

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NU MARK LLC,
Petitioner,

v.

FONTEM HOLDINGS 1 B.V.,
Patent Owner.

Case No. **IPR2016-01309**
Patent No. **8,863,752**

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

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	THE '752 PATENT	4
III.	PERSON OF ORDINARY SKILL IN THE ART	8
IV.	CLAIM CONSTRUCTION	9
A.	"Atomizer"	9
B.	"Screw Thread Electrode"	12
C.	"Through Hole"	15
D.	"Through Hole Substantially Aligned with the Atomizer"	18
V.	THE PETITION FAILS TO SHOW A REASONABLE LIKELIHOOD THAT ANY CLAIM OF THE '752 PATENT IS UNPATENTABLE.....	19
A.	Petitioner's Ground for Unpatentability is Redundant Over Art Considered by the Examiner and Grounds Previously Denied by the Board	20
B.	Petitioner's Expert's Testimony Is Conclusory, Incomplete, and Lacks Credibility	24
C.	Ground 1: Claims 1-5, 7, 8, 10-15, 19, and 20 are Not Obvious Over Brooks in View of Whittemore	27
1.	Brooks	27
2.	Whittemore.....	31
3.	Claims 1-5, 7, 8, 10-15, 19, and 20 of the '752 Patent are Not Obvious Over Brooks in View of Whittemore	33
a.	Brooks Does Not Teach or Suggest a Liquid Storage as Required by Independent Claims 1, 11, 14, and 19 and Dependent Claims 2-5, 7, 8, 10, 12, 13, 15, and 20.....	34

b.	The Proposed Combination of Brooks and Whittemore Does Not Include a Screw Thread Electrode as Required by Independent Claims 1, 11, 14, and 19 and Dependent Claims 2-5, 7, 8, 10, 12, 13, 15, and 20.....	42
c.	The Proposed Combination of Brooks and Whittemore Does Not Include a Through Hole Centered on the Screw Thread Electrode as Required by Claims 1-5, 7, 8, 10, 13, 15, and 20, Aligned With the Atomizer as Required by Claim 10, or Substantially Aligned With the Atomizer as Required by Claims 7, 11-15, 19, and 20	45
d.	A POSITA Would Have Had No Credible Motivation for Incorporating the Screw Thread Electrode of Whittemore Into the Brooks Smoking Article	48
e.	The Proposed Combination of Brooks and Whittemore Would Be Inoperable.....	61
f.	The Proposed Combination of Brooks and Whittemore Does Not Include an Atomizer Including a Heater Coil Wound Around a Porous Component as Required by Dependent Claims 4, 5, and 12.....	63
g.	A POSITA Would Have Had No Credible Motivation for Incorporating an Atomizer Including a Heater Coil Wound Around a Porous Component Into the Smoking Article of Brooks.....	66
VI.	CONCLUSION.....	67
	CERTIFICATE OF COMPLIANCE.....	68

TABLE OF AUTHORITIES

CASES

<i>Allied Erecting & Dismantling Co. v. Genesis Attachments</i> , 825 F.3d 1373 (Fed. Cir. 2016)	58
<i>In re Etter</i> , 756 F.2d 852 (Fed. Cir. 1985)	59
<i>In re Mouttet</i> , 686 F.3d 1322 (Fed. Cir. 2012)	59
<i>In re Sneed</i> , 710 F.2d 1544 (Fed. Cir. 1983)	59
<i>Insite Vision Inc. v. Sandoz, Inc.</i> , 783 F.3d 853 (Fed. Cir. 2015)	55
<i>Leo Pharmaceutical Products, Ltd. v. Rea</i> , 726 F.3d 1346 (Fed. Cir. 2013)	55
<i>Par Pharm., Inc. v. Twi Pharms., Inc.</i> , 773 F.3d 1186 (Fed. Cir. 2014)	59
<i>Quad/Tech, Inc. v. Q.I. Press Controls B.V.</i> , 701 F.Supp.2d 644 (Fed. Cir. 2010)	5
<i>Unigene Labs., Inc. v. Apotex, Inc.</i> , 655 F.3d 1352 (Fed. Cir. 2011)	53

STATUTES

35 U.S.C. § 314(a)	1
--------------------------	---

LIST OF EXHIBITS

Petitioner's Exhibits	
Exhibit	Description
Ex. 1001	U.S. Patent No. 8,863,752 ("the '752 Patent")
Ex. 1002	File History for U.S. Patent No. 8,863,752
Ex. 1003	Declaration of Dr. John Collins
Ex. 1004	U.S. Patent No. 6,155,268 ("Takeuchi")
Ex. 1005	U.S. Patent No. 2,057,353 ("Whittemore")
Ex. 1006	U.S. Patent No. 4,947,874 ("Brooks")
Ex. 1007	European Patent Application No. EP0845220 B1 ("Susa")
Ex. 1008	J.A. Speck, <i>Mechanical Fastening, Joining, and Assembly</i> (1997) (excerpt)
Ex. 1009	<i>McGraw-Hill Dictionary of Scientific and Technical Terms</i> , McGraw-Hill Companies, Inc., (6th ed. 2003) (excerpt)
Ex. 1010	Invalidation Decision (No. WX15007), Patent Reexamination Board of the State Intellectual Property Office of the People's Republic of China (June 13, 2010), with certified translation
Ex. 1011	U.S. Patent Application No. 2006/0093977 A1 ("Pellizzari I")
Ex. 1012	U.S. Patent No. 7,059,307 ("Pellizzari II")
Ex. 1013	U.S. Patent No. 3,200,819 ("Gilbert")
Ex. 1014	U.S. Patent No. 5,894,841 ("Voges")
Ex. 1015	U.S. Patent No. 5,743,251 ("Howell")

Ex. 1016	U.S. Patent No. 2,461,664 ("Smith")
Ex. 1017	U.S. Patent No. 3,234,357 ("Eberhard")
Ex. 1018	U.S. Patent No. 5,745,985 ("Ghosh")
Ex. 1019	U.S. Patent No. 4,676,237 ("Wood")
Ex. 1020	U.S. Patent No. 438,310 ("Edison")
Ex. 1021	U.S. Patent No. 4,945,448 ("Bremenour")
Ex. 1022	R. Messler, <i>Joining of Materials and Structures</i> (2004)
Ex. 1023	U.S. Patent No. 2,442,004 ("Hayward-Butt")
Ex. 1024	U.S. Patent No. 6,501,052 ("Cox")
Ex. 1025	U.S. Patent No. 6,491,233 ("Nichols")
Ex. 1026	U.S. Patent No. 1,084,304 ("Vaughn")
Patent Owner's Exhibits	
Exhibit	Description
Ex. 2001	Declaration of Richard Meyst
Ex. 2002	<i>NJOY, Inc. v. Fontem Holdings 1 B.V.</i> , IPR2015-01299, Paper 15, Decision Denying Institution of <i>Inter Partes</i> Review (PTAB Dec. 8, 2015)
Ex. 2003	<i>VMR Products LLC v. Fontem Holdings 1 B.V.</i> , IPR2015-00859, Paper 9, Decision Denying Institution of <i>Inter Partes</i> Review (PTAB Sep. 16, 2015)
Ex. 2004	<i>Logic Tech. Devel., LLC v. Fontem Holdings 1 B.V.</i> , IPR2015-00098, Paper 8, Decision Denying Institution of <i>Inter Partes</i> Review (PTAB May 11, 2015)

Ex. 2005	<i>JT Int'l, S.A. v. Fontem Holdings I B.V.</i> , IPR2015-01513, Paper 14, Order Dismissing Petitions (PTAB Dec. 14, 2015)
Ex. 2006	<i>NJOY, Inc. v. Fontem Holdings I B.V.</i> , IPR2015-01301, Paper 16, Decision Denying Institution of <i>Inter Partes</i> Review (PTAB Dec. 8, 2015)
Ex. 2007	<i>JT Int'l, S.A. v. Fontem Holdings I B.V.</i> , IPR2015-01604, Paper 9, Order Dismissing Petitions (PTAB Dec. 14, 2015)
Ex. 2008	European Patent Publication No. 0358002A2 by Brooks
Ex. 2009	<i>Toyota Motor Corp. v. Cellport Sys., Inc.</i> , IPR2015-01423, Paper 7, Decision Denying Institution of <i>Inter Partes</i> Review (PTAB Oct. 28, 2015)
Ex. 2010	<i>NJOY, Inc. v. Fontem Holdings I B.V.</i> , IPR2015-01302, Paper 15, Decision Denying Institution of <i>Inter Partes</i> Review (PTAB Dec. 9, 2015)
Ex. 2011	Non-Final Office Action mailed March 21, 2014 in U.S. Patent Appl. No. 13/915,427 (US Patent No. 8,863,752)
Ex. 2012	Merriam-Webster's Collegiate Dictionary (11th ed. 2003), selected pages
Ex. 2013	Random House Webster's Unabridged Dictionary (2nd ed. 2001), selected pages
Ex. 2014	Information Disclosure Statement in U.S. Patent Application No. 13/915,427 (US Patent No. 8,863,752), filed June 20, 2013 and considered by the Examiner March 15, 2014
Ex. 2015	NOT FILED
Ex. 2016	U.S. Patent No. 4,947,875 to Brooks
Ex. 2017	<i>Benitec Biopharma Ltd. V. Cold Spring Harbor Laboratory</i> , IPR2016-00014, Paper 7, Decision Denying Institution of <i>Inter Partes</i> Review (PTAB Mar. 23, 2016)

Ex. 2018	<i>NJOY, Inc. et al. v. Fontem Holdings I B.V.</i> , IPR2015-01301, Paper 1, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,863,752 (PTAB May 29, 2015)
----------	---

I. INTRODUCTION

Nu Mark LLC ("Petitioner") filed a Petition for *Inter Partes* Review of claims 1-5, 7, 8, 10-15, 19, and 20 of U.S. Patent No. 8,863,752 ("752 Patent;" Ex. 1001) on June 28, 2016. Paper No. 1 ("Petition"). Petitioner asserts that all of the challenged claims are obvious over U.S. Patent No. 4,947,874 ("Brooks;" Ex. 1006) in view of U.S. Patent No. 2,057,353 ("Whittemore;" Ex. 1005) (Ground 1). Petition at 13. Petitioner does not challenge the patentability of claims 6, 9, and 16-18.

Fontem Holdings 1 B.V. ("Patent Owner") requests that the Petition be denied because Petitioner has failed to establish "that there is a reasonable likelihood that they would prevail with respect to at least 1 of the claims challenged in the petition" under 35 U.S.C. § 314(a). Petitioner's proposed combination of Brooks and Whittemore lacks several limitations of the challenged '752 Patent claims, including a liquid storage, a screw thread electrode, a through hole in a screw thread electrode, and an atomizer having a heater coil wound around a porous component. Further, a person of ordinary skill in the art (POSITA) would have had no motivation to combine Brooks and Whittemore in the manner proposed by Petitioner.

First, all of the challenged '752 Patent claims recite an atomizer assembly housing containing "liquid storage" and an "atomizer." Petitioner relies on Brooks

for both limitations. However, Brooks is directed to a disposable cigarette designed for a single use (i.e., "the 6 to 10 puff life of a typical cigarette," see Brooks at 4:5-6¹), and therefore does not disclose and has no need for liquid storage separate from the atomizer. Instead, Brooks discloses directly impregnating a porous heating element (i.e., atomizer) with liquid.

Second, all of the challenged '752 Patent claims require a "screw thread electrode" on an end of the atomizer assembly housing. Petitioner acknowledges that Brooks does not disclose the use of screw threads, let alone screw thread electrodes, but asserts that it would have been obvious to adapt Brooks to include the threaded electrode of Whittemore in place of Brooks' plug connector. However, the screw threads in Petitioner's proposed combination device are not screw thread electrodes because they do not provide an electrical connection. Instead, Petitioner's proposed device retains the pins/prongs of Brooks' plug connector, which are shown extending into the threaded receptacle on the reusable

¹ Brooks lists the puff range for its device as 6 to 10 puffs (4:2-6), 6 puffs or more (4:29-31, 10:67), and "preferably at least about 6 puffs, more preferably at least about 10 puffs" (6:34-36). The examples utilize the disclosed device to generate 10 puffs (18:29, 19:65, 21:38, 22:49) or 12 puffs (21:40). For simplicity, Patent Owner will reference the 6 to 10 puff range herein.

controller. See, e.g., Petition at 33. Because the screw threads in Petitioner's proposed combination do not provide an electrical connection, they cannot be screw thread electrodes.

All of the challenged '752 Patent claims require that the recited screw thread electrode have a "through hole" that is centered on the screw thread electrode (claims 1-5, 7, 8, 10, 13, 15, and 20), aligned with the atomizer (claim 10), or substantially aligned with the atomizer (claims 7, 11-15, 19, and 20). Petitioner argues that tube 48 of Brooks forms a through hole in its proposed combination of Brooks and Whittemore, and that this through hole is centered on the screw thread electrode and aligned with the atomizer. However, Brooks teaches that tube 48 is positioned off-center within the plug, meaning that the tube would not be centered on the screw thread or aligned or substantially aligned with the atomizer in Petitioner's proposed combination. Further, a POSITA would have no motivation to incorporate the Whittemore screw thread electrode into a device having tube 48, because a hole in the Whittemore screw thread electrode would render it inoperable.

Finally, claims 4, 5, and 12 of the '752 Patent recite an atomizer that includes "a heater coil wound around a porous component." Petitioner asserts that Brooks discloses a wire heater coil. However, there is no such disclosure in Brooks, and a wire heater coil would not be compatible with the surface area

requirements set forth by Brooks for its heating element. In the alternative, Petitioner asserts that it would have been obvious to adapt Brooks based on Whittemore's disclosure of a wire coil wound around a wick. However, Whittemore's wire heater coil wound around a wick is designed to draw liquid to be vaporized from a separate liquid storage to the heater. Because Brooks discloses that liquid is impregnated directly into its heating element, there is no reason to incorporate Whittemore's wire heater coil into Brooks. Petitioner's generic assertion that the combination would improve heating efficiency is insufficient to provide motivation, and has already been repeatedly rejected by the Board in other IPRs. Ex. 2002, p. 12; Ex. 2003, p. 19.

Since Petitioner fails to establish a reasonable likelihood that any of the claims of the '752 Patent are unpatentable, Patent Owner requests that the Board deny *inter partes* review for any claim.

II. THE '752 PATENT

The '752 Patent issued from U.S. Patent Appl. No. 13/915,427, filed June 11, 2013. The '752 Patent was previously involved in IPR No. 2015-01301, which the Board declined to institute, and IPR No. 2015-01604, which was terminated via settlement prior to institution. Ex. 2006, 2007. Related U.S. Patent No. 8,375,957 ("957 Patent") was previously involved in IPR No. 2015-00098, which the Board

declined to institute, and IPR No. 2015-01513, which terminated via settlement prior to institution. Ex. 2004, 2005.

Petitioner notes that the '752 Patent claims priority to a PCT application published as WO2007/131450, which in turn claims priority to Chinese Patent Appl. No. 200620090805.0. Petition at 12. As further noted by Petitioner, claims 1-5 and 7-20 of that Chinese application were invalidated by the Patent Reexamination Board of the State Intellectual Property Office of the People's Republic of China. Petition, at 12, 15, 30. Invalidation of certain claims of the Chinese patent should have no weight on the Board's decision whether to institute in the present proceeding because foreign patent determinations are non-binding in determining US patents and patent law. *Quad/Tech, Inc. v. Q.I. Press Controls B.V.*, 701 F.Supp.2d 644, 655 (Fed. Cir. 2010) (court held that defendant's attempt to rely on a German invalidation decision on the related German patent was "specious," and that a foreign decision "has no application" in the United States and "is not entitled to any deference.").

In one embodiment, the '752 Patent discloses an atomizer assembly for use in an electronic cigarette. Fig. 3 of the '752 Patent, below (annotations added), illustrates an embodiment of an atomizer assembly including a housing, atomizer, screw thread electrode with a through hole, and flow passageway as recited in the claims of the '752 Patent.

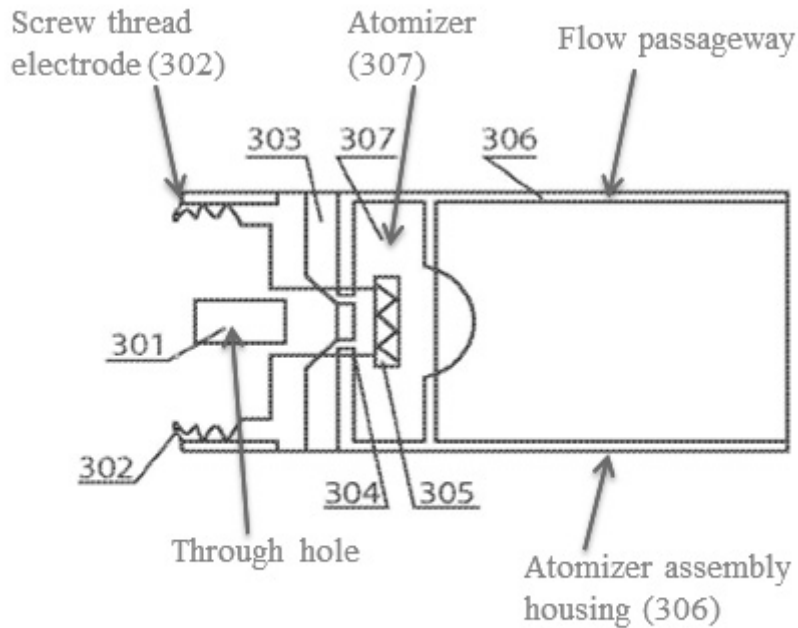


Figure 3

Screw thread electrode 302 is used to connect the atomizer assembly to screw thread electrode 209 on a battery assembly, which is shown in Fig. 2A of the '752 Patent, below (annotations added). '752 Patent, 1:65-2:2.

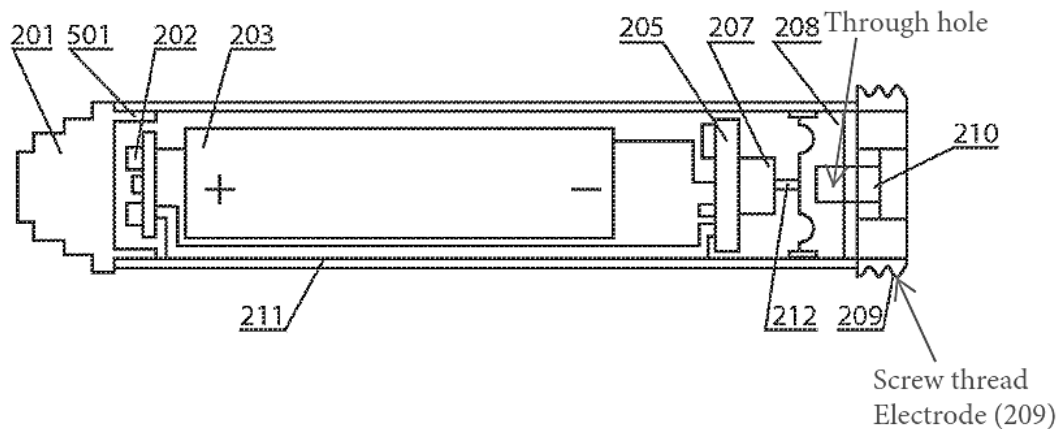
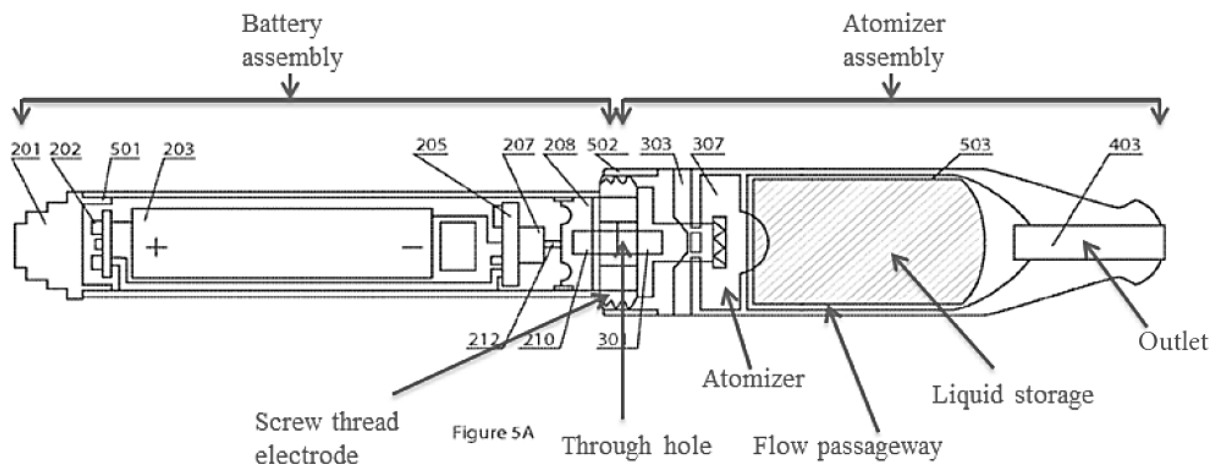


Figure 2A

Fig. 5A of the '752 Patent, below (annotations added), illustrates how the atomizer assembly connects to a battery assembly via their mated screw thread electrodes to form a complete electronic cigarette. '752 Patent, 1:65-2:4. The mated screw thread electrodes provide a secure mechanical and electrical connection between the assemblies and allow for easy disassembly/interchangeability. Ex. 2001 ("Meyst"), ¶¶11, 24. In certain embodiments, the screw thread electrodes are gold-coated stainless steel or brass parts with a hole in the center. '752 Patent, 2:28-30, 43-45. In the embodiment illustrated in Fig. 5A, a cigarette bottle assembly including fiber that contains cigarette liquid is inserted into the other end of the atomizer assembly. '752 Patent, 2:2-4, 50-51.



The four challenged independent claims (claims 1, 11, 14, and 19) of the '752 Patent recite an "atomizer assembly for an electronic cigarette" comprising "an atomizer assembly housing" containing "an atomizer" and "liquid storage," as

well as "a flow passageway" "from the atomizer to an outlet of the atomizer assembly housing." The "atomizer assembly housing" includes "a screw thread electrode" on "one end" of the "atomizer assembly housing." The "screw thread electrode" has "a through hole" which is either "centered on the screw thread electrode" (claim 1) or "substantially aligned with the atomizer" (claims 11, 14, 19). In claims 11 and 14, the "atomizer" is "electrically connected to the screw thread electrode." In claims 1, 11, and 19, the "atomizer" is "in physical contact with the liquid storage." Dependent claim 3 requires that the atomizer comprise "a heater coil," while dependent claims 4 and 12 require that the atomizer include "a heater coil wound around a porous component." Dependent claim 8 requires "the through hole in the screw thread electrode, the passageway and the outlet" to comprise "a flow path through the atomizer assembly housing passing through the atomizer."

III. PERSON OF ORDINARY SKILL IN THE ART

A POSITA with respect to the '752 Patent has a mechanical or electrical engineering degree, industrial design degree, or a similar technical degree or equivalent work experience, and 5–10 years of working in the area of electromechanical devices, including medical devices. Meyst, ¶16. Petitioner asserts that a POSITA has "a Bachelor of Science degree in mechanical engineering, or a similar degree, along with at least 3–5 years of experience in

designing and developing handheld devices with thermal management and fluid handling technologies." Petition at 21. Under either definition, Petitioner has failed to meet its burden.

IV. CLAIM CONSTRUCTION

A. "Atomizer"

Patent Owner's Construction	Petitioner's Construction
a component or components that convert(s) liquid into aerosol or vapor	no proposed construction

All of the challenged '752 Patent claims recite an atomizer assembly housing containing an "atomizer." Claim 3 recites an "atomizer" that comprises a heater coil. Claims 4 and 12 recite an "atomizer" that includes a heater coil wound around a porous component, with claim 5 reciting that this porous component includes a fiber material. Thus, the claims of the '752 Patent show that an "atomizer" may include several different components.

The '752 Patent specification discloses that the "atomizer" is responsible for converting liquid into aerosol or vapor. For example, the '752 Patent states that "[t]he air-liquid mixture sprays onto the heating body (305) [inside the atomizer (307), see '752 Patent, 3:2-7, 4:11-14], gets vaporized, and is quickly absorbed into the airflow and condensed into aerosol, which passes through the air intake hole (503) and suction nozzle (403) to form white mist type aerosol." '752 Patent, 3:13-

17, 4:21-25. The specification discloses that the atomizer includes a porous heating body (e.g., "[heating body] may be a porous component directly made of electrically conductive ceramics or PTC (Positive Temperature Coefficient) ceramics and associated with a sintered electrode;" "...cigarette liquid, which soaks the micro-porous ceramics (801) inside the atomizer..."). '752 Patent, 3:6-9, 3:31-34. The '752 Patent specification also discloses that the atomizer may include additional components that play a direct role in atomization, e.g., a wire wound around the heating body ("[t]he heating body (305) is made is made of the micro-porous ceramics on which nickel-chromium alloy wire, iron-chromium alloy wire, platinum wire, or other electrothermal materials are wound"). '752 Patent, 3:28-31. This is further illustrated by Figs. 8-11 of the '752 Patent, below, which show diagrams of capillary impregnation and spray atomizers 307 containing heating body 305 and micro-porous ceramics 801.

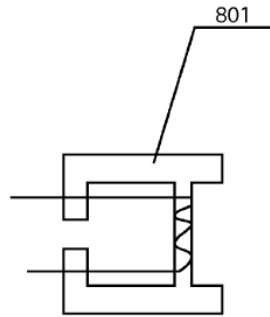


Figure 8

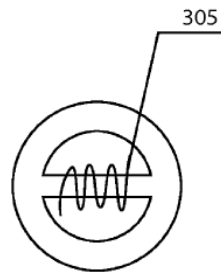


Figure 9

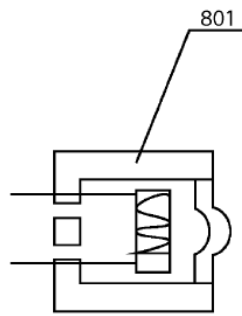


Figure 10

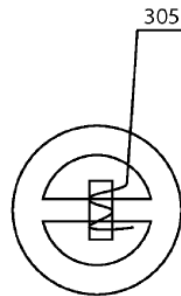


Figure 11

The extrinsic evidence confirms that an atomizer functions to convert liquid into aerosol or vapor. Merriam-Webster's Collegiate Dictionary (11th Ed. 2003) ("Merriam-Webster;" Ex. 2012) defines "atomize" as "2: to reduce to minute particles or to a fine spray," and defines "atomizer" as "an instrument for atomizing usu. a perfume, disinfectant, or medicament." Ex. 2012, p. 78. Similarly, Random House Webster's Unabridged Dictionary (2nd ed. 2001) ("Random House;" Ex. 2013) defines "atomize" as "2. to reduce to fine particles or spray," and defines "atomizer" as "an apparatus for reducing liquids to a fine spray, as for medicinal or cosmetic application." Ex. 2013, p. 132.

In view of the claims and specification of the '752 Patent and the extrinsic evidence regarding the ordinary meaning of the term, the broadest reasonable construction of "atomizer" is "a component or components that convert(s) liquid into aerosol or vapor." Meyst, ¶¶18-22.

B. "Screw Thread Electrode"

Patent Owner's Construction	Petitioner's Construction
a projecting helical rib of a screw formed from a conductor for passing electricity that mates with a corresponding groove between projecting helical ribs of a screw formed from a conductor for passing electricity	a helical fastener or connector that includes an electrical conductor for passing electric current (Petition at 20-21)

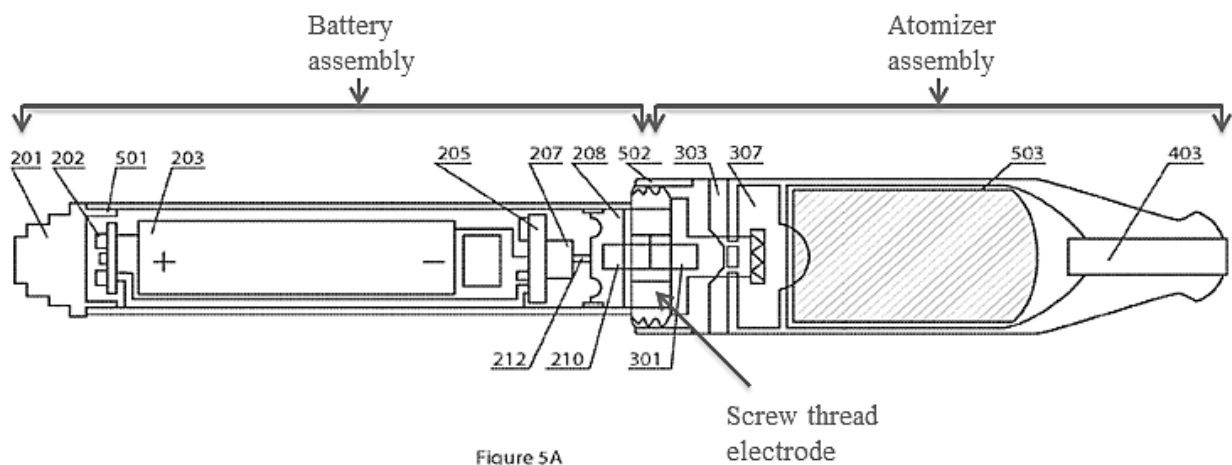
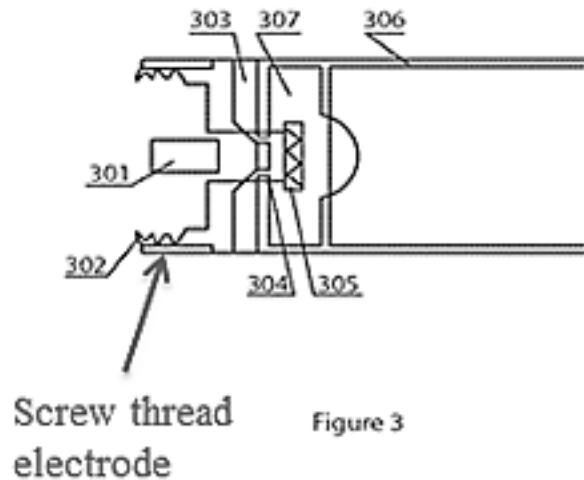
All of the challenged claims of the '752 Patent recite a "screw thread electrode," and every occurrence of the claim term "screw thread" modifies the term "electrode." As discussed below, an electrode is commonly understood to be a conductor of electricity. Thus, a screw thread electrode is a screw thread that conducts electricity, i.e., a screw thread that can create an electrical connection via its threads. This is supported by dependent claims 2, 11, and 14, which recite that the screw thread electrode is electrically connected to the atomizer.

Petitioner's proposed construction is unreasonably broad because it merely requires the screw thread electrode to "include[] an electrical conductor," rather

than requiring that the screw thread electrode itself be formed *from* a conductor.

Meyst, ¶¶25-26.

The '752 Patent specification discloses the use of mated screw thread electrodes to create a mechanical and electrical connection between an atomizer assembly and a battery assembly. For example, Fig. 3 of the '752 Patent, below (annotations added), shows "internal thread electrode (302)" on one end of the atomizer assembly. '752 Patent, 1:65-67. This "internal thread electrode (302)" is a gold-coated stainless steel or brass part with a hole in the center." '752 Patent, 2:43-45. Fig. 5 of the '752 Patent, below (annotations added), shows how the atomizer assembly housing connects to a battery assembly housing via a threaded connection between "internal thread electrode (302)" and "external thread electrode (209)" on the battery assembly housing ("An external thread electrode (209) is located in one end of the battery assembly, and an internal thread electrode (302) located in one end of the atomizer assembly. The battery assembly and atomizer assembly are connected through the screw thread electrode into an electronic cigarette"). '752 Patent, 1:65-2:2. This threaded connection serves to mechanically and electrically connect the battery assembly housing, which includes a source of electricity, to the atomizer housing, which includes an atomizer that must be powered by electricity.



Merriam-Webster and Random House define "screw thread" as "the projecting helical rib of a screw" and "the helical ridge of a screw," respectively, and define "electrode" as "1: a conductor used to establish electrical contact with a nonmetallic part of a circuit" and "a conductor, not necessarily metallic, through which a current enters or leaves a nonmetallic medium, as an electrolytic cell, arc generator, vacuum tube, or gaseous discharge tube," respectively. Ex. 2012, pp. 401, 1116; Ex. 2013, pp. 628, 1722.

In view of the claims and the specification of the '752 Patent and the extrinsic evidence regarding the ordinary meaning of the terms "screw thread" and "electrode," the broadest reasonable construction of "screw thread electrode" is "a projecting helical rib of a screw formed from a conductor for passing electricity that mates with a corresponding groove between projecting helical ribs of a screw formed from a conductor for passing electricity." Meyst, ¶¶23-27.

C. "Through Hole"

Patent Owner's Construction	Petitioner's Construction
an enclosed passage	no proposed construction

All of the challenged claims of the '752 Patent recite a screw thread electrode having a "through hole." Claim 8 recites that the through hole, in combination with the flow passageway leading from the atomizer to an outlet of the atomizer assembly housing and the outlet itself, forms a flow path through the atomizer assembly housing passing through the atomizer.

The specification of the '752 Patent describes internal screw thread electrode 302 on the atomizer assembly housing and external screw thread electrode 209 on the battery assembly housing, illustrated in Figs. 3 and 2A of the '752 Patent, below, as gold-coated stainless steel or brass parts with a hole in their center. '752 Patent, 2:28-30, 2:43-45. These holes form an enclosed passage through the center of the screw thread electrode, represented by secondary negative pressure cavity

301 in Fig. 3 and primary negative pressure cavity 210 in Fig. 2A. When the atomizer assembly is joined to a battery assembly via their respective screw thread electrodes as illustrated in Fig. 5A of the '752 Patent, below, secondary negative pressure cavity 301 and primary negative pressure cavity 210 form a continuous enclosed passage between the assemblies. Meyst, ¶29.

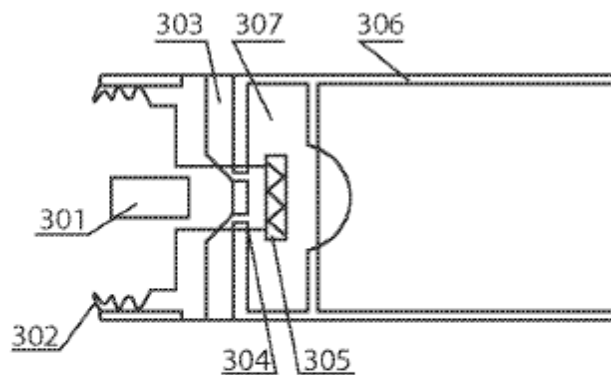


Figure 3

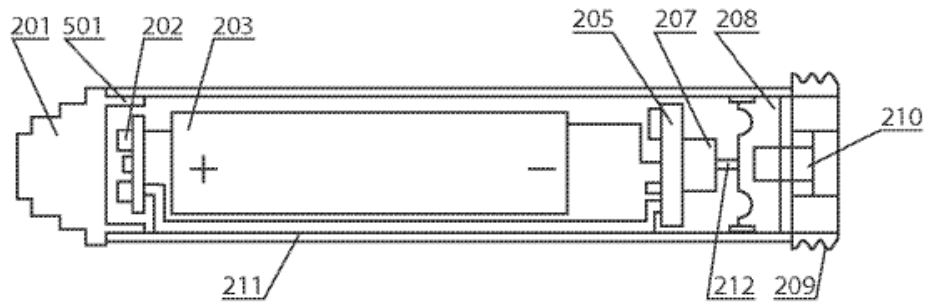


Figure 2A

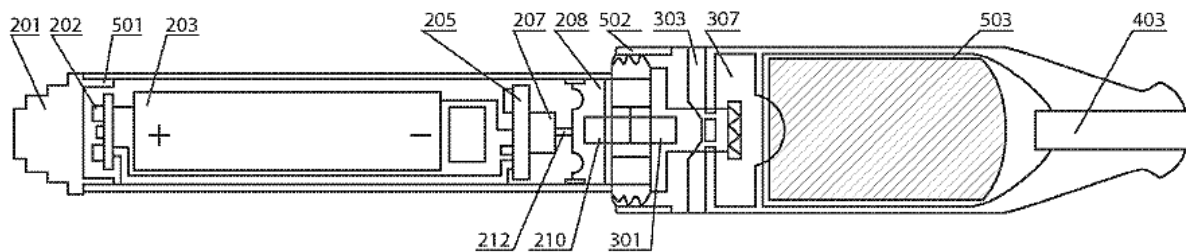


Figure 5A

The extrinsic evidence confirms that a through hole is an enclosed passage. Merriam-Webster defines "through" as "from one end or side to the other" and "hole" as "an opening through something," while Random House defines "through" as "in at one end, side, or surface and out at the other" and "hole" as "an opening through something; gap; aperture." Ex. 2012, pp. 593, 1303; Ex. 2013, pp. 911, 1977.

In view of the claims and specification of the '752 Patent and the extrinsic evidence regarding the ordinary meaning of the terms "through" and "hole," the

broadest reasonable construction of "through hole" is "an enclosed passage."

Meyst, ¶¶28-31. Under this construction, a through hole extending through a component runs inside and along the entire length of the component.

D. "Through Hole Substantially Aligned with the Atomizer"

Patent Owner's Construction	Petitioner's Construction
no construction necessary, or in the alternative, a through hole largely in line with the atomizer	no proposed construction

Claims 7, 8, 11-15, 19, and 20 of the '752 Patent recite "the through hole [in the screw thread electrode] substantially aligned with the atomizer." This term is self-explanatory and needs no construction. Alternatively, the broadest reasonable construction of this term is "a through hole largely in line with the atomizer." This construction is supported by the specification of the '752 Patent. For example, Fig. 3 of the '752 Patent, below (annotations added, dotted line illustrates alignment of the through hole and the atomizer), shows the center of the through hole in line or largely in line with the center of the atomizer from a side view.

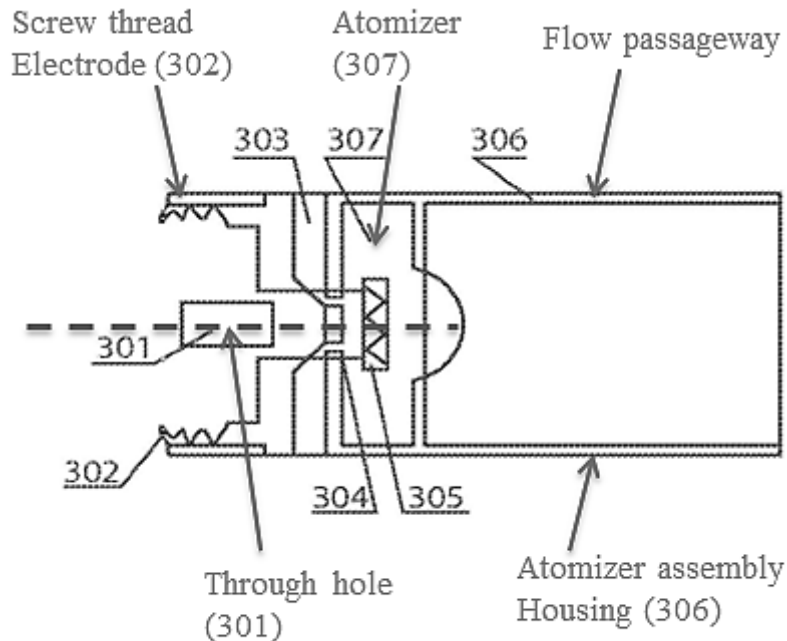


Figure 3

The extrinsic evidence also supports Patent Owner's proposed construction. Merriam-Webster defines "align" as "to bring into line or alignment," and Random House defines "align" as "to arrange in a straight line; adjust according to a line." Ex. 2012, p. 31; Ex. 2013, p. 53.

In view of the specification of the '752 Patent and the extrinsic evidence regarding the ordinary meaning of the term "align," the broadest reasonable construction of "through hole substantially aligned with the atomizer" is "a through hole largely in line with the atomizer." Meyst, ¶¶32-35.

V. THE PETITION FAILS TO SHOW A REASONABLE LIKELIHOOD THAT ANY CLAIM OF THE '752 PATENT IS UNPATENTABLE

Petitioner proposes one ground for unpatentability of claims 1-5, 7, 8, 10-15, and 19-20 of the '752 Patent, namely that the claims are obvious over Brooks in

view of Whittemore. Petition at 13. As addressed in detail below, Petitioner fails to show a reasonable likelihood of prevailing on this ground. Since Petitioner fails to establish a reasonable likelihood that any of the claims of the '752 Patent are unpatentable, the Board should deny *inter partes* review for any claim.

A. Petitioner's Ground for Unpatentability is Redundant Over Art Considered by the Examiner and Grounds Previously Denied by the Board

Whittemore and the disclosure of Brooks were both considered by the Examiner during prosecution of the '752 Patent. Whittemore was included in an Information Disclosure Statement (IDS) filed June 20, 2013, formed the basis for a 102(b) rejection which was overcome by the patentee, and is the third U.S. patent cited on the title page of the '752 Patent. Ex. 2014, p. 1, Cite No. A2; Ex. 2011, p. 4. As noted by Petitioner (see Petition at 14), Brooks itself was not cited by the Examiner during prosecution. However, the Examiner considered two references with cumulative disclosure to Brooks.

A European counterpart of Brooks, EP Publ. No. 0358002 (Ex. 2008), was included in an IDS filed June 20, 2013, in the '752 Patent, and was considered by the Examiner. Ex. 2014, p. 5, Cite No. B17. This EP application was filed August 15, 1989, and claims priority to the application giving rise to Brooks (US Patent Appl. No. 07/242,086). Ex. 2008, Title Page. The disclosure of the EP application is largely identical to that of Brooks.

Another patent with the same filing date as Brooks and listing the same inventors (U.S. Patent No. 4,947,875, "'875 Patent;" Ex. 2016) was included in the IDS filed June 20, 2013. Ex. 2014, p. 1, Cite No. A17. The '875 Patent includes all of the structural features of Brooks relied upon by Petitioner, namely a flavor delivery article comprising (1) "disposable cartridge 12" including porous "resistance heating element 18 carrying an aerosol forming substance" and "electrical connection plug 16" "manufactured from a...electrically insulative material" and having "pins or prongs 38, 39" and (2) "controller 14" including battery power supply 34 and "insulative receptacle 44" with "electrical terminals 42, 43," wherein the two components are connected by inserting pins or prongs 38, 39 into electrical terminals 42, 43. '875 Patent, 5:40-6:27, 7:12-23, 7:64-8:7. Petitioner acknowledges that the '875 Patent "is cited on the face of the 752 Patent but was not used in any office actions." Petition at 14. However, as noted by the Board in IPR No. 2016-00014, "[a]n Examiner's initials on an IDS form 'provides...a clear record in the application to indicate which documents have been considered by the examiner in the application.'" Ex. 2017 at 10. Thus, the Examiner considered the '875 Patent and made a proactive decision not to include it in a rejection.

The '752 Patent was subject to two previous IPR petitions, one of which the Board declined to institute (IPR No. 2015-01301; "'301 IPR") and one of which

terminated prior to an institution decision (IPR No. 2015-01604; "'604 IPR").

Petitioner argues that its asserted ground is not redundant over those set forth in the '301 and '604 IPRs because those proceedings cited Canadian Patent Appl. No. 2,752,134 ("Hon '134") rather than Brooks. Petition at 13-15. According to Petitioner, Brooks is different from Hon '134 in that it discloses "a detachable plug-in connector that provides both a mechanical and an electrical connection." Petition at 15.

Contrary to Petitioner's characterization, the underlying arguments in the present petition are redundant over those set forth in the '301 IPR. The petitioners in the '301 IPR asserted that independent claims 1, 11, 14, 16, and 19 were obvious over Hon '134 in view of U.S. Patent No. 3,200,819 ("Gilbert;" Ex. 1013 in the present IPR). Ex. 2018 at 12. The '301 IPR petitioners asserted that it would have been obvious to incorporate the screw thread of Gilbert into the device of Hon '134 in view of Gilbert's teaching of a lightbulb-like heating element connected to a battery via a screw thread. Ex. 2018 at 14-21. The petitioners relied on a rationale of combining known elements with predictable results. Ex. 2018 at 21. The Board denied institution of the '301 IPR. Ex. 2006.

Petitioner in the current proceeding makes essentially the same argument, with the difference being that Petitioner has identified a reference (Brooks) that discloses a plug-in connector between separable atomizer and battery assemblies

and a different reference (Whittemore) for its alleged screw thread electrode component. However, inclusion of Brooks and Whittemore does not change the crux of the underlying argument, namely that it would have been obvious to replace a functional connector on an atomizer assembly with a screw thread electrode because screw thread electrodes were known in the art. The similarity between the present arguments and those presented in the '301 IPR is illustrated by Petitioner's reliance on Gilbert as a secondary reference.

The Board has expressly criticized the approach of advancing the same ground based on an allegedly different set of references. For example, in IPR No. 2015-01423, the Board concluded that but for substituting a new reference for an old reference, the petitioner submitted "substantially the same" arguments as those in a prior IPR. The Board noted that the petitioner failed to explain why the disclosure of the new reference is "substantively and meaningfully different" from the disclosure of the old reference. Finally, the Board disallowed the petitioner's attempt to take "a second bite at the apple [that] wastes the Board's limited resources and imposes undue burden on the Patent Owner." Ex. 2009 at 7-8.

With regard to Brooks, Petitioner states that "[t]he Board found [in the '301 IPR] that Hon 134 did not teach or suggest a screwthread electrode," and that Brooks discloses "a detachable plug-in connector that provides both a mechanical and an electrical connection." Petition at 14-15. However, Petitioner fails to

explain how Brooks' disclosure is "substantively and meaningfully different" from that of Hon '134.

B. Petitioner's Expert's Testimony Is Conclusory, Incomplete, and Lacks Credibility

To support its arguments, Petitioner provides a declaration from Dr. John Collins ("Collins;" Ex. 1003). Collins testimony largely mirrors the assertions set forth in the Petition, providing a series of conclusory statements without significant original analysis. As such, Collins' testimony is riddled with the same shortcomings and inconsistencies as the Petition itself, which are discussed in detail below at (V)(C)(3).

Collins asserts that it would have been obvious to incorporate the screw thread electrode of Whittemore into the smoking article of Brooks. Collins, ¶¶59-70. Despite acknowledging that "[o]ne should be cautious of using hindsight in evaluating whether a claimed invention would have been obvious" (Collins, ¶44), Collins relies entirely on hindsight in formulating his rationale for incorporating a screw thread electrode into the Brooks device. Rather than providing arguments based on the teachings of Brooks, Whittemore, and the state of the art as of the filing date of the '752 Patent, Collins uses the '752 Patent itself as a roadmap for combining Brooks and Whittemore.

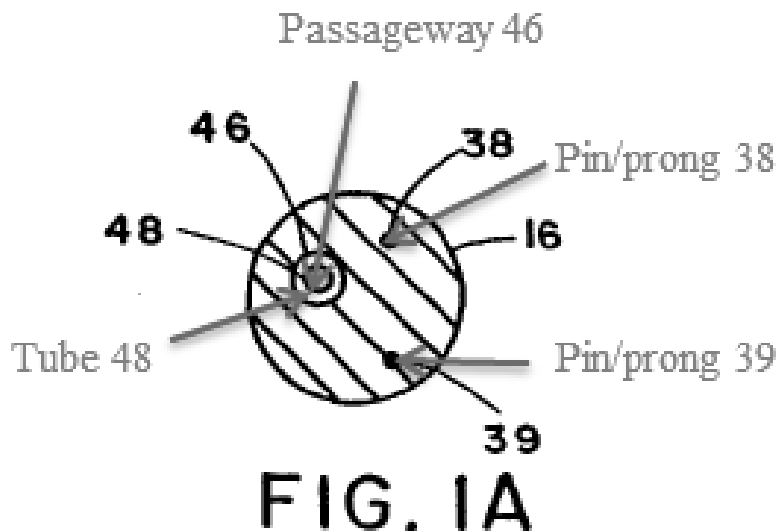
For example, Collins relies heavily on the fact that screw thread electrodes had been known in the art for many years. Collins, ¶¶65-67. However, Collins

does not provide any analysis as to why a POSITA would have been motivated to incorporate a screw thread electrode into the Brooks device specifically, nor does he explain why Brooks itself does not teach or suggest the use of screw thread electrodes if they represented such an attractive alternative. Collins also fails to point out any disclosure in Brooks or any other reference suggesting that the plug-type connector of Brooks was deficient in any way, or that the connectability of the Brooks cigarette cartridge was a concern. Meyst, ¶71.

Collins asserts that a POSITA would have been motivated to incorporate mated screw threads into Brooks "[b]ecause of the simplicity and ease of assembly and disassembly." Collins, ¶64. This is not a credible motivation, but instead reflects hindsight. Meyst, ¶74. The cigarette component of Brooks' device is designed to be removed and discarded after or 6 to 10 puffs, the equivalent of one traditional cigarette. Meyst, ¶46. Screw threads and screw thread electrodes are more expensive to manufacture and incorporate into a device than plug-type connectors, and they require a user to line up threads and twist multiple times. Meyst, ¶74. There is no credible motivation for a POSITA to replace the plug-type connector of Brooks with a more expensive and labor-intensive alternative. Meyst, ¶¶73-74.

Collins' assertions regarding the proposed combination of Brooks and Whittemore also fail to address the explicit teaching in Brooks that passageway 46

and tube 48 are offset from the center of the device. Brooks, 8:40-42. This is illustrated in Fig. 1A of Brooks, below (annotations added). A POSITA would recognize that offset components are incompatible with the proposed screw thread electrode, since the slightest amount of over- or under-tightening would result in misalignment and twisting the screw threads to engage the cigarette and controller components would likely break tube 48. Meyst, ¶¶81-82. Further, since Brooks discloses that tube 48 is offset from the center of the device and set away from pins/prongs 38 and 39 (see annotated Fig. 1A, below), Collins' proposed combination cannot meet the '752 Patent claim limitations that require a through hole aligned with or substantially aligned with the atomizer. Meyst, ¶¶66-60. Collins fails to address any of these shortcomings in his conclusory analysis.



Collins' testimony is further undermined by its inconsistency. For example, Collins' mirrors Petitioner's assertion that the "porous substrate" disclosed at Brooks 8:1 simultaneously meets two mutually exclusive claim limitations, namely: (1) a liquid storage separate from the atomizer (see, e.g., Collins, ¶50) and (2) a porous component of an atomizer around which a heater coil is wound (see, e.g., Collins, ¶71, A-24). Meyst, ¶84. Collins' willingness to adopt Petitioner's contradictory positions reflects his hindsight analysis and lack of credibility.

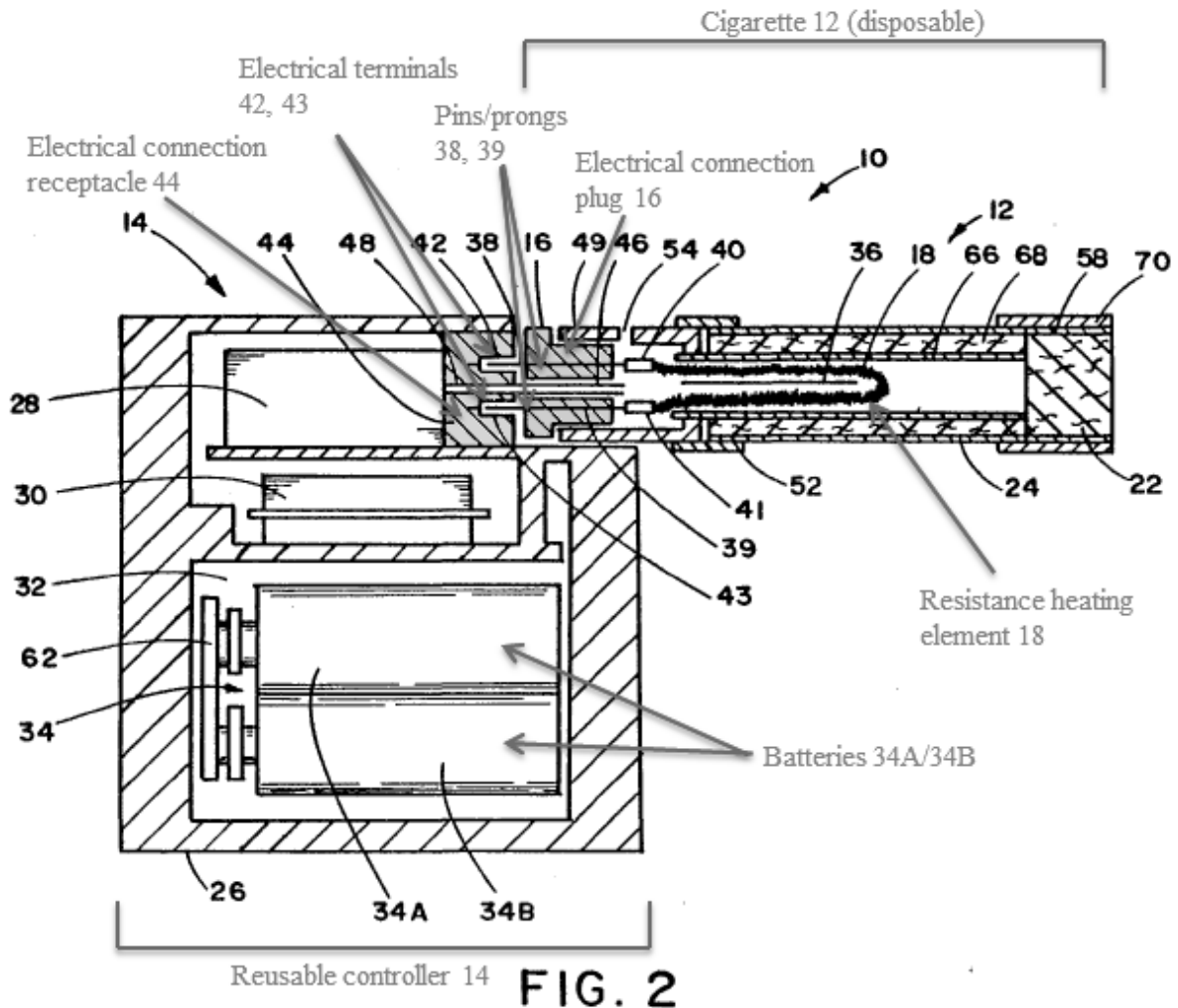
C. Ground 1: Claims 1-5, 7, 8, 10-15, 19, and 20 are Not Obvious Over Brooks in View of Whittemore

1. Brooks

Brooks discloses a "smoking article" made up of a "disposable portion" ("cigarette 12") and a "reusable controller" ("hand-held controller 14"). Brooks, Abstract. In all of the disclosed embodiments, the cigarette and controller components are electrically connected via insertion of pins or prongs into a plug.

Fig. 2 of Brooks, below (annotations added), shows an embodiment in which the disposable portion includes "electrical connection plug 16" (light blue in annotated Fig. 2 below) and "resistance heating element 18." Brooks, 7:15-18. "Electrical connection plug 16 preferably is manufactured from a resilient, electrically insulative material such as a thermoplastic material," and "includes two electrical connector pins or prongs 38, 39 connected to the ends of heating element 18 via connectors 40, 41." Brooks, 8:31-36. Plug 16 also includes passageway 46.

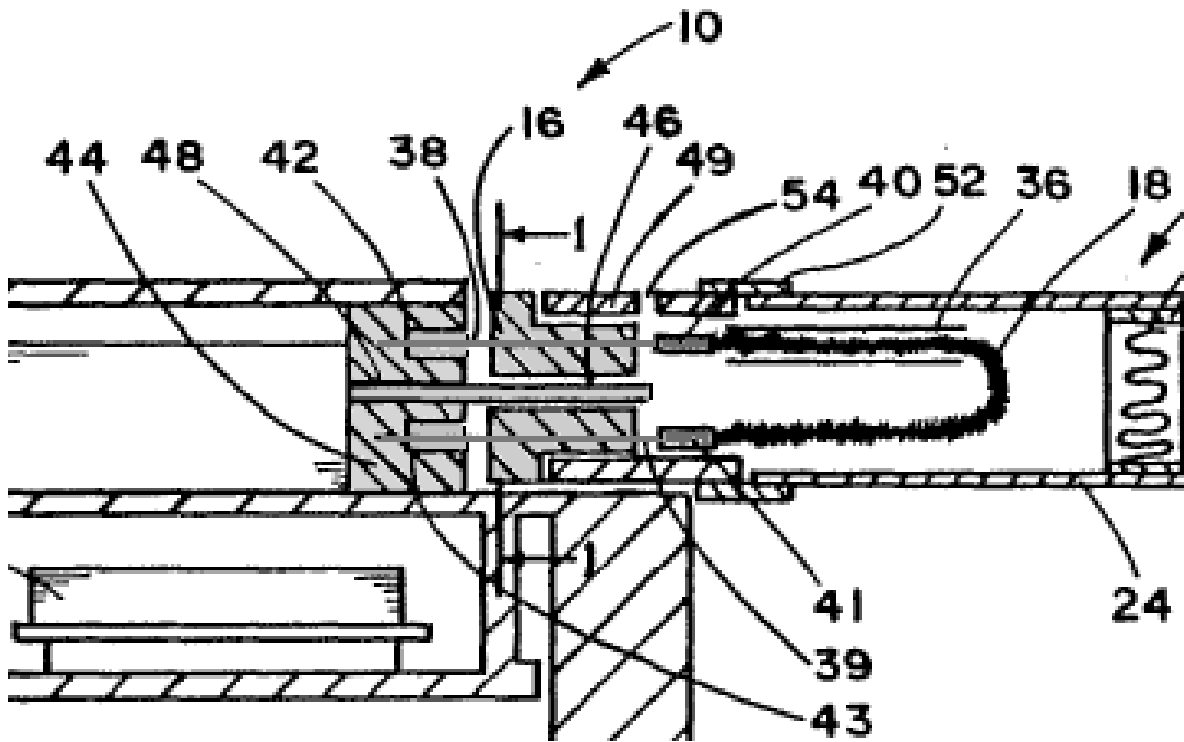
Brooks, 8:38-40. The reusable controller component includes "chamber 32 into which battery power supply 34) is inserted," as well as "insulative receptacle 44 (green in annotated Fig. 2 below) which includes plug-in connectors 42, 43 for engagement with prongs 38, 39 of plug 16." Brooks, 7:15-25; 9:41-43.



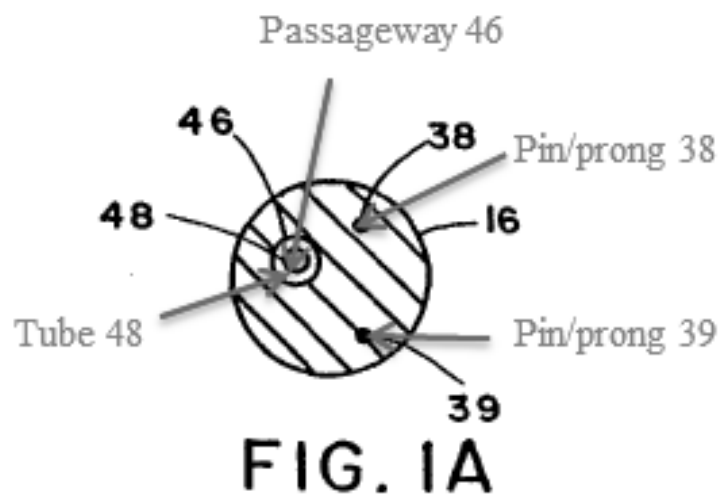
To connect the two portions of the device, "the user inserts the plug 16 of the cigarette 12 into the receptacle 44 of the controller 14," such that "pins 38, 39 engage with electrical terminals 42, 43 located in electrical connection receptacle

44 of the controller 14." Brooks, 8:36-38, 10:34-35. This connection "provides electrical connection of the resistance heating element 18 with the switch 28, the control circuit 30 and the batteries 34A and 34B." Brooks, 10:35-38. When the components are connected, tube 48 is "in airflow communication with the internal region of the cigarette" and "with pressure sensing switch 28, so that changes in air pressure which occur within the cigarette during draw can be sensed by the switch." Brooks, 8:38-40, 9:43-50.

The annotated figure below provides a closer view of that portion of the Brooks device containing electrical connection receptacle 44 (green), electrical connection plug 16 (light blue), passage 46/tube 48 (orange), connectors 40 and 41 (purple) on the ends of heating element 18, pins/prongs 38 and 39 (red), and electrical terminals 42 and 43 (gray).



As shown in Fig. 1A of Brooks, below (annotations added), "pins 38, 39 and passageway 46 are offset with respect to the longitudinal axis of plug 16." Brooks, 8:40-42.



Brooks does not contemplate liquid storage. Meyst, ¶¶48-59. Instead, "[r]esistance heating element 18" is impregnated with "liquid aerosol forming substances," specifically "enough aerosol forming substances to provide aerosol for 6 to 10 puffs, or more." Brooks, 4:22-31. Upon heating, the heating element volatilizes the aerosol forming substances, producing an aerosol which is inhaled by a user. In order to facilitate liquid impregnation, the heating element "typically is a porous material." Brooks, 4:12-25, 7:26-30, claims 5, 30, 78, 108. "Other suitable heating elements include porous metal wires or films; carbon yarns, cloths, fibers, discs or strips; graphite cylinders, fabrics or paints; microporous high temperature polymers having moderate resistivities; porous substrates in intimate contact with resistance heating components; and the like." Brooks, 7:65-8:3.

2. Whittemore

Whittemore discloses a "vaporizing unit[]" for therapeutic apparatus." Whittemore, p. 1, left col., ll. 1-2. This device, illustrated in Fig. 2 of Whittemore below, resembles a lightbulb attached to a flashlight body. Liquid medicament x is carried along wick D by capillary action, then vaporized by filament/heating element 3. Whittemore, p. 1, left col., ll. 19-28. Terminal plug B "is adapted to be plugged into or positioned in a terminal socket forming part of an electric circuit, such, for example, as the receptacle or socket of an ordinary flashlight C." Whittemore, p. 1, left col, ll. 39-45. Fig. 1 of Whittemore, below, illustrates

terminal plug B plugged into ordinary flashlight C. Electricity flows to filament/heating element 3 via conductors 1 and 2, wherein "conductor 1 is soldered to the inner surface of the metal shell 7 of the plug B, and the other conductor 2 is soldered to the inner surface of the center conducting button 8 of the plug." Whittemore, p. 1, left col., ll. 45-49. Fig. 2 of Whittemore, below (annotations added), illustrates the disclosed vaporizing unit, while Fig. 1 of Whittemore, below, illustrates this vaporizing unit screwed into flashlight C.

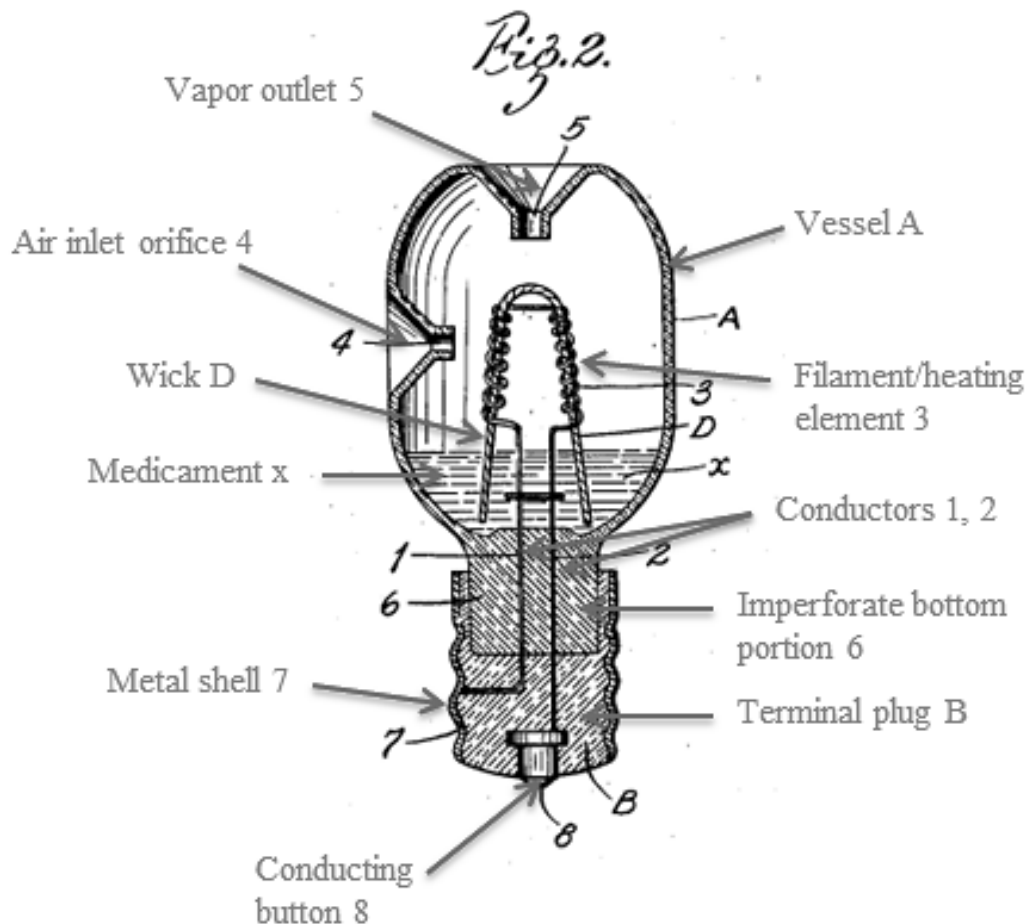
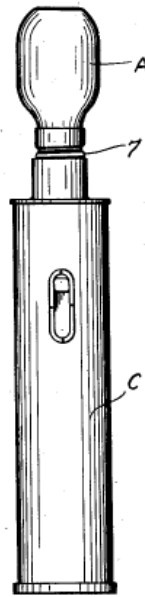


Fig. 1.



3. Claims 1-5, 7, 8, 10-15, 19, and 20 of the '752 Patent are Not Obvious Over Brooks in View of Whittemore

As detailed below, Brooks and Whittemore fail to disclose, either alone or in combination, all of the limitations of the challenged '752 Patent claims. First, the combination of Brooks and Whittemore proposed by Petitioner lacks a liquid storage separate from the atomizer as required by all of the challenged '752 Patent claims. Second, Petitioner's proposed combination lacks a screw thread electrode as required by all of the challenged '752 Patent claims, much less a screw thread having a through hole centered on the screw thread electrode as required by challenged claims 1-5, 7, 8, 10, 13, 15, and 20, aligned with the atomizer as required by challenged claim 10, or substantially aligned with the atomizer as required by challenged claims 7, 11-15, 19, and 20. A POSITA would not have

been motivated to incorporate the Whittemore screw thread electrode into the device of Brooks, and such a combination would be inoperable. Finally, Brooks does not disclose an atomizer that includes a heater coil wound around a porous component as required by claims 4, 5, and 12, and a POSITA would not have combined Brooks and Whittemore to arrive at such an atomizer.

a. Brooks Does Not Teach or Suggest a Liquid Storage as Required by Independent Claims 1, 11, 14, and 19 and Dependent Claims 2-5, 7, 8, 10, 12, 13, 15, and 20

All of the challenged claims of the '752 Patent recite the "atomizer" and "liquid storage" as two separate components within the atomizer assembly housing (see, e.g., claims 1 and 19: "...an atomizer assembly housing containing an atomizer, liquid storage..."; claims 11 and 14: "...an atomizer assembly housing containing an atomizer and liquid storage..."). Meyst, ¶48. Other indications in the claims that the atomizer and liquid storage are separate components can be found in claims 11 and 19, which require that the liquid storage and atomizer be in physical contact, and claim 6, which requires that the liquid storage be a separate component that is inserted into the atomizer assembly. This is all consistent with the '752 Patent specification, which teaches the liquid storage as a store of liquid that will eventually be transferred to the atomizer for aerosolization. Meyst, ¶48.

Petitioner relies on Brooks for the claim limitation of "liquid storage." Petitioner at 46-47. However, Brooks does not teach or suggest any embodiment

in which liquid is stored outside the atomizer. Meyst, ¶49. Instead, liquid is impregnated directly into the heating element. Based on the disclosure of Brooks, a POSITA would understand that the atomizer in Brooks includes this "heating element." Meyst, ¶¶49-50. For example, Brooks describes controlling the temperature of the heating element to achieve "a desired temperature range for volatilization of the aerosol former and the tobacco flavor substances," and notes that its heating elements "are capable of holding and releasing relatively large quantities of aerosol forming substances and tobacco flavor materials." Brooks, Abstract, 4:25-41, 5:1-5. The role of the "heating element" as part of the atomizer is further supported by Brooks' description of the prior art, which refers to the "electrical resistance heating element" of Whittemore serving to vaporize liquid, and to heating element of U.S. Patent No. 4,735,217 achieving temperatures high enough "to volatilize menthol from a menthol pellet." Brooks, 1:57-61, 3:15-24.

Brooks consistently describes direct impregnation of its atomizer with liquid. Meyst, ¶53. For example, Brooks states "[p]referably, such porous heating elements are impregnated with liquid aerosol forming substances.... Such heating elements are particularly advantageous in that they are capable of holding and efficiently releasing relatively large quantities of liquid aerosol forming substances and tobacco flavor materials." Brooks, 4:22-29. Later, Brooks states "[p]referably, the heating element 18 is impregnated with or otherwise carries the aerosol

forming substance in order that the aerosol forming substance is in a heat exchange relationship with the electrical heating element." Brooks, 8:4-8. Working examples 1, 3, and 4 all refer to impregnating the heating element with liquid aerosol forming substance. Brooks, 17:1-9, 19:16-22, 20:14-22; Meyst, ¶53. Finally, claims 5, 7, 9, 30, 32, 34, 78, 80, 82, 108, 110, 112, and 142 each recite an aerosol forming substance impregnated within a heating element comprising porous material (claims 5, 30, 78, 108), fibrous material (claims 7, 32, 80, 110), and carbon fibers (claims 9, 34, 82, 112, 142).

Brooks presents impregnation of the heating element with liquid as a key feature distinguishing its disclosed device from the prior art. For example, in discussing U.S. Patent No. 4,735,217 to Gerth et al., Brooks notes that "it is believed that it would not be possible to coat a Nichrome heating element [of Gerth et al.]...with enough vaporizable liquid material to deliver sufficient volatile material to the user, over the 6 to 10 puff life of a typical cigarette." Brooks, 3:30-34. Later, Brooks distinguishes its device from Gerth et al. by stating:

Preferably, the heating element is a fibrous carbon material, most preferably having a surface area greater than about 1,000 m²/g. (In contrast, the surface area of the Nichrome metal resistance element of Gerth et al is believed to be about 0.01 m²/g). Preferably, such porous heating elements are impregnated with liquid aerosol forming substances....Such heating elements are particularly advantageous in that they are

capable of holding and efficiently releasing relatively large quantities of liquid aerosol forming substances and tobacco flavor materials. For example, such heating elements can carry enough aerosol forming substances to provide aerosol for 6 to 10 puffs, or more.

Brooks, 4:18-31.

The incorporation of liquid storage separate from the atomizer is at odds with Brooks' teaching of its smoking articles as comprising a disposable component capable of delivering a limited number of puffs. Meyst, ¶55. For example, Brooks states "[p]referred smoking articles of the invention can deliver such aerosol, preferably in visible form, for a plurality of puffs, preferably at least about 6 puffs, more preferably at least about 10 puffs, under such conditions."

Brooks, 6:32-36. Later, Brooks states "This process continues, puff after puff, normally for at least about 6 puffs, until aerosol delivery drops below the level desired by the user. Then, the user can remove the cigarette 12 from the control pack 14, and dispose of the cigarette." Brooks, 10:66-11:2. The working examples show the disclosed devices delivering 10 puffs (Examples 1, 3, 5, and 6) or 12 puffs (Example 4). Brooks, 18:28-29, 19:64-66, 21:39-48, 22:38-40. For a disposable device designed for such limited usage, there is no need for liquid storage separate from the atomizer – the atomizer itself is impregnated with sufficient liquid. Meyst, ¶55.

Petitioner ignores Brooks' clear and consistent disclosure of direct impregnation of liquid into the atomizer, instead twisting the Brooks disclosure to conjure an embodiment that is not disclosed. According to Petitioner, "Brooks discloses two embodiments" for liquid storage. Petition at 46, citing Brooks, 7:65-8:3. In the first alleged embodiment, "the atomizer is also the liquid storage (i.e., the heating component doubles as a porous component for storing liquid)." *Id.* This "first embodiment" is consistent with the disclosure of Brooks.

The second alleged embodiment put forth by Petitioner is wholly unsupported by Brooks. Meyst, ¶¶56-58. In this alleged embodiment, "the heating element comprises a resistance heating component that is in 'intimate contact' with a liquid storage in the form of a 'porous substrate' (i.e., the 'heating *element*' comprises a 'heating *component*' that is distinct from the porous component)." Petition at 46, citing Brooks, 7:65-8:3. Petitioner asserts that in this second embodiment "the heating element may be a 'resistance heating component' that is in contact with a 'porous substrate.'" Petition at 22, citing Brooks, 8:1-3. Petitioner purports to adopt this alleged second embodiment, then asserts that since "the porous substrate is impregnated with the liquid that is ultimately vaporized," "[t]he porous substrate is therefore a liquid storage." Petition at 47. In other words, Petitioner appears to interpret the "porous substrate" at 8:1 of Brooks to be liquid storage, and the "heating component" at 8:2 to be the atomizer. Petitioner's expert,

Collins, parrots Petitioner's arguments regarding the so-called second embodiment without providing any substantive analysis. Collins, ¶50.

Petitioner never clearly delineates what it considers to be the atomizer in Brooks, instead merely stating that it "include[es] at least the heating component." Petition at 47, 53, 54, 55. This imprecision is necessary for Petitioner to reach its conclusion that the "resistance heating component" of Brooks is the atomizer, while the "porous substrates in intimate contact with" this resistance heating component constitutes a separate liquid storage. However, as discussed above, a POSITA would understand that the atomizer of Brooks comprises the entire "heating element," while the vaguely referenced "heating component" (a term which appears only once in Brooks) constitutes a subpart of the heating element (and hence a subpart of the atomizer). Meyst, ¶58.

There is nothing in the disclosure of Brooks to support Petitioner's assertion that the "heating component" in and of itself constitutes an atomizer, and that assertion is contradicted by Petitioner's later statements regarding the alleged heater coil and porous component of Brooks (see (V)(C)(3)(f), below). The lone Brooks passage cited in support of Petitioner's alleged second embodiment lists "porous substrates in intimate contact with resistance heating components" as an example of a "suitable heating element" ("*[o]ther suitable heating elements include porous metal wires or films; carbon yarns, cloths, fibers, discs or strips;*

graphite cylinders, fabrics or paints; microporous high temperature polymers having moderate resistivities; *porous substrates in intimate contact with resistance heating components*; and the like;" Brooks, 7:65-8:3, emphasis added). The "porous substrate" in this passage is explicitly part of the "heating element," i.e., the atomizer, not a liquid storage separate from the atomizer. Meyst, ¶58. A POSITA would recognize that the "resistance heating component" in this passage is also part of the heating element, i.e., the atomizer, because a heating component would be directly involved in converting liquid into aerosol or vapor. Meyst, ¶58.

Petitioner attempts to subvert the plain meaning of the cited Brooks passage by transposing "resistance heating component" and "porous substrate" throughout its arguments. For example, Petitioner states that Brooks' "heating element may be a '*resistance heating component*' that is in contact with a '*porous substrate*.'" Petition at 22 (emphasis added). Petitioner repeats this sleight of hand later, for example stating that Brooks' "heating element can constitute a resistance heating component in 'intimate contact' with 'porous substrates,'" and "Brook's heating element – *i.e.*, a resistant heating component in intimate contact with a porous substrate..." Petition at 36, 41. However, this is not what the cited Brooks passage says. Instead, Brooks states that "suitable heating elements include...*porous substrates in intimate contact with resistance heating components*," i.e., the "heating element" necessarily includes at least the "porous

substrate." Petitioner's interpretation of the "porous component" in this passage as a liquid storage separate from the atomizer, rather than as a part of the atomizer, is contradicted by the plain meaning of the passage.

Brooks refers to "porous" materials several times outside of the passage cited by Petitioner. In each of these instances, the porous material is explicitly described as part of the heating element (i.e., the atomizer), not a separate liquid storage: "[t]his resistance heating element typically is a porous material...;" "[p]referably, such porous heating elements are impregnated with liquid aerosol forming substances...;" "[t]he resistance heating element 18 employed in cigarette 12 preferably is a fibrous material having a high surface area and an adsorbant, porous, wettable character, in order to carry a suitable amount of aerosol forming substance for effective aerosol formation." Brooks, 4:12-24, 7:26-30.

In summary, Brooks uses the term "heating element" to refer to part of its atomizer, a usage consistent with the art generally (as illustrated by Brooks' own background section). Meyst, ¶¶49, 58. Brooks teaches that aerosol forming liquid is impregnated directly into the heating element, which preferably has a porous surface to facilitate this impregnation. Meyst, ¶53. Consistent with this teaching, Brooks teaches that in one embodiment the "heating element" includes "porous substrates in intimate contact with resistance heating components." Meyst, ¶¶52, 56. Thus, contrary to Petitioner's assertions, Brooks does not teach a liquid storage

separate from the heating element, i.e., separate from the atomizer, as required by all of the challenged '752 Patent claims. Meyst, ¶59.

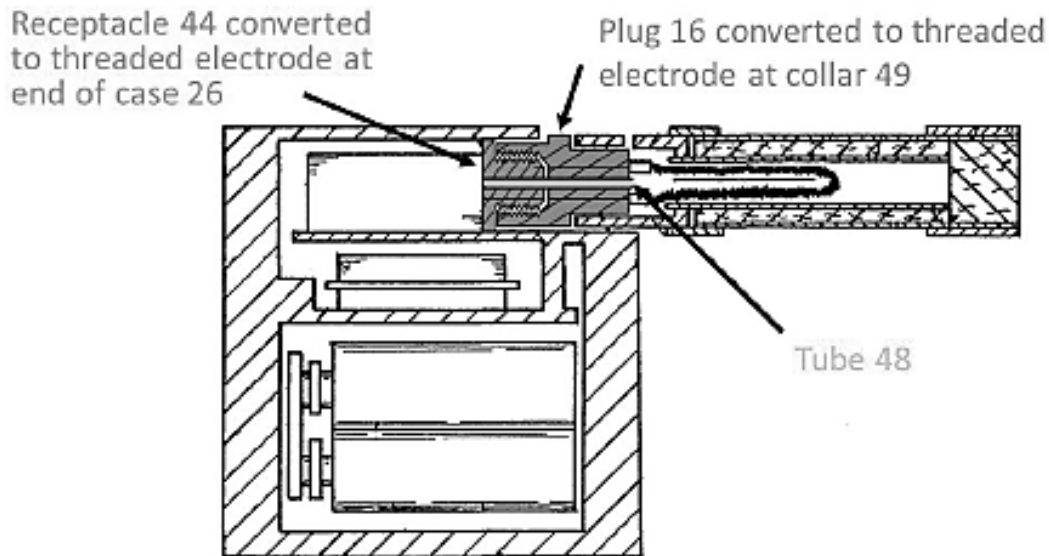
b. The Proposed Combination of Brooks and Whittemore Does Not Include a Screw Thread Electrode as Required by Independent Claims 1, 11, 14, and 19 and Dependent Claims 2-5, 7, 8, 10, 12, 13, 15, and 20

All of the challenged '752 Patent claims require a screw thread electrode on one end of the atomizer assembly housing. This screw thread electrode is designed to mate with a corresponding screw thread electrode on a battery assembly, thereby providing a mechanical and electrical connection between the battery and atomizer assemblies in an assembled electronic cigarette.

Brooks discloses a device with two separable components, namely the disposable portion and the reusable controller. These components are mechanically and electrically connected by inserting "electrical connector pins or prongs 38, 39" on "electrical connection plug 16" of the disposable portion into "plug-in connectors 42, 43" (also referred to as "electrical terminals 42, 43") on "insulative receptacle 44." Brooks, 7:15-25, 8:33-38; Meyst, ¶61. Brooks does not contemplate the use of a threaded connection between the two components, much less a screw thread electrode. Meyst, ¶61.

Petitioner asserts that "it would have been obvious to a person of ordinary skill in the art to adapt Brooks to include a threaded electrical connection, as taught

by Whittemore." Petition at 27-36. Petitioner provides the following figure illustrating an "exemplary embodiment" of its proposed combination of Brooks and Whittemore:



Brooks in view of Whittemore.

Petition at 33, 52.

In this illustration, Petitioner purports to convert "receptacle 44" and "plug 16" of Brooks, both of which are made from insulative, non-conductive materials, to "threaded electrodes." Brooks, 8:31-33, 9:41-43; Meyst, ¶¶61-62.

Petitioner's proposed combination suffers from a critical flaw: its modified connectors do not constitute screw thread electrodes. Meyst, ¶¶64-65.

Screw thread electrodes provide both mechanical and electrical connections between components. Meyst, ¶63. Electricity flows directly through the screw

thread electrode, which is made of a conductive material. Meyst, ¶¶63. Petitioner makes no attempt to explain how the "threaded electrodes" it incorporates in place of the non-conductive receptacle and plug of Brooks would conduct electricity from the reusable controller to heating element 18. Meyst, ¶¶64-65. In fact, Petitioner's illustration of its proposed combination shows that the combination device retains pins/prongs 38 and 39 from the Brooks disposable component, indicating that these components continue to conduct electricity. Meyst, ¶¶64. This would lead a POSITA to conclude that the incorporated screw threads are mechanical, not electrical, connectors. Meyst, ¶¶64-65.

Petitioner's description of its proposed combination confirms this conclusion. Specifically, Petitioner repeatedly states that its combination device maintains the electrical connection of Brooks. For example, Petitioner states that its proposed combination "would retain all the features of Brooks except that the mating of the two detachable components would be achieved with threaded pieces rather than the prongs of a plug connection," and accordingly the combination "would retain Brooks' electrical and airflow connections between the two components of the device.... Electricity would flow from controller 14 to cigarette 12 as in the unmodified device, and tube 48 would likewise be retained...." Petition at 33-34. Petitioner goes on to state that "all that would change is the nature of the fastener – from a plug connection to a screw thread connection...." Petition at 34.

Petitioner and its expert assert that the combination of Brooks and Whittemore would be a "a simple substitution" with "predictable results," but neither Petitioner nor Collins provide any explanation as to how a POSITA would implement the Whittemore screwthread electrode into Brooks' device without retaining Brooks' electrical connections. Petition at 34; Collins, ¶¶64, 69; Meyst, ¶¶64-65.

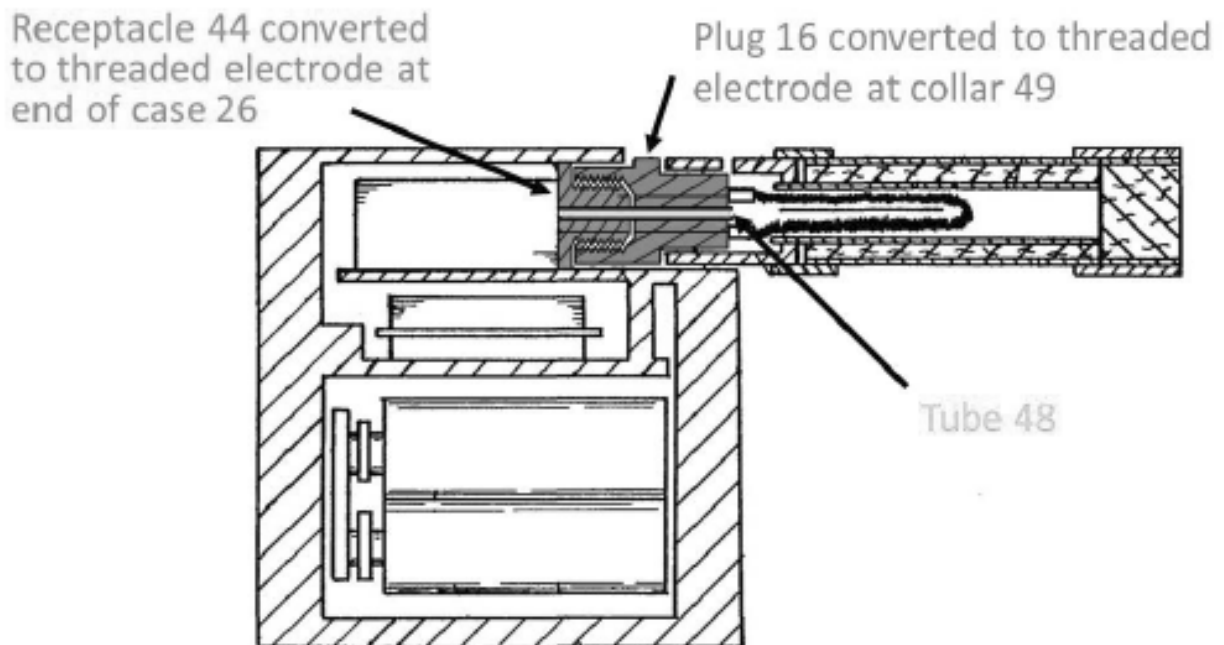
In summary, Petitioner's proposed combination of Brooks and Whittemore does not include a screw thread electrode as recited in the '752 Patent claims. Meyst, ¶64. Instead, Petitioner's proposed combination retains pins/prongs 38 and 39 of Brooks and conducts electricity in the same manner as Brooks, with the only difference being the inclusion of a threaded mechanical connection. Meyst, ¶64. Since the threaded connection does not provide an electrical connection, it cannot be a screw thread electrode.

c. The Proposed Combination of Brooks and Whittemore Does Not Include a Through Hole Centered on the Screw Thread Electrode as Required by Claims 1-5, 7, 8, 10, 13, 15, and 20, Aligned With the Atomizer as Required by Claim 10, or Substantially Aligned With the Atomizer as Required by Claims 7, 11-15, 19, and 20

All of the challenged claims require a through hole in the screw thread electrode on the atomizer assembly housing that is either "centered on [or in] the screw thread electrode" (claims 1-5, 7, 8, 10, 13, 15, and 20), "aligned with the

atomizer" (claim 10), or "substantially aligned with the atomizer" (claims 7, 11-15, 19, and 20).

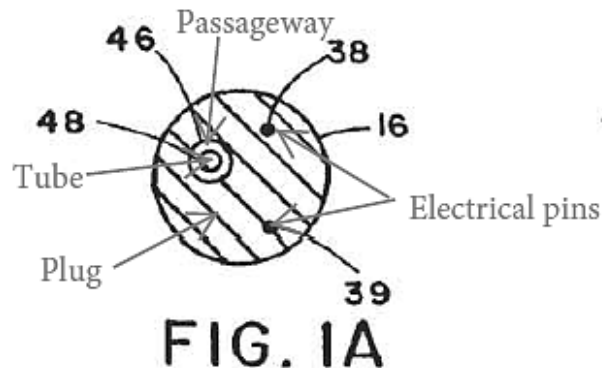
Whittemore's screw thread electrode has no hole, leaving Petitioner to assert that a POSITA would have incorporated Whittemore's screw thread electrode into Brooks "while maintaining the through hole in the center of the electrode that Brooks already discloses." Petition at 51. In its "exemplary figure" showing what this proposed combination device would look like, below, Petitioner points to Brooks' tube 48 as the through hole.



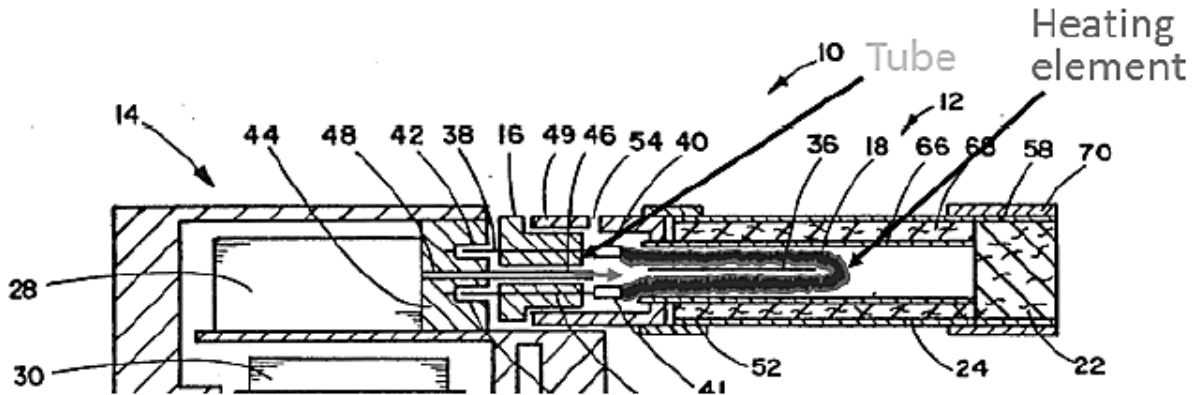
Brooks modified in view of Whittemore.

Petition at 52.

Tube 48 in Petitioner's proposed combination device is not "centered on" or "centered in" the alleged screw thread electrode. Meyst, ¶68. Brooks teaches that tube 48 and passage 46 "are offset with respect to the longitudinal axis of plug 16." Brooks, 8:40-42. This is illustrated in Fig. 1A of Brooks, below (annotations added). Thus, the through hole in Petitioner's combination device is explicitly not centered. Meyst, ¶¶68-69.



For the same reason, tube 48 in Petitioner's proposed combination device also is not "aligned with the atomizer" or "substantially aligned with the atomizer." Meyst, ¶70. According to Petitioner, "Brooks discloses that tube 48 (which extends through receptacle 44 and plug 16 and thus constitutes a through hole) is *substantially aligned* with heating element 18 (including the resistance heating component)." Petition at 62 (emphasis added). However, the only support Petitioner provides for this assertion is the annotated version of Fig. 2 of Brooks set forth below.



Ex.1006, Brooks at Fig. 2 (annotated excerpt). See also Figs. 1, 4-7.

Petition at 62.

Fig. 2 provides a longitudinal view of the device. From this angle, there is no way to conclusively determine whether tube 48 is centered. However, Fig. 1A (which Petitioner tellingly fails to cite) *does* provide a conclusive view, showing that tube 48 and passage 46 "are offset with respect to the longitudinal axis of plug 16."

Brooks, 8:40-42, Fig. 1A. Given Brooks' explicit teaching that tube 48 is offset, a POSITA would not interpret Fig. 2 to support Petitioner's assertion that tube 48 is substantially aligned with heating element. Meyst, ¶70.

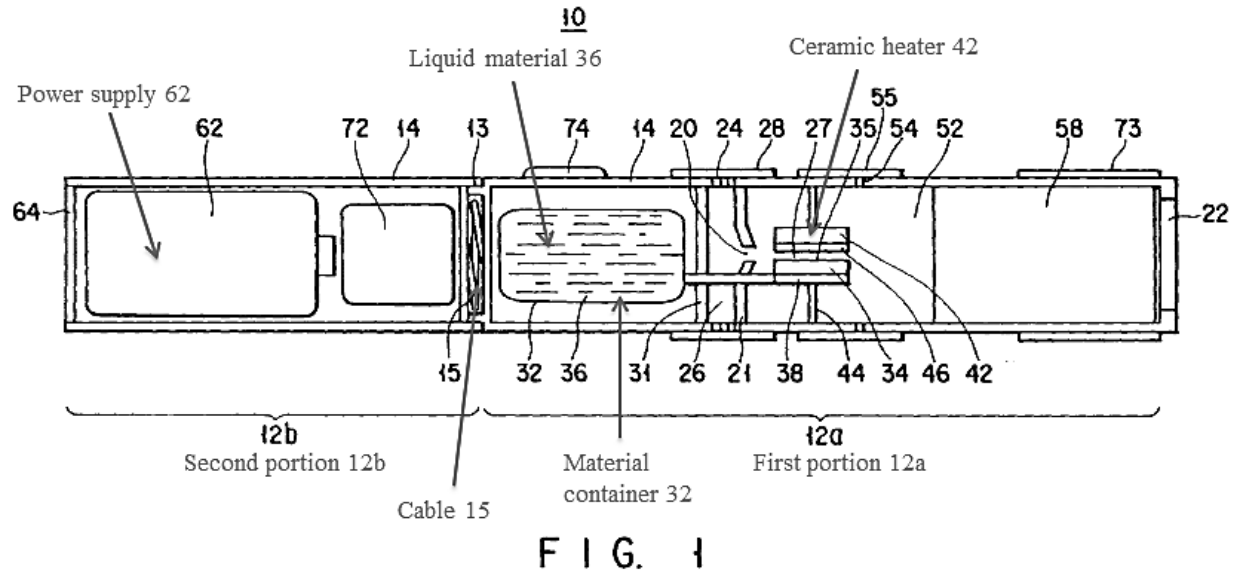
d. A POSITA Would Have Had No Credible Motivation for Incorporating the Screw Thread Electrode of Whittemore Into the Brooks Smoking Article

A POSITA would have had no credible motivation for incorporating the screw thread electrode of Whittemore into the smoking article of Brooks. The motivations alleged by Petitioner are based on faulty reasoning and impermissible hindsight.

Petitioner asserts that a POSITA "would have understood that a threaded connection could be used in the Brooks device because such connections (including electrical threaded connections) are so commonplace and routinely used in everyday structures like light fixtures," and "[t]echnologists have applied such threaded electrical connections to vaporization devices at least since the 1930s, as Whittemore demonstrates." Petition at 28, 30. In addition to Whittemore, Petitioner cites several additional references, namely EP Patent 0845220 ("Susa;" Ex. 1007), Gilbert (Ex. 1013), and U.S. Patent No. 5,894,841 ("Voges;" Ex. 1014), as analogous prior art to support its contention that screw thread electrodes were well known. Petition at 31-35. All three of these references were cited during prosecution of the '752 Patent. Ex. 2014, p. 1, Cite No. A4; p. 2, Cite No. A43; p. 5, Cite No. B21.

Susa and Voges do not disclose screw thread electrodes. Meyst, ¶¶76-78. The threaded connections used in the disclosed Susa and Voges devices provide a purely mechanical connection; they do not conduct electricity. Meyst, ¶¶76-78.

Susa discloses a "flavor generation article" with "casing (12) constituted by first and second portions (12a, 12b) that are detachably connected to each other" through connecting portion 13. Susa, Abstract, 5:20-22. Fig. 1 of Susa, below (annotations added), illustrates an embodiment of the disclosed device.



Petitioner states that Figure 1 of Susa "depicts a plug-type connection that links the two housing pieces (12a and 12b)," but asserts that "Susa's disclosure makes clear...that this plug-type connection is interchangeable with other known fasteners – including screws." Petition at 28-29. Susa discloses that "a known structure, e.g., a screw or a fitting pair, can be employed" for connecting portion 13. Susa, 5:17-28. However, this threaded connection is not a screw thread electrode because "portions 12a and 12b are electrically connected to each other through a cable 15." *Id.* This electrical connection could not be replaced with a screw thread electrode because the Susa device requires two-way communication between sensor 73 and control circuit 72. Susa, 8:55-58; Meyst, ¶77. Further, a POSITA would not incorporate the screw thread of Susa into Brooks even as a purely mechanical connection. Meyst, ¶77. The Susa device is able to utilize a

screw thread connection because there are no rigid components that need to mate properly between portions 12a and 12b; the only required interface between the components is a single flexible cable. Meyst, ¶77. This is not the case with the Brooks device, which includes offset pins/prongs and a tube/passage that must align and mate between components.

Voges discloses a nicotine dispenser "comprising a cigarette-shaped hollow tubular body 1 comprising connected body parts 2, 3." Voges, 5:48-51. "Body part 3 is screw threaded at one end for connection with threaded end 6 of body part 2." Voges, 5:54-55. This is illustrated in Fig. 2 of Voges, below.

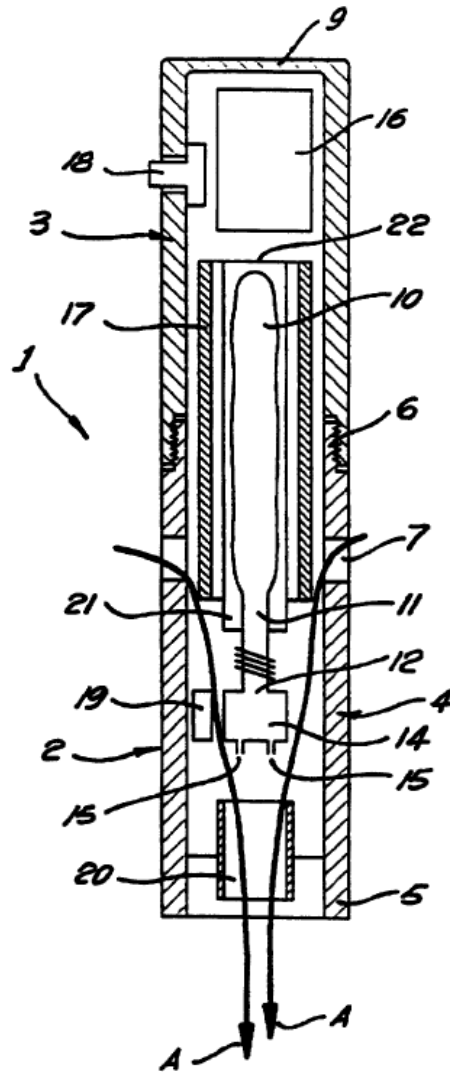


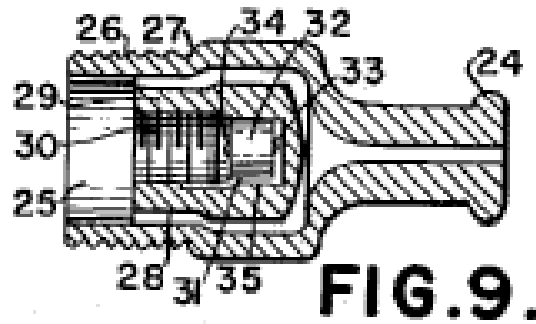
FIG. 2

Electricity is conducted from battery 17 to other components via an internal connection. Meyst, ¶78. Thus, as with Susa, the threaded connection in between body parts 2 and 3 in Voges is purely mechanical. Meyst, ¶78.

Gilbert discloses a smoking device using a vacuum tube or bulb "similar to a light bulb." Gilbert, 2:50. As shown in Figure 10 of Gilbert, below, the back end of this bulb has a screw plug 37. This screw plug connects to socket 30, shown in

Figure 9 of Gilbert, below. Socket 30 is internal to the Gilbert device, not on the end of the atomizer housing. Therefore, a POSITA would not have been motivated to incorporate the screw thread connection of Gilbert into the Brooks device in the manner proposed by Petitioner. Meyst, ¶79. Further, socket 30 itself is not a screw thread electrode because it is not formed from a conductor and does not conduct electricity. Meyst, ¶79. Gilbert states "[w]ithin the inner ring 29 is a threaded electric socket 30 and forwardly thereof a battery cavity 31 for detachably receiving a battery 32 having an inner contact 33 and an outer contact 34 with a contact strip 35 between the inner contact 33 and the socket 30." Gilbert, 2:41-45, Fig. 9. Contact strip 35 is required to electrically connect the inner contact 33 of the battery 32 to the inner ring: "[w]hen the bulb 36 is assembled to the socket 30 its tip end 38 will engage the inner battery contact 33 and complete the circuit through the filament of the bulb 36 by the contact strip." Gilbert, 2:70-3:2. If socket 30 were formed from an electrically conductive material, there would be no need for contact strip 35. Meyst, ¶79. Therefore, a POSITA also would not have looked to Gilbert for guidance in producing a device having two connected screw thread electrodes.





Regardless of how well known screw thread electrodes were in the art, the mere fact that elements are known does not make the combination of those elements obvious. "Whether a patent claiming the combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements to their established functions.... To reach this conclusion, however, requires more than a mere showing that the prior art includes separate references covering each separate limitation in the claim under examination." Ex. 2010, p. 18-19; citing *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Petitioner fails to provide such a showing. Petitioner also fails to address why, in view of the purported ubiquity of screw thread electrodes in vaporization devices from the 1930s onward, it took over 75 years for someone to develop the electronic cigarette of the '752 Patent. Meyst, ¶¶72, 75.

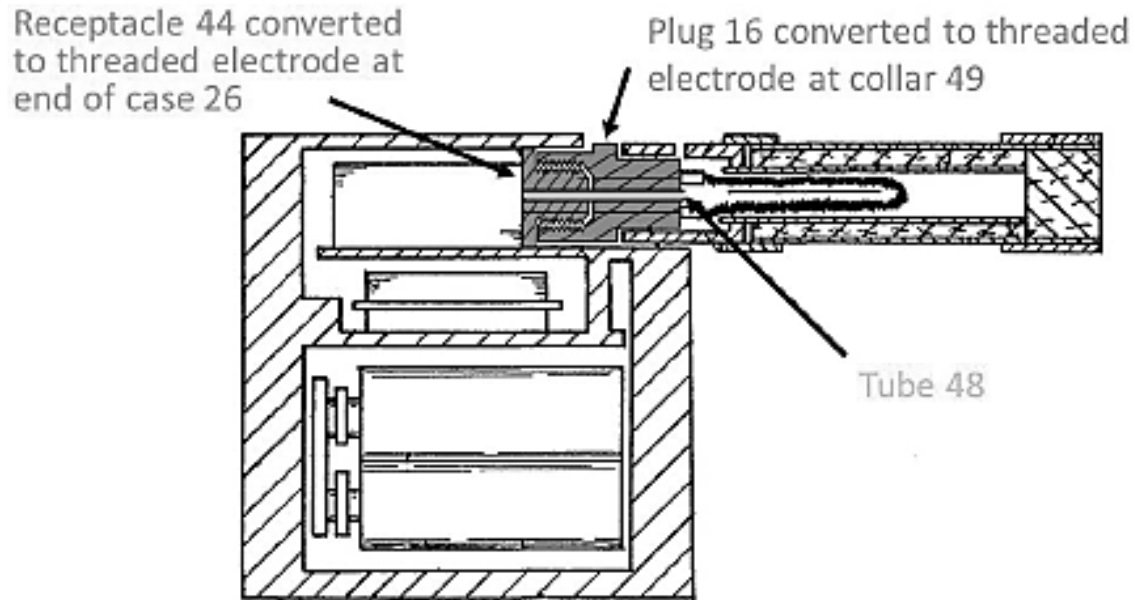
Petitioner asserts that a POSITA "would have known that threaded connections are especially appropriate where components reusable [sic] and thus

require frequent assembly and disassembly, and would have identified the Brooks device as presenting just such a circumstance." Petition at 32. To the contrary, the device of Brooks is precisely the sort of device one skilled in the art would *not* incorporate a screw thread connection into. Meyst, ¶¶74. The simple pin/plug connector of Brooks is cheaper to produce and easier to assemble and use than a screw thread electrode, which requires more expensive and higher tolerance materials. Meyst, ¶¶73-74. In the device of the '752 Patent, the atomizer assembly and its corresponding battery assembly can be used repeatedly, and the battery assembly is designed to be rechargeable. Meyst, ¶11. In Brooks, on the other hand, the disposable component is designed to be used for 6-10 puffs, the equivalent of a single traditional cigarette, and then discarded. Brooks, 4:29-31, 10:66-11:5; Meyst, ¶46. Thus, contrary to Petitioner's assertion, the disposable component of Brooks is not "reusable." There is no reason to incorporate a more complex and costly connection into a single-use disposable component. Meyst, ¶¶73-74.

Moreover, none of the prior art relied on by Petitioner expresses any concern about the ease of assembly/disassembly for the allegedly reusable components. Instead, Petitioner has created a nonexistent problem based on hindsight in order to justify its proposed combination. Petitioner's overreaching rationale contravenes legal precedent. See *Insite Vision Inc. v. Sandoz, Inc.*, 783 F.3d 853, 859 (Fed. Cir. 2015) ("Defining the problem in terms of its solution reveals improper hindsight in

the selection of the prior art relevant to obviousness.") (citation omitted); and *Leo Pharmaceutical Products, Ltd. v. Rea*, 726 F.3d 1346, 1354-57 (Fed. Cir. 2013) (rejecting obviousness argument where prior art did not recognize an alleged problem so there was "no reason for one of ordinary skill in the art to attempt to improve" upon the art).

Petitioner's proposed combination of Brooks and Whittemore retains pins/prongs 38 and 39 of Brooks, as well as passageway 46 and tube 48 (illustrated in Petitioner's illustration of its combination, below). Meyst, ¶¶64-65, 80. A POSITA would not have been motivated to incorporate a screw thread, much less a screw thread electrode, into a device configured in this manner. Meyst, ¶81. The screw threads on each component could not be twisted together while tube 48 is engaged with passageway 46 and the pins/prongs are engaged with their corresponding slots on controller 14, and engagement of the tube and pins/prongs could not be achieved by twisting the screw threads. Meyst, ¶81. The situation is further complicated by Brooks' disclosure that "pins 38, 39 and passageway 46 are offset with respect to the longitudinal axis of plug 16." Brooks, 8:40-42. Thus, even if simultaneous plug and screw connections were possible, even the slightest amount of under- or overtightening would prevent proper alignment of the pins/prongs and tube/passageway and cause bending or breakage of these components. Meyst, ¶82.



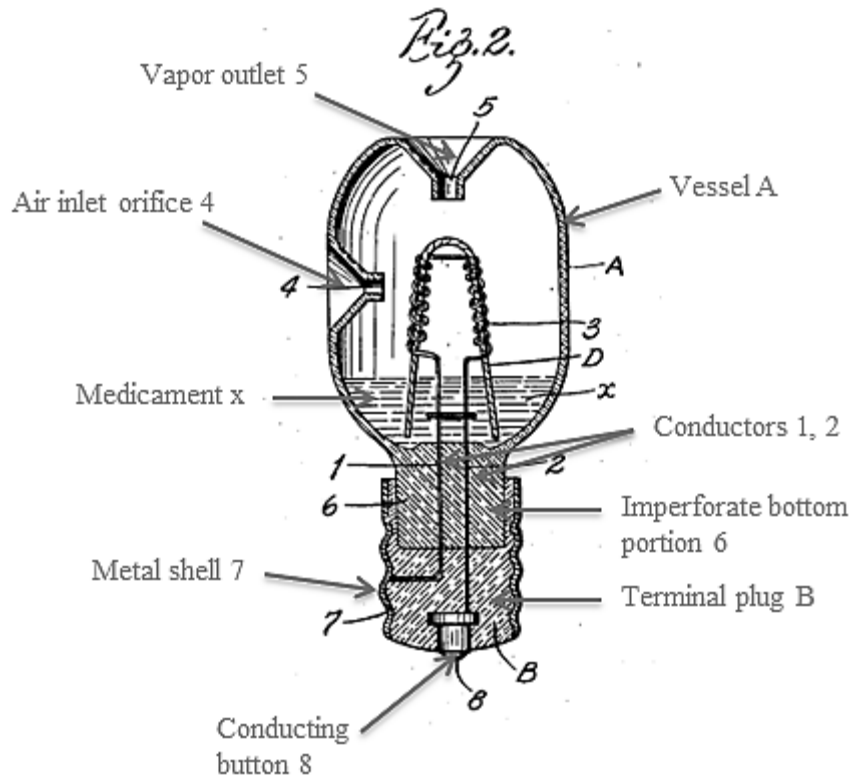
Brooks in view of Whittemore.

Petition at 52.

All of the challenged '752 Patent claims require that the screw thread electrode have a through hole. The Whittemore device has no such hole through its screw thread electrode, leaving Petitioner to assert that a POSITA would have incorporated the Whittemore screw thread electrode into Brooks "while maintaining the through hole in the center of the electrode that Brooks already discloses." Petition at 51. However, a POSITA would have had no motivation to utilize the Whittemore screw thread electrode in the proposed manner.

As shown in Fig. 2 of Whittemore, below (annotations added), the Whittemore device features a lightbulb-type connector, with metal shell 7 threaded for insertion into a socket. Electricity flows through conductors 1 and 2, with

conductor 2 attached to the inner surface of the metal shell at center conducting button 8. Whittemore, p. 1, left col., ll. 45-49. Whittemore does not teach or suggest incorporating a through hole into metal shell 7. Meyst, ¶80.



A POSITA would not utilize the Whittemore screw thread in a device requiring a hole through the screw thread because such a hole would result in leakage and render the device inoperable. The Whittemore device is explicitly configured to be used in an upright orientation only. Meyst, ¶80. Air enters vaporization vessel A via air inlet orifice 4 "disposed at a point below the upper end of the vessel," while vapor escapes the vessel via vapor outlet 5 "formed preferably in the top wall of the vessel A." Whittemore, p. 1, left col., ll. 29-34.

Operation of the device in a non-upright position would result in leakage of medicament X out of one or both of these inlets. Meyst, ¶80. The bottom portion of vaporization vessel A in which conductors 1 and 2 are embedded is made up of "a solid or substantially imperforate bottom portion 6." Whittemore, p. 1, left col., ll. 33-36. Incorporating a through hole into the screw thread that extended into the vessel would disrupt this bottom portion and result in liquid medicament X leaking through the screw thread and into the corresponding receptacle or socket. Meyst, ¶80.

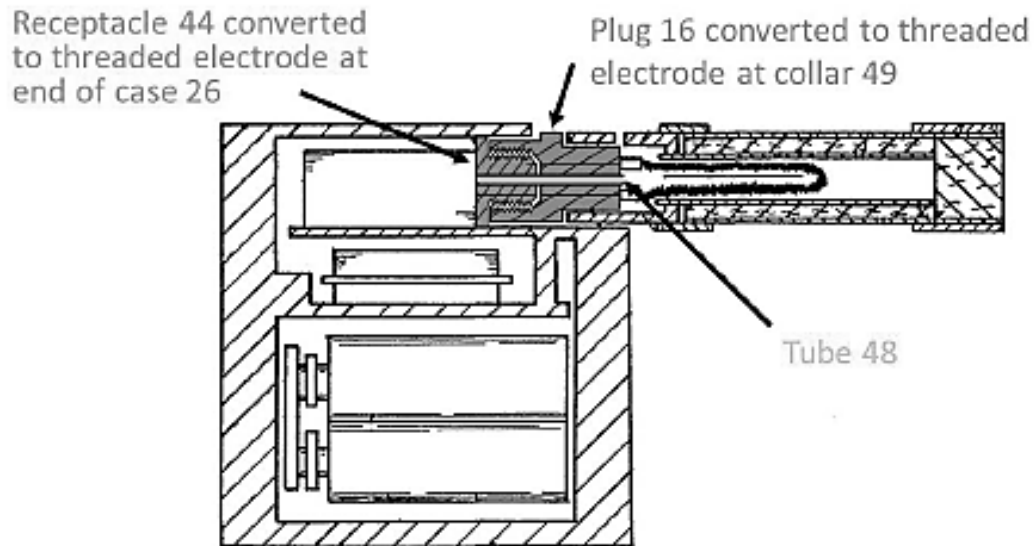
The case law cited by Petitioner' (see Petition at 34-36) is not applicable to the present facts and does not support Petitioner's obviousness arguments. In Petitioner's lead case, *Allied Erecting & Dismantling Co. v. Genesis Attachments*, the Federal Circuit confirmed that the relevant inquiry for obviousness is "whether a skilled artisan would have been motivated to combine the teaching of the prior art references to achieve the claimed invention." 825 F.3d 1373, 1381 (Fed. Cir. 2016). In that case, Allied argued that a POSITA would not have made the proposed combination because to do so would have required redesign of the features from one reference prior to incorporation of those features into another reference. *Id.* at 1380-81. The court affirmed that the claims were unpatentable, but only because there was a specific motivation in the record to make the modifications in the combination. *Id.* at 1381-82. Petitioner's other cited cases

also confirm that motivation is required. *In re Mouttet*, 686 F.3d 1322, 1333 (Fed. Cir. 2012) (affirming finding of motivation to modify references in the proposed combination); *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (affirming board's finding of that the prior art references to be combined included a "strong[] suggestion for combining" those same references); *In re Sneed*, 710 F.2d 1544, 1550-51 (Fed. Cir. 1983) (finding motivation for combination in one of the proposed references); *Par Pharm., Inc. v. Twi Pharms., Inc.*, 773 F.3d 1186, 1197 (Fed. Cir. 2014) (affirming district court's finding of specific motivation in the record to make the combination).

In contrast to these cited cases, Petitioner fails to set forth the modifications necessary to make its proposed combination work, let alone why a POSITA would have been motivated to make those modifications. As set forth below at (V)(C)(3)(e), Brook's pins/prongs 38 and 39 and tube 48 would not function if Brook's plug 16 were replaced with Whittemore's screw thread. Yet, Petitioner's proposed combination retains all of these features without explanation. Because Petitioner fails to identify the necessary modifications or provide any motivation to make those modifications, Petitioner fails to demonstrate that a skilled artisan would have been motivated to combine the teaching of Brooks and Whittemore to achieve the claimed invention.

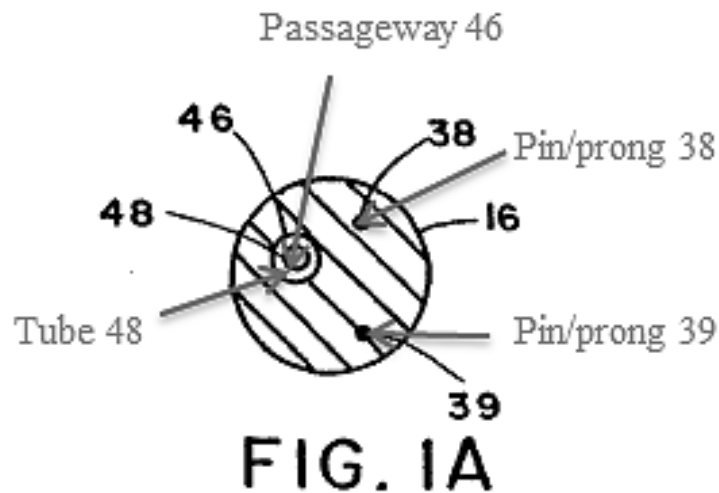
e. The Proposed Combination of Brooks and Whittemore Would Be Inoperable

A POSITA would recognize that Petitioner's proposed combination of Brooks and Whittemore would be inoperable. Meyst, ¶¶81-82. As discussed above at (V)(C)(3)(b), Petitioner's proposed combination (see illustration below) retains pins/prongs 38 and 39, offset passageway 46, and tube 48 of Brooks. Petition at 33-34; Meyst, ¶¶81-82. As discussed above at (V)(C)(3)(d), a POSITA would recognize that the presence of these components, particularly in the offset configuration explicitly taught by Brooks (see Brooks 8:40-42, Fig. 1A (below, annotations added)), is incompatible with the proposed screw thread connection. Meyst, ¶¶81-82. A screw thread requires twisting, and this could not be done while the pins/prongs and tube are engaged. Meyst, ¶81. Further, engagement of the pins/prongs could not be accomplished by twisting a screw thread. Meyst, ¶82. Finally, even if simultaneous plug and screw connections were possible, even the slightest amount of under- or overtightening would prevent the pins/prongs and tube from connecting in the proper alignment and could cause them to bend or break. Meyst, ¶82.



Brooks in view of Whittemore.

Petition at 52.



f. The Proposed Combination of Brooks and Whittemore Does Not Include an Atomizer Including a Heater Coil Wound Around a Porous Component as Required by Dependent Claims 4, 5, and 12

Challenged claims 4 and 5 (which depend from claim 1) and claim 12 (which depends from claim 11) all require that the atomizer include a heater coil wound around a porous component.

Petitioner asserts that Brooks discloses an atomizer including a heater coil wound around a porous component. Petition at 36-37. In support of this assertion, Petitioner states "Brooks discloses that its heating element can constitute a 'metal wire,' and further discloses that the heating element can constitute a resistance heating component in 'intimate contact' with 'porous substrates.'" Petition at 36, citing Brooks 7:65-8:3. The lone reference to a wire in the cited passage of Brooks is the statement that "[o]ther suitable heating elements include porous metal wires...." Nonetheless, Petitioner concludes that Brooks discloses "that the atomizer may comprise a heater coil where that heating coil is wound around a porous component (the porous substrate)." Petition at 37.

Contrary to Petitioner's assertion, Brooks never discloses a heater coil wound around a porous component. Meyst, ¶84. The only mention of heater coils in Brooks is in reference to prior art devices, which Brooks presents as inferior to its disclosed porous heating element. Meyst, ¶85.

Just as it did when arguing that Brooks discloses liquid storage separate from the atomizer (see (V)(C)(3)(a)), Petitioner mischaracterizes the disclosure of Brooks by transposing "heating components" and "porous substrates." The cited passage of Brooks states that "suitable heating elements include...porous substrates in intimate contact with resistance heating components," not a heating component in intimate contact with a porous substrate. Meyst, ¶83.

In arguing that Brooks discloses an atomizer that includes a heater coil wound around a porous component as recited in claims 4, 5, and 12, Petitioner ignores the language in these claims requiring liquid storage separate from the atomizer in the atomizer assembly housing. As discussed above at (V)(C)(3)(a), Petitioner argues that Brooks' "porous substrates in intimate contact with resistance heating components" provide both an atomizer (the resistance heating component) and a separate liquid storage (the porous substrate) (the so-called "second embodiment"). Meyst, ¶84. Now, in attempting to meet a different limitation of the challenged claims, Petitioner changes its argument and asserts that Brooks' "porous substrates in intimate contact with resistance heating components" are both components of the atomizer. Petitioner's arguments are mutually exclusive: either the porous substrate and heating component of Brooks constitute an atomizer, in which case Brooks does not disclose a liquid storage, or the porous substrate and heating component of Brooks constitute a liquid storage and an atomizer, in which

case Brooks does not disclose an atomizer including a heater coil wound around a porous component. Meyst, ¶84. In either case, there is no heater coil wound around a porous component.

Petitioner goes on to argue that to the extent Brooks does not disclose an atomizer including a heater coil wound a porous component, Whittemore discloses such an element, and that it would have been obvious to incorporate the Whittemore heating wire/porous component into Brooks. Petition at 37-41. According to Petitioner, "Whittemore describes a wick D made of thread or string that is surrounded by 'coiled or looped portions' of a 'filament 3,' which acts as a heater when electric current is run through it." Petition at 37. According to Petitioner, it would have been obvious to a POSITA to adapt the Brooks porous substrate to include a coil wrapped around the porous substrate in view of Whittemore. Petition at 38. Again, this argument undercuts Petitioner's other arguments. Combining Whittemore's atomizer, which includes a heating wire wrapped around a wick, with Brooks reflects that the so-called second embodiment of Brooks is merely an atomizer that holds liquid (the so-called first embodiment) because Whittemore discloses a separate liquid supply in its lightbulb housing. Thus, there is no separate liquid storage as required by all of the challenged '752 Patent claims.

g. A POSITA Would Have Had No Credible Motivation for Incorporating an Atomizer Including a Heater Coil Wound Around a Porous Component Into the Smoking Article of Brooks

A POSITA would have had no credible motivation to combine Whittemore and Brooks to produce an atomizer that includes a heater coil wound around a porous component. Meyst, ¶¶87-90.

Petitioner asserts that a POSITA would have found it obvious to "adapt Brooks' heating element – *i.e.*, a resistance heating component in intimate contact with a porous substrate – to include winding the resistance heating component around the porous substrate, as taught by Whittemore." Petition at 41. However, a POSITA would not apply Whittemore to Brooks in this manner because of conflicting features of the disclosed devices. Meyst, ¶55. The disposable component of the Brooks smoking article is only designed to deliver 6 to 10 puffs of aerosol, the equivalent of one traditional cigarette. Brooks, 6:32-36, 10:66-11:2, 18:28-29, 19:64-66, 21:39-48, 22:38-40; Meyst, ¶46. As such, there is no need for liquid storage outside the heating element, and hence no need for a Whittemore-style wick to transport liquid to the heating element. Meyst, ¶55.

Petitioner goes on to assert that it would have been obvious to "adapt Brooks to include a heating coil wound around a porous component because wire coils promote efficient heat transfer," and that such a modification "would thus be nothing more than application of a known technique...to a similar structure...."

Petition at 40-41. However, due to its lower surface area, a wire coil would not be more efficient than the heating elements actually disclosed in Brooks, and would in fact be inferior to the specific materials disclosed in Brooks. Meyst, ¶¶89-90.

Further, the Board has previously stated that a mere assertion that a POSITA would have wanted more efficient heat transfer, in the absence of any actual teaching in the prior art that improved heat transfer was desirable or necessary, does not constitute a sufficient motivation to combine. Ex. 2002, p. 12; Ex. 2003, p. 19.

VI. CONCLUSION

For the reasons discussed above, Patent Owner requests that the Board deny the Petition for Inter Partes Review of the '752 Patent.

Respectfully submitted,

Date: September 30, 2016 By: / Michael J. WISE /
Michael J. Wise, Reg. No. 34,047
Perkins Coie LLP
1888 Century Park East, Suite 1700
Los Angeles, CA 90067
Phone: 310-788-3210
Facsimile: 310-788-3399
MWise@PerkinsCoie.com

Counsel for Patent Owner

CERTIFICATE OF COMPLIANCE

The undersigned certifies that this brief complies with the type-volume limitations of 37 CFR § 42.24. This brief contains 12,132 words as calculated by the "Word Count" feature of Microsoft Word 2010, the word processing program used to create it.

Date: September 30, 2016

/ Michael J. WISE /
Michael J. Wise, Reg. No. 34,047
Perkins Coie LLP
1888 Century Park East, Suite 1700
Los Angeles, CA 90067
Phone: 310-788-3210
Facsimile: 310-788-3399
Email: MWISE@PerkinsCoie.com

Counsel for Patent Owner

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: September 30, 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**

Persons served: Elizabeth Stotland Weiswasser, Lead Counsel
Weil, Gotshal & Manges LLP
767 Fifth Avenue
New York, NY 10153
elizabeth.weiswasser@weil.com
Numark.Fontem.WGM.Service@weil.com

Adrian Percer, Back-up Counsel
Jeremy Jason Lang, Back-up Counsel
Brian C. Chang, Back-up Counsel
Weil, Gotshal & Manges LLP
201 Redwood Shores Parkway
Redwood Shores, CA 94065
adrian.percer@weil.com
jason.lang@weil.com
brian.chang@weil.com

Anish Desai, Back-up Counsel
Weil, Gotshal & Manges LLP
1300 Eye Street NW, Suite 900
Washington, DC 20005-3314
anish.desai@weil.com

/Nicole Thatcher/
Nicole Thatcher, Paralegal
Perkins Coie LLP