

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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VMR PRODUCTS LLC

Petitioner,

v.

FONTEM HOLDINGS 1 B.V.

Patent Owner.

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Case 2015-000859

Patent No. 8,365,742

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**PATENT OWNER'S PRELIMINARY RESPONSE TO PETITION FOR  
*INTER PARTES* REVIEW OF U.S. PATENT NO. 8,365,742**

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## LIST OF EXHIBITS RELIED UPON HEREIN

Petitioner's Exhibits	
Exhibit	Description
Ex. 1001	U.S. Patent No. 8,365,742 (“the ‘742 patent”)
Ex. 1006	WO 2005/099494, which is the PCT application equivalent of Hon (CN2719043) (“Hon ‘494”)
Ex. 1007	Certified English translation of WO 2005/099494
Ex. 1010	European Patent No. EP0845220 B1 (“Susa”)
Ex. 1011	U.S. Patent No. 5,144,962 (“Counts”)
Ex. 1012	WO 03/034847 (“Abhulimen”)
Ex. 1013	U.S. Patent No. 2,057,353 (“Whittemore”)
Ex. 1014	Litigation Proceedings in CV 14-1645-Rulings on Claims Construction
Ex. 1017	Prosecution History, Non-final Office Action

Ex. 1020	'742 Prosecution History, Examiner Interview Summary
<b>Patent Owner's Exhibits</b>	
<b>Exhibit</b>	<b>Description</b>
2001	Electronic Cigarette: a possible substitute for cigarette dependence by P. Caponnetto et al. 2013; 79:1, 12-19
2002	Safety evaluation and risk assessment of electronic cigarettes as tobacco cigarette substitutes: a systematic review Ther Adv Drug Saf 2014, Vol 5(2) 67-86
2003	e-cigarette definition Dictionary.reference.com
2004	Dkt 93 - 0Joint Claim Construction and Prehearing Statement; Case No. CV14-1645 GW (MRWx)
2005	The New Oxford American Dictionary 2001
2006	Dkt 133 Civil Minutes dated May 7, 2015, Case No. CV 14-1645-GW (MRWx)
2007	US Patent 4,981,522 Nichols et al.
2008	Dkt 34 - Revised Joint Claim Construction and Prehearing Statement, Case No. CV 14-1645-GW (MRWx) and related cases

## 1. INTRODUCTION

VMR Products LLC (“Petitioner”) filed a Petition for *Inter Partes* Review of U.S. Patent No. 8,365,742 (the “’742 patent”) on March 10, 2015. Petition (Paper 2). The Patent Trial and Appeal Board (the “Board”) mailed a Notice of Filing Date Accorded to Petition on March 20, 2015. Notice of Filing (Paper 3).

Pursuant to 37 C.F.R. § 42.107, Fontem Holdings 1 B.V. (“Patent Owner”) submits this Preliminary Patent Owner Response requesting that the petition be denied because the Petitioner has failed 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” under 35 U.S.C. § 314(a).

Petitioner’s request for *Inter Partes* Review should be denied because none of the prior art relied on in the Petition discloses “a heating wire wound on a part of the porous component” as required by all the claims. In addition, none of the prior art relied on in the Petition discloses a “porous component supported by a frame having a run-through hole” as in claims 1 and 2. These limitations are missing from any combination of the prior art.

So, Petitioner resorts to attorney argument that the missing elements were “well known” and “obvious to one of ordinary skill.” But, “[a]rgument of counsel cannot take the place of evidence lacking in the record.” *Estee Lauder Inc. v. L’Oreal, S.A.*, 129 F.3d 588, 595 (Fed. Cir. 1997) . *See also Velandier v. Garner*,

348 F.3d 1359, 1371 (Fed. Cir. 2003) (attorney argument and conclusory statements, absent evidence, are entitled to little, if any, weight). Petitioner’s expert, Dr. Buckner submits a declaration (Ex. 1002) that is a verbatim copy of the Petition. Pages 18–61 of Ex. 1002 (Ex. 1002-019–1002-062) are identical to pages 15–60 of the Petition (Paper 2). Both documents have the same drafting errors (for example, referring to Hon ‘494 as having the porous layer 46 of Susa, and others). As Ex. 1002 adds nothing, it can be ignored. *Logic Tech. Dev., LLC v. Fontem Holdings 1 B. V.*, IPR2015-00098, Paper 8, May 11, 2015 Decision Denying Institution of *Inter Partes* Review, pages 9–10, (rejecting the declaration testimony of the same Dr. Buckner of Petitioner’s Exhibit 1002 in the present proceeding). *ActiveVideo Networks, Inc. v. Verizon Comm., Inc.*, 649 F.3d 1312, 1327 (Fed. Cir. 2012) (rejecting “conclusory and factually unsupported” expert testimony regarding obviousness). See also *Kinetic Tech., Inc. v. Skyworks Solutions, Inc.*, IPR2014-00529, Paper 8, September 23, 2014, Decision Denying Institution of *Inter Partes* Review, page 15 (PTAB 2014) (“Merely repeating an argument from the Petition in the declaration of a proposed expert does not give that argument enhanced probative value.”).

Accordingly, institution of Inter Partes Review of any claim of the ’742 patent should be denied.

## 2. CLAIM CONSTRUCTION

In an *inter partes* review proceeding, “[a] claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears.” 37 C.F.R. § 42.100(b). Under that standard, primacy is given “to the language of the claims, followed by the specification. Additionally, the prosecution history, while not literally within the patent document, serves as intrinsic evidence for purposes of claim construction.” *Tempo Lighting v. Tivoli*, 742 F.3d 973, 977 (2013). Moreover, claims are construed from the perspective of one of ordinary skill in the art at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).

Petitioner offers no substantive analysis on claim construction. Instead, Petitioner relies solely on the constructions in other proceedings, primarily the companion district court decision.

### 2.1 Electronic Cigarette

Patent Owner’s Construction	Petitioner’s Construction
An electronic device that simulates the feel and experience of a traditional cigarette without burning.	None.

The broadest reasonable interpretation of the term “electronic cigarette” is “an electronic device that simulates the feel and experience of a traditional

cigarette without burning.” The ’742 patent is directed to an “electronic cigarette. The title of the ’742 patent is an aerosol “electronic cigarette.” Ex. 1001-001, ‘742 patent, title. Claim 1 of the ’742 patent recites an “aerosol electronic cigarette” in the preamble. Ex. 1001-014, ’742 patent, 6:6. Claims 2 and 3 recite an “electronic cigarette” in the their respective preambles. Ex. 1001-014, ‘742 patent, 6:27, 6:39.

The problem solved by the ’742 patent is discussed at col. 1, lines 5–25.

Smoking causes serious respiratory system diseases and cancer, though it is hard to persuade the smokers to completely quit smoking.

Nicotine is the effective ingredient in cigarettes. Nicotine acts on the receptor of the central nervous system....

To provide cigarette substitutes that contain nicotine but not harmful tar, many products have been used. These products are not as harmful as tar, but are absorbed very slowly. As a result, smokers can't be satisfied in full. In addition, the smokers are deprived of the “smoking” habit.

The electronic cigarettes currently available on the market may resolve the above-mentioned issue, though they are complicated in structure. They don't provide the ideal aerosol effects, and their atomizing efficiency is not high.

Ex 1001-012, '742 patent, 1:5–25.

The problem to be solved is not just in efficiently delivering nicotine. The rituals of the smoking must also be provided. The solution to the problem is the claimed electronic cigarette which both efficiently provides nicotine and also provides the smoking habit. The smoking habit is provided via a device that simulates the feel and experience of a traditional cigarette. Researchers assessing smoking cessation products have recognized that the “efficacy with NRTs [nicotine replacement therapy], as with other anti-smoking medication, is modest because it addresses only the physical component of cigarette smoking (i.e. nicotine dependence), and is unlikely to resolve the psychological factors (cognitive and behavioral including handling, holding and puffing a cigarette) associated with cigarette smoking.” Caponnetto, P., *et al.*, *Electronic cigarette: a possible substitute for cigarette dependence*, 79:1 Monaldi Arch. Chest Dis. 12, 13 (2013) (citations omitted) (Ex. 2001).

In contrast “[electronic cigarettes] are unique in that they provide rituals associated with smoking behavior (e.g. hand-to-mouth movement, visible ‘smoke’ exhaled) and sensory stimulation associated with it.” Farsalinos, K.E., *et al.*, *Safety evaluation and risk assessment of electronic cigarettes as tobacco cigarette substitutes: a systematic review*, 5[2] Ther. Adv. Drug Saf. 67, 68 (2014) (citations

omitted) (Ex. 2002). As such, electronic cigarettes may “provide a coping mechanism for the conditioned smoking cues by replacing some of the mechanisms associated with smoking gestures (e.g., hand-to-mouth action of smoking), and for these reasons it is now perceived as a more attractive substitute for smoking. . . .” *Id.* at 13.

And Dictionary.com defines “e-cigarette” as “a device used to simulate the experience of smoking, having a cartridge with a heater that vaporizes liquid nicotine instead of burning tobacco.” <http://dictionary.reference.com/browse/e-cigarette> (last visited 06/18/2015). Ex. 2003.

In fact, four days after filing the Petition, in related district court litigation Petitioner agreed that, as used in the ’742 patent, the term “electronic cigarette” had that same meaning. *Fontem v. NJOY*, Case No. 14-1645, Dkt. 93, Ex. A (Ex. 2004).

Accordingly, the broadest reasonable construction of “electronic cigarette” is “an electronic device that simulates the feel and experience of a cigarette without burning.” Petitioner does not disagree.

## 2.2 Porous Component

Patent Owner’s Construction	Petitioner’s Construction

A component of the atomizer assembly having pores or interstices and providing for absorption or diffusion of liquid.	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. Petition at page 7 (Paper 2).
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The '742 patent claims recite the following regarding the porous component:

- the atomizer includes a porous component and heating wire (claims 1–3);
- the porous component is supported by the atomizer frame having a run-through hole (claims 1 & 2);
- the porous component is between the atomizer frame and the outlet (claim 3);
- the heating wire is wound on a part of the porous component (claims 1–3); that is substantially aligned with the run-through hole (claims 1 & 3) or in the path of air flowing through the run-through hole (claim 2);

- the porous component is positioned substantially within the cigarette bottle assembly (claim 1);
- the porous component is substantially surrounded by the liquid storage component (claim 2);
- the porous component is in contact with a liquid supply in the housing (claim 3).

As described in the '742 Patent, the porous component provides “liquid absorption and diffusion, and the ability to absorb liquid stored in the cigarette bottle assembly.” Ex. 1001-013, '742 Patent, 3:25–26. And, that it “absorbs the cigarette liquid from the perforated component for liquid storage....” Ex. 1001-013, '742 Patent, 3:66–67. The function of the porous component is to draw liquid from the liquid storage to the atomizer for vaporization. That is why the porous component is in the atomizer assembly, has a coil wrapped around it, and is in contact with the liquid supply. It is not merely a component that has holes.

Petitioner proposes that the Board accept the definition of porous component from IPR2013-00387, which involved the parent patent (USPN 8,156,944) to the '742 patent. Petition at page 7 (Paper 2). Petitioner offers no analysis why that construction is proper for the claims of the '742 patent. As explained above, based

upon the claims and the disclosure of the '742 patent, a porous component is something more than a component that simply has holes.

### **2.3 Liquid supply and liquid storage component**

<b>Patent Owner's Construction</b>	<b>Petitioner's Construction</b>
A supply of liquid; a component that stores a supply of liquid.	None. But not limited to a liquid supply bottle.

Claims 2 and 3 of the '742 patent recite a “liquid storage component” and a “liquid supply,” respectively. “Liquid supply” means exactly what it says: a supply of liquid. Similarly, a “liquid storage component” is a component that stores a supply of liquid. The '742 patent specification discloses “[a] component for liquid storage of the cigarette bottle assembly stores the nicotine liquid.” Ex. 1001-012, '742 Patent, 1:38–39. “The perforated component for liquid storage (9) is made of such materials as PLA fiber, terylene fiber or nylon fiber, which are suitable for liquid storage” and “[t]he perforated component for liquid storage (9) of the cigarette bottle assembly and the porous component (81) of the atomizer (8) contact each other to achieve the capillary impregnation for liquid supply.” Ex. 1001-013, '742 Patent, 3:1–54, 4:36–40.

## 2.4 Frame

Patent Owner's Construction	Petitioner's Construction
A firm structure designed to hold up another component.	A rigid structure. Petition at pages 7–8 (Paper 2).

The '742 patent claims recite an atomizer having a frame, the frame has a run-through hole. Claims 1 and 2 state that the frame supports the porous component.

The '742 patent specification reads:

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**), and the heating wire (**83**) wound on the porous component (**81**). The frame (**82**) has a run-through hole (**821**) on it.

Ex. 1001-014, '742 Patent, 5:42–47.

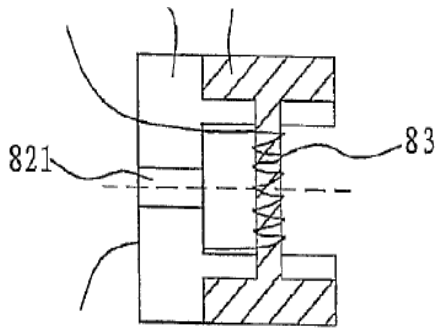


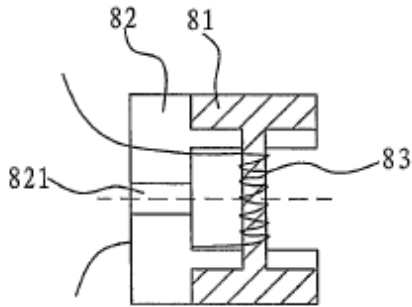
Figure 18

The Petition cites to the claim construction ruling in CV14-1645 (Ex. 1014). Petition at page 7 (Paper 2). In Ex. 1014, the Court acknowledges that “rigid” introduces some measure of ambiguity, and observed that “the ‘742 patent identifies the ‘frame’ as a firm structure designed to hold up another component.” Ex. 1014-008. In the context of the ‘742 patent, this is the better interpretation, particularly because “supported by” means “held up” as set forth below. Thus, frame should be construed as “a firm structure designed to hold up another component.”

## 2.5 Supported by

Patent Owner’s Construction	Petitioner’s Construction
Held up by; <i>i.e.</i> , bearing all or part of the weight of;	None.

Claims 1 and 2 of the '742 patent recite a porous component that is



supported by a frame. The '742 patent specification discloses and illustrates such an embodiment in Figs. 17 and 18 (left). The description of Figs. 17 and 18 includes:

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), and the heating wire (83) wound on the porous component (81). The frame (82) has a run-through hole (821) on it. Ex. 1001-014, '742 Patent, 5:42–47.

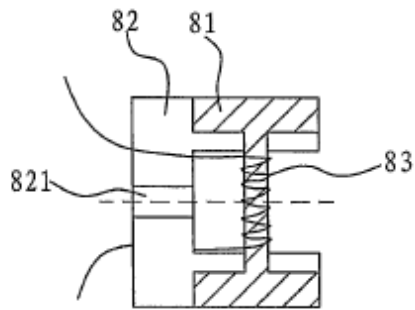
The New Oxford American Dictionary defines “support” to mean “1. Bear all or part of the weight of: hold up.” Ex. 2005 at 1708 (2001).

Thus, as illustrated by Fig. 18 and the disclosure of the specification, the broadest reasonable interpretation of “supported by” is its ordinary meaning of “held up by, *i.e.*, bearing all or part of the weight of.”

## 2.6 Heating wire wound on a part of the porous component

Patent Owner’s Construction	Petitioner’s Construction

The heating wire is wrapped around and in contact with a part of the porous component.	None
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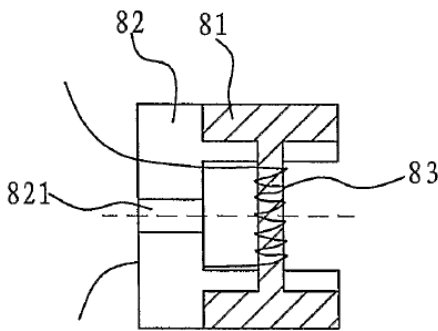


Claims 1–3 of the '742 patent recite “a heating wire wound on a part of the porous component.” The '742 patent specification discloses and illustrates such an embodiment in Figs. 17 and 18. The description of Figs. 17 and 18 includes: “The porous component (81) is wound with heating wire (83) in the part that is on the side in the axial direction of the run-through hole (821).” Ex. 1001-014, '742 Patent, 5:47–49. Fig. 18 (left) shows the heating wire is in contact with the part of the porous component. Consistent with the above construction of the porous component to draw liquid from the liquid supply to the atomizer for atomization, the heating wire is “wound **on** a part of the porous component.” Emphasis added. The word “on” further indicates that the wire touches the component. The New Oxford American Dictionary defines “on” to mean “1. Physically in contact with and supported by (a surface).” Ex. 2005 at 1194 (2001).

## 2.7 Run-through hole

Patent Owner's Construction	Petitioner's Construction
A hole extending through	None

Claims 1–3 of the '742 patent recite “a frame” having a “run-through hole.”



The '742 patent specification illustrates a frame with a run-through hole in Fig 18 (left). “The frame (82) has a run-through hole (821) on it.”

Ex. 1001-014, '742 Patent, 5:46–47. Fig. 18 to the left shows the run-through hole 821 extending

through the frame. The run-through hole is a through hole with open ends.

## 2.8 Substantially aligned

Patent Owners Construction	Petitioner's Construction
At least largely in line with	“Substantially” means largely but not completely. Petition at page 9 (Paper 2).

The Petition at page 9 refers to Ex. 1014, page 26 as supporting Petitioner's construction. Petition at page 9 (Paper 2). However, Ex. 1014, pages 24–25 is directed to the phrases “substantially within” and “substantially surrounded by” in claims 1 and 2, as is clear from the recitation of these phrases at the top of page 25 of Ex. 1014. Ex. 1014-025–1014-026. “Substantially aligned,” the phrase at issue here, is not discussed.

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. 1001-014, '742 Patent, 5:43–49.

In Figs. 17 and 18 of the '742 patent shown below, the heating wire 83 is wound on a part of the porous component in direct alignment with the run-through hole 821.

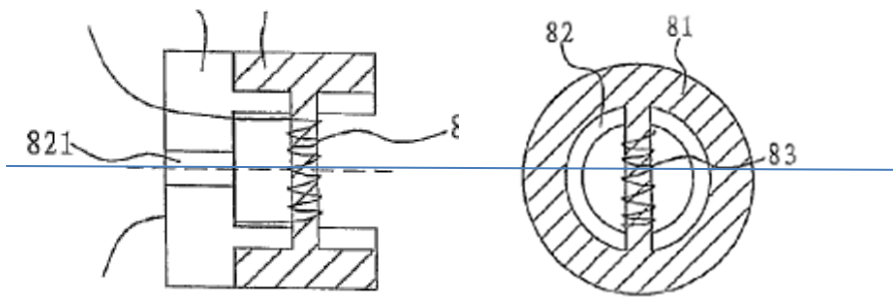


Figure 18

Fig. 17 is a view looking into the right side of the atomizer as it is shown in Fig. 18. The run-through hole 821 is not visible in Fig. 17 because it is hidden behind the part of the porous component on which the heating wire 83 is wound. Consequently, that part of the porous component is aligned with the run-through hole to a degree that the line-of-site of the run-through hole 821 is partially or fully blocked. This alignment is shown by the centerline added through Figs. 17 and 18 above. This alignment may be visualized by the result of poking a hypothetical wire or rod through the run-through hole 821. The hypothetical wire or rod will hit the 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.

As the court reasoned in its second Markman hearing:

Patent drafters often use approximation words - like substantially - to affirmatively indicate that total precision is not required... the Court

would construe “substantially ” as a term of approximation design to capture “minor variations that may be appropriate to secure the invention.” Plaintiffs’ proposed construction - “at least largely - accurately reflects this meaning. It is also consistent with the term’s ordinary meaning when used as a term of approximation. *Fontem Ventures B.V. et al. v. NJOY, Inc. et al.*, Case No. CV 14-1645-GW(MRWx), Ruling on Claim Construction, Ex. 2006 at page 8.

The same definition of substantially should be applied to aligned here, “at least largely in line with.”

## 2.9 Atomizer

Patent Owners Construction	Petitioner’s Construction
A component that converts liquid into aerosol or vapor.	None

The broadest reasonable interpretation of the term “atomizer” is a “component that converts liquid into aerosol or vapor.” Petitioner (along with its co-defendants in related litigation) already agreed to that construction. *Fontem v. NJOY*, Case No. 14-1645, Dkt. 34 at 7 (Ex. 2008).

Claims 1 , 2 and 3 recite an “atomizer” that includes a “frame,” “porous body,” and a “heating wire.” The ‘742 patent specification discloses that “the atomizer (8) works to atomize the cigarette liquid and produce gas flow, which enters the cigarette holder shell (b).” Ex. 1001-014, ‘742 Patent, 5:21–23. And, that:

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), 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. 1001-014, ‘742 Patent, 5:42–49.

Thus, the broadest reasonable interpretation of the term “atomizer” is a “component that converts liquid into aerosol or vapor.”

### **3. SUMMARY OF THE ARGUMENTS**

#### **3.1 Heating Wire Wound on a Part of the Porous Component**

None of the prior art relied on in the Petition discloses “a heating wire wound on a part of the porous component” as required by all the claims.

### **3.2 Frame Having a Run-Through Hole**

None of the prior art relied on in the Petition discloses a “porous component supported by a frame having a run-through hole” as in claims 1 and 2.

Consequently, these limitations are necessarily missing from any combination of the prior art.

### **3.3 Law of Obviousness**

Even if the prior art is modified as proposed in the Petition to create these limitations, there is still no reasonable likelihood of the claims being found to be unpatentable because the Petition offers no reason to combine the prior art as described in the Petition. Rather the Petition simply states conclusions of obviousness with no articulated reasoning. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 401 (2007).

"A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *Id.*

"[I]nventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." *Id.*, 550 U.S. at 419. To prove obviousness, Petitioners must show that "there was an apparent

reason to combine the known elements in the fashion claimed by the patent at issue." *Id.* at 418. The analysis "should be made explicit." *Id.*

"[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal standard of obviousness." *Id.* at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

#### **4. EXAMINATION OF THE ‘742 PATENT**

The Petition at page 13 cites to the First Office Action (Ex. 1017-003–1017-004) as supporting the contention that the Examiner determined that “only one limitation was lacking” from Hon ‘043. Petition at page 13 (Paper 2). The Examiner’s statement of reasons for allowance in Ex. 1017 is:

The Examiner believes that the closest prior art of record, namely the CN 2719043 reference, neither teaches nor reasonably suggests an aerosol electronic cigarette having the claimed combination of structural features, including “an atomizer, which includes a porous component and a heating body; the said heating body is heating wire...the heating wire is wound on the said porous component. Ex. 1017-003–1017-004.

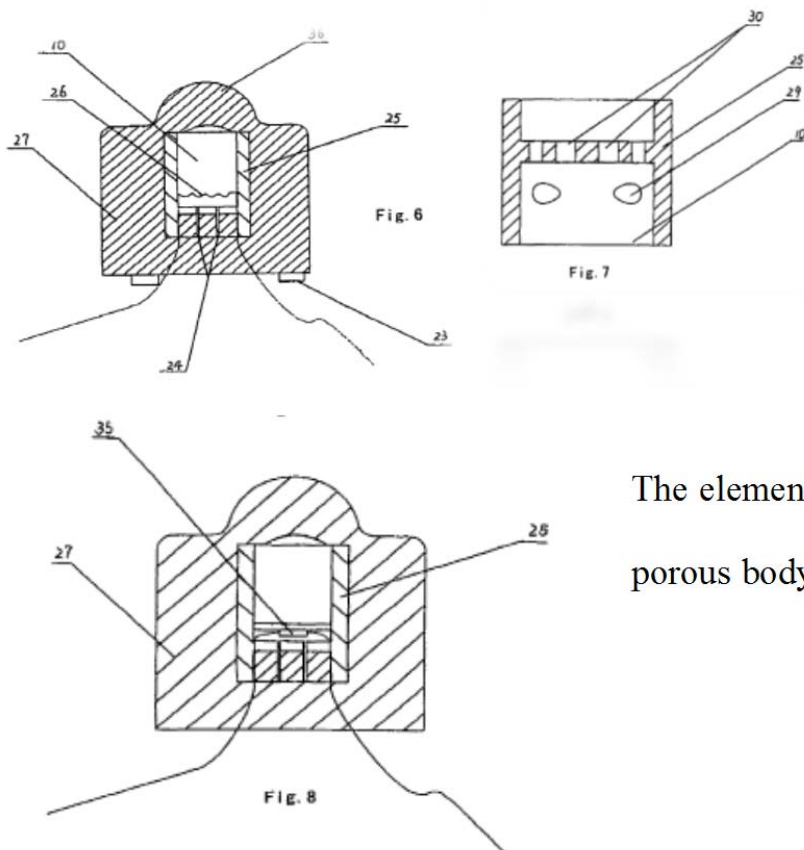
Among the claimed combination of structural features (in addition to the atomizer) are the frame, the run-through hole, and the part of the porous aligned with the run-through hole. The Examiner did not conclude that “only one limitation was lacking.”

**5. RESPONSE TO GROUND 1: THE PETITION SHOWS NO REASONABLE LIKELIHOOD THAT CLAIMS 1–3 ARE UNPATENTABLE OVER HON 494 IN VIEW OF SUSA**

**5.1 Overview of Hon ‘494**

The Petition refers to various equivalent “Hon” publications which are Exs. 1004–009. For consistency, this paper refers only to Ex. 1007 (Hon ‘494) as Ex. 1007 is primarily cited in the Petition.

The atomizer of Hon ‘494 is shown in Figs. 6–8.



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. 1007-005, Hon '494, lines 27–38. The unlabeled extended lines in Figs. 6 and 8 are the wire leads of the heating element 26.

Element 23 in Fig. 6 and element 35 in Fig. 8 are both piezoelectric elements, which may be omitted, with atomization then made only by the heating element 26. Ex. 1007-006, Hon '494, lines 41–43.

Fig. 7 is an inverted view of the cavity wall 25. The wall 25 is cylindrical. The holes 30 are short stream ejection holes. Hon '494, Ex. 1007-005:26–32. The smaller holes to the outside of the holes 30 are holes for the unlabeled heating wire leads. The holes 29 are overflow holes. Ex. 1007-005, Hon '494, line 26. Fig. 8 shows a modified design having a second piezo element 35. Ex. 1007-006, Hon '494, lines 44–47.

Operation of Hon '494 is explained at Ex. 1007-006, Hon '494, lines 21–33, which reads:

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 M1 and is further atomized by the heating element RL. After the atomization the droplets with large diameter 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 droplets with small diameter float in stream and forms aerosols, which are sucked out via the aerosol passage 12, gas vent 17 and mouthpiece 15.

Ex. 1007-006:21–33.

Hon ‘494 was discussed at the August 14, 2012 Examiner Interview. Ex. 1020.

## **5.2 Hon ‘494 Has No Frame Supporting a Porous Component**

In Hon ‘494 the porous body 27 of the atomizer 9 is arranged within the shell 14. Ex. 1007–003:17–18. There is no frame or any element disclosed in Hon ‘494 which supports the porous body. The Petition at page 21 asserts that the cylindrical wall 25 is a “frame” which supports the porous body. Petition at page 21 (Paper 2). The word support, however, means to “bear all or part of the weight of; to hold up.” Ex. 2005 at 1708. However, the wall 25 is supported from below

and laterally by porous body 27. The wall 25 is a liner within the porous body which forms the atomization cavity 10. The wall 25 that is entirely within the porous body 27 does not support the porous body. To the contrary, the porous body 27 supports the wall 25 as the porous body hold the wall in place.

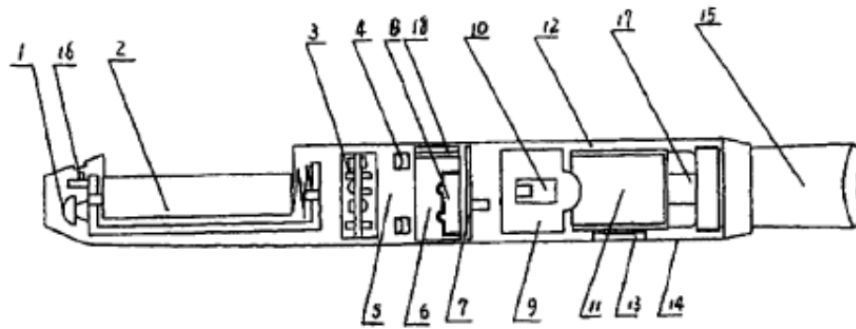


Fig. 1

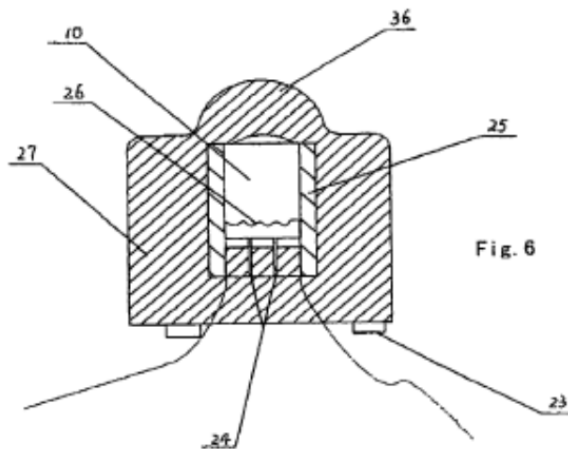
Page 21 of the Petition (and the corresponding ¶54 of Dr. Buckner's declaration) argues that the vapor-liquid separator 7 is also a frame that supports the porous component 27. Petition at page 21 (Paper 2), Ex. 1002-025, ¶54. The purported basis for this conclusion is that Hon "discloses an atomizer that includes a vapor liquid separator." However, the citation that allegedly supports that conclusion is Hon '494, Ex. 1007-003:40-41 which reads:

The present invention includes a shell; a mouthpiece; an air inlet provided in the external wall of the shell; an electronic circuit board, a normal pressure cavity, a sensor, a vapor-liquid separator, an atomizer, a liquid-supplying bottle arrange sequentially in the shell;...

Nowhere does Hon '494 disclose that the vapor liquid separator is part of the atomizer. And, for good reason. The function of the vapor liquid separator is to separate both the vapor created by the atomizer and the liquid from the liquid supply from the electronics which are upstream from the vapor liquid separator. This is shown in Fig. 1 above from Hon '494, which illustrates that the atomizer 9 is spaced apart from the vapor-liquid separator 7. They are not attached to each other, as such the vapor-liquid separator cannot support the porous component 27 of atomizer 9.

### **5.3 Hon '494 has no heating wire wound on a part of the porous componen**

At page 33 the Petition admits that Hon '494 does not disclose a heating wire wound on a part of the porous component. Petition at page 33 (Paper 2). As



shown in Fig. 6 of Hon '494, the heating element 26, which may be a wire, extends across the atomization cavity 10 between the opposite sides of the wall 25. In Hon '494, the heating element 26 is not wound on

anything.

## 5.4 Overview of Susa

As shown below, in Figs. 1 and 3 of Susa, liquid 36 flows from a container 36 to a piezo device discharge head 34 which forms droplets applied onto a ceramic heater 42 having a porous layer 46. The Petition at page 23 contends that the claimed porous component is disclosed via the porous layer 46 of Susa. Susa explains:

The liquid material 36 from the material container 32 is supplied first through a narrow flow path 142, and flows from a plurality of suction holes 144, having a smaller diameter than that of the discharge ports 35, to reach the liquid reservoir 146. Under the control of a control circuit 72, when the electrode 138 is operated to vibrate, the liquid material 36 is selectively discharged through the discharge ports 35 having a low resistance against the flow. The discharged liquid material 36 is supplied onto the ceramic heater 42 as a liquid drop LD. Ex. 1010-005 at 7:7–16.

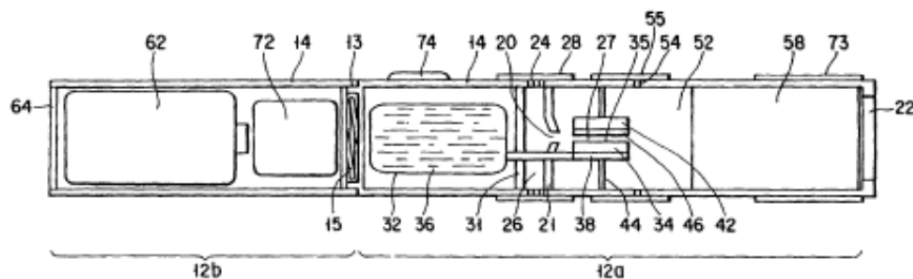


FIG. 1

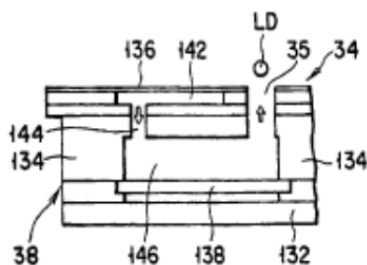


FIG. 3

The porous layer 46 on the ceramic heater 42 is provided to protect the heater surfaces and to relax heat conduction from the heater 42, thereby stabilizing gasification of the splash of the material. Susa describes the porous layer as follows:

A liquid-absorbing porous layer 46 having a thickness of 0.01 mm to 2.0 mm, e.g., an activated carbon layer having a thickness of about 0.5 mm, is formed on a surface of the ceramic heater 42 that receives the liquid splash of the material, i.e., a surface of the ceramic heater 42 that serves as the catch pan. The porous layer 46 not only protects the surface of the ceramic heater 42 but also relaxes heat conduction from the ceramic heater 42, thereby stabilizing gasification of the splash of the material. The porous layer 46 can be formed of an organic compound, e.g., natural cellulose, a cellulose derivative, or an aramid resin, or an inorganic compound, e.g., carbon (including activated carbon), alumina, or silicon carbide. The porous layer 46 can have an arbitrary shape. Ex. 1010-005 at 7:50–8:6.

In use a drop of liquid is splashed onto the porous layer 46 on the heater and the liquid is vaporized, as Susa explains: “[a] material corresponding to

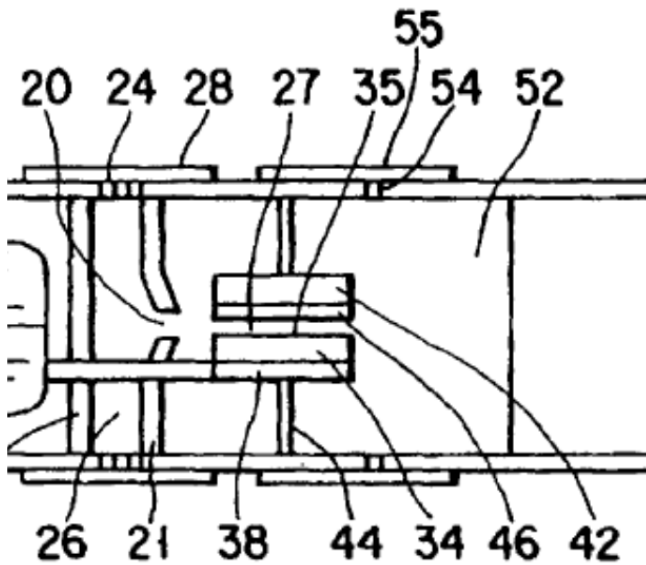
one puffing operation, which is driven by the discharge drive portion 38 and emitted from the discharge ports 35 is supplied onto the ceramic heater 42 in the form of a liquid splash or liquid drop.” Ex 1010-005 at 7:39–43.

At page 22 the Petition cites to a support member 44 in Susa. The entire description of the support member in Sousa is:

- “The ceramic heater 42 is disposed in the gas flow path 26 to oppose the discharge ports 35. The ceramic heater 42 is fixed on the inner surface of the casing main body 14 through a support member 44.” Ex. 1010-005 at 7:29–32.
- “Air that has flowed into the article flows on the ceramic heater 42 because it is regulated by a support member 44 supporting the ceramic heater 42. Ex. 1010-008 at 13:20–23.
- “Although no throttle plate 21 (see FIG. 1) is disposed in a gas flow path 26, a support member 44 of the ceramic heater 42 is formed to have a slit only at its central portion corresponding to the discharge head 34..” Ex 1010-005 at 17:4–7.

Susa was discussed at the August 14, 2012 Interview with the Examiner. Ex. 1020.

**5.5 Susa Has No Frame with a Run-Through Hole and No Porous Component in Contact with or Substantially Surrounded by a Liquid Supply**



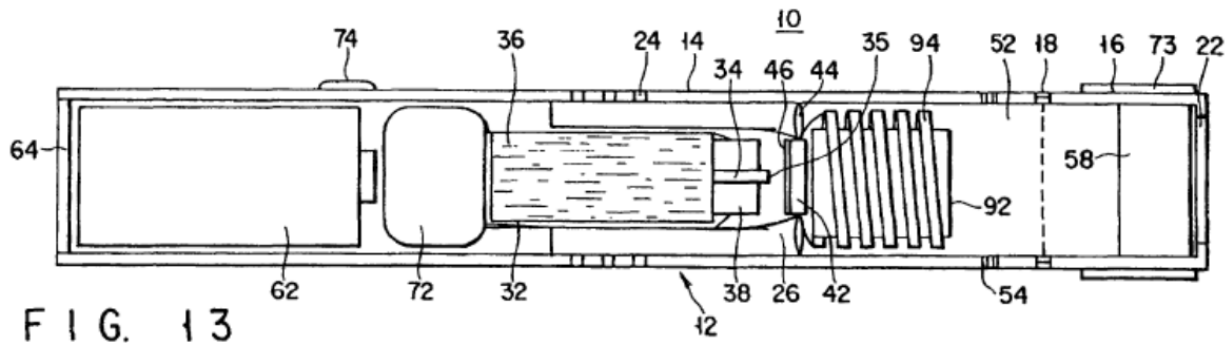
The support member 44 in Susa supports the discharge head 34 and the ceramic heater 42. The support member 44 has no run-through hole, as the slit or opening is between the discharge head 34 and the ceramic heater 42.

Susa also has no porous component in contact with or surrounded by a liquid supply. Liquid supply 32 is separated from the porous layer 46 by a conduit and is sprayed onto porous layer 46 by piezo device discharge head 34a.

**5.6 Susa Has No Heating Wire Wound on a Porous Component**

The Petition at page 22 refers to a coil heater 94 in Fig. 13 of Susa. However, the coil heater 94 is not wound on the porous layer 46, which the Petition asserts discloses the claimed porous component. The embodiment in Fig. 13 gasifies liquid in the same way as in Fig. 1 discussed above, that is via liquid projected from the discharge head 34 onto a now vertical porous layer 46 on the ceramic heater 42. The coil heater 94 together with the formed body 92 generate

flavor by heating, but presumptively without gasifying where liquid contacts a heated surface, as in Fig. 1. Susa illustrates Fig. 13 as follows:



Referring to Fig. 13 above, the Petition at pages 22–23 does not assert that the formed body 92 discloses the claimed porous component element. Rather the Petition posits that the vertical porous layer 46 in Fig. 13 is a “porous component”, and that it would be obvious to first modify Susa to wind the coil heater 94 around the porous layer 42, and then take Susa as modified and combine it with Hon ‘494.

In order to make that cognitive leap, the Petition at page 22 asserts that formed body 92 “has qualities and functions similar to the porous layer, for example, it is a ‘material that generates a flavor or the like to be inhaled by the user’ including containing ‘an extracted materials and/or the constituent components of various types of natural materials in accordance with the application purpose,’ including a ‘tobacco component.’” The Petition cites to the

section of Susa that describes the formed body. Tellingly, neither the Petition nor Dr. Buckner cite to anything that attributes these so-called “qualities” and “functions” to the porous layer 46. And, for good reason. These are not the qualities and functions of porous layer 46. Porous layer 46 is an activated carbon layer having a thickness of about 0.5 mm which functions to protect the surface of the ceramic heater 42 and relax heat conduction from the ceramic heater 42.

The modification of Hon ‘494 in view of Susa, as shown in the image labelled “Proposed Combination” on page 23 of the Petition, raises certain questions:

1. As the porous layer 46 in Susa is on the ceramic heater 42 and is heated by the ceramic heater 42, what is the motivation for winding a heating coil around the already heater porous layer? If the motivation is to create more heat, clearly a person of ordinary skill would simply use a more powerful ceramic heater. A reference is presumed operable until facts are presented rebutting the presumption of operability. MPEP 2121.02 I. The ceramic heater 42 in Susa is presumed to be operable.

At page 23 the Petition states the motivation for the modification of Hon ‘494 is provide more efficient, uniform heating. The reason for the need to do so is not articulated, but presumably it relates improving heat transfer. Yet, neither

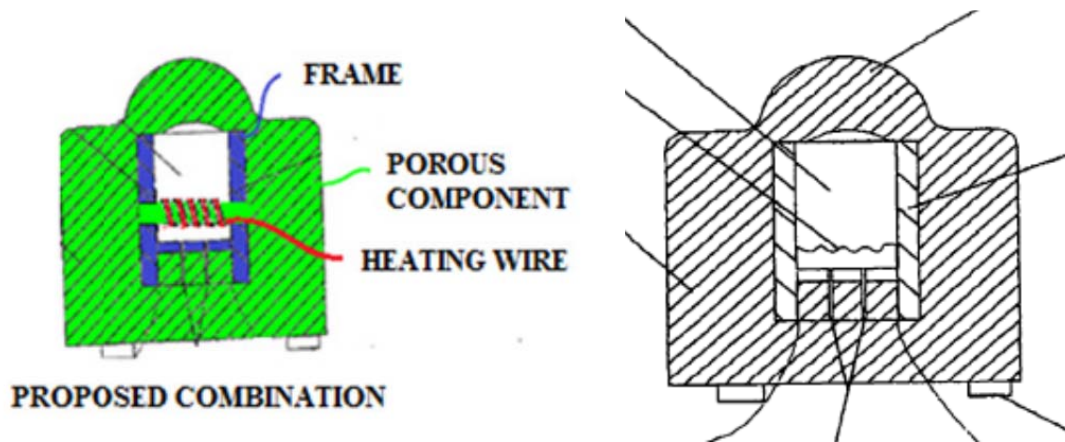
Hon ‘494 nor Susa focus on heat transfer. The predicate step to create the proposed combination is to add a duplicative second coil heater around the existing ceramic heater in Susa which would be less efficient, as both heaters would require battery power. The Petition offers no such facts or any reasoning on why a person of ordinary skill would be led to the Proposed Combination.

2. Considering that in all embodiments, Susa teaches projecting droplets of liquid onto a ceramic heater (having a porous layer) to gasify the liquid, how can Susa reasonably also suggest adding a coil wrapped around that ceramic heater?

3. Since the porous layer 46 is a flat surface, how is a coil wound on it? Is the coil also wound around the ceramic heater 42 and/or the discharge head 34?

These questions demonstrate that a person of ordinary skill would not make the predicate modification to Susa (wrapping heater coil 94 around porous layer 46) to make the combination with Hon ‘494 as suggested in the Petition. Indeed, even if it the modification were expressly proposed, the person of ordinary skill would reject it.

The “Proposed Combination” from page 23 of the Petition is shown below on the left, with Fig. 8 of Hon ‘494 on the right.



What's wrong with this picture? It results only from hindsight reasoning. The Petition provides no explanation as to how to make the modification. The Petition provides no motivation for the modification, other than improving efficiency and uniform heating via some form of improved heat transfer—even though Susa (the source of the coil) says nothing about heat transfer; or [1] moving the coil from the formed body 92 to the porous layer 46; [2] reducing the size of the coil so that it can fit with the atomizer; [3] putting the coil inside a porous component such as depicted above with Hon '494; or [4] reorienting the Susa's formed body coil with a quarter turn rotation. Where does the unshaded green cross part of the porous component (on which the coil is wound) come from? There is no similar element in Hon '494 or in Susa. Correspondingly, there is no similar element in the combination of Hon '494 and Susa.

That hindsight analysis is reaffirmed at page 25 of the Petition which argues that the “it would be obvious to wind the coil heater described in Susa

around the porous component in the ‘742 patent.” (emphasis added). Dr. Buckner makes the exact same statement in his declaration. Ex. 1002-029, ¶61. The obviousness analysis does not include combining the prior art with the patent for which *inter partes* review is requested. Even assuming that the Petitioner meant Hon ‘494, and not the ‘742 patent, no reasoning is provided.

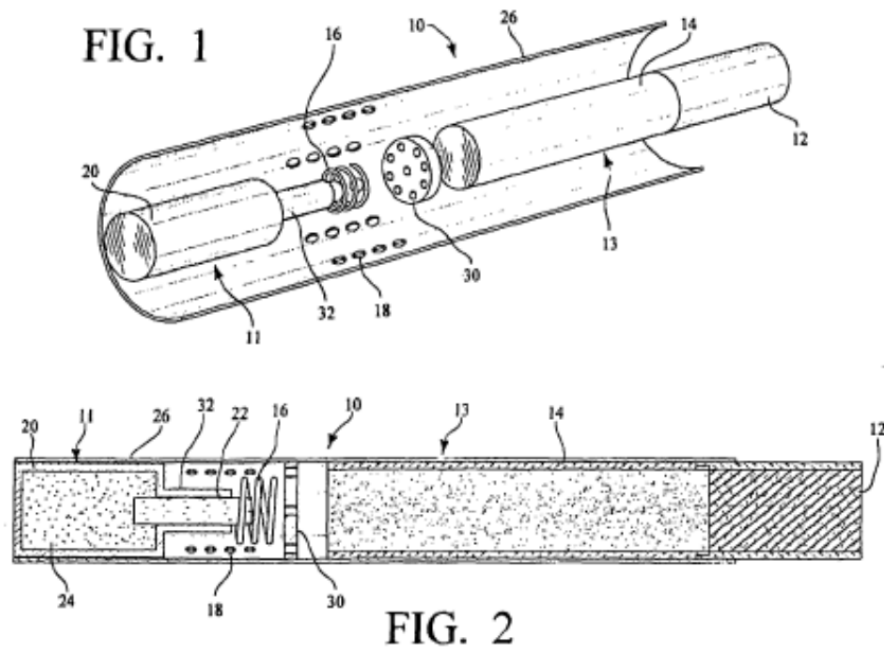
Ground 1 of the Petition fails because the combination of Hon ‘494 and Susa do not disclose or render obvious “heating wire wound on a part of the porous component” as in claims 1–3.

**6. RESPONSE TO GROUND 2: THE PETITION SHOWS NO REASONABLE LIKELIHOOD THAT CLAIMS 1–3 ARE UNPATENTABLE OVER HON 494 IN VIEW OF ABHULIMEN**

**6.1 Overview of Abhulimen**

Abhulimen uses a liquid fuel to heat a tobacco rod. Ex. 1012-001, Abstract. Abhulimen teaches away from using a battery and an electrical heating element.

“Other devices include an electrical heating element for stimulating an aerosol forming substance. Although these are capable of being turned off between puffs, the electrical heating element requires a battery which requires extra efforts by the consumer and also is generally quite cumbersome.” Ex. 1012-003, paragraph 3.



The fuel element 11 includes has a fuel tank 20 filled with a fuel cartridge 24 comprising a porous medium. The fuel element 11 also has an extended wick 22 and a glow element 16. The fuel element 11 is encased in one end of the tubular wrapper 26, which wrapper is provided with a plurality of puffing air inlets 18 which are located slightly upstream of the glow element 16, so that during use puffing air is brought in through the inlets 18 and provides oxygen for the burning of the fuel in the wick 22. The glow element 16 is a coil made out of copper wire filament or other heat conducting or glowing materials, and is inserted at the open end of the ceramic tube 32. Ex 1012-006, paragraph 2.

In use, the glow element 16 is lit using a commercially available lighter, such as a butane type lighter. The heat diffuser 30 blocks the flame from contact

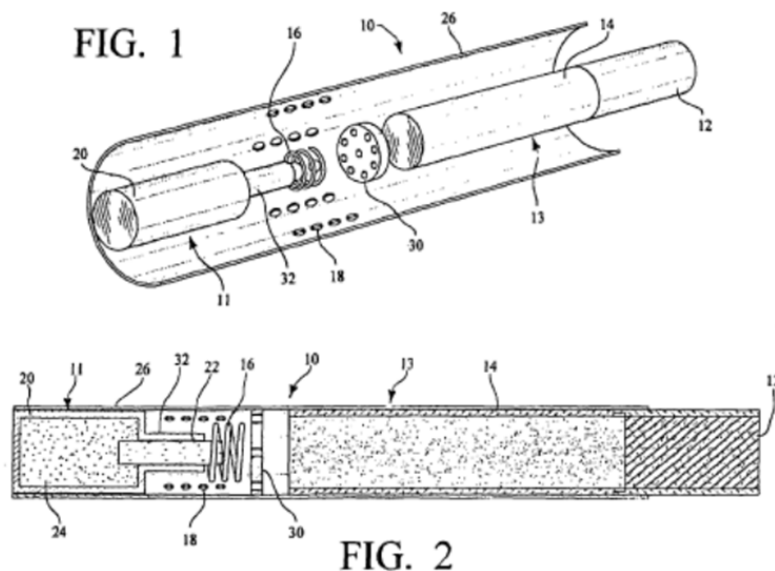
with the cigarette 13 upon the application of suction at the filter end or mouth end of the cigarette by the user. This facilitates preventing ignition and substantial burning of the cigarette 13. Between puffs, the filament 16 maintains its glow. When ready to extinguish the smoking article, the fuel supply is cut off by sliding a sleeve or the like over the tubular wrapping covering the puffing air inlets 18, thereby cutting the air supply and causing extinguishment. Ex. 1012-006, paragraph 3 to 1012-007, paragraph 1.

## **6.2 Claim Limitations Missing From Abhulimen**

Initially, given the express criticism of use of battery powered electrical heating elements in Abhulimen, the person of ordinary skill would not be motivated to combine elements of Abhulimen with a battery device such as Hon ‘494. Indeed, a fuel and flame heating device as in Abhulimen has little in common with a battery powered aerosol electronic cigarette as in the ‘742 patent. The Petition offers no motivation for combining Abhulimen with Hon ‘494.

Responsive to page 33 of the Petition which proposes that Abhulimen discloses “a heating wire wound on a part of the porous component,” the glow element 16 is not wound on a porous part. The wick 22 may be porous. However, the glow element 16 does not touch the wick, and just barely overlaps the wick. “Wick 22, which is usually non-burning fibres or glass capillary tubes, extends generally a short distance, such as 1-2 mm, into the glow element 16, in this case a

metal filament.” Ex. 1012-006, paragraph 3. See Figs. 1 & 2 below. Wick 22 is shown in Fig.1 as not touching glow element 16. Indeed, the Abhulimen specification confirms the lack of contact when it discloses that the “glow element is adjacent to said wick” and “arranged around the wick,” yet fails to illustrate or describe any embodiment where the glow element is wound on the wick. Ex. 1012-004, paragraphs 7 and 9. Glow element 16 is not wound on a porous component as required by claims 1–3 of the ‘742 patent.



Moreover, the glow element 16 of Abhulimen is not a heating wire. The claimed heating wire is an active element which positively heats liquid to create aerosol. The glow element 16 of Abhulimen is a passive element which is heated by a flame. It receives heat rather than providing heat.

The wick also holds combustible liquid fuel, not nicotine liquid as in the ‘742 patent (Ex. 1001-012 at 1:39). The glow element 16 heats fuel, not liquid used to create an aerosol. Abhulimen does not disclose an atomizer where liquid is converted into aerosol. Rather, Abhulimen is a “heat but not burn” device that heats tobacco. Ex. 1012-003, paragraph 3. The fuel and glow element 16 in Abhulimen simply provide hot air, which flows into the cigarette 13, which is solid.

### **6.3 Claim Limitations Missing From the Combination of Hon ‘494 and Abhulimen**

In view of the content of Abhulimen, replacing the glow element 16 with an actively electrically heated coil; moving the coil over the wick; winding the coil on the wick, *i.e.*, putting the coil in contact with the wick; and then combining Abhulimen, as so modified, with Hon ‘494, would not be obvious to the person of ordinary skill in the art.

Responsive to Ground 2 (Hon ‘494 and Abhulimen), the Petitioner has not shown that the combination of Hon ‘494 and Abhulimen discloses the “heating wire wound on a part of the porous component” limitation of claims 1–3.

Also responsive to Ground 2 the Petition makes no mention of Abhulimen disclosing a “frame,” where “the porous component is supported by a frame” and the frame has “a run-through hole” as in claims 1 and 2; or “a porous component

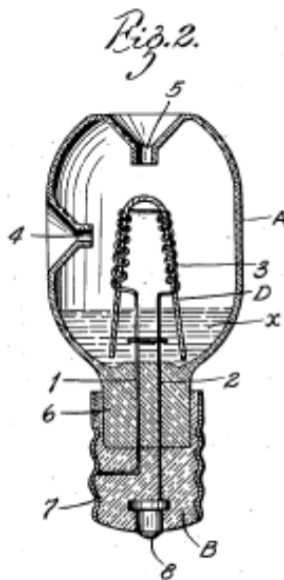
between the frame and the outlet” as in claim 3. Instead, the Petition, page 33, last paragraph simply states the aspirational conclusion that “Hon ‘494 discloses a porous component ‘substantially aligned with the run-through hole’ (claims 1 and 3) and a porous component ‘in the path of air flowing through the run through hole,’ limitations [1.11], [2.5] and [3.4] of claims 1, 2 and 3.” Other than the citation to sections 1.11, 2.5 and 3.4, no explanation as to where these limitations are found in Hon ‘494 is provided. Dr. Buckner, repeats this same statement in his declaration. Ex. 1002-037, ¶ 85.

Sections 1.11 of the Petition asserts that “it would be obvious to wind the coil heater described in Susa around the porous component in the ‘742 patent.” (emphasis added). First, as explained above, this is inappropriate obviousness analysis and reflects Petitioner and Dr. Buckner’s hindsight analysis. Second, section 1.11 reflects that the conclusions of the Petition on page 25 are premised upon the combination of Susa and Hon discussed in 1.11, not Hon alone. Section 2.5 of the Petition argues that “a heating wire wound on a part of the porous component in the path of air flowing through the run-through hole” limitation of claim 2 is also based upon a combination of Susa and Hon and also references 1.11 and its improper obviousness analysis. Section 3.4 of the Petition does the same for “a heating wire wound on a part of the porous component that is substantially aligned with the run-through hole” limitation of claim 3.

**7. RESPONSE TO GROUND 3: THE PETITION SHOWS NO REASONABLE LIKELIHOOD THAT CLAIMS 1-3 ARE UNPATENTABLE OVER HON 494 IN VIEW OF WHITTEMORE**

**7.1 Overview of Whittemore**

Whittemore discloses a vaporizing unit reminiscent of an incandescent light bulb--unrelated to an electronic cigarette. In Whittemore, a wick D is combined with and in contact with a heating element or filament 3. A portion of the wick D



is always in contact with medicament in the vessel A. The vessel A has an air inlet orifice 4 disposed below the upper end of the vessel, and a vapor outlet 5 formed preferably in the top wall of the vessel. The vessel is permanently connected to a terminal plug B, that may be positioned in a terminal socket, such as in the socket of an ordinary flashlight. Ex. 1013-002, Whittemore, 1:49.

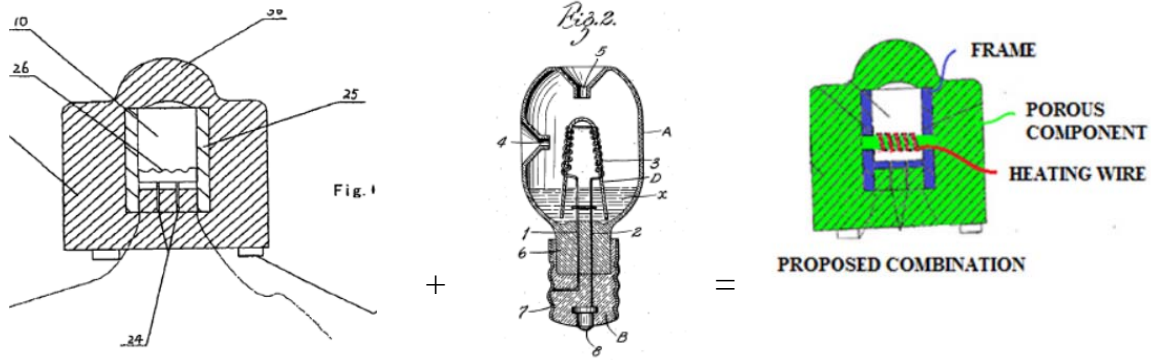
Whittemore is not reasonably combined with Hon '494, even conceptually, because the combination would be non-functional. As shown in Figure 2, above, Whittemore can only be operated in an upright manner (vertically oriented manner) otherwise the medicament would empty out of orifice 4 or outlet 5. Because Hon '494 is meant to be used vertically and in any orientation, the combination would be non-functional.

## **7.2 Claim Elements Missing From The Combination of Hon ‘494 and Whittemore**

Ground 3 at pages 35–36 of the Petition argues that Hon ‘494 discloses each limitation of claims 1–3 except for “a heating wire wound on a part of the porous component” and that Whittemore discloses this limitation. Petition at pages 35–36 (Paper 2). Ground 3 fails at the outset because Hon ‘494 does not disclose a “frame” where “the porous component is supported by the frame” as in claims 1 and 2. Similarly, Whittemore does not disclose a “frame” where “the porous component is supported by the frame.” Hence, the combination of Hon ‘494 and Whittemore does not disclose these limitations.

Whittemore discloses a wire coil filament wound around a wick. The Petition asserts at page 36 that it would have been obvious “to wind the coil heater of Whittemore around the *porous layer* in Hon ‘494 to yield the Proposed Combination discussed, *supra*.” Petition at page 36 (Paper 2) (Emphasis added). Hon ‘494 has a *porous body*, not a *porous layer* as in Susa. Regardless, the Proposed Combination from page 23 of the Petition is shown on the right below.

Ground 3 postulates that Hon ‘494 plus Whittemore renders the claims obvious, as shown below.



What's wrong with this picture?

1. The proposed modification requires the following changes to Hon '494, based only on the content of Whittemore:

A. Cut openings through the wall 25, on opposite sides of the wall 25, at the location of the heater wire 26.

B. Discard the wick of Whittemore and replace it with additional porous body material to create a new section of the porous body 27. Position the newly created section of the porous body so that it extends across the atomization cavity 10. Connect the ends of the newly created section to porous body 27 of Hon '494 by passing the ends of the new section through the newly created openings in the wall 25. The existing overflow holes 29 in the wall 25 (in Fig. 7 of Hon '494) cannot be used for this purpose, as they must remain open to allow overflow in the atomization cavity 10 to be reabsorbed by the porous body 27. Reposition the overflow holes 29 as needed to avoid interfering with the addition of the new section of the porous body 27.

C. Wind the newly added wire coil around the newly added section of the porous body.

D. Remove the jet ejection holes 24 and replace them with a run-through hole which passes entirely through the bottom of the porous body 27 to create an open passageway into the atomization cavity 10. And,

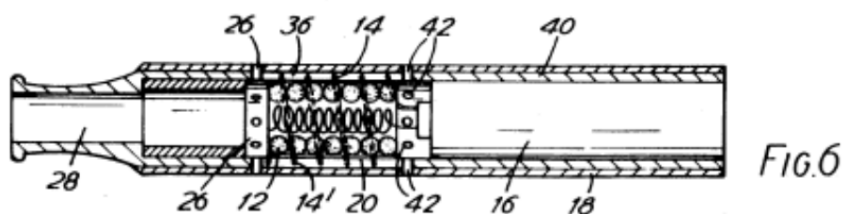
E. Align the newly added run-through hole with the newly added coil wound around the newly added section of the porous body.

Those changes to Hon '494 to arrive at the Proposed Combination are not obvious, initially because all that Whittemore discloses, relevant to Hon '494, is a heating coil wound on a wick. Nothing in Hon '494 or Whittemore suggests the Proposed Combination, or any reason to believe it would improve Hon '494.

## **8. RESPONSE TO GROUND 4: THE PETITION SHOWS NO REASONABLE LIKELIHOOD THAT CLAIMS 1–3 ARE UNPATENTABLE OVER HON 494 IN VIEW OF COUNTS**

### **8.1 Overview of Counts**

In Fig. 6, Counts discloses a flavor delivery device which heats a solid flavor medium 12 using two heating elements 14 and 14'.



A first heating element 14 maintains the temperature of flavor-generating medium 12 at a substantially constant temperature, below the temperature to which flavor-generating medium 12 must be heated to generate the desired aerosol. A second heating element 14' is pulsed with electrical energy to raise the temperature of the medium above the vaporization temperature to produce the desired flavor components.

Flavor-generating medium 12 is captured within tube 20, which may be a metal or other thermally conductive container. Heating element 14 surrounds and can be in thermal contact with tube 20 to heat the contents of the tube. Heating element 14 preferably heats the air drawn through passageway 36 before the air is drawn into tube 20. Heating element 14', which typically may be disposed within flavor-generating medium 12, is pulsed for a predetermined period with electrical energy from power source 16 to generate/release flavor components for each puff. Ex. 1011-013, Counts, 6:18–36.

Counts was discussed at the August 12, 2012 Interview with the Examiner.

Ex. 1020.

## **8.2 Claim Elements Missing From The Combination of Hon ‘494 and Counts**

Ground 4 at pages 36–38 of the Petition argues that Hon ‘494 discloses each limitation of claims 1–3 except for “a heating wire wound on a part of the porous component,” and that Counts discloses this limitation. Petition at pages 36–38 (Paper 2). Ground 4 fails at the outset because Hon ‘494 does not disclose a “frame,” where “the porous component is supported by a frame” as in claims 1 and 2. Similarly, Counts does not disclose a “frame” where “the porous component is supported by the frame.” Hence, the combination of Hon ‘494 and Counts does not disclose these limitations.

The Petition at page 37 relies on Counts as disclosing a heating wire wound on a part of a porous component. This presumes that the flavor generating medium 12 of Counts is a porous component. It is not. All Counts says about the substance of the flavor generating medium 12 is “Flavor-generating medium 12 may be similar to the flavor pellets shown in commonly assigned U.S. patent application Ser. No. 07/222,831, filed Jul. 22, 1988, hereby incorporated by reference in its entirety.” Ex. 1011-012, Counts, 3:65–4:1. Counts suggests nothing about the flavor-generating medium being porous. Ser. No. 07/222,831 (U.S. Patent No.

4,981,522, the ‘522 Patent), which is not cited in the Petition, discloses extruded tobacco pellets with no disclosure of a porous characteristic. Ex. 2007, the ‘522 Patent, abstract. There is no evidence that the flavor-generating medium 12 of Counts is porous. Perforce, it cannot be a porous component.

The person of ordinary skill in the art understands that the claimed porous component is an intermediate liquid conduction element which moves liquid from the liquid storage component to the heating wire. In contrast, in Counts the flavor generating medium 12 is a source of bulk flavor generating medium. Since the flavor generating medium is solid, its contents are fixed in place and do not move, unlike liquid in the claimed electronic cigarette. As a result, the person of ordinary skill in the art would not view the flavor generating medium as a “porous component” for use as in the claims.

In Counts, the flavor-generating medium 12 is captured within tube 20, and the heating wire 14’ surrounds the tube 20 and is in thermal contact with tube 20 to heat the contents of the tube. Ex. 1011-013, Counts, 6:26–30. Consequently, even if the flavor generating medium 12 is presumed to be a “porous component,” the heating wire 14’ is not “wound on a part of the porous component” because the heating wire 14’ does not touch the flavor generating medium at all. Rather, it is wound on and touches the tube 20. The tube is “metal or other thermally

conductive container” which presumptively is not porous. Nothing in Counts suggests that the tube 20 is porous.

Counts therefore does not disclose a heating wire wound on a part of a porous component. This limitation is also not disclosed in Hon ‘494, as admitted in the Petition. The combination of Hon ‘494 and Counts consequently also fails to suggest this limitation.

**9. Response to Ground 5: The Petition Shows No Reasonable Likelihood that Claims 1–3 are Unpatentable Over Susa**

Responsive to page 41 of the Petition, relative to claim 1, in all embodiments of Susa, the liquid container 72 is in the middle of the housing, and not “detachably located at one end of the shell.” Moreover, nothing in Susa suggests that a porous component is “positioned substantially within the cigarette bottle assembly” as required by claim 1, or “substantially surrounded by the liquid storage component” as required by claim 2, or “in contact with a liquid supply” as required by claim 3. In Susa, the liquid supply 32 is separated from the porous layer 46 by a conduit and is sprayed onto porous layer 46 by piezo device discharge head 34a. Because Susa has no porous component in contact with or surrounded by a liquid supply, Petitioner makes the conclusory assertion that these limitations are “an obvious modification” contemplated by Susa and cite to Ex. 1010, Susa, Figs 8–16, col. 17,

lines. 11-19. Petition at page 46 (Paper 2). Yet, the cited Figures do not suggest the modification and column 17, lines 11–19 recite standard boilerplate disclosure:

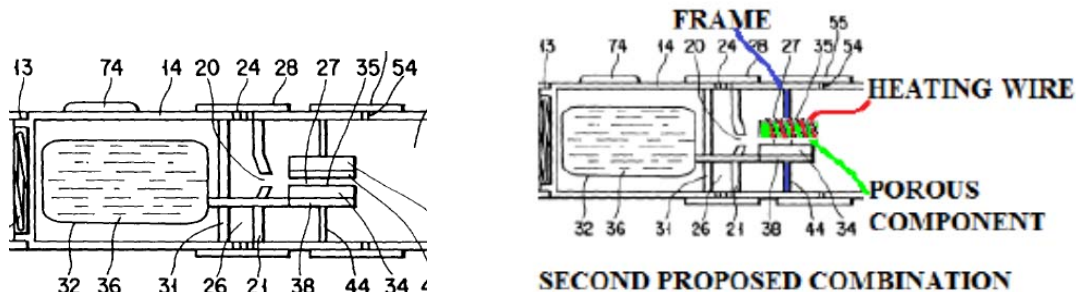
The characteristic features of the respective portions of the present invention have been described divisionally by way of several embodiments in order to facilitate understanding of the present invention. These characteristics can be appropriately combined in accordance with the object. More specifically, the present invention can be practiced in various embodiments other than those shown in the drawings within the spirit and scope of the invention. Ex. 1010-010 at 7:11-19.

No such modification is contemplated by Susa.

Page 43 of the Petition mistakenly equates the coil heater 94 in Fig. 13 of Susa as “the heating body is a heating wire.” The heating element in Susa is the ceramic heater 42. This is the element that converts liquid into vapor. The coil heater 94 is an optional element that heats the formed body 92, which is solid, not liquid. The coil heater 94 is not an atomizer assembly, because it does not atomize. Rather, it is a formed body heater.

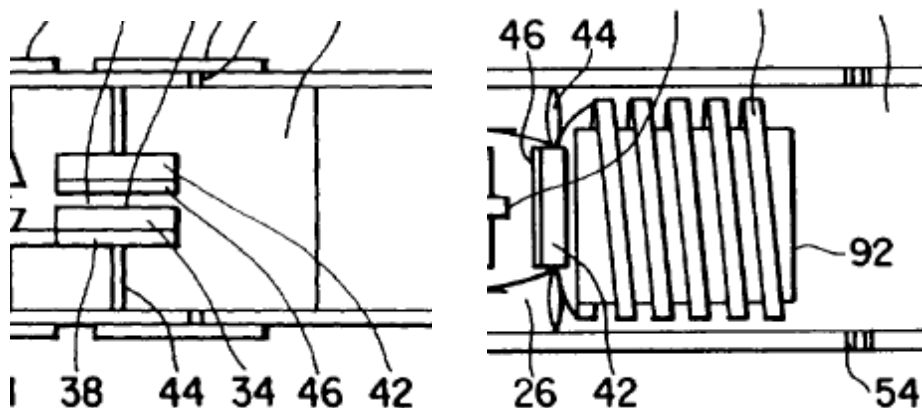
Responsive to pages 43–44 of the Petition, Susa does not disclose a “frame having a run-through hole,” or a “heating wire wound on a part of the porous

component” as explained above in the Response to Ground 1 in Section 5.5 supra. At pages 44–45 the Petition proposes moving the coil heater 94 Susa from its position around the formed body 92, to a position wound around the porous layer 46 on the ceramic heater 42 of Susa, that is modifying Susa Fig. 1 on the left below to the Second Proposed Combination shown on the right below.



What’s wrong with this picture?

1. The coil heater 94 is in the Fig. 13 embodiment of Susa. The Second Proposed Combination is a modification of Fig. 1 of Susa, a different embodiment.
2. The Petition at page 44 argues in support of the Second Proposed Combination on the basis that “the formed body 92 is adjacent to the ceramic heater 42 and porous layer 46. Yet Fig. 1 has no formed body 92.
3. The Petition at page 44 argues in support of the Second Proposed Combination on the basis that the formed body 92 has qualities and functions similar to the porous layer 46.



But, the porous layer 46 in Figs. 1 and 13 above is .01 mm to 2 mm thick. The formed body 92 is a cylinder of solid material. The porous layer 46 is provided to protect the surface of the ceramic heater 42. Ex. 1010-005, Susa, 7:50–57. The formed body 92 is provided to produce flavor. The formed body 92 is a consumable, and it is detachably disposed in a gas flow path 26 between a ceramic heater 42 and a cooling chamber (presumably so that it may be easily replaced). Ex. 1010-008, Susa, 14:57–15:4. The porous layer 46 is not consumed or detachable from the ceramic heater. All embodiments in Susa have a ceramic heater 42. The formed body 92 is an optional feature that (when present) is used with the ceramic heater having the porous layer. The shape, dimensions, position, function, attachment, and useful life of the formed body 92 are entirely different from the porous layer 46.

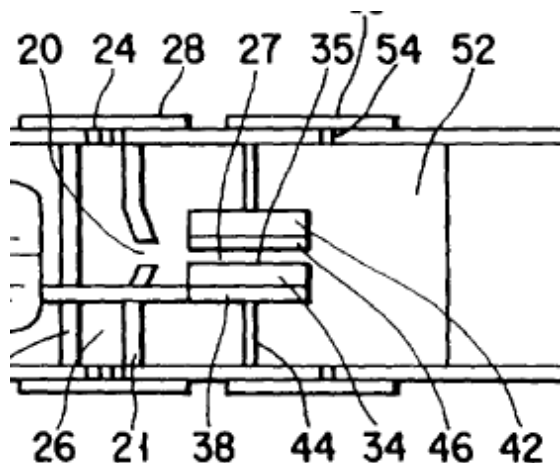
Susa describes no relationship or interaction between the formed body 92 and the porous layer 46. Setting aside unsupported attorney argument, neither does

the Petition. For these reasons the person of ordinary skill would first not be led to the Second Proposed Combination, and second to modifying Hon '494 using the Second Proposed Combination.

At page 45 the Petition states “Given that the coil heater 94 works together with a ceramic heater 42 (containing porous layer 46), it would have been obvious to one of ordinary skill in the art to wind the coil heater around the porous layer to provide the second proposed combination.” The Petition leaves open whether the Second Proposed Modification contemplates adding a second coil heater 94 around the porous layer 46, or just moving the coil heater 94 from the position shown in Fig. 13 to the position shown in the second proposed combination shown above.

Adding a second coil heater 94 is nonsensical, because the person of ordinary skill would not add a second heater (coil heater 94) to an existing heater (ceramic heater 42). Rather, the person of ordinary skill would simply use an adequate existing heater (ceramic heater 42), which is what Susa teaches. Moving the coil heater from the position shown in Fig. 13 to the position shown in the second proposed combination destroys the utility of the embodiment of Fig. 13, because there is then no heater for the formed body 92.

At page 46 the Petition views Susa as disclosing a run-through hole, at the gap 27 between the discharge ports 35 of the discharge head and the ceramic heater 42.



In Susa the throttle plate 21 has a throttle hole 20. However, the Petition at page 44 identifies support member 44 as a frame, not the throttle plate 21. The Petition is then forced argue that the gap 27 is a run-through hole. This argument fails initially because the gap 27 is not a hole at all. It is a gap between the surfaces of the discharge head 34 and the porous layer 46 on the heater 42. The gap 27 is open in the front/back direction and also in the left/right side-to-side direction. The claimed run-through hole 821 is a hole in a frame open only in the front/back direction, as shown in Fig. 18.

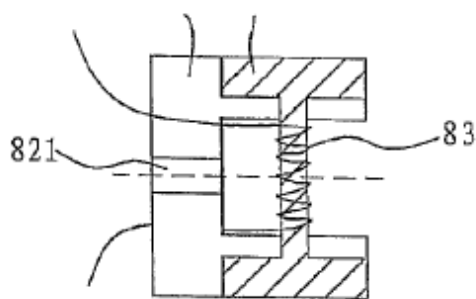


Figure 18

shown in Fig. 18.

Susa also has no “heating wire ... aligned with the run-through hole” as required by claims 1 and 3 because in Susa the gap 27 is at the heater 42, and not in line with or in the path of the run-through hole, as

**10. RESPONSE TO GROUND 6: THE PETITION SHOWS NO REASONABLE LIKELIHOOD THAT CLAIMS 1–3 ARE UNPATENTABLE OVER SUSA COMBINED WITH ABHULIMEN**

As discussed above, neither of Susa or Abhulimen discloses:

- A. “a heating wire wound on a part of a porous component” as required by all claims;
- B. “a heating wire” that is “substantially aligned with the run-through hole” as in claims 1 and 3;
- C. “a heating wire” that is “in the path of air flowing through the run-through hole” as in claim 2;
- D. a frame having “a run-through hole”, as in claims 1–3, or a “porous component supported by a frame having a run-through hole” as in claims 1 and 2.

Correspondingly the combination of Susa and Abhulimen does not disclose those limitations.

**11. RESPONSE TO GROUND 7: THE PETITION SHOWS NO REASONABLE LIKELIHOOD THAT CLAIMS 1–3 ARE UNPATENTABLE OVER SUSA COMBINED WITH WHITTEMORE**

**11.1 Elements Missing From the Combination of Susa and Whittemore**

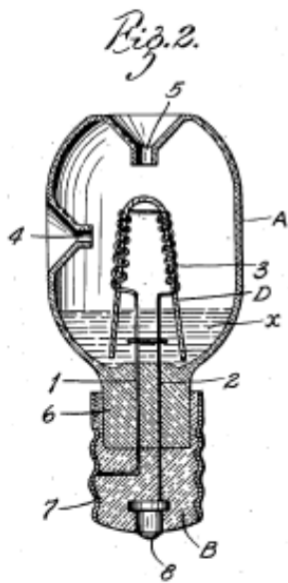
As discussed above, neither of Susa or Whittemore discloses:

- A. “a heating wire wound on a part of the porous component that is substantially aligned with the run-through hole” as in claims 1 and 3;
- B. “a heating wire wound on a part of the porous component in the path of air flowing through the run-through hole” as in claim 2;
- C. a frame having “a run-through hole”, as in claims 1–3, or a “porous component supported by a frame having a run-through hole” as in claims 1 and 2.

Correspondingly the combination of Susa and Whittemore does not disclose these elements.

### 11.2 Whittemore is Not Reasonably Combined with Susa

Whittemore is not reasonably combined with Susa, even conceptually,



because the combination would be non-functional. As shown in Figure 2, to the left, Whittemore can only be operated in an upright manner (vertically oriented manner) otherwise the medicament would empty out of orifice 4 or outlet 5. Because Susa is meant to be used vertically and in any orientation, the combination would be non-functional.

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At pages 59–60 the Petition states the rationale supporting a combination of Susa and Whittemore is “saturating a porous wicking component so that the liquid can be atomized by a wound heating coil.” However, replacing the discharge head 34 with the wick of Whittemore changes the principle of operation of Susa as so modified, contrary to MPEP 2143.01, and the cases cited there.

## **12. 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,

Date: June 22, 2015

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## CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of this Patent Owner Preliminary Response to Petition for *Inter Partes* Review has been served via electronic mail and U.S. mail upon the following counsel of record for Petitioner VMR Products, LLC on June 22, 2015:

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