

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

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

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Case No. **IPR2017-01642**  
Patent No. **9,370,205**

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

## TABLE OF CONTENTS

I.	INTRODUCTION .....	1
II.	THE '205 PATENT .....	2
	A. Overview .....	2
	B. Independent Claims .....	4
	C. Previous IPRs .....	5
III.	PERSON OF ORDINARY SKILL IN THE ART .....	6
IV.	CLAIM CONSTRUCTION .....	6
	A. "Micro-controller unit" .....	6
	B. "Atomizer" .....	7
	C. "Physical Contact"/"Contact" .....	10
V.	SUMMARY OF ALLEGED PRIOR ART .....	12
	A. Brooks.....	12
	B. Whittemore .....	18
VI.	THE PETITION FAILS TO SHOW A REASONABLE LIKELIHOOD THAT ANY CLAIM OF THE '205 PATENT IS UNPATENTABLE.....	19
	A. Collateral Estoppel Precludes Relitigating Whether Brooks Discloses a Heating Element and a Separate Porous Component .....	20
	B. The Petition Should Be Denied Under 35 U.S.C. § 314(a) .....	26
	C. The Petition Should be Denied Under 325(d).....	35
	D. A POSITA Would Not Have Been Motivated to Combine Whittemore and Brooks .....	41

E.	Brooks Does Not Teach or Suggest a "Liquid Supply" as Required by Claims 1-8 or "Liquid Absorbed in a Fiber Material" as Required by Claims 14 and 16-22, and a POSITA Would Have No Motivation for Incorporating Those Components Into Brooks.....	47
F.	A POSITA Would Have No Motivation for Incorporating a Liquid Storage Into Brooks .....	54
G.	Brooks Does Not Teach or Suggest a Tubular Battery Assembly Housing as Recited in Claims 1-15 or 18.....	57
VII.	CONCLUSION.....	60
	CERTIFICATE OF COMPLIANCE .....	61

## TABLE OF AUTHORITIES

### CASES

<i>Benitec Biopharma Ltd. v. Cold Spring Harbor Laboratory</i> , IPR2016-00014, Paper 7 (P.T.A.B. Mar. 23, 2016) (Ex. 2026).....	40
<i>Gen. Plastic Indus. Co., Ltd. v. Canon Kabushiki Kaisha</i> , IPR2016-01357, Paper 19 (P.T.A.B. Sept. 6, 2017) (Ex. 2027) .....	27, 28, 29, 34, 36
<i>In re Mouttet</i> , 686 F.3d 1322 (2012).....	46, 47
<i>Levi Strauss &amp; Co. v. Abercrombie &amp; Fitch Trading Co.</i> , 719 F.3d 1367 (Fed. Cir. 2013) .....	21
<i>Microsoft Corp. v. Global Tech., Inc.</i> , IPR2016-00663 and IPR2016-00669, Paper 24 (P.T.A.B. Mar. 24, 2013) (Ex. 2043) .....	21
<i>Neil Ziegmann, N.P.Z. v. Stephens</i> , IPR2015-01860, Paper 13, (P.T.A.B. Sept. 6, 2017) .....	36, 37
<i>NVIDIA Corp. v. Samsung Electronics Co., Ltd.</i> , IPR2016-00134, Paper 9 (P.T.A.B. May 4, 2016) (Ex. 2028) .....	27
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005) .....	53
<i>Poly-America v. API</i> , 839 F.3d 1131 (Fed. Cir. 2016) .....	54
<i>Retractable Technol., Inc. v. Becton, Dickinson &amp; Co.</i> , 653 F.3d 1296 (Fed. Cir. 2011) .....	54
<i>Samsung Electronics Co., Ltd. v. Elm 3DS Innovations, LLC</i> , IPR2017-01305, Paper 11 (P.T.A.B. Oct. 17, 2017) (Ex. 2029) .....	28, 29, 31, 34, 36
<i>Synaptics Inc. v. Amkor Technology, Inc.</i> , IPR2017-00085, 2017 WL 1403668 (P.T.A.B. Apr. 18, 2017) .....	36

<i>US Endodontics, LLC v. Gold Standard Instruments, LLC</i> , IPR2015-01476, Paper 13 (P.T.A.B. Oct. 26, 2015) (Ex. 2025).....	36
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## **STATUTES**

35 U.S.C. 325(d) .....	27
35 U.S.C. § 314(a) .....	1, 20, 27
35 U.S.C. § 316(a)(11).....	35
35 U.S.C. § 325(d) .....	1, 20, 36, 37

## **REGULATIONS**

37 C.F.R. § 42.108 .....	36
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## LIST OF EXHIBITS

Petitioner's Exhibits	
Exhibit	Description
Ex. 1001	U.S. Pat. No. 9,370,205 to Lik Hon
Ex. 1002	U.S. Pat. No. 4,947,874 to Brooks et al.
Ex. 1003	U.S. Pat. No. 2,057,353 to C.L. Whittemore, Jr.
Ex. 1004	Declaration of Dr Robert Sturges
Ex. 1005	<i>Nu Mark, LLC v. Fontem Holdings 1 B.V.</i> , IPR2017-00257 (P.T.A.B., filed November 11, 2016), Paper No. 10
Ex. 1006	U.S. Pat. Appl. No. 13/754,521 Filed January 30, 2012
Ex. 1007	Model No. MPL-502-V by Micro Pneumatic Logic, annotated image of pressure sensing port
Ex. 1008	Model No. MPL-502-V by Micro Pneumatic Logic, annotated image of pressure sensing port
Ex. 1009	MPL 502 Series Specifications, <i>Micro Pneumatic Logic, Inc.</i> , (March 11, 2006), <a href="http://www.pressureswitch.com/PDFs/0502STANDARD.A.pdf">http://www.pressureswitch.com/PDFs/0502STANDARD.A.pdf</a> [ <a href="https://web.archive.org/web/20060311132848/http://www.pressureswitch.com/PDFs/0502STANDARD.A.pdf">https://web.archive.org/web/20060311132848/http://www.pressureswitch.com/PDFs/0502STANDARD.A.pdf</a> ]
Ex. 1010	MPL Pressure Switch Solutions, <i>Micro Pneumatic Logic, Inc.</i> , (March 11, 2006), <a href="http://www.pressureswitch.com/PDFs/2000_MPLBrochure.pdf">http://www.pressureswitch.com/PDFs/2000_MPLBrochure.pdf</a> [ <a href="https://web.archive.org/web/20060311132419/http://www.pressureswitch.com/PDFs/2000_MPLBrochure.pdf">https://web.archive.org/web/20060311132419/http://www.pressureswitch.com/PDFs/2000_MPLBrochure.pdf</a> ]
Ex. 1011	<i>McGraw-Hill Dictionary of Scientific and Technical Terms</i> , McGraw-Hill Companies, Inc. (6th ed. 2003) (excerpt)

Ex. 1012	<i>Nu Mark, LLC v. Fontem Holdings 1 B.V.</i> , IPR2016-01642 (PTAB, filed August 18, 2016), Paper No. 7
Ex. 1013	<i>Nu Mark, LLC v. Fontem Holdings 1 B.V.</i> , IPR2016-01283 (PTAB, filed June 28, 2016), Paper No. 12
Ex. 1014	U.S. Pub. No. 2009/0126745 to Hon, which is the parent application publication of the 205 patent (Ex. 1001)
Ex. 1015	U.S. Pat. No. 3,685,522 to Kleinhans
Ex. 1016	U.S. Pat. No. 4,637,407 to Bonanno et al.
Ex. 1017	U.S. Pat. No. 5,266,746 to Nishihara et al.
Ex. 1018	U.S. Pat. No. 4,968,263 to Silbernagel et al.
Ex. 1019	U.S. Pat. No. 2,461,664 to Smith
Ex. 1020	U.S. Pat No. 3,234,357 to Seuthe
Ex. 1021	U.S. Pat. No. 5,743,251 to Howell et al.
Ex. 1022	Chinese Pat. No. 2719043Y to Lik Hon
Ex. 1023	Certified English translation of Chinese Pat. No. 2719043Y to Lik Hon
Ex. 1024	U.S. Pat. No. 6,598,607 to Adiga et al.
Ex. 1025	U.S. Pat. No. 4,793,365 to Sensabaugh, Jr. et al.
Ex. 1026	U.S. Pat. No. 5,203,355 to Clearman et al.
Ex. 1027	U.S. Pat. No. 2,472,282 to Burchett
Ex. 1028	U.S. Pat. No. 2,032,695 to Gimera et al.
Ex. 1029	U.S. Pat. No. 5,703,633 to Gehrler et al.

Ex. 1030	U.S. Pat. No. 6,885,814 to Saito et al.
Ex. 1031	U.S. Pat. No. 5,894,841 to Voges
Ex. 1032	European Pat. No. 1584910 to Tohyama et al.
Ex. 1033	U.S. Pat. No. 6,311,561 to Bang et al.
Ex. 1034	U.S. Pat. No. 2,442,004 to Hayward-Butt
Ex. 1035	U.S. Pat. No. 3,200,819 to Gilbert
Ex. 1036	U.S. Pat. No. 6,155,268 to Takeuchi
Ex. 1037	U.S. Pat. No. 5,745,985 to Ghosh
Ex. 1038	U.S. Pat. No. 4,676,237 to Wood
Ex. 1039	U.S. Pat. No. 4,945,448 to Bremenour
Ex. 1040	R. Messler, <i>Joining of Materials and Structures</i> (2004) (excerpt)
Ex. 1041	U.S. Pat. No. 438,310 to Edison
Ex. 1042	European Pat. Appl. No. EP0845220 A1 to Susa
Ex. 1043	U.S. Pat. No. 5,177,424 to Connors
Ex. 1044	U.S. Pat. No. 1,084,304 to Vaughn
Ex. 1045	<i>R.J. Reynolds Vapor Company v. Fontem Holdings I B.V.</i> , IPR2016-01270 (PTAB, filed July 2, 2016), Paper No. 13
Ex. 1046	<i>R.J. Reynolds Vapor Company v. Fontem Holdings I B.V.</i> , IPR2016-01270 (PTAB, filed July 2, 2016), Paper No. 11
Ex. 1047	European Pat. No. EP 2,022,349 to Hon
Ex. 1048	European Pat. Pub. 0 501 419 to Patteri
Ex. 1049	<i>Merriam-Webster's Collegiate Dictionary</i> , Merriam-Webster, Inc.



	(11th ed. 2003) (excerpt)
Ex. 1050	Declaration of Kyle Yarberry
Ex. 1051	Record of purchase of MPL-502-V-G-Range-A sensor
Ex. 1052	U.S. Pat. No. 6,217,315 to Mifune et al.
Ex. 1053	MPL 500: Low Pressure Momentary Switches, <a href="http://www.pryde.com/au/Data_Sheets/Industrial/02/MPL/MPL_500_pg1.pdf">http://www.pryde.com/au/Data_Sheets/Industrial/02/MPL/MPL_500_pg1.pdf</a> (last visited June 26, 2017)
Ex. 1054	Model No. MPL-502-V, Range A, by Micro Pneumatic Logic, Inc., Ft. Lauderdale, FL
Ex. 1055	<i>NuMark, LLC v. Fontem Holdings 1 B.V.</i> , IPR2017-00257 (PTAB, filed December 9, 2016), Paper No. 10

**Patent Owner's Exhibits**

<b>Exhibit</b>	<b>Description</b>
Ex. 2001	Declaration of Richard Meyst
Ex. 2002	<i>R.J. Reynolds Vapor Company v. Fontem Holdings 1 B.V.</i> , IPR2016-01270, Paper 2, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,893,726 (July 2, 2016)
Ex. 2003	<i>R.J. Reynolds Vapor Company v. Fontem Holdings 1 B.V.</i> , IPR2016-01270, Exhibit 1009, Declaration of Robert Sturges, Ph.D.
Ex. 2004	<i>R.J. Reynolds Vapor Company v. Fontem Holdings 1 B.V.</i> , IPR2016-01270, Paper 9, Patent Owner Preliminary Response to Petition for <i>Inter Partes</i> Review (Oct. 7, 2016)
Ex. 2005	<i>R.J. Reynolds Vapor Company v. Fontem Holdings 1 B.V.</i> , IPR2016-01270, Exhibit 2001, Declaration of Richard Meyst
Ex. 2006	<i>Nu Mark LLC v. Fontem Holdings 1, B.V.</i> IPR2016-01309, Paper 1, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,863,752 (June 28, 2016)

Ex. 2007	<i>Nu Mark LLC v. Fontem Holdings 1 B.V.</i> , IPR2016-01309, Paper 8, Patent Owner Preliminary Response to Petition for <i>Inter Partes</i> Review (Sept. 30, 2016)
Ex. 2008	<i>Nu Mark LLC v. Fontem Holdings 1 B.V.</i> , IPR2016-01309, Exhibit 2001, Declaration of Richard Meyst
Ex. 2009	<i>Nu Mark LLC v. Fontem Holdings 1, B.V.</i> , IPR2016-01309, Paper 11, Decision – Denying Institution of <i>Inter Partes</i> Review (P.T.A.B. Dec. 15, 2016)
Ex. 2010	<i>Nu Mark LLC v. Fontem Holdings 1, B.V.</i> , IPR2016-01307, Paper 1, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,375,957 (June 28, 2016)
Ex. 2011	<i>Nu Mark LLC v. Fontem Holdings 1 B.V.</i> , IPR2016-01307, Exhibit 1003, Declaration of Dr. John M. Collins in Support of Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,375,957
Ex. 2012	<i>Nu Mark LLC v. Fontem Holdings 1 B.V.</i> , IPR2016-01307, Paper 9, Patent Owner Preliminary Response to Petition for <i>Inter Partes</i> Review (Sept. 30, 2016)
Ex. 2013	<i>Nu Mark LLC v. Fontem Holdings 1 B.V.</i> , IPR2016-01307, Exhibit 2001, Declaration of Richard Meyst in Support of Patent Owner Preliminary Response to Petition for <i>Inter Partes</i> Review
Ex. 2014	<i>Nu Mark LLC v. Fontem Holdings 1 B.V.</i> , IPR2016-01307, Paper 12, Decision – Denial of Institution of <i>Inter Partes</i> Review (P.T.A.B. Dec. 23, 2016)
Ex. 2015	<i>Merriam-Webster's Collegiate Dictionary</i> , Merriam-Webster, Inc. (11th Ed. 2003) (selected pages)
Ex. 2016	Random House Webster's Unabridged Dictionary (2nd ed. 2001) (selected pages)
Ex. 2017	US Patent No. 8,893,726 (Hon)
Ex. 2018	US Patent No. 4,947,875 (Brooks)

Ex. 2019	EP Patent Publ No. 0358002 (Brooks)
Ex. 2020	Information Disclosure Statement in U.S. Patent Appl. No. 13/754,521 (U.S. Patent No. 9,370,205), filed Mar. 20, 2013 and considered by the Examiner on Sept. 23, 2015
Ex. 2021	Information Disclosure Statement in U.S. Patent Appl. No. 13/754,521 (U.S. Patent No. 9,370,205), filed Dec. 19, 2013 and considered by the Examiner on Sept. 25, 2015
Ex. 2022	Statement of Related Applications in U.S. Patent Appl. No. 13/754,521 (U.S. Patent No. 9,370,205), filed Jan. 7, 2016
Ex. 2023	Statement of Related Applications in U.S. Patent Appl. No. 13/754,521 (U.S. Patent No. 9,370,205), filed June 4, 2013
Ex. 2024	<i>Neil Ziegmann, N.P.Z. v. Stephens</i> , IPR2015-01860, Paper 13, Decision on Request for Rehearing (P.T.A.B. Sept. 6, 2017)
Ex. 2025	<i>US Endodontics, LLC v. Gold Standard Instruments, LLC</i> , IPR2015-01476, Paper 13, Decision – Denying Institution of <i>Inter Partes</i> Review (P.T.A.B. Oct. 26, 2015)
Ex. 2026	<i>Benitec Biopharma Ltd. v. Cold Spring Harbor Laboratory</i> , IPR2016-00014, Paper 7, Decision – Denying Institution of <i>Inter Partes</i> Review (P.T.A.B. Mar. 23, 2016)
Ex. 2027	<i>General Plastic Industrial Co., Ltd. v. Canon Kabushiki Kaisha</i> , IPR2016-01357, IPR2016-01358, IPR2016-01359, IPR2016-01360, and IPR2016-01361, Paper 19, Decision – Denying Petitioner's Request for Rehearing (P.T.A.B. Sept. 6, 2017)
Ex. 2028	<i>NVIDIA Corp. v. Samsung Electronics Co., Ltd.</i> , IPR2016-00134, Paper 9, Decision – Denying Institution of <i>Inter Partes</i> Review (P.T.A.B. May 4, 2016)
Ex. 2029	<i>Samsung Electronics Co., Ltd. v. Elm 3DS Innovations, LLC</i> , IPR2017-01305, Paper 11, Decision – Denying Institution of <i>Inter Partes</i> Review (P.T.A.B. Oct. 17, 2017)

Ex. 2030	<i>NJOY, Inc. et al. v. Fontem Holdings I B.V.</i> , IPR2015-01302, Paper 15, Decision Denying Institution of <i>Inter Partes</i> Review (P.T.A.B. Dec. 9, 2015)
Ex. 2031	<i>R.J. Reynolds Vapor Company v. Fontem Holdings I B.V.</i> , IPR2016-01268, Paper 1, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,365,742 (July 2, 2016)
Ex. 2032	<i>Nu Mark LLC v. Fontem Holdings I, B.V.</i> , IPR2017-00205, Paper 1, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 9,326,550 (Nov. 4, 2016)
Ex. 2033	<i>Nu Mark LLC v. Fontem Holdings I, B.V.</i> , IPR2017-00257, Paper 1, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 9,370,205 (Nov. 11, 2016)
Ex. 2034	<i>Nu Mark LLC v. Fontem Holdings I B.V.</i> , IPR2017-00303, Paper 1, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 9,339,062 (Nov. 18, 2016)
Ex. 2035	<i>Nu Mark LLC v. Fontem Holdings I, B.V.</i> , IPR2017-00342, Paper 1, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 9,326,551 (Nov. 28, 2016)
Ex. 2036	<i>R.J. Reynolds Vapor Co. v. Fontem Holdings I B.V.</i> , IPR2017-01118, Paper 2, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,490,628 (Apr. 4, 2017)
Ex. 2037	<i>R.J. Reynolds Vapor Co. v. Fontem Holdings I B.V.</i> , IPR2017-01118 and IPR2017-01119, Paper 10, Decision – Denying <i>Inter Partes</i> Review (P.T.A.B. Oct. 4, 2017)
Ex. 2038	<i>R.J. Reynolds Vapor Co. v. Fontem Holdings I B.V.</i> , IPR2016-01527, Paper 1, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,490,628 (Aug. 3, 2016)
Ex. 2039	<i>R.J. Reynolds Vapor Co. v. Fontem Holdings I B.V.</i> , IPR2016-01692, Paper 2, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 9,326,548 (Aug. 30, 2016)

Ex. 2040	<i>R.J. Reynolds Vapor Co. v. Fontem Holdings I B.V.</i> , IPR2017-01120, Paper 2, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,899,239 (Apr. 4, 2017)
Ex. 2041	<i>R.J. Reynolds Vapor Co. v. Fontem Holdings I B.V.</i> , IPR2017-01319, Paper 2, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 9,326,549 (May 3, 2017)
Ex. 2042	<i>Fontem Ventures B.V. v. R.J. Reynolds Vapor Co.</i> , Case No. 2:16-cv-4534, Complaint for Patent Infringement – Demand for Jury Trial (C.D. Cal.) (June 22, 2016)
Ex. 2043	<i>Microsoft Corp. v. Global Tech., Inc.</i> , IPR2016-00663 and IPR2016-00669, Paper 24, Order – Conduct of the Proceedings (P.T.A.B. Mar. 24, 2013)
Ex. 2044	U.S. Patent No. 4,735,217
Ex. 2045	<i>R.J. Reynolds Vapor Company v. Fontem Holdings I B.V.</i> , IPR2016-01270, Paper 12, Petitioner's Request for Rehearing (Feb. 2, 2017)
Ex. 2046	<i>R.J. Reynolds Vapor Company v. Fontem Holdings I B.V.</i> , IPR2016-01692, Exhibit 1015, Declaration of Dr. Robert H. Sturges
Ex. 2047	Declaration of Amy Candeloro

## I. INTRODUCTION

Petitioner R.J. Reynolds Vapor Company filed a Petition for *Inter Partes* Review asserting that claims 1-22 of U.S. Patent No. 9,370,205 are obvious over Brooks (Ex. 1002) in view of Whittemore (Ex. 1003). Petition, pp. 23-29.

Petitioner's sole ground requires that the Board accept Petitioner's assertion that Brooks discloses a heating element and a separate porous substrate. But, the parties have already litigated that issue and the Board has rejected Petitioner's argument, finding that Brooks does not disclose a heating element separate from a porous substrate. Ex. 1045, p. 13. Accordingly, Petitioner is collaterally estopped from relitigating that issue here. Similarly, because the Board has already considered and rejected Petitioner's assertion that Brooks discloses a heating element and separate porous substrate, the Board should exercise its discretion to deny the petition under § 314(a) or § 325(d).

If the Board does choose to allow Petitioner to relitigate the issue here, the result should be the same. Because Brooks does not disclose a heating element separate from a porous substrate as the Board has previously found, Petitioner fails to establish a reasonable likelihood that any of the claims of the '205 Patent are unpatentable. Accordingly, Patent Owner requests that the Board deny *inter partes* review for any claim.

## II. THE '205 PATENT

### A. Overview

The '205 Patent issued from U.S. Patent Appl. No. 13/754,521 ("521 Application"). The '521 Application was a continuation of U.S. Patent Appl. No. 12/226,819 ("819 Application"), which issued as U.S. Patent No. 8,375,957 ("957 Patent"). Other patents in this family include U.S. Patent Nos. 8,863,752 ("752 Patent"), 9,326,550 ("550 Patent"), 9,326,551 ("551 Patent"), and 9,339,062 ("062 Patent").

In one embodiment, the '205 Patent discloses a vaporizing device comprising a battery assembly and an atomizer assembly. Figs. 2B and 3 of the '205 Patent, below (annotations added), illustrate embodiments of these battery and atomizer assemblies, respectively.

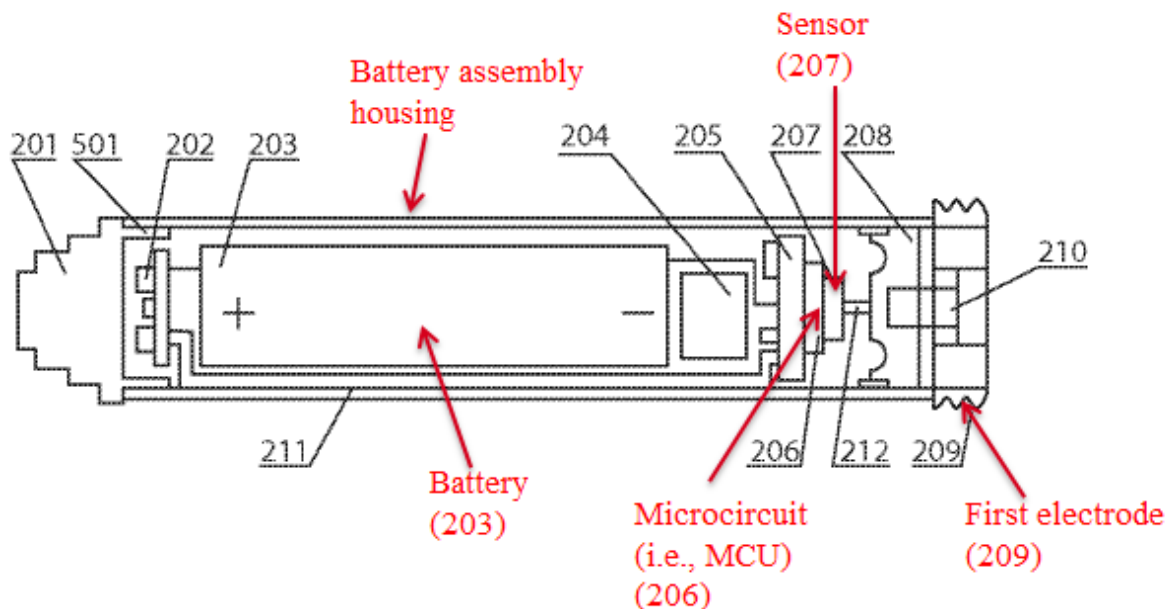
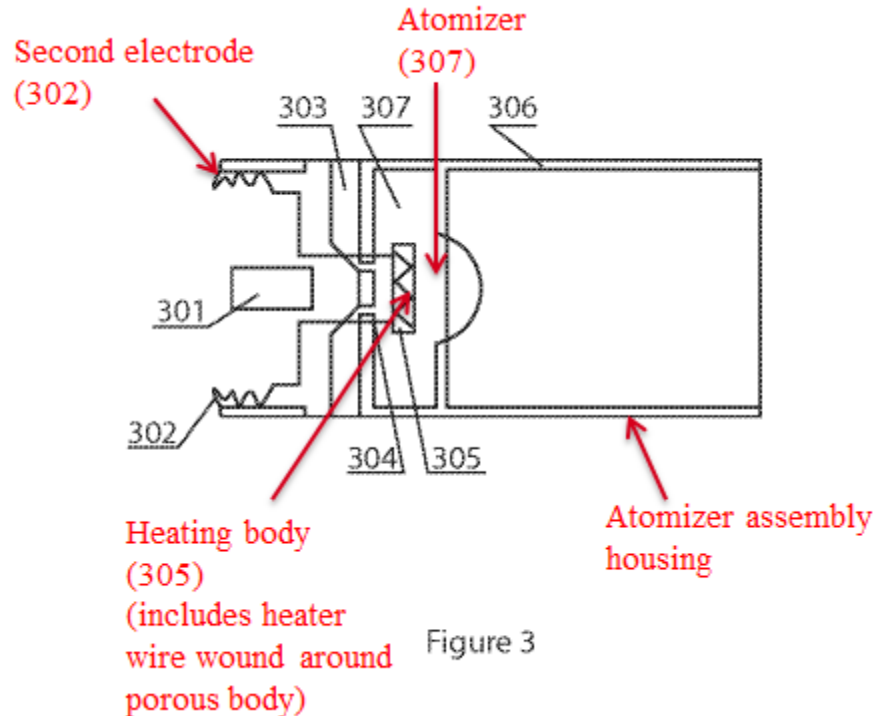


Figure 2B

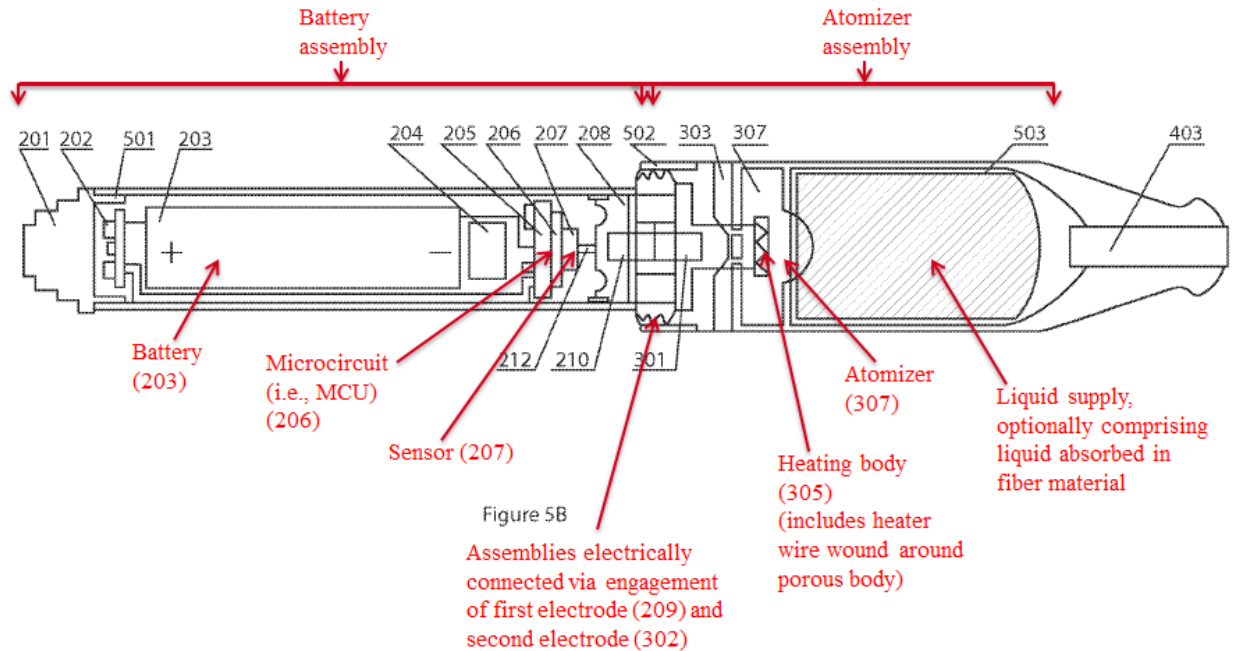


The battery assembly shown in Fig. 2B includes a battery, sensor, and microcircuit inside a battery assembly housing. The atomizer assembly shown in Fig. 3 includes an atomizer inside a tubular atomizer assembly housing. This atomizer includes heating body 305, which in turn includes a heater wire wound around a porous body. See, e.g., Ex. 1001, 3:27-30. The atomizer assembly also includes a liquid supply, which may optionally comprise fiber soaked with cigarette liquid, which is located inside the atomizer assembly housing. Ex. 1001, 4:14-16.

In several embodiments, first and second electrodes are located on one end of the battery and atomizer assembly housings, respectively. The battery and atomizer assemblies are electrically connected via engagement of the first and second electrodes to form a complete vaporizing device. '205 Patent, 1:64-2:3.



Fig. 5B of the '205 Patent, below (annotations added), illustrates an embodiment of this device.



## B. Independent Claims

The '205 Patent includes three independent claims (claims 1, 9, and 16). All three independent claims recite a "vaporizing device" comprising a "battery assembly" and an "atomizer assembly." The "battery assembly" comprises a "battery," "sensor," and "micro-controller unit" (MCU) within a "battery assembly housing," while the "atomizer assembly" comprises an "atomizer" within a "tubular atomizer assembly housing."

Every claim of the '205 Patent further requires an atomizer that includes a "heater wire"/"heater wire coil" wound on or around a "porous body" or "a part of the porous body." The "battery assembly housing" and "atomizer assembly

housing" have a "first electrode" and "second electrode," respectively, at an end of each housing, and the two assemblies are "electrically connected" via engagement of these electrodes.

The vaporizing devices of claims 1 and 16 include a "liquid supply" or "liquid absorbed in fiber material, " respectively, within the atomizer assembly housing. In claim 16, the porous body of the atomizer is in "physical contact" with the fiber material.

### **C. Previous IPRs**

The '205 Patent and the related '957, '752, '550, '551, and '062 Patents have been previously involved in 14 *inter partes* reviews, including six which asserted obviousness over Brooks and Whittemore. Ex. 2006; Ex. 2010; Ex. 2032; Ex. 2033; Ex. 2034; Ex. 2035. None of these six were instituted – the Board denied the petitions to institute IPR2016-01307 and IPR2016-01309, and the other four proceedings were terminated via settlement prior to an institution decision. Ex. 2009; Ex. 2014; Ex. 1005. Petitioner asserts that its ground for unpatentability has not been expressly considered before, and references the termination of IPR2017-00257 by settlement prior to an institution decision. Petition, pp. 10-11; citing Ex. 1055. The inclusion of these previous IPRs in Petitioner's list of "Related Proceedings Before the Board" indicates that Petitioner was aware of these

proceedings, including the two (IPR2016-01307 and IPR2016-01309) which the Board declined to institute. Petition, pp. 7-8.

### **III. PERSON OF ORDINARY SKILL IN THE ART**

A POSITA with respect to the '205 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 (Ex. 2001), ¶15. Petitioner asserts that a POSITA has "at least the equivalent of a Bachelor's degree in electrical engineering, mechanical engineering, or biomedical engineering or related fields, along with at least 5 years of experience designing electromechanical devices, including those involving circuits, fluid mechanics and heat transfer. Petition, p. 14. Under either definition, Petitioner has failed to meet its burden.

### **IV. CLAIM CONSTRUCTION**

#### **A. "Micro-controller unit"**

Petitioner asserts that the broadest reasonable construction of "micro-controller unit" is "a component of an electronic device that regulates a particular process or function." Petition, p. 15.

While Patent Owner disagrees with Petitioner's proposed construction, the meaning of "micro-controller unit" is not relevant to the issues raised by Petitioner

and to resolution of the Petition. Thus, Patent Owner urges the Board to decline to construe the term.

**B. "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 '205 Patent claims recite an atomizer assembly housing containing an "atomizer." All of the claims further recite that this "atomizer" includes a "porous body," and a "heater wire coil" "wound around" (claim 1) or "wound on" (claim 9) the "porous body" or a "heater wire" "wound in a coil on a part of" the "porous body" (claim 16). Thus, the claims of the '205 Patent show that an "atomizer" may include several different components.

The '205 Patent specification discloses that the "atomizer" is responsible for converting liquid into aerosol or vapor. For example, the '205 Patent states that "[t]he air-liquid mixture sprays onto the heating body (305) [inside the atomizer (307), see '205 Patent, 3:1-2; 4:10], 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." '205 Patent, 3:12-16, 4:20-24. 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..."). Ex. 1001, 3:5-8, 3:30-33. The '205 Patent specification further discloses that the atomizer may include a wire wound around the heating body ("[t]he heating body (305) is made of the micro-porous ceramics on which nickel-chromium alloy wire, iron-chromium alloy wire, platinum wire, or other electro thermal materials are wound"). Ex. 1001, 3:27-30. This is further illustrated by Figs. 8-11 of the '205 Patent, below, which show atomizers containing heating body 305 and micro-porous ceramics 801. Each of these embodiments converts liquid into aerosol or vapor.

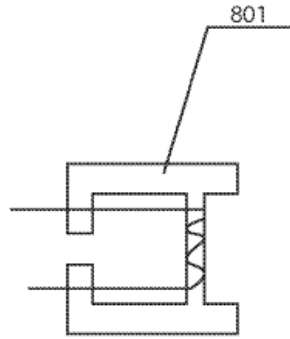


Figure 8

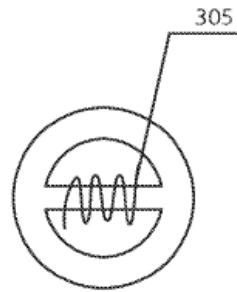


Figure 9

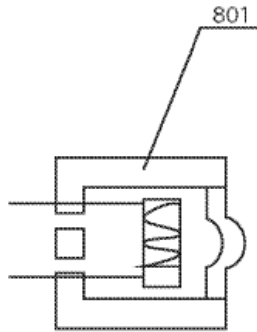


Figure 10

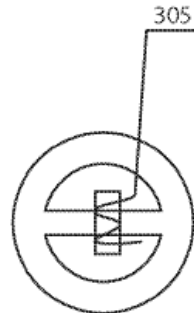


Figure 11

The extrinsic evidence confirms that an atomizer functions to convert liquid into aerosol or vapor. Merriam-Webster's Collegiate Dictionary (11th Ed. 2003) 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. 2015, p. 78. Similarly, Random House Webster's Unabridged Dictionary (2nd ed. 2001) 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. 2016, p. 132.

In view of the claims and specification of the '205 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 (Ex. 2001), ¶¶19-21.

**C. "Physical Contact"/"Contact"**

Patent Owner's Construction	Petitioner's Construction
separate components in direct contact	no proposed construction

Independent claim 16 of the '205 Patent recites that the porous body of the atomizer is in "physical contact" with the fiber material containing absorbed liquid. Dependent claim 5 recites fiber containing cigarette liquid in "contact" with the porous body of the atomizer.

The specification of the '205 Patent does not use the terms "physical contact" or "contact" outside of the claims. However, the specification does show the liquid supply in direct contact with the atomizer. For example, Fig. 5B, below (annotations added), shows atomizer 307 in direct contact with the liquid supply, which may optionally comprise fiber soaked with cigarette liquid. Ex. 1001, 4:14-16.

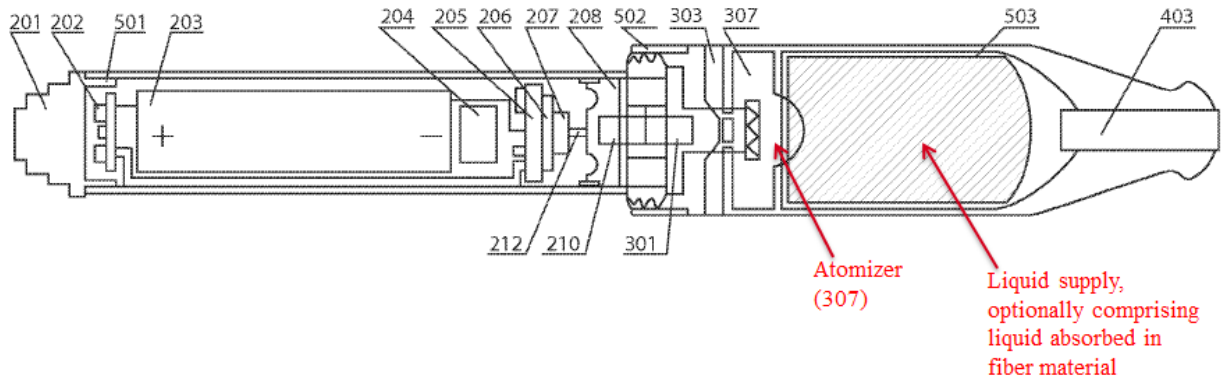


Figure 5B

The present construction is consistent with the Board's constructions in previous proceedings. In IPR2015-01302, which involved U.S. Patent No. 8,893,726 ("726 Patent"), the claims at issue recited a "liquid storage body in physical contact with the atomizer." Ex. 2017, claim 15. The Board construed both "physical contact" and "contact" to mean "direct contact." Ex. 2030, pp. 10-11. In subsequent IPR2016-01270 involving the same patent (and the present Petitioner), the Board favorably cited its earlier decision and found that the '726 Patent specification supported a construction of "physical contact" as "direct contact." Ex. 1046, p. 7; citing Ex. 2030, pp. 10-11. The Board went on to note that two components in "direct contact" with one another are necessarily separate components, i.e., a component cannot be in direct contact with itself. Ex. 1046, p. 7. Thus, the Board's final construction of "physical contact" was "separate components in direct contact." Ex. 1046, p. 8.

The extrinsic evidence confirms that "contact" refers to direct contact between two separate components. Merriam-Webster's Collegiate Dictionary (11th



ed. 2003) defines "contact" as "1 a : a union or junction of surfaces." Ex. 2015, p.

268. Similarly, Random House Webster's Unabridged Dictionary (2nd ed. 2001)

defines "contact" as "1. the act or state of touching; a touching or meeting, as of two things or people. 2. immediate proximity or association. " Ex. 2016, p. 437.

In view of the claims and specification of the '205 Patent, the extrinsic evidence regarding the ordinary meaning of the term, and the Board's previous constructions in other proceedings, the broadest reasonable construction of "physical contact" and "contact" is "direct contact." Meyst (Ex. 2001), ¶¶22-27.

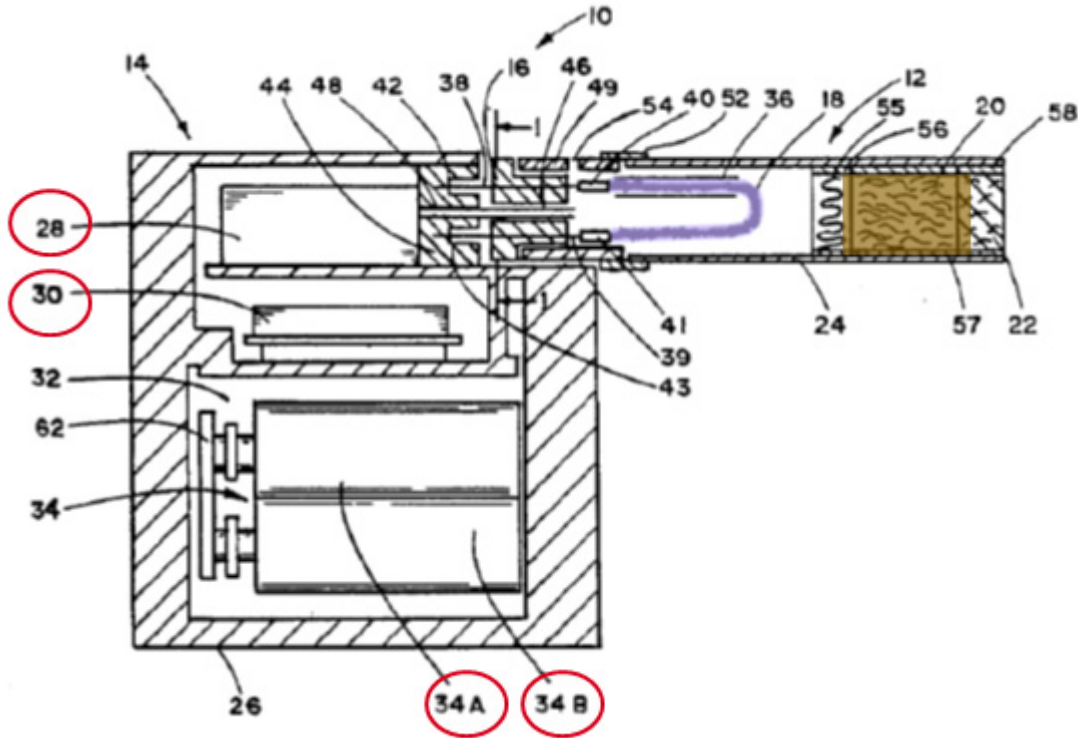
## **V. SUMMARY OF ALLEGED PRIOR ART**

### **A. Brooks**

Brooks, which issued in August 1990 and is assigned to R.J. Reynolds, a real party-in-interest here (Paper 2 at 1-2), has previously been addressed by the Board. *See, e.g.*, IPR2016-01270 (Ex. 1045, Ex. 1046). Brooks discloses a "smoking article" having two basic parts: a "disposable portion" ("cigarette 12") and a "reusable controller" ("hand-held controller 14"). Ex. 1002, Title Page, Abstract; Ex. 1045, p. 8.

Brooks teaches an electrical smoking article that includes heating element 18, shown in purple in annotated Fig. 1 below. Heating element 18 sits within disposable cigarette 12, which also includes a roll of tobacco 20 (brown). Ex. 1002, 7:17-20. Disposable cigarette 12 connects to reusable controller 14, which

includes, among other components, pressure sensing switch 28, control circuit 30, and batteries 34A and 34B (red circles). Ex. 1002, 7:20-25.



Heating element 18 is made from fibrous or porous material, is electrically resistant, and is capable of holding an "aerosol forming substance." Ex. 1002, 4:7-12, 7:26-30, 7:65-8:3. The heating element also needs to be "air permeable" and have a "high surface area." Ex. 1002, 4:7-12, 4:22-25. Specifically, the heating element should be made from "porous material" and have a surface area "greater than about 1,000 m<sup>2</sup>/g." Ex. 1002, 4:12-20.

Brooks discloses that a heating element with these features is "particularly advantageous" because it is "capable of holding and efficiently releasing relatively

large quantities of liquid aerosol forming substances," enough to provide aerosol in "6 to 10 puffs" like the puff life of a typical cigarette.<sup>1</sup> Ex. 1002, 3:30-34; 4:25-31, 6:32-36. The design ensures that the "aerosol forming substance is in a heat exchange relationship with the electrical heating element." Ex. 1002, 8:4-8. When a user inhales, heating element 18 increases in temperature "which in turn heats and volatilizes the aerosol forming substance" contained within the heater. Ex. 1002, 10:45-48. As a result, an aerosol forms, picks up tobacco flavor while passing through tobacco roll 20, and exits into a user's mouth. Ex. 1002, 10:48-53.

Brooks further describes objectives for its preferred heating elements with the features noted above: they must have "low mass, low density, and moderate resistivity," be "thermally stable at the temperatures experience during use," "heat and cool rapidly," use energy efficiently, provide "almost immediate volatilization of the aerosol forming substance," prevent waste of the aerosol forming substance,

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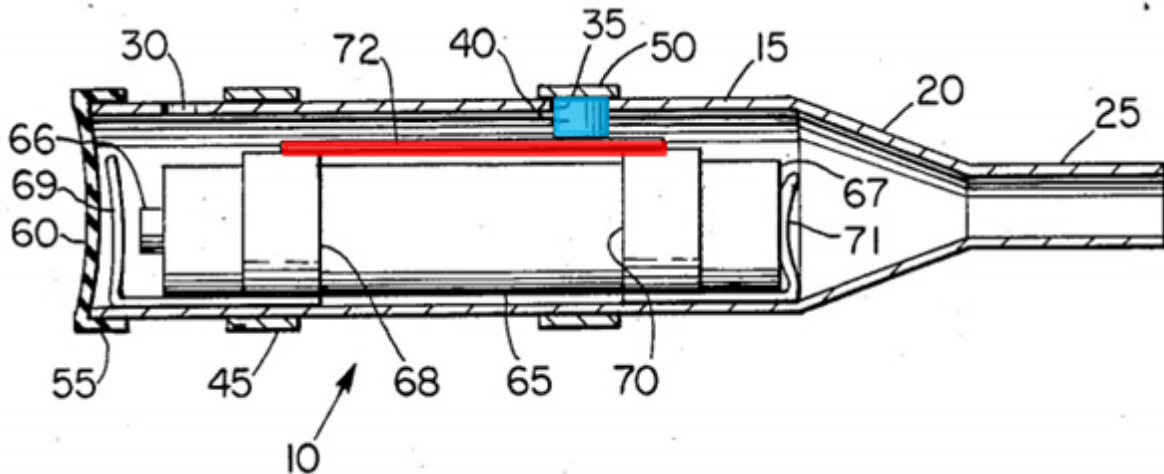
<sup>1</sup> Brooks lists the puff range for its device as 6 to 10 puffs (Ex. 1002, 4:2-6), 6 puffs or more (Ex. 1002, 4:29-31, 10:67), and "preferably at least about 6 puffs, more preferably at least about 10 puffs" (Ex. 1002, 6:34-36). The examples use the disclosed device to generate 10 puffs (Ex. 1002, 18:29, 19:65, 21:48, 22:39) or 12 puffs (Ex. 1002, 21:40). For simplicity, Patent Owner will reference the 6 to 10 puff range herein.

and permit "precise control of the temperature range experienced by the aerosol forming substance." Ex. 1002, 7:34-47. The heating element must heat rapidly based on current supplied by Brooks' current actuation and current regulation mechanism and provide 0.5 mg or preferably 0.8 mg of aerosol per puff. Ex. 1002, 5:38-58, 6:26-28.

Another object of Brooks' device is to provide reusable controller 14 (containing batteries, a control circuit, and a sensor) that connects to disposable cigarette cartridge 12, which houses liquid-containing heating element 18. Ex. 1002, 4:35-38, 5:38-42. These components are shown above in annotated Figure 1. Once the liquid is exhausted, a user removes the spent cartridge, throws it away, and replaces it with a new one. Ex. 1002, 5:58-62.

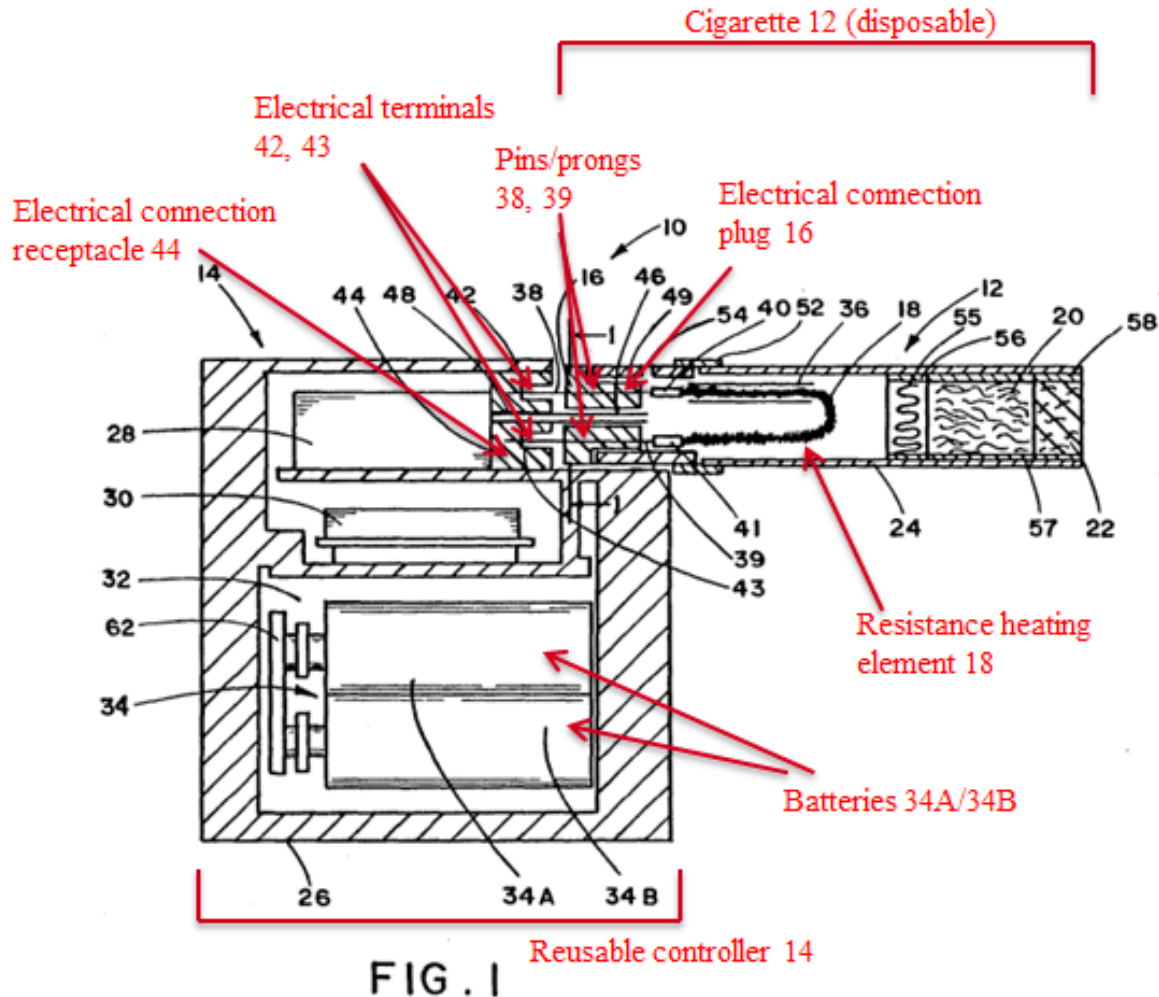
Brooks also distinguishes prior art devices that, unlike Brooks' porous heating element (*see, e.g.*, 4:7-18), include a liquid storage body in physical contact with a separate heater. Brooks points to U.S. Patent No. 4,735,217 (Gerth) (Ex. 2044). Gerth discloses a medicament pellet 40 in contact with a heating element 72. Ex. 2044, 5:56-62. The pellet can be made from a liquid nicotine base. Ex. 2044, 8:46-52. Pellet 40 (blue) and heating element 72 (red) are shown in annotated Fig. 4 of Gerth below. Heat from heating element 72 causes medicament in pellet 40 to vaporize for inhalation by a user. Ex. 2044, 6:33-42.

Brooks criticized Gerth's design as being too large, too heavy, and as too imprecise regarding electrical current and heat. Ex. 1002, 3:42-48.



In all of Brooks' disclosed cigarette embodiments, the disposable portion and the reusable controller 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" and "resistance heating element 18." Ex. 1002, 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." Ex. 1002, 8:31-36. Plug 16 also includes passageway 46. Ex. 1002, 8:38-40. The reusable controller component includes "chamber 32 into which battery power supply 34 is inserted," as well as "insulative receptacle 44 which includes plug-in

connectors 42, 43 for engagement with prongs 38, 39 of plug 16." Ex. 1002, 7:15-25; 9:41-43.



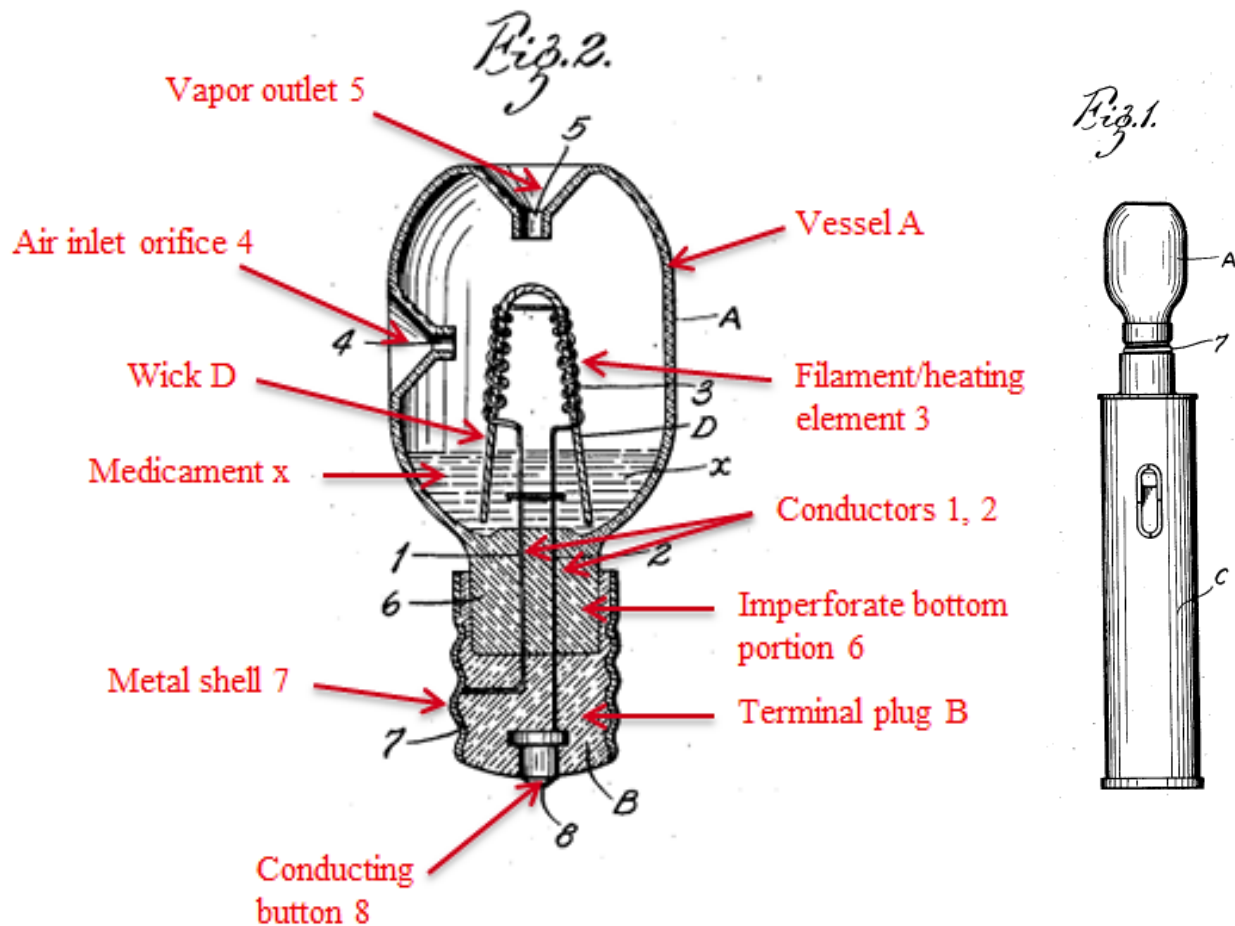
To connect the two portions of the device, "the user inserts the plug 16 of the cigarette 12 into the receptacle 44 of the controller 14," such that "pins 38, 39 engage with electrical terminals 42, 43 located in electrical connection receptacle 44 of the controller 14." Ex. 1002, 8:36-38, 10:34-35. 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." Ex. 1002, 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." Ex. 1002, 8:38-40, 9:43-50.

## **B. Whittemore**

Whittemore, which issued October 1936 and is cited on the face of Brooks, discloses a "vaporizing unit[] for therapeutic apparatus." Ex. 1003, 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 from a liquid source by wick D using capillary action, then vaporized by filament/heating element 3. Ex. 1003, p. 1, left col., ll. 19-28; Meyst (Ex. 2001), ¶43. The purpose of wick D is to transport liquid from the separate liquid supply to the heating coil. Meyst (Ex. 2001), ¶43. *See also* Ex. 2046, ¶47. 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." Ex. 1003, 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." Ex. 1003, 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.



**VI. THE PETITION FAILS TO SHOW A REASONABLE LIKELIHOOD THAT ANY CLAIM OF THE '205 PATENT IS UNPATENTABLE**

Petitioner's sole ground for unpatentability requires that the Board accept the assertion that Brooks discloses a heating element and a separate porous substrate. However, the parties have already litigated that issue and the Board has rejected Petitioner's argument finding that Brooks does not disclose a heating element



separate from a porous substrate. Accordingly, Petitioner is precluded from relitigating the issue under collateral estoppel.

Regardless, because the Board has already considered and rejected this issue and other arguments offered up by Petitioner here, the Board should exercise its discretion and deny the petition under §314(a) or § 325(d).

Finally, if the Board decides to allow Petitioner to relitigate these issue again in this proceeding, the result should not change. Because Brooks does not disclose a heating element separate from a porous substrate as the Board has previously found, Petitioner has failed to demonstrate a reasonable likelihood that claims 1-22 are unpatentable.

**A. Collateral Estoppel Precludes Relitigating Whether Brooks Discloses a Heating Element and a Separate Porous Component**

"Under the doctrine of issue preclusion, also called collateral estoppel, a judgment on the merits in a first suit precludes relitigation in a second [proceeding] of issues actually litigated and determined in the first suit." *Microsoft Corp. v. Global Tech., Inc.*, IPR2016-00663 and IPR2016-00669, Paper 24 at 7–8 (P.T.A.B. Mar. 24, 2013) (Ex. 2043) (citing *In re Freeman*, 30 F.3d 1459, 1465 (Fed. Cir. 1994)). In *Levi Strauss & Co. v. Abercrombie & Fitch Trading Co.*, the Federal Circuit annunciated four preconditions for the application of issue preclusion:

- (1) identity of the issues in a prior proceeding;
- (2) the issues were actually litigated;

(3) the determination of the issues was necessary to the resulting judgment; and

(4) the party defending against preclusion had a full and fair opportunity to litigate the issues.

719 F.3d 1367, 1371 (Fed. Cir. 2013).

Here, collateral estoppel precludes Petitioner from relitigating a key fact underlying its only asserted ground of unpatentability. Every claim of the '205 Patent requires an atomizer that includes a "heater wire coil" "wound around" or "on" a "porous body" or a "part of the porous body." To meet that limitation, Petitioner asserts that Brooks discloses a "resistance heating component" and a separate "porous substrate." *See, e.g.*, Petition, p. 19. Petitioner relies on that alleged disclosure as motivation to include Whittemore's wire heating coil wrapped around the "porous substrate" of Brooks or the wick of Whittemore. *See, e.g.*, Petition, pp. 26-28.

But, the Board has already rejected Petitioner's mischaracterization of Brooks in a previous IPR between the same parties. Ex. 1045, Ex. 1046. Specifically, the Board found in IPR2016-01270 that Brooks does not disclose "*that the porous substrate is separate from the resistance heating components of the heating element.*" Ex. 1045, p. 13. In the prior IPR, that finding was necessary for the Board's ultimate conclusion that Brooks does not disclose the claimed liquid supply such that the claims at issue were not unpatentable. Ex. 1045, pp. 11-

13. The Board later denied Petitioner's request for reconsideration of the Board's ruling that Brooks does not disclose a heating element separate from a porous substrate. Ex. 1046, p. 5.

The Board's decision in IPR2016-01270 dictates the result in this IPR. Here, Petitioner's proposed combination of Brooks and Whittemore requires either (a) incorporating the coil heating element of Whittemore into the Brooks in place of the "resistance heating component" or (b) incorporating both the coil heating element and the wick of Whittemore into Brooks in place of the "resistance heating component" and "porous substrate," respectively. But both of those combinations are premised on Petitioner's mischaracterization of Brooks' "resistance heating component" and "porous substrate" as separate components.

Petitioner made the same arguments about Brooks in IPR2016-01270 that it makes here. Specifically, Petitioner asserted that Brooks "discloses that the heating element 18 may comprise a porous substrate that is separate, but in intimate contact with, resistance heating components," and that "something cannot be intimate contact with itself, and thus Brooks expressly taught that the porous substrates could be separate from the resistance heating components, provided the substrates and the heating component are in intimate contact." Ex. 2002, pp. 11, 20. Similarly, here Petitioner argues that Brooks discloses that "the heating element is in 'intimate contact' with a separate 'porous substrate'.... That the heating element

and the porous substrate are distinct components in the 'intimate contact' embodiment is confirmed by the common sense notion that something cannot be in intimate contact with itself." *See, e.g.*, Petition, p. 19.

Petitioner had a full opportunity to litigate, and in fact did litigate, this issue in IPR2016-01270. The Board carefully considered and then rejected Petitioner's interpretation of Brooks in its Decision Denying Institution, and that finding was the basis for the Board's denial of institution. The Board first explained Petitioner's position:

Relying on Brooks' statement that "[o]ther suitable heating elements include... porous substrates in intimate contact with resistance heating components," Petitioner equates Brooks' 'porous substrates' with the recited "liquid storage body" and the "resistance heating components" of heating element 18 with the recited "atomizer."

Ex. 1045, p. 10.

The Board then explained why Petitioner was wrong:

We agree with Patent Owner... that Brooks repeatedly describes heating element 18 as both holding the liquid and atomizing it.... Petitioner's expert does not elucidate any further as to why a skilled artisan would understand that the 'porous substrate' is separate from the 'resistance heating components' of heating element 18.... In light of the entirety of Brooks's disclosure describing the same element, heating element 18, as

both holding aerosol forming substances and atomizing them, Brooks's lone statement that "other suitable heating elements includes...porous substrates in intimate contact with resistance heating components...*does not persuade us that 'in intimate contact' discloses that the porous substrate is separate from the resistance heating components of the heating element.*

Ex. 1045, pp. 11-13 (emphasis added).

Because the Board's finding that Brooks does not disclose a heating element separate from a porous substrate was the basis for the Board's denial of IPR2016-01270, Petitioner requested reconsideration of that ruling, asserting that the Board erred in its characterization of Brooks. Ex. 2045, pp. 7-8. In its Decision Denying the Request for Reconsideration, however, the Board confirmed that the "porous substrate" and "resistance heating component" of Brooks are not separate components:

Nevertheless, we remain unpersuaded by Brooks's disclosure referred to by Petitioner as a "different" embodiment. *Brooks's use of the term "in intimate contact," by itself, to describe the physical relationship between its 'porous substrates' and "resistance heating components" is not the same as disclosing that the elements are in "direct contact."*

Petitioner has not sufficiently shown that Brooks's use of "in intimate contact" for this embodiment is any different than its repeated description of heating element 18 as both holding and atomizing the liquid. And, more importantly, *there is no*

*illustration in Brooks, as there is in the '726 patent specification, of the relevant two elements (porous substrate and resisting [sic] heating element) being separate.*

Ex. 1046, p. 5 (emphasis added).

Because Brooks does not disclose a separate heating component and porous substrate, a POSITA could not replace the heating component of Brooks by wrapping the coil heater wire of Whittemore around Brooks' porous substrate. Moreover, a POSITA would not include Whittemore's coil wrapped around a wick in Brooks because Brooks has no need for Whittemore's wick, which functions to move liquid from a liquid source to a heating coil. Ex. 2046, ¶47. Brooks is designed expressly not to include a separate liquid source. Meyst (Ex. 2001), ¶39.

Petitioner provides no reason why collateral estoppel does not mandate application of the Board's previous decision regarding Brooks' disclosure in this proceeding. Instead, Petitioner glosses over the Board's earlier decision in IPR2016-01270, mentioning that proceeding only in a single footnote. Petition, p. 21, fn. 1. In that footnote Petitioner asserts that a different decision is "mandated by the more fully developed record in this IPR" citing six paragraphs from its same expert from the previous IPR. *Id.* Those six paragraphs discussed below repeat the arguments Petitioner presented previously in IPR2016-01270. Petitioner should not be allowed to relitigate the issue in view of the Board's previous decision.

Because collateral estoppel precludes Petitioner from relitigating whether or not Brooks discloses a separate heating component and porous substrate, and because the Board's ruling that it does not in IPR2016-01270 eliminates the foundation of Petitioner's lone ground of unpatentability, the Petition should be denied.

**B. The Petition Should Be Denied Under 35 U.S.C. § 314(a)**

The Board has discretion to deny *inter partes* review for follow-on petitions under 35 U.S.C. § 314(a). This discretion is not subordinate to or encompassed by the Board's discretion under 35 U.S.C. 325(d). *Gen. Plastic Indus. Co., Ltd. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 19 (P.T.A.B. Sept. 6, 2017) (Ex. 2027).

In *Gen. Plastic*, the Board laid out seven non-exhaustive factors first set forth in *NVIDIA Corp. v. Samsung Electronics Co., Ltd.*, IPR2016-00134, Paper 9 (P.T.A.B. May 4, 2016) (Ex. 2028) for determining whether to exercise its discretion to deny institution:

1. whether the same petitioner previously filed a petition directed to the same claims of the same patent;
2. whether at the time of filing of the first petition the petitioner knew of the prior art asserted in the second petition or should have known it;
3. whether at the time of filing of the second petition the petitioner already received the patent owner's preliminary

response to the first petition or received the Board's decision on whether to institute review in the first petition;

4. the length of time that elapsed between the time the petitioner learned of the prior art asserted in the second petition and the filing of the second petition;

5. whether the petitioner provides adequate explanation for the time elapsed between the filings of multiple petitions directed to the same claims of the same patent;

6. the finite resources of the Board; and

7. the requirement under 35 U.S.C. § 316(a)(11) to issue a final determination not later than 1 year after the date on which the Director notices institution of review.

*Gen. Plastic* at 8-10.

Analysis under the *Gen. Plastic* factors may be used to deny institution under 314(a) even where the previous proceedings involved a different petitioner. In *Samsung Electronics Co., Ltd. v. Elm 3DS Innovations, LLC*, IPR2017-01305, Paper 11 (P.T.A.B. Oct. 17, 2017) (Ex. 2029), petitioner Samsung sought to invalidate a patent that had been involved in two earlier IPRs involving petitioners Micron and Hynix. *Samsung* at 3. Institution had been denied in those earlier proceedings. *Id.* Applying the *Gen. Plastic* factors, the Board denied institution under 314(a) on the basis of the earlier proceedings. *Samsung* at 23.

*Samsung* also illustrates that 314(a) analysis using the *Gen. Plastic* factors is based on the totality of the factors, i.e., there is no requirement that every factor be



met to warrant denial of institution. In *Samsung*, the Board found that factors 3 and 5 weighed in favor of exercising discretion to deny institution (with factor 3 weighing "strongly"), factor 1 weighed minimally against exercising discretion to deny, and factors 2, 4, 6, and 7 did not weigh significantly for or against exercising discretion to deny. *Samsung* at 18-23. Thus, the Board exercised its discretion to deny institution on the basis of only two factors that weighed against institution.

As set forth below, the *Gen. Plastic* factors weigh in favor of a denial of institution under 314(a) in the current proceeding.

Factor 1: whether the same petitioner previously filed a petition directed to the same claims of the same patent

Petitioner filed another petition against the '205 Patent three days prior to filing the instant Petition. See IPR2017-01641. The earlier filed petition challenges the '205 Patent's priority claim based on written description. Moreover, the '205 Patent family has previously been involved in six IPRs filed by other petitioners that utilized Brooks and Whittemore for the primary ground of unpatentability. Ex. 2006; Ex. 2010; Ex. 2032; Ex. 2033; Ex. 2034; Ex. 2035. Those previous IPRs were based on the same already rejected argument that Petitioner relies on in the current proceeding, namely Petitioner's mischaracterization that Brooks discloses a second "intimate contact" embodiment in which the "porous substrate" is a separate component from the "resistance heating component."

Although factor 1 generally requires the same petitioner, the Board has held that a "high degree of similarity" between a later petition and earlier petitions brought by other parties "reduces the weight we accord this factor." *Samsung* at 19. Here, there is a "high degree of similarity" between the present Petition and the six previous petitions filed by other parties that rely on Brooks and Whittemore.

Moreover, although directed to different patent families, Petitioner filed 15 earlier petitions against various Fontem patents, at least seven of which cited the same reference cited in the present Petition, Brooks and/or Whittemore. Ex. 2002; Ex. 2031; Ex. 2036; Ex. 2038; Ex. 2039; Ex. 2040; Ex. 2041. Those earlier petitions include IPR2016-01270, in which the Board rejected Petitioner's understanding of Brooks' disclosure (see (VI)(A) above)). Thus, Petitioner has filed earlier petitions based on the same arguments used in the present case.

In in view of Petitioner's earlier petitions in different patent families based on the same art/arguments and the earlier petitions by Petitioner and others directed to the '205 Patent or related patents, factor 1 weighs in favor of denying institution.

Factor 2: whether at the time of filing of the first petition the petitioner knew of the prior art asserted in the second petition or should have known it

Petitioner filed its current Petition on June 26, 2017. Petitioner was aware of Brooks and Whittemore when it filed the earlier filed IPR2017-01641 directed to the '205 Patent on June 23, 2017.

Specifically, Petitioner had filed at least seven IPR petitions against other Fontem patents that included grounds of unpatentability based on Brooks and/or Whittemore. These included two petitions filed on July 2, 2016, one of which cited Whittemore against U.S. Patent No. 8,365,742 and the other of which cited Brooks against the '726 Patent. Ex. 2002; Ex. 2031. Petitioner went on to cite Brooks and or Whittemore in five additional IPR petitions filed between July 2016 and the filing date of the present Petition. Ex. 2036; Ex. 2038; Ex. 2039; Ex.2040; Ex. 2041. Thus, Petitioner was aware of Brooks and Whittemore at least by July 2, 2016, nearly a year before the filing date of the present Petition.

Moreover, Brooks was assigned to a real party-in-interest to Petitioner (Paper 2 at 1-2) and Brooks cites to Whittemore and discusses Whittemore in its background section (Ex. 1002 at 1 and 1:57-61). Thus, Petitioner has also been aware of both Brooks and Whittemore since at least 1990 when Brooks issued.

Accordingly, factor 2 weighs in favor of denying institution.

Factor 3: whether at the time of filing of the second petition the petitioner already received the patent owner's preliminary response to the first petition or received the Board's decision on whether to institute review in the first petition

As discussed above with regard to factor 1, the '205 Patent family has previously been involved in six IPRs brought by other petitioners that utilized Brooks and Whittemore for the primary ground of unpatentability. Ex. 2006; Ex. 2010; Ex. 2032; Ex. 2033; Ex. 2034; Ex. 2035. These IPRs were based on the same previously rejected argument Petitioner relies on in the present proceeding.

In two of the previous IPRs involving the '205 Patent family, IPR2016-01307 and IPR2016-01309, Patent Owner filed a response that included expert testimony, and the Board issued a decision denying institution. Ex. 2007; Ex. 2008; Ex. 2009; Ex. 2012; Ex. 2013; Ex. 2014. There is no question Petitioner was aware of and considered those IPRs here. Specifically, Petitioner relies on information from Patent Owner's previous responses in the current proceeding noting what Patent Owner "may argue" and then attempting to address Patent Owner's previous positions in the Petition. *See, e.g.*, Petition, pp. 28-29, 56. Petitioner's expert, Dr. Sturges ("Sturges") likewise preemptively addresses what Patent Owner may argue in his declaration. *See, e.g.*, Ex. 1004, ¶¶65, 74, 84.

And as set forth above, Petitioner filed an earlier petition for another Fontem patent relying on the same mischaracterization of Brooks that Petitioner relies on in the present proceeding. In that proceeding, IPR2016-01270, Patent Owner filed

a response that included expert testimony, and the Board issued a decision denying institution and a decision denying Petitioner's request for rehearing. Ex. 2004; Ex. 2005; Ex. 1045; Ex. 1046. As discussed at length in (VI)(A) above, the Board's decisions denying the petition focused on Petitioner's mischaracterization of Brooks.

In *Samsung*, the Board held that factor 3 weighed heavily in favor of denying institution because of the petitioner's access to earlier patent owner responses in other proceedings, as follows:

In the circumstances of this case, we also look to additional considerations regarding what information was available to Petitioner... At the time of filing the instant Petition, Samsung also had the Patent Owner's Response and Patent Owner's expert testimony in the related proceedings. Not only did the Petitioner have such information, but Petitioner used such information in its Petition.... The availability of the Patent Owner's Response and Patent Owner's expert testimony from other proceedings also weighs strongly in favor of exercising our discretion, as does Petitioner's use of such information in its Petition.

*Samsung* at 20-21.

Here, factor 3 weighs in favor denying institution because of Petitioner's access to Patent Owner's responses and expert testimony and the Board's decisions from IPR2016-01307 and 2016-01309 while preparing the Petition.

Factor 4: the length of time that elapsed between the time the petitioner learned of the prior art asserted in the second petition and the filing of the second petition

Petitioner filed its current Petition on June 26, 2017. As set forth above, Petitioner was aware of Brooks and Whittemore at least by July 2, 2016, nearly a year before the filing date of the present Petition, and more likely by 1990 when Brooks issued.

Petitioner does not explain the lag between the time it became aware of Brooks and Whittemore and the filing of the Petition. The '205 Patent issued June 21, 2016, and was first asserted against Petitioner on June 22, 2016 in related litigation. Ex. 2042. Thus, Petitioner cannot blame its delay on either of these factors.

Patent Owner's responses in IPR2016-01307 and IPR2016-01309 were both filed on September 30, 2016, and the Board's decisions denying institution of those proceedings were issued on December 23 and December 15, 2016, respectively. Thus, by waiting for a year after it was aware of Brooks and Whittemore to file the present Petition, Petitioner was able to get a preview of Patent Owner's arguments and the Board's characterization of those references. As discussed above with regard to factor 3, Petitioner took advantage of this preview by incorporating Patent Owner's arguments from the earlier proceedings to address what Patent Owner "may argue." See, e.g., Petition, pp. 28-29, 56; Ex. 1004, ¶¶65, 74, 84.

"A central issue addressed by the *General Plastic* factors is balancing the equities between a petition and a patent owner when information is available from prior Board proceedings for a subsequent proceeding." *Samsung* at 17-18; citing *Gen. Plastic* at 15-19. Allowing the Petitioner to take advantage of its delay in filing the Petition would result in a serious imbalance in equity. Accordingly, factor 4 weighs in favor of denying institution.

Factor 5: whether the petitioner provides adequate explanation for the time elapsed between the filings of multiple petitions directed to the same claims of the same patent

Petitioner provides no explanation for the delay between its knowledge of Brooks and Whittemore and its filing of the current Petition. Accordingly, factor 5 weighs in favor of denying institution.

Factor 6: the finite resources of the Board

As discussed above, Patent Owner has addressed Brooks and Whittemore in numerous IPRs, including IPRs relating to the '205 Patent family, and the Board has weighed in with decisions to deny institution on several occasions. Petitioner is repeating issues that have already been rejected by the Board, and thus, in addition to constituting an unfair burden on the Patent Owner, moving forward with the present IPR would be a waste of the Board's limited resources.

Factor 7: the requirement under 35 U.S.C. § 316(a)(11) to issue a final determination not later than 1 year after the date on which the Director notices institution of review

Factor 7 does not appear to be relevant to the present situation, and as such does not weight for or against an exercise of discretion to deny.

Totality of the factors

In *Samsung*, the Board declined to institute on the basis of two factors being met by earlier petitions filed by different petitioners. *Samsung* at 18-23. Like *Samsung*, the totality of the *Gen. Plastic* factors in the present proceeding weigh in favor of denying institution under 314(a).

**C. The Petition Should be Denied Under 325(d)**

The Board has discretion to deny a petition as redundant when "the same or substantially the same prior art or arguments" have been previously presented to the Office. 35 U.S.C. § 325(d); 37 C.F.R. § 42.108; *Synaptics Inc. v. Amkor Technology, Inc.*, IPR2017-00085, 2017 WL 1403668, at \*4 (P.T.A.B., Apr. 18, 2017); *US Endodontics, LLC v. Gold Standard Instruments, LLC*, IPR2015-01476, Paper 13 at 8 (P.T.A.B. Oct. 26, 2015) (Ex. 2025). The Board has stated "[i]n determining whether to exercise our discretion under Section 325(d), we first examine whether the grounds asserted in the instant Petition present 'the same or substantially the same prior art or arguments' as those previously presented to the Office," and "[t]hen, we determine whether it is appropriate to exercise our



discretion to deny institution." *R.J. Reynolds Vapor Co. v. Fontem Holdings 1 B.V.*, IPR2017-01118 and IPR2017-01119, Paper 10 at 4 (P.T.A.B. Oct. 4, 2017) (Ex. 2037); citing *Neil Ziegmann, N.P.Z. v. Stephens*, IPR2015-01860, Paper 13 at 14-15 (P.T.A.B. Sept. 6, 2017) (Ex. 2024). "[T]he use of the word 'or' in 'prior art or arguments' indicates that the presence of previously prior art *or* arguments is sufficient to invoke Section 325(d)." *Id.* at 5; citing *Ziegmann* at 19. Accordingly, the Board may determine it is appropriate to exercise its discretion to deny under 325(d) where the cited art has been previously considered, even where the precise arguments differ.

In IPR2016-01309, the claims at issue recited an atomizer assembly for an electronic cigarette comprising, among other elements, an atomizer assembly housing containing an atomizer in physical contact with a liquid storage. Petitioner Nu Mark asserted that the claims were obvious over Brooks in view of Whittemore, but the Board denied the petition under 325(d) because it raised "the same or substantially the same prior art and arguments as those previously presented to the Office." Ex. 2009, p. 12.

The Board found that Whittemore had been cited in an Information Disclosure Statement (IDS) and considered by the Examiner, and that the Examiner had applied Whittemore in an anticipation rejection which was later overcome by the applicant. Ex. 2009, pp. 6-8.

The Board also found that although Brooks itself had not been considered during prosecution of the '752 Patent, it was cumulative over two references that had been cited in an IDS and considered by the Examiner during prosecution: U.S. Patent No. 4,947,875 ("the '875 Patent;" Ex. 2018) and EP Publ. No. 0358002 ("the EP Publication;" Ex. 2019). Ex. 2009, pp. 6-7, 9-11. The '875 Patent and the EP Publication both name the same inventors as Brooks, and both were assigned to R.J. Reynolds Tobacco Company (the Petitioner in the present proceeding). Ex. 2009, pp. 9-10. The EP Publication claims priority to the application that issued as Brooks (US Patent Appl. No. 07/242,086), and the Board noted that the figures in the EP Publication are "the same as those in Brooks," and that "the disclosure of the EP Publication 'is largely identical to that of Brooks.'" Ex. 2009, p. 9; Ex. 2019, Title Page. The '875 Patent issued from an application filed the same day as the application giving rise to Brooks, and like Brooks the '875 Patent discloses a device comprising a disposable cartridge component containing a heating element electrically connected to a controller containing a battery supply. Ex. 2009, p. 10; Ex. 2018, Title Page. The Board found that, like Brooks, the '875 Patent "describes 'suitable heating elements' that include 'porous substrates in intimate contact with resistance heating components.'" Ex. 2009, p. 10.

The Board concluded that "[a] comparison of Brooks, the EP Publication, and the '875 patent demonstrates that the smoking article described in the EP

Publication and the flavor delivery article described in the '875 patent are the same in all material respects as the smoking article described in Brooks." Ex. 2009, p.

11. The Board went on to confirm that the presence of the '875 Patent and the EP Publication in an IDS signed by the Examiner was sufficient for both references, and therefore the disclosure of Brooks, to have been "previously considered by the Office." Accordingly, the Board declined to "second-guess the Office's previous decision on substantially the same issues," acknowledging "the burden and expense to Patent Owner in having to defend the '752 patent based on substantially the same prior art or arguments already considered by the Office." Ex. 2009, pp. 12-13.

Like the petitioner in IPR2016-01309, Petitioner relies on Brooks and Whittemore for its lone ground of unpatentability. Also like IPR2016-01309, Whittemore, the EP Publication, and the '875 Patent were all considered by the Examiner during prosecution of the '205 Patent.

Whittemore was included in an IDS filed March 20, 2013, and is the first of the "U.S. Patent Documents" cited in the "References Cited" section of the '205 Patent. Ex. 2020, p. 2 of 14; Ex. 1001, p. 2. Whittemore was also included in the Statement of Related Applications filed January 7, 2016. Ex. 2022, p. 2.

The EP Publication was included in an IDS filed March 20, 2013, and also included under "Foreign Patent Documents" in the "References Cited" section of

the '205 Patent. Ex. 2020, p. 3 of 14; Ex. 1001, p. 2. The '875 Patent was also included in the IDS filed March 20, 2013, as well as another IDS filed December 19, 2013. Ex. 2020, p. 2 of 14; Ex. 2021, p. 1, Cite No. 1 under "U.S. Patents." In addition, the '875 Patent was included under "U.S. Patent Documents" in the "References Cited" section of the '205 Patent, and was included in the Statement of Related Applications filed June 4, 2013. Ex. 1001, p. 2; Ex. 2023, pp. 2-3. In addition, Brooks itself was included in the Statement of Related Applications filed June 4, 2013. Ex. 2023, p. 2.

The Board in IPR2016-01309 confirmed that citation of a reference in a signed IDS is sufficient for the reference to be considered previously presented for purposes of 325(d). This was further confirmed by the Board in IPR2016-00014: "[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.'" *Benitec Biopharma Ltd. v. Cold Spring Harbor Laboratory*, IPR2016-00014, Paper 7 at 10 (P.T.A.B. Mar. 23, 2016) (Ex. 2026). Thus, the Examiner considered the Brooks EP Application and the '875 Patent and made a proactive decision not to include them in a rejection.

As in IPR2016-01309, Petitioner in the present proceeding relies heavily on the disclosure in Brooks of "[o]ther suitable heating elements" that include "porous substrates in intimate contact with resistance heating components." As noted by

the Board in that proceeding, this disclosure is present in the EP Publication and the '875 Patent.

The additional Brooks disclosure cited by Petitioner in the current proceeding is likewise present in the EP Publication and the '875 Patent. Specifically, the reference in Brooks to "aerosol forming substances and/or flavor substances located on the resistance element or elsewhere in the article" is present in the EP Publication and the '875 Patent, and dependent claims reciting "wherein the flavor substance is carried by the heating element prior to use" are present in the '875 Patent. Ex. 1002, 6:50-52, claim 57; Ex. 2018, 5:6-9, claim 25. The EP Publication includes similar dependent claims reciting "wherein the aerosol forming substance is carried by the heat element." Ex. 2019, claims 12, 23.

Petitioner was aware of IPR2016-01309 as indicated by its inclusion in the Related Proceedings Before the Board. Petition, p. 7. However, Petitioner makes no effort to address the Board's decision in that case, or to explain why a different decision would be warranted in this proceeding despite the nearly identical circumstances.

Accordingly, institution of the present IPR should be denied for at least the same reason as IPR2016-01309, namely because Petitioner's grounds for unpatentability are based on references that were already considered by the Patent Office during prosecution of the '205 Patent, and because instituting the proceeding

would present an undue "burden and expense to Patent Owner in having to defend the...patent based on substantially the same prior art or arguments already considered by the Office." Ex. 2009, p. 11.

**D. A POSITA Would Not Have Been Motivated to Combine Whittemore and Brooks**

Claims 1-22 all require an atomizer that includes a heater wire coil wound around or on a porous body. A POSITA would have had no motivation to combine Whittemore and Brooks to produce such an atomizer. Meyst (Ex. 2001), ¶¶69-82. As set forth above, Petitioner's proposed combination of Brooks and Whittemore, in which the heater wire coil of Whittemore is substituted into Brooks in place of the resistance heating component and wrapped around the porous substrate requires that Brooks disclose a heating element and a separate porous substrate. But the Board has already ruled that Brooks does not disclose that the "porous substrate" and "resistance heating component" of Brooks are separate.

As discussed above at (VI)(A), Petitioner advanced this same argument in IPR2016-01270, and the Board rejected it. Ex. 1046, p. 5. In the absence of a separate heating component and porous substrate, Petitioner's proposed combination falls apart. The Brooks heating component is not a separate component that can be replaced with the heater coil of Whittemore, but instead is intimately interconnected with the porous substrate. Meyst (Ex. 2001), ¶80.

Petitioner's backup argument, namely substituting the resistance heating component and porous substrate of Brooks with the heater wire coil and wick of Whittemore, is based on the same misinterpretation of Brooks. As discussed below at (VI)(E), Brooks discloses that its heating element is made of porous materials for storing liquid, and that liquid is impregnated directly onto the heating element rather than stored elsewhere. The heater wire coil/wick of Whittemore would not function in this manner because the wick is not designed to hold liquid, but rather to transport liquid from a separate liquid supply to the heater wire coil. Meyst (Ex. 2001), ¶80. Whittemore's wick would have no use in Brooks, which is specifically designed to eliminate the need for a separate liquid source.

Whereas Petitioner asserts that it would have been obvious to incorporate a heater coil into Brooks, Sturges goes a step further and suggests that Brooks actually discloses the use of coiled wires. Ex. 1004, ¶62. However, Brooks does not disclose the use of coiled heater wires in its disclosed device. The only reference to heater coils in Brooks is in the Background section, specifically in Brooks' discussion of inferior prior art devices. For example, Brooks refers to the coil heaters in the devices of U.S. Patent No. 2,104,266, West German Patent Appl. No. 2,653,133, and PCT Publ. No. WO86/02528, and also references Whittemore. Ex. 1002, 1:57-2:6, 2:36-43, 2:67-3:14; Meyst (Ex. 2001), ¶68. Brooks never refers to the use of heater coils in its disclosed device. Meyst (Ex. 2001), ¶68. The

absence of such disclosure in combination with Brooks' characterization of devices containing heater coils as inferior would lead a POSITA to conclude that Brooks does not teach or suggest the use of heater coils in its device. Meyst (Ex. 2001), ¶68.

Further, in discussing the metal wires of Brooks, Petitioner and Sturges omit that Brooks specifically discloses *porous* metal wires. See, e.g., Ex. 1002, 7:66. This disclosure is consistent with Brooks' repeated characterization of its heating elements as porous material designed to be directly impregnated with liquid and confirms that Brooks does not disclose a heating element separate from a porous substrate.

Brooks utilizes a disposable cigarette portion designed to deliver 6-10 puffs by directly impregnating the heater with liquid and eliminating the need for a separate liquid source. Due to its lower surface area, a wire coil would not be more efficient than the heating elements actually disclosed in Brooks for this purpose, and would in fact be inferior to the specific materials disclosed in Brooks. Meyst (Ex. 2001), ¶¶75-76. A POSITA would recognize that wire heater coils provide a way to get more energy throughput in a small space, but this does not guarantee efficiency. Meyst (Ex. 2001), ¶¶75-76. A wire heater coil wrapped around or in contact with a porous body has only line contact with the porous body, resulting a very limited total contact area and thus less efficient heat transfer.



Meyst (Ex. 2001), ¶¶75-76. Brooks discloses that the resistance heating element typically has a surface area greater than  $1 \text{ m}^2/\text{g}$ , and most preferably a surface area greater than about  $1,000 \text{ m}^2/\text{g}$ . Ex. 1002, 4:12-20. A POSITA would recognize that a wire heater could not achieve this type of surface area. Meyst (Ex. 2001), ¶¶76-77. Brooks actually contrasts its desired surface area with that of U.S. Patent No. 4,735,217 ("Gerth"): "[i]n contrast, the surface area of the Nichrome metal resistance element [i.e., a wire heater] of Gerth et al. is believed to be about  $0.01 \text{ m}^2/\text{g}$ ." Ex. 1002, 4:18-22.

A POSITA also would not have been motivated to incorporate a wire heater coil into the Brooks device because superior materials were available. Examples of these superior materials, including porous heaters and felts, are specifically disclosed by Brooks, and are consistent with Brooks' focus on high surface area heating elements designed for direct impregnation of liquid without a separate liquid source. Meyst (Ex. 2001), ¶¶77-80.

Petitioner cites U.S. Patent Nos. 5,743,251 ("Howell;" Ex. 1021) and 3,234,357 ("Seuthe;" Ex. 1020) to support its argument that heating coils were known to promote efficient heat transfer. Petition, p. 26. However, the passages cited by Petitioner do not support its assertion. The cited passage of Howell states that "[t]he wire was wrapped in a fashion that produced close, tight coils to insure good heat transfer," while the cited passage of Seuthe states "[i]n order to obtain a

stronger heating effect, wire in the upper region is wound in a tighter coiled manner than the lower portion." Ex. 1021, 11:19-21; Ex. 1020, 4:75-5:2. In both cases, the references are simply teaching that wire coils in which the coils are tightly spaced provide better heat transfer than those with less tightly spaced coils, not that coils are more efficient than other configurations. Meyst (Ex. 2001), ¶76. There is nothing in the quoted statements, nor in the references as a whole, to suggest that wire coils are superior to, e.g., more efficient than, solid heating elements.

Petitioner points to several references, including several cited in Brooks, in support of its argument that winding heating coils around a porous component to generate vapor was well known in the art, and Petitioner's expert states that winding a metal wire coil around a porous body had been known for "at least seven decades." Petition, p. 25; Ex. 1004, ¶63. Indeed, the cited references date from 1936 (Whittemore), 1938 (U.S. Patent No. 2,104,266), 1949 (Ex. 1019) , 1955 (U.S. Patent No. 2,704,218), and 1966 (Ex. 1020), meaning that they all pre-date the filing of Brooks by at least 22 years. Petitioner does not explain why, if the use of heating coils was well known in the art, Brooks (i.e., Petitioner) did not disclose incorporating such coils into the Brooks device. The inclusion of several of these references in the Background section of Brooks but not in the Detailed Description shows that heater coils were known, but were considered inferior and did not meet

the criteria set forth by Brooks for its heating elements, namely the ability to "heat and cool rapidly, and thus provide for the efficient use of energy." Ex. 1002, 7:34-38. Meyst (Ex. 2001), ¶68.

Petitioner attempts to preempt arguments relating to the relative inefficiency of wire heater coils by citing a passage from *In re Mouttet* 686 F.3d 1322 (2012): "a known system such as an arithmetic/logic unit 'does not become patentable simply because it has been described as somewhat inferior to some other product for the same use.'" Petition, pp. 28-29. In *Mouttet*, the Board had found that it would have been obvious to incorporate an A/D converter and electrical crossbar array from two references into the device of a third reference because the incorporation of the electrical circuitry "enable[s] more complex and specialized functions to be performed." *Mouttet*, 686 F.3d at 1330. In other words, there was a credible motivation for combining the references. The passage cited by Petitioner is from the portion of the Court's decision related to teaching away, which the Court only addressed after deferring to the Board's finding of a reasonable motivation to combine. *Mouttet* did not alter the requirement for a credible motivation to combine, and therefore does nothing to advance Petitioner's argument in this case. There is simply no credible motivation for a POSITA to incorporate the heater coil of Whittemore into the Brooks device. Meyst (Ex. 2001), ¶80.

**E. Brooks Does Not Teach or Suggest a "Liquid Supply" as Required by Claims 1-8 or "Liquid Absorbed in a Fiber Material" as Required by Claims 14 and 16-22, and a POSITA Would Have No Motivation for Incorporating Those Components Into Brooks**

Claims 1-8 of the '205 Patent recite that the tubular atomizer assembly housing contains an "atomizer" and a "liquid supply." Dependent claim 5 further recites a "fiber containing cigarette liquid in contact with the porous body" of the atomizer. Claims 16-22 recite that the tubular atomizer assembly housing contains an "atomizer" and "liquid absorbed in a fiber material," with the fiber material in "physical contact" with the "porous body" of the atomizer. Similarly, dependent claim 14 recites "fiber containing a cigarette liquid in contact with the atomizer." In each of these claims, the "liquid supply" or "fiber containing cigarette liquid" is a separate component from the atomizer, which includes a heater coil and a porous body. Meyst (Ex. 2001), ¶52. In an embodiment, the '205 Patent discloses a liquid storage that stores liquid that will eventually be transported to an atomizer for aerosolization. Meyst (Ex. 2001), ¶56.

Brooks consistently describes direct impregnation of the heating element with liquid. Meyst (Ex. 2001), ¶56. 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, Ex. 1002, 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, Ex. 1002, 17:1-9, 19:16-22, 20:14-22; Meyst (Ex. 2001), ¶55.

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." Ex. 1002, 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 m<sup>2</sup>g. (In contrast, the surface area of the Nichrome metal resistance element of Gerth et al is believed to be about 0.01 m<sup>2</sup>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.

Based on the disclosure of Brooks, a POSITA would understand that the atomizer in Brooks necessarily includes the heating element. Meyst (Ex. 2001), ¶54. 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." Ex. 1002, Abstract, 4:25-41, 5:1-5. Brooks' usage of "heating element" to refer to a part of the atomizer is consistent with the art generally, which is illustrated by Brooks' description of the prior art. Meyst (Ex. 2001), ¶68. For example, Brooks 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." Ex. 1002, 1:57-61, 3:15-24.

Since the heating element of Brooks is necessarily part of the atomizer and the "porous substrates" cited repeatedly by Petitioner are part of the heating element ("[o]ther suitable heating elements include...porous substrates..."), a

POSITA would recognize that the "porous substrates" are part of the atomizer.

This is consistent with Brooks' repeated references to porous heating elements (see, e.g., "[t]his resistance heating element typically is a porous material;" "[p]referably, the heating element is a fibrous carbon material;" "[p]referably, such porous heating elements are impregnated with liquid aerosol forming substances...;" "[t]he resistance heating element 18...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."). Ex. 1002, 4:7-24, 7:26-30.

Petitioner acknowledges that the "heating element" of Brooks is part of the atomizer. See, e.g., Petition, p. 38 ("an atomizer formed by heating element 18..."), 45 ("Brooks discloses...an atomizer (including at least heating element 18...). Accordingly, Brooks' statement that "[o]ther suitable heating elements include...porous substrates..." confirms that the porous substrate is part of the atomizer. Ex. 1002, 7:65-8:3. Meyst (Ex. 2001), ¶¶47-48.

As discussed above at (VI)(A), Petitioner's assertion that the "porous substrate" and "resistance heating component" of Brooks are separate components was rejected by the Board in IPR2016-01270. Petitioner asserts that the present proceeding warrants a different decision than IPR2016-01270 due to the "more fully developed record" presented by Petitioner. In support of this "more fully

developed record," Petitioner cites six paragraphs from Sturges' declaration.

Petition, p. 21, fn1; citing Ex. 1004, ¶¶49-51, 61-63. These paragraphs essentially repeat the previous arguments set forth by Petitioner and Sturges in IPR2016-01270. Compare, e.g., Ex. 1004, ¶¶50, 63 to Ex. 2003, ¶¶43-45. Relying on the same lone sentence of Brooks that Petitioner has relied on previously for the alleged "intimate contact" embodiment (7:65-8:3), Sturges states that a POSITA "would have understood that there were a finite number of identified, predictable ways to arrange the resistance heating component 'in intimate contact' with the porous substrate," and then goes on to discuss various ways in which a separate heating component and porous substrate could be oriented relative to one another, including with the resistance heating component wrapped around the porous substrate. Ex. 1004, ¶62; citing Ex. 1002, 8:1-3. Based on the supposed "intimate contact" embodiment of Brooks, Sturges repeats Petitioner's assertion that it would have been obvious to either "coil Brooks' heating element around the porous substrate in 'intimate contact' with the heating element" or "substitute Whittemore's coiled heating wire/wick configuration for Brooks' heating element." Ex. 1004, ¶¶50, 61; citing Ex. 1002, 1:57-61. In short, Sturges' statements in paragraphs 50, 61, and 63 reargue Brooks's disclosure that the Board already considered in IPR2016-01270. Sturges offers no new insight as to why a POSITA would arrive at a different conclusion.



Petitioner and Sturges point to two additional sections of Brooks that were not addressed in detail in previous IPR2016-01270 as supporting the alleged "intimate contact" embodiment. However, those sections are consistent with the rest of the Brooks specification, and therefore do not contradict the Board's finding that Brooks does not disclose a heating element and a separate porous substrate.

First, Petitioner states "[a]ccording to Brooks, the aerosol forming substance can be located either 'on the resistance heating element or elsewhere in the article.'" Petition, p. 20; citing Ex. 1002, 6:45-52; Ex. 1004, ¶51. According to Petitioner, a POSITA would have interpreted "on the resistance heating element or elsewhere in the article" to encompass "locating the aerosol forming substance in the porous substrate that is in 'intimate contact' with the heating element." Petition, p. 20.

Petitioner's quotation of Brooks is misleading. The cited passage actually says "aerosol forming substances *and/or tobacco flavor substances* located on the resistance heating element or elsewhere in the article." Ex. 1002, 6:45-52 (emphasis added). In other words, "elsewhere on the article" does not refer to "aerosol forming substances," but instead to "aerosol forming substances and/or tobacco flavor substances." As discussed at length above, Brooks does not disclose any embodiment in which liquid is stored outside of the heating element, i.e., outside of the atomizer. Brooks does, however, disclose that tobacco flavor substances can be located outside the heating element. See, e.g., Ex. 1002, 10:49-

53. Accordingly, rather than twisting this sentence of Brooks into an embodiment at odds with the entire specification, a POSITA would interpret "elsewhere in the article" as referring to tobacco flavor substances. Meyst (Ex. 2001), ¶59.

Second, Petitioner points to claims 57, 105, and 132 of Brooks, which depend from independent claims 53, 104, and 131, respectively, and each recite "the aerosol forming substance is carried by the heating element." Petition, p. 20; Ex. 1004, ¶51. Citing *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005), Petitioner concludes that this claim language indicates the aerosol forming substance may be "carried by the heating element and/or elsewhere in the device, including on the porous component that is in 'intimate contact' with the heating element. Petition, pp. 20-21.

Once again, Petitioner's argument is predicated on the existence of an embodiment that does not exist, i.e., a porous component separate from the heating element. And, claim differentiation cannot change Brooks disclosure. Claim differentiation relates to claim scope, not whether or not Brooks discloses additional embodiments. Regardless, "[c]laim language must always be read in view of the written description...and any presumption created by the doctrine of claim differentiation 'will be overcome by contrary construction dictated by the written description...'" *Retractable Technol., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1305 (Fed. Cir. 2011). "[C]laim differentiation does not serve to

broaden claims beyond their meaning in light of the patent as a whole, and it cannot override clear statements of claim scope found in the specification." *Poly-America v. API*, 839 F.3d 1131, 1137 (Fed. Cir. 2016). In this case, claim differentiation cannot overcome the clear and consistent teaching in Brooks of liquid being stored only in the porous atomizer.

**F. A POSITA Would Have No Motivation for Incorporating a Liquid Storage Into Brooks**

Implicitly recognizing that Brooks does not disclose a heating element separate from a porous substrate, Petitioner also argues that it would have been obvious to add a liquid supply to the Brooks device "in order to improve the liquid storage capacity of the disposable portion 12 of the Brooks device," for example by incorporating wick D of Whittemore. Petition, pp. 41-44. According to Petitioner, the primary motivation for such a modification is the teaching in Brooks that "the liquid storage structures of the disclosed device are 'advantageous' because they are 'capable of holding and efficiently releasing relatively large quantities of liquid aerosol forming substances.'" Petition, p. 42; citing Ex. 1002, 4:25-29.

But, the "advantageous" liquid storage structures of Brooks that Petitioner relies on for its asserted motivation are the heating elements, i.e., the atomizer. Brooks touts the liquid storage characteristics of its heating elements because directly impregnating a heater with liquid eliminates the need for a separate liquid source. That configuration is fundamental to Brooks' device. A POSITA would

not conclude that a separate liquid source was needed based on a heating structure explicitly designed to eliminate the need for a separate liquid source. To the contrary, that disclosure in Brooks teaches away from including a separate liquid storage. Meyst (Ex. 2001), ¶55.

Further, the incorporation of a liquid supply separate from the atomizer would be at odds with Brooks' teaching of its smoking articles as comprising a disposable component capable of delivering a limited number of puffs. Meyst (Ex. 2001), ¶63. 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." Ex. 1002, 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." Ex. 1002, 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). Ex. 1002, 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 storing liquid outside of the atomizer – the atomizer itself is impregnated with sufficient liquid. Meyst (Ex. 2001), ¶64.

Petitioner goes on to reference "other motivations," specifically "the avoidance of waste that would result from reducing the frequency of cartridge replacement." Petition, p. 42. However, the disposable nature of the cigarette component of Brooks is presented as a feature, not a drawback. Meyst (Ex. 2001), ¶63. Brooks repeatedly refers to the "disposable portion" of its device, and the fact that it can easily be removed from the reusable battery component and discarded. See, e.g., Ex. 1002, 5:58-62. This is consistent with the limited number of puffs offered by each cigarette component. Meyst (Ex. 2001), ¶63. A POSITA would have no credible motivation to eliminate disposability because doing so would fundamentally alter the purpose of the Brooks device. Meyst (Ex. 2001), ¶64.

Petitioner's assertion that additional liquid storage could be incorporated into the Brooks device by incorporating wick D of Whittemore ignores the purpose of Whittemore's wick. Whittemore's wick is not a liquid supply. It is a wick for transporting liquid from a separate liquid supply to a heating coil. Meyst (Ex. 2001), ¶43; Ex. 2046, ¶47. There is no reason to include a wick for transporting liquid, into a device that does not have a separate liquid supply. Meyst (Ex. 2001), ¶80.

In discussing the alleged obviousness of adding additional liquid storage to the Brooks device, Petitioner states that its arguments are "supported by the factual findings of a British tribunal evaluating the patentability of EP Patent No. 2022349

over Brooks. Petition, p. 44. However, Petitioner provides no support for this assertion because the only evidence it cites is the EP patent itself (Ex. 1047). In fact, the quoted passage cited by Petitioner does not support their argument. As discussed in detail above, the "porous component" of Brooks is the heating element, i.e., the atomizer. Thus, "increasing the volume/capacity of the porous component" would not entail incorporating a separate liquid supply into the Brooks device, but instead would involve enlarging the heating element. Meyst (Ex. 2001), ¶75.

**G. Brooks Does Not Teach or Suggest a Tubular Battery Assembly Housing as Recited in Claims 1-15 or 18**

Claims 1-15 and 18 recite a "tubular battery assembly housing." Brooks does not teach or suggest a battery assembly having a tubular battery assembly housing.

Petitioner alleges that Brooks "discloses that the controller 14 can have a tubular shape such as a pipe or cigarette holder." Petition, p. 31; citing Ex. 1002, 4:46-49 ("[t]he reusable controller can be in the form of a pipe, a reusable cigarette holder...."). Petitioner argues that a POSITA would have understood a pipe and cigarette holder to be tubular shaped structures. Petition, p. 31.

With regard to the alleged tubular pipe, Petitioner cites Figs. 7 and 8 of Brooks, which Petitioner claims show a pipe as "a narrow tube with a tubular-shaped structure at one end." Petition, p. 31.

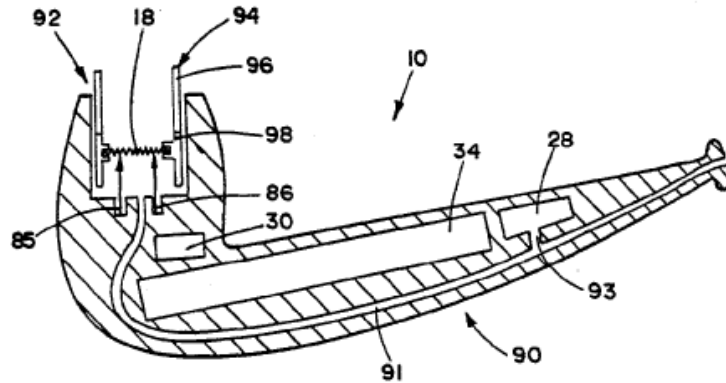


FIG. 7

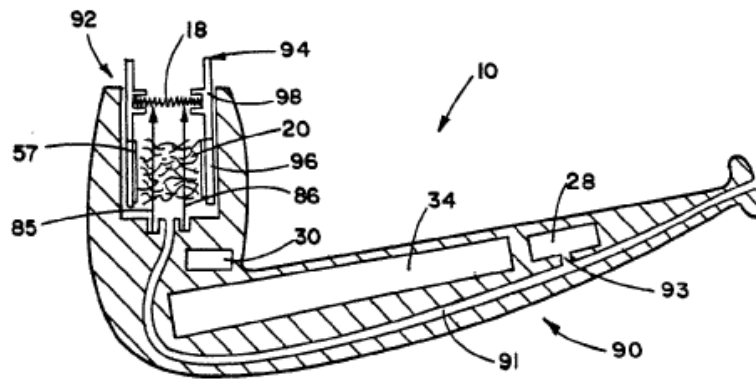


FIG. 8

Brooks states that the pipe of Figs. 7 and 8 contains power source 34, and that disposable smoking cartridge 94 is inserted into bowl 92. Petitioner does not delineate the boundaries of the alleged battery assembly housing of Figs. 7 and 8, but in order to meet the "first electrode at an end of the battery assembly housing" element of the '205 Patent claims, the battery assembly housing would have to include at least that portion of the pipe containing battery 34 and bowl 92. Such a housing is not tubular since it curves sharply over its full length.

With regard to the alleged tubular cigarette holder, Petitioner argues that "[a] cigarette holder is also a tubular shaped structure for receiving a cigarette," while Sturges states that a cigarette holder "is a tubular structure since its purpose is to hold a tubular cigarette while matching its general appearance and shape." Petition, p. 31; Ex. 1004, ¶74. Sturges' assertion that the cigarette holder must be tubular because it is designed to hold a tubular cigarette is belied by Brooks' own disclosure of a non-tubular reusable component holding a tubular cigarette component. Fig. 3 of Brooks, below, shows a rectangular battery assembly, which is described as shaped to fit in a user's pocket. *See, e.g.*, Ex. 1002, Fig. 3, 11:31-35.

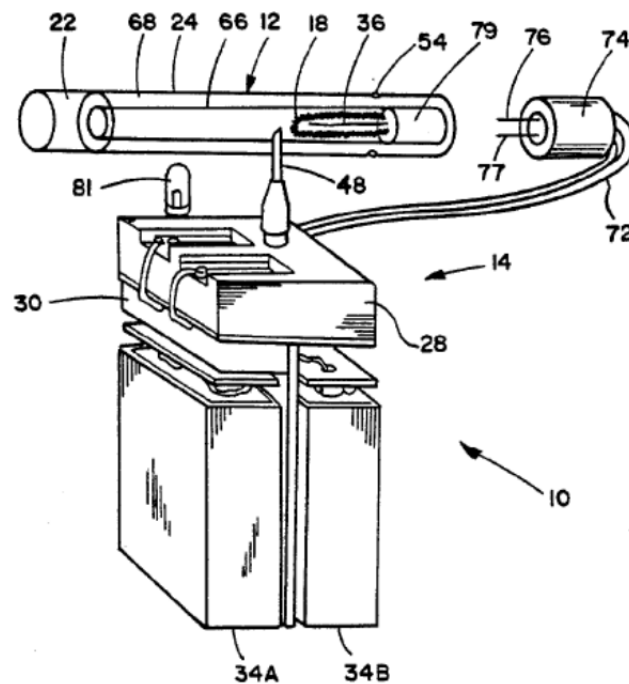


FIG. 3



Petitioner goes on to cite two references, Kleinhans (Ex. 1015) and Bonanno (Ex. 1016), as allegedly supporting its contention that cigarette holders are necessarily tubular. Petition 31. However, Petitioner provides no motivation for a POSITA to look to these references in combining the devices of Brooks and Whittemore, nor does Petitioner provide any evidence that the tubular cigarette holders disclosed in these references were indicative of the general knowledge in the art.

## VII. CONCLUSION

For the reasons discussed above, Patent Owner requests that the Board deny the Petition for *Inter Partes* Review of the '205 Patent.

Respectfully submitted,

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**CERTIFICATE OF COMPLIANCE**

The undersigned certifies that this brief complies with the type-volume limitations of 37 CFR § 42.24. This brief contains 12,229 words as calculated by the "Word Count" feature of Microsoft Word 2010, the word processing program used to create it.

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**CERTIFICATE OF SERVICE**

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

*Date of service:* October 23, 2017

*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'S PRELIMINARY RESPONSE TO PETITION FOR *INTER PARTES* REVIEW**

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