

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

R.J. Reynolds Vapor Company,

Petitioner

v.

Fontem Holdings 1 B.V.

Patent Owner

U.S. Patent No.: 8,365,742

Issue Date: Feb. 5, 2013

Title: Aerosol Electronic Cigarette

Inter Partes Review No. IPR2016-01268

PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 8,365,742 PURSUANT TO
35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42

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EXHIBITS LIST

Exhibit No.	Description
Exhibit 1001:	U.S. Pat. No. 8,365,742 to Lik Hon
Exhibit 1002:	Chinese Pat. No. 2719043Y to Lik Hon
Exhibit 1003:	Certified English translation of Chinese Pat. No. 2719043Y to Lik Hon
Exhibit 1004:	U.S. Pat. No. 2,057,353 to C. L. Whittemore, Jr
Exhibit 1005:	Application Data Sheet of April 5, 2011 Filed in U.S. Pat. Appl. No. 13/079,937
Exhibit 1006:	Preliminary Amendment of April 5, 2011 Filed in U.S. Pat. Appl. No. 13/079,937
Exhibit 1007:	Non-Final Office Action of July 19, 2012 in U.S. Pat. Appl. No. 13/079,937
Exhibit 1008:	Amendment of August 3, 2012 in U.S. Pat. Appl. No. 13/079,937
Exhibit 1009:	PCT Pub. No. WO2007131449
Exhibit 1010:	English translation of PCT Pub. No. WO2007131449
Exhibit 1011:	Board's Decision Denying Institution in IPR2015-00859
Exhibit 1012:	Patent Owner's Preliminary Response to Petition for IPR of U.S. Pat. No. 8,365,742
Exhibit 1013:	Petition for IPR of U.S. Pat. No. 8,365,742 in IPR2015-00859
Exhibit 1014:	Board's Order Dismissing Petition IPR2015-01587
Exhibit 1015:	Declaration of Dr. Robert Sturges
Exhibit 1016:	Rohsenow, "Heat, Mass, And Momentum Transfer"
Exhibit 1017:	WO 2005/099494, which is the PCT application equivalent of Hon (CN 2719043) ("Hon '494")
Exhibit 1018	Certified English translation of WO 2005/099494 pursuant to 37 C.F.R. 42.63(b)

I. INTRODUCTION

Pursuant to 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42, R.J. Reynolds Vapor Company (“Petitioner”) respectfully requests *Inter Partes* Review (“IPR”) of claims 2 and 3 of U.S. Pat. No. 8,365,742 to Lik Hon, titled “Aerosol Electronic Cigarette” (“‘742 patent,” Ex. 1001), which is currently assigned to Fontem Holdings 1 B.V. (“Fontem” or “Patent Owner”). The Petitioner authorizes the Patent and Trademark Office to charge Deposit Account No. 23-1925 for the fees set in 37 C.F.R. § 42.15(a) for this Petition for IPR, and further authorizes payment of any additional fees to be charged to this Deposit Account.

This Petition demonstrates a reasonable likelihood that claims 2-3 of the ‘742 patent are unpatentable under 35 U.S.C. § 103 based upon the combination of Chinese Pat. No. 2719043Y to Lik Hon (“Hon ‘043,” Ex. 1002) and U.S. Pat. No. 2,057,353 to C. L. Whittemore, Jr (“Whittemore,” Ex. 1004).

II. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(A)(1)

A. Real Party-in-Interest

For purposes of 35 U.S.C. § 312(a)(2) and 37 C.F.R. § 42.8(b)(1) only, Petitioner, R.J. Reynolds Vapor Company (“Petitioner”) identifies the real-parties-in-interest as R.J. Reynolds Vapor Company and Reynolds American Inc. R.J. Reynolds Vapor Company further discloses that it is an indirect wholly owned subsidiary of Reynolds American Inc., and states that under the governing standard

Reynolds American Inc. is not a real-party-in-interest. *See* Patent Trial Practice Guide 77 Fed. Reg., Vol. 77, No. 157 (2012) at 48759-60. Reynolds American Inc. nevertheless agrees to be bound to same extent as a real-party-in-interest.

B. Related Matters

Petitioner is not aware of any reexamination certificates or pending prosecution concerning the ‘742 patent.¹ Petitioner is a defendant in the following litigation involving the ‘742 patent: *Fontem Ventures B.V. et al v. R.J. Reynolds Vapor Company*, No. 2:16-cv-02286 (C.D. Cal., filed April 4, 2016). In addition to the foregoing, the Petitioner is aware of the additional matters involving the ‘742 patent listed in the tables below.

Pending Litigations and IPRs

Case Name	Filed
<i>Fontem Ventures BV v. RJ Reynolds Vapor Company</i> , 2-16-cv-02286 (CACD)	April 4, 2016
<i>Fontem Ventures BV v. Nu Mark LLC</i> , 2-16-cv-02291(CACD)	April 4, 2016
Petition for <i>Inter Partes</i> Review by NU MARK	June 28, 2016

¹ The parent of the ‘742 patent, U.S. patent no. 8,156,944 (the “‘944 patent”), is in *inter partes* reexamination (Reexamination No. 95/002,235). The *inter partes* reexamination was requested by Fin Branding Group, LLC, and alleges that all claims of the ‘944 patent are anticipated or obvious. The reexamination proceeding is currently stayed.

Case Name	Filed
LLC, IPR2016-01302 (challenging claims 2-3)	

Terminated Litigations and IPRs

Case Name	Filed
<i>Fontem Ventures BV et al v. Nu Mark LLC</i> , No. 2:16-cv-02291 (C.D. Cal.)	April 4, 2016
<i>Fontem Ventures BV et al v. NJOY, Inc.</i> , No. 2:14-cv-01645 (C.D. Cal.)	March 5, 2014
<i>Fontem Ventures BV et al v. LOEC, Inc. et al</i> , No. 2:14-cv-01648 (C.D. Cal.)	March 5, 2014
<i>Fontem Ventures BV et al v. CB Distributors, Inc. et al</i> , No. 2:14-cv-01649 (C.D. Cal.)	March 5, 2014
<i>Fontem Ventures BV et al v. Vapor Corp.</i> , No. 2:14-cv-01650 (C.D. Cal.)	March 5, 2014
<i>Fontem Ventures BV et al v. FIN Branding Group, LLC et al</i> , No. 2:14-cv-01651 (C.D. Cal.)	March 5, 2014
<i>Fontem Ventures BV et al v. Ballantyne Brands, LLC</i> , No. 2:14-cv-01652 (C.D. Cal.)	March 5, 2014
<i>Fontem Ventures BV et al v. Spark Industries, LLC</i> , No. 2:14-cv-01653 (C.D. Cal.)	March 5, 2014
<i>Fontem Ventures BV et al v. Logic Technology Development LLC</i> , No. 2:14-cv-01654 (C.D. Cal.)	March 5, 2014
<i>Fontem Ventures BV et al v. VMR Products, LLC</i> , No. 2:14-cv-01655 (C.D. Cal.)	March 5, 2014
<i>JT International S.A. v. Fontem Holdings 1 B.V.</i> , IPR2015-01587 (PTAB, filed) (challenging claims 1-3)	July 14, 2015
<i>VMR Products, LLC v. Fontem Holdings 1 B.V.</i> , IPR2015-00859 (PTAB) (challenging claims 1-3).	March 10, 2015

Pursuant to the parties' request, the Board dismissed JT International's petition in IPR2015-01587 in view of an apparent settlement. Ex.1014 at 2. The Board denied institution of VMR's petition in IPR2015-00859. Ex. 1011 at 2.

Relevant here, the Board denied institution on a ground that combined Hon ‘043 with Whittemore, finding that the petitioner in that matter failed to articulate sufficient reasoning with rational underpinnings (as opposed to conclusory statements) as to why the person of ordinary skill in the art would have been motivated to make the proposed combination. Specifically, the Board concluded that the “more efficient, uniform heating” as the motivation to combine the references consisted of unsupported conclusory statements. *Id.* at 17-19, 21-25. In addition, the Board found that the petitioner in that matter also failed to explain adequately how the cavity wall 25 in Hon ‘043 provides support for porous component 27. *Id.* at 16.

Petitioner’s proposed combination of Hon ‘043 and Whittemore is not subject to the same objections. Petitioner explains how the cavity wall 25 of Hon ‘043 provides support for porous component 27. Moreover, the Petitioner provides rational underpinnings why more efficient heating would have motivated the person of ordinary skill in the art to modify Hon ‘043 as taught by Whittemore. For the reasons provided herein, the Petitioner’s proposed combination of Hon ‘043 with Whittemore involves the simple substitution of one known element for another to obtain predictable results – a rational for obviousness that has been expressly endorsed by the Supreme Court. *See KSR Int’l v. Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007); *see also* MPEP § 2143.

C. Lead and Back-Up Counsel

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D. Service Information

Service of any documents via hand delivery, express mail or regular mail may be made to the lead and backup counsel at the postal mailing address above. Petitioner also consents to service by email at the above-designated email addresses.

E. Proof of Service

Proof of service of this Petition on the Patent Owner at the correspondence address of record for the '742 Patent is attached.

III. GROUNDS FOR STANDING

As required by 37 C.F.R. § 42.104(a), Petitioner certifies that the ‘742 Patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting *inter partes* review on the grounds identified herein.

IV. IDENTIFICATION OF CHALLENGE AND STATEMENT OF THE PRECISE RELIEF REQUESTED

Pursuant to 37 C.F.R. § 42.104(b), the precise relief requested is that the Patent Trial and Appeal Board review and find unpatentable claims 2 and 3 of the ‘742 Patent.

Petitioner requests *inter partes* review and cancellation of claims 2-3 of the ‘742 patent pursuant to 35 U.S.C. § 103 as set forth herein. The ‘742 patent is to be reviewed under pre-AIA § 103. Petitioner’s detailed statement of the reasons for the relief requested is set forth below in the section titled “Statement of Reasons for the Relief Requested.” In accordance with 37 C.F.R. § 42.6(c), copies of the exhibits are filed herewith. In addition, the Petition is accompanied by the Declaration of Dr. Robert Sturges (“Sturges Decl.”) Ex. 1015.

Claims 2-3 of the ‘742 patent are unpatentable based upon the following ground:

Ground 1: Claims 2-3 are obvious over Chinese Pat. No. 2719043Y to Lik Hon (“Hon ‘043,” Ex. 1002; “Hon ‘043 English translation,” Ex. 1003; Hon PCT

equivalent; Ex. 1017; and Hon PCT English translation; Ex. 1018) in view of U.S. Pat. No. 2,057,353 to Whittemore, Jr (“Whittemore,” Ex. 1004).

V. THRESHOLD REQUIREMENT FOR *INTER PARTES* REVIEW

This petition meets the threshold requirement for *inter partes* review because it establishes “a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). As explained below, for the ground of unpatentability proposed below, there is a reasonable likelihood that Petitioner will prevail with respect to at least one of the challenged claims.

VI. STATEMENT OF REASONS FOR THE RELIEF REQUESTED

A. Summary of the Argument

The ‘742 patent is titled “Aerosol Electronic Cigarette.” Hon ‘043 discloses every element of claims 2 and 3 of the ‘742 patent, except that Hon ‘043’s heating wire is not wound on a porous component. However, a heating wire wound on a porous wick is disclosed by Whittemore.

As explained herein, simple thermodynamics would have motivated the person having ordinary skill in the art (“PHOSITA”) to modify Hon ‘043 as taught by Whittemore. The PHOSITA would have readily appreciated that, because air is a good thermal insulator, the air gaps between the heating wire 26 of Hon ‘043 and the liquid nicotine droplets expelled into the atomization chamber 10 create a

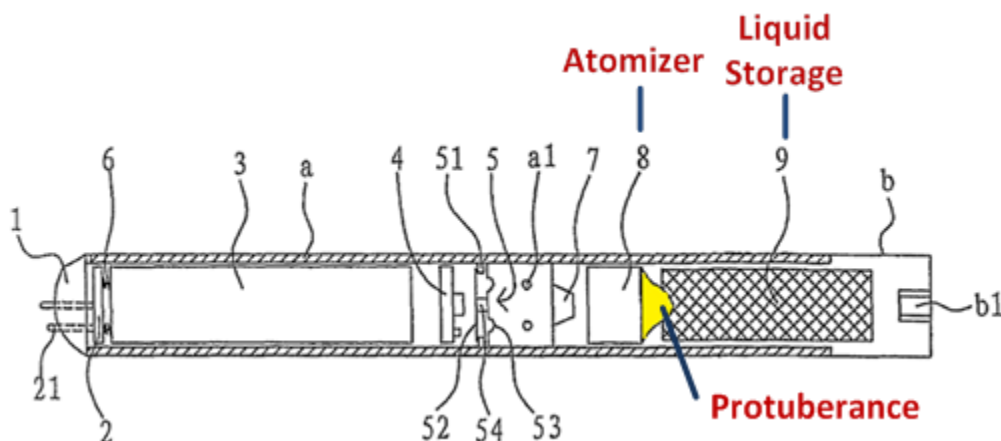
relatively inefficient heating environment for heating the nicotine solution, and thus wire 26 would need to be operated at relatively high temperatures, which would require more battery power. In contrast, Whittemore's wick/heating wire configuration is more thermally efficient than the configuration of Hon '043, because the heating element is in direct contact with the liquid that is vaporized. Accordingly, the POSITA would have been motivated to substitute Whittemore's wick/heating wire configuration for the heating wire of Hon '043 to achieve the predicted result of more efficient heating, lower heating temperatures, and improved battery life. Ex. 1015 at ¶¶ 56-62.

Accordingly, Petitioner respectfully requests that the Board find that claims 2 and 3 of the '742 patent are invalid under 35 U.S.C. § 103.

B. Background of the '742 Patent

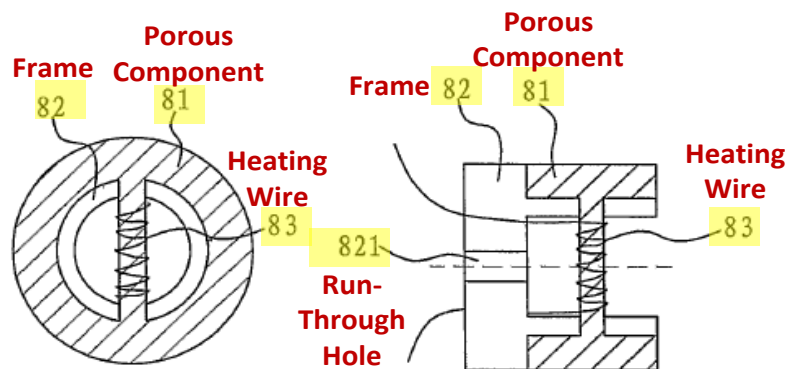
1. Summary of the '742 Patent

The '742 patent generally describes an electronic cigarette.



With respect to Fig. 1, the electronic cigarette includes a battery 3, an atomizer assembly 8 and a liquid storage 9. Ex. 1001 at 2:30-38, 44-45; 3:6-8, 49-51; Fig. 1. The electronic cigarette also includes a shell (a) which is hollow and integrally formed. *Id.* at 2:30-33. The battery assembly connects with said atomizer assembly and both are located in said shell (a). *Id.* The shell (a) has through-air-inlets (a1). *Id.* at 2:37-38; Fig. 1. A porous component of the atomizer assembly 8, *i.e.*, protuberance/bulge 812, contacts the liquid storage 9 “to achieve the capillary impregnation for liquid supply.” *Id.* at 3:16-21; 4:37-40.

Further details of the atomizer assembly 8 are illustrated in annotated Figs. 17 and 18, which are reproduced below. *Id.* at Figs. 17-18.



The atomizer assembly includes “a frame (82), the porous component (81) set on the frame (82), and the heating wire (83) wound on the porous component (81). The frame (82) has a run-through hole (821) on it. The porous component (81) is wound with heating wire (83) in the part that is on the side in the axial

direction of the run-through hole (821). One end of the porous component (81) fits with the cigarette bottle assembly.” *Id.* at 5:42-50.

2. Prosecution History of the ‘742 Patent

The ‘742 patent issued from U.S. Appl. No. 13/079,937, which was filed on April 5, 2011. Ex. 1005 at 2. On April 5, 2011, Applicant also filed a Preliminary Amendment cancelling all application claims (*i.e.*, claims 1-29) and adding sole application claim 30. Ex. 1006 at 3. The Examiner rejected application claim 30 under 35 U.S.C. § 112, second paragraph, as indefinite, but stated that the claim would be allowable if the § 112 rejection was overcome. Ex. 1007 at 3-4.

According to the Examiner, CN2719043 (“Hon ‘043”) was the closest prior art of record but purportedly failed to disclose that the heating wire could be wound on a portion of the porous component. *Id.*

In response, the Applicant amended application claim 30 by specifying that “the porous component is supported by the frame” and “a heating wire wound on a part of the porous component that is substantially aligned with the run-through hole,” respectively. Ex. 1008 at 2-3. Applicant also added new independent claims 31 and 32. *Id.* at 3. Application claims 30-32 were subsequently allowed, and issued as patent claims 1-3, respectively. *Id.*; Ex. 1001 at 6:6-52.

C. Person Having Ordinary Skill in the Art (“PHOSITA”)

The PHOSITA is a hypothetical person who is presumed to know the relevant prior art. Factors that guide the determination of level of ordinary skill in the art may include: the education level of those working in the field, the sophistication of the technology, the types of problems encountered in the art, the prior art solutions to those problems, and the speed at which innovations are made may help establish the level of skill in the art.

The PHOSITA for the ‘742 patent is a person with at least the equivalent of a Bachelor’s degree in electrical engineering, mechanical engineering, or biomedical engineering or related fields, along with at least 5 years of experience designing electromechanical devices, including those involving circuits, fluid mechanics and heat transfer. Ex. 1015, ¶¶ 29-30.

D. Claim Construction

Pursuant to 37 C.F.R. § 42.100(b), a claim in an unexpired patent is given its broadest reasonable construction in light of the specification in which it appears. *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278-79 (Fed. Cir. 2015), *aff’d* *Cuozzo Speed Techs. v. Lee*, 579 U. S. ____ (2016).

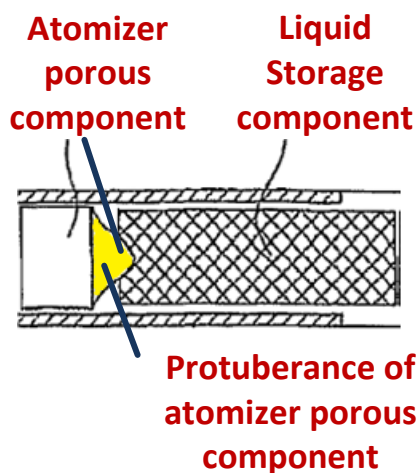
1. “Frame”

Both claims 2 and 3 of the ‘742 patent recite the term “frame.” The Board previously construed “frame” to mean a “rigid structure.” IPR2015-00859, Ex.

1011 at pp. 7-8. For purposes of this Petition only, the Petitioner accepts the Board's prior construction.

2. “Porous component substantially surrounded by the liquid storage component”

The specification of the '742 patent does not expressly define this limitation, it having been added during prosecution. Ex. 1008 at 3. However, Fig. 1 of the '742 patent (annotated below) illustrates that protuberance/bulge 812 in the atomizer assembly's porous component is in physical contact with liquid storage 9 for liquid transfer from the liquid storage to the porous component. Ex. 1001 at Fig. 1; 3:16-19.



For purposes of this Petition, “porous component substantially surrounded by the liquid storage component” should be construed under the BRI standard applicable here to encompass the above-illustrated structure described in Fig. 1 of the '742 patent.

E. Patents and Printed Publications Relied Upon in this Petition

1. Hon '043 (Ex. 1002; Ex. 1003)

The '742 patent claims priority to PCT Application No.

PCT/CN2007/001575, filed on May 15, 2007. Ex. 1001 at 1; Ex. 1005 at 2.

Because Hon '043 published on August 24, 2005, it is prior art under 35 U.S.C. § 102(b).

Hon '043 discloses an electronic cigarette, which is illustrated in Fig. 1 from Hon '043 below.

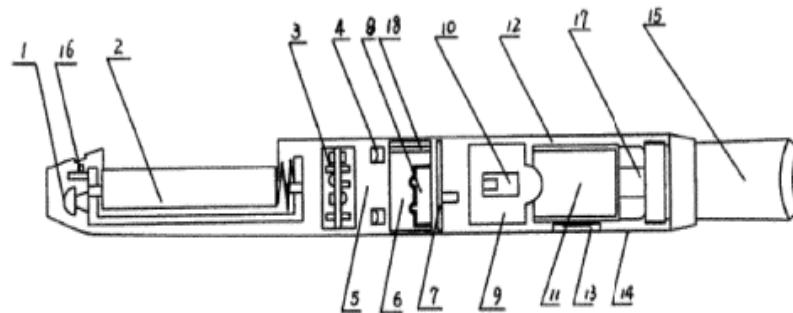
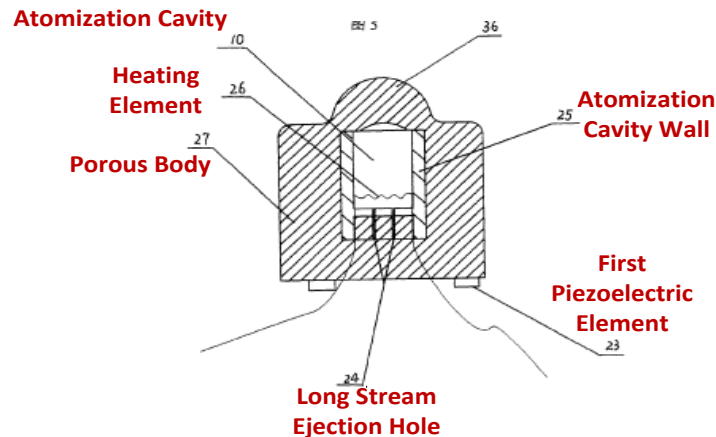


FIG. 1

Hon '043's electronic cigarette includes "a cell 2, an electronic circuit board 3, a normal pressure cavity 5, a sensor 6, a vapor-liquid separator 7, an atomizer 9, a liquid-supplying bottle 11 and a mouthpiece 15 ... sequentially provided within the shell 14." Ex. 1003 at 9:3-6. "An air inlet 4 is provided on the external wall of the shell 14." *Id.* at 9:3.

Details of Hon '043's atomizer assembly 9 are illustrated in annotated Fig. 6 of Hon '043.

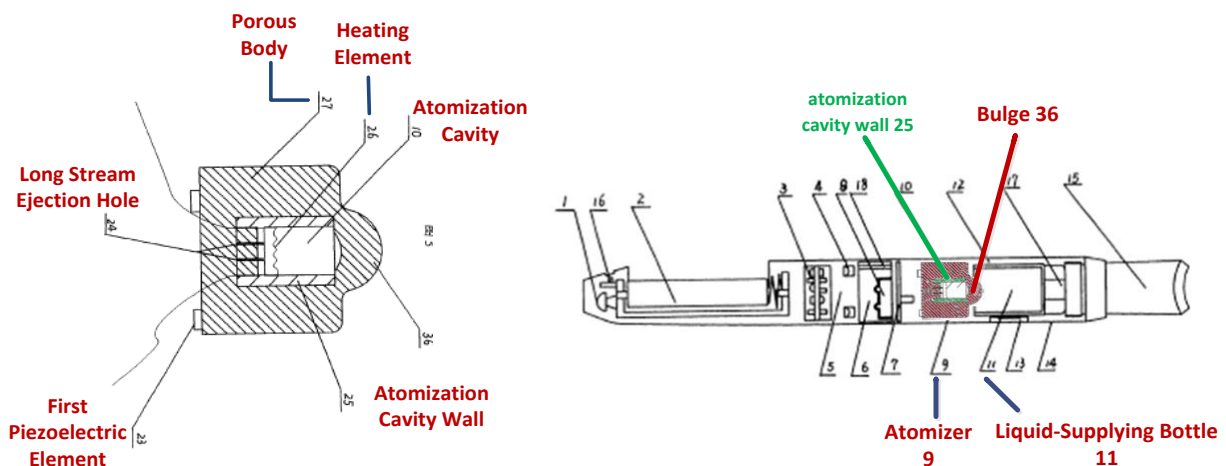


The atomizer has an atomization cavity wall 25 “surrounded with a porous body 27.” *Id.* at 9:22-23. The porous body 27 includes a bulge 36. *Id.* at 9:11-12; Fig. 6. The bulge 36 of the porous body 27 is in physical contact with and substantially surrounded by liquid supplying bottle 11. *See Id.*, Fig. 1. A short stream ejection hole 30 or a long stream ejection hole 24 is provided on the atomization cavity wall 25. *Id.* at 9:13-24; Figs. 6-8. In use, “[t]he high speed stream passing through the ejection hole drives the nicotine solution in the porous body 27 to eject into the atomization cavity 10 in the form of droplet[s], where the nicotine solution is subjected to the ultrasonic atomization by the first piezoelectric element 23 and is further atomized by the heating element 26.” *Id.* at 10:28-11:2.

As the Board determined in IPR2015-00859, cavity wall 25 is a “frame.” Ex. 1011 at 15. However, the Board held that the petitioner in that matter failed to establish that the cavity wall provided support for the porous body 27, as claimed. According to the Board, the “Petitioner does not explain adequately, nor cite to

sufficient evidence of record explaining, how porous component 27 is held up by atomization cavity wall 25. The teachings in Hon on which Petitioner relies describe porous component 27 surrounding atomization cavity wall 25, but do not indicate that atomization cavity wall 25 is bearing the weight of, or holding up, porous cavity 27.” *Id.* at 15-16.

The Petitioner here respectfully submits that on the basis of the current record, which is more fully developed on this issue, the evidence establishes that the PHOSITA would have understood that atomization cavity wall 25 provides support for porous body 27. As explained in the accompanying declaration of Dr. Sturges, cavity wall 25 provides support for porous body 27 in several ways.

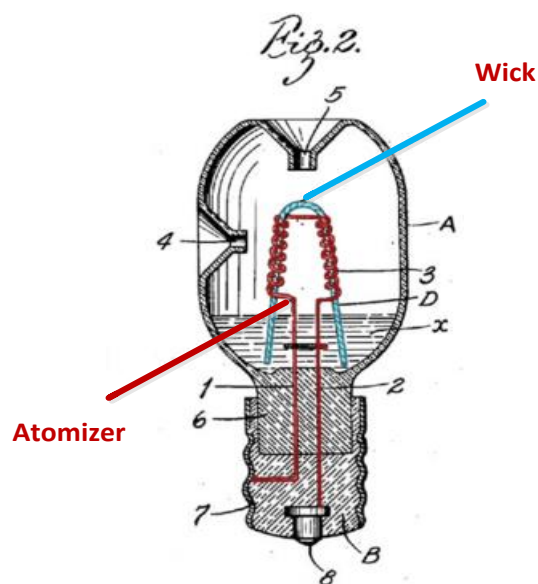


To begin with, porous body 27 is attached to cavity wall 25 either by a friction fit or with a bonding material to prevent axial displacement of the porous body under the shear forces at the interface of cavity wall 25 and porous body 27 when the porous body is inserted into the solution storage body 28 (see Fig. 11 of

Hon '043) of the liquid supplying bottle 11. These shear forces can be significant particularly when the rigidities of the porous body 27 and solution storage body 28 are similar and relatively high. In addition, the leading edge of the cavity wall 25 provides further support for the porous body in the area of bulge 36. Ex.1015 at ¶¶ 45-46. The cavity wall 25 also provides radial support when pressure increases in the low pressure area surrounding the atomizer 9, such as when the user deliberately or accidentally blows into the mouthpiece 15. In that situation, the cavity wall 25 provides radial support to porous body 27, and thus prevents the body 27 from impinging upon and/or destroying the atomization cavity 10. *Id.* at 47-50.

2. Whittemore (Ex. 1004)

Whittemore is prior art under 35 U.S.C. § 102(b). Whittemore discloses a vaporizing unit, which is illustrated in annotated Fig. 2 of Whittemore below.



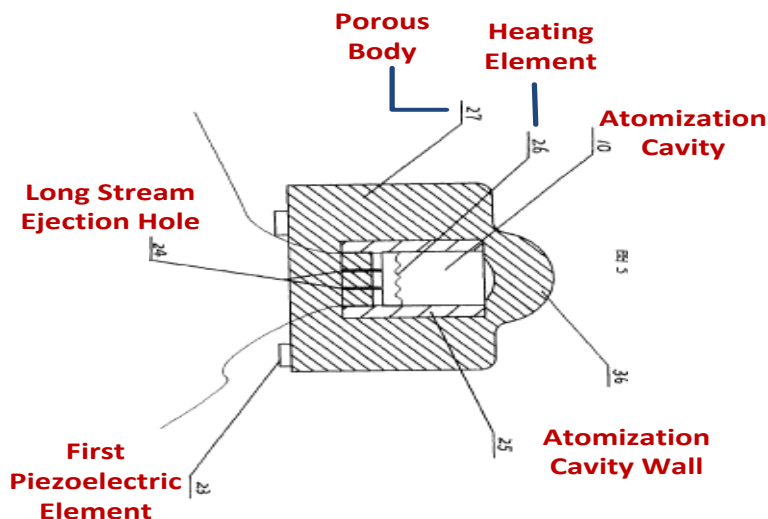
A vaporizing vessel A is “adapted to hold a liquid medicament x and provided with an electrically-operated heating means comprising two electrical conductors 1 and 2 and a filament or heating element 3 combined in such a way that when said conductors are energized by an electric current, the filament 3 will become heated.” Ex. 1004 at p. 1, left col., ll. 18-28. Whittemore also discloses that heating element 3 is wound on a part of wick D. According to Whittemore, “a wick D made of any suitable material and combined with the heating element or filament 3 in such a way that 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.” *Id.* at p 1, left col., l. 54 - right col., l. 8.

**F. THERE IS A REASONABLE LIKELIHOOD THAT
CLAIMS 2 AND 3 ARE OBVIOUS OVER THE
COMBINATION OF HON ‘043 AND WHITTEMORE**

As illustrated by the discussion, annotated figures and claim chart below, the PHOSITA would have been motivated to combine the teachings of Hon ‘043 with those of Whittemore to arrive at the claimed invention.

1. Motivation For Combining Hon '043 With Whittemore

The PHOSITA would have readily understood the inefficiencies associated with the heating element configuration disclosed in Hon '043. The liquid nicotine droplets are expelled into the atomization cavity 25 and heated by convection from the heat given off by heating element 26. In other words, the nicotine droplets are heated in the atomization cavity via the heat transfer through air gaps between the heating element and the nicotine droplets.



However, air is a very poor thermal conductor, and the PHOSITA would have immediately appreciated the thermal inefficiencies associated with the configuration of Hon '043. For example, to compensate for the poor thermal transfer properties of air, the PHOSITA would have appreciated that the heating element 26 would need to be at higher temperatures to vaporize the nicotine

droplets than would be required with respect to droplets that were in direct contact with the heating element. Ex. 1015 at ¶¶ 56-58.

In contrast to the configuration of Hon ‘043, the PHOSITA would have recognized that the configuration disclosed in Whittemore (i.e., a heating wire wound on a porous wick) is thermally more efficient, because the liquid (which is contained in the porous wick) comes into direct contact with the heating element. Thus, in the Whittemore configuration, the heating element can be run at lower temperatures as compared to the configuration in Hon ‘043, where there are air gaps between the nicotine droplets and the heating element. An obvious benefit to running at lower temperatures, of course, is that less energy is required to vaporize the liquid. Thus, the PHOSITA would have been highly motivated to substitute the wick/heating wire configuration of Whittemore for the heating wire of Hon ‘043 to achieve the predicted result of more efficient heating, lower heating temperatures, and improved battery life. Ex. 1015 at ¶¶ 59-62.

Thus, the proposed combination is the simple substitution of one known element (Whittemore’s wick/heating wire configuration) for another (Hon ‘043’s heating element) to obtain predictable results. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. at 416; *see also* MPEP §§ 2143-44.

2. Claim 2 Is Obvious

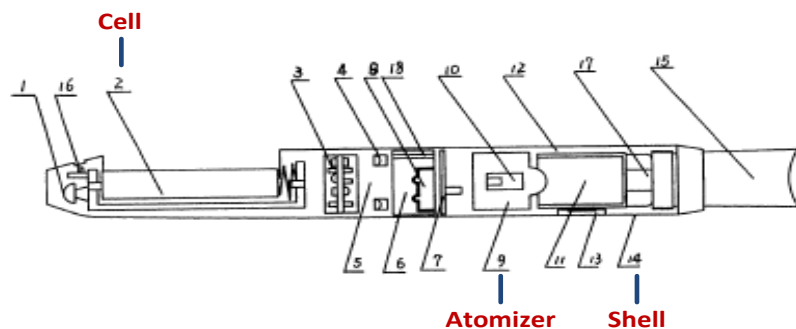
a. “an electronic cigarette”

To the extent that the preamble is considered a claim limitation, as illustrated in the claim chart below, Hon ‘043 discloses an electronic cigarette. Ex. 1003 at 5:3-4; Ex. 1015 at ¶ 63.

Claim 2	Hon ‘043 and Whittemore
An electronic cigarette, comprising:	“The present utility model relates to an electronic cigarette ...” Ex. 1003 at 5:3-4.

b. “a battery assembly and an atomizer assembly within a housing with the battery assembly electrically connected to the atomizer assembly”

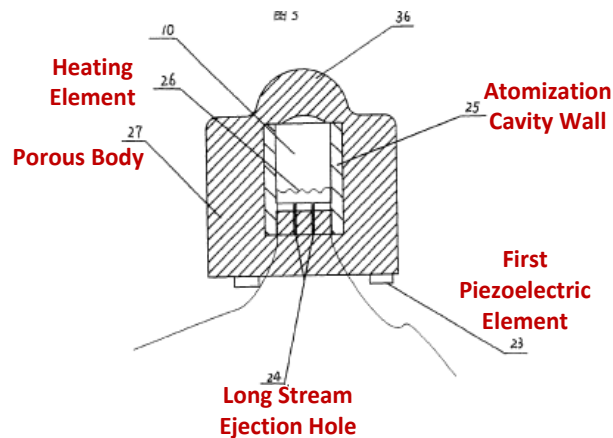
As illustrated in annotated figures and claim chart below, these features are found in Hon ‘043.



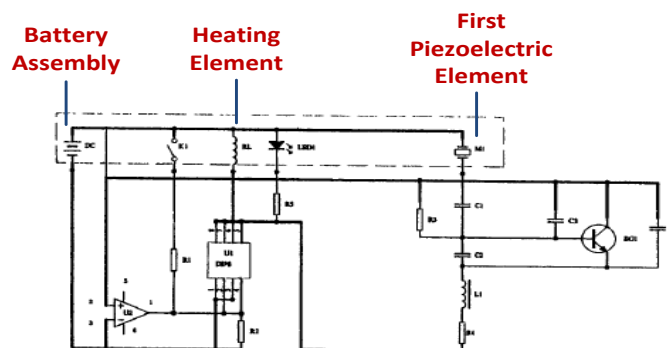
Hon ‘043 has a battery assembly that includes cell 2, an atomizer assembly that includes atomizer 9 within a housing that comprises shell 14. Ex. 1003 at 9:3-6; Figs. 1-2, 6. As illustrated in annotated Fig. 6 of Hon ‘043, the atomizer

assembly includes a porous body 27 and a heating wire 26, among other structure.

Id. at 9:14-16, 22-24; Fig. 6.



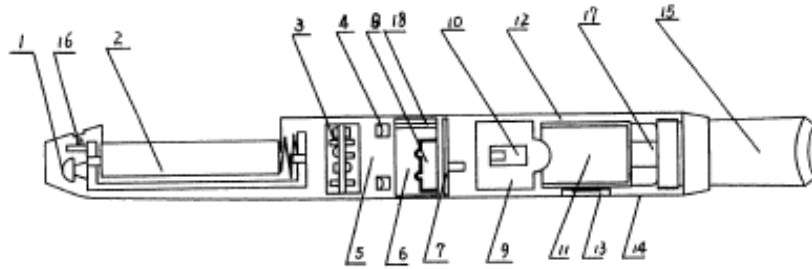
As illustrated in annotated Fig. 12 of Hon '043, the battery assembly is electrically connected with the heating element 26 (shown as RL in FIG. 12) and the first piezoelectric element 23 (shown as M1 in FIG. 12) of the atomizer assembly. *Id.* at 9:24-25; 10:7-11; Figs. 6, 12; *see also* Ex. 1015 at ¶ 63.



Claim 2

Hon '043 and Whittemore

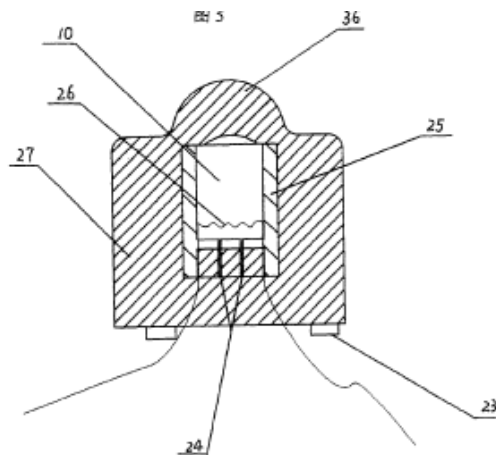
a battery assembly and an atomizer assembly within a housing with the battery assembly electrically connected to the atomizer assembly;



Ex. 1003 at Fig. 1.

“A LED 1, a cell 2, an electronic circuit board 3, a normal pressure cavity 5, a sensor 6, a vapor-liquid separator 7, an atomizer 9, a liquid-supplying bottle 11 and a mouthpiece 15 are sequentially provided within the shell 14.” *Id.* at 9:3-6; Figs. 1-2, 6.

“A first piezoelectric element 23 is also provided on the atomizer 9.” *Id.* at 9:24-25; Fig. 6.

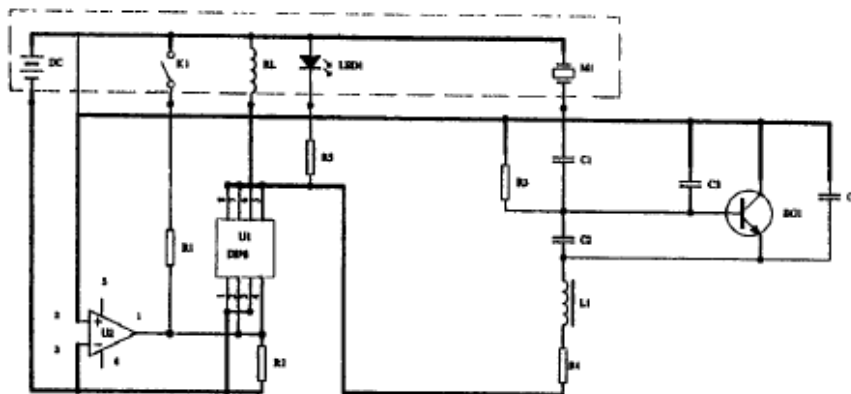


Id. at Fig. 6.

“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 ...” *Id.* at 9:14-16; Fig. 6.

“As shown in the functional diagram of the circuit in Fig.

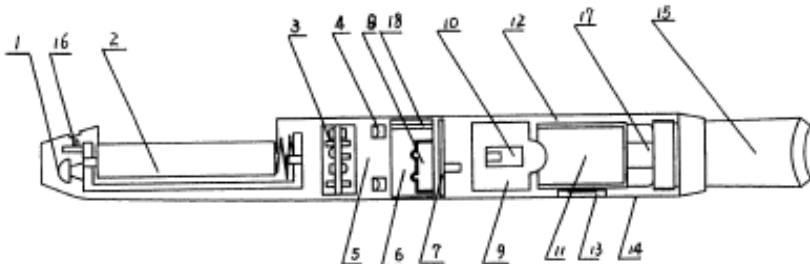
12 ... RL refers to the heating element 26 ... M1 refers to the first piezoelectric element 23 ...” *Id.* at 10:7-11; Fig. 12.



Id. at Fig. 12.

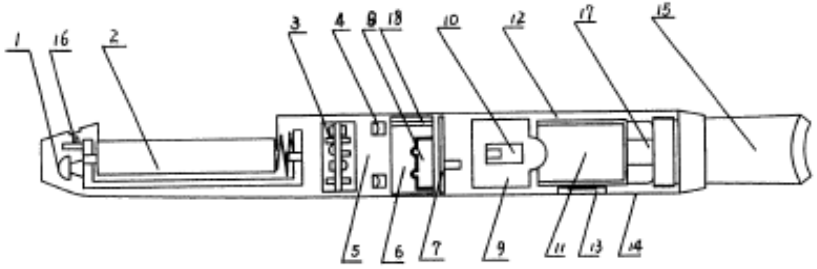
c. “a liquid storage component in the housing”

As illustrated in the claim chart below, Hon ‘043 discloses a liquid storage component (“liquid-supplying bottle 11”) in the housing (“shell 14”). Ex. 1003 at 9:3-6; Figs. 1-2; Ex. 1015 at ¶ 63.

Claim 2	Hon ‘043 and Whittemore
a liquid storage component in the housing;	 <p>Ex. 1003 at Fig. 1.</p> <p>“A LED 1, ... a liquid-supplying bottle 11, ... are sequentially provided within the shell 14.” <i>Id.</i> at 9:3-6; Figs. 1-2.</p>

d. “with the housing having one or more through-air-inlets”

As illustrated in the claim chart below, Hon ‘043 discloses the housing (“shell 14”) having one or more through-air-inlets (“air inlets 4”). Ex. 1003 at 9:3; Figs. 1-3; Ex. 1015 at ¶ 63.

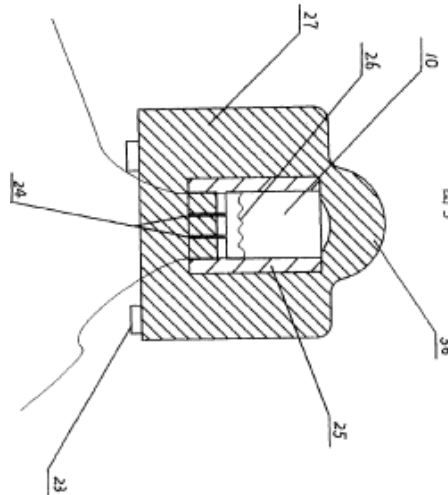
Claim 2	Hon ‘043 and Whittemore
with the housing having one or more through-air-inlets;	 <p>Ex. 1003 at Fig. 1.</p> <p>“An air inlet 4 is provided on the external wall of the shell 14.” <i>Id.</i> at 9:3; Figs. 1-3.</p>

e. “the atomizer assembly including a porous component supported by a frame having a run-through hole”

As illustrated in the claim chart below, and as previously discussed (*see infra* VI.E.1.) Hon ‘043 discloses these claim elements. *See* Ex. 1015 at ¶¶ 40-50; 63.

Claim 2	Hon ‘043 and Whittemore
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the atomizer assembly including a porous component supported by a frame having a run-through hole;



Ex. 1003 at Fig. 6.

“An ejection hole is provided on the side opposite to the heating element 26 and the ejection hole can be determined to select either a long stream ejection hole 24 or a short stream ejection hole 30, depending on the material used for the atomization cavity wall 25 ... The atomization cavity wall 25 is surrounded with a porous body 27, which can be made of foam nickel, stainless steel fiber felt, high molecule polymer foam and foam ceramic.” *Id.* at 9:17-26; Figs. 6-8.

f. “a heating wire wound on a part of the porous component in the path of air flowing through the run-through hole”

Hon ‘043 discloses a heating element 26 (*i.e.*, “heating wire”) in the path of air flowing through the run-through hole in atomization cavity wall (*i.e.*, “frame”) 25. Ex. 1003 at 9:14-16; 10:26-28; Fig. 6. In the annotated Fig. 6 below, the pink highlighting shows the paths of the air through the atomizer, the blue dashed lines show the high pressure (nearly ambient) area, and the green dashed lines show the

lower pressure surface). The cylindrical surface of the atomizer is at a lower pressure than the flat circular end during a draw, which causes the air to move through the atomizer towards the mouthpiece. The air stream enters the atomizer from the flat, high pressure end and leaves radially through the wall 25 and the lower pressure atomizer surfaces. The wall 25 would be porous itself for greatest airflow. Ex. 1015 at ¶63.

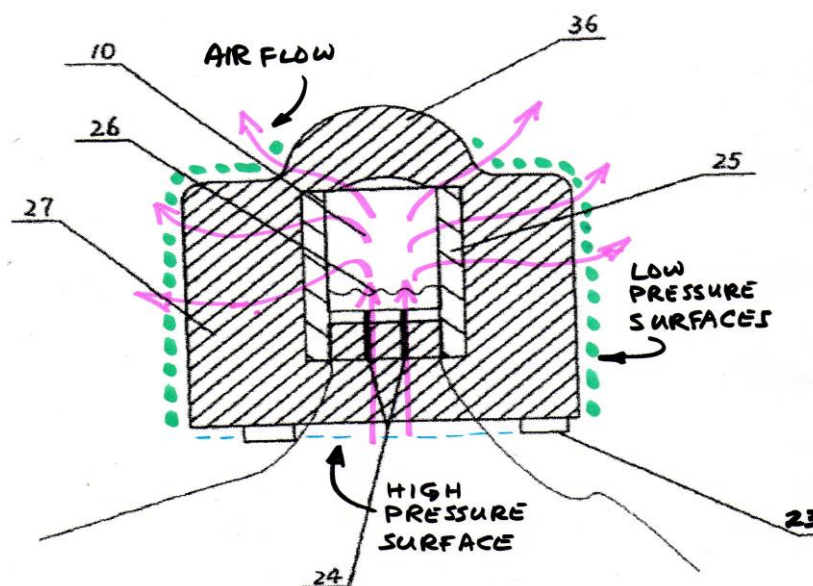


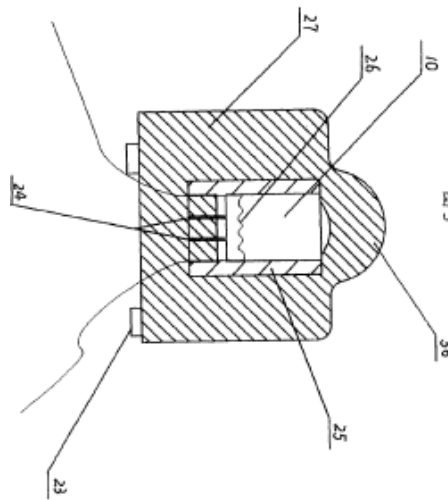
FIG. 6

The only feature that is not expressly disclosed in Hon '043 is the heating wire wound on a part of the porous body that is in the path of airflow through the run-through hole. However, as discussed above, it would have been obvious to substitute Whittemore's heating wire/wick configuration for Hon '043's heating wire. Ex. 1015 at ¶¶ 55-63; Ex. 1006.

Claim 2	Hon '043 and Whittemore
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a heating wire wound on a part of the porous component in the path of air flowing through the run-through hole; and

Hon '043



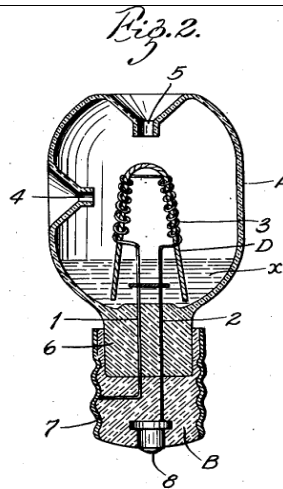
Ex. 1003 at Fig. 6.

“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 ...” *Id.* at 9:14-16; Fig. 6.

“An ejection hole is provided on the side opposite to the heating element 26 and the ejection hole can be determined to select either a long stream ejection hole 24 or a short stream ejection hole 30, depending on the material used for the atomization cavity wall 25. . . .” *Id.* at 9:18-25.

“The air enters the normal pressure cavity 5 through the air inlet 4, passes through the air passage 18 of the sensor and then the through hole in the vapor-liquid separator 7, and flows into the atomization cavity 10 in the atomizer 9.” *Id.* at 10:26-28; Fig. 6.

Whittemore



Ex. 1004 at Fig. 2.

“In the drawing A designates the vaporizing vessel of my improved unit, said vessel being preferably constructed in the form of a hollow glass container adapted to hold a liquid medicament *x* and provided with an electrically-operated heating means comprising two electrical conductors 1 and 2 and a filament or heating element 3 combined in such a way that when said conductors are energized by an electric current, the filament 3 will become heated.” *Id.* at p. 1, left col., ll. 19-28.

“In order that the unit will function properly, even though the heating element or filament 3 is spaced a considerable distance above or away from the medicament *x*, the unit is equipped with a wick D made of any suitable material and combined with the heating element or filament 3 in such a way that 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.” *Id.* at p. 1, left col., l. 50 - right col., l. 8.

“A therapeutic vaporizing unit adapted to be plugged into a conventional socket terminal of an electric circuit,

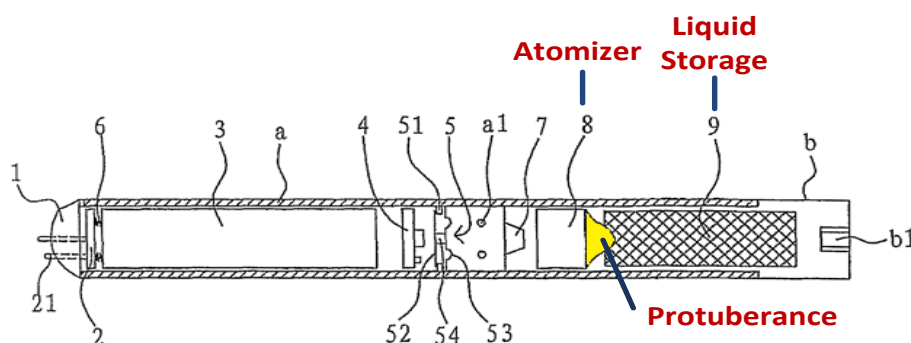
	comprising . . . a porous wick entwined within the filament for lifting the medicament by capillary attraction whereby the liquid becomes vaporized upon the filament becoming heated. <i>Id.</i> at Claim 9.
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g. “the porous component substantially surrounded by the liquid storage component”

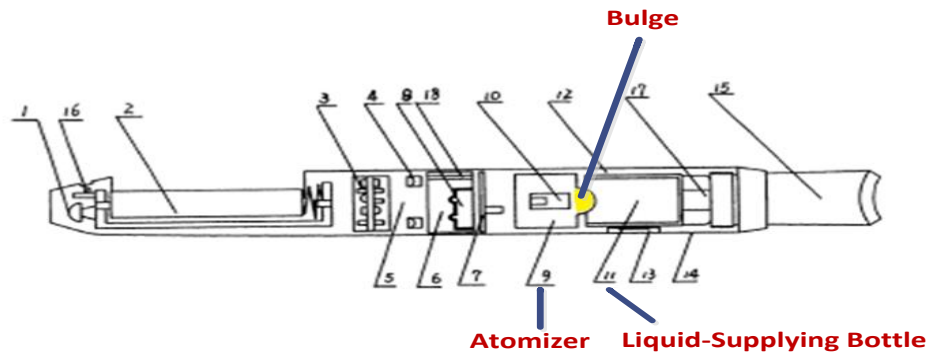
Hon ‘043 discloses this limitation. As illustrated by the annotated figures of Hon ‘043 and the ‘742 patent, they both disclose essentially identical structure for this claim limitation, namely, the bulge portion of the atomizer assembly’s porous component is in contact with the liquid supply. Ex. 1003 at Fig. 1; Ex. 1001 at Fig.

1. Petitioner assumes for purposes of this Petition only that embodiment disclosed in Figure 1 of the ‘742 patent is within the scope of this limitation. As such, then the disclosure of Hon ‘043 is necessarily also within the scope of this limitation.

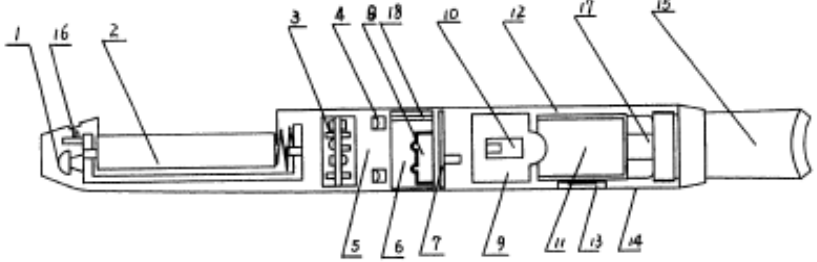
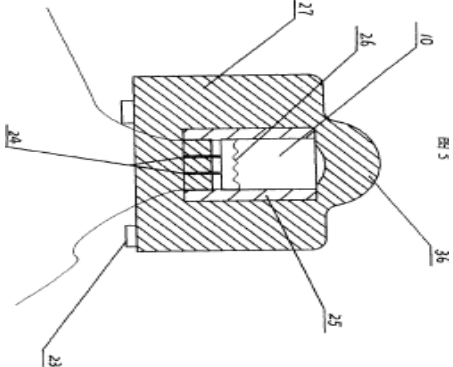
Ex. 1015 at ¶ 63.



Ex. 1001 at Fig. 1.



Ex. 1003 at Fig. 1.

Claim 2	Hon '043 and Whittemore
<p>the porous component substantially surrounded by the liquid storage component.</p>	 <p>Ex. 1003 at Fig. 1.</p> <p>“The atomizer 9 is in contact with the liquid-supplying bottle 11 via the bulge 36, and an atomization cavity 10 is provided in the atomizer 9.” <i>Id.</i> at 9:11-13; Figs. 1, 6-9.</p>  <p><i>Id.</i> at Fig. 6.</p>

3. Claim 3 Is Obvious

a. “an electronic cigarette”

To the extent that the preamble is considered a claim limitation, Hon ‘043 discloses an electronic cigarette. *See* claim 2 above.

b. “a battery assembly and an atomizer assembly within a housing with the battery assembly electrically connected to the atomizer assembly”

Hon ‘043 discloses this limitation. *See* claim 2 above.

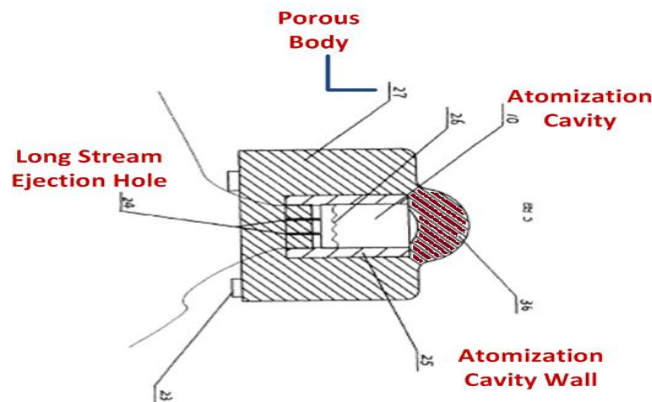
c. “with the housing having one or more through-air-inlets and an outlet”

As illustrated in the claim chart below, Hon ‘043 discloses the housing (“shell 14”) having one or more through-air-inlets (“air inlets 4”) and an outlet (“mouth piece 15”). Ex. 1003 at 9:3-6; Figs. 1-3; Ex. 1015 at ¶ 63.

Claim 3	Hon ‘043 and Whittemore
with the housing having one or more through-air-inlets and an outlet;	<p>Ex. 1003 at Fig. 1.</p> <p>“An air inlet 4 is provided on the external wall of the shell 14. A LED 1 ... and a mouthpiece 15 are sequentially provided within the shell 14.” Ex. 1003 at 9:3-6; Figs. 1-3.</p>

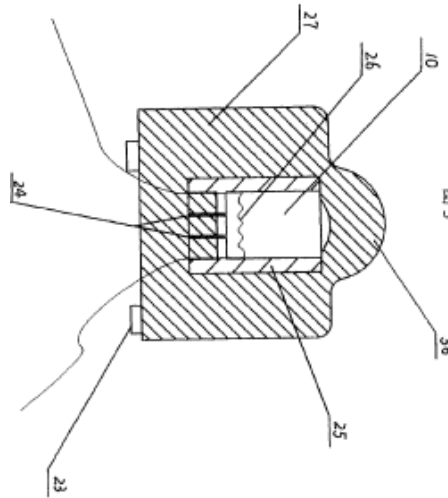
- d. **“the atomizer assembly includes a frame having a run through hole, and a porous component between the frame and the outlet”**

For the reasons discussed above, the atomization cavity wall 25 of Hon ‘043 is a frame having a run through hole (“long stream ejection hole 24,” “short stream ejection hole 30”). In addition, Hon ‘043 discloses that porous body 27 (*i.e.*, “porous component”), a portion of which (color highlighted in purple in the annotated Fig. 6 below) is between the atomization cavity wall 25 (*i.e.*, “frame”) and the mouthpiece 15 (*i.e.*, “outlet”). Ex. 1003 at 9:17-26, 22-24; Figs. 1, 6-9; Exhibit 1015 at ¶ 63.

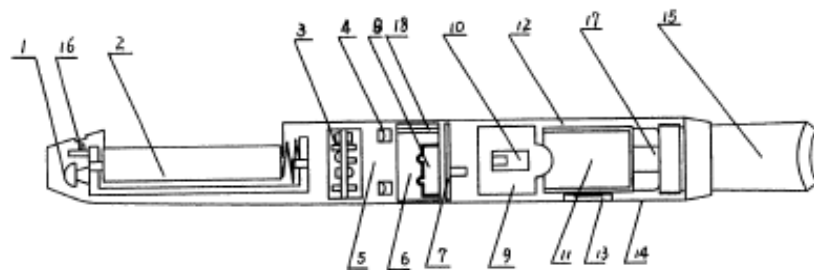


Claim 3	Hon ‘043 and Whittemore
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the atomizer assembly includes a frame having a run through hole, and a porous component between the frame and the outlet;



Ex. 1003 at Fig. 6.



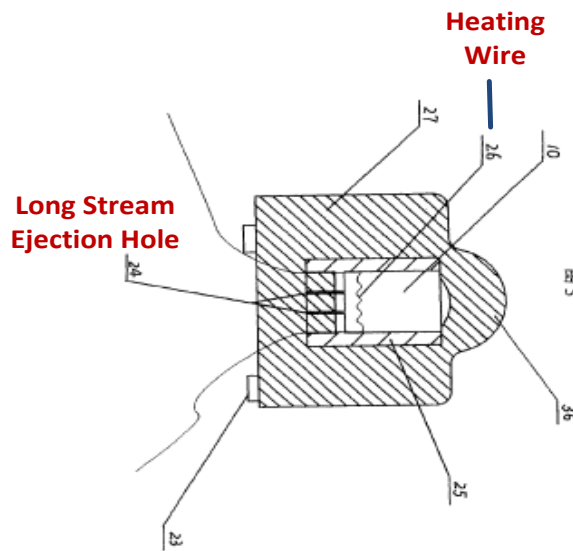
Id. at Fig. 1.

“An ejection hole is provided on the side opposite to the heating element 26 and the ejection hole can be determined to select either a long stream ejection hole 24 or a short stream ejection hole 30, depending on the material used for the atomization cavity wall 25 ... The atomization cavity wall 25 is surrounded with a porous body 27, which can be made of foam nickel, stainless steel fiber felt, high molecule polymer foam and foam ceramic.” *Id.* at 9:17-26; Figs. 6-8.

“The atomization cavity wall 25 is surrounded with a porous body 27, which can be made of foam nickel, stainless steel fiber felt, high molecule polymer foam and foam ceramic.” *Id.* at 9:22-24; Figs. 1, 6-9.

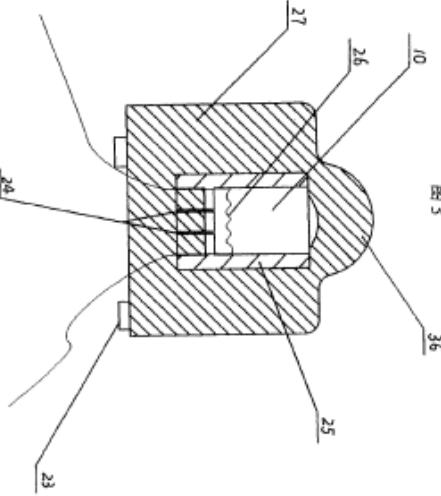
- e. “a heating wire wound on a part of the porous component which is substantially aligned with the run-through hole”

As illustrated in the annotated figure and claim chart below, Hon ‘043 discloses a heating wire 26 that is substantially aligned with the run-through hole (“long stream ejection hole 24,” “short stream ejection hole 30”). Ex. 1003 at 9:14-16; Fig. 6; Ex. 1015 at ¶ 63.



Moreover, for the reasons explained above (*see* *infra* VI.E.1.) it would have been obvious to substitute Whittemore’s wick/heating wire configuration for the heating wire of Hon ‘043.

Claim 3	Hon ‘043 and Whittemore
a heating wire wound on a part of the porous component which is substantially aligned with the run-through hole; and	<u>Hon ‘043</u>

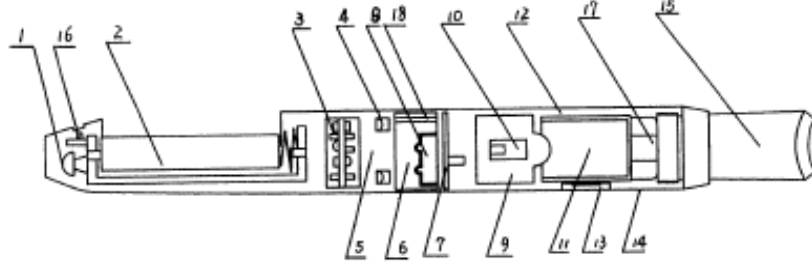
	 <p>Ex. 1003 at Fig. 6.</p> <p>“A heating element 26, which can be made of platinum wire, nickel chromium alloy or iron chromium aluminum alloy wire with rare earth element, is provided within the cavity ...” Ex. 1003 at 9:14-16; Fig. 6.</p> <p><u>Whittemore</u> See claim 2 above.</p>
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f. “with the porous component in contact with a liquid supply in the housing”

As illustrated in the claim chart below, Hon ‘043 discloses the porous component (“the porous body 27”) in contact with a liquid supply (“a liquid-supplying bottle 11”) in the housing (“shell 14”). Ex. 1003 at 9:11-13; 9:22-24; Figs. 1, 6-9; Exhibit 1015 at ¶ 63

Claim 3	Hon ‘043 and Whittemore
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with the porous component in contact with a liquid supply in the housing.



Ex. 1003 at Fig. 1.

“The atomizer 9 is in contact with the liquid-supplying bottle 11 via the bulge 36, and an atomization cavity 10 is provided in the atomizer 9.” *Id.* at 9:11-13; Figs. 1, 6-9.

“The atomization cavity wall 25 is surrounded with a porous body 27, which can be made of foam nickel, stainless steel fiber felt, high molecule polymer foam and foam ceramic.” *Id.* at 9:22-24; Figs. 1, 6-9.

VII. CONCLUSION

Petitioner has demonstrated a reasonable likelihood that claims 2-3 of the ‘742 patent are unpatentable as obvious in view of the prior art identified herein. Petitioner therefore requests that the Board grant *inter partes* review for each of those claims.

Dated: July 2, 2016

Respectfully submitted,

/s/Ralph J. Gabric

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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 5,925 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: July 2, 2016

BRINKS GILSON & LIONE

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on July 2, 2016, a complete and entire copy of this Petition for *Inter Partes* Review, and all supporting exhibits, were served by EXPRESS MAIL® to the Patent Owner by serving the correspondent of record, as indicated below:

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