

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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**R.J. REYNOLDS VAPOR COMPANY,**  
Petitioner,

v.

**FONTEM HOLDINGS 1 B.V.,**  
Patent Owner.

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Case No. **IPR2016-01268**  
Patent No. **8,365,742**

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**PATENT OWNER PRELIMINARY RESPONSE TO PETITION FOR  
*INTER PARTES* REVIEW**

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### LIST OF EXHIBITS

| <b>Petitioner's Exhibits</b> |                                                                                    |
|------------------------------|------------------------------------------------------------------------------------|
| <b>Exhibit</b>               | <b>Description</b>                                                                 |
| Ex. 1001                     | U.S. Pat. No. 8,365,742 to Lik Hon                                                 |
| Ex. 1002                     | Chinese Pat. No. 2719043Y to Lik Hon                                               |
| Ex. 1003                     | Certified English translation of Chinese Pat. No. 2719043Y to Lik Hon              |
| Ex. 1004                     | U.S. Pat. No. 2,057,353 to C. L. Whittemore, Jr                                    |
| Ex. 1005                     | Application Data Sheet of April 5, 2011 Filed in U.S. Pat. Appl. No. 13/079,937    |
| Ex. 1006                     | Preliminary Amendment of April 5, 2011 Filed in U.S. Pat. Appl. No. 13/079,937     |
| Ex. 1007                     | Non-Final Office Action of July 19, 2012 in U.S. Pat. Appl. No. 13/079,937         |
| Ex. 1008                     | Amendment of August 3, 2012 in U.S. Pat. Appl. No. 13/079,937                      |
| Ex. 1009                     | PCT Pub. No. WO2007131449                                                          |
| Ex. 1010                     | English translation of PCT Pub. No. WO2007131449                                   |
| Ex. 1011                     | Board's Decision Denying Institution in IPR2015-00859                              |
| Ex. 1012                     | Patent Owner's Preliminary Response to Petition for IPR of U.S. Pat. No. 8,365,742 |
| Ex. 1013                     | Petition for IPR of U.S. Pat. No. 8,365,742 in IPR2015-00859                       |
| Ex. 1014                     | Board's Order Dismissing Petition IPR2015-01587                                    |

|          |                                                                                          |
|----------|------------------------------------------------------------------------------------------|
| Ex. 1015 | Declaration of Dr. Robert Sturges                                                        |
| Ex. 1016 | Rohsenow, “Heat, Mass, And Momentum Transfer”                                            |
| Ex. 1017 | WO 2005/099494, which is the PCT application equivalent of Hon (CN 2719043) (“Hon ‘494”) |
| Ex. 1018 | Certified English translation of WO 2005/099494 pursuant to 37 C.F.R. 42.63(b)           |

| <b>Patent Owner's Exhibits</b> |                                                                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>Exhibit</b>                 | <b>Description</b>                                                                                                                  |
| Ex. 2001                       | Declaration of Richard Meyst                                                                                                        |
| Ex. 2002                       | <i>RESERVED</i>                                                                                                                     |
| Ex. 2003                       | <i>RESERVED</i>                                                                                                                     |
| Ex. 2004                       | Summary of Examiner Interview of 08/14/2012 Interview in U.S. Patent Application No. 13/079,937 issued as U.S. Patent No. 8,365,742 |
| Ex. 2005                       | Robinson U.S. Patent No. 1,775,947                                                                                                  |
| Ex. 2006                       | Counts U.S. Patent No. 5,144,962                                                                                                    |
| Ex. 2007                       | Susa EP Patent No. 0 845 220B1                                                                                                      |
| Ex. 2008                       | Statement of Related Applications filed 12/22/2015 in U.S. Patent Application No. 13/740,011                                        |
| Ex. 2009                       | <i>RESERVED</i>                                                                                                                     |
| Ex. 2010                       | Notice of Allowance dated 6/21/2016 in U.S. Patent Application No. 13/740,011                                                       |
| Ex. 2011                       | Statement of Related Applications filed 4/3/2014 in U.S. Patent Application No. 14/244,376, issued as U.S. Patent No. 9,326,548     |

|          |                                                                                                                                  |
|----------|----------------------------------------------------------------------------------------------------------------------------------|
| Ex. 2012 | Examiner Interview Summary of 12/1/2015 Interview in U.S. Patent Application No. 14/244,376, issued as U.S. Patent No. 9,326,548 |
| Ex. 2013 | Statement of Related Applications filed 1/13/2016 in U.S. Patent Application No. 14/244,376, issued as U.S. Patent No. 9,326,548 |
| Ex. 2014 | Notice of Allowance dated 3/15/2016 in U.S. Patent Application No. 14/244,376, issued as U.S. Patent No. 9,326,548               |

## I. INTRODUCTION

Fontem Holdings 1 B.V. (“Patent Owner”) requests that R. J. Reynolds Vapor Company’s (“Petitioner” or “Reynolds”) Petition for *Inter Partes* Review of U.S. Patent No. 8,365,742 (“the ’742 Patent”) be denied under 35 U.S.C. § 314(a) because the Petition fails to establish “that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition,” and under 35 U.S.C. § 325(d) because the same Ground was already rejected by the Board in a previous IPR petition. The Petition challenges claims 2 and 3 but does not challenge claim 1.

Ground 3 of the petition in IPR2015-00859 is the same as the sole Ground and arguments in this Petition. Ex. 1013 at 5, 34-35. The prior petition was denied because there was no motivation to modify or combine the references as claimed and the references did not disclose the claim limitation “a porous component supported by a frame.” Ex. 1011 at 22-25. Here, the Board should deny the Petition for the same reasons as the Board previously denied the same Ground and arguments.

First, in the prior IPR, the Board found that the “Petitioner does not provide sufficient explanation as to why a person having ordinary skill in the art would have wanted to provide ‘more efficient, uniform heating’ in the Hon cigarette. Petitioner does not direct us to, nor do we discern, statements in Hon or Susa with

respect to the efficiency—or inefficiency—of atomization within the described articles. Petitioner’s unsupported, conclusory statements do not constitute articulated reasoning with rational underpinnings as to why one of ordinary skill in the art would modify Hon in view of Susa’s teachings to arrive at the claimed invention.” Ex. 1011 at 19 . Here, Petitioner asserts the same motivation to combine and modify the references as the prior IPR petition, namely, “simple thermodynamics.” Petitioner’s “simple thermodynamics” argument here suffers from the same flaws and should be rejected again.

Similarly, regarding the missing “frame” limitation the Board found that “the petitioner . . . failed to explain adequately how the cavity wall 25 in Hon ‘043 provides support for porous component 27.” Petition (Paper 2) at 4 (citing Ex. 1011 at 16). Here, Petitioner points to the same element as allegedly disclosing the “frame” limitation, namely, the cavity wall 25 of Hon ’043. But, Petitioner’s assertion that the same “cavity wall 25” is the claimed “frame” here fails because that cavity wall 25 does not support a porous component just as the Board found in the previous IPR. Ex. 1011 at 15-16.

Accordingly, Patent Owner requests that the Petition be denied.

## **II. BACKGROUND**

### **A. The '742 Patent**

The '742 Patent generally relates to an “aerosol electronic cigarette.” Ex. 1001, Title. The '742 Patent explains that the disclosed device can provide nicotine, without depriving the user of the “smoking habit,” meaning a user uses the device like a traditional cigarette so that the device simulates the feel and experience of smoking. Ex. 1001 at 1:18-20. The problem to be solved is not just in the ability to efficiently deliver nicotine like the nicotine patch or gum. The rituals of the smoking must be provided. Ex. 2001 at ¶ 11.

One of the problems the '742 Patent addresses in prior art electronic cigarettes is the lack of atomizing efficiency: “The electronic cigarettes currently available on the market . . . are complicated in structure. They don't provide the ideal aerosol effects, and their atomizing efficiency is not high.” Ex. 1001 at 1:21–24. The '742 Patent focuses on this problem by addressing how air flows through an electronic cigarette in combination with how liquid contacts a heater to be vaporized. Ex. 2001 ¶¶ 11-12.

Air flow is a key concept in the '742 Patent. The resistance to air flow through the electronic cigarette during inhalation should generally simulate that of a real tobacco cigarette. If the air flow resistance is too high, the user's inhalation effort will be unduly high and the air flow rate through the e-cigarette (which

entrains the nicotine vapor) will be too low. On the other hand, if the air flow resistance is too low, the user will inhale excessive air and the air flow rate will be too high. In either case, the ratio of air to atomized liquid will cause a user to inhale too much air and not enough atomized liquid or vice versa. Ex. 2001 at ¶ 12.

In one embodiment, the '742 Patent discloses an improved atomizer configuration that addresses both airflow and vaporization. The '742 Patent states: “the atomizer assembly is an atomizer (8), which 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).” Ex. 1001 at 5:43–49 . That embodiment is shown in Figures 17 and 18 (reproduced below), showing the heating wire (83) wound on a part of the porous component (81) in alignment with run-through hole 821.

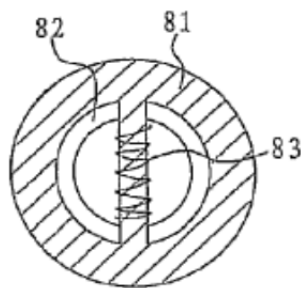


Figure 17

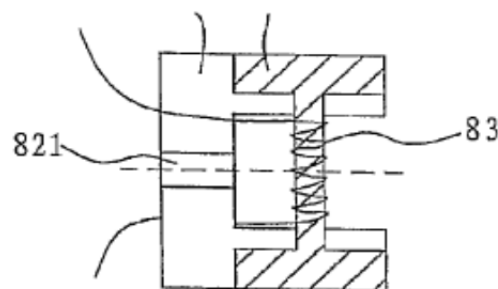


Figure 18

As shown in Figure 18, the run-through hole (821) is aligned with portion of the porous component (81) in contact with the heating wire (83) such that the line-of-site to the run-through hole 821 is partially or fully blocked. This alignment may be visualized by the result of poking a hypothetical rod through run-through hole 821. The hypothetical rod will hit heating wire 83. The context of the '742 Patent shows that “substantially aligned with the run-through hole” means the porous body is in line with or in the path of the run-through hole. Ex. 2001 at ¶ 21.

In embodiment shown in Figure 17 and 18 air flows freely into the atomizer through the run-through hole and is directed to the heating wire because the wire is aligned with the run through hole. Those design elements help to improve the aerosol effects and atomizing efficiency of the claimed electronic cigarette. Ex. 2001 at ¶ 13.

The '742 Patent claims recite an atomizer according to the above embodiments. Claims 2 and 3 of the '742 Patent both require “a frame” having a “run-through hole” and “a heating wire wound on a part of the porous component.” Claim 2 further requires that the heating wire be “in the path of air flowing through the run-through hole” and claim 3 requires that the heating wire be “substantially aligned with the run-through hole.” Finally, claim 2 further recites that the frame “support[s]” the porous component and claim 3 recites that the “porous component [is] between the frame and the outlet.”

**B. The Prosecution History of the '742 Patent**

In the Office Action dated July 19, 2012, the Examiner identified Hon '043 as the closest prior art of record. Ex. 1007 at 3. During the Examiner Interview on August 14, 2012, Hon '043 (specifically its PCT equivalent Hon WO/2005/099494) was discussed. Ex. 2004 at 1. Robinson U.S. Patent No. 1,775,947, Ex. 2005; Counts US Patent No. 5,144,962, Ex. 2006; and Susa EP 0 845 220, Ex. 2007, were also discussed at the Examiner Interview. Ex. 2004 at 1. Each of these references discloses a wire heating coil.

**C. The Prior IPR Petitions on the '742 Patent**

A first petition that was filed was IPR2015-00859 filed on March 10, 2015 by VMR Products LLC. Ground 3 of the VMR Petition (Hon '043 modified by Whittemore) is identical to the single ground in the present Petition filed by Reynolds. The Board denied institution of the VMR's Petition on September 16, 2015. Ex. 1011 at 31.

A second Petition IPR2015-01587 was filed by JT International S.A., on July 14, 2015, relying on Takeuchi, Cox, Brooks and Whittemore. This second Petition was dismissed via agreement of the parties before any institution decision by the Board. Ex. 1014 at 2.

Two additional IPR petitions have been filed on the '742 Patent. The Board has not issued a decision on institution for either IPR. The Petitioner here filed

IPR2016-01532 on August 5, 2016 against the '742 Patent asserting the claims are invalid over the publication of its parent application (US2009/0095311) on the basis that the claims of the '742 Patent are not entitled to a priority claim earlier than the actual filing date of the application for the '742 Patent. Another petitioner, Nu Mark LLC, filed IPR 2016-01303 on June 28, 2016 asserting obviousness based on combinations of Takeuchi, Brooks and Whittemore.

### **III. THE PETITION SHOULD BE DENIED UNDER 35 U.S.C. § 325(d)**

In pertinent part, 35 U.S.C. § 325(d) provides:

“In determining whether to institute or order a proceeding under this chapter, chapter 30, or chapter 31, the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.”

In *Arista Networks v. Cisco Systems, Inc.*, the Board denied a petition under 35 U.S.C. § 325(d) in part because “[a]llowing similar, serial challenges to the same patent, by the same petitioner, risks harassment of patent owners and frustration of Congress’s intent in enacting the Leahy-Smith America Invents Act.” IPR 2015-01710, 2016 WL 1083023, at \*5 (Feb. 16, 2016).

The same reasoning should apply even if the Petitioner is different. Otherwise, a subsequent Petitioner can simply recycle the same losing petition to harass a patent owner.

Here, Ground 3 of the VMR Petition in IPR2015-00859 is identical to the present Petition. Ex. 1013 at 5. And, the claims, the prior art, the proposed modification of Hon '043 using the wick and wire coil of Whittemore, and the arguments in the VMR Petition are the same as in the present Petition. Ex. 1011 at 22-25 (The VMR Petition refers Hon '494 which is the PCT equivalent of Hon '043--as noted in the description of Petitioner's Ex. 1017 on page V of the Petition.)

The modification of Hon '043 is the same as in the VMR Petition. The present Petition does not cite to anything new in the '742 Patent, or in the Hon '043 patent, or in Whittemore. The Petition does not cite to anything new in the file history, or even any new extrinsic evidence.

The Petition here asserts that it addresses two shortcomings in the previous petition. First, in denying the VMR Petition, the Board found that "the petitioner . . . 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." Petition at 4 (citing 1011 at 17-19, 21-25.). Here, Petitioner asserts that it provides the missing "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.”  
Petition at 4.

But, Petitioner’s rational underpinnings are the same ones rejected in the prior IPR. In denying the VMR Petition, the Board wrote:

Petitioner asserts that a person having ordinary skill in the art would be motivated to modify the Hon electronic cigarette to include a heating wire wound on a porous component “by the interest of providing more efficient, uniform heating” that “would enhance commercial opportunities and make the product more desirable by increasing the efficiency of atomization.” Petitioner does not provide sufficient explanation as to why a person having ordinary skill in the art would have wanted to provide “more efficient, uniform heating” in the Hon cigarette. Petitioner does not direct us to, nor do we discern, statements in Hon or Susa with respect to the efficiency—or inefficiency—of atomization within the described articles. Petitioner’s unsupported, conclusory statements do not constitute articulated reasoning with rational underpinnings as to why one of ordinary skill in the art would modify Hon in view of Susa’s teachings to arrive at the claimed invention.

Ex. 1011 at 19 (citations omitted). The same reasoning applies to the present Petition. Neither Hon '043 or Whittemore contain statements with respect to “more efficient heating, lower heating temperatures, and improved battery life”. No evidence suggests these advantages would be obtained, other than the

conclusory statements in the Sturges Declaration which lack any technical basis or explanation.

Petitioner Reynolds' alleged new rational underpinnings are the same thermodynamics arguments previously presented to the board. Petitioner alleges that:

[S]imple 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.

Petition at 7-8.

In other words, Petitioner's "simple thermodynamics" argument is that "Whittemore's wick/heating wire configuration is more thermally efficient than the

configuration on Hon '043, because the heating element is in direct contact with the liquid that is vaporized.” The previously rejected VMR Petition argued the same thing:

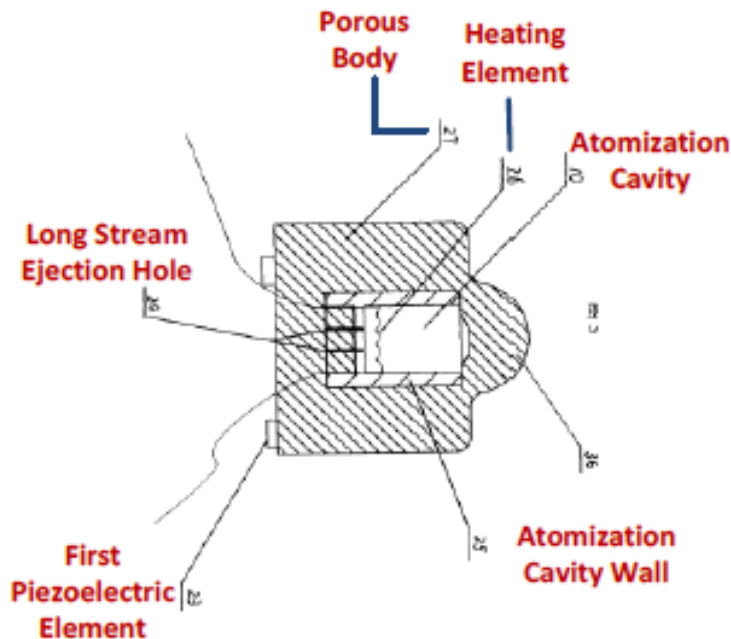
The modification is motivated by the interest of providing more efficient, uniform heating. The winding of the heating coil around the porous component increases the contact area between the component and the coil, in turn, improving heat transfer to the component. Such an improvement would enhance commercial opportunities and make the product more desirable by increasing the efficiency of atomization.

Ex. 1013 at 23 (citations omitted).

Second, for the VMR petition, the Board found that “the petitioner . . . failed to explain adequately how the cavity wall 25 in Hon '043 provides support for porous component 27.” Petition at 4 (citing Ex. 1011 at 16.) Here, Petitioner asserts that it explains how the cavity wall 25 of Hon '043 provides support for porous component 27.” Petition at 4. But, Petitioner’s argument was already rejected in the prior IPR.

The claim limitation at issue is “a porous component supported by a frame” in claim 2. The Petition requires that in Hon '043 the cavity wall 25 support the porous body 27, to meet this limitation. But in Hon '043 the cavity wall 25 is

entirely inside of the porous body 27, as shown in the image below from page 15 of the Petition, so that it cannot support the porous body.



In Hon '043, if the cavity wall 25 is removed the porous body 27 remains as is. If the porous body 27 is removed, the cavity wall 25 falls down.

In the VMR Decision the Board found the atomization cavity wall 25 is a “frame” but the Board was not persuaded that the atomization cavity wall 25 supports a porous component. Ex. 1011 at 15-16. Nothing in the present Petition suggests any different result. The Petition asserts that in Hon '043 the cavity wall 25 supports the porous body 27, based on a presumption of shear forces occurring when the porous body is inserted into the solution storage body 28. Page 16 of the Petition relies on a presumption of a leading edge of the cavity wall supporting the

bulge area 36 of the porous body. Yet, Hon '043 says nothing about shear forces or a leading edge of the cavity wall.

The Board should deny the Petition under 35 U.S.C. § 325(d) because the issues raised by the Petition have already been decided in the VMR Decision.

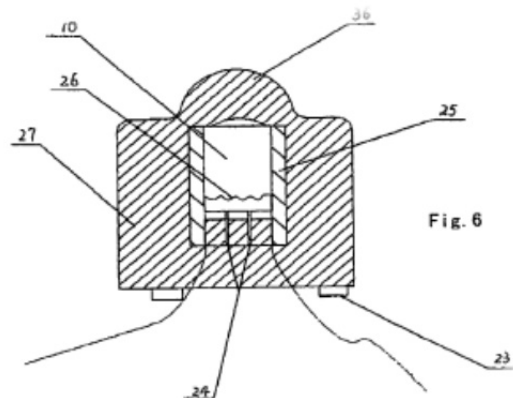
#### **IV. CLAIM CONSTRUCTION**

In the VMR Decision the Board construed “frame” to mean “a rigid structure” and “porous component” 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 at 7-8. Patent Owner disagrees with those constructions for “frame” and “porous component.” But, because those constructions are not relevant to this response, Patent Owner does not dispute those construction here. Patent Owner reserves its right to dispute those constructions if the IPR is instituted.

#### **V. THE PETITION DOES NOT DEMONSTRATE A REASONABLE LIKELIHOOD THAT CLAIMS 2 AND 3 ARE UNPATENTABLE OVER HON '043 IN VIEW OF WHITEMORE**

##### **A. Overview of Hon '043.**

The atomizer of Hon '043 is shown in Fig. 6, right. The elements in these Figures are the porous body 27; the porous



bulge 36; the atomizing cavity 10; the heating element 26; the cavity wall 25; the first piezo element 23 and long stream ejection holes 24. The cavity wall 25 is surrounded by the porous body 27. The wall 25 can be made of aluminum oxide or ceramic. Ex. 1003 at 9.

Fig. 1 of Hon '043, below, shows an embodiment where the atomizer 9 in an electronic cigarette.

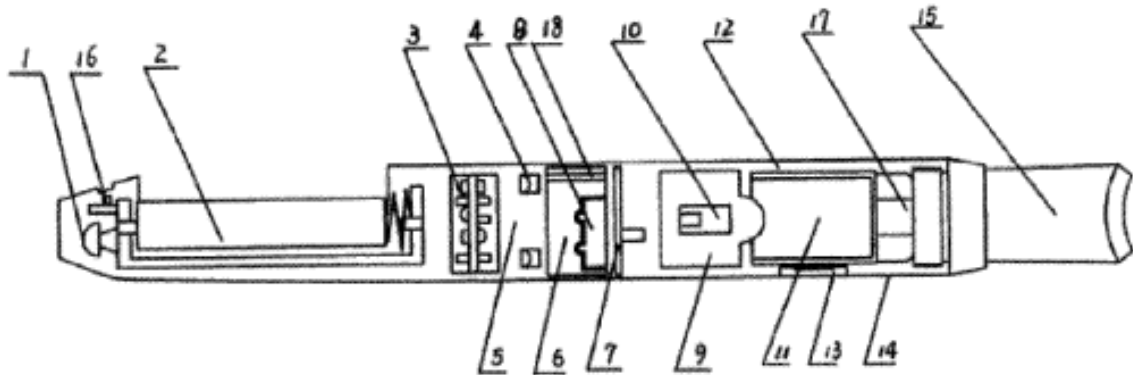


FIG. 1

Hon '043 operates as follows:

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. The 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, 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. After the atomization the large diameter droplets stick to

the wall under the action of eddy flow and are reabsorbed by the porous body 27 via the overflow hole 29, whereas the small diameter droplets float in stream and forms aerosols, which are sucked out via the aerosol passage 12, gas vent 17 and mouthpiece 15.

Ex.1003 at 10-11.

**B. Hon '043 does not disclose a Frame Supporting a Porous Component.**

In the VMR Decision the Board found that the ordinary meaning of “support” is “bear all or part of the weight of: hold up.” Relying on the lack of explanation as to how the porous component 27 is held up by the cavity wall 25 the Board found that the cavity wall 25 does not support the porous body as claimed. Ex. 1011 at 15-16. To the contrary, since the cavity wall 25 is entirely inside of porous body 27, the cavity wall 25 cannot support or hold up the porous body 27. Ex. 2001 at ¶ 28.

The Petition at page 4, 15 and 16, and the Sturges Declaration, Ex. 1015 at paragraphs 44-48, assert that the cylindrical wall 25 is a “frame” which supports the porous body 27 via the following statements:

“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.”

Petition at 15-16.

Hon '043 says nothing about the cavity wall 25 being attached to the porous body, about preventing axial displacement, or shear forces. Hon '043 says nothing about a friction fit or a bonding material. These are factors created purely by the Petitioner and have no factual basis in the record. Regardless, when the porous body is inserted into the solution storage body 28, there are no forces, shear or otherwise, acting on the cavity wall 25, because the cavity wall 25 is inside of the porous body 27 as shown in Fig. 6 of Hon '043. Ex. 2001 at ¶30.

The Petition also asserts that:

“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.”

Petition at 16.

Hon '043 makes no mention of the leading edge of the cavity wall 25. Hon '043 makes no mention of the cavity wall providing radial support to the porous body 27, or any indication that the porous body requires any radial support. Again,

these are factors created purely by the Petitioner without any factual basis in the record.

There is nothing in Hon '043 to support any of these conclusions in the Petition. The porous body does not need, and is not provided with, any radial support. Ex. 2001 at ¶ 35.

The function of the cavity wall 25 in Hon '043 is to provide a surface for large droplets to stick to:

“After the atomization the large diameter droplets stick to the wall under the action of eddy flow and are reabsorbed by the porous body 27 via the overflow hole 29, whereas the small diameter droplets float in stream and forms aerosols, which are sucked out via the aerosol passage 12, gas vent 17 and mouthpiece 15.”

Ex. 1003 at 11.

The cavity wall 25 does not function to support the porous body.

The Petition and the Sturges Declaration show a lack of understanding of what Hon '043 discloses. Pages 25-26 of the Petition and page 33 of the Sturges Declaration describe an air stream moving radially through the atomization cavity wall 25 as indicated in the marked up Fig. 6 from page 26 of the Petition below.

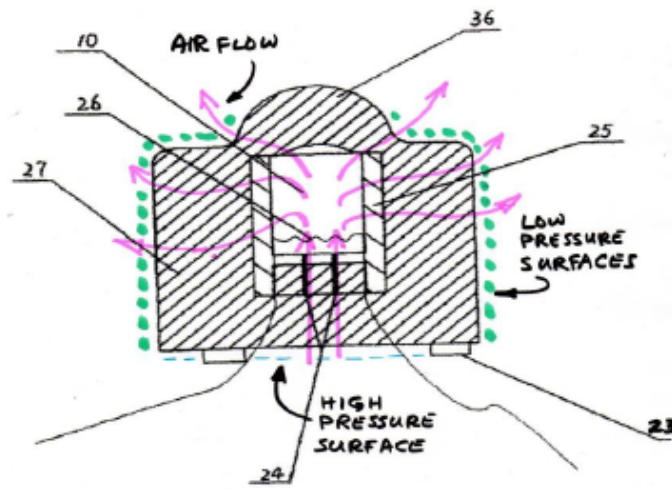
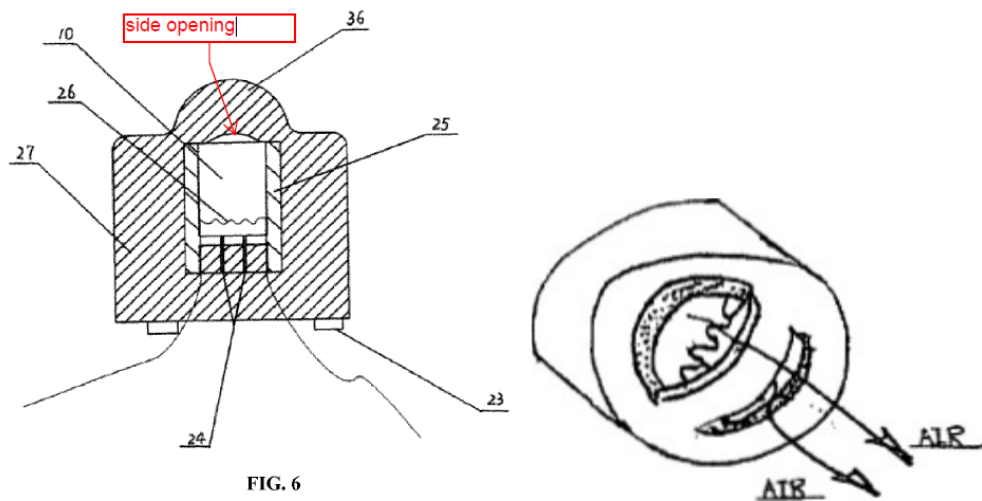


Fig. 6 above indicates air moving radially outwardly through both the cavity wall 25 and the porous body 27. However, the porous body 27 is saturated with liquid from the liquid supplying bottle 11 and it has thick walls. Those factors increase make the porous body's resistance to air flow, particularly where there are open paths with less resistance for air to flow through the device, such as the ejection holes leading into the atomization cavity. Ex. 2001 at ¶ 45. The atomization cavity wall 25 is made of aluminum oxide or ceramic. The atomization cavity wall 25 has overflow holes 29 to allow large droplets to be reabsorbed by the porous body. Ex. 1003 at 11. Those descriptions of the atomization cavity wall mean that it is not permeable.

The cavity wall 25 and the porous body 27 have insufficient permeability, or no permeability, to allow air flow through them. Drawing air through the

cylindrical sidewalls of the porous body by inhaling on the device, as shown in the marked up Fig. 6 from the Petition, would require vacuum well beyond normal inhalation, or not be possible even with high vacuum. That is not how Hon '043 works. Ex. 2001 at ¶ 41.

Instead, Fig. 6 of Hon '043 shows side openings in the porous body 27, as labelled below.



The bulge part 36 of the porous body is a bridge with side openings on either side. In a front view it would appear as shown on the right above. Air flows out through the side openings at the downstream end of the atomization cavity 10, and not radially out through the atomization cavity wall 25 and the side walls of the porous body 27. Ex. 2001 at ¶ 44.

The atomization cavity 10 is open at the upstream end via the ejection holes, and it is open at the downstream end via the side openings. This means that there

is no low pressure area surrounding the porous body 27, as argued at page 16 of the Petition relative to “a porous component supported on a frame”, and there are no high pressure surfaces, and no low pressure surfaces of the porous body 27, as argued at pages 25-26 of the Petition relative to “a heating wire wound on a part of the porous component in the path of air flowing through the run-through hole”. Ex. 2001 at ¶ 44.

The Petition does not argue that Whittemore discloses “a porous component supported by a frame.” As neither Hon ’043 nor Whittemore discloses this limitation, the combination of Hon ’043 and Whittemore also does not disclose “a porous component supported by a frame” as recited in claim 2.

**C. The Petition Provides no Rational Underpinnings for Modifying Hon ’043 in view of Whittemore.**

In the VMR Decision, the Board wrote:

“Petitioner contends that a person having ordinary skill in the art would have been motivated “to wind the coil heater of Whittemore around the porous layer in Hon” to provide more efficient, uniform heating. Id. at 36. As set forth above with respect to the combinations of Hon and Susa, and Hon and Abhulimen, 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 have provided more efficient, uniform heating. See supra Sections II.B.3.b, II.C.3.b. Petitioner does not point to other evidence

or explanation to support its proposed combination of Hon and Whittemore. Consequently, for the reasons set forth above with respect to the modification of Hon and Susa, and Hon and Abhulimen, we determine that the record before us does not establish a reasonable likelihood that Petitioner would prevail in establishing that claims 1–3 of the '742 patent would have been obvious over the combination of Hon and Whittemore.”

Ex. 1011 at 24-25.

The result is the same here as the Petition lacks any reasonable explanation for modifying Hon '043 to include the wick and heater coil of Whittemore. The explanations in the Petition for modifying Hon '043 are at pages 8, 18 and 19, which conclude that the modified Hon '043 would be more thermally efficient because the heating element is in direct contact with the liquid, providing more efficient heating, and lower heating temperatures.

But, the VMR Petition made the same heating efficiency argument as outlined above. Specifically, the VMR Petition argued that “[t]he modification is motivated for the same reasons explained above regarding Hon '494 and Susa (e.g., to provide more efficient, uniform heating).” Ex. 1013 at 36.

The Board found this argument to be not persuasive and denied the Petition. The Board should do the same here.

## **VI. SUBSEQUENT USPTO EXAMINATION RELEVANT TO THE PETITION**

### **A. U.S. Application 13/740,011.**

US Application 13/740,011 is a continuation of the '742 Patent. In this Application, the grounds in the VMR Petition in IPR2015-00859 including the Ground 3 combination of Hon '043 in view of Whittemore were cited in a separate paper filed 12/22/2015. Ex. 2008 at 2-3.

The reasons for allowance in the June 21, 2016 Notice of Allowance in 13/740,011 are:

“The closest prior art neither teaches nor suggests a vaporizing device including a housing having within it an atomizing chamber within which is placed a wire coil heater wound on a porous component connected to a battery.” Ex. 2010 at 7.

The Examiner wrote these reasons for allowance with recent knowledge of both Hon '043 and Whittemore.

### **B. U.S. Application 14/244,376 .**

U.S. Application 14/244,376 is a continuation of the '742 Patent. In 14/244,376, a paper filed April 3, 2014 discusses rejections of claims in other applications over Hon '043 or its counterparts. Ex. 2011 at 3-4.

During a Dec. 1, 2015 interview in 14/244,376 with the Examiner and the Examiner's supervisor, the IPR Petitions filed against the '742 Patent were

discussed, including Ground 3 of the VMR Petition in IPR2015-00859. Ex. 2012 at 1. The grounds of VMR Petition were further cited in a separate paper filed Jan. 13, 2016, which paper also discussed the Examiner's rejections of claims in a parent application over Hon '043. Ex. 2013 at 1-2.

In a March 15, 2016 Notice of Allowance in 14/244,376 the Examiner wrote:

“None of the prior art of record teaches nor reasonably suggests an electronic cigarette which includes a heating wire coil would 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. 2014 at 6.

Again, the Examiner wrote these reasons for allowance with recent knowledge of both Hon '043 and Whittemore.

## VII. CONCLUSION

The Petition fails to demonstrate a reasonable likelihood that the petitioner would prevail with respect to any claim of the '742 Patent. Institution of *Inter Partes* Review of any claim of the '742 Patent should be denied.

Respectfully submitted,

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**CERTIFICATE OF COMPLIANCE**

The undersigned certifies that this brief complies with the type-volume limitations of 37 CFR § 42.24. This brief contains 4,939 words as calculated by the “Word Count” feature of Microsoft Word 2010, the word processing program used to create it.

Date: October 7, 2016

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**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that service on Petitioner was made as follows, in accordance with 37 CFR 42.6(e):

*Date of service:* October 7, 2016

*Manner of service:* 1. Electronic submission through the USPTO Patent Trial and Appeal Board End-to-End System  
2. Electronic mail

*Document(s) served:* **PATENT OWNER PRELIMINARY RESPONSE TO PETITION FOR *INTER PARTES* REVIEW**

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