Institution Decision, Paper 9, pp.8-10. For the purposes of this Petition, Petitioner applies that construction of “porous component.”

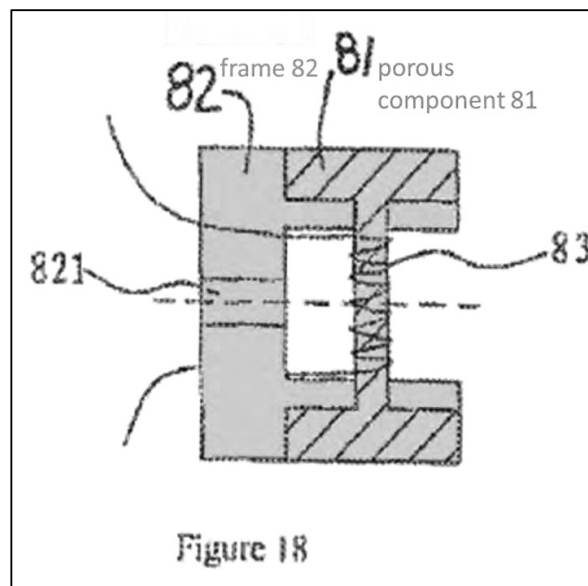
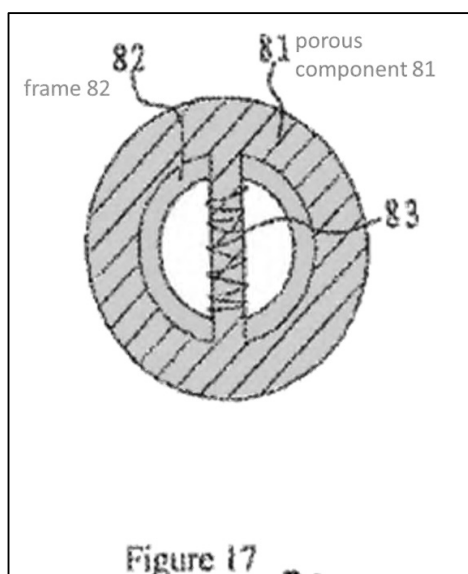
7.2.3. “a porous component set on a frame” (claims 1-10)

Independent claims 1 and 8 recite “a porous component **set on** a frame.”¹ The specification of the 548 Patent does not define “set” or “set on,” and Petitioner submits that “set on” should be given its plain and ordinary meaning—namely, to put one thing in a particular place, position, or posture on a second thing. Ex.1013,

¹ Emphases herein added unless otherwise noted.

RANDOM HOUSE WEBSTER'S COLLEGE DICTIONARY, 1226 (1991) (“**set** ... to put (something or someone) in a particular place, position, or posture: *to set a vase on a table; Set the baby on her feet.*”) (bold added, italics original); *see also* Ex.1003, ¶28.

Such a plain and ordinary meaning is consistent with how Figures 17 and 18 of the 548 Patent (below) depict that “the porous component (81) [is] **set on** the frame (82)” (Ex.1001, 5:63-64), by showing “porous component 81” arranged in a particular position on “frame 82”:



Ex.1001, 548 Patent, Figs.17 and 18 (annotated)

See also Ex.1003, ¶29.²

8. PERSON HAVING ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSA”) relevant to the 548 Patent would be a person with a Bachelor of Science degree in mechanical engineering, or a similar technical degree, along with at least 3-5 years of experience in designing and developing handheld devices with thermal management and fluid handling technologies. Ex.1003, ¶¶22-24. A higher level of education may substitute for a lesser amount of experience, and vice versa. *Id.*

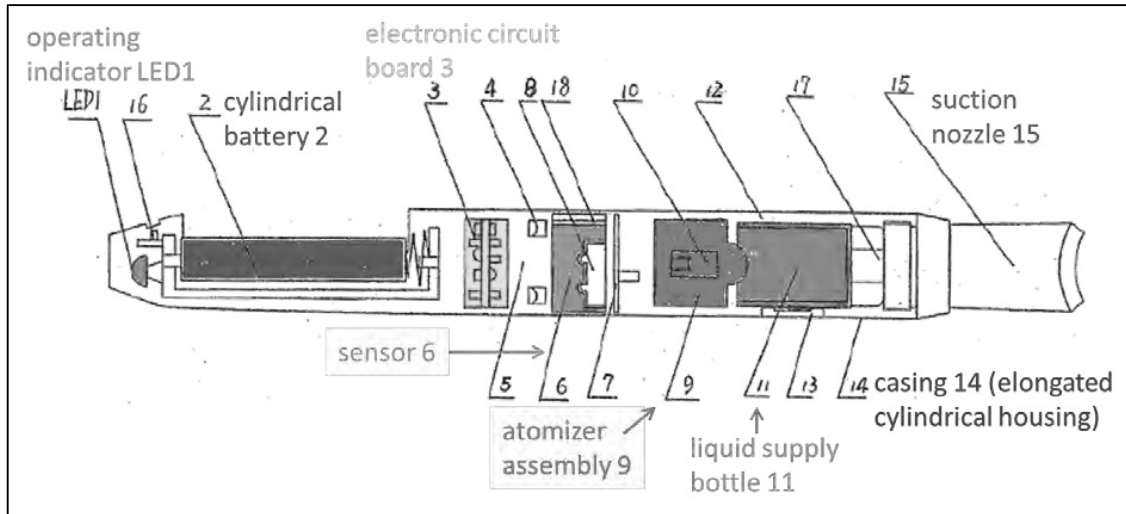
9. DESCRIPTION OF THE PRIOR ART

9.1. Hon 494

Publication WO 2005/099494 to Hon Lik (“Hon 494,” Int’l App. No. PCT/CN2005/000337, Exs.1004, 1005) is cited on the face of the 548 Patent along

² Petitioner submits that this “set on” claim limitation is different (and broader) than the “supported by” limitation the Board analyzed in a prior IPR regarding the grandparent 742 Patent, where the Board found that the ordinary meaning of “support” was “bear all or part of the weight of: hold up.” Ex.1011, IPR2015-00859, Paper 9, pp.15-16.

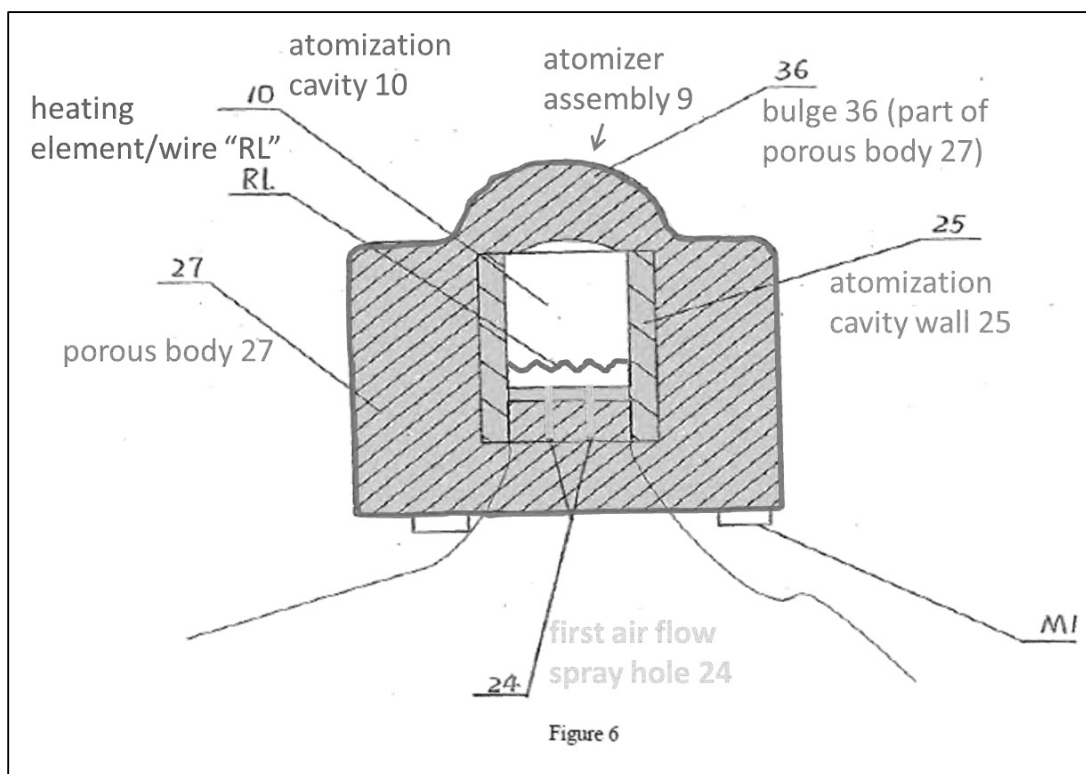
with over 300 other references. Hon 494 discloses an electronic cigarette, which is illustrated in an annotated version of Figure 1 here:



Ex.1005, Fig.1 (annotated)

See also Ex.1003, ¶42. As seen, Hon 494’s electronic cigarette has an outer casing 14, with a suction nozzle 15, liquid supply bottle 11, atomizer assembly 9, sensor 6, electronic circuit board 3, battery 2, and operating indicator light LED1. Ex.1005, p.3; Ex.1003, ¶43. Further, “a porous liquid-storing body (28) is installed in the liquid supply bottle....” *Id.*

Details of the atomizer 9 are shown in Figure 6 (where the atomizer 9 is rotated 90 degrees counter-clockwise from its orientation in Figure 1 above), annotated here:



Ex.1005, Fig.6 (annotated)

See also Ex.1003, ¶44. As seen, Hon 494's atomizer 9 includes atomization cavity 10 having a heating wire "RL," an atomization cavity wall 25 (orange) including first air flow spray hole 24 (turquoise), and a porous body 27 (green) set on the atomization cavity wall 25, with the porous body 27 including a bulge 36 (shown at the top of the figure). Ex.1005, p.3; Ex.1003, ¶45. Porous body 27 "can be made of foamed nickel, stainless steel fiber felt, polymer foam body, and foamed ceramic." *Id.* In Figure 1 above, the bulge 36 (which is part of porous body 27, which is in turn part of atomizer assembly 9) is shown to be in contact with liquid supply bottle 11. Ex.1005, Fig.1; Ex.1003, ¶45. "The contact between

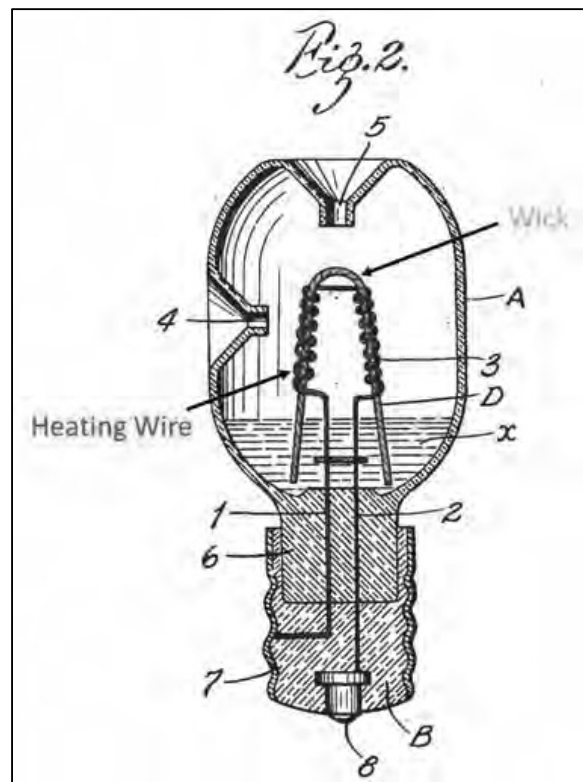
the porous liquid-storing body (28) in the liquid supply bottle (11) and the bulge (36) on the atomizer (9) implements capillary infiltration liquid supply.” Ex.1005, p.4; Ex.1003, ¶45.

In operation, “[a]ir goes from the air inlet hole (4) into the normal pressure cavity (5) and flows into the atomization cavity (10) in the atomizer (9) through the sensor air flow passage (18) and the through-hole in the gas-liquid separator (7). The high-speed air flow from the spray hole drives the cigarette liquid contained in the porous body (27) to be sprayed into the atomization cavity (10) in the form of droplets, the droplets are subjected to ultrasonic atomization of the first piezoelectric patch (M1) and then are further atomized under the action of the heating element (RL), the atomized large-diameter droplets are attached to the wall under the action of vortices and are re-adsorbed by the porous body (27) through the overflow hole (29), and the small-diameter droplets are suspended in the air flow to form aerosol, and the aerosol is sucked out through the aerosol passage, air guide hole (17), and suction nozzle (15).” Ex.1005, p.4; Ex.1003, ¶46.

9.2. Whittemore

U.S. Patent No. 2,057,353 to Whittemore (“Whittemore,” Ex.1006) is cited on the face of the 548 Patent along with over 300 other references. Whittemore discloses “a vaporizing unit” for vaporizing liquid medicament. Ex.1006, 1:1-10; Ex.1003, ¶47. Whittemore discloses that the vaporizing unit includes a housing,

i.e., a vaporizing vessel, that includes an inlet for air and an outlet for the vaporized medicament. Ex.1006, 1:28-34; Ex.1003, ¶47. The vaporizing unit further includes a heating wire coil wound around a porous body (porous wick “D”) to draw liquid from a medicament reservoir “x”, for vaporization by the heating wire coil. Ex.1006, 1:50-2:25, 3:49 (“porous wick”), Fig. 2 below:



Ex.1006, Fig.2 (annotated)

See also Ex.1003, ¶47. The “wick D [is] made of any suitable material” such as “a thread, string or strand of some suitable wick material,” where the wick is “encased in and surrounded by coiled or looped portions of the filament 3 [heating wire].” Ex.1006, 1:54-2:15; Ex.1003, ¶48. In that way, “a portion of said wick is

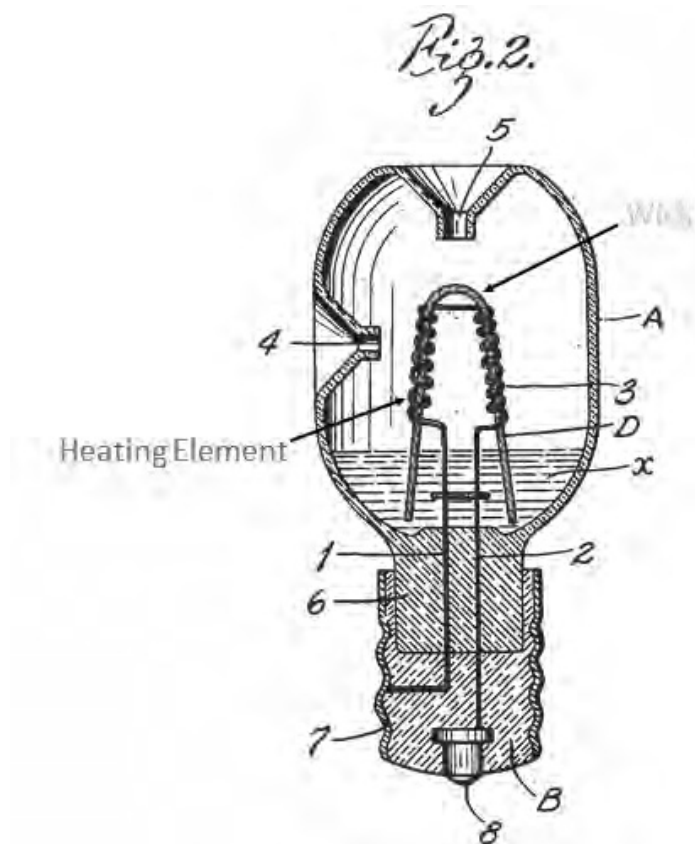
always in contact or approximate contact with the heating element or filament 3, and a portion of said wick is always in contact with the medicament in the vaporizing vessel, whereby said medicament will be carried by capillary action to a point where it will be vaporized by the heat from the filament 3.” Ex.1006, 2:1-8; Ex.1003, ¶48.

10. GROUND #1: CLAIMS 1-14 OF THE 548 PATENT ARE RENDERED OBVIOUS BY HON 494 IN VIEW OF WHITTEMORE

10.1. It Would Have Been Obvious to Combine Hon 494 and Whittemore

Hon 494’s heating element (wire “RL”) is not wound on Hon 494’s porous/fiber component. Whittemore, however, discloses a heating wire coil wound on a porous fiber component, and, for the reasons that follow, it would have been obvious to one of ordinary skill in the art to incorporate that feature into Hon 494’s device. Ex.1003, ¶¶49-66.

As noted above, Whittemore describes a porous wick D made of thread or string that is surrounded by “coiled or looped portions” of a “filament 3,” which acts as a heater when electric current is run through it. Ex.1006, 1:53-2:18; Ex.1003, ¶50.



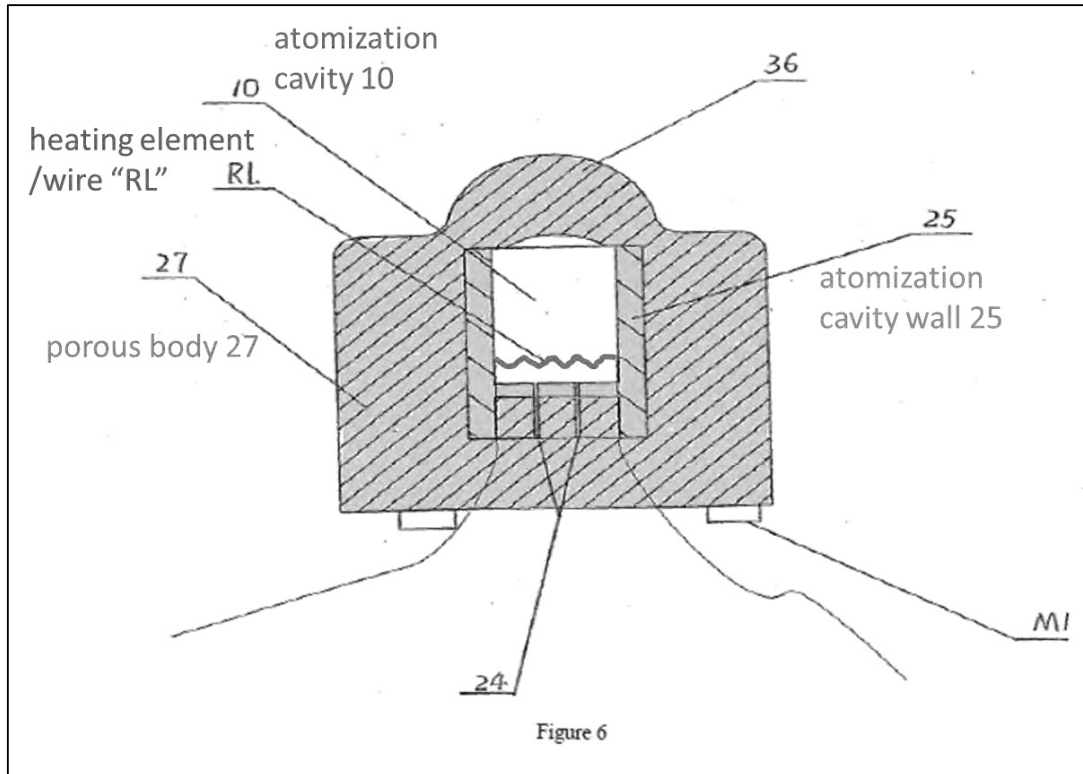
Ex.1006, Fig.2 (annotated)

As Whittemore expressly states, wick D is a “porous wick.” Ex.1006, 3:49-52.

Accordingly, Whittemore discloses a heating wire coil (filament 3) wound on a porous component (wick D). Ex.1006, 1:53-2:18, 3:49-52; Ex.1003, ¶51.

Moreover, because Whittemore discloses that wick D may be made of thread or string, Whittemore further discloses that its porous component (wick D) is composed of fiber (*i.e.*, string or thread). *Id.* Whittemore’s heating wire coil vaporizes liquid medicament in proximate portions of wick D, where the liquid travels up the wick from the liquid reservoir via capillary action. Ex.1006, 2:1-8; Ex.1003, ¶51.

As described in more detail below for limitation [1.6], Hon 494 discloses a wire heating element “RL” between different portions of Hon 494’s porous body 27, as shown here:



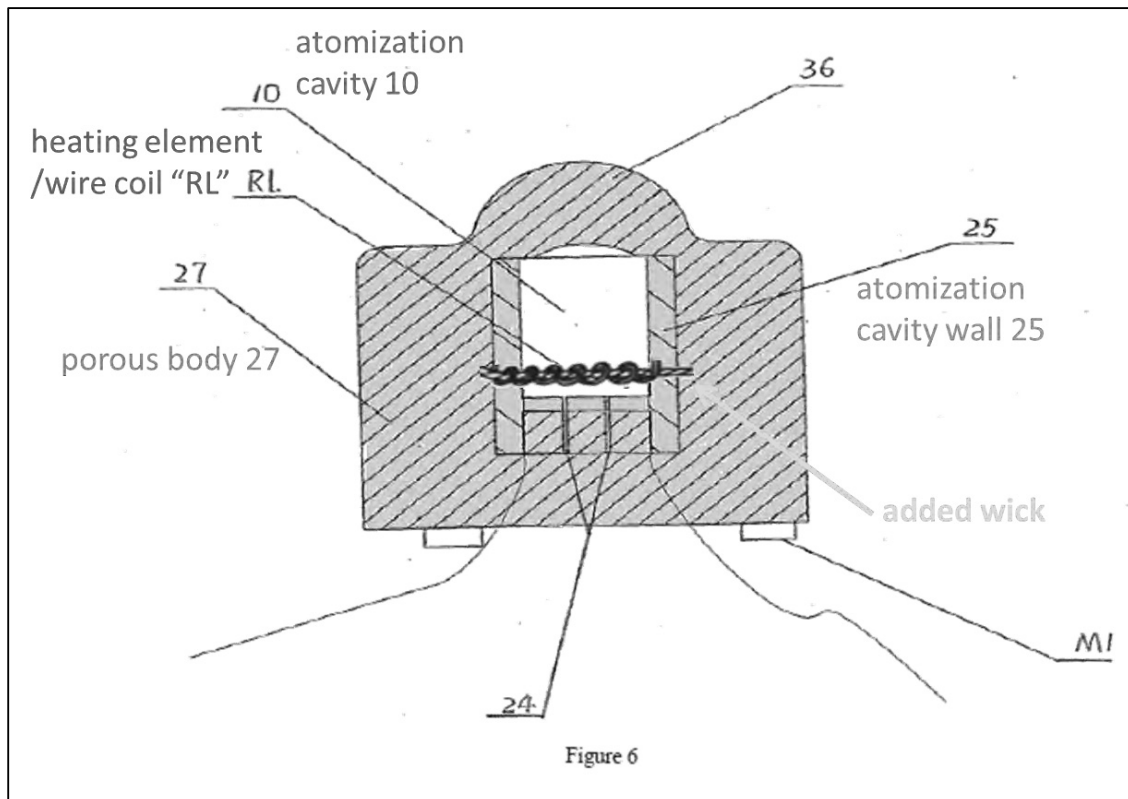
Ex.1005, Fig.6 (annotated)

See also Ex.1005, p.3 (disclosing that “heating element (RL)” can “be made of a platinum wire, nichrome wire, or aludirome wire containing rare earth elements”); *infra* limitation [1.6]; Ex.1003, ¶52.

In Hon 494, air flow spray hole 24 transports liquid from the porous body 27 into the atomization cavity 10 where the liquid is vaporized by heat from the

heating wire “RL.” Ex.1005, p.4; Ex.1003, ¶53. Hon 494’s porous body 27 can be made of “fiber felt.” Ex.1005, p.3; Ex.1003, ¶53.

It would have been obvious to a POSA to adapt Hon 494 to include Whittemore’s porous fiber wick D—*i.e.*, Hon 494’s heating wire “RL” would be coiled around a wick as in Whittemore, where the wick would form part of Hon 494’s porous body 27. Ex.1003, ¶54. Alternatively, but with the same result, Whittemore’s wick having its own coiled heating wire could together be added to Hon 494, again where the wick would form part of Hon 494’s porous body 27. *Id.* The wick would, predictably, transport Hon 494’s cigarette liquid from Hon 494’s existing porous body 27 via capillary action to be vaporized by the heating wire, as taught by Whittemore. *Id.* Hon 494’s atomizer so modified to include Whittemore’s wick (or to include Whittemore’s wick and coiled wire) is shown here:



Ex.1005, Fig.6 (annotated)

See also Ex.1003, ¶54.

It would have been obvious to a person of ordinary skill in the art to make such an adaption for several reasons.³ Adapting Hon 494 to include a fiber wick

³ Note that the Board previously denied institution of Hon 494 in view of Whittemore in a parent patent IPR because “we are not persuaded that Petitioner has articulated reasoning with rational underpinnings as to why one of ordinary skill in the art would modify Hon’s teachings to arrive at the claimed invention based on the asserted reasoning that it would provide more efficient, uniform

(with a heating wire wrapped around the wick, as in Whittemore) would make the device more efficient. Ex.1003, ¶55. Specifically, the wick would draw the liquid into close proximity with the heating element enabling the heating element to better vaporize the liquid. *Id.* In Hon 494’s current form, liquid droplets are expelled via airflow into the atomization cavity 10 and vaporized solely by convection from the heat given off by heating element “RL.” Ex.1005, p.4; Ex.1003, ¶55. In other words, the liquid droplets are vaporized in the atomization cavity mainly via the heat transfer through air between the heating element and the liquid droplets—most of the liquid is not directly contacting the heating element. Ex.1003, ¶55.

Air, however, is a good insulator (in other words, a poor thermal conductor), and a POSA would have realized the thermal inefficiencies associated with the configuration of Hon 494. Ex.1003, ¶56. To compensate, a POSA would have known that Hon 494’s heating wire “RL” would need to be at relatively higher temperatures than would be required in a system where all (or a majority) of the heating.” Ex.1011, p.25. In that case, however, the Petition and supporting Expert Declaration provided no more than a conclusory paragraph supporting the combination. Here, the Petition and Petitioner’s expert provides a thorough analysis explaining why a POSA would have made such a combination.

cigarette liquid would be available to be in direct contact with the heating element. *Id.* In contrast, using the Whittemore configuration (*i.e.*, a heating wire coil wound on a porous fiber wick) would increase the thermal efficiency of the system because the liquid (contained in the porous wick) comes into direct contact with the heating element. *Id.* Thus, in the Whittemore device, the heating element can be run at lower temperatures as compared to the device in Hon 494, and achieve the same vaporization capacity. *Id.* An obvious benefit to running at lower temperatures, of course, is that less energy is required to vaporize the liquid. *Id.* A POSA would have been motivated to modify Hon 494 in view of Whittemore as proposed, to achieve the predicted result of more efficient heating, lower requisite heating temperatures, and improved battery life. *Id.*

In addition, there would have been many other reasons to combine Hon 494 and Whittemore in such a way. First, as Whittemore itself and other references demonstrate, using a heating coil wound around a porous component to generate vapor is a technique that had been widely known in the art of electronic vaporizing devices for at least seven decades. *See* Ex.1006 (filed Sept. 27, 1935), 1:53-2:18; *see also, e.g.*, Ex.1014, U.S. Patent No. 2,461,664 (“Smith”) (filed Aug. 30, 1941), 20:36-40 (disclosing a heating element “compris[ing] loops of a coil of electrical resistance wire and the said capillary feeder comprises a stretch of wick passing axially through said coil of wire”); Ex.1015, U.S. Patent No. 3,234,357 (“Seuthe”)

(filed Oct. 29, 1962), 4:73-75 (“The wire 71 is advantageously coiled around a wick or mandrel 63 which is easily wetted.”); Ex.1003, ¶57.

The use of heater coils wound around liquid containers for the purpose of generating vapor is even older. *See* Ex.1016, U.S. Patent No. 1,084,304 (“Vaughn”) (filed Jan. 27, 1913), 3:39-43 (“As the current thus passes through the resistance heating coil 13, such coil will be heated and the medicinal compound *a* within the interior of the container 16 will be heated so that a vapor will be generated...”); Ex.1003, ¶58.

Second, the proposed combination is the combination of prior art elements according to known methods to yield predictable results. Specifically, the combination of Whittemore’s porous fiber wick, having a heating coiled wire wrapped around it, with Hon 494’s device is the combination of prior art elements to yield the predicted result of transporting a liquid solution via capillary action from a liquid source to a spaced apart heating element for subsequent vaporization. Ex.1003, ¶59.

Third, the proposed combination is the simple substitution of one known element for another to obtain predictable results. The substitution of Whittemore’s porous wick/heating coil configuration for Hon 494’s heating wire is the substitution of one known element for another to obtain the predicted result of

transporting liquid solution via capillary action from Hon 494's porous body 27 to a spaced apart heating coil for subsequent vaporization. Ex.1003, ¶60.

Fourth, the proposed combination is the use of a known technique to improve a similar device in the same way. Specifically, the use of Whittemore's porous wick improves the device of Hon 494 in the same way as it improves the vaporizing unit of Whittemore—the porous wick provides a reliable means for transporting liquid from a liquid supply to a heating element for subsequent vaporization. Ex.1003, ¶61.

Fifth, the proposed combination is the application of a known technique to a known device ready for improvement to yield predictable results. Specifically, using Whittemore's technique of transporting liquid via the capillary action of a porous wick is nothing more than the use of a known technique for improving Hon 494's electronic cigarette, which a POSA would have appreciated was ready for such an improvement, to yield predictable results. Ex.1003, ¶62.

Sixth, it would have been obvious to try Whittemore's wick in the electronic cigarette of Hon 494 for transporting liquid from the porous body 27 to the heating wire for subsequent vaporization. The proposed combination merely involves choosing from a finite number of identified, predictable solutions for transporting—and ultimately vaporizing—a liquid from a liquid source to a spaced apart heating element, with a reasonable expectation of success. For example,

Hon 494 discloses transporting the liquid in droplet form via airflow. Ex. 1005, p.4; Ex.1003, ¶63. Whittemore, on the other hand, discloses transporting liquid via capillary action through porous wick D. Ex. 1006, 1:53-2:8; Ex.1003, ¶63. The Takeuchi prior art reference is another example of a reference that discloses that liquid can be transported via capillary action. See Ex.1008, Figs. 1, 10-11, 14-15; Ex.1003, ¶63.

Similarly, there were a finite number of identified, predictable solutions for vaporizing liquid in devices of the type claimed. Hon 494 discloses a heating wire for convectively heating liquid droplets contained within an atomization chamber. Ex. 1005, p.4; Ex.1003, ¶64. Whittemore discloses a porous wick/heating wire coil configuration for directly heating the liquid in proximate portions of the wick. Ex.1006, Fig. 2, 1:53-2:8; Ex.1003, ¶64. As another example, the Brooks prior art reference discloses a resistive heating component in contact with a porous substrate. Ex.1009, 7:65-8:3; Ex.1003, ¶64. In view of the prior teachings, it would have been obvious to try a porous wick/heating coil combination in the electronic cigarette of Hon 494, such as that disclosed by Whittemore, because such a configuration was one of a finite number of identified, predictable solutions in vaporization devices of the type claimed for transporting a liquid source to a spaced apart heating element for subsequent vaporization. Ex.1003, ¶64.

Modifying Hon 494 in this way would not have rendered Hon 494's device inoperable. On the contrary, and as noted above, the proposed modification would have improved the device, permitting more efficient heating of the cigarette liquid solution. Ex.1003, ¶65. Liquid sprayed into the atomizer cavity would be absorbed by the porous material to be more efficiently atomized by the heating wire. *Id.* Moreover, rather than relying solely on airflow (and thus a person's suction force) to deliver the liquid solution from Hon 494's porous body 27 to heating wire "RL" (*see* Ex.1005, p.4), the proposed modification would additionally deliver the liquid to the heating wire via capillary action, making the device easier to use. Ex.1003, ¶65.

Finally, to the extent Patent Owner argues that the proposed modification would fundamentally change the operation of Hon 494 by transporting liquid via capillary action for vaporization, and thereby preventing the disclosed ultrasonic atomization of the liquid by the first piezoelectric patch "M1" (*see* Ex.1005, p.4), any such argument is misplaced. Hon 494 expressly discloses that the first piezoelectric patch "M1" may be "canceled" such that "atomization of [the] cigarette liquid relies on the heating element (RL) only." Ex.1005, p.4; Ex.1003, ¶66.

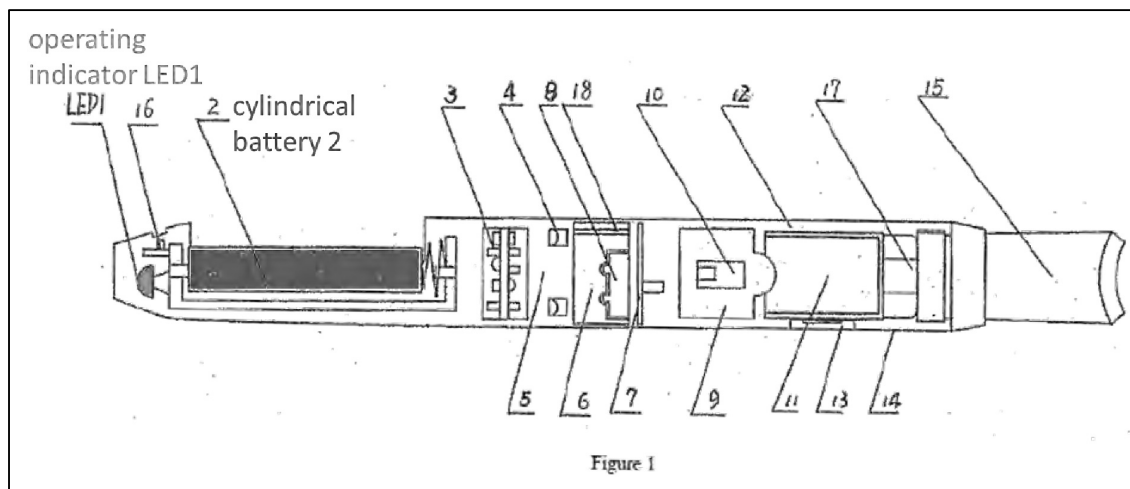
10.2. Claim 1

[1.P] An electronic cigarette, comprising:

To the extent the preamble is considered a limitation, Hon 494 discloses “an electronic cigarette.” *See, e.g.*, Ex.1005, Abstract (“This invention relates to an aerosol electronic cigarette just containing nicotine without tar, which includes a shell and a suction nozzle.”); *id.*, p.1 (“To overcome the above-mentioned shortcomings, the present invention is intended to provide an aerosol electronic cigarette which can substitute cigarettes to let smokers quit smoking.”); Ex.1003, Append.A[1.P].

[1.1] a battery assembly having a cylindrical battery and an operating indicator;

Hon 494 discloses a cylindrical battery (“battery 2”) and an operating indicator (“light-emitting diode LED1”), together comprising a battery assembly. Ex.1005, p.3 (“As shown in Figure 1, the present invention can form a cigarette-holder-type, cigar-type, or tobacco-pipe-type integral body. An air inlet hole (4) is opened in the external wall of the casing (14), and a **light-emitting diode (LED1)**, a **battery (2)** ... are sequentially set in the casing (14).”); *see also id.*, Fig.1 (depicting a cross-section of Hon 494’s tubular electronic cigarette, with indicator LED1 on the left, and suction nozzle 15 on the right):



Ex.1005, Fig.1 (annotated)

See also Ex.1003, Append.A[1.1].

Hon 494’s “LED1” is an “operating indicator.” It lights up when the device atomizes the nicotine liquid to form vapor, thereby indicating to the user (or to an observer) that the device is operating. Ex.1005, p.4 (“When the reed switch (K1) is closed, the field-effect transistor (U1) is started and the heating element (RL) works. ... At the same time, the light-emitting diode (LED1) emits light after being powered by the rechargeable battery (2).”); Ex.1003, Append.A[1.1].⁴

⁴ The 548 Patent describes its “operating indicator” in the same way. Ex.1001, 3:14-19 (“The operating indicator (1) is a LED. In this embodiment, there are two LEDs. The electronic circuit board (4) includes an electronic switch circuit, which controls the electric circuit according to the input signals, so that the rechargeable

Finally, Hon 494's battery is "cylindrical," or, at the very least, it would have been obvious to a POSA that Hon 494's battery could be cylindrical. Ex.1003, Append.A[1.1]. In related IPR-2016-01297, Patent Owner admitted that Hon 494's device is shaped like a cylindrical tube. Specifically, Patent Owner admitted that U.S. 8,893,726 (which claims priority to Hon 494 through a series of continuation applications, and has the same Figure 1 as Hon 494) "discloses a device shaped like a cylindrical tube, as shown below in Figure 1." See Ex.1017, IPR2016-01297, Patent Owner's Preliminary Response, Paper 8, pp.12-13. And indeed, Hon 494 discloses that "[many components] are connected in sequence, a light emitting diode (LED1) and a battery (2) are additionally included at the front end of the casing (14), and all these components jointly form a cigarette-holder-type, cigar-type, or tobacco-pipe-type integral body." Ex.1005, p.6, claim 1; Ex.1003, Append.A[1.1].

A POSA would understand that the battery depicted in Hon 494 at Figure 1, above, is cylindrical, particularly because the battery is intended to fit in a cylindrical housing. Ex.1003, Append.A[1.1]. Nonetheless, to the extent Patent Owner argues here that Hon 494 does not disclose a "cylindrical" battery or a battery (3) electrifies the electric heating rod (82) inside the atomizer (8) and the LEDs as well.").

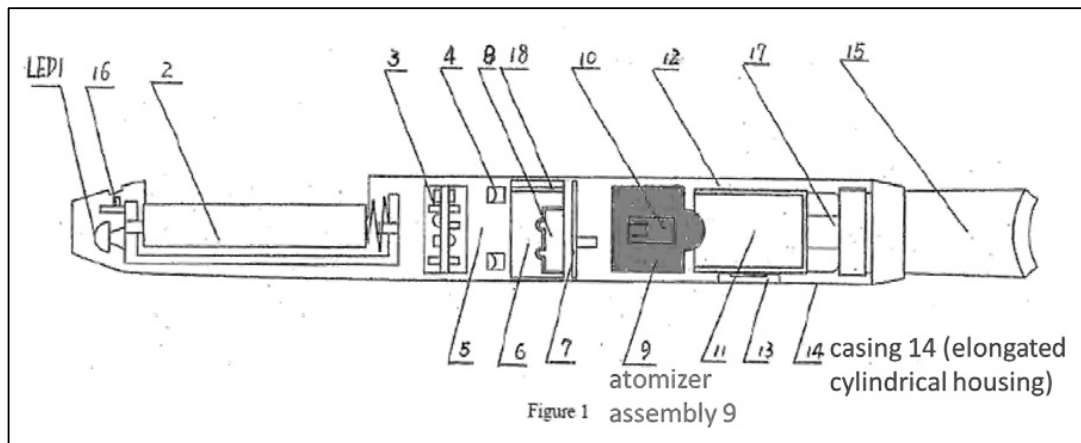
“cylindrical” device, it would have been obvious to a POSA to make Hon 494’s device (as well as its “battery 2” shown in Figure 1) cylindrical. *Id.* The express goal of Hon 494 is to simulate a traditional tobacco cigarette, cigar, or pipe, the vast majority of which are (and were) cylindrically shaped, and a cylindrical battery would best fit into a cylindrical device. *Id.* Further, it was known in the art that electronic cigarettes themselves could be cylindrically shaped, and that such devices specifically contained cylindrical batteries. *Id.* (citing Voges, Ex.1007, at Fig.1, 3:29-30, 5:48-51, 5:66-6:2). Finally, cylindrical batteries in general were well known, such as common “AA” or “AAA” batteries one could have purchased at any hardware or convenience store. Ex.1003, Append.A[1.1]. Therefore given the goals of Hon 494 and the teachings of the prior art, one of ordinary skill would have been motivated to make Hon 494’s device, as well as the battery therein, cylindrical. *Id.*

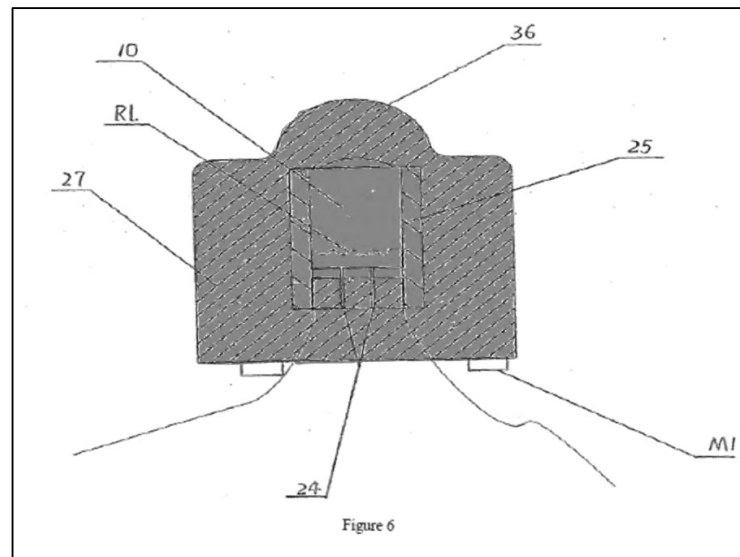
Therefore Hon 494 discloses a battery assembly having a cylindrical battery (“battery 2,” or at least would have rendered obvious that the battery is “cylindrical” in view of the knowledge of a POSA) and an operating indicator (“light-emitting diode LED1”). Ex.1003, Append.A[1.1].

[1.2] an atomizer assembly in an elongated cylindrical housing,

Hon 494 discloses an “atomizer assembly”—specifically, “atomizer 9,” which includes, in part, “atomization cavity 10,” “atomization cavity wall 25,”

“heating element RL,” and “porous body 27.” *See, e.g.*, Ex.1005, p.3 (“The atomizer (9) contacts the liquid supply bottle (11) through a bulge (36), a clearance is reserved between the atomizer and the casing (14), and an atomization cavity (10) is set in the atomizer (9). As shown in Figure 6 and Figure 7, an overflow hole (29) is opened in the atomization cavity wall (25) of the atomization cavity (10), a heating element (RL) is set in the atomization cavity.... A porous body (27) is wrapped outside the atomization cavity wall (25) and the porous body can be made of foamed nickel, stainless steel fiber felt, polymer foam body, and foamed ceramic.”); *id.*, Figs. 1 and 6 (the latter “show[ing] the structure of one atomizer of the present invention”):





Ex.1005, Fig.1 (annotated) and Fig.6 (annotated, “show[ing] the structure of one atomizer of the present invention”)⁵

See also Ex.1003, Append.A[1.2].

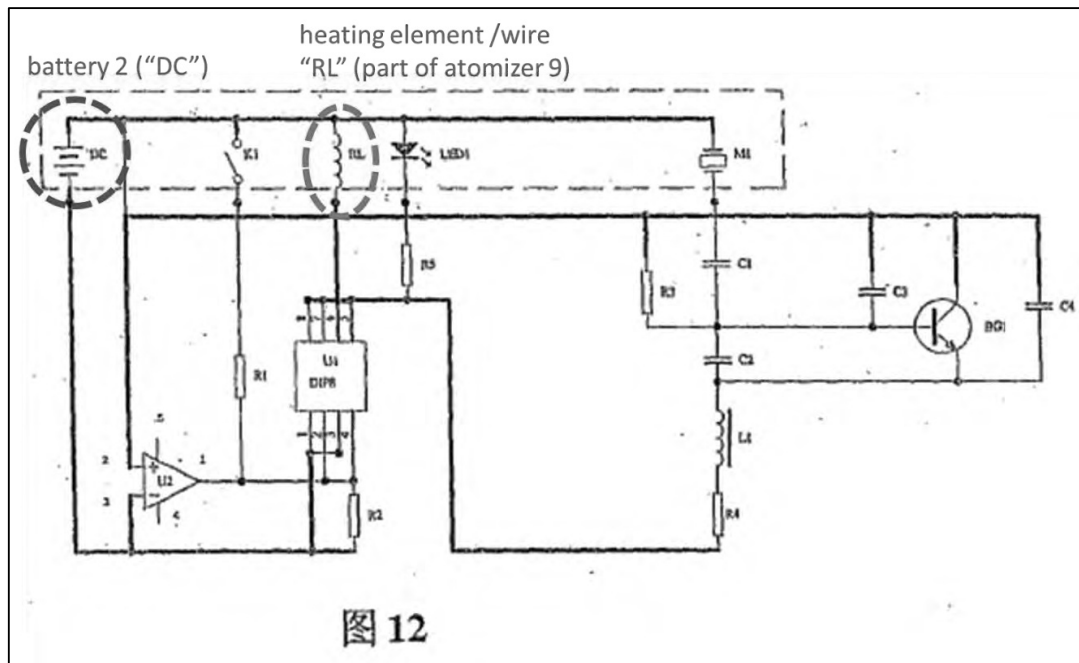
Further, the atomizer assembly (“atomizer 9”) is in “an elongated cylindrical housing”—specifically, inside “casing 14.” See, e.g., Ex.1005, p.3 (“As shown in Figure 1 ... an atomizer (9) ... set in the casing (14).”), Fig.1; Ex.1003, Append.A[1.2]. As discussed for limitation [1.1] *supra*, Patent Owner admitted in IPR-2016-01297 that the housing (casing 14) depicted in Hon 494 in Figure 1 is cylindrical. At the very least, it would have been obvious to a POSA to make “casing 14” cylindrical. See [1.1] *supra*.

⁵ Note that the atomizer assembly 9 in Figure 6 is rotated 90 degrees counter-clockwise from its orientation in Figure 1.

Therefore Hon 494 discloses an atomizer assembly (“atomizer 9”) in an elongated cylindrical housing (“casing 14,” or at least would have rendered obvious that the housing is “cylindrical” in view of the knowledge of a POSA). Ex.1003, Append.A[1.2].

[1.3] with the battery assembly electrically connected to the atomizer assembly, and with the cylindrical battery coaxial with the atomizer assembly;

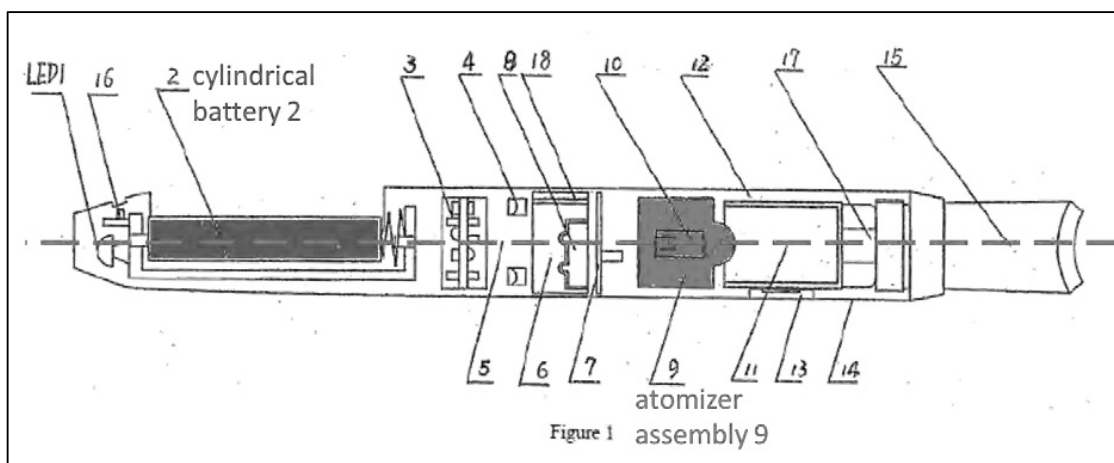
First, Hon 494’s battery assembly is electrically connected to the atomizer assembly. As illustrated in the Figure 12 circuit diagram (below), the battery (labeled “DC”) is electrically connected with “heating element RL,” which is in the “atomizer 9.” *See, e.g.*, Ex.1005, p.4 (“As shown in Figure 12, the core of the electronic switch circuit is the field-effect transistor (U1). K1 is a reed switch (located in the sensor (6)), RL is a heating element (located in the atomizer (9)), LED1 is a light-emitting diode, U2 is a low-voltage detector (used for overdischarge protection of lithium battery), and M1 is a first piezoelectric patch. ... When the reed switch (K1) is closed, the field-effect transistor (U1) is started and the heating element (RL) works.”); *id.*, Fig.12:



Ex.1005, Fig.12 (annotated)

See also Ex.1003, Append.A[1.3] (explaining that one of ordinary skill in the art would have known that the symbol labeled “DC” in Figure 12 is the conventional symbol for a voltage source in a circuit diagram (*i.e.*, Hon 494’s battery)).

Second, Hon 494’s “battery 2” is coaxial with “atomizer 9” along the longitudinal axis of the device (as the dotted line depicts below). See, *e.g.*, Ex.1005, p.3 (“...a **battery (2)**, an electronic circuit board (3), a normal pressure cavity (5), a sensor (6), a gas-liquid separator (7), an **atomizer (9)**, a liquid supply bottle (11), and a suction nozzle (15) are **sequentially set in the casing (14)**.”); *id.*, Fig.1:



Ex.1005, Fig.1 (annotated)

See also Ex.1003, Append.A[1.3].

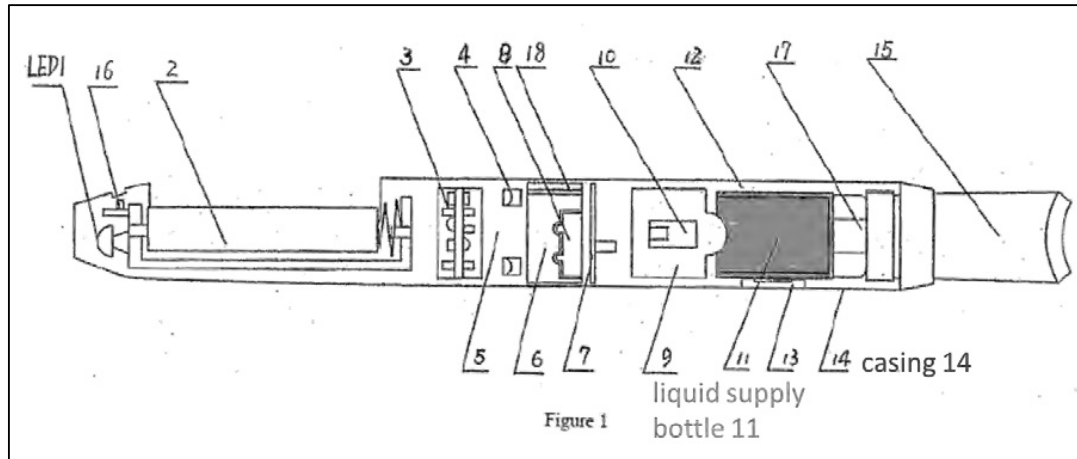
Therefore Hon 494 discloses the battery assembly (including “battery 2” and “LED1”) electrically connected to the atomizer assembly (“atomizer 9”), with the cylindrical battery (“battery 2”) coaxial with the atomizer assembly (“atomizer 9”) (or at least would have rendered obvious that the battery is “cylindrical” in view of the knowledge of a POSA, *see* [1.1] *supra*). Ex.1003, Append.A[1.3].

[1.4] a liquid storage component in the housing,

Hon 494’s electronic cigarette includes a liquid storage component (“liquid supply bottle 11”) in the housing (“casing 14”). *See, e.g.*, Ex.1005, p.3 (“An air inlet hole (4) is opened in the external wall of the **casing (14)**, and a light-emitting diode (LED1), a battery (2), an electronic circuit board (3), a normal pressure cavity (5), a sensor (6), a gas-liquid separator (7), an atomizer (9), a **liquid supply**

bottle (11), and a suction nozzle (15) are sequentially set in the casing (14).”),

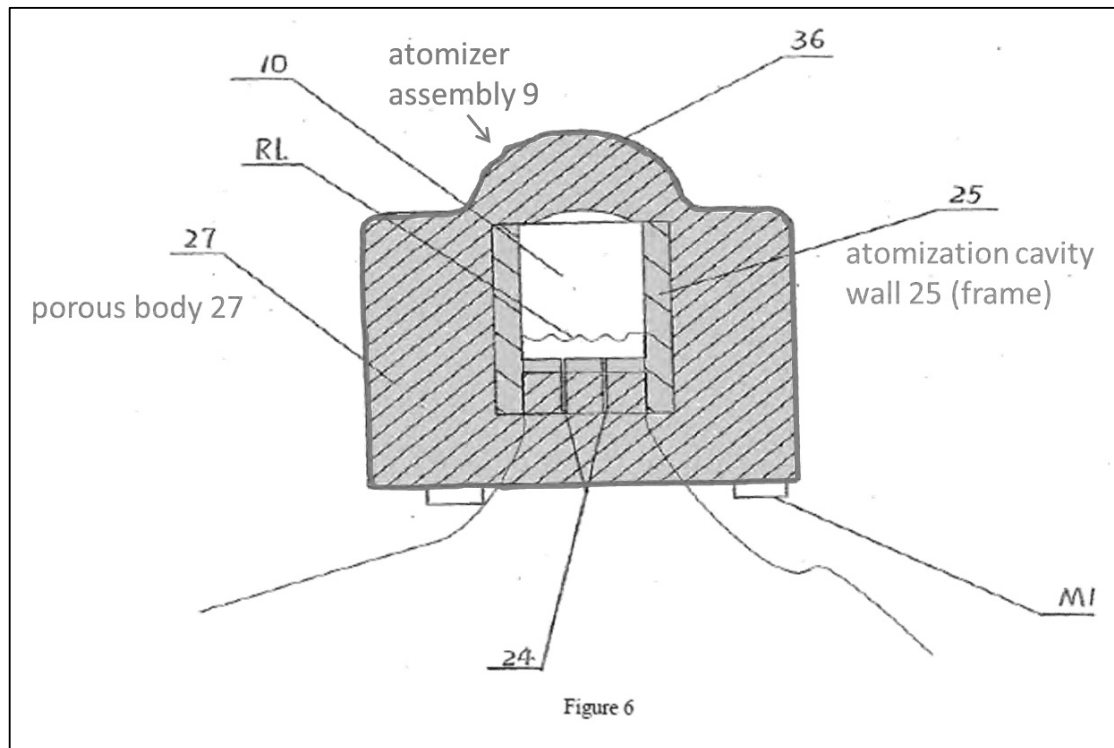
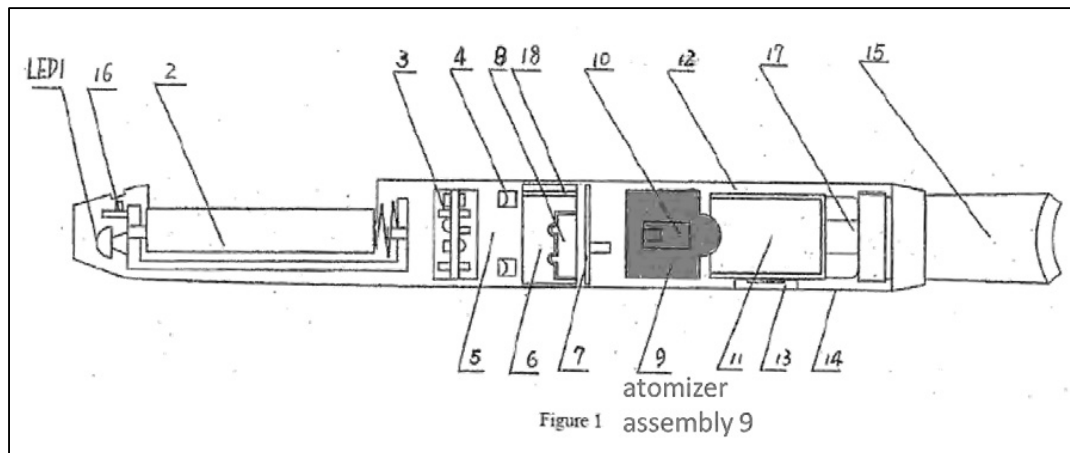
Fig.1; Ex.1003, Append.A[1.4].



Ex.1005, Fig.1 (annotated)

[1.5] the atomizer assembly including a porous component set on a frame having a run-through hole;

First, as noted above, Hon 494’s atomizer assembly (“atomizer 9”) includes a “porous component,” specifically “porous body 27.” *See, e.g.*, Ex.1005, p.3 (“As shown in Figure 1... an atomization cavity (10) is set in the atomizer (9). ... A **porous body (27)** is wrapped outside the atomization cavity wall (25) and the porous body can be made of foamed nickel, stainless steel fiber felt, polymer foam body, and foamed ceramic.”), p.4 (“...cigarette liquid contained in the **porous body (27)**...”), Figs. 1 and 6 (the latter “show[ing] the structure of one atomizer of the present invention,” including porous body 27):

Ex.1005, Figs.1 and 6 (annotated)⁶

⁶ Note that the atomizer assembly 9 in Figure 6 is rotated 90 degrees counter-clockwise from its orientation in Figure 1.

See also Ex.1003, Append.A[1.5].

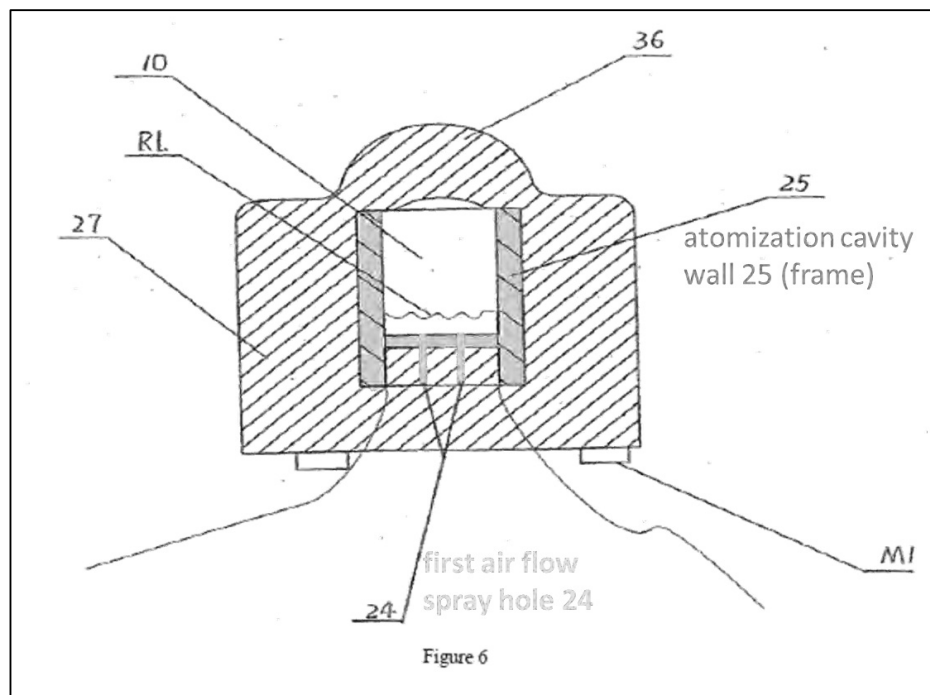
As explained in Section 10.1 above, in the proposed combination of Hon 494 and Whittemore, Whittemore's porous wick is added to Hon 494's device, becoming part of Hon 494's "porous body 27" (and thereby also part of the claimed "porous component"). *See* §10.1 *supra*; Ex.1003, Append.A[1.5].

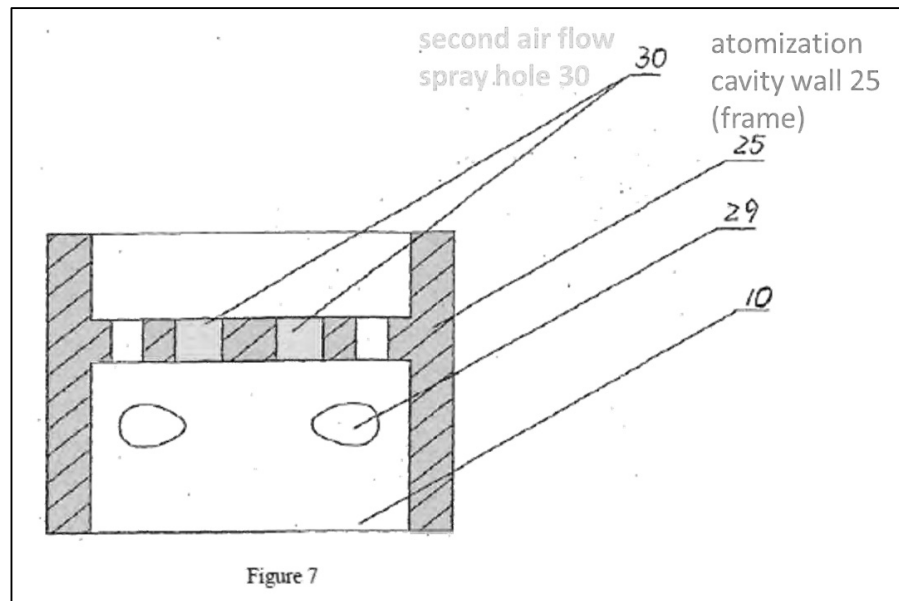
Notably, in IPR2013-00387 concerning the 944 Patent (the great-grandparent to the 548 Patent), the Board found that Hon 494's "porous body 27" corresponded to the claimed "porous component" (Ex.1010, IPR2013-00387, Final Written Decision, Paper 43, p.29), under the same construction of "porous component" (*id.* at pp.11-13).

Second, under the Board's prior construction of "frame" as a "rigid structure," the claimed "frame" corresponds to Hon 494's "atomization cavity wall 25" (illustrated in orange in Figure 6 of Hon 494, above). Hon 494 discloses that its atomization cavity wall 25 comprises "aluminum oxide or ceramic" (*see, e.g.,* Ex.1005, p.3), each of which is a rigid material. Ex.1003, Append.A[1.5].⁷

⁷ Indeed, in IPR2015-00859 concerning the grandparent 742 Patent, the Board found that the same "atomization cavity wall 25" (in the Chinese patent that resulted in Hon 494) is a "rigid structure," due to its composition of aluminum oxide or ceramic. Ex.1011, p.15.

Third, Hon 494's "frame" (atomization cavity wall 25) has a "run-through hole." Specifically, Hon 494 discloses a "first air flow spray hole 24" or a "second air flow spray hole 30," each of which runs through portions of atomization cavity wall 25. Ex. 1005, p.3; Ex.1003, Append.A[1.5]. These run-through holes can be seen in Hon 494 at Figures 6 and 7 (below). Figure 6 depicts the structure of one atomizer embodiment, and Figure 7 depicts the ceramic elements in the atomizer.



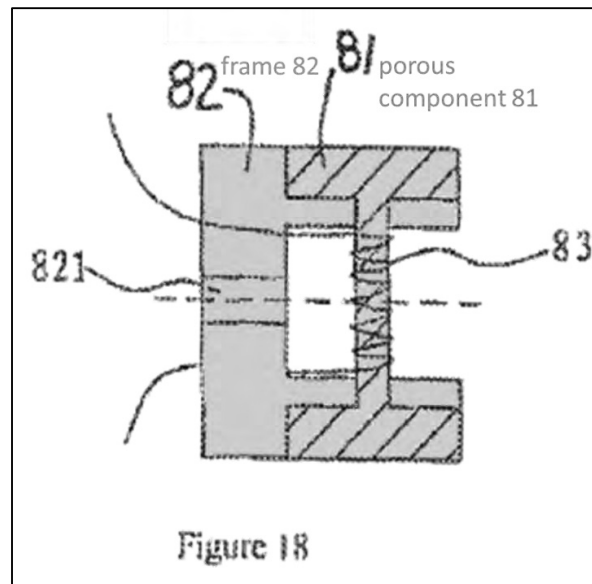
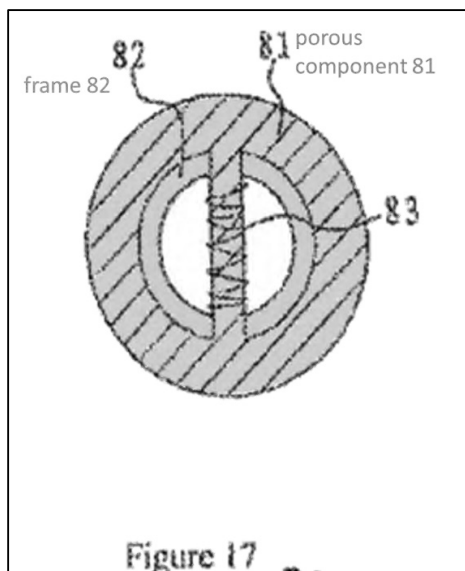


Ex.1005, Figs.6 and 7 (annotated)

See also Ex.1003, Ex.1003, Append.A[1.5].

The airflow spray holes provide access through the frame to the heating element. See, e.g., Ex.1005, p.3 (“A spray hole is opened on the side facing the heating element (RL), and the spray hole can be the first air flow spray hole (24) or the second air flow spray hole (30), depending on the material of the atomization cavity wall (25). The first air flow spray hole (24) can be a 0.1-mm to 1.3-mm-wide slit structure, or a structure consisting of one or more round holes with a diameter of 0.2 mm to 1.3 mm, and the diameter of the second air flow spray hole (30) is 0.3 mm to 1.3 mm.”), p.4 (“The high-speed air flow from the spray hole drives the cigarette liquid contained in the porous body (27) to be sprayed into the atomization cavity (10) in the form of droplets.”); Ex.1003, Append.A[1.5].

Finally, Hon 494’s “porous body 27” is “**set on**” the frame (“atomization cavity wall 25”), under the plain meaning of “set on” explained in the Claim Construction section above (namely, to put one thing in a particular place, position, or posture on a second thing). Ex.1003, Append.A[1.5]. As noted in that section, the 548 Patent discloses the “set on” embodiments in Figures 17 and 18 (below). Ex.1001, 5:61-64 (“In the fifth preferred embodiment, as shown in FIGS. 17 and 18, the atomizer assembly is an atomizer (8), which includes a **frame (82)**, the **porous component (81)** set on the frame (82).”), Figs. 17 and 18:

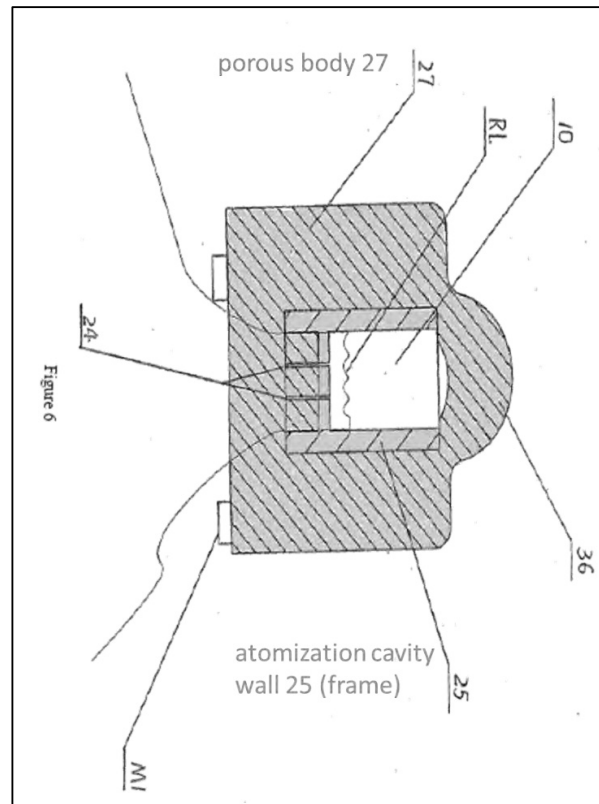


Ex.1001, 548 Patent, Figs.17 and 18 (annotated)

See also Ex.1003, Append.A[1.5].

In the same way, the “porous body 27” in Hon 494 is “set on” the frame in Hon 494. Specifically, Hon 494 discloses that its “porous body (27) is wrapped

outside the atomization cavity wall (25) [frame]” (Ex.1005, p.3), as seen in Figure 6 (below) showing porous body 27 arranged in a particular position surrounding and in contact with cavity wall 25:



Ex.1005, Fig.6 (annotated, and rotated such that atomizer 9 in Fig.6 has the same orientation as in Fig.1, when the device is in the standard horizontal position)

See also Ex.1003, Append.A[1.5]. As seen in Figure 6 above, porous body 27 is in contact with and set on cavity wall 25. *Id.*⁸

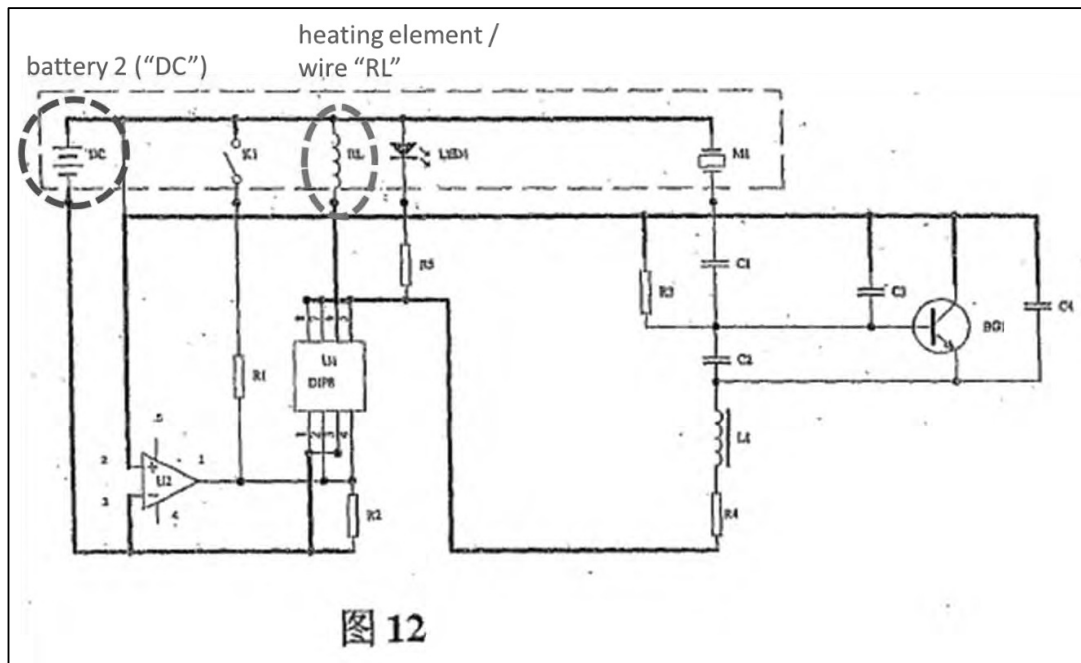
⁸ Indeed, regardless of the orientation of the device, porous body 27 is always “set on” cavity wall 25 under the plain meaning of “set on,” because porous

Therefore, under the proposed combination of Hon 494 and Whittemore (*see* §10.1 *supra*), Hon 494's atomizer assembly ("atomizer 9") includes a porous component (Hon 494's "porous body 27" and Whittemore's porous wick) set on a frame ("atomizer cavity wall 25") having a run-through hole ("first air flow spray hole 24" or "second air flow spray hole 30"). Ex.1003, Append.A[1.5].

[1.6] a heating wire coil electrically connected to the battery,

Hon 494 discloses that its electronic cigarette has a wire "heating element (RL)" electrically connected to the "battery 2." More specifically, Hon 494 discloses that "heating element (RL)" can "be made of a platinum **wire**, nichrome **wire**, or aludirome **wire** containing rare earth elements or can be made into a strip." Ex.1005, p.3; Ex.1003, Append.A[1.6]. Further, Hon 494 also discloses that its heating wire RL is electrically connected to its battery, as claimed, as shown in Figure 12 where heating wire "RL" is electrically connected to the battery marked "DC":

body 27 is arranged/put in a particular position on various portions of cavity wall 25. Ex.1005, Fig.6; Ex.1003, Append.A[1.5].



Ex.1005, Fig.12 (annotated)

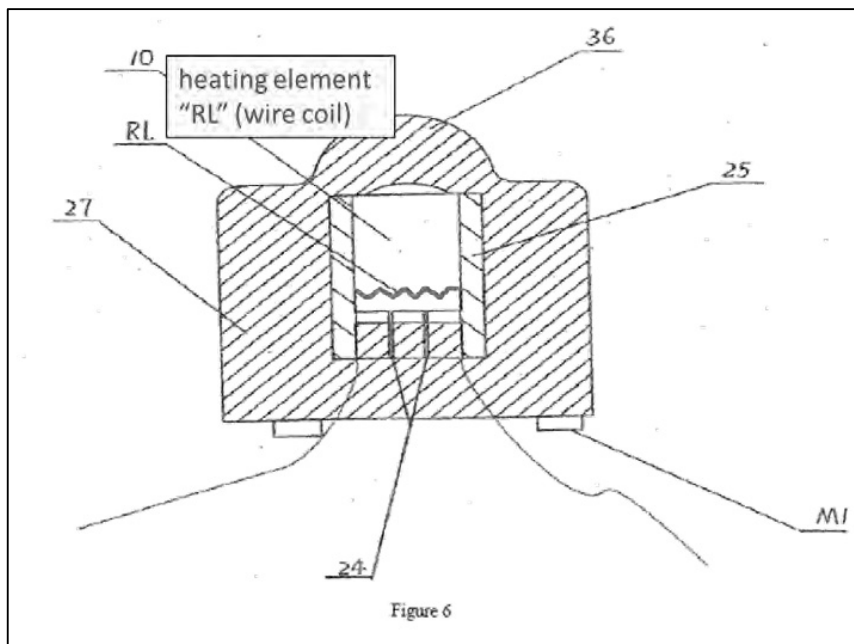
See also Ex.1005, p.4 (“As shown in Figure 12, the core of the electronic switch circuit is the field-effect transistor (U1). K1 is a reed switch (located in the sensor (6)), RL is a heating element (located in the atomizer (9)), LED1 is a light-emitting diode, U2 is a low-voltage detector (used for overdischarge protection of lithium battery), and M1 is a first piezoelectric patch.”); Ex.1003, Append.A[1.6] (further explaining that one of ordinary skill in the art would have known that the symbol labeled “DC” in Figure 12 is the conventional symbol for a voltage source in a circuit diagram, and thus corresponds to Hon 494’s battery, the only disclosed voltage source).

In IPR2016-01288, Patent Owner admitted that Hon 494 (which is the publication of Int'l App. No. PCT/CN2005/000337) provides written description support for a claim limitation of the grandparent 726 Patent reciting “the heating wire comprising a **wire coil**,” as seen by the following excerpt from Patent Owner’s Ex.2009 in that IPR proceeding:

CLAIM 9	PRIORITY APPLICATIONS
The electronic cigarette of claim 1 with the heating wire comprising a wire coil.	The priority applications disclose “the heating wire comprising a wire coil” at least at: • '707 application (PCT/CN2005/000337), Ex. 1108 at 11:9-11 (“As shown in Fig. 6 and 7, the overflow hole 29 is provided on the atomization cavity wall 25 of the atomization cavity 10. A heating element 26, which can be made of platinum wire, nickel chromium alloy or iron chromium aluminum alloy wire with rare earth element, is provided within the cavity, and can also be made into a sheet form with conductive ceramics or PTC ceramics.”) and 22 (FIG. 6, <i>see</i> annotated below); • '123 application, Ex. 1106 at 7, ¶ 0027 and 23 (FIG. 6); • '789 application, Ex. 2004 at 11, ¶ 0024 and 23 (FIG. 6). Fig. 6

Ex.1018, IPR2016-01288, Patent Owner’s Preliminary Response at Ex.2009, p.17 (yellow highlights added)

The same figure used by the Patent Owner in IPR2016-01288 to demonstrate a wire coil also appears in Hon 494 at Fig. 6:



Ex.1005, Fig.6 (annotated)

See also Ex.1003, Append.A[1.6].

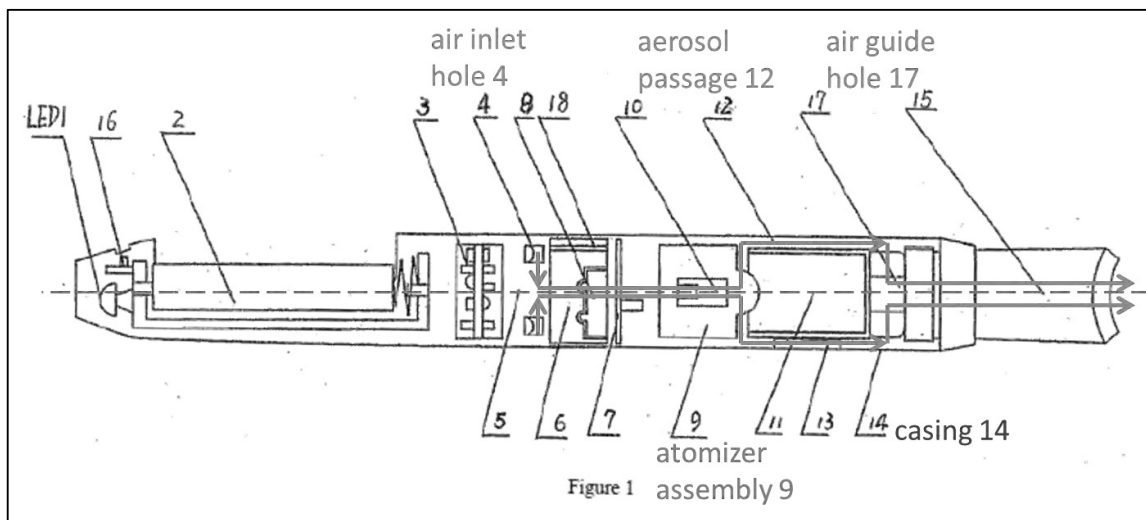
Nevertheless, to the extent Patent Owner argues that Hon 494 does not disclose that its heating wire is a “coil,” the proposed combination of Hon 494 and Whittemore, as explained in Section 10.1 *supra*, renders obvious a heating wire coil (*i.e.*, a heating wire coiled around Whittemore’s wick, as disclosed in Whittemore), where the heating wire coil is electrically connected to a battery as disclosed by Hon 494. See §10.1 *supra*; Ex.1003, Append.A[1.6].

Therefore by Patent Owner’s own admission Hon 494 discloses a heating wire coil (“heating element RL”) and Hon 494 further discloses that the heating

wire is electrically connected to the battery (“battery 2”). Ex.1003, Append.A[1.6]. The proposed combination of Hon 494 and Whittemore also renders obvious a heating wire coil (Whittemore’s heating wire coil, or Hon 494’s heating wire coiled around Whittemore’s wick) electrically connected to the battery (Hon 494’s “battery 2”). See §10.1 *supra*; Ex.1003, Append.A[1.6].

[1.7] an air flow path in the atomizer assembly parallel to a longitudinal axis of the housing, with the air flow path through the run-through hole to an outlet,

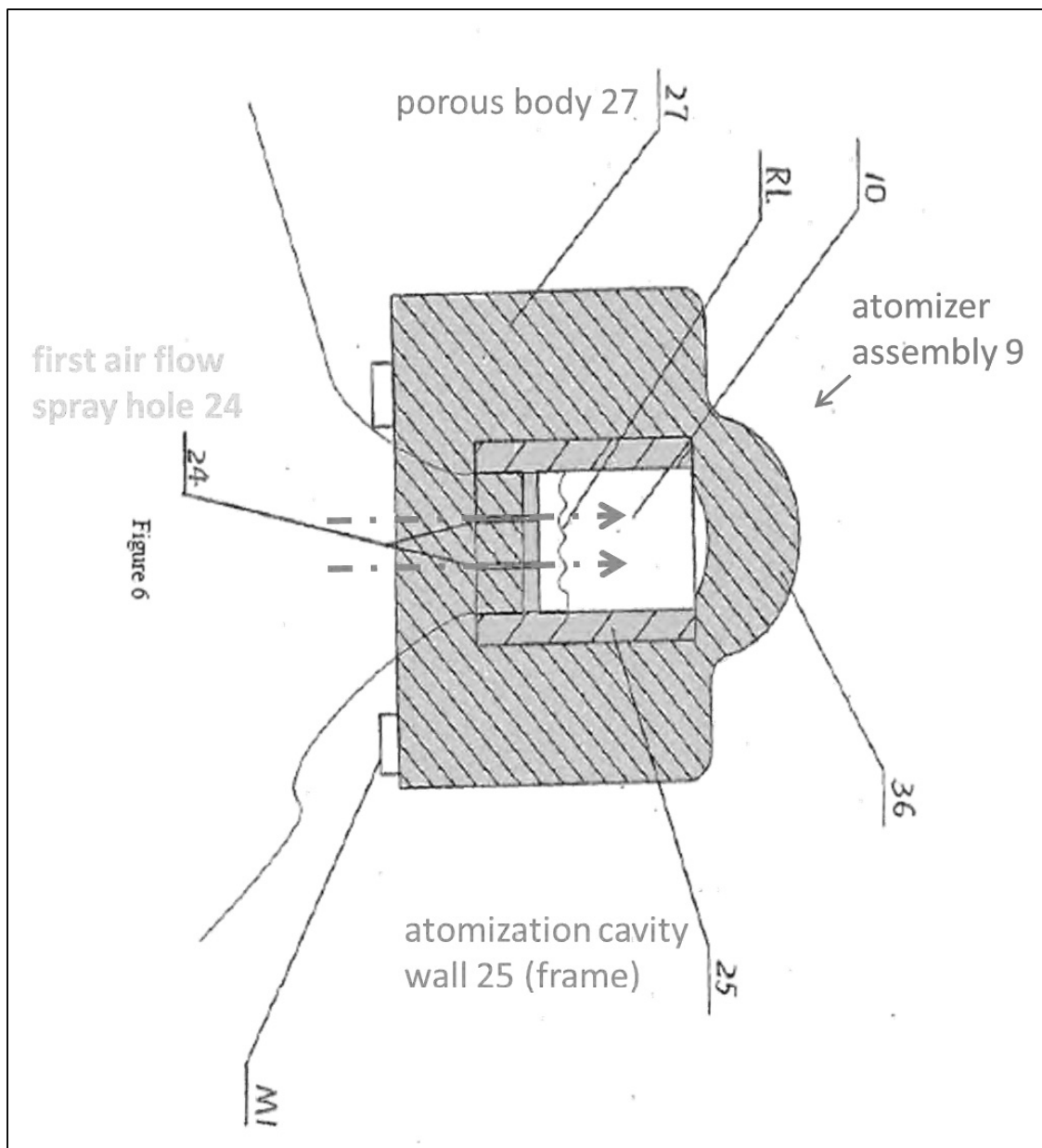
Hon 494’s electronic cigarette has an air flow path in the atomizer assembly 9, where the airflow path is parallel to a longitudinal axis of the casing 14, and with the air flow path through the run-through hole to an outlet at the mouthpiece. Specifically, the air flow path is depicted by the pink lines in the annotated version of Figure 1 here:



Ex.1005, Fig.1 (annotated)

See also Ex.1003, Append.A[1.7]. As seen, the air flows in “air inlet 4,” through “sensor 6,” through “atomizer 9,” around “liquid supply bottle 11” via “aerosol passages 12,” through “air guide hole 17,” and out the outlet at “suction nozzle 15.” Ex.1005, pp.3-4; Ex.1003, Append.A[1.7]. Further, as seen, the pink air flow path (moving left to right) is parallel to the longitudinal axis of the housing (casing 14), which is shown by the blue dotted line above. *Id.*

Finally, the air flow path is through the run-through hole (“first air flow spray hole 24” or “second air flow spray hole 30,” *see* [1.5] *supra*), as seen in Figure 1 above, and in Figure 6 below (depicting atomizer 9, again with the air flow path in pink arrows, passing through, *e.g.*, first air flow spray hole 24):



Ex.1005, Fig.6 (annotated, and rotated such that atomizer 9 has the same orientation as in Fig.1)

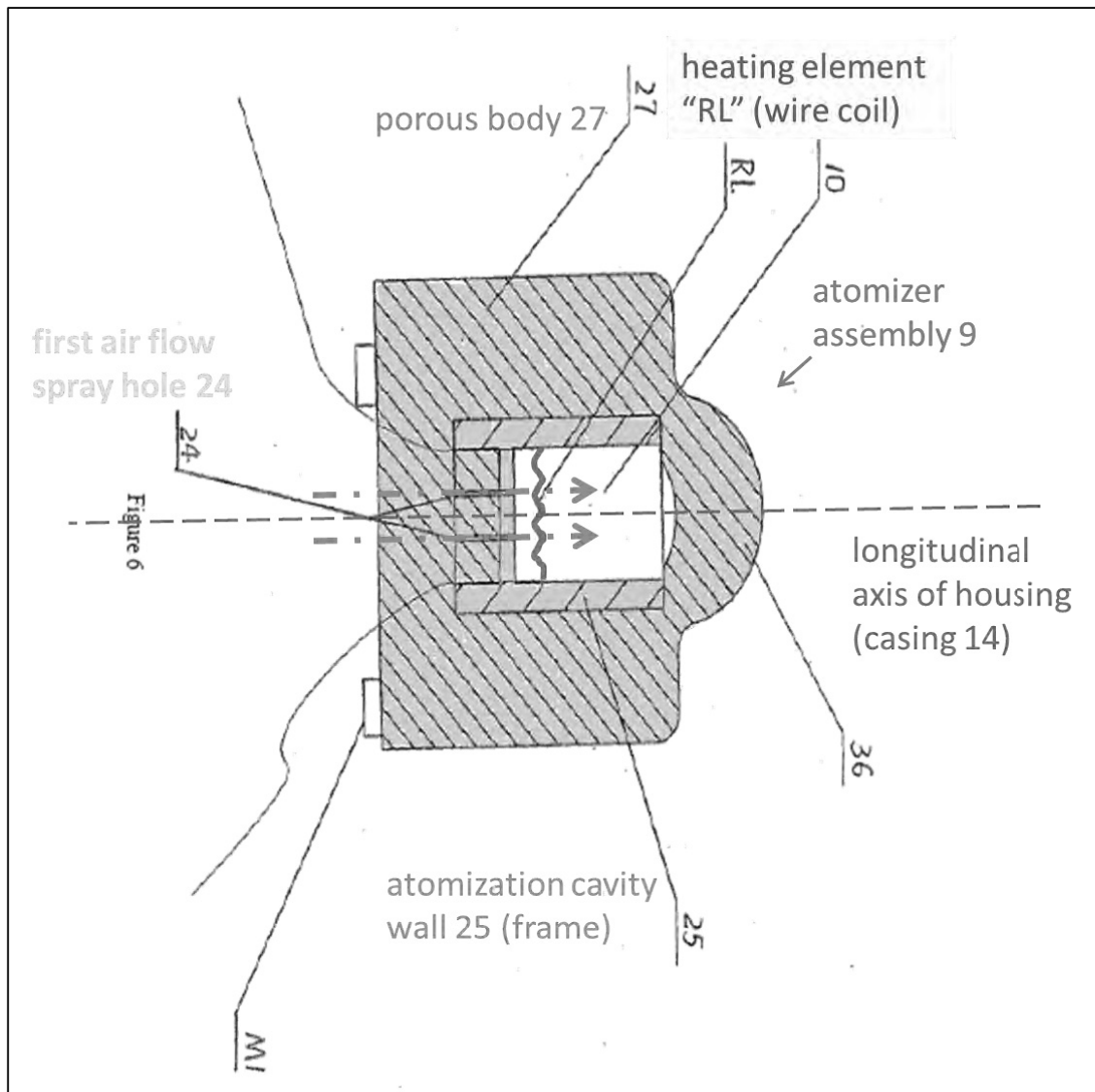
See also Ex.1003, Append.A[1.7].

Therefore Hon 494 discloses an air flow path in the atomizer assembly (“atomizer 9”) parallel to a longitudinal axis of the housing (“casing 14”), with the

air flow path through the run-through hole (“first air flow spray hole 24” or “second air flow spray hole 30”) to an outlet (at “suction nozzle 15”). Ex.1003, Append.A[1.7].

[1.8] with the heating wire coil wound on the porous component and in the air flow path and with the heating wire coil oriented perpendicular to the longitudinal axis; and

As seen in Figure 6 below, Hon 494’s heating element “RL” (brown below, *see also* [1.6] *supra*) is in the air flow path (pink arrows below, *see also* [1.7] *supra*), where the heating element “RL” is oriented perpendicular to the longitudinal axis of the housing (casing 14, *see* [1.7] *supra*):

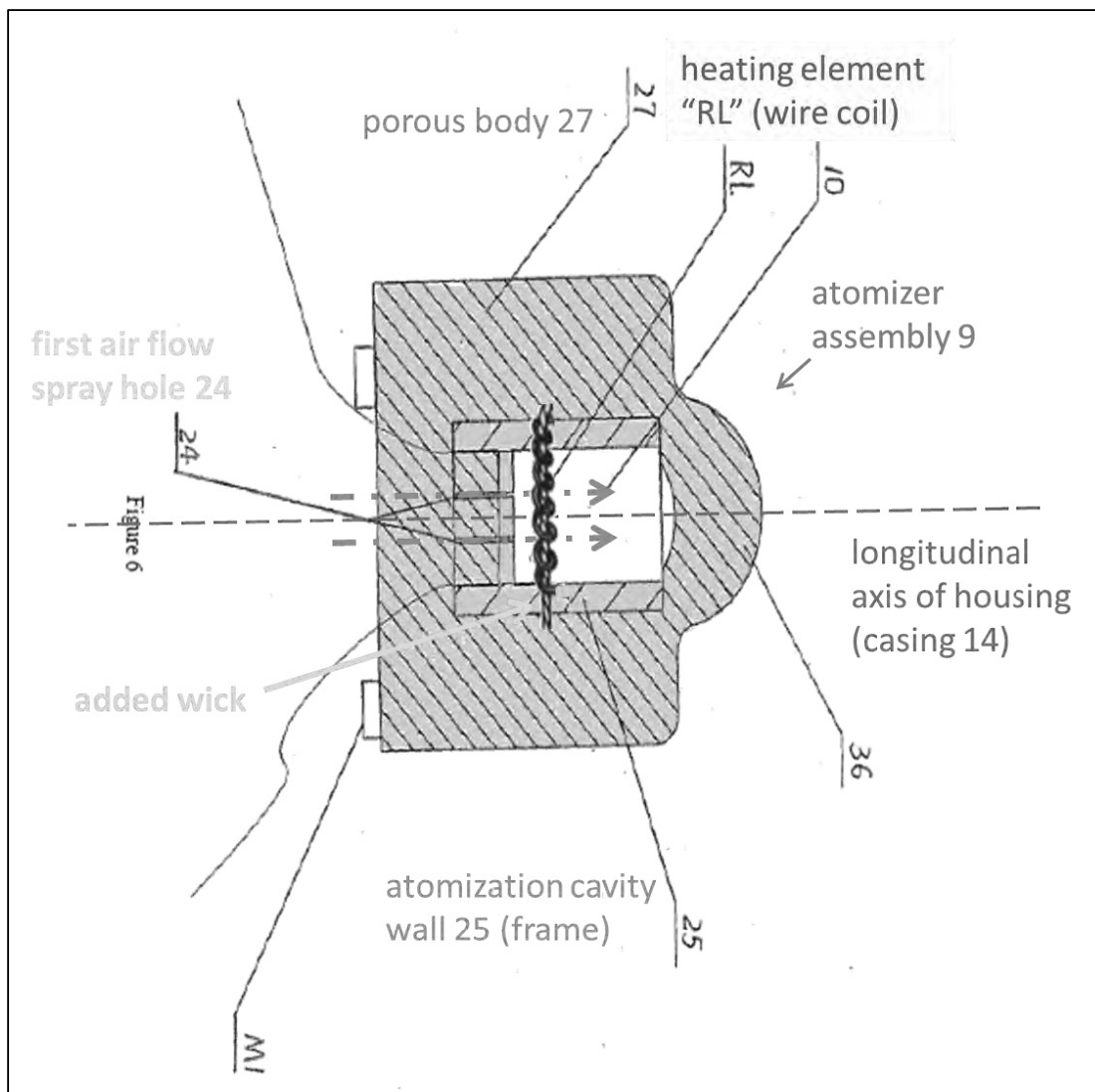


Ex.1005, Fig.6 (annotated, and rotated such that atomizer 9 has the same orientation as in Fig.1)

See also Ex.1003, Append.A[1.8].

However, Hon 494's heating element "RL" is not "wound on" any part of Hon 494's porous body 27. Nevertheless, as detailed in Section 10.1 *supra*, it would have been obvious to a POSA in view of Whittemore to include in

Hon 494's device Whittemore's feature of a wire heating coil wound on a porous wick, such that the porous wick added to Hon 494 would be a portion of Hon 494's porous body 27, where liquid from porous body 27 would be delivered to the coiled heating element (for vaporization) via capillary action along the porous wick, as taught by Whittemore. *See* §10.1 *supra*; Ex.1005, Fig.6 (depicting the proposed combination):



Ex.1005, Fig.6 (annotated, and rotated such that atomizer 9 has the same orientation as in Fig.1)

See also Ex.1003, Append.A[1.8].

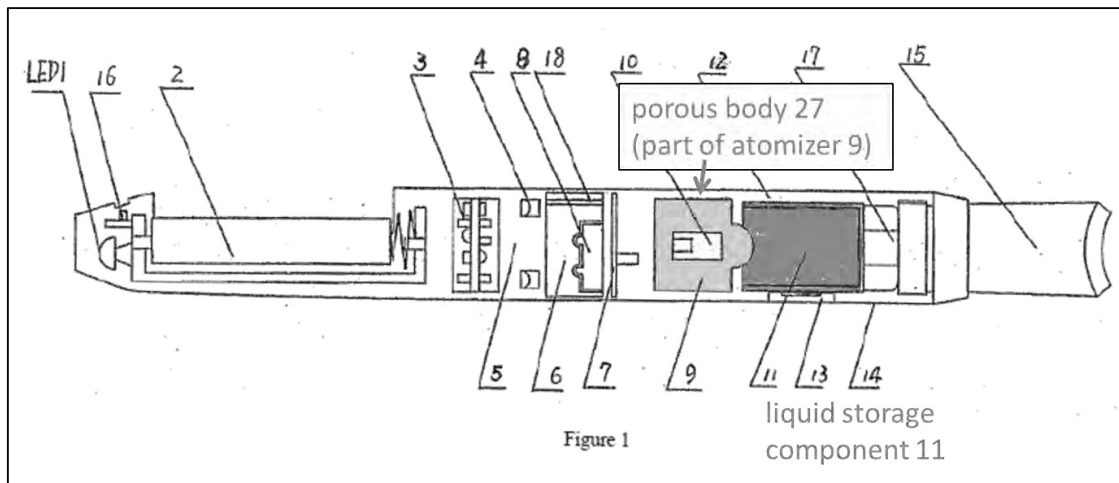
The heating wire coil seen above is still oriented perpendicular to the longitudinal axis. Ex.1003, Append.A[1.8]. The heating wire is also still “in the air flow path,” because although liquid would be delivered to the heating coil via capillary action via the wick, air would still flow into and through atomizer 9 as

seen above and described in Hon 494 (*see* [1.7] *supra*), due to a person inhaling at the suction nozzle. Ex.1005, p.4; Ex.1003, Append.A[1.8]. Stated differently, the proposed modification to Hon 494 retains the air flow spray holes through which air passes into atomization cavity 10 and then flows to the outlet at the mouthpiece. Ex.1003, Append.A[1.8].

Therefore Hon 494 in view of Whittemore renders obvious the heating wire coil wound on the porous component and in the air flow path, and with the heating wire coil oriented perpendicular to the longitudinal axis. Ex.1003, Append.A[1.8].

[1.9] the porous component in contact with the liquid storage component.

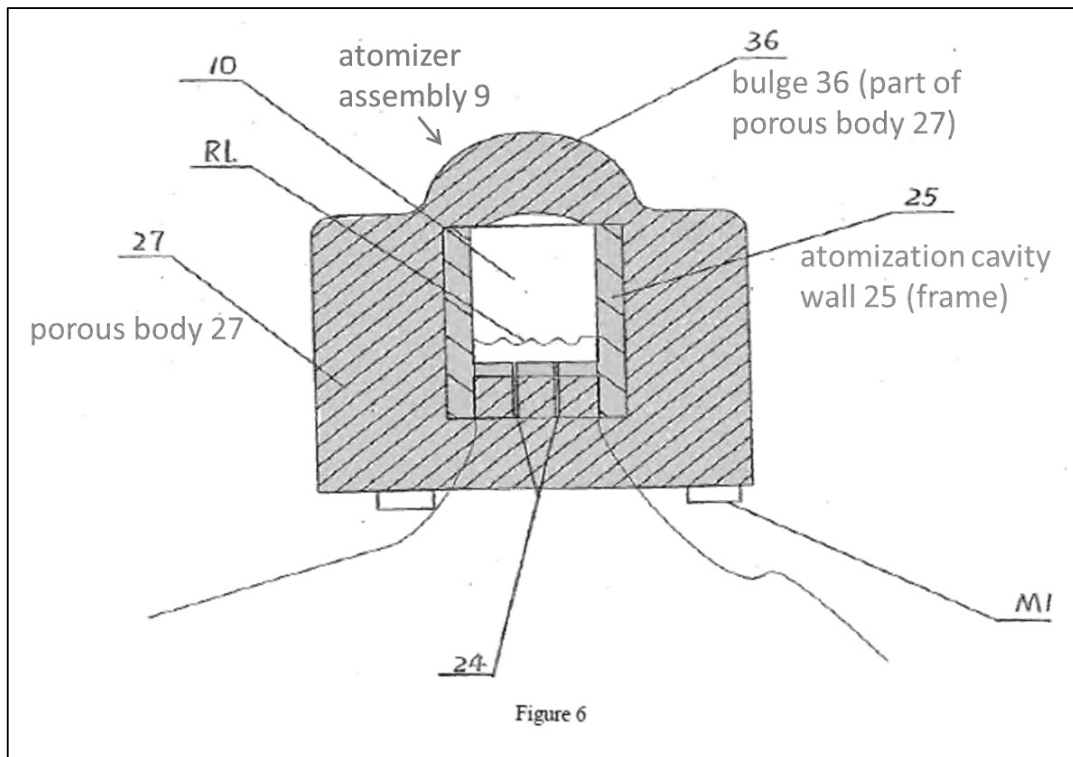
As explained, Hon 494's electronic cigarette includes "porous body 27" (*see* [1.5] *supra*) and a liquid storage component ("liquid supply bottle 11," *see* [1.4] *supra*). Further, Hon 494 discloses that these two components are in contact with one another. For example, Figure 1 shows a "bulge" portion of "porous body 27" (which is part of the "atomizer 9") in contact with "liquid supply bottle 11":



Ex.1005, Fig.1 (annotated)

See also Ex.1005, p.7 (“...porous body (27) in said atomizer (9)...”); Ex.1003, Append.A[1.9].

Figure 6 (a close-up of atomizer 9, rotated 90 degrees counter-clockwise from its orientation in Figure 1), confirms that the hemispherical “bulge 36” (shown in Figure 1 in contact with the left-hand side of liquid supply bottle 11) is indeed a portion of porous body 27:



Ex.1005, Fig.6 (annotated)

See also Ex.1005, p.7 (“...porous body (27) in said atomizer (9)...”); *id.*, p.3 (“A porous body (27) is wrapped outside the atomization cavity wall (25) and the porous body can be made of foamed nickel, stainless steel fiber felt, polymer foam body, and foamed ceramic.”); *id.* (“The atomizer (9) contacts the liquid supply bottle (11) through a bulge (36) [which is part of porous body 27], a clearance is reserved between the atomizer and the casing (14), and an atomization cavity (10) is set in the atomizer (9).”); *id.*, p.4 (“The contact between the porous liquid-storing body (28) in the liquid supply bottle (11) and the bulge (36) [portion of

porous body 27] on the atomizer (9) implements capillary infiltration liquid supply.”); Ex.1003, Append.A[1.9].

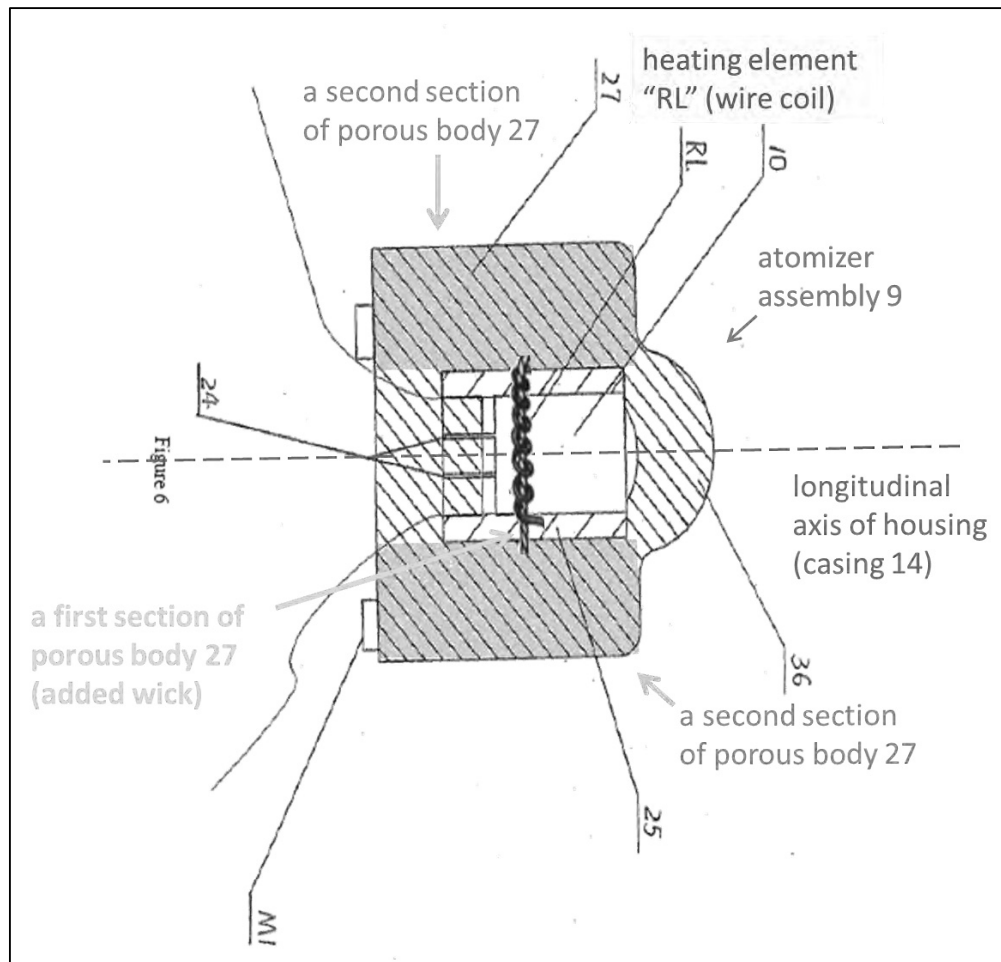
Indeed, in IPR2013-00387 challenging the 944 Patent (the great-grandparent to the 548 Patent), the Board found that “Hon 494 describes, and depicts in Figures 1 and 6, porous body 27 (i.e., a ‘porous component’) of atomizer 9 having a protruding half sphere that fits with liquid supplying bottle 11 (i.e., a ‘cigarette solution storage area’).” Ex.1019, IPR2013-00387, Institution Decision, Paper 7, p.24. In accord, in IPR2016-01268 challenging the grandparent 742 Patent, Patent Owner admitted that “bulge part 36” in Hon 043 (the Chinese patent to which the Hon 494 PCT publication claims priority) is part of “the porous body” in Hon 043. Ex.1020, IPR2016-01268, Patent Owner’s Preliminary Response, Paper 8, p.19 (“The bulge part 36 of the porous body....”).

Therefore Hon 494 discloses that “bulge 36” of Hon 494’s porous component (“porous body 27,” which includes Whittemore’s wick) is in contact with the liquid storage component (“liquid supply bottle 11”). Ex.1003, Append.A[1.9].

Hon 494 in view of Whittemore thereby renders obvious claim 1 of the 548 Patent. Ex.1003, Append.A[1.9].

10.3. Claim 2 – “The electronic cigarette of claim 1 with the porous component having a first section perpendicular to the longitudinal axis and having a second section parallel to the longitudinal axis.”

As annotated below, the combination of Hon 494 and Whittemore proposed above for claim 1 has a porous component with a first section (the added wick from Whittemore, as explained for limitation [1.8]) perpendicular to the longitudinal axis, and a second section (shown in cross-section below as top and bottom portion of porous body 27) parallel to the longitudinal axis:



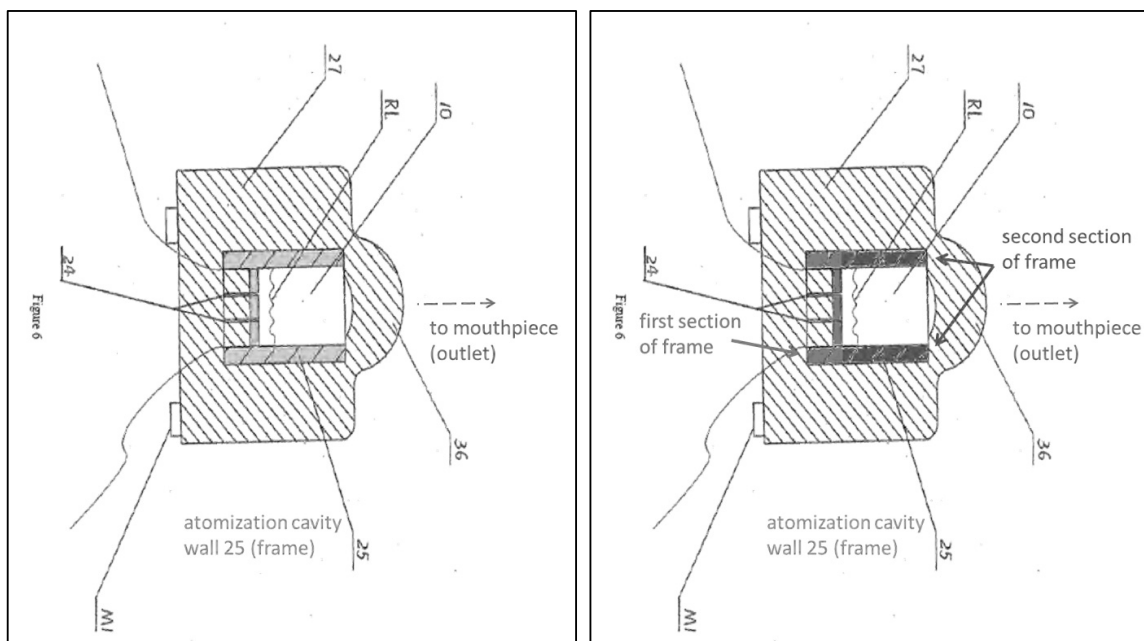
Ex.1005, Fig.6 (annotated, and rotated such that atomizer 9 in Fig.6 has the same orientation as in Fig.1)

See also Ex.1003, Append.A claim 2. This matches how, during prosecution of the 548 Patent, the applicant described and depicted the limitations relating to the first and section sections of the porous component. See Ex.1002.018.

Therefore Hon 494 in view of Whittemore renders obvious claim 2 of the 548 Patent. Ex.1003, Append.A claim 2.

10.4. Claim 3 – “The electronic cigarette of claim 1 with the frame having a cylindrical first section and a second section, with the second section between the first section and the outlet, and with the second section longer than the first section.”

As explained for limitation [1.5], the “frame” in Hon 494 corresponds to atomization cavity wall 25. The atomization cavity wall 25 has a first section and a second section, as illustrated in the annotated figures below:



Ex.1005, Fig.6 (annotated, and rotated such that atomizer 9 in Fig.6 has the same orientation as in Fig.1)

See also Ex.1003, Append.A claim 3.

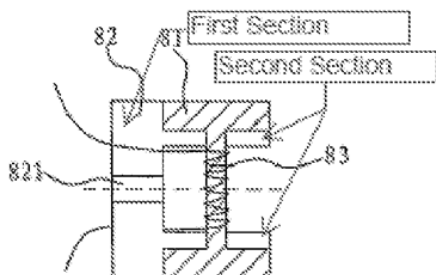
As seen above, the second section is between the first section and the outlet, and the second section is longer than the first section (in the left-right direction above, *i.e.* along the length of the device). *See also* Ex.1003, Append.A claim 3. Further, the first section of the frame is cylindrical. As discussed for

limitation [1.1], the Patent Owner admitted that Hon 494 discloses a cylindrical device. A POSA, viewing the cross section depicted in Hon 494 at Figure 6, would recognize that the frame (and the porous atomizer component) is cylindrical because the frame is intended to sit within the cylindrical housing. *See* [1.1] *supra*; Ex.1003, Append.A claim 3.

Nonetheless, at a minimum, it would have been obvious to a POSA to make Hon 494's device (as well as its atomization cavity wall 25) cylindrical, for the same reasons as discussed for the “battery” of limitation [1.1] (*i.e.*, it would have been obvious to make the device cylindrical for the reasons explained, and the frame would be intended to fit inside such a cylindrical housing). *See* [1.1] *supra*; Ex.1003, Append.A claim 3. Furthermore, Patent Owner admitted that Hon 494 “discloses a device shaped like a cylindrical tube,” and it would have been a matter of routine, and logical, design choice to use a cylindrical frame within a cylindrical device—*e.g.*, to make it fit snug. *Id.*

The division of the frame disclosed in Hon 494 into two such sections is the same approach taken by the Patent Owner during prosecution of the 548 Patent. Specifically, the Patent Owner described and labeled the frame's “first section” and “second section,” by stating and illustrating the following: “Claims 3, 18 and 22 include a frame having a cylindrical first section and a second section, with the

second section between the first section and the outlet, and with the second section longer than the first section, as shown in the marked up Fig.18 below.



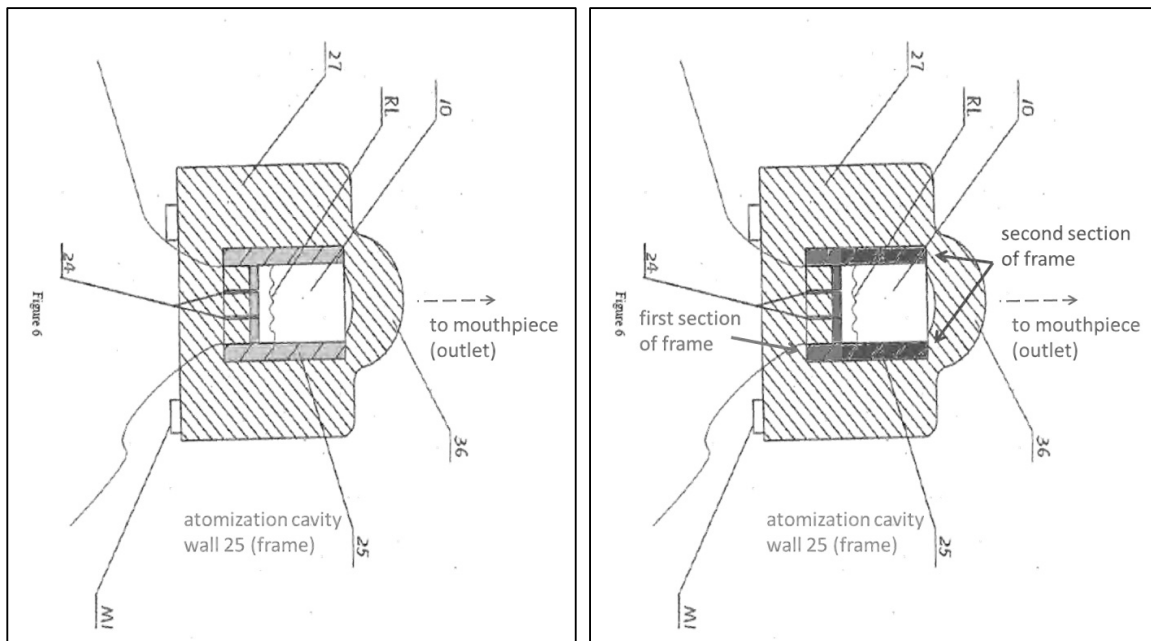
.”

Ex.1002.018-.019; Ex.1003, Append.A claim 3.

Therefore Hon 494 in view of Whittemore renders obvious claim 3 of the 548 Patent. Ex.1003, Append.A claim 3.

10.5. Claim 4 – “The electronic cigarette of claim 3 wherein the first section of the frame is a cylindrical base section.”

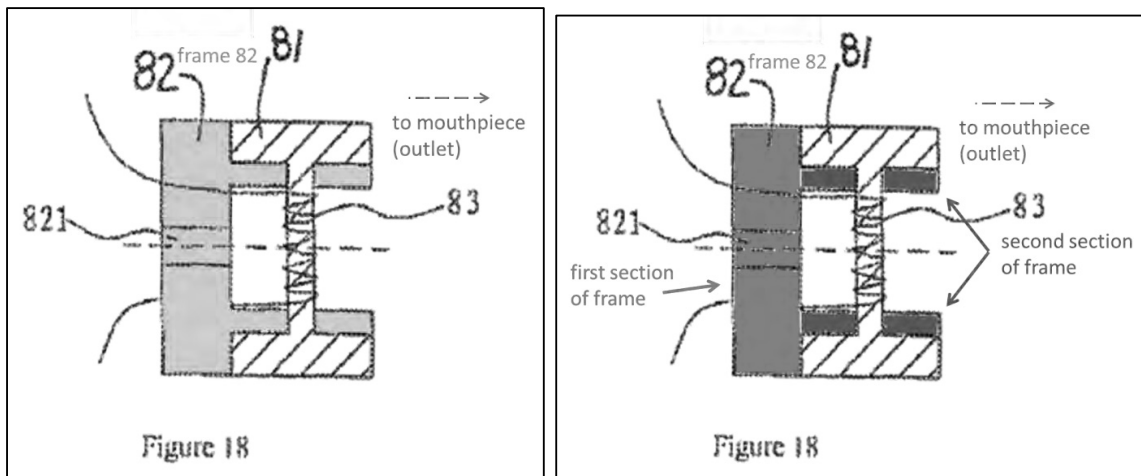
As discussed for claim 3, the first section of Hon 494’s frame is cylindrical (or, at a minimum, using a cylindrical frame would have been obvious to a POSA). The first section of Hon 494’s frame is a “base section.” The 548 Patent does not use the word “base” outside of the claims, but as seen in the annotated figures below, the first section of atomization cavity wall 25 (frame) has components that act as a base for the attached second section of atomization cavity wall 25 (the latter of which extends toward the mouthpiece away from the first section of the frame):



Ex.1005, Fig.6 (annotated, and rotated such that atomizer 9 in Fig.6 has the same orientation as in Fig.1)

See also Ex.1003, Append.A claim 4.

In the same way, the first section of the 548 Patent's frame is positioned as a "base" for the second section of the frame, as seen below in the annotated versions of Figure 18 of the 548 Patent (which mimic how Patent Owner described and annotated that figure during prosecution, as explained above for claim 3):



Ex.1001, 548 Patent, Fig.18 (annotated)

See also Ex.1003, Append.A claim 4; Ex.1002.018-.019.

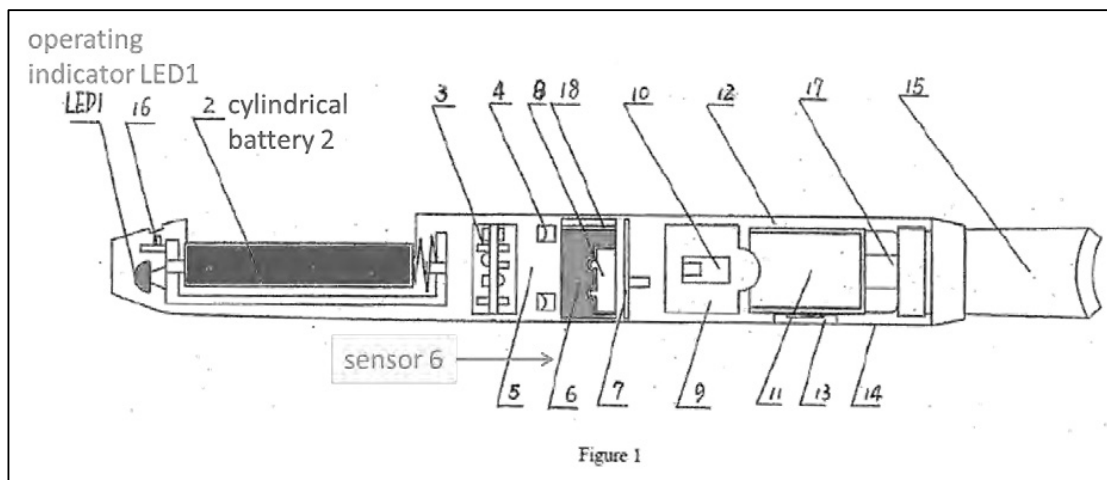
Therefore Hon 494 in view of Whittemore renders obvious claim 4 of the 548 Patent. Ex.1003, Append.A claim 4.

10.6. Claim 5 – “The electronic cigarette of claim 1 with the battery assembly further including an air flow sensor.”

Hon 494 discloses that its battery assembly further includes an air flow sensor—specifically, “sensor 6.” See, e.g., Ex.1005, p.3 (“An air inlet hole (4) is opened in the external wall of the casing (14), and a light-emitting diode (LED1), a battery (2), an electronic circuit board (3), a normal pressure cavity (5), a **sensor (6)**, a gas-liquid separator (7), an atomizer (9), a liquid supply bottle (11), and a suction nozzle (15) are sequentially set in the casing (14). ... As shown in Figure 4, a negative pressure cavity (8) is set in the sensor (6) and the negative pressure cavity is separated by the corrugated diaphragm (22) and the sensor (6).”);

id., p.4 (“As shown in Figure 12, the core of the electronic switch circuit is the field-effect transistor (U1). K1 is a reed switch (located in the **sensor (6)**)....

When the user smokes, the suction nozzle (15) is in a negative-pressure state, the **pressure difference or high-speed air flow between the normal pressure cavity (5) and the negative pressure cavity (8) causes the sensor (6) to output a start signal**, and the connected electronic circuit board (3) starts to work.”); *id.*, Fig. 1:



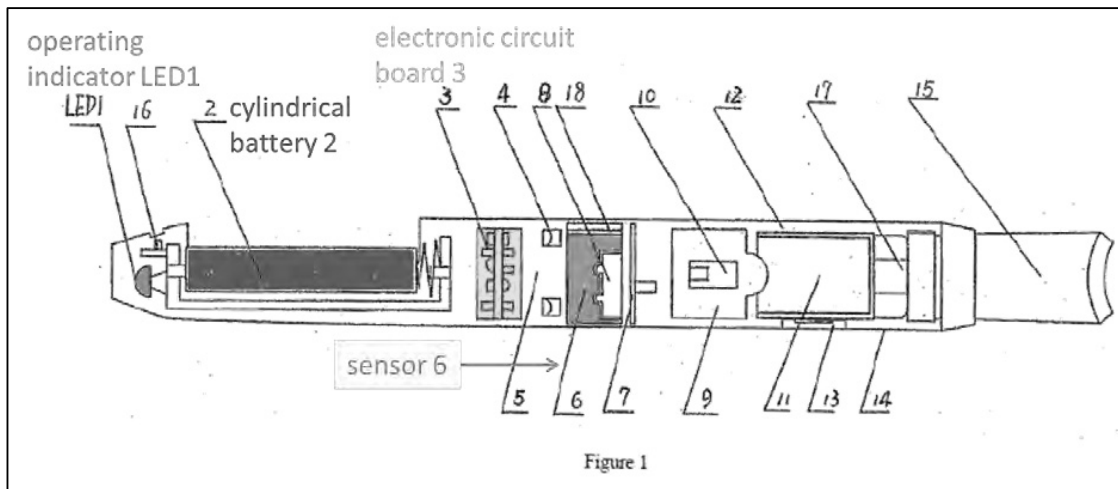
Ex.1005, Fig.1 (annotated)

See also *id.*, Fig.4 (depicting “the sensor of the present invention”); Ex.1003, Append.A claim 5.

Therefore Hon 494 in view of Whittemore renders obvious claim 5 of the 548 Patent. Ex.1003, Append.A claim 5.

10.7. Claim 6 – “The electronic cigarette of claim 5 with the battery assembly further comprising an electronic circuit board electrically connected to the air flow sensor.”

Hon 494 discloses that its battery assembly further includes an electronic circuit board electrically connected to the air flow sensor—specifically, “electronic circuit board 3.” *See, e.g.*, Ex.1005, p.3 (“An air inlet hole (4) is opened in the external wall of the casing (14), and a light-emitting diode (LED1), a battery (2), **an electronic circuit board (3)**, a normal pressure cavity (5), a sensor (6), a gas-liquid separator (7), an atomizer (9), a liquid supply bottle (11), and a suction nozzle (15) are sequentially set in the casing (14). ... The **electronic circuit board (3)** consists of an electronic switch circuit and a high-frequency oscillator....”); *id.*, p.4 (“When the user smokes, the suction nozzle (15) is in a negative-pressure state, the pressure difference or high-speed air flow between the normal pressure cavity (5) and the negative pressure cavity (8) causes **the sensor (6) to output a start signal, and the connected electronic circuit board (3) starts to work.**”); *id.*, Fig. 1:



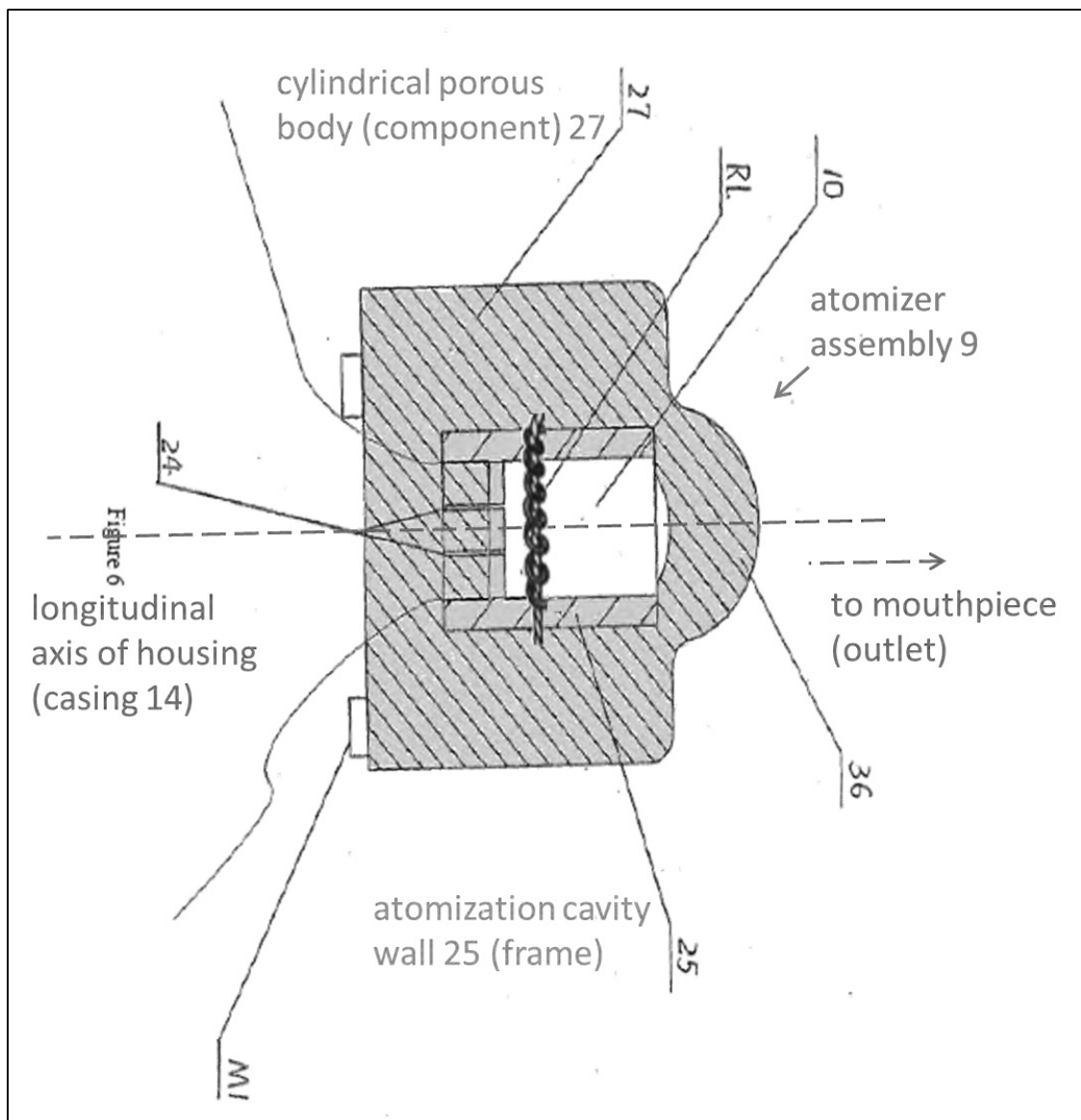
Ex.1005, Fig.1 (annotated)

See also Ex.1003, Append.A claim 6.

Therefore Hon 494 in view of Whittemore renders obvious claim 6 of the 548 Patent. Ex.1003, Append.A claim 6.

10.8. Claim 7 – “The electronic cigarette of claim 1 wherein the porous component is cylindrical.”

As explained for limitation [1.5] above, Hon 494’s “porous component” corresponds to the disclosed porous body 27 (which includes Whittemore’s wick in the proposed combination), seen here:



Ex.1005, Fig.6 (annotated, and rotated such that atomizer 9 in Fig.6 has the same orientation as in Fig.1)

See also Ex.1003, Append.A claim 7.

As discussed for limitation [1.1], Patent Owner admits that the device of Hon 494 is cylindrical, and a POSA, viewing the figures of Hon 494, would

recognize that the components intended to fit within the cylindrical device are also cylindrical in shape. *See* [1.1] *supra*; Ex.1003, Append.A claim 7. Porous body 27 (forming the “porous component”) is one of those cylindrical components having a cylindrical shape, a cross-section cutaway of which is shown in Figure 6 above. *Id.*

Nonetheless, at a minimum, it would have been obvious to a POSA to make Hon 494’s device (as well as its porous body 27) cylindrical, for the same reasons as discussed for the “battery” of limitation [1.1]. *See* [1.1] *supra*; Ex.1003, Append.A claim 7. Furthermore, Patent Owner admitted that Hon 494 “discloses a device shaped like a cylindrical tube,” and it would have been a matter of routine, and logical, design choice to use a cylindrical porous body 27 within a cylindrical device—*e.g.*, to make it fit snug. *Id.*

Therefore Hon 494 in view of Whittemore renders obvious claim 7 of the 548 Patent. Ex.1003, Append.A claim 7.

10.9. Claim 8

[8.P] An electronic cigarette, comprising:

To the extent the preamble is considered a limitation, Hon 494 discloses “an electronic cigarette” for the reasons explained for limitation [1.P].

[8.1] a battery assembly having a cylindrical battery and an operating indicator;

Hon 494 discloses, or at least renders obvious, this claim limitation for the reasons explained for limitation [1.1].

[8.2] an atomizer assembly in an elongated cylindrical housing having a longitudinal axis,

Hon 494 discloses, or at least renders obvious, this claim limitation for the reasons explained for limitations [1.2] (atomizer assembly in an elongated cylindrical housing) and [1.7] (housing having a longitudinal axis).

[8.3] with the battery assembly electrically connected to the atomizer assembly, and with the cylindrical battery coaxial with the atomizer assembly;

Hon 494 discloses, or at least renders obvious, this claim limitation for the reasons explained for limitation [1.3].

[8.4] the atomizer assembly including a porous component having a first section perpendicular to the longitudinal axis and a second section parallel to the longitudinal axis, with the porous component set on a frame having a run-through hole;

Hon 494 in view of Whittemore renders obvious the atomizer assembly including a porous component, with the porous component set on a frame having a run-through hole, for the reasons explained for limitation [1.5]. Further, for the reasons explained for claim 2, Hon 494 in view of Whittemore renders obvious the

porous component having a first section perpendicular to the longitudinal axis and a second section parallel to the longitudinal axis.

[8.5] a heating wire coil wound on the first section of the porous component and electrically connected to the battery;

For the reasons explained for limitation [1.6], Hon 494 discloses a heating wire coil electrically connected to the battery, and, additionally, the proposed combination of Hon 494 and Whittemore renders obvious a heating wire coil electrically connected to the battery. Further, Hon 494 in view of Whittemore renders obvious the heating wire coil wound on the first section of the porous component, for the reasons explained for limitation [1.8] (heating wire coil wound on the porous component) and claim 2 (heating wire coil wound on the first section of the porous component).

[8.6] an air flow path in the atomizer assembly parallel to the longitudinal axis, with the air flow path through the run-through hole to an outlet,

Hon 494 discloses this claim limitation for the reasons explained for limitation [1.7].

[8.7] and the heating wire coil in the air flow path and oriented perpendicular to the longitudinal axis;

Hon 494 discloses, or at least renders obvious in view of the proposed combination with Whittemore, a heating wire coil in the air flow path and oriented

perpendicular to the longitudinal axis, for the reasons explained for limitations [1.6] and [1.8].

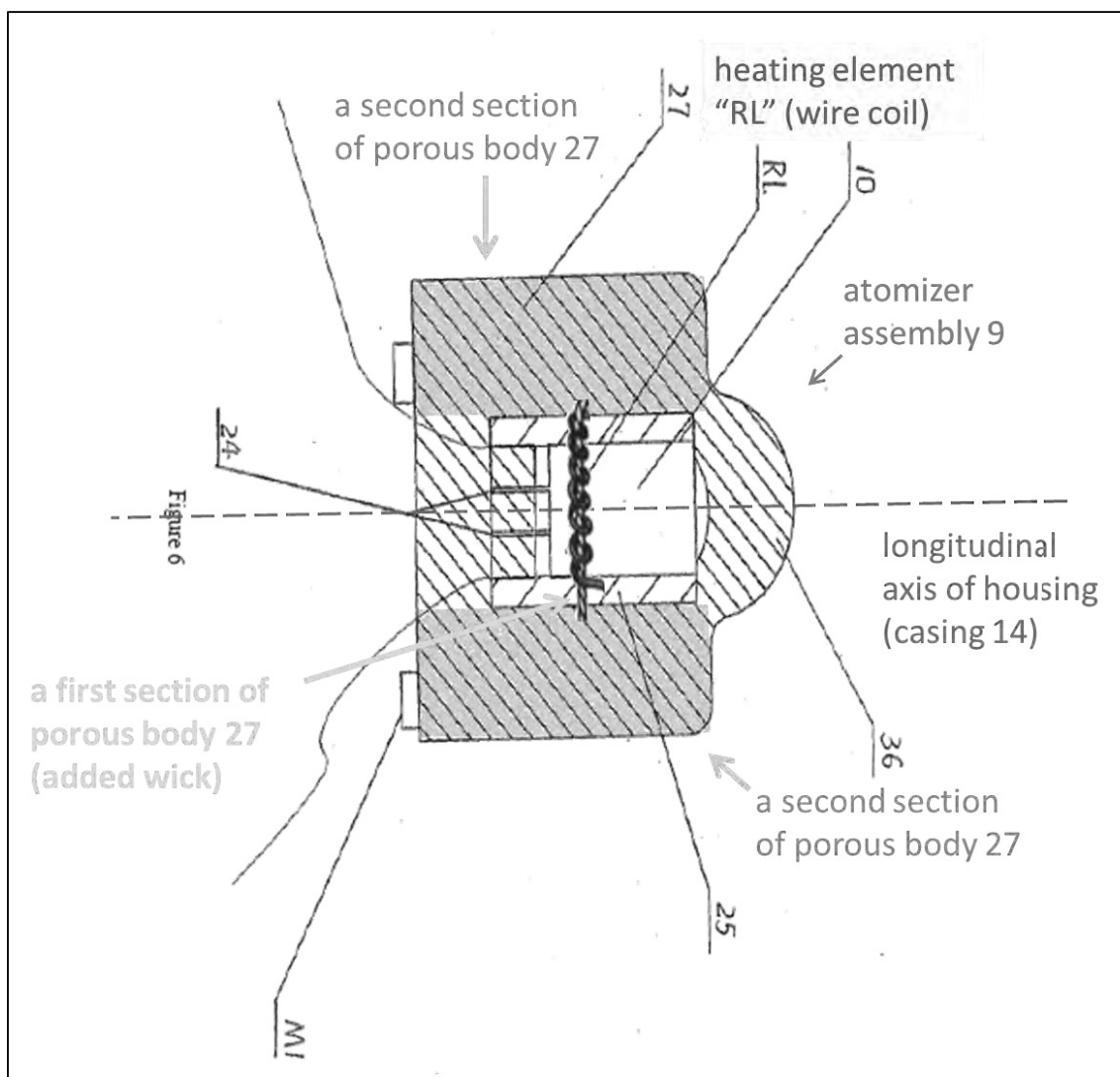
[8.8] and a liquid storage component in the housing in contact with the porous component.

Hon 494 discloses a liquid storage component in the housing for the reasons explained for limitation [1.4]. Further, Hon 494 discloses that its liquid storage component is in contact with the porous component (Hon 494's porous body 27 and Whittemore's wick), for the reasons explained for limitation [1.9].

Hon 494 in view of Whittemore thereby renders obvious claim 8 of the 548 Patent. Ex.1003, Append.A claim 8.

10.10.Claim 9 – “The electronic cigarette of claim 8 with the second section of the porous component on opposite sides of the first section of the porous component.”

As explained for claim 2 above, Hon 494 as modified by Whittemore includes a porous component with first and second sections as illustrated here:



Ex.1005, Fig.6 (annotated, and rotated such that atomizer 9 in Fig.6 has the same orientation as in Fig.1)

See also Ex.1003, Append.A claim 9.

As seen above, the “second section” of porous body 27 is on opposite sides of the “first section” (wick) of porous body 27, as required by claim 9. Ex.1003, Append.A claim 9 (noting that in the 3-D device, the second section of porous body 27, a cross-section of which is shown above, forms a cylinder with a space in

the middle, having the wick spanning that space, such that the second section of porous body 27 contacts opposite sides of the wick). This is the same manner that Patent Owner during prosecution described and illustrated the 548 Patent's "second section of the porous component on opposite sides of the first section of the porous component." *See* Ex.1002.019; Ex.1003, Append.A claim 9.

Therefore Hon 494 in view of Whittemore renders obvious claim 9 of the 548 Patent. Ex.1003, Append.A claim 9.

10.11.Claim 10 – “The electronic cigarette of claim 8 with the frame having a cylindrical first section and a second section, with the second section between the first section and the outlet, and with the second section longer than the first section.”

Hon 494 in view of Whittemore renders obvious claim 10 of the 548 Patent for the same reasons explained for claim 3. Ex.1003, Append.A claim 10.

10.12.Claim 11

[11.P] An electronic cigarette, comprising:

To the extent the preamble is considered a limitation, Hon 494 discloses “an electronic cigarette” for the reasons explained for limitation [1.P].

[11.1] an atomizer assembly and a liquid storage component in an elongated cylindrical housing having a longitudinal axis:

Hon 494 discloses, or at least renders obvious, this limitation for the reasons explained for limitations [1.2] (atomizer assembly in an elongated cylindrical

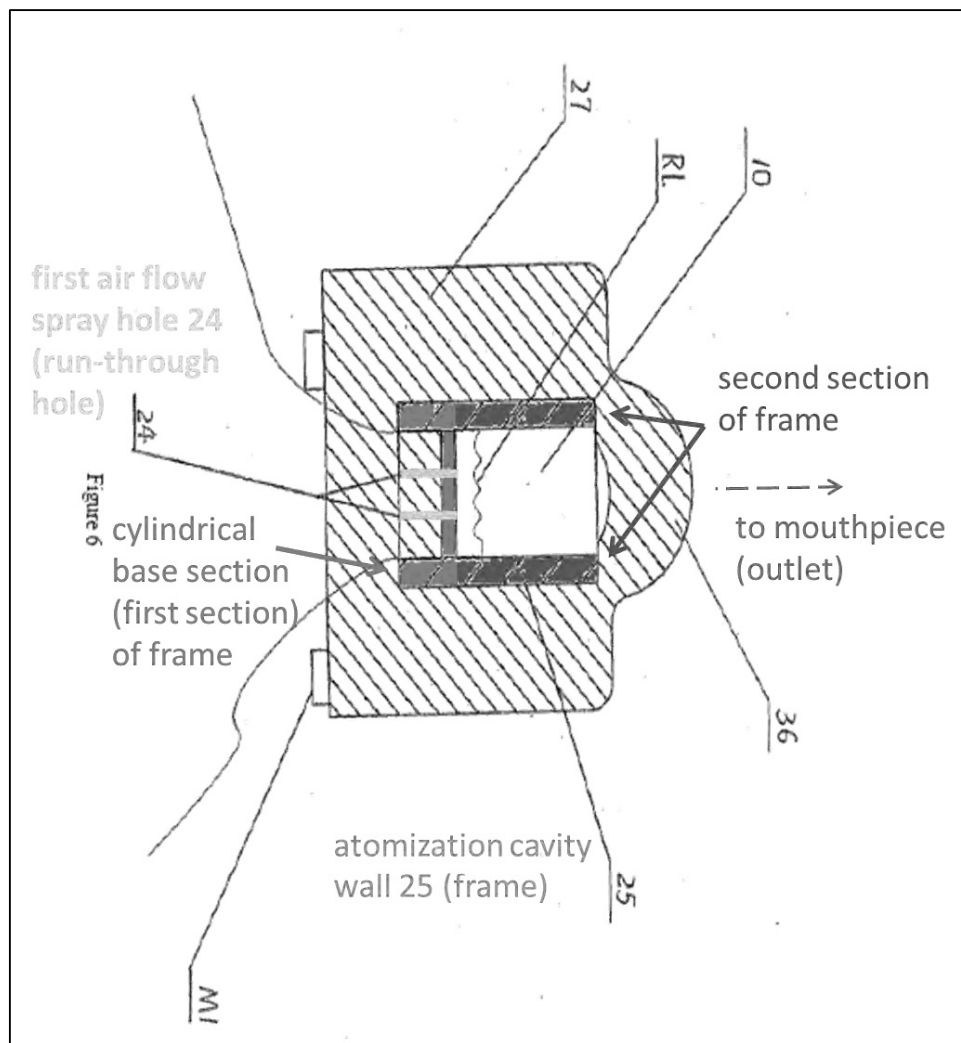
housing), [1.4] (liquid storage component in the same housing), and [1.7] (housing having a longitudinal axis).

[11.2] battery assembly electrically connected to the atomizer assembly, and with the battery assembly including a cylindrical battery coaxial with the atomizer assembly;

Hon 494 discloses, or at least renders obvious, this claim limitation for the reasons explained for limitations [1.1] and [1.3].

[11.3] the atomizer assembly including: a frame comprising a cylindrical base having a run-through hole;

Hon 494 discloses, or at least renders obvious, this limitation for the reasons explained for limitation [1.5] (the atomizer assembly including a frame having a run-through hole) and for claims 3 and 4 (the frame comprising a cylindrical base section). Further, as seen above in the illustrations for limitation [1.5] and claim 3, and again below, Hon 494 discloses that the run-through hole (first air flow spray hole 24) is in the cylindrical base portion of the frame:



Ex.1005, Fig.6 (annotated, and rotated such that atomizer 9 has the same orientation as in Fig.1)

See [1.5], claims 3, 4, *supra*; Ex.1003, Append.A[11.3].

[11.4] [the atomizer assembly including] ... a fiber member in contact with the liquid storage component;

Hon 494 in view of Whittemore renders obvious this claim limitation for the reasons explained for limitation [1.5] (atomizer assembly including a fiber

member) and [1.9] (fiber member in contact with the liquid storage component), each where the “fiber member” of claim 11, like the “porous component” of claim 1, includes Hon 494’s “porous body 27” (which Hon 494 discloses can be made of fiber) and Whittemore’s added wick (which Whittemore discloses can be made of fiber), with the fiber member contacting Hon 494’s liquid storage component via “bulge 36.” *See* limitations [1.5], [1.9] *supra*; *see also* Ex.1005, Hon 494, p.3 (“A porous body (27) is wrapped outside the atomization cavity wall (25) and the porous body can be made of foamed nickel, stainless steel **fiber felt**, polymer foam body, and foamed ceramic.”); Ex.1006, Whittemore, 2:8-11 (“the wick D consists of a thread, string or strand of some suitable wick material”); Ex.1003, Append.A[11.4].

[11.5] [the atomizer assembly including] ... a heating wire coil wound on the fiber member and oriented perpendicular to the longitudinal axis;

Hon 494 in view of Whittemore renders obvious this claim limitation for the reasons explained for limitation [1.6] (heating wire coil) and limitation [1.8] (heating wire coil wound on a fiber member and oriented perpendicular to the longitudinal axis), where claim 11’s “fiber member,” like claim 1’s “porous component,” corresponds to Hon 494’s fibrous porous body 27 as augmented by Whittemore’s wick, and with the heating wire coil wound on the wick (which Whittemore discloses can also be made of fiber). *See* limitations [1.6], [1.8],

supra; see also Ex.1006, Whittemore, 2:8-11 (“the wick D consists of a thread, string or strand of some suitable wick material”); Ex.1003, Append.A[11.5].

Therefore Hon 494 in view of Whittemore renders obvious the atomizer assembly including a heating wire coil (Hon 494’s heating element RL, or Whittemore’s heating wire coil) wound on the fiber member (Whittemore’s fiber wick, which, in the proposed combination, forms part of Hon 494’s fibrous porous body 27) and oriented perpendicular to the longitudinal axis. Ex.1003, Append.A[11.5].

[11.6] and the heating wire coil electrically connected to the battery,

Hon 494 discloses (and the combination of Hon 494 and Whittemore additionally renders obvious) this limitation for the reasons explained for limitation [1.6].

[11.7] with the fiber member moving liquid from the liquid storage component to the heating wire coil by capillary action;

As explained above for limitations [11.4] and [11.5], in the proposed combination of Hon 494 and Whittemore, Hon 494’s porous body 27 (including Whittemore’s wick) corresponds to the “fiber member” of claim 11. As explained when detailing the motivations to combine Hon 494 and Whittemore in the proposed manner, the combination of Hon 494’s porous body 27 and Whittemore’s wick would predictably, and desirably, move liquid from Hon 494’s liquid supply

bottle to the heating wire coil by capillary action (1) from the liquid supply to the bulge of the porous body 27, and (2) to the wick portion of porous body 27, around which is wrapped the heating wire coil. *See* §10.1 *supra*; *see also* Ex.1005, p.4 (“The contact between the porous liquid-storing body (28) in the liquid supply bottle (11) and the bulge (36) on the atomizer (9) implements capillary infiltration liquid supply.”); Ex.1003, Append.A[11.7].

Therefore the fiber member of the Hon 494 and Whittemore proposed combination (Hon 494’s porous body 27 including Whittemore’s added wick) moves liquid from the liquid storage component (Hon 494’s liquid supply bottle 11) to the heating wire coil by capillary action. Ex.1003, Append.A[11.7].

[11.8] and an air flow path parallel to the longitudinal axis through the atomizer assembly, with the air flow path passing through the run-through hole,

Hon 494 discloses this limitation for the reasons explained for limitation [1.7].

[11.9] and with the heating wire coil in the air flow path and perpendicular to the longitudinal axis.

Hon 494 discloses a heating wire coil in the air flow path and perpendicular to the longitudinal axis, for the reasons explained for limitations [1.6] and [1.8]. Additionally, the proposed combination of Hon 494 and Whittemore renders obvious this limitation for the reasons explained for limitations [1.6] and [1.8].

Therefore Hon 494 in view of Whittemore renders obvious claim 11 of the 548 Patent. Ex.1003, Append.A claim 11.

10.13.Claim 12 – “The electronic cigarette of claim 11 with a first part of the fiber member perpendicular to the longitudinal axis and the heating wire coil wrapped on the first part.”

Hon 494 in view of Whittemore renders obvious claim 12 of the 548 Patent for the same reasons explained for limitation [1.8], claim 2, and limitation [8.5], where claim 12’s “first part of the fiber member,” like claim 2 and claim 8’s “first section” of the “porous component,” corresponds to Whittemore’s added wick portion of Hon 494’s porous body, which Whittemore discloses can be made of fiber. Ex.1006, 2:8-11; Ex.1003, Append.A claim 12.

10.14.Claim 13 – “The electronic cigarette of claim 11 with the fiber member having a first section perpendicular to the longitudinal axis and having a second section parallel to the longitudinal axis.”

Hon 494 in view of Whittemore renders obvious claim 13 of the 548 Patent for the same reasons explained for claim 2, where the first and second sections of claim 13’s “fiber member” correspond to the first and second sections of claim 2’s “porous component,” each of which can be made of fiber. Ex.1005, p.3, claim 11; Ex.1006, 2:8-11; Append.A claim 13.

10.1. Claim 14 – “The electronic cigarette of claim 11 with the frame having a cylindrical first section and a second section, with the second section between the first section and the outlet, and with the second section longer than the first section.”

Hon 494 in view of Whittemore renders obvious claim 14 of the 548 Patent for the same reasons explained for claim 3. Ex.1003, Append.A claim 14.

11. CONCLUSION

For the foregoing reasons, *inter partes* review of claims 1-14 of the 548 Patent is requested.

Respectfully submitted,

Dated: November 4, 2016

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CERTIFICATE OF COMPLIANCE

The undersigned certifies that this brief complies with the type-volume limitations of 37 CFR § 42.24(a)(1)(i). This brief contains 12,087 words as calculated by the “Word Count” feature of Microsoft Word 2010, the word processing program used to create it.

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 2010 in Times New Roman 14 point font.

Dated: November 4, 2016

By: / Elizabeth S. Weiswasser/

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CERTIFICATE OF SERVICE

The undersigned certifies, in accordance with 37 C.F.R. § 42.105 and § 42.6(e), that service was made on the Patent Owner as detailed below.

<i>Date of service</i>	November 4, 2016
<i>Manner of service</i>	EXPRESS MAIL
<i>Documents served</i>	Petition for <i>Inter Partes</i> Review of U.S. Pat. No. 9,326,548 with Nu Mark's Exhibit List Power of Attorney Exhibits Ex.1001 through Ex.1022
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