

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ECTO WORLD, LLC and SV3, LLC,
Petitioner

v.

RAI STRATEGIC HOLDINGS, INC.,
Patent Owner

Case PGR2024-00049
U.S. Patent No. 11,925,202

**PETITION FOR POST-GRANT REVIEW
OF U.S. PATENT NO. 11,925,202**

Mail Stop "PATENT BOARD"
Patent Trial and Appeal Board
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	MANDATORY NOTICES (37 C.F.R. §42.8(A)(1)).....	5
III.	GROUND FOR STANDING (37 C.F.R. §42.204(A)).....	6
IV.	THE '202 PATENT IS PGR ELIGIBLE.....	7
V.	IDENTIFICATION OF CHALLENGE (37 C.F.R. §42.204(B)).....	10
	A. Citation of Prior Art.....	10
	B. Statutory Grounds for the Challenge.....	11
VI.	TECHNOLOGY OVERVIEW	11
VII.	THE '202 PATENT	12
	A. Overview of the '202 Patent	12
	B. Applicant Admits that the Claimed Features Were Well Known.....	13
	C. Prosecution History Summary	16
	D. Level of Ordinary Skill in the Art	16
	E. Claim Construction.....	17
	1. “wicked into contact with the electrical resistance heater”	17
	2. “smoking article”.....	19
VIII.	OVERVIEW OF THE APPLIED REFERENCES	20
	A. Takeuchi.....	20
	B. Kim.....	23
	C. Pienemann	25
	D. Susa	27
IX.	GROUND OF UNPATENTABILITY.....	28
	A. Ground 1: Takeuchi renders obvious claims 1, 3-15, and 18-29.....	28
	1. Claim 1	28
	(a) [1.P].....	28
	(b) [1.a]	32
	(c) [1.b].....	35
	(d) [1.c]	38

	(e)	[1.d]	40
	(f)	[1.e]	44
	(g)	[1.f]	52
	(h)	[1.g]	56
2.		Claim 3	58
3.		Claim 4	60
4.		Claim 5	62
5.		Claim 6	63
6.		Claim 7	64
7.		Claim 8	65
8.		Claim 9	65
9.		Claim 10	66
10.		Claim 11	67
11.		Claim 12	71
12.		Claim 13	72
13.		Claim 14	73
14.		Claim 15	74
15.		Claim 18	75
16.		Claim 19	76
17.		Claim 20	76
18.		Claim 21	77
19.		Claims 22-29	77
B.		Ground 2: The combination of Takeuchi and Pienemann renders obvious claims 6, 7, 14, 15, and 18-29.	78
	1.	A POSA would have been motivated to combine Takeuchi and Pienemann.	78
		(a) Motivation to implement Takeuchi's liquid container using Pienemann's wrapper material	78

	(b)	Motivation to implement Takeuchi's control circuit having additional control/regulating capabilities	81
	(c)	Motivation to modify Takeuchi's flavor-generating devices to incorporate removable end caps	84
2.		Claim 6	86
3.		Claim 7	87
4.		Claim 14	87
5.		Claim 15	88
6.		Claim 18	89
7.		Claims 19-29	89
C.		Ground 3: The combination of Kim and Pienemann renders obvious claims 1-30.	89
1.		A POSA would have been motivated to combine Kim and Pienemann.	89
	(a)	Motivation to modify Kim's technique of activating the heater using Pienemann's puff detector and electronic circuit 32	90
	(b)	Motivation to implement Kim's porous chip to be removable/replaceable and wrapped	92
	(c)	Motivation to modify Kim's device to incorporate a removable end cap and mouthpiece	94
2.		Claim 1	97
	(a)	[1.P]	97
	(b)	[1.a]	98
	(c)	[1.b]	98
	(d)	[1.c]	99
	(e)	[1.d]	100
	(f)	[1.e]	102
	(g)	[1.f]	107
	(h)	[1.g]	108
3.		Claim 2	109

4.	Claim 3	110
5.	Claim 4	110
6.	Claim 5	112
7.	Claim 6	113
8.	Claim 7	113
9.	Claim 8	113
10.	Claim 9	113
11.	Claim 10	114
12.	Claim 11	115
13.	Claim 12	115
14.	Claim 13	118
15.	Claim 14	118
16.	Claim 15	118
17.	Claim 16	119
18.	Claim 17	119
19.	Claim 18	120
20.	Claim 19	121
21.	Claim 20	121
22.	Claim 21	122
23.	Claims 22-30	122
D.	Ground 4: The combination of Kim, Pienemann, and Susa renders obvious claims 1-30.	123
1.	A POSA would have been motivated to combine Kim, Pienemann, and Susa	123
2.	Claim 1	124
	(a) [1.P]	124
	(b) [1.a]-[1.g]	125
3.	Claims 2-30	125
E.	Ground 5: Claims 1-30 lack written description support.	125

X.	DISCRETIONARY CONSIDERATIONS UNDER 324(A) AND 325(D) STRONGLY FAVOR INSTITUTION.	130
A.	The Petition should not be denied under <i>Fintiv</i>	130
B.	The <i>Advanced Bionics</i> two-part framework strongly favors institution.	130
XI.	CONCLUSION	132
XII.	CLAIMS APPENDIX.....	133

PETITIONER'S EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 11,925,202 to Robinson et al. (“’202 patent”)
1002	’202 Patent Prosecution History
1003	Declaration of Dr. Seetharama Deevi
1004	U.S. Patent No. 6,155,268 to Takeuchi (“Takeuchi”)
1005	<i>Intentionally Left Blank</i>
1006	International Patent Application Pub. No. WO2000/028843 to Pienemann [Certified Translation] (“Pienemann”)
1007	U.S. Patent Application Pub. No. 2006/0016453 to Kim (“Kim”)
1008	<i>Curriculum Vitae</i> of Dr. Seetharama Deevi
1009	Reynolds’ Motion for Temporary Relief [Public Version], Certain Disposable Vaporizer Devices; Inv. No. 337-TA-1410
1010	Declaration of Dr. Robert Sturges, <i>RJ Reynolds Vapor Company et al v. Fontem Holdings 1 BV et al.</i> , IPR2018-00627, EX1002
1011	Petition for <i>Inter Partes</i> Review, <i>RJ Reynolds Vapor Company et al v. Fontem Holdings 1 BV et al.</i> , IPR2018-00627, Paper 2
1012	<i>Intentionally Left Blank</i>
1013	Petition for <i>Inter Partes</i> Review, <i>RJ Reynolds Vapor Company v. Fontem Holdings 1 BV</i> , IPR2016-01527, Paper 1
1014	Initial Determination, <i>Certain Tobacco Heating Articles and Components Thereof</i> , Inv. No. 337-TA-1199 [Public Version]
1015	Declaration of Charles Clemens, <i>Philip Morris Products SA v. RAI Strategic Holdings, Inc.</i> , IPR2020-01602, EX2010
1016	Declaration of Dr. Robert Sturges, <i>RJ Reynolds Vapor Company v. Fontem Holdings 1 BV</i> , IPR2016-01270, EX1009
1017	Institution Decision, <i>Philip Morris Products SA v. RAI Strategic Holdings, Inc.</i> , IPR2020-01602, Paper 9
1018	EP Patent Appl. No. 0845220 to Susa (“Susa”)

Exhibit No.	Description
1019	P.M. Ling and S.A. Glantz, “Tobacco industry consumer research on socially acceptable cigarettes,” <i>Tobacco Control</i> 14 , e3 (2005) (http://www.tobaccocontrol.com/cgi/content/full/14/5/e3) (“Ling”)
1020	U.S. Patent No. 2,104,266 to McCormick (“McCormick”)
1021	U.S. Patent No. 1,775,947 to Robinson (“Robinson”)
1022	U.S. Patent No. 3,200,819 to Gilbert (“Gilbert”)
1023	U.S. Patent No. 3,258,015 to Drummond et al. (“Drummond”)
1024	U.S. Patent No. 4,079,742 to Ranier et al. (“Ranier”)
1025	U.S. Patent No. 4,819,665 to Roberts et al. (“Roberts”)
1026	U.S. Patent No. 5,666,977 to Higgins et al. (“Higgins”)
1027	U.S. Patent No. 5,743,251 to Howell et al. (“Howell”)
1028	U.S. Patent No. 6,234,167 to Cox et al. (“Cox”)
1029	CN Patent No. 2719043Y to Hon Lik (“Hon”)
1030	U.S. Patent No. 2,057,353 to Whittemore (“Whittemore”)
1031	U.S. Patent No. 4,765,347 to Sensabaugh et al. (“Sensabaugh”)
1032	U.S. Patent No. 11,758,936 to Robinson et al.
1033	U.S. Patent No. 11,785,978 to Robinson et al.
1034	U.S. Patent No. 10,231,488 to Robinson et al.
1035	U.S. Patent No. 9,901,123 to Robinson et al.
1036	U.S. Patent No. 9,801,416 to Robinson et al.
1037	U.S. Patent No. 8,899,238 to Robinson et al.
1038	U.S. Patent No. 8,079,371 to Robinson et al.
1039	U.S. Patent No. 7,726,320 to Robinson et al.
1040	U.S. Patent No. 7,992,626 to Tilton et al.

I. INTRODUCTION

Ecto World, LLC and SV3, LLC (“Petitioner”) petitions for post-grant review of claims 1-30 of U.S. Patent No. 11,925,202 to Robinson *et al.* (“the ’202 patent”), titled “Tobacco-Containing Smoking Article.”

The ’202 patent claims an “electrically-powered, aerosol-generating smoking article.” EX1001, ’202 patent, 32:58-59. However, as explained in detail herein, the ’202 patent admits that every feature recited in the claims was known and in use well before the ’202 patent. Section VII.B *infra*. The ’202 patent’s only purported advancement over these well-known devices was to allegedly replace a known, publicly available cartridge that contained an aerosol-forming liquid with a cartridge containing both aerosol-forming liquid **and tobacco**. *Id.*, 22:19-26 (representative cartridges are “incorporated within a device available as Ruyan Atomizing Electronic Cigarette” and “**can be modified by adding tobacco extract thereto**, or by removing at least a portion of the substrate and nicotine-containing material incorporated therein and replacing that removed portion with a tobacco composition”).

However, there are three problems with the ’202 patent’s alleged point of novelty. First, this alleged point of novelty—a cartridge containing both aerosol-forming liquid **and tobacco**—is not expressly recited in any of the challenged claims. Second, removing “tobacco” from the challenged claims results in the

claims being invalid under 35 U.S.C. §112 for lack of written description support in the specification. Third, even if the '202 patent's alleged point of novelty was recited in the claims, the prior art discloses and/or renders obvious smoking articles containing tobacco, as well as each and every other feature recited in the claims.

As explained herein, Patent Owner ("RAI") canceled all originally-filed claims and subsequently added new, broader claims that are not adequately supported in the specification. With the new claim set added during prosecution of the '202 patent, RAI abandoned the (supported) claim scope that it had obtained over the course of no less than seven other patents and which was captured in the originally-filed claims here—all of which were directed towards "A **tobacco**-containing ... smoking article." EX1002, '202 Patent Prosecution History, 62-64; *see also* EX1032, '936 patent (parent to the '202 patent), claim 1, EX1036, '416 patent (grandparent to the '202 patent), claim 1 ("comprising a cartridge providing a liquid storage compartment containing a mixture comprising a **tobacco extract** and an aerosol-forming material"). The '202 patent, along with each of these seven other patents in the same family, still bears the title: "**Tobacco**-Containing Smoking Article."

Instead, of continuing to pursue claims commensurate with the scope of tobacco-containing smoking articles, which is also the overwhelming focus of the specification of the '202 patent, RAI sought to add new claims that removed any

mention of “tobacco,” to assert the ’202 patent against vaporizer devices, which are not only devoid of tobacco, but are actually specifically designed to help smokers quit devices and products containing harmful tobacco. This blatant attempt to impermissibly broaden the claims of the ’202 patent during prosecution not only renders the challenged claims invalid under §112 but also illustrates that the ’202 patent is not entitled to its earliest possible priority date of October 18, 2006. Instead, the ’202 patent should, at best, be afforded a priority date of March 31, 2023—the filing date of the ’202 patent. When given this proper priority date, the ’202 patent becomes eligible for post-grant review.¹

This Petition demonstrates that each of the challenged claims are not patentable under both §112 and §103. The prior art ground presented herein is based on just a small subset of the overall volume of patents, publications, and products disclosing or rendering obvious the ’202 patent’s electrically-powered, aerosol-generating smoking article. This Petition is also supported by Dr. Seetharama Deevi, who has over 35 years of experience working with devices and

¹ Petitioner is concurrently filing a petition for IPR of the ’202 patent to preserve its ability to challenge the patentability of the ’202 patent in the event that the Board determines that the ’202 patent is not PGR eligible. The concurrently-filed IPR petition contains nearly identical prior art grounds to those herein.

processes for generating and inhaling smoke, aerosol, and vaporized materials.

EX1003, Deevi Declaration.

Takeuchi, Kim, Pienemann, and Susa, alone or used in various combinations, teach each and every limitation of the challenged claims of the '202 patent. While Takeuchi, Kim, and Pienemann are listed on the face of the '202 patent, the Examiner was not afforded the opportunity to seriously consider any of these references, as they were buried in a massive IDS dump of over 1000 references by Patent Owner during prosecution. As a result, none of these references were applied in any office action during prosecution of the '202 patent. In fact, the Examiner did not issue a single art-based rejection. If the importance any one of Takeuchi, Kim, or Pienemann had been properly identified during prosecution, *as the Examiner requested*², these references would have indeed been applied in a rejection, and the '202 patent would not have been allowed.

Accordingly, the Board should institute this proceeding and find claims 1-30 of the '202 patent unpatentable.

² Examiner stated that the submitted IDS “contains an extremely large number of references for consideration by the Examiner,” and requested applicant “specifically point[] out in response to this Office Action” any particular relevant references. EX1002, 174. Applicant ignored this request.

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

REAL PARTY-IN-INTEREST: The real parties-in-interest are Petitioner Ecto World, LLC d/b/a Demand Vape, and SV3, LLC d/b/a Mi-One Brands.

RELATED MATTERS: The '202 patent is the subject of *Certain Disposable Vaporizer Devices* (Inv. No. 337-TA-1410), filed June 11, 2024.

The '202 patent claims the benefit of U.S. Patent No. 9,901,123 (“the '123 patent”), which was at issue in the following litigation proceedings:

Case	Court	Case No.	Filed	Status
<i>Philip Morris Products SA v. RAI Strategic Holdings, Inc.</i>	PTAB	IPR2020-01602	September 18, 2020	Final Written Decision issued March 30, 2022
<i>Philip Morris Products SA v. RAI Strategic Holdings, Inc.</i>	PTAB	IPR2020-00919	May 8, 2020	Institution denied November 16, 2020
<i>Certain Tobacco Heating Articles and Components Thereof</i>	ITC	337-TA-1199	April 8, 2020	Final Determination issued September 29, 2021
<i>Philip Morris Products S.A. v. RAI Strategic Holdings, Inc.</i>	CAFC	22-1846	May 31, 2022	Final Written Decision in IPR2020-01602 affirmed; Mandate issued October 23, 2023
<i>Philip Morris Products S.A. v. ITC</i>	CAFC	22-1227	December 7, 2021	Judgment in 337-TA-1199 affirmed; Mandate issued May 22, 2023

Case	Court	Case No.	Filed	Status
<i>RAI Strategic Holdings, Inc. et al v. Altria Client Services LLC et al.</i>	EDVA	1:20-cv-00393	April 9, 2020	123 patent dismissed from suit May 5, 2020

Petitioner is also concurrently filing a Petition for *Inter Partes* Review of the '202 patent (IPR2024-01280).

LEAD AND BACKUP COUNSEL: Under 37 C.F.R. §§42.8(b)(3) and 42.10(a), Petitioner appoint **Ryan C. Richardson** (Reg. No. 67,254) as lead counsel; and **Daniel E. Yonan** (Reg. No. 53,812), **Kyle E. Conklin** (Reg. No. 59,425), and **Christopher R. O'Brien** (Reg. No. 63,208) as back-up counsel, all at the address: STERNE, KESSLER, GOLDSTEIN & FOX PLLC, 1101 K Street, NW, 10th Floor, Washington, DC, 20005, phone (202) 371-2600, and facsimile (202) 371-2540.

SERVICE INFORMATION: Petitioner consent to electronic service by email at: **rrichardson-PTAB@sternekessler.com**, **dyanan-PTAB@sternekessler.com**, **kconklin-PTAB@sternekessler.com**, **cobrien-PTAB@sternekessler.com**, and **PTAB@sternekessler.com**.

III. GROUNDS FOR STANDING (37 C.F.R. §42.204(A))

The undersigned and Petitioner certify that the '202 patent is available for post-grant review. Petitioner is not barred or estopped from requesting post-grant review on the grounds herein.

IV. THE '202 PATENT IS PGR ELIGIBLE

Petitioner certify that the '202 patent is available for PGR.³ Section 3(n)(1) provides the first-inventor-to-file provisions of the AIA “shall apply to any application for patent, and any patent issuing thereon, that contains or contained at any time—(A) a claim to a claimed invention that has an effective filing date in Section 100(i) of title 35, United States Code, that is on or after the effective date described in this paragraph.” AIA § 3(n)(1), 125 Stat. at 293. The AIA passed on September 16, 2011. 125 Stat. 284. The effective date under § 3(n)(1) is 18 months after the date of passage—i.e., March 16, 2013.

The '202 patent issued on March 12, 2024 from an application filed March 31, 2023. The patent claims priority to a series of applications originating October 18, 2006. Patent Owner bears the ultimate burden of demonstrating entitlement to

³ Petitioner are concurrently filing a nearly identical IPR corresponding to this PGR in the event that RAI is able to provide evidence during trial that might dissuade the Board from holding that the '202 patent is PGR eligible. The Board has previously found such filings are proper and do not weigh against instituting PGR. *Align Tech. Inc., v. 3Shape*, PGR2018-00103, Paper 12 at 10 (P.T.A.B. May 13, 2019) (instituting PGR filed alongside copending IPR presenting virtually identical prior-art-based invalidity grounds).

an earlier application's filing date. *In re NTP, Inc.*, 654 F.3d 1268, 1276-77 (Fed. Cir. 2011). This burden is not satisfied merely because the later application is a "continuation" of the earlier one. *Research Corp. Techs. v. Microsoft Corp.*, 627 F.3d 859, 865, 869-70 (Fed. Cir. 2010). Patent Owner must show that the claimed invention was "disclosed in the manner provided by the first paragraph of [35 U.S.C.] section 112 (a)" in the earlier application. 35 U.S.C. § 120; *Anascope, Ltd. v. Nintendo of Am., Inc.*, 601 F.3d 1333, 1334-35 (Fed. Cir. 2010).

If the earlier application is not an immediate parent, the invention must be disclosed in compliance with § 112 in every intervening application. *Lockwood v. Am. Airlines*, 107 F.3d 1565, 1571 (Fed. Cir. 1997). The earlier application(s) must "reasonably convey[] to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*). The claimed combination, not just its individual elements, must be described. *Hyatt v. Dudas*, 492 F.3d 1365, 1369-71 (Fed. Cir. 2007).

As long as one claim of the '202 patent is not entitled to an effective filing date earlier than March 16, 2013, PGR is available, even if some of the claims are entitled to an earlier date. Leahy-Smith America Invents Act, Pub. L. No. 112-29, sec. 3(n)(1)(A), 6(f)(2), 125 Stat. 284, 293, 311 (2011). In Ground 5, Petitioner identify at least one reason that RAI will not be able to meet its burden of proving

that the claims at issue are entitled to a filing date earlier than the '202 application's March 31, 2023, filing date: the claims lack written-description support in the specification of the '202 patent and likewise every patent in the priority chain (all of which have identical specifications). *Compare* EX1001 with EX1032-1039. As explained in Ground 5, the inventors removed “tobacco” from the originally-filed claims, and as a result, impermissibly broadened the claims beyond what is supported by any specification in the '202 patent family, thereby rendering the amended claims invalid under §112.

Accordingly, the '202 patent claims are not entitled to the benefit of an earlier priority date. Thus, the claims of the '202 patent have an effective filing date of March 31, 2023. As a result, at least one claim of the '202 patent has an effective filing date on or after March 16, 2013, such that PGR is available.⁴

⁴ To the extent that RAI argues that U.S. Patent No. 11,785,978 (“the '978 patent”) provides written-description support, and thus priority, for the claims of the '202 patent, such an argument would be unavailing. First, as discussed in Ground 5, the '978 patent does not provide such written-description support. Second, the '978 patent was filed on February 8, 2019—i.e., after March 16, 2013. Thus, a priority claim to the '978 patent would not impact the '202 patent's PGR eligibility. Third, such a priority claim would result in the claims of the '202 patent being anticipated

Leahy-Smith America Invents Act, Pub. L. No. 112-29, sec. 3(n)(1)(A), 6(f)(2),
125 Stat. 284, 293, 311 (2011).

This Petition is filed less than nine months after the issuance of the '202 patent. 35 U.S.C. § 321(c). Petitioner is not barred or estopped from requesting PGR. Petitioner challenge all claims under §§ 102, 103, and 112. Specifically, Petitioner challenge all claims for lack of written description under § 112(a).

V. IDENTIFICATION OF CHALLENGE (37 C.F.R. §42.204(B))

A. Citation of Prior Art

As discussed above, the '202 patent is not entitled to claim priority to its earliest possible priority date because the new claim set added during prosecution of the application that issued as the '202 patent lacks written description support in the originally-filed specification. Section IX.E; EX1003, ¶¶366-370. Nonetheless, all of the references relied upon herein are prior art even as of the '202 patent's earliest priority date—October 18, 2006.

Takeuchi (EX1004) was filed on July 23, 1998, and issued on December 5, 2000. Therefore, Takeuchi is prior art under §102(a).

and/or rendered obvious by earlier patents in the '202 patent family that contain identical disclosures, and that issued more than a year before the '978 patent's filing date—e.g., U.S. Patent Nos. 9,801,416, 8,899,238, 8,079,371, and 7,726,320.

Pienemann (EX1006) has an international filing date of November 8, 1999, and published on May 25, 2000. Therefore, Pienemann is prior art under §102(a).

Kim (EX1008) was filed on July 22, 2004, and published on January 26, 2006. Therefore, Kim is prior art under §102(a).

Susa (EX1018) was filed on September 6, 1997, and published on March 6, 1998. Therefore, Susa is prior art under §102(a).

B. Statutory Grounds for the Challenge

Ground	Basis	Claims	References
1.	§103	1, 3-15, and 18-29	Takeuchi
2.	§103	6, 7, 14, 15 and 18-29	Takeuchi in view of Pienemann
3.	§103	1-30	Kim in view of Pienemann
4.	§103	1-30	Kim in view of Pienemann and Susa
5.	§112	1-30	None

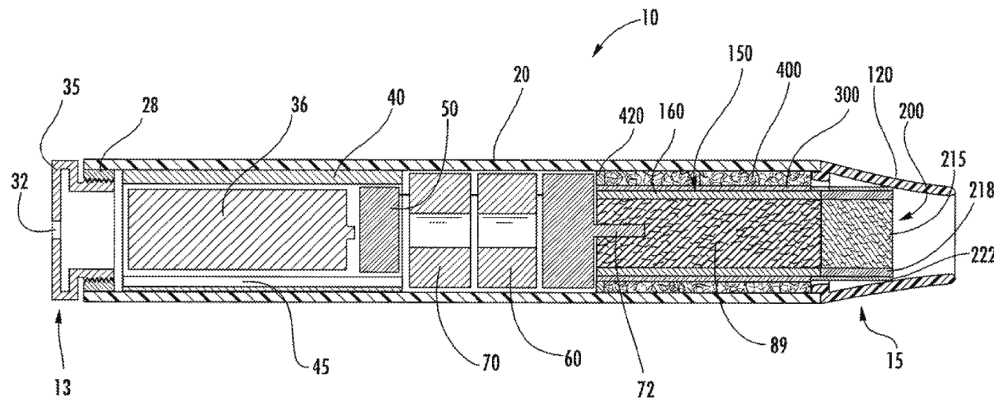
VI. TECHNOLOGY OVERVIEW

The '202 patent describes a “smoking article [that] may include a cigarette incorporated within an electrically powered aerosol generating device that acts as a holder for that cigarette.” EX1001, Abstract. The claims of the '202 patent recite this smoking article in terms of five general concepts. But as explained by Dr. Deevi in his declaration, each of these concepts, and combinations thereof, were well known before the '202 patent's earliest possible priority date. EX1003, ¶¶78-79.

VII. THE '202 PATENT

A. Overview of the '202 Patent

The '202 patent discloses a “smoking article” that “may include a cigarette incorporated within an electrically powered aerosol generating device.” EX1001, Abstract; FIG. 3.



The “smoking article 10” has an “outer container 20.” *Id.*, 19:58-59. An “air passageway 45” extends through the container 20 to a “mouth-end piece 120.” *Id.*, 29:14-20. A “power source 36” powers the heating elements. *Id.*, 28:1-8. A storage container that can include “[t]obacco filler material 89” that can wick aerosol-forming material into proximity with a “heating element 72.” *Id.*, 22:14-40. A “controller 50” and “sensor 60” cooperate to puff actuate heating elements. *Id.*, 21:4-12. These elements function to allow “[a]erosol that is formed by the action of drawn air passing heated tobacco components and aerosol-forming material in the region occupied by the second heating element 72 [to be] drawn through the mouth-end piece 120, and into the mouth of the smoker.” *Id.*, 24:50-54.

The smoking article 10 of Figure 3 includes a cigarette 150 with tobacco filling material 89. EX1001, 27:45-46, 27:51-65. The '202 patent discloses other smoking articles in Figures 1 and 2 that incorporate tobacco in different formats, but operate similarly. *Id.*, FIGS. 1-3, 19:49-53, 22:9-40, 24:60-25:4, 25:38-41, 26:47-49, 27:45-51.

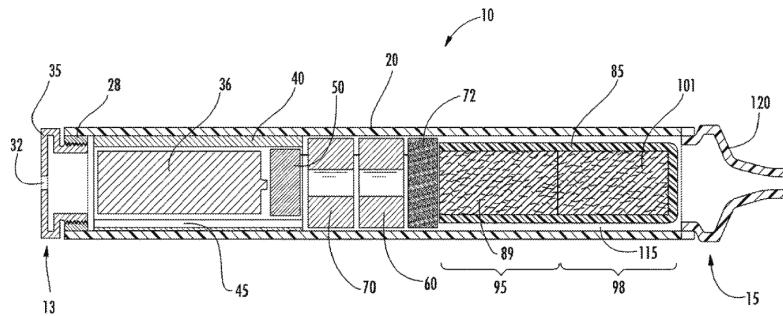


FIG. 1

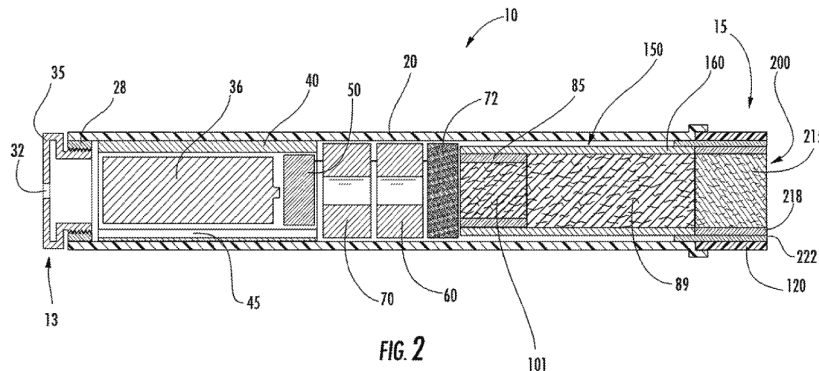


FIG. 2

B. Applicant Admits that the Claimed Features Were Well Known

The challenged claims of the '202 patent recite the following elements: a “smoking article,” “an outer housing” having “an air passageway” there through, “a mouthpiece,” “an electrical power source,” “an electrical resistance heater,” a “storage compartment being configured for storage of a liquid aerosol-forming material,” “a controller configured to activate current flow through the electrical

resistance heater in response to a draw on the ... smoking article,” “a sensor adapted for sensing the draw by a user,” and “an end cap defined at a second of the two ends [of the smoking article].” The ’202 patent, however, *admits* that each of these features was known and in use before the ’202 patent:

- **“smoking article”**: admitting that “[r]epresentative smoking articles” were known and disclosed in EPO 1,618,803 to Hon, and available through Atlanta Imports Inc., having the brand name E-CIG, and available as Ruyan Atomizing Electronic Pipe and Ruyan Atomizing Electronic Cigarette from Ruyan SBT Technology and Development Co., Ltd. EX1001, 19:34-48;
- **“outer housing”**: “A representative outer housing can be of the type possessed by the Ruyan Atomizing Electronic Cigarette....” EX1001, 20:1-4;
- **“mouthpiece”**: admitting that a “representative mouth-end piece” was available as Ruyan Atomizing Electronic Cigarette, and also disclosed in U.S. patent application Ser. No. 11/377,630 to Crooks et al. EX1001, 24:20-29;
- **“power source”**: admitting that “[r]epresentative types of power sources, and representative arrangements thereof” were available in Ruyan Atomizing Electronic Cigarettes. EX1001, 20:38-43;
- **“electrical resistance heater”**: admitting that “[r]epresentative types of resistance heating elements” were available in Ruyan Atomizing Electronic Cigarettes. EX1001, 21:58-61;

- **“storage compartment”** admitting that **“[r]epresentative types of cartridges”** were available in Ruyan Atomizing Electronic Cigarettes. EX1001, 22:19-26, 22:46-49;
- **“controller”**: admitting that **“[r]epresentative types of electronic control components”** were available in Ruyan Atomizing Electronic Cigarettes, and also disclosed in U.S. Pat. No. 4,947,874 to Brooks et al. EX1001, 20:55-60;
- **“sensor”**: admitting that **“[r]epresentative types of sensing mechanism components”** were available in Ruyan Atomizing Electronic Cigarettes, and disclosed in EPO 1,618,803 to Hon, and U.S. Pat. Nos. 4,735,217 to Gerth et al., 4,947,874 to Brooks et al., and 5,388,574 to Ingebrethsen.” EX1001, 20:64-21:4; and
- **“end cap”**: **“A representative end cover or cap 35** can be of the type possessed by the Ruyan Atomizing Electronic Cigarette ...” EX1001, 20:20-23.

The '202 patent's only purported advancement was to replace the known, publicly available storage compartment (e.g., cartridge) that contained an aerosol-forming liquid with a cartridge containing both aerosol-forming liquid **and tobacco**. *Id.*, 22:9-23:34 (the cartridge available in the Ruyan Atomizing Electronic Cigarette **“can be modified by adding tobacco extract thereto,”** or by **“replacing that removed portion [portion of the substrate] with a tobacco composition”**).

However, this alleged point of novelty is not expressly recited in any of the challenged claims, and even if it was, the references asserted herein disclose and/or render obvious smoking articles containing tobacco, as well as every other feature recited in the claims.

C. Prosecution History Summary

The application that became the '202 patent issued after very limited examination. EX1002, 175. In the only office action, all pending claims were rejected for nonstatutory double patenting over ancestor patents. *Id.*, pg. 176-79. In response, Applicant filed a terminal disclaimer to obviate the double patenting rejection. *Id.*, 299-306. The Examiner then issued a first notice of allowance on September 21, 2023, and a second notice of allowance on December 13, 2023. *Id.*, pg. 310, 372-81, pg. 397. But, as detailed below, the claimed concepts were well-known before the '202 patent, and as such the patent should not have been allowed.

D. Level of Ordinary Skill in the Art

A person of ordinary skill in the art ("POSA") would have a bachelor's degree in electrical engineering, mechanical engineering, chemistry, physics, or an equivalent field, as well as least 3-4 years of industry experience, or a master's degree in the above fields, and 1-2 years of industry experience. Such a POSA

would have been familiar with electrically powered smoking articles and/or the components and underlying technology used therein. EX1003, ¶63.

E. Claim Construction

In an IPR, claims are “construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. §42.100(b). All claim terms must be given their ordinary and customary meaning as understood by a POSA at the time of the invention in light of the specification and the prosecution history of the patent. *Id.* Petitioner affirmatively set forth a proposed construction for a single claim term and set forth a contingent proposed construction for a second term, as explained below. Petitioner submits that all other claim terms should receive their plain and ordinary meaning in the context of the ’202 patent specification. EX1003, ¶72. Additionally, even if other terms end up being expressly construed in another proceeding, such express constructions are not necessary here, as they are not needed to resolve a controversy in this proceeding. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

1. “wicked into contact with the electrical resistance heater”

In addition to being recited in independent claims 1 and 18 in the ’202 patent, the term “wicked into contact” is recited in other related patents. For example, the term “wicked into contact” is recited in U.S. Patent No. 9,901,123

(“the ’123 patent,” a grandparent to, and sharing the same specification as the ’202 patent), which was the subject of IPR2020-01602. In that proceeding, the Board determined that this term should be construed to mean “wicked into contact (1) with the heater, or (2) with an area in close proximity to, and exposed to the heat produced by, the heater.” *Philip Morris Products SA v. RAI Strategic Holdings, Inc.* IPR2020-01602, Paper 32, 10, 15. The Board, in that proceeding, also explicitly found that “wicked into contact” does not “require[] that the liquid mixture [] be brought into contact with the electrical resistance heater solely by wicking.” *Id.*, 14.

The Federal Circuit subsequently affirmed the Board’s construction of this term. *Philip Morris Products S.A. v. RAI Strategic Holdings, Inc.*, No. 22-1846, 2023 WL 5970786 at *1 (Fed. Cir. Sept. 14, 2023). RAI also indicated that to the extent that this terms needs to be construed, it also believes that Board’s construction from IPR2020-01602 is correct. EX1009, Reynolds’ Motion for Temporary Relief, 28.

Therefore, the term “*wicked into contact with the electrical resistance heater,*” as recited in claims 1 and 18, should be construed as consistent with the Board’s construction in the IPR2020-01602 to mean “wicked into contact (1) with the heater, or (2) with an area in close proximity to, and exposed to the heat produced by, the heater.”

2. “*smoking article*”

RAI canceled all of the claims that were filed with the original application that matured into the '202 patent and subsequently added a new, broader set of claims that removed any mention of “tobacco.” EX1002, 4-6. RAI did this such that it could assert the '202 patent against vaporizer devices, which are not only devoid of tobacco but are actually specifically designed to help smokers quit devices and products containing harmful tobacco. As explained, this broader set of claims lacks written description support in the specification, thereby rendering the challenged claims invalid under §112.

To the extent that the Board disagrees with Petitioner and finds that the challenged claims have not been impermissibly broadened beyond the scope of the specification, then the claims necessarily must be limited to a “tobacco containing smoking article.” Such a construction is commensurate with: (i) the title of the '202 patent; (ii) the entirety of the specification; (iii) the figures; (iv) the alleged point of novelty; and (v) the claim scope in at least seven of the parent/grandparent patents to the '202 patent (which each recite “A **tobacco**-containing ... smoking article” in some form or another). Section IX.E.; EX1032, claim 1, EX1036, claim 1 (“comprising a cartridge providing a liquid storage compartment containing a mixture comprising a **tobacco extract** and an aerosol-forming material”).

Therefore, if the Board finds that the challenged claims have not been impermissibly broadened beyond the scope of the specification, the term “*smoking article*,” as recited in each of the challenged claims, should be construed to mean “tobacco containing smoking article.”

VIII. OVERVIEW OF THE APPLIED REFERENCES

A. Takeuchi

Like the '202 patent, Takeuchi describes a device 10 “for enjoying simulated smoking . . . by heating a liquid.” EX1004, Takeuchi, 1:3-8.

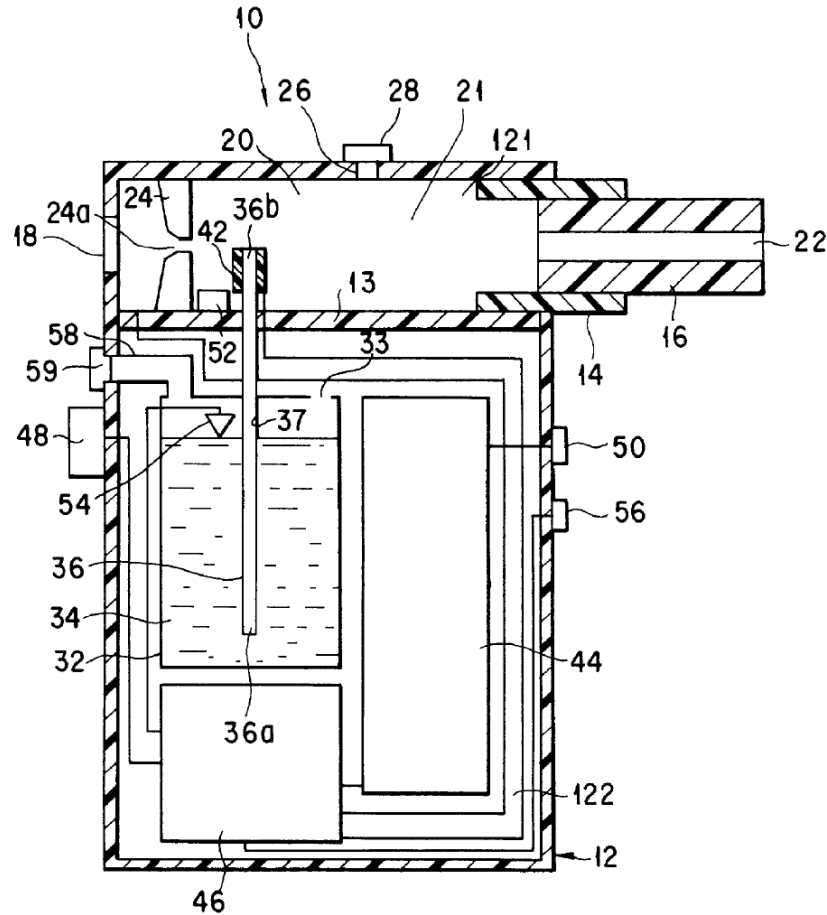
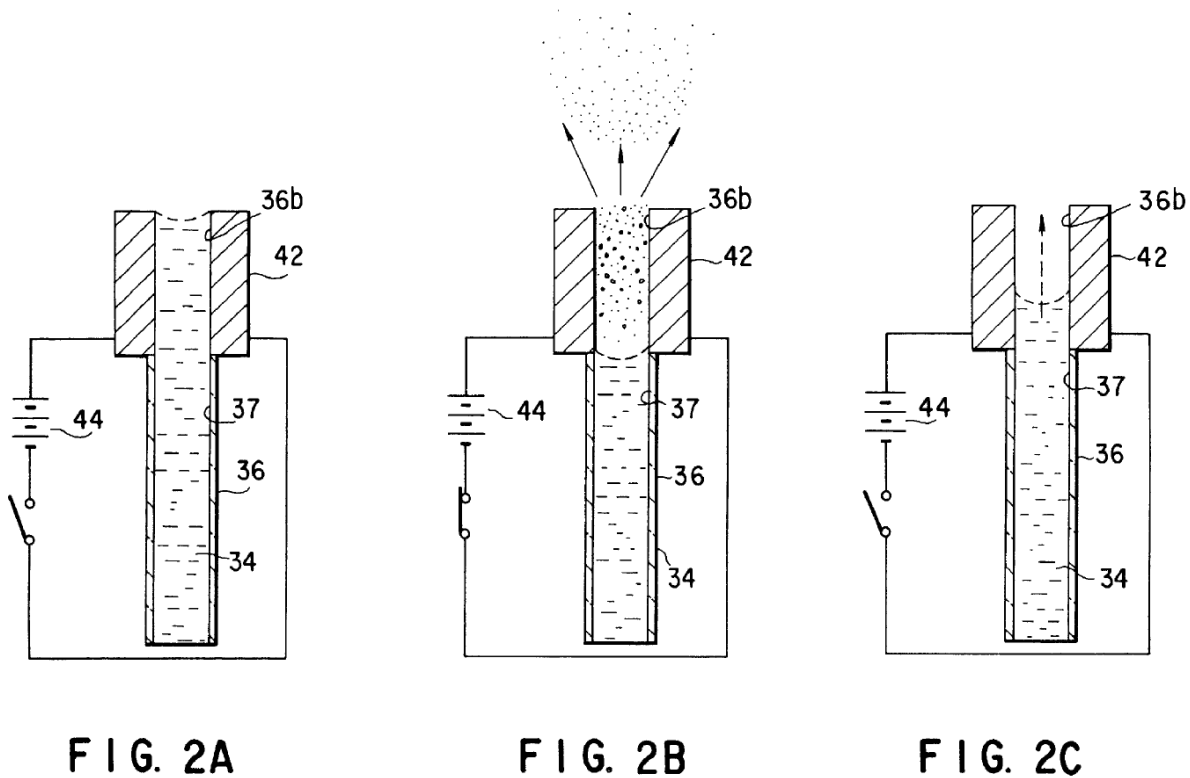


FIG. 1

“One feature of the present invention resides in ... transportation of liquid flavor source from the liquid container ... to the heater ... by the capillary force or capillarity.” EX1004, 3:31-35. The flavor-generating device includes a “liquid container 32 housing a liquid flavor source 34” that may “contain a substance forming aerosol when heated.” *Id.*, 5:28-35.

A “capillary tube 36 for transporting the liquid flavor source by the capillary force is inserted within the liquid container.” *Id.*, 5:47-49. Takeuchi discloses that

capillary tub 36 can also include a capillary pore structure to help transport the liquid flavor source to heater 42. EX1004, 3:36-50. Once the liquid flavor source reaches heater 42, “the liquid flavor source 34 within the outlet port 36[a] is instantly gasified by the heat generated from the heater 42 as shown in FIG. 2B so as to be supplied into the gas passageway 20.” *Id.*, 7:60-63.



Once in the gas passageway 20, and “in accordance with the inhaling action of the user,” “the mixture is transferred into the inhalation port 22.” EX1004, 8:5-10,

Takeuchi also discloses a second flavor generating device, device 100, which includes an “exchangeable liquid container 3:2 [sic]” positioned in-line along the gas path. *Id.*, FIG. 8, 9:23-34. Device 100 (Figure 8) has a capillary

passageway defined by plates 361, 362, but otherwise operates by the same principles as the device of Figure 1. *Id.*, FIG. 8, 8:55-58, 9:5-7, 9:31-44.

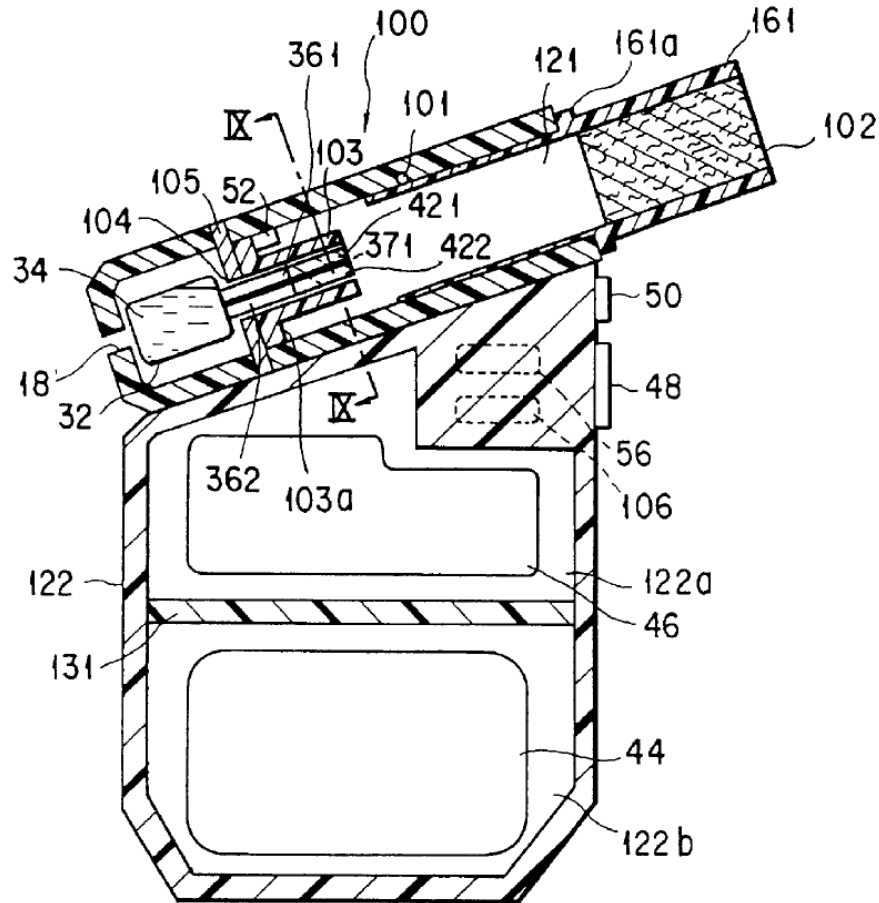


FIG. 8

B. Kim

Like the '202 patent, Kim describes a “device, which, in response to an electric power suppl[y] and suction by a user, evaporates nicotine mixture and delivers them to the user.” EX1007, Kim, Abstract; FIG. 1.

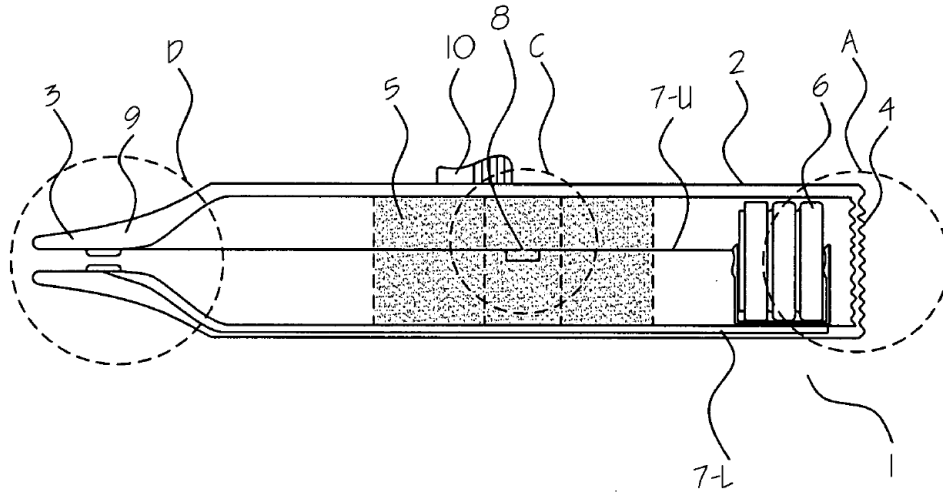
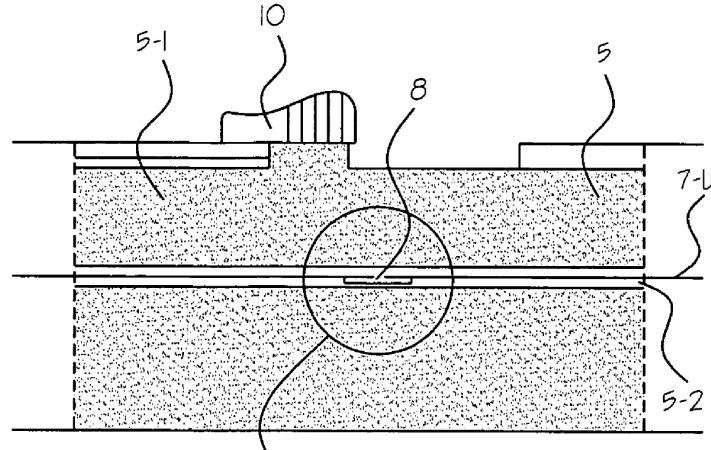


FIG. 1

Figure 1 shows a “cigarette substitute device (1).” EX1007, ¶[0012]. The device includes a porous chip (5), “preferably in the form of polymeric fibers, and having absorbed therein the volatile liquid composition of mixture of nicotine and volatile palatability enhancing agents.” *Id.*, ¶[0015]. An electrical shortening connector (8) or heating coil can be embedded in the chip (5). *Id.*, ¶[0015]. The shortening connector can be powered by onboard batteries (6) and configured to operate when the device detects the user’s lips. *Id.*, [0018].

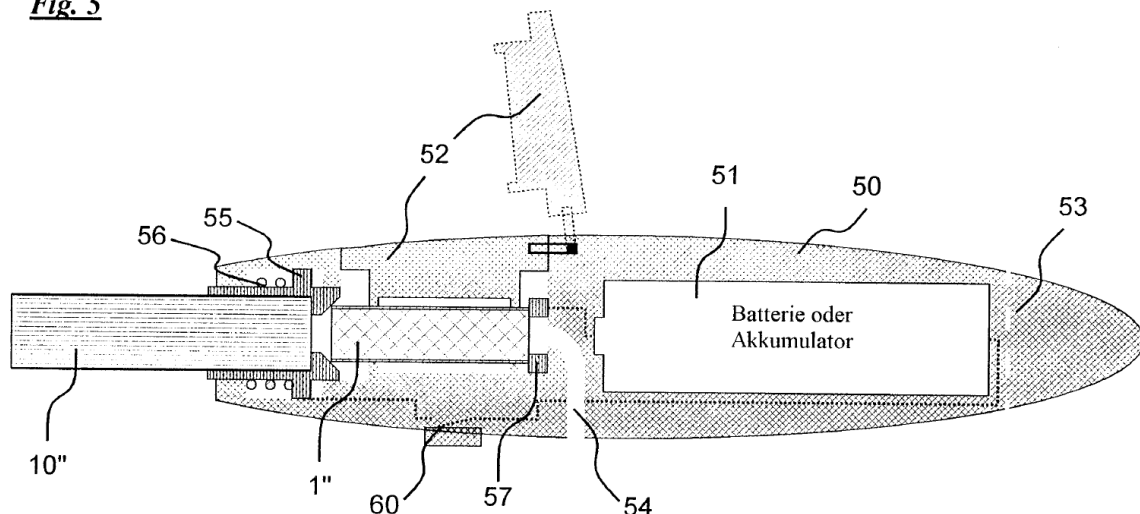


Heat evaporates the mixture from the chip (5) to be delivered into the smoker's mouth. *Id.*, ¶[0019].

C. Pienemann

Pienemann describes a “system for supplying an inhalable aerosol” that “contains a substrate portion (1”) and an inhaling device.” EX1006, Certified English Translation of Pienemann, Abstract; FIG. 5.

Fig. 5



The substrate portion 1 “contains an aerosol-forming material 2 surrounded by an electrically conductive wrapper 3.” *Id.*, 5:5-20, FIGS 1a-c (below). The

material 2 contains “a volatile polyol, e.g. glycerol or propylene glycol, to enhance aerosol formation.” *Id.*, 6:1-9.

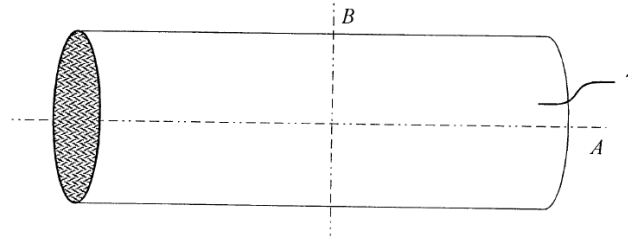


Fig. 1a

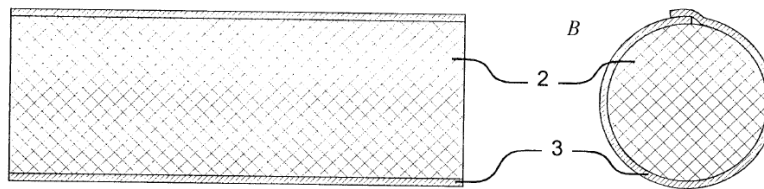


Fig. 1b

Fig. 1c

The wrapper 3 can have conductive zones 12, 13, 14, 15 that act as contacts and resistance heaters, as shown in Figures 2a-c below. *Id.*, 7-8.

Fig. 2a

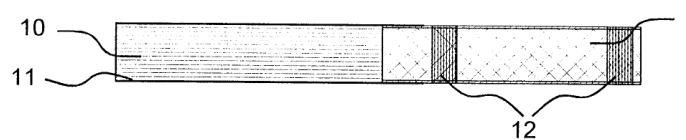


Fig. 2b

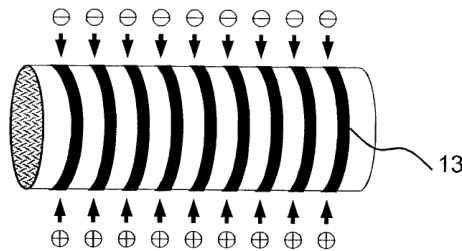
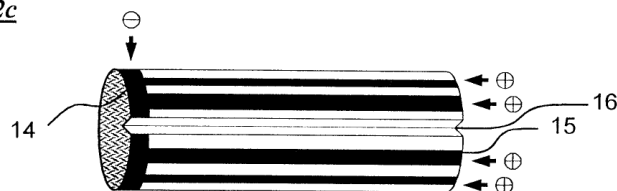


Fig. 2c



Pienemann discloses various inhaler devices that can include substrate 1, such as in Figure 5. EX1006, FIGS. 3–5, 8:26-29, 9:30–32, 10:17-21. In operation, “current flows between the contacts 55, 57 via the conductive wrapper of the substrate portion 1”, so that it is heated” and “smoke aerosol can be extracted by dragging upon a mouthpiece 10.” *Id.*, 10:28–31.

D. Susa

Susa is directed to “a flavor generation article employed for enjoying inhalation of a flavor and simulated smoking and, more particularly, to a flavor generation article used for generating the flavor as an inhalation target by heating a liquid material with an electric heater.” EX1018, ¶¶ [0001], [0024], FIG. 1. Susa explains that “a tobacco component, e.g., a tobacco extracted component or a tobacco smoke condensate component, may be contained in the liquid material 36.” *Id.*, ¶[0028].

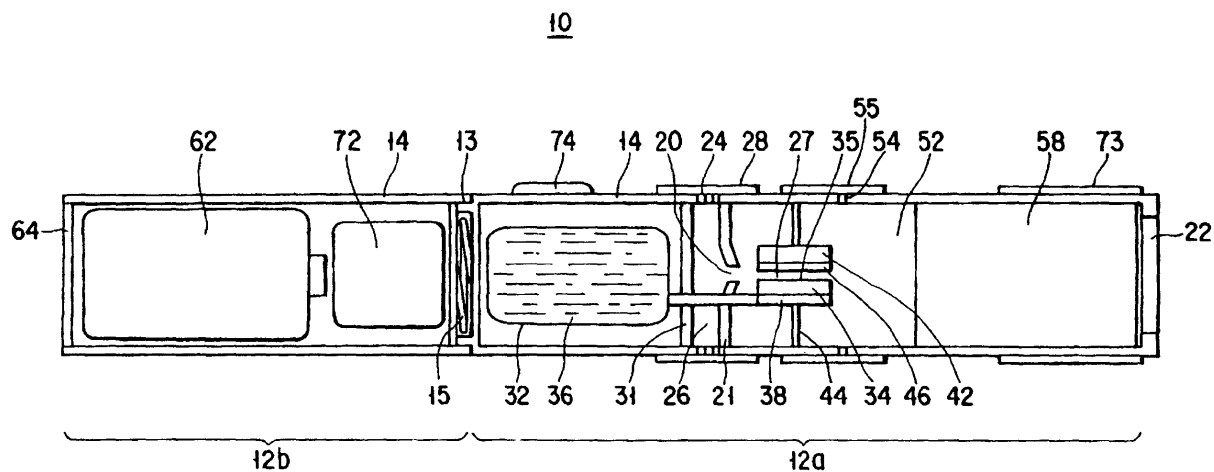


FIG. 1

IX. GROUNDS OF UNPATENTABILITY

Claims 1-30 are unpatentable for at least the reasons set forth below.

EX1003, ¶¶136-370.

A. Ground 1: Takeuchi renders obvious claims 1, 3-15, and 18-29.

1. Claim 1

(a) [1.P]⁵

RAI admits that [1.P] was well-known before the '202 patent's earliest priority date. Section VII. B; EX1001, 14:29-38 (admitting that known smoking articles incorporated “aerosol-forming materials”). Additionally, RAI's own expert in a prior IPR admitted that “Electronic Cigarettes (‘e-cigarettes’) were well-known ... since at least the mid-1990s, as demonstrated by, for example, the ... **Takeuchi** reference[.]”⁶ EX1010, Sturges Declaration, ¶16-17; EX1013, IPR2016-01527 Petition, 32 (RAI similarly admitting that “Takeuchi discloses an electronic cigarette”). For similar reasons, Takeuchi discloses element [1.P]. EX1003, ¶¶137-42.

⁵ See the claim appendix for a full recitation of each claim.

⁶ Emphasis added unless otherwise stated.

Takeuchi discloses this limitation in two different embodiments—e.g., as illustrated in Figures 1 and 8 (below).⁷ Both embodiments disclose “**a flavor-generating device for** enjoying inhalation of flavor or for enjoying **simulated smoking.**” EX1004, 1:3-5, 4:26-29 (describing flavor-generating device 10 of Figure 1); 8:49-51 (“describing flavor-generating device 100 of Figure 8); EX1003, ¶138.

⁷ Takeuchi explains that features disclosed in its multiple embodiments “can be combined appropriately depending on the object of the flavor-generating device.” EX1004, 11:1-6.

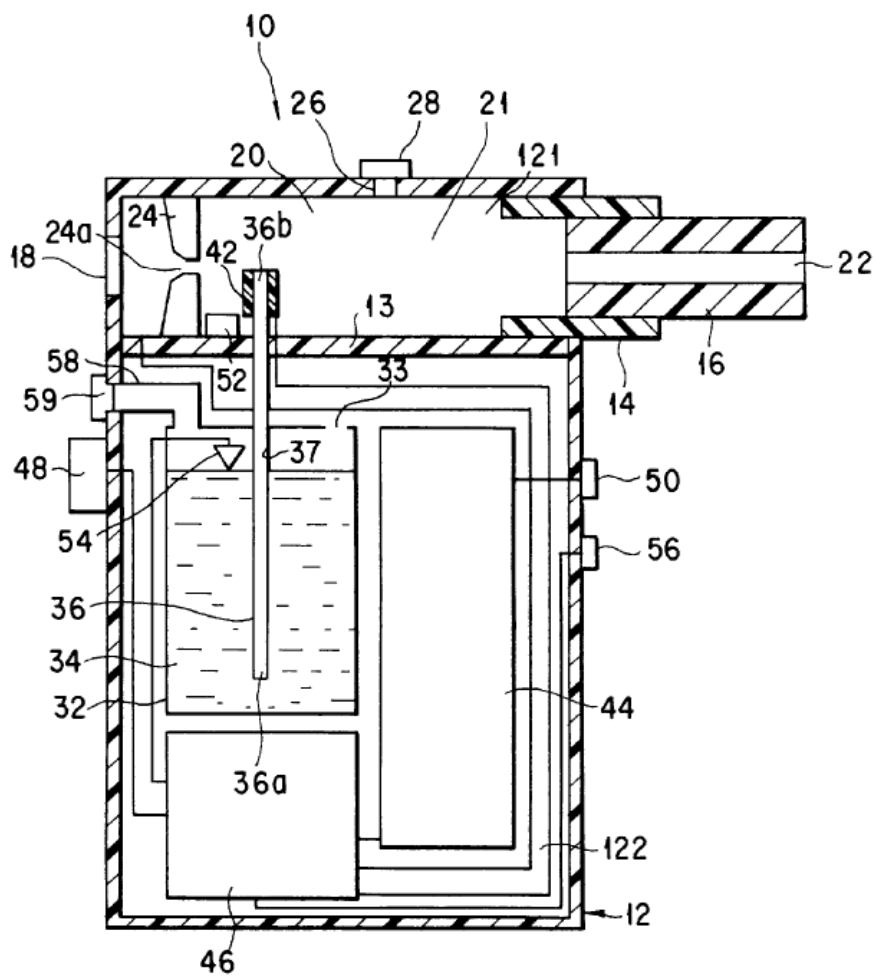


FIG. 1

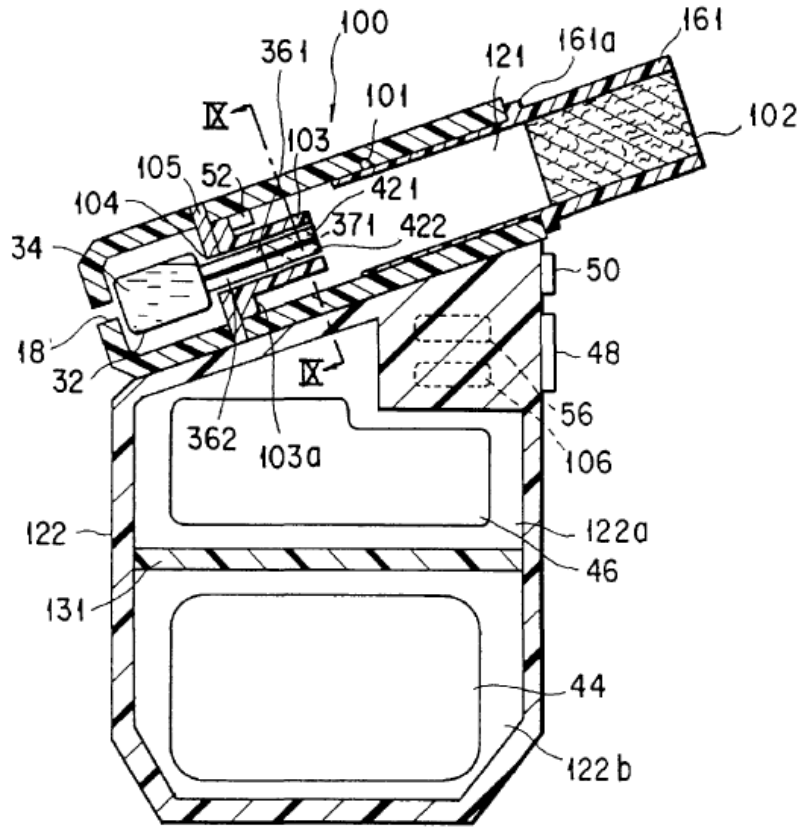


FIG. 8

To the extent that the term “*smoking article*” is construed to mean “tobacco containing smoking article” (as discussed in Section VII.E.2), Takeuchi still discloses this limitation. Indeed, Takeuchi discloses that “where the device is used as a simulated smoking article, it is possible for the liquid flavor source 34 to contain **tobacco components** such as **tobacco extracts** and a **tobacco smoke condensate**.” EX1004, 5:43-46; EX1003, ¶139.

Takeuchi also discloses that devices 10 and 100 are both “*electrically-powered*”: “**electric power** is supplied from a power source 44.” EX1004, 6:12-14.

Takeuchi further discloses that devices 10 and 100 are configured to be “*aerosol-generating*”: “in order to add smoke to the flavor, it is possible for the liquid flavor source 34 to contain **a substance forming aerosol** when heated.” EX1004, 5:33-35, 10:5-13 (“an aerosol formation efficiency can be more enhanced when the liquid flavor source contains **the aerosol generation material**”); EX1003, ¶140-42

(b) [1.a]

RAI admits that [1.a] was well-known before the ’202 patent’s earliest priority date. Section VII.B. Additionally, RAI admitted in multiple prior IPRs that “**Takeuchi discloses a housing**, i.e., casing 12.” EX1011, IPR2018-00627 Petition, 27; EX1013, 33 (RAI admitting that “Takeuchi discloses a housing having an upper chamber 121 and a lower chamber 122”). For similar reasons, Takeuchi discloses [1.a]. EX1003, ¶143.

Indeed, Takeuchi’s casing 12 represents “*an outer housing having two ends*,” as illustrated in Figure 1. EX1004, 4:30-32; EX1003, ¶144.

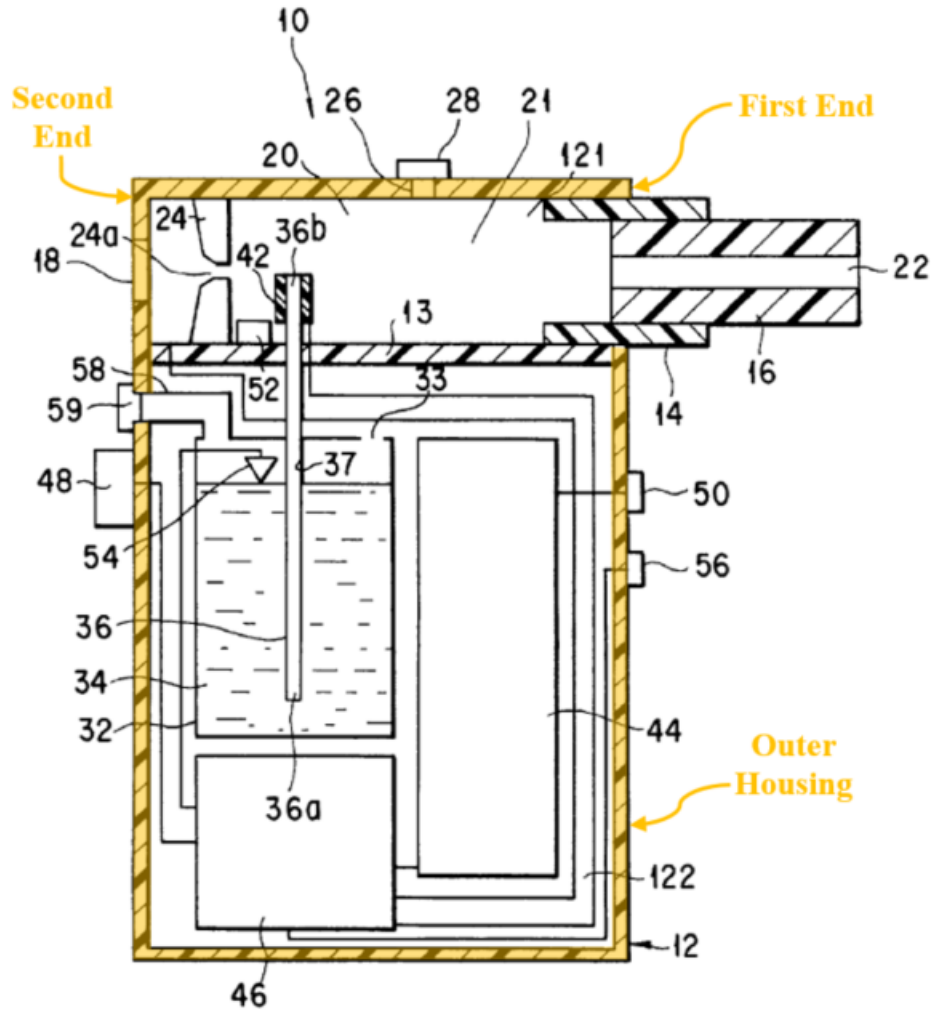


FIG. 1

Similarly, Takeuchi discloses that device 100 also includes a casing surrounding “the upper chamber 121 and the lower chamber 122,” and “*having two ends*,” as illustrated in Figure 8. EX1004, 8:59-62; EX1003, ¶145.

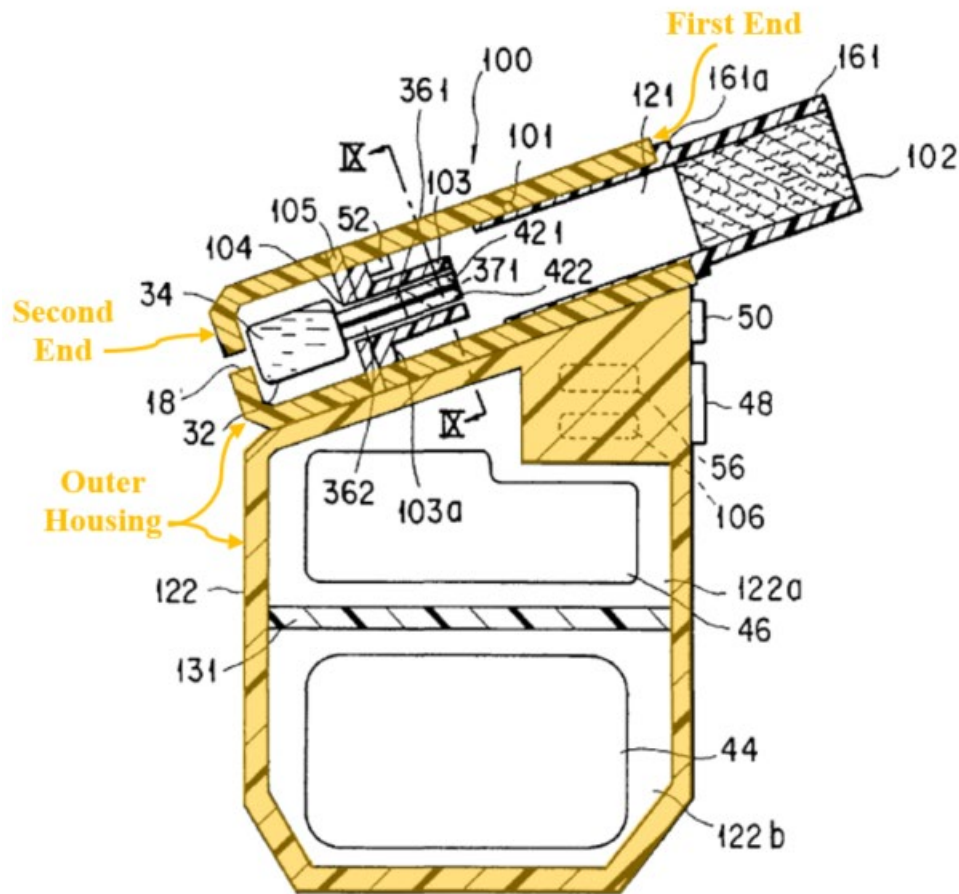


FIG. 8

To the extent that RAI argues that device 100's casing does not constitute “an outer housing,” because such casing is described as defining two “separate chamber[s] unlike the device shown in FIG. 1 wherein one casing is partitioned by the partition wall 13 into the two chambers” (EX1004, 8:59-62), such an argument would fail for at least two reasons. First, when reviewing the validity of U.S. Patent No. 9,901,123 (a grandparent to the '202 patent and sharing the same specification), the International Trade Commission found that it is a “false premise

that the claimed ‘tubular outer housing’ must be a single structure and cannot be comprised of multiple components or sub-structures.” EX1014, Initial Determination, 28. Second, even if the claimed “*outer housing*” did require a single unitary structure, which it does not, a POSA would have found it obvious to implement device 100’s casing as a single unitary structure. Indeed, Takeuchi discloses that while some features are described in different embodiments, “these features can be combined appropriately depending on the object of the flavor-generating device.” EX1004, 11:4-6. And because a single structure casing is already disclosed in the Figure 1 embodiment, a POSA would have found it obvious to combine such a feature with the remaining features of Figure 8, at least because doing so would not impact the functionality of device 100. EX1003, ¶146; *Boston Scientific v. Cordis*, 554 F.3d 982, 991 (Fed. Cir. 2009) (“Combining two embodiments disclosed adjacent to each other in a prior art patent does not require a leap of inventiveness”).

(c) [1.b]

RAI admits that [1.b] was well-known before the ’202 patent’s earliest priority date. Section VII.B. Additionally, Takeuchi discloses this limitation. EX1003, ¶148.

Takeuchi discloses that devices 10 and 100 each include “*a mouthpiece*”—**mouth piece 16** and **mouthpiece 161**, respectively. EX1004, 4:41-43, 9:9-15. RAI

similarly admitted in a prior IPR that “Takeuchi discloses a ‘mouth piece 16 ...’”

EX1011, 28. As shown in Figures 1 and 8, mouth piece 16 and 161 are “*defined at one of the two ends*” of device 10 and 100, respectively. EX1003, ¶149.

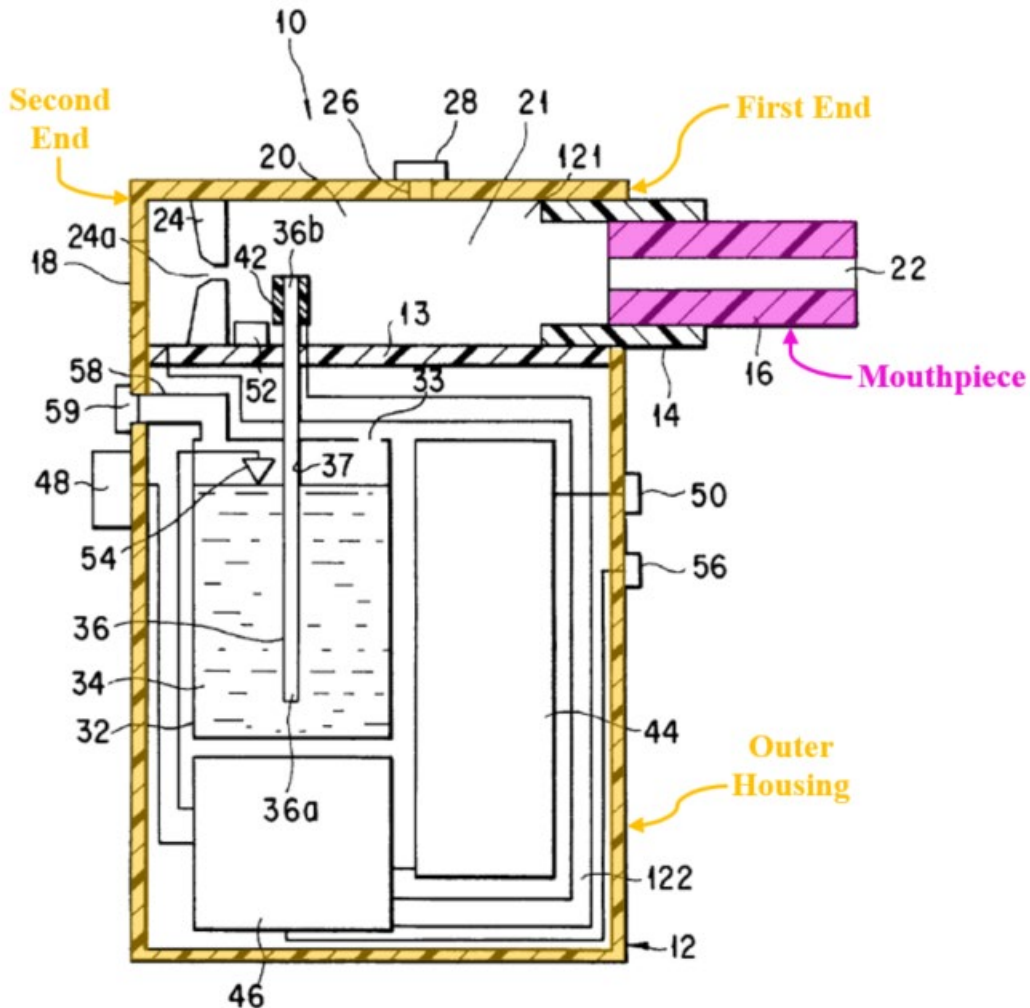


FIG. 1

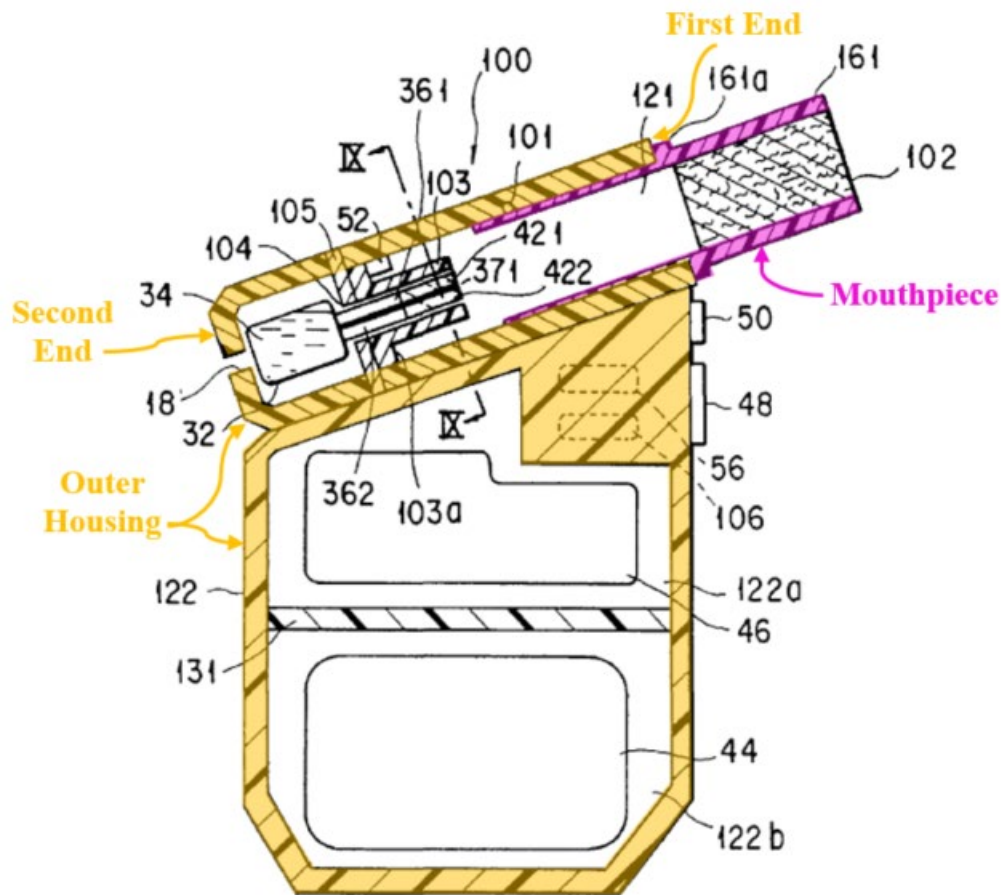


FIG. 8

To the extent that RAI argues that mouth piece 16 and/or mouthpiece 161 do not satisfy [1.b], because they are disclosed as being “detachably inserted” into their respective casing (EX1004, 4:41-43, 9:9-12), such an argument would be flawed. Indeed, the '202 patent discloses that “mouth-end piece 120, which is **typically removable**, can be maintained in place by friction fit, a threaded screw mechanism that cooperates with a complementing threaded mechanism that is secured to the outer container, or the like.” EX1001, 24:16-20. EX1003, ¶150.

Therefore, Takeuchi discloses [1.b]. EX1003, ¶151.

(d) [1.c]

RAI admits that [1.c] was well-known before the '202 patent's earliest priority date. Section VII.B. Additionally, Takeuchi discloses this limitation. EX1003, ¶152.

As discussed for element [1.P], Takeuchi discloses that devices 10 and 100 each include “*an electrical power source arranged within the outer housing*”: “electric power is supplied from a **power source 44** detachably **mounted within** the lower chamber 122 of the **casing 12**.” EX1004, 6:12-14; 9:1-5. RAI similarly admitted in a prior IPR that “Takeuchi discloses a battery (‘power source 44,’ ... within the housing (‘casing 12’).” EX1011, 33. Figures 1 and 8 illustrate power source 44. EX1003, ¶153.

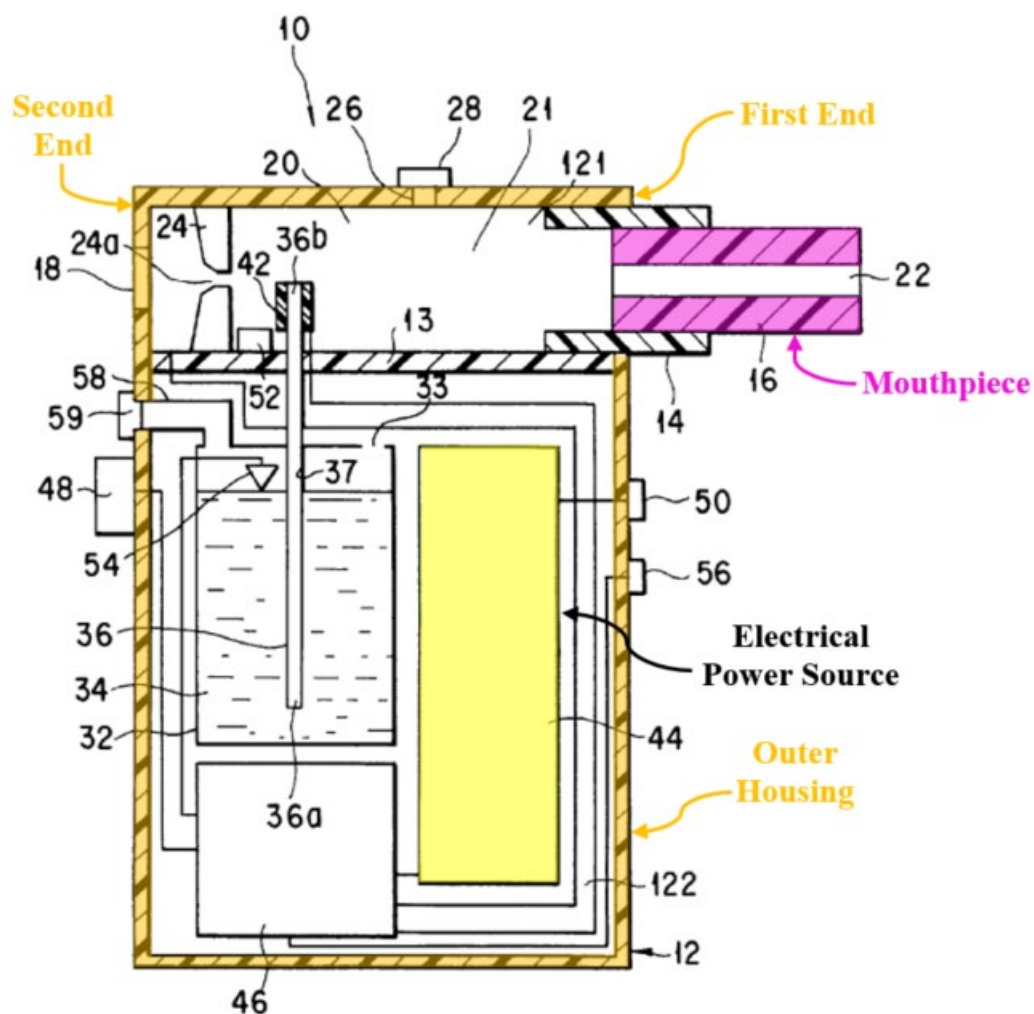


FIG. 1

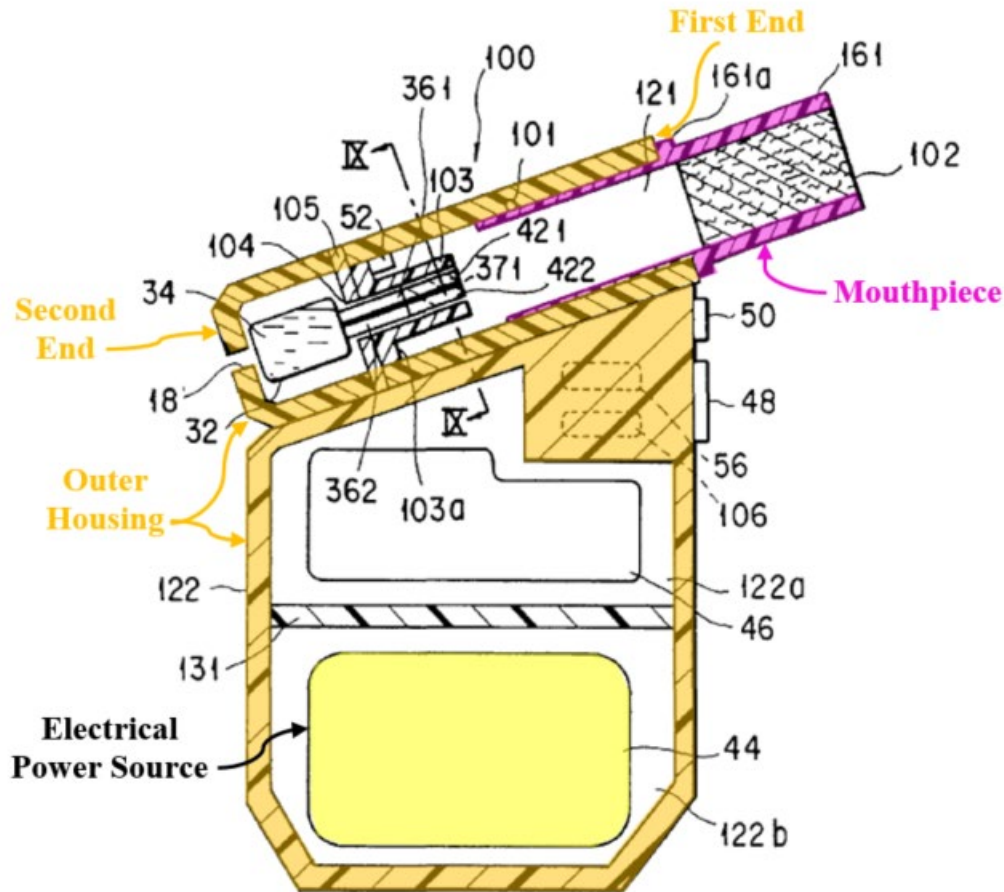


FIG. 8

(e) [1.d]

RAI admits that [1.d] was well-known before the '202 patent's earliest priority date. Section VII.B. Additionally, Takeuchi discloses this limitation under two different, but equally applicable interpretations. EX1003, ¶155.

Under a first interpretation, Takeuchi discloses “an electrical resistance heater” in the form of heater 42 that “consists of a tubular body mounted to the capillary tube 36” (implemented in device 10), and plate-like heaters 421 and 422

“mounted to the plates 361 and 362” that define liquid passageway 371 (implemented in device 100). EX1004, 6:7-12, 9:29-34; EX1003, ¶156.

Takeuchi also discloses that heater 42 and plate-like heaters 421 and 422 are each “*configured for electrical connection with the electrical power source*”: “**An electric power is supplied from a power source 44 detachably mounted within the lower chamber 122 of the casing 12 to the electric heater 42.**” EX1004, 6:12-14, 9:5-7 (“In the device shown in FIG. 8, the electrical connections are essentially the same as those in the device shown in FIG. 1”); EX1003, ¶156.

Heater 42 and plate-like heaters 421 and 422 are each clearly implemented “*within the outer housing*” of device 10 and 100, respectively. EX1003, ¶157.

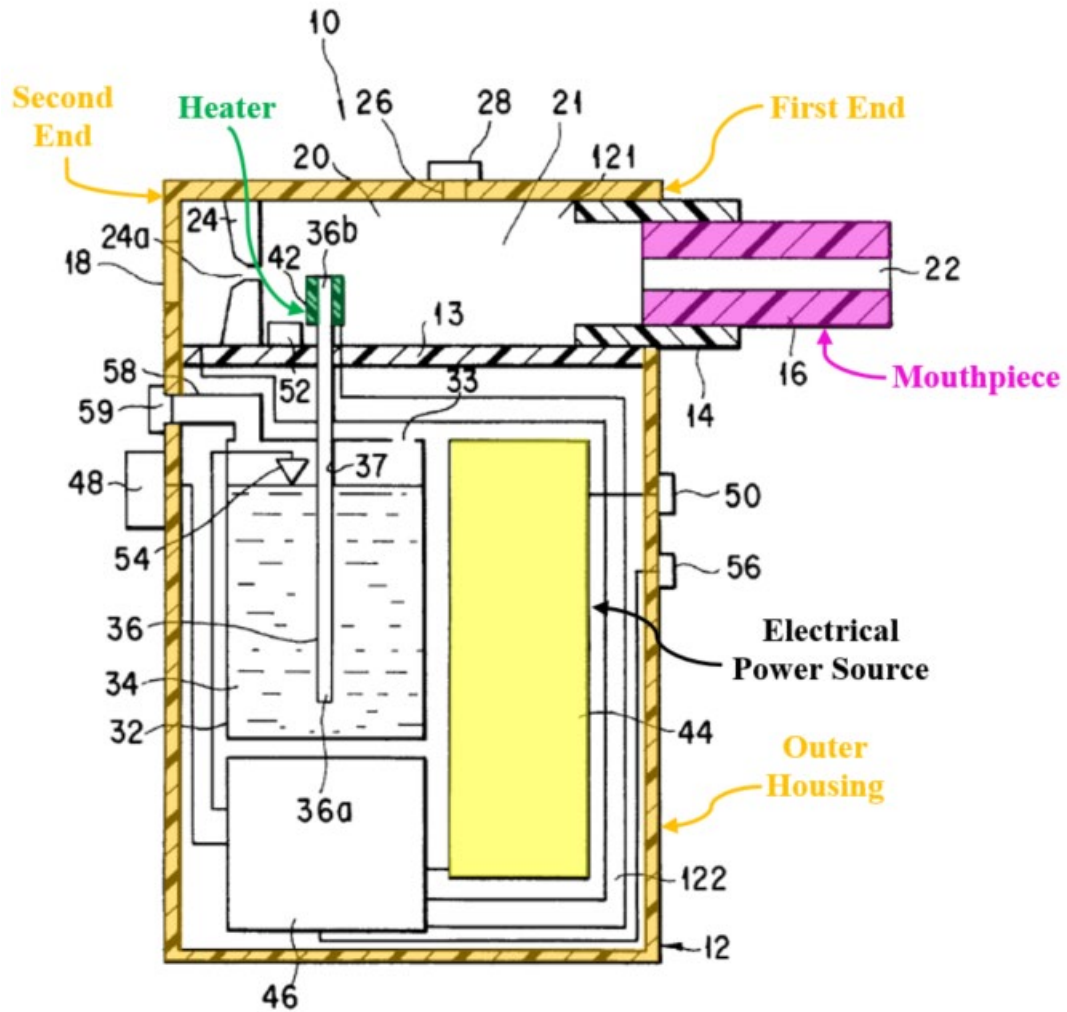


FIG. 1

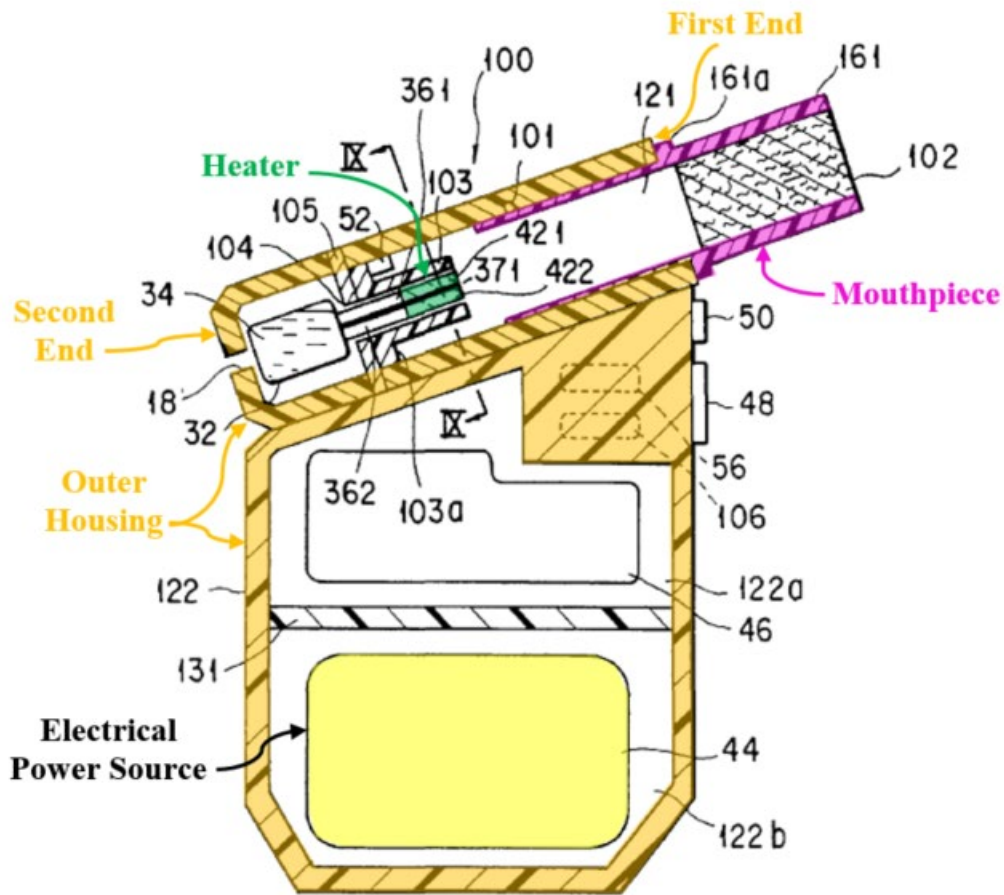


FIG. 8

Takeuchi also discloses the claimed “*electrical resistance heater*” under a second interpretation in the form of the combination of both heater 42 and capillary tube 36. EX1003, ¶158. Indeed, RAI took the position in a prior IPR that an atomizer (i.e., heater) includes “at least both the components that cause atomization and the mechanism that transfers liquid from the ‘liquid-supply’ to those components.” EX1011, 18. After taking this position, RAI then concluded that “Takeuchi teaches an atomizer including both ... (‘heater 42’) and ...

‘capillary tube 36.’” EX1011, 42. For ease of reference going forward, Petitioner will refer to this interpretation as “RAI’s Heater Interpretation.” EX1003, ¶158.

(f) [1.e]

RAI admits that [1.e] was well-known before the ’202 patent’s earliest priority date. Section VII.B. Additionally, Takeuchi discloses this limitation under two different but equally applicable interpretations. EX1003, ¶160.

Under a first interpretation, Takeuchi discloses a “*storage compartment being configured for storage of a liquid*” in the form of both liquid container 32 and capillary tube 36 (implemented in device 10). Takeuchi also discloses a “*storage compartment being configured for storage of a liquid*” in the form of both liquid container 32 and plates 361 and 362 that define liquid passageway 371 (as implemented in device 100). Under this interpretation, any compartment that stores liquid represents the claimed “*storage compartment.*”⁸ EX1003, ¶161.

⁸ To the extent that it is argued that the claimed “*storage compartment*” requires more than storing a liquid—e.g., that it must be replenishable—Takeuchi’s liquid container 32 would still disclose the claimed “*storage compartment*” because liquid container 32 “can be replenished” and/or is “exchangeable.” EX1004, 7:18-30, 9:23-26, claim 9.

Takeuchi's "**liquid container 32 hous[es] a liquid flavor source 34 [and]** is fixed within the lower chamber 122 of the casing 12." EX1004, 5:28-30, 9:23-26. Liquid flavor source 34 is also housed within capillary tube 36 after being brought into "capillary tube 36 by the capillary force of capillary tube 36 as show in FIG. 2A." EX1004, 7:57-59.⁹ Air passageway 371 (defined by plates 361 and 362) functions in a substantially similar manner to capillary tube 36, due to the similar capillary force that is exerted within air passageway 371. EX1004, 9:26-38; EX1003, ¶162.

Figures 1 and 8 show the claimed "*storage compartment defined within the outer housing*" under this first interpretation. EX1003, ¶164.

⁹ RAI's expert admitted in a prior IPR that "a 'storage' body" is disclosed by a structure where "liquid is stored during the transport process," because "storage and transport are not mutually exclusive." EX1016, Sturges Declaration, ¶84.

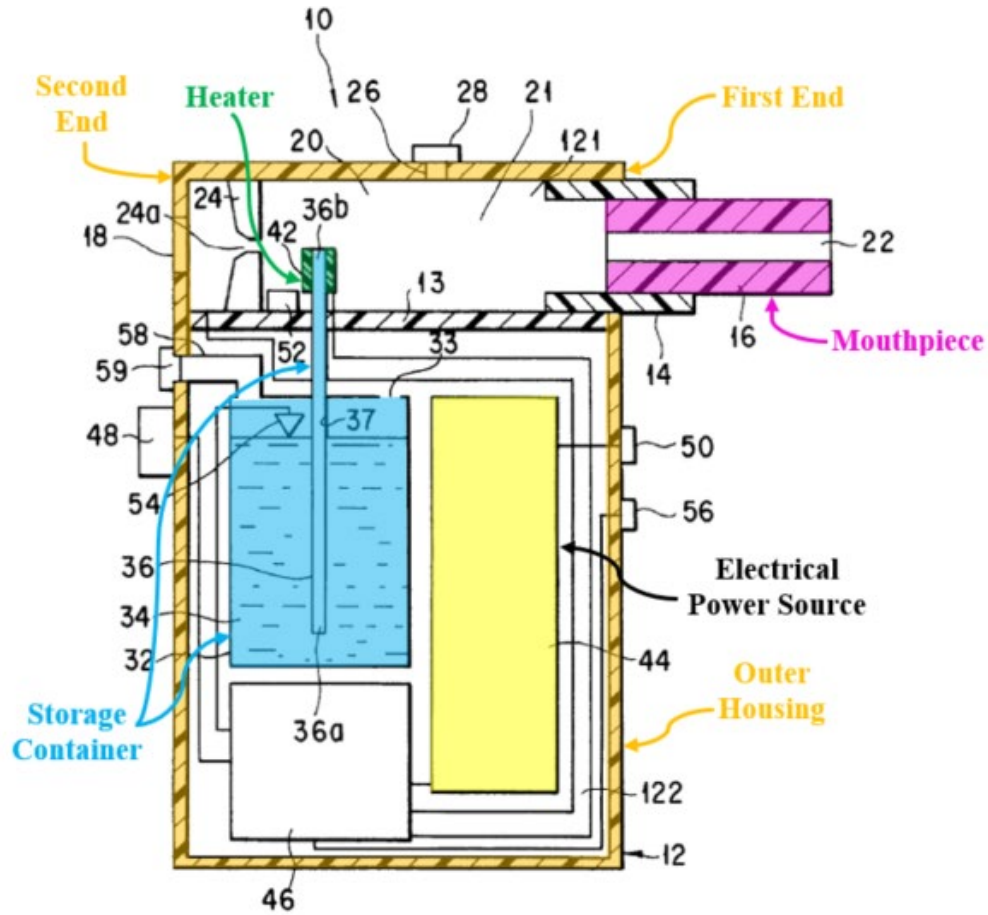


FIG. 1

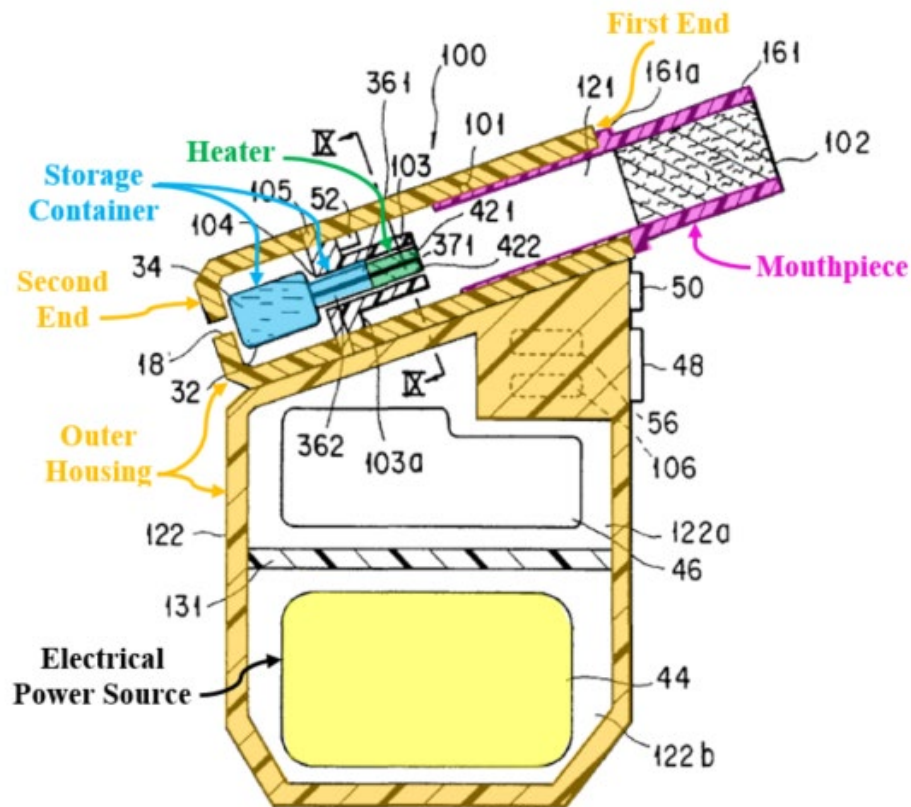


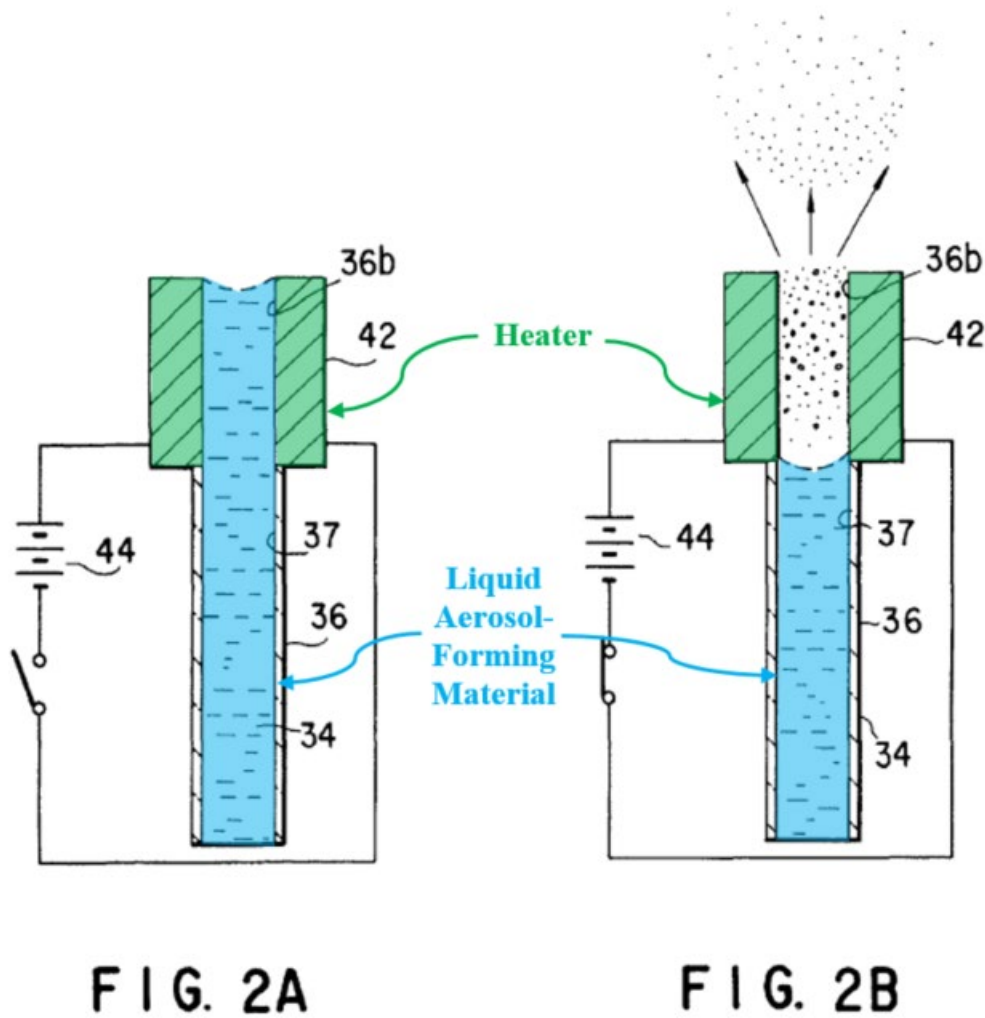
FIG. 8

As discussed for element [1.P], Takeuchi also discloses that the liquid being stored is a “*liquid aerosol-forming material*”: “in order to add smoke to the flavor, it is possible for the liquid flavor source 34 to contain **a substance forming aerosol** when heated.” EX1004, 5:33-35, 10:5-13; EX1003, ¶165

Takeuchi further discloses that “*the liquid aerosol-forming material can be wicked into contact with the electrical resistance heater.*” As discussed in Section VII.E.1, “*wicked into contact with the electrical resistance heater*” should be construed to mean “wicked into contact (1) with the heater, or (2) with an area in

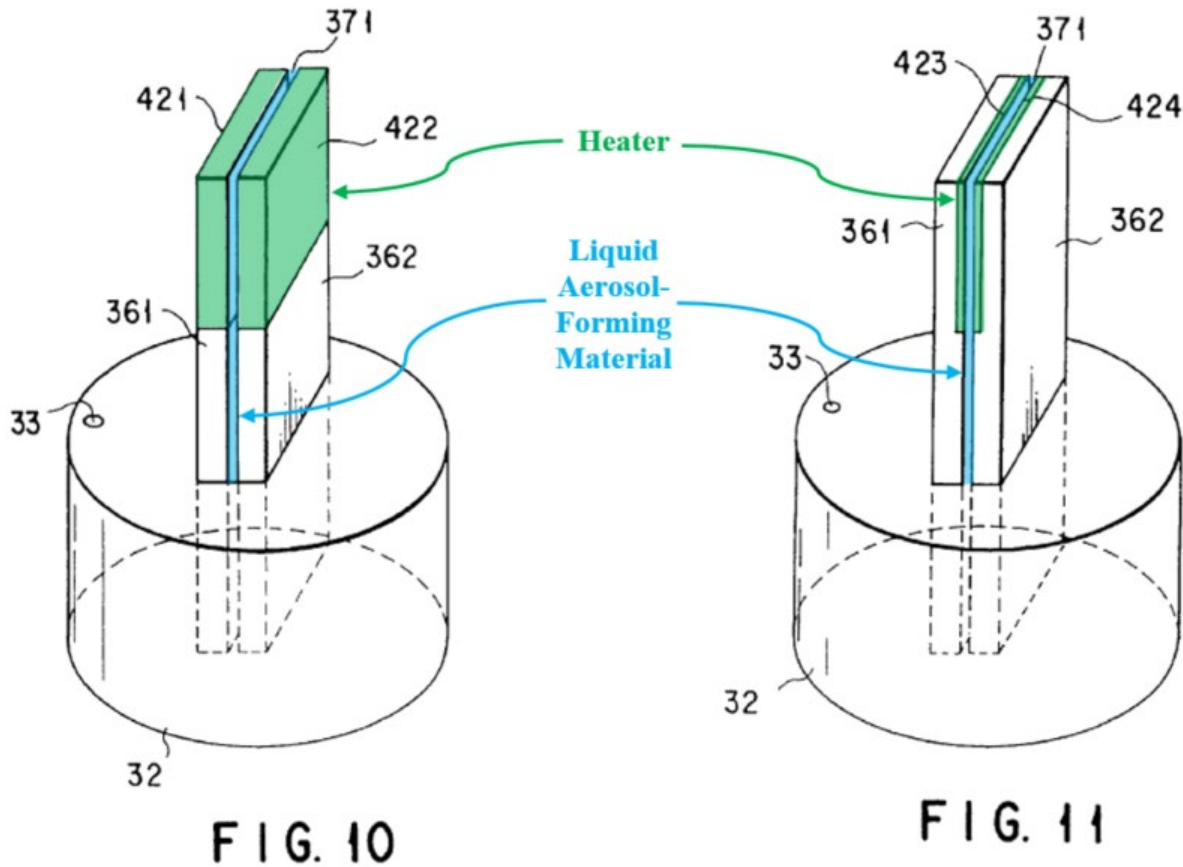
close proximity to, and exposed to the heat produced by, the heater.” Takeuchi discloses this under both of these alternatives. EX1003, ¶166.

Takeuchi explains that, in the Figure 1 embodiment, liquid flavor source 34 (“*liquid aerosol-forming material*”) is “transported to the outlet port 36[b] of the capillary tube 36 by the **capillary force of the capillary tube 36** as shown in FIG. 2A.” EX1004, 7:57-59. Subsequently, “**liquid flavor source 34 within the outlet port 36a is instantly gasified by the heat generated from the heater 42** as shown in FIG. 2B [(below)] so as to be supplied into the gas passageway 20.” EX1004, 7:60-63. EX1003, ¶167.



Takeuchi similarly explains that, in the Figure 8 embodiment, liquid flavor source 34 is transported up liquid passageway 371 by capillary action where “[t]he distal end portion (the outlet portion of the liquid flavor source) of the liquid passageway 371 is heated by plate-like heaters 421 and 422 mounted to the plate 361 and 362, respectively.” EX1004, 9:26-38. Heaters 421 and 422 are configured “for heating and **gasifying or evaporating the liquid** transported from the liquid

container.” EX1004, 2:14-16. Example interactions between liquid flavor source 34 and heaters 421 and 422 are illustrated below. EX1003, ¶168.



A POSA would have understood that the capillary action that transports liquid flavor source 34 up both capillary tube 36 and liquid passageway 371 is an example of wicking. EX1003, ¶168. Indeed, in multiple prior IPRs, both RAI and its experts admitted as much. EX1010, ¶41 (“Capillary action was a well-known technique for moving fluids to a heater ... **Capillary action generally refers to the ability of liquid to flow in narrow spaces, such as that of a wick or a capillary tube ...**”); EX1013, 63; EX1015, Clemens Declaration, ¶78 (“This

vaporization sets up a **capillary action (i.e., wicking)** ...”). As illustrated, the capillary action (wicking) of capillary tube 36 and liquid passageway 371 results in liquid flavor source 34 (*“liquid aerosol-forming material”*) being brought into contact both “(1) with the heater,” and “(2) with an area in close proximity to, and exposed to the heat produced by, the heater.” EX1003, ¶¶169-70.

As also discussed in detail for claim 3, Takeuchi discloses that the enclosure of capillary tube 36 and/or liquid passageway 371 formed by plates 361 and 362 can be filled with “bundled fibers.” EX1004, 3:36-50. A POSA would have understood that using bundled fibers to further help transport liquid flavor source 34 through capillary tube 36 and/or liquid passageway 371 also represents an example of wicking. EX1003, ¶171.

Moreover, a POSA would have understood that heaters 42, 421, and 422 gasifying and/or evaporating liquid flavor source 34 discloses the claimed “*electrical resistance heater to volatilize the liquid aerosol-forming material.*” EX1003, ¶172. In fact, in a prior IPR, RAI confirmed that Takeuchi’s liquid flavor source 34, capillary tube 36, and heater 42 operate in this manner. EX1011, 40 (“The **heater turns the liquid into aerosol** and the liquid-supply moves from the liquid container 32 where it is stored up through the capillary tube 36 to the heater 42 by capillary action **so that it can be atomized**”).

Therefore, Takeuchi discloses [1.e] under this first interpretation. EX1003, ¶173.

Takeuchi also discloses this limitation under a second interpretation (RAI's Heater Interpretation). As discussed for [1.d], RAI took the position in a prior IPR that the combination of Takeuchi's heater 42 and capillary tube 36 disclose the claimed atomizer (i.e., heater). EX1011, 18, 42. Under RAI's Heater Interpretation, Takeuchi still discloses that liquid flavor source 34 (*"liquid aerosol-forming material"*) stored within liquid container 32 (*"storage compartment"*) contacts capillary tube 36, and the subsequent capillary force of capillary tube 36 results in liquid flavor source 34 being *"wicked into contact"* with heater 42 to become instantly gasified (*"volatilize the liquid aerosol-forming material"*). EX1004, FIG. 1, 7:57-63; EX1003, ¶174-75.

(g) [1.f]

RAI admits that [1.f] was well-known before the '202 patent's earliest priority date. Section VII.B. Additionally, both RAI and its expert admitted in multiple prior IPRs that Takeuchi discloses this limitation:

"Takeuchi discloses a stream passage[] (gas passageway 20) ... within the upper chamber 121 of the housing (casing 12) ..."

EX1011, 45-46, 54-55 (admitting same); EX1013, 42 (admitting same).

"The user inhales at mouthpiece 16 causing air to flow thorough an air passage extending from inlet 18 to outlet (i.e., "inhalation port")

22,” and “[t]he liquid vaporized at heater 42 is supplied into gas passageway 20 and carried by the air flow through the upper chamber of the housing to the outlet 22 at mouthpiece 16.”

EX1013, 14; EX1010, ¶39.

Indeed, Takeuchi discloses [1.f] as shown in Figure 1. EX1003, ¶177.

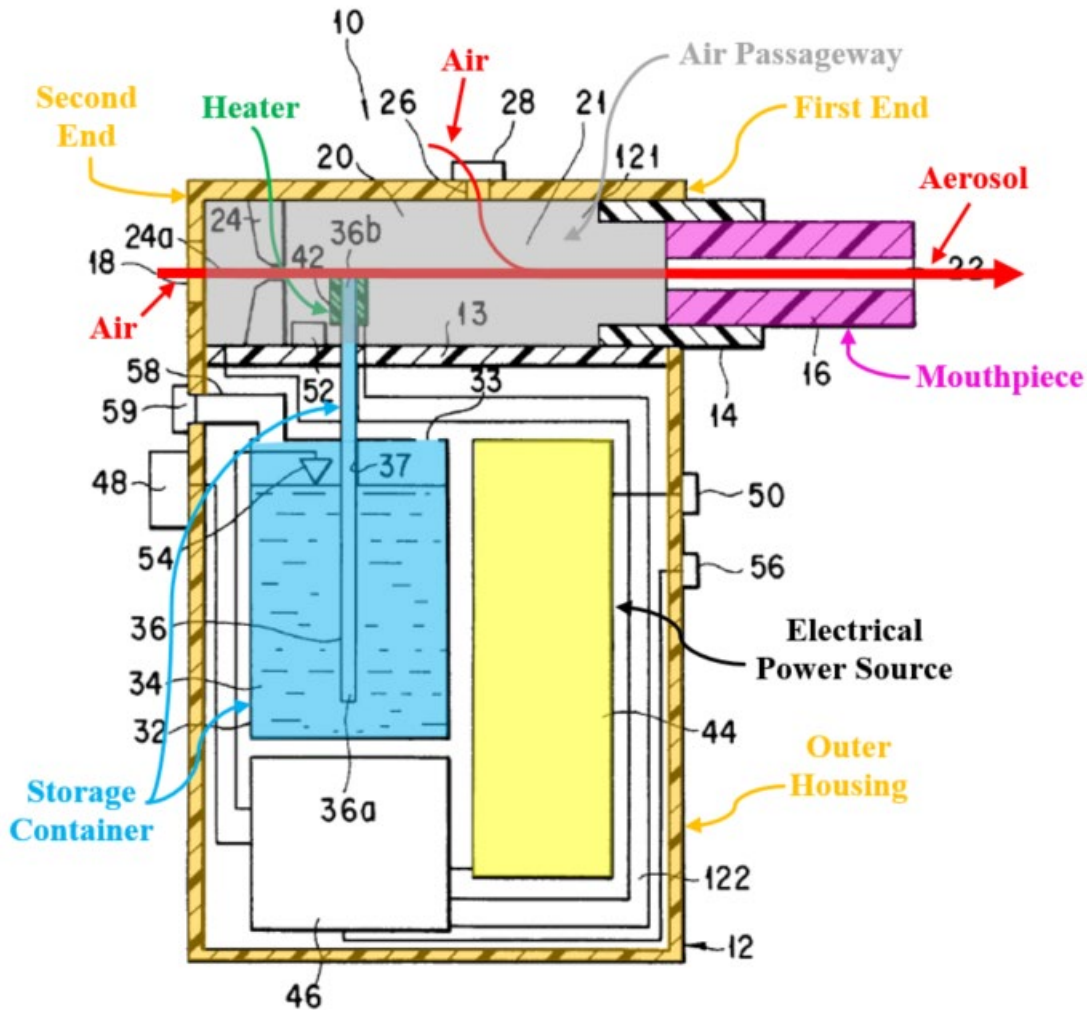


FIG. 1

As illustrated, gas passageway 20 (“*an air passageway*”) extends “*through at least a portion of the outer housing*” (casing 12). Takeuchi also explains that “[t]he **gasified flavor source is mixed with the main air introduced through the air intake port 18** and the squeeze hole 24a into a region around the outlet port 36a of the capillary tube 36 in accordance with the inhaling action of the user and, then, **the mixture is transferred into the inhalation port 22.**” EX1004, 8:5-10, 5:1-11 (disclosing that gas passageway 20 can also include “an outer air introduction hole [] formed through the ceiling of the upper chamber 121 to permit the **outer air to be introduced,**” and subsequently “**mixed**” with “[a] **gas containing a flavor,** which is formed by the heating of the liquid flavor source with a heater 42” before “**flow[ing] to reach the inhalation port 22**”); EX1003, ¶178.

Takeuchi similarly discloses [1.f] as shown in Figure 8. EX1003, ¶179.

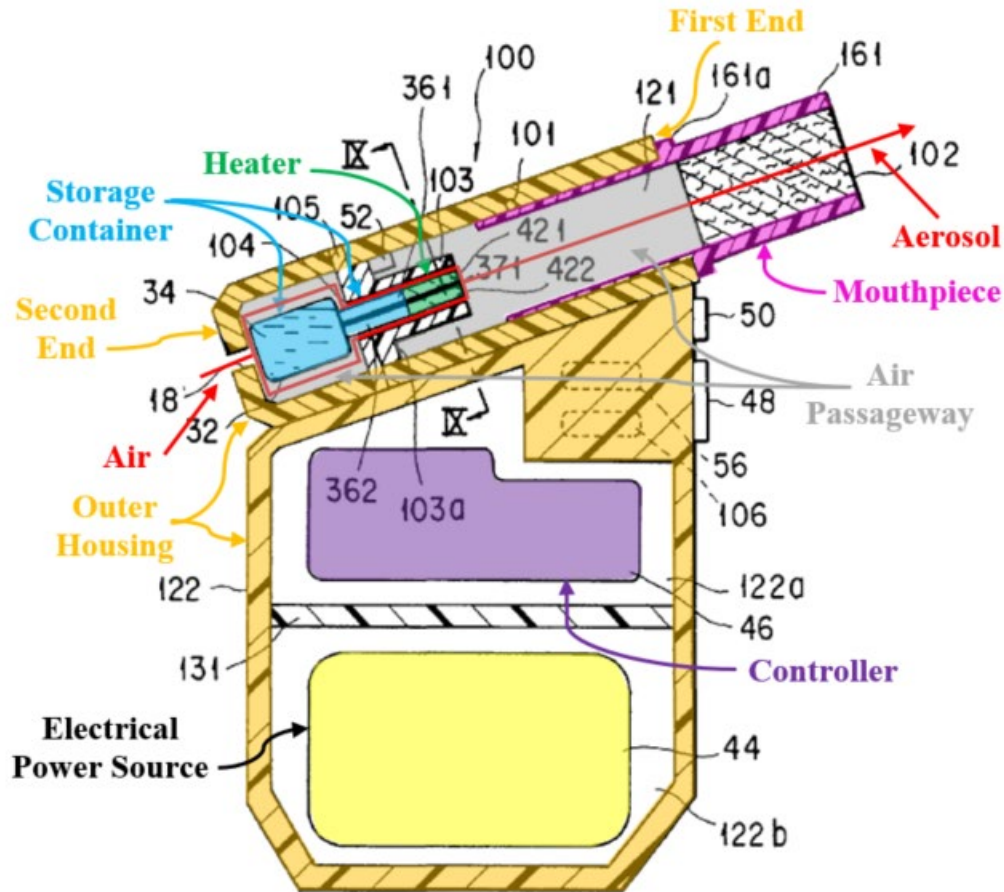


FIG. 8

As illustrated, air guiding path 104 (“an air passageway”) extends “*through at least a portion of the outer housing.*” EX1004, 9:59-66 (“air passageway (air guiding path) 104 guides, along it, the air introduced by the inhalation action of the user from the air intake port 18,” such that “[t]he introduced air embraces or surrounds the gasified liquid flavor source at the outlet portion of the liquid passageway 371, and is directed toward the inhalation port by the air passageway 104”). Takeuchi also explains that “an **aerosol formation efficiency can be more enhanced** when the liquid flavor source contains the aerosol generation material,

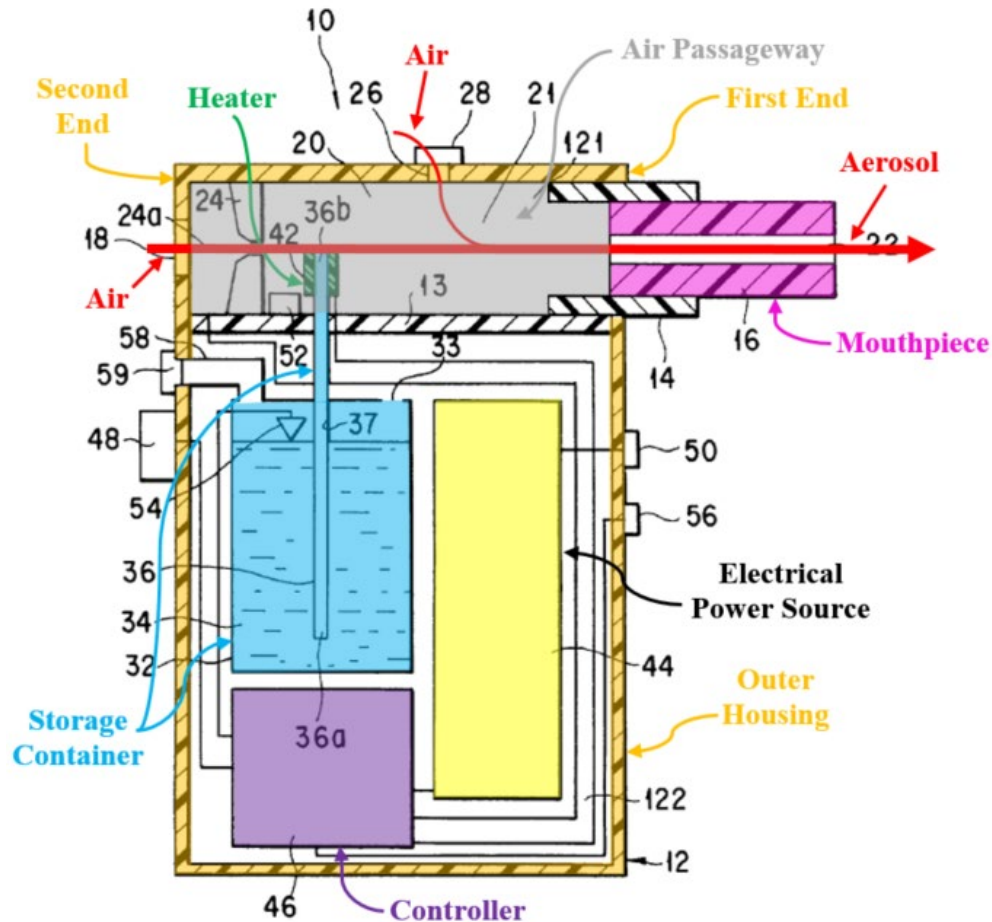
since the **mixing of the gasified flavor source with the air** and the cooling of the gasified flavor source thereby can be simultaneously effected efficiently by means of the **air stream passing through the air guiding path 104.**” EX1004, 10:5-13; EX1003, ¶¶180-81.

(h) [1.g]

RAI admits that [1.g] was well-known before the ’202 patent’s earliest priority date. Section VII.B. Additionally, Takeuchi discloses this limitation. EX1003, ¶182.

Specifically, Takeuchi discloses that “the mouth piece 16 is taken in the mouth of the user for the **inhaling action through the inhalation port 22.** As a result, an inhaling action signal is transferred from the sensor 52 to the control circuit 46. Then, **under the control of the control circuit 46, an electric power is supplied from the power source 44 to the heater 42 so as to turn the heater 42 on.**” EX1004, 7:50-56, 6:55-62. Takeuchi also discloses that control circuit 46 can be implemented using various known components.¹⁰ EX1004, 6:59-62. Control circuit 46 (“*controller*”) is highlighted in Figures 1 and 8. EX1003, ¶183-84.

¹⁰ To the extent that the claimed “*controller*” is found to constitute means-plus-function language under 35 U.S.C. §112(f), which it should not be, Takeuchi’s control circuit 46 would still disclose and/or render obvious this limitation. Both



the claimed “*controller*” and Takeuchi’s control circuit 46 perform this same function in substantially the same way, and produce substantially the same results. EX1003, ¶183; MPEP 2183; *Caterpillar Inc. v. Deere & Co.*, 224 F.3d 1374, 56 USPQ2d 1305 (Fed. Cir. 2000); *Electronic Arts Inc. v. Terminal Reality, Inc.*, IPR2016-00928, FWD, 22-23 (P.T.A.B. Oct. 23, 2017).

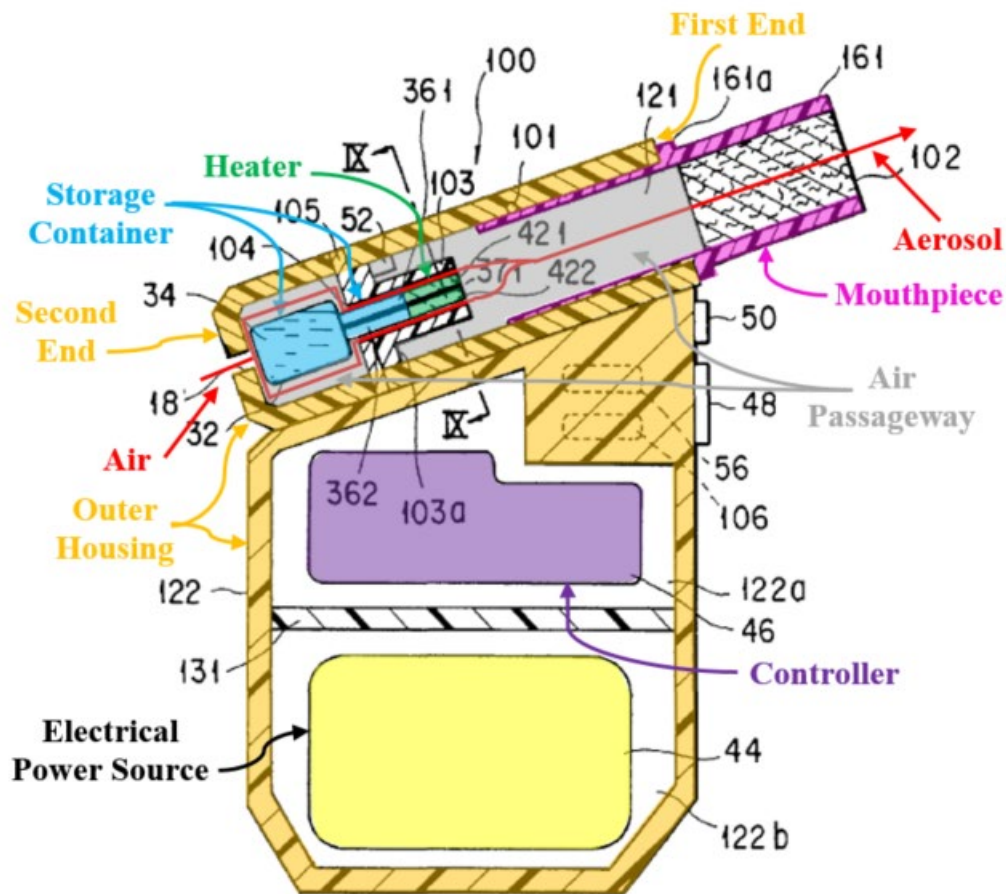


FIG. 8

2. Claim 3

Takeuchi discloses claim 3. EX1003, ¶185.

Takeuchi discloses that a “**pore structure** [can be] filled in an enclosure” of capillary tube 36 and/or liquid passageway 371 formed by plates 361 and 362.

EX1004, 3:36-42. “Representative examples of the structure include open-cell foamed structure, and **bundled fibers**.” EX1004, 3:47-50. “The intercommunicating pore structure [“(fibrous substrate”)”] refers to a structure

having intercommunicating voids or pores through which the liquid may be elevated from the inlet of the passageway which is in fluid communication with the liquid flavor source contained in the liquid container to the outlet of the passageway by the capillary force.” EX1004, 3:42-47. As discussed for [1.e], both capillary tube 36 (implemented in device 10) and plates 361 and 362 that define liquid passageway 371 (as implemented in device 100) can constitute part of the claimed “*storage compartment*.” EX1003, ¶186.

An example embodiment showing “intercommunicating pore structure 302 filled in an enclosure 301”—which “may be provided by a tube, or two plates arranged spaced apart from each other”—is shown in Figure 14. EX1004, 10:50-57.

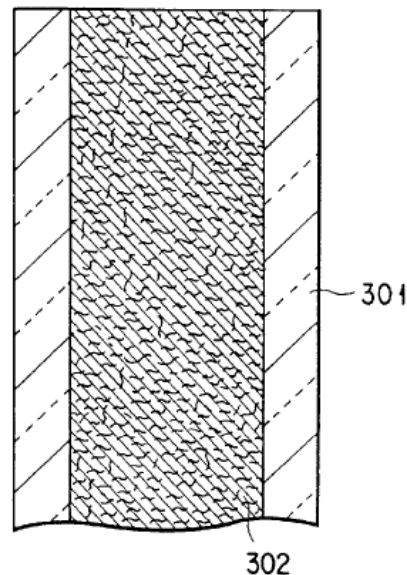


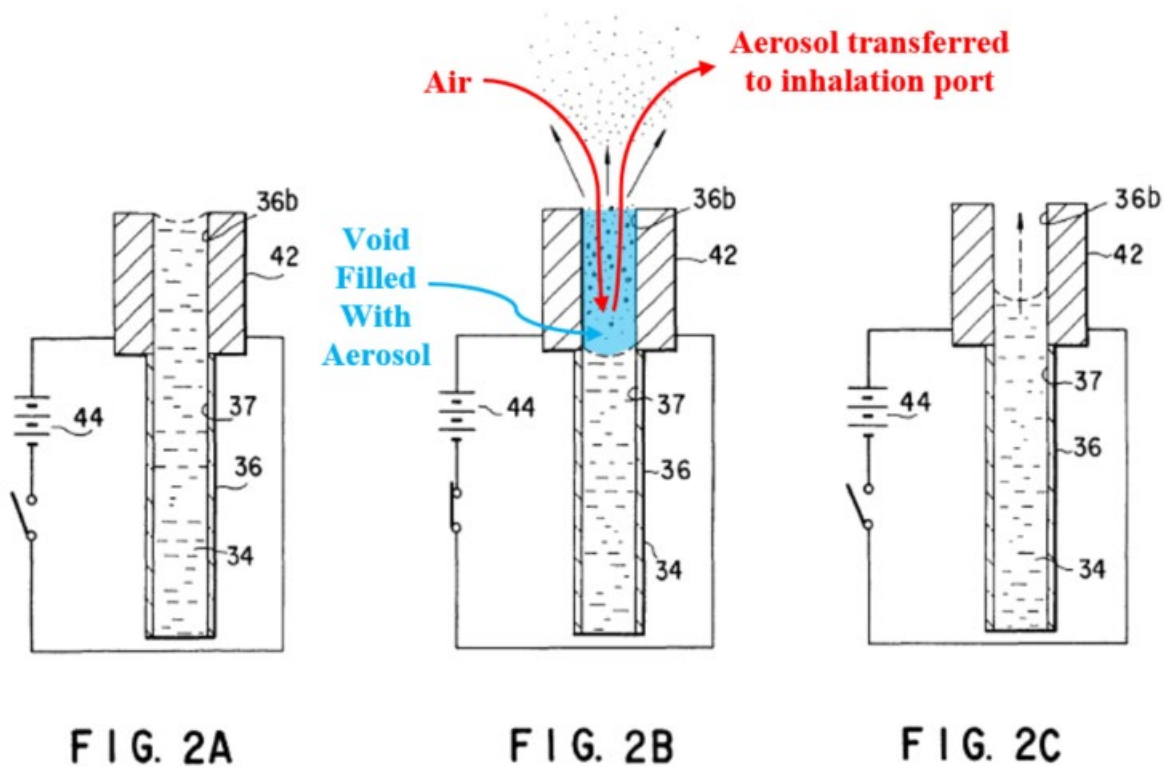
FIG. 14

3. Claim 4

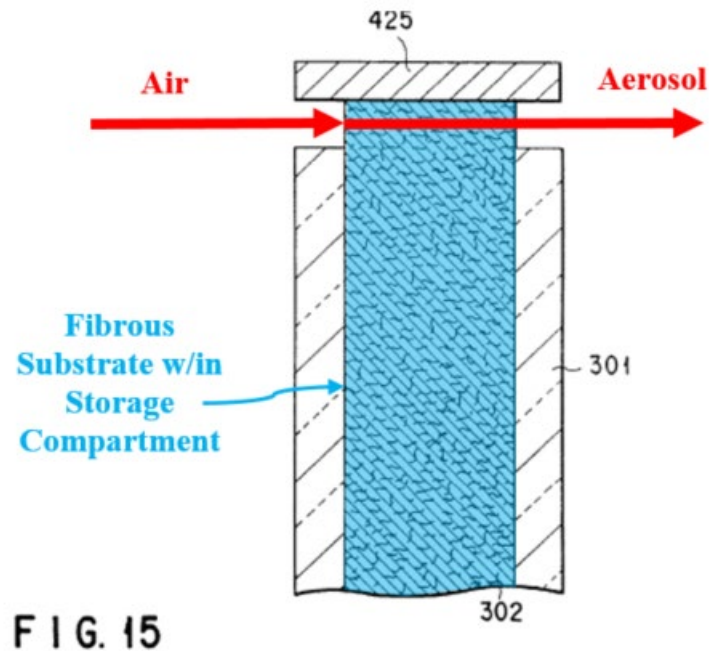
Takeuchi discloses claim 4. EX1003, ¶188.

Takeuchi explains that the mixture of the gasified flavor source and main air introduced through the air intake port 18 (“*the aerosol that is produced*”) exists in “a region around the outlet port 36[a] of the capillary tube 36” before “the mixture is transferred into the inhalation port 22.” EX1004, 8:5-10. Takeuchi discloses at least two ways by which this mixture “*passes at least partially through the storage compartment before exiting through the mouthpiece.*” EX1003, ¶189.

First, when “the liquid flavor source 34 within the outlet port 36[b of capillary tube 36] is instantly gasified by the heat generated from the heater 42,” a void is left in the upper portion of capillary tube 36 (a portion of “*the storage compartment*”). EX1004, 7:57-8:1. As shown in Figure 2B, this void is filled by the gasified flavor source and air mixture (“*the aerosol that is produced*”) at least until the upper portion of capillary tube 36 is filled with liquid flavor source 34 again by capillary action (Figure 2C). EX1003, ¶190.



Second, Takeuchi discloses that in the embodiment of Figure 15, “intercommunicating pore structure 302 may protrude from the enclosure 301,” and “heater 425 can be provided on the protruded end of the intercommunicating pore structure 302.” EX1004, 10:59-63. As discussed for claim 3, pore structure 302 represents “a fibrous substrate” comprised within “the storage compartment.” In this embodiment, the gasified flavor source and air mixture (“the aerosol that is produced”) thus “passes at least partially through the storage compartment [(“pore structure 302”)] before exiting through the mouthpiece.” EX1003, ¶191.



4. Claim 5

RAI admits that the “*cartridge*” recited in claim 5 was well-known before the ’202 patent’s earliest priority date. Section VII.B. Takeuchi also discloses claim 5. EX1003, ¶193.

The ’202 patent does not explicitly define a “*cartridge*.” Beyond the “*cartridge*” needing to function as “*the storage compartment*” (as recited in claim 5), the only guidance provided in the ’202 patent as to the scope of the claimed “*cartridge*,” is that it can be “removed from the outer housing of the device.” EX1001, 5:57-61, 8:17-23 (“removable cartridge enclosing the aerosol-forming material and tobacco material”). Takeuchi discloses such a removable cartridge for storing aerosol-forming material. EX1003, ¶194.

Specifically, liquid container 32 in Figure 8 is “**exchangeable**.” EX1004, 9:23-26, claim 9 (“wherein said liquid container is **exchangeably mounted**”). Therefore, a POSA would have understood that Takeuchi’s liquid container 32 (at least in the Figure 8 embodiment) discloses this limitation. EX1003, ¶195.

5. Claim 6

RAI admits that implementing a cartridge “*circumscribed with a wrapping material*,” as recited in claim 6, was well-known before the ’202 patent’s earliest priority date. EX1001, 18:19-19:24, 25:27-37. Takeuchi also renders obvious claim 6. EX1003, ¶196.

Liquid flavor source 34 can be at least partially contained using various structures, including “**bundled fibers**.” EX1004, 3:47-50. Additionally, liquid passageway extends from liquid container 32 (at least in the Figure 8 embodiment) is “fluid-tightly sealed at its sides by a sealing material (not shown) such as a plastic film or a metal foil so as to prevent the leakage or the evaporation of the liquid flavor source from the sides of the plates.” EX1004, 9:45-50 *compare to* EX1001, 18:37-49 (describing “[e]xemplary wrapping materials, such as laminates of paper and metal foil, and papers”); EX1003, ¶197.

Therefore, based on the well-known use of various wrapping materials in smoking articles, and Takeuchi’s disclosure of using bundled fibers, plastic film, and/or a metal foil to at least partially contain liquid flavor source 34, a POSA

would have found it obvious to implement Takeuchi's liquid container 32 (at least in the Figure 8 embodiment) being "*circumscribed with a wrapping material.*" EX1003, ¶198.

6. Claim 7

Takeuchi renders obvious claim 7. EX1003, ¶199.

Takeuchi discloses that casing 12 can be made of "plastic." EX1004, 4:30-32. As discussed for claim 6, Takeuchi also discloses that the liquid passageway extending from liquid container 32 (at least in the Figure 8 embodiment) can include "a plastic film." EX1004, 9:45-50. Further, Takeuchi discloses that, in some embodiments, liquid container 32 is "formed of a transparent or translucent material." EX1004, 7:36-37. A POSA would have understood that plastic is such a transparent or translucent material. Finally, a POSA would have understood that plastic cartridges were well known before the late 1990s. EX1003, ¶200.

Therefore, based on the well-known use of plastic cartridges and Takeuchi's disclosure of using plastic or plastic-like materials for various components within devices 10 and 100, a POSA would have found it obvious to implement Takeuchi's liquid container 32 (at least in the Figure 8 embodiment) comprising "*a plastic material,*" as recited in claim 7. EX1003, ¶201.

7. Claim 8

Takeuchi discloses claim 8 for the reasons discussed for [1.e]. EX1004, 5:28-30, 7:57-59, 9:23-38; EX1003, ¶202.

8. Claim 9

Takeuchi discloses claim 9 under both the first interpretation of “*electrical resistance heater*” discussed for [1.d] and RAI’s Heater Interpretation. EX1003, ¶203.

That is, heater 42 (implemented in device 10) and plate-like heaters 421 and 422 (implemented in device 100) each separately disclose the “*electrical resistance heater*” under the first interpretation. Takeuchi discloses “*wherein the electrical resistance heater is arranged in contact with the storage compartment*” under the first interpretation, because heater 42 “consists of a tubular body **mounted to the capillary tube 36**” (a portion of “*the storage compartment*”), and plate-like heaters 421 and 422 are “**mounted to the plates 361 and 362**” that define liquid passageway 371 (a portion of “*the storage compartment*”). EX1004, 6:7-12, 9:29-34. The fact that Takeuchi’s heaters are “*arranged in contact with the storage compartment*” is also illustrated in annotated Figures 1, 2A-C, 8, 10, and 11. EX1003, ¶204.

As also discussed for [1.d], the combination of both heater 42 and capillary tube 36 discloses the “*electrical resistance heater*” under RAI’s Heater

Interpretation. Takeuchi also discloses “*wherein the electrical resistance heater is arranged in contact with the storage compartment*” under RAI’s Heater

Interpretation, because capillary tube 36 “is inserted within the liquid container.”

EX1004, 5:47-49. As shown in Figure 1, when inserted in liquid container 32, capillary tub 36 is “*in contact*” with at least the top edge of liquid container 32, such that capillary tube 36 remains fixed in place during use. EX1003, ¶205.

9. Claim 10

Takeuchi discloses claim 10. EX1003, ¶206.

As discussed for claim 3, Takeuchi discloses that a “**pore structure** [can be] filled in an enclosure” of capillary tube 36 and/or liquid passageway 371 formed by plates 361 and 362. EX1004, 3:62-42. And for the same reasons discussed for claim 3, a POSA would have also understood that this pore structure represents “*an absorbent wicking material configured for transferring the liquid aerosol to the electrical resistance heater.*” EX1004, 3:42-47; EX1003, ¶207.

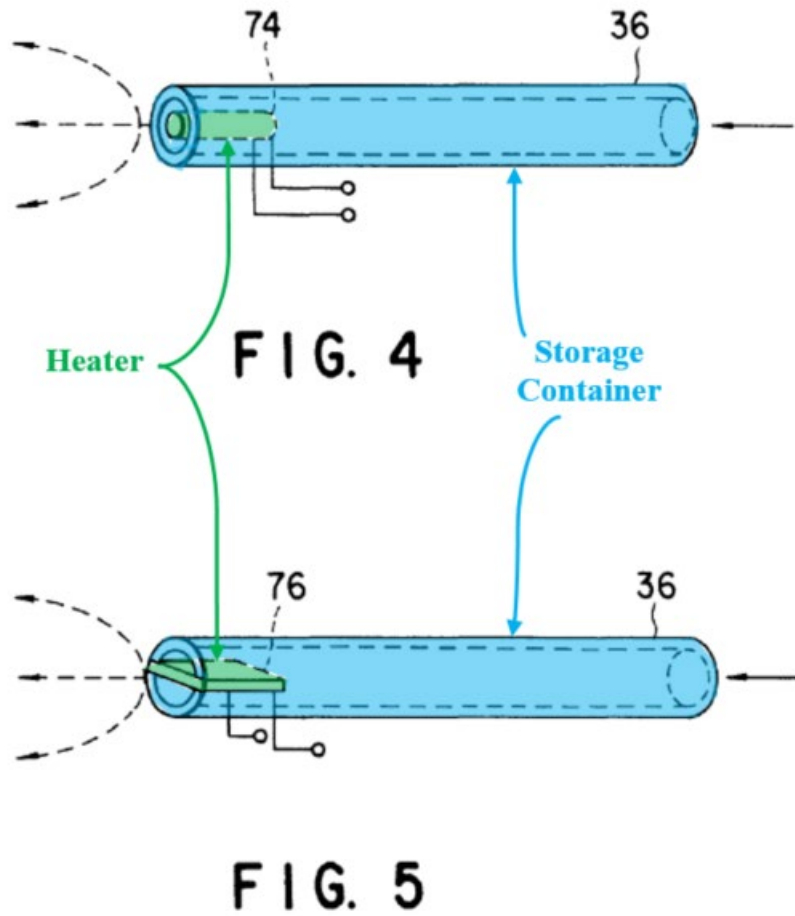
That is, pore structure 302 implemented within capillary tube 36 and/or liquid passageway 371 formed by plates 361 and 362, as shown in Figures 14- 15, would be “*arranged proximate to*” the electrical resistance heater for the same reasons as discussed for claim 9. EX1004, 6:7-12, 9:29-34. Indeed, pore structure 302 would also be implemented throughout the length of capillary tube 36 and/or

liquid passageway 371, and would thus either contact or be in proximity to heater 42 and heater plates 421 and 422. EX1003, ¶207.

10. Claim 11

Takeuchi discloses claim 11 under the first interpretation of “*electrical resistance heater*” discussed for [1.d] and RAI’s Heater Interpretation. EX1003, ¶208.

As discussed for [1.d], heater 42 (implemented in device 10) and plate-like heaters 421 and 422 (implemented in device 100) each separately disclose the “*electrical resistance heater*” under the first interpretation. Takeuchi discloses “*wherein at least a portion of the electrical resistance heater extends into the storage compartment*” under the first interpretation, because in some embodiments, heater 42 can be implemented within capillary tube 36, and plate-like heaters 421 and 422 can be similarly implemented between plates 361 and 362 that define liquid passageway 371. For example, heater 42 can be implemented: (i) as “a rod-like heater 74 [that] is **inserted into the outlet port 36[b] of the capillary tube;**” or (ii) as “a plate-like heater 76 [that] is **inserted into the outlet port 36[b] of capillary tub 36.**” EX1004, 8:22-26. These example implementations for heater 42 are shown in Figures 4- 5. EX1003, ¶209.



Similarly, plate-like heaters 421 and 422 can be “**provided in the opposing surface regions of the plates 361 and 362** defining the liquid passageways therebetween.” EX1004, 10:24-27. This example implementation is shown in Figure 11. EX1003, ¶210.

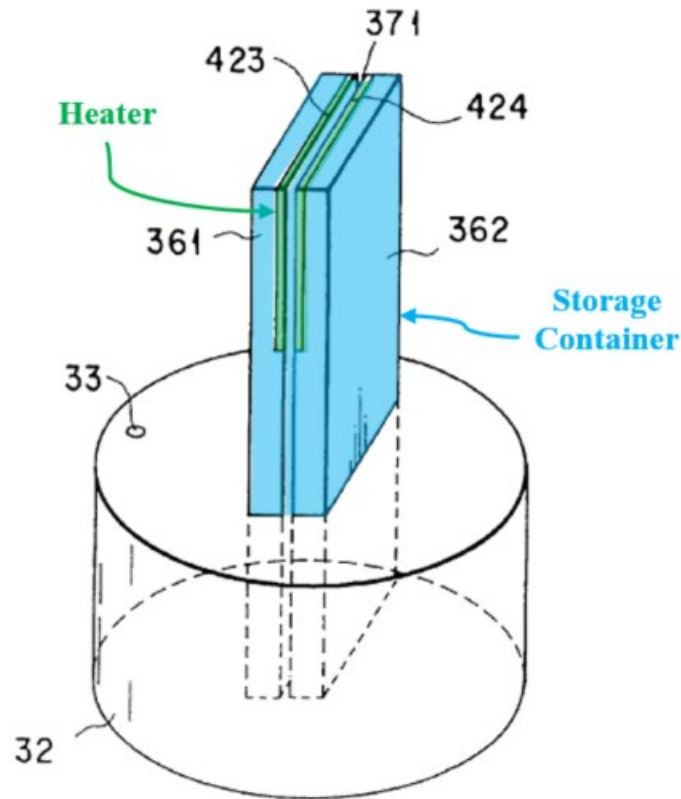
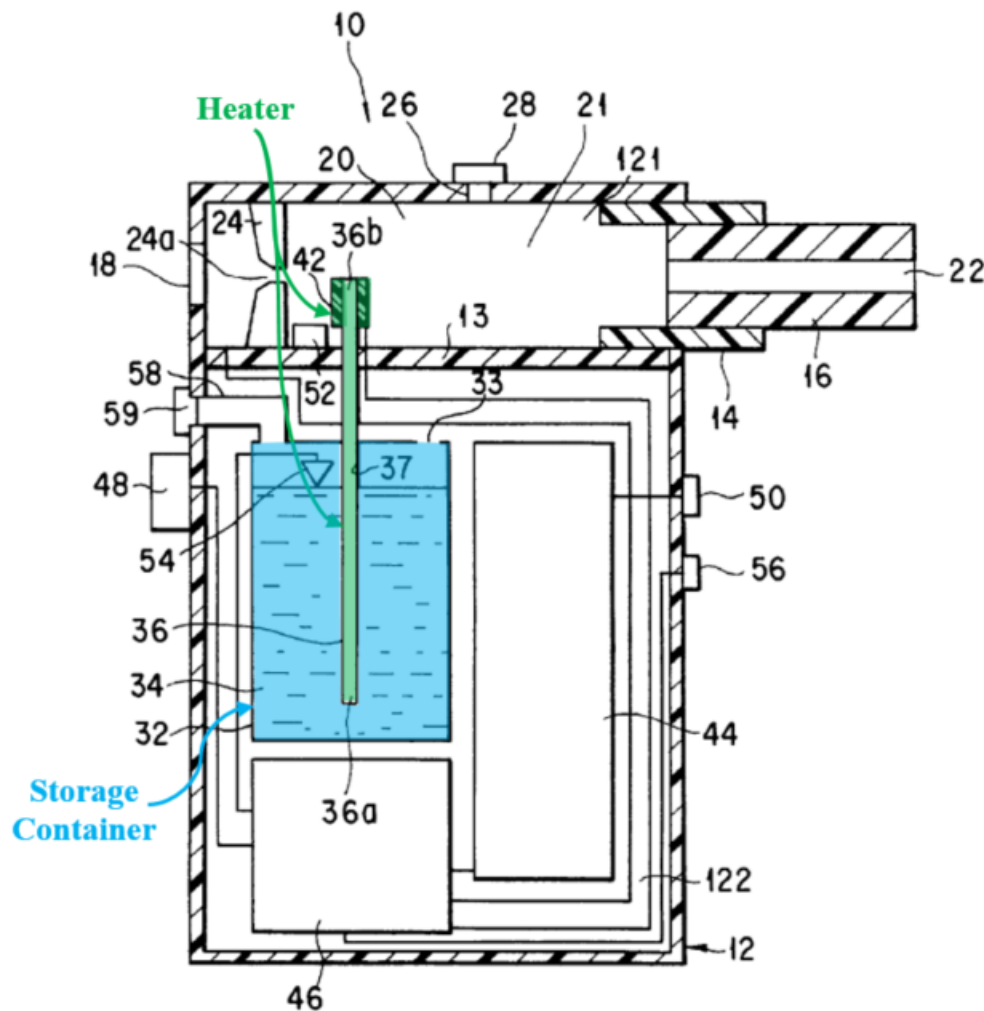


FIG. 11

As discussed for [1.e], under the first interpretation, capillary tube 36 represents a portion of “*the storage compartment*” in the Figure 1 embodiment, and plates 361 and 362 that define liquid passageway 371 represent a portion of “*the storage compartment*” in the Figure 8 embodiment. EX1003, ¶211. Therefore, Takeuchi discloses that both heater 42 and plate-like heaters 421 and 422 can “*extend[] into the storage compartment*” under the first interpretation of “*electrical resistance heater.*” EX1003, ¶211.

As also discussed for [1.d], the combination of both heater 42 and capillary tube 36 discloses the “*electrical resistance heater*” under RAI’s Heater Interpretation. Takeuchi also discloses claim 11 under RAI’s Heater Interpretation because capillary tube 36 “*extends into the storage compartment*” (liquid container 32), as shown in Figure 1. EX1003, ¶212.



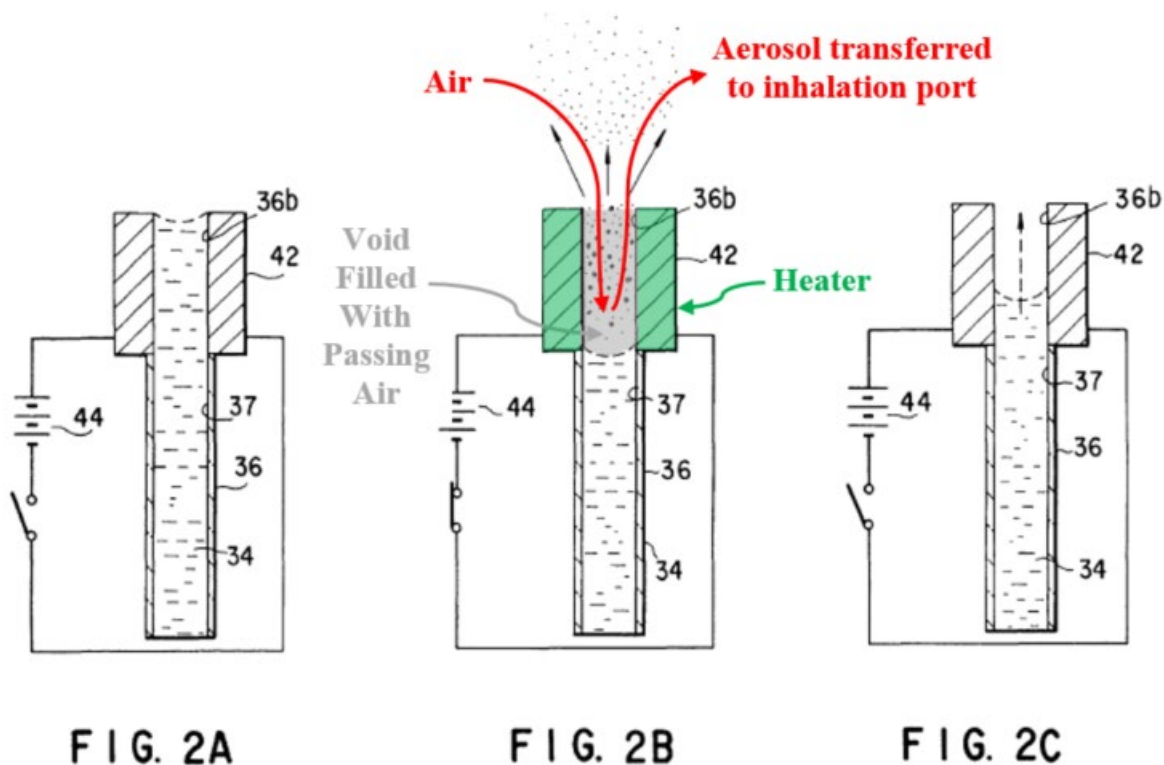
**Patent Owner's Heater
Interpretation**

FIG. 1

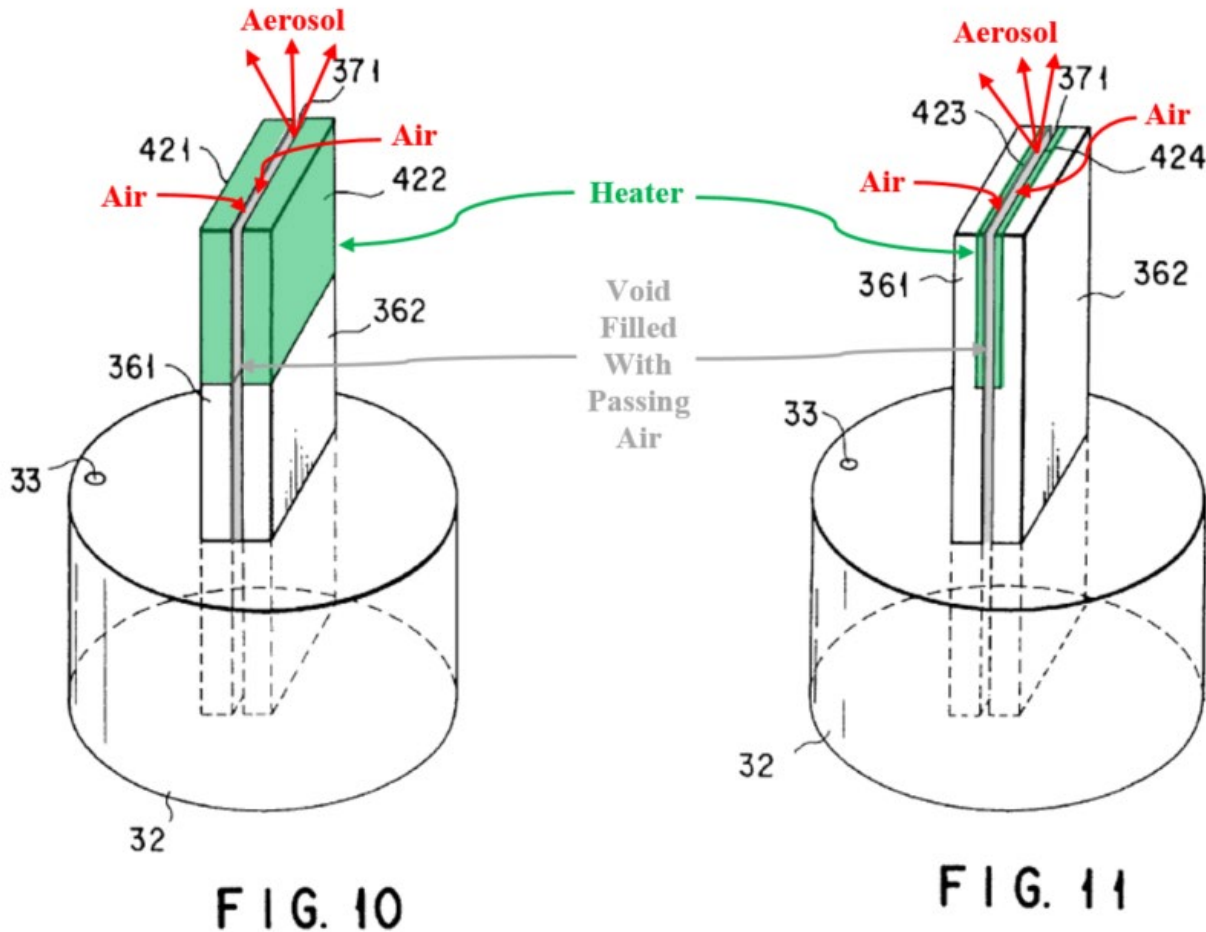
11. Claim 12

Takeuchi discloses claim 12. EX1003, ¶213.

As discussed for claim 4, when “the liquid flavor source 34 within the outlet port 36[b of capillary tube 36] is instantly gasified by the heat generated from the heater 42,” a void is left in the upper portion of capillary tube 36, which exists within heater 42. EX1004, 7:57-8:1. As also discussed for claim 4 (and shown in Figure 2B), this void is filled by the passing gasified flavor source and air mixture at least until the upper portion of capillary tube 36 is filled with liquid flavor source 34 again by capillary action (Figure 2C). EX1003, ¶214.



This same passing gasified flavor source and air mixture also fills the void between plate-like heaters 421 and 422 as shown in Figures 10-11. EX1003, ¶215.



A POSA would have understood that the gasified flavor source and air mixture filling the void within heater 42, as well as the void between plate-like heaters 421 and 422 discloses this limitation. EX1003, ¶216.

12. Claim 13

Takeuchi discloses claim 13, because **sensor 52 “detect[s] the inhaling action of the user.”** EX1004, 6:46-54, 2:29-33, 6:23-28, FIG. 1; EX1003, ¶217.

13. Claim 14

Takeuchi discloses claim 14 for at least the reasons discussed for [1.g].

EX1003, ¶218.

To the extent that RAI argues that “*regulat[ing] the current flow through the electrical resistance heater during the draw...*” (as recited in claim 14) is somehow different from “*activat[ing] current flow through the electrical resistance heater in response to a draw*” (as recited in [1.g]), such an argument would be misplaced.

Indeed, in a prior IPR, RAI argued that “‘regulating the current flow through the electrical resistance heater during draw’ means something more than just turning on the heater.” EX1017, Institution Decision, 30. The Board in that prior IPR, however, expressly rejected RAI’s argument, finding that the specification of the ’123 patent (and thus the ’202 patent as well) does not support RAI’s argument.

EX1017, 30-31.

Nonetheless, even if something more than turning on the heater in response to a user’s draw was required to satisfy claim 14, which it is not, Takeuchi would at least render obvious this claim. For example, Takeuchi discloses that “the heater can be controlled on the basis of a signal from a sensor for detecting the inhaling action of the user, with the result that the flavor can be supplied to the user **with a high stability**.” EX1004, 2:29-34. A POSA would have understood “high stability” in this context to mean something more than just turning on the heater—

e.g., the ability to control the heater such that it remains stable not just at the outset of the user's draw but during the user's draw as well. EX1003, ¶219.

This understanding is reinforced by the fact that Takeuchi discloses that “[t]he signal processing and control are performed within the control circuit 46 in accordance with, for example, **a known analog control**, a two-position control or a combination thereof.” EX1004, 6:59-62. A POSA would have understood that known analog circuits in the late 1990s could do more than just turn on a power supply, and instead had the capability to sense current and voltage (via some form of feedback) and regulate the power supply accordingly. EX1003, ¶220.

Therefore, a POSA would have at least found it obvious that Takeuchi's control circuit 46 had the capability to both turn on heater 42 in response to a user's draw, and “*regulate the current flow through the electrical resistance heater during the draw*,” as recited in claim 14. EX1003, ¶221.

14. Claim 15

RAI admits that the “*end cap*” recited in claim 15 was well-known before the '202 patent's earliest priority date. Section VII.B. Takeuchi also discloses claim 15 for at least two independent reasons. EX1003, ¶222.

First, “a removable cap 59 is provided in the exposed end portion of the pouring port 58.” EX1004, 7:22-23. Second, Takeuchi discloses that “[i]t is also possible to arrange an adjusting ring (not shown) having a plurality of openings in

a manner to surround the air intake port 18 of the casing 12,” such that “the air flow rate into the gas passageway 20 can be adjusted by adjusting the position of the adjusting ring relative to the air intake port 18.” EX1004, 4:55-60. As shown in Figure 1 (reproduced for [1.a]), both removable cap 59 and air intake port 18 (to which the adjusting ring would surround) are implemented “*at a second of the two ends*” of device 10. EX1003, ¶223.

Therefore, both Takeuchi’s removable cap 59 and adjusting ring disclose the claimed “*end cap defined at a second of the two ends.*” EX1003, ¶224.

15. Claim 18

Takeuchi discloses claim 18 for the same reasons discussed for claim 1. EX1003, ¶225.

Claim 18 is nearly identical to claim 1, but with three minor differences. First, claim 18 omits the “*mouthpiece*” of claim 1 ([1.b]). Second, claim 18 recites “*a liquid storage*” as opposed to the “*storage compartment*” of claim 1 ([1.e]). Third, claim 18 recites “*a puff-actuated controller*” as opposed to just “*a controller*” ([1.g]). None of these differences impact the patentability analysis set forth for claim 1. EX1003, ¶225.

To the extent that RAI argues that “*regulat[ing] current flow through the electrical resistance heater during a draw ...*” (as recited in claim 18) is somehow different from “*activat[ing] current flow through the electrical resistance heater in*

response to a draw” ([1.g]), such an argument would be misplaced, as discussed for claim 14. Nonetheless, Takeuchi would at least render obvious this limitation for the same reasons discussed above for claim 14. EX1003, ¶226.

Therefore, Takeuchi both discloses and renders obvious claim 18 for the same reasons discussed for claims 1 and 14. EX1003, ¶227.

16. Claim 19

Takeuchi discloses claim 19 for the same reasons as discussed for claim 13. EX1003, ¶228.

17. Claim 20

Takeuchi discloses claim 20. EX1003, ¶229.

As an initial matter, the '202 patent does not provide any guidance as to what is meant by “*the puff-actuated controller comprises additional control circuitry.*” EX1003, ¶230. Nonetheless, Takeuchi discloses that “[t]he signal processing and control are performed within the control circuit 46 in accordance with, for example, a known analog control, a two-position control or a combination thereof.” EX1004, 6:59-62. Thus, a POSA would have understood that control circuit 46 (“*the puff-actuated controller*”) can include several different control circuitry components, any number of which could represent the claimed “*additional control circuitry.*” Additionally, Takeuchi discloses that switch 48 is electrically coupled to control circuit 46, and thus also constitutes “*additional*

control circuitry.” EX1004, 25-45 (“a switch 48 for the heater 42 which can independently turn the heater on”); EX1003, ¶230.

18. Claim 21

Takeuchi discloses claim 21 for the same reasons as discussed for [1.b]. Indeed, Takeuchi discloses that “mouth piece 16 having an inhalation port 22 through which a user inhales a flavor is **detachably inserted into the holder 14.**” EX1004, 4:41-43, 9:9-11 (disclosing same for mouthpiece 161); EX1003, ¶231.

19. Claims 22-29

Takeuchi discloses claims 22-29 for the same reasons as discussed for their corresponding claims. EX1003, ¶¶232-39.

Claim 22	<i>See claim 8</i>
Claim 23	<i>See claim 3</i>
Claim 24	<i>See claim 4</i>
Claim 25	<i>See claim 9</i>
Claim 26	<i>See claim 10</i>
Claim 27	<i>See claim 11</i>
Claim 28	<i>See claim 12</i>
Claim 29	<i>See [1.b] & claim 15</i>

B. Ground 2: The combination of Takeuchi and Pienemann renders obvious claims 6, 7, 14, 15, and 18-29.

1. A POSA would have been motivated to combine Takeuchi and Pienemann.

A POSA would have been motivated to make three modifications, individually or collectively, to Takeuchi's flavor-generating devices 10 and 100. EX1003, ¶240.

First, a POSA would have been motivated to implement Takeuchi's liquid container 32 (at least in the Figure 8 embodiment) using a wrapper material, as taught by Pienemann. Second, a POSA would have been motivated to implement Takeuchi's control circuit 46 having additional control/regulating capabilities, as also taught by Pienemann. Third, a POSA would have been motivated to modify Takeuchi's flavor-generating devices 10 and 100 to incorporate a removable end cap, as further taught by Pienemann. EX1003, ¶241.

(a) Motivation to implement Takeuchi's liquid container using Pienemann's wrapper material

As discussed above, Takeuchi discloses that its flavor-generating devices 10 and 100 each include "liquid container 32 [for] housing a liquid flavor source 34." EX1004, 5:28-30, 9:23-26. Takeuchi also discloses that liquid container 32 (at least as implemented in device 100 (the Figure 8 embodiment)) is "exchangeable." EX1004, 9:23-26, claim 9. While Takeuchi explicitly discloses certain types of materials that can be used to produce other components within devices 10 and

100—e.g., casing 12 (plastic) and pore structure 302 (bundled fibers) (*see* claims 6 and 7 in Ground 1)—Takeuchi does not explicitly disclose the types of materials that can be used to implement liquid container 32. As Dr. Deevi explains, a POSA would have thus looked to the prior art for guidance on what types of materials could be used for liquid container 32. Pienemann is such a prior art reference. EX1003, ¶242.

Pienemann discloses a “system for supplying an inhalable aerosol [that] contains a substrate portion (1”) and an inhaling device.” EX1006, Abstract. Pienemann discloses that substrate portion 1 contains an “aerosol-forming material within a wrapper.” EX1006, 3:10-14, Abstract. Pienemann explains that the wrapper “may consist of paper ... or a plastic foil also made conductive by additives.” EX1006, 6:10-15. Pienemann also explains that substrate portion 1 is configured to be inserted (and removed) from a housing of the inhaling device. *Id.*, 9:4-5, 9:26-29, 10:20-28. A POSA would have therefore recognized that Pienemann (through its disclosure of a removable substrate having a wrapper) fills in the missing details about how to implement Takeuchi’s liquid container 32. EX1003, ¶243.

Based on the teachings of Pienemann, a POSA would have been motivated to implement Takeuchi’s liquid container 32 (at least in the Figure 8 embodiment) using a wrapper material. Takeuchi’s liquid container 32 and Pienemann’s

substrate portion 1 are both disclosed as being exchangeable or removable, and are both designed for use within an aerosol-generating inhaling device. *Compare* EX1004, 1:4-9, 4:26-28, 5:33-35, 8:49-51, 10:5-13 *with* EX1006, Abstract, 3:10-14; EX1003, ¶244.

Thus, a POSA would have recognized that Pienemann's teachings are applicable to Takeuchi, and that implementing Takeuchi's liquid container 32 (e.g., Figure 8 embodiment) using a wrapper material would have required minimal modifications. In the combined system, Takeuchi's liquid container 32 (e.g., Figure 8 embodiment) would be implemented using Pienemann's wrapper material—e.g., formed from either a paper wrapper or plastic wrapper. EX1003, ¶245.

Additionally, as Dr. Deevi explains, a POSA would have understood that implementing Takeuchi's liquid container 32 (e.g., Figure 8 embodiment) using a wrapper material would have numerous added benefits. EX1003, ¶246.

A POSA would not have experienced any unreasonable technical hurdles in implementing these modifications. Additionally, a POSA would have understood that implementing Takeuchi's liquid container 32 (e.g., Figure 8 embodiment) using a wrapper material would merely amount to combining prior art elements (Takeuchi's liquid container 32 and Pienemann's wrapping material surrounding substrate portion 1) according to known methods (implementing Takeuchi's liquid container 32 (e.g., Figure 8 embodiment) using a wrapper material consisting of

either paper or plastic) to yield predictable results (e.g., a container having the ability to house an aerosol-generating material, and being configured to be removably inserted from in an inhaling device). EX1003, ¶247.

(b) Motivation to implement Takeuchi's control circuit having additional control/regulating capabilities

As also discussed above, Takeuchi discloses that its flavor-generating devices 10 and 100 each include control circuit 46 that controls “an electric power [] supplied from the power source 44 to the heater 42” in response to an “inhaling action through the inhalation port 22.” EX1004, 7:50-56, 6:55-62. Takeuchi also discloses that the purpose of control circuit 46 is to ensure that flavor is “supplied to the user with a high stability.” EX1004, 2:29-34. However, Takeuchi does not explicitly disclose the types of control operations that can be carried out by control circuit 46 during a user's inhalation in order to ensure a high stability flavor delivery. As Dr. Deevi explains, a POSA would have thus looked to the prior art for guidance on what specific types of control operations could be performed by control circuit 46 to achieve the desired high stability goal. Pienemann is such a prior art reference. EX1003, ¶248.

Like Takeuchi's control circuit 46, Pienemann discloses “a puff detector, which reacts to the pressure change when the user announces air,” and in conjunction with electronic circuit 32, adjusts the power supply in response to the user's inhalation. EX1006, 11:10-16. Pienemann discloses that the puff detector

and electronic circuit 32 can perform a variety of different control operations in response to a user's inhalation, including supplying power to different "zones" along the substrate portion 1, controlling the power "in such a way that the heating power is set to a higher value on the first puff than on the following puffs, as well as to interrupt the power supply after a defined puff time to avoid overheating." EX1006, 11:10-16, claims 17-20. A POSA would have therefore again recognized that Pienemann (through its disclosure of various power supply control operations) fills in the missing details about how to implement Takeuchi's control circuit 46. EX1003, ¶246.

Based on the teachings of Pienemann, a POSA would have been motivated to implement Takeuchi's control circuit 46 such that it is capable of carrying out a variety of power supply control operations, including setting the heating power "to a higher value on the first puff than on the following puffs," and "interrupt[ing] the power supply after a defined puff time to avoid overheating." Takeuchi's control circuit 46 and Pienemann's puff detector/electronic circuit 32 are also each designed to control the power supplied to a heater in response to detection of inhalation by a user. EX1004, 7:50-56, 6:55-62; EX1006, 11:10-16, claims 17-20; EX1003, ¶250.

Thus, a POSA would have recognized that Pienemann's teachings are applicable to Takeuchi, and that implementing Pienemann's various power supply

control operations within Takeuchi's control circuit 46 would have required minimal modifications. In the combined system, Takeuchi's control circuit 46 would be implemented with the ability to perform Pienemann's various power supply control operations so as to regulate the power supplied to heater 42 and/or heater plates 421 and 422 during the course of a user's draw, and based on the characteristics of that draw. EX1003, ¶251.

Additionally, as Dr. Deevi explains, a POSA would have understood that implementing Pienemann's various power supply control operations within Takeuchi's control circuit 46 would have numerous added benefits. EX1003, ¶252.

A POSA would not have experienced any unreasonable technical hurdles in implementing these modifications. Additionally, a POSA would have understood that implementing additional power control operations within Takeuchi's control circuit 46 would merely amount to combining prior art elements (Takeuchi's control circuit 46 and Pienemann's various power supply control operations) according to known methods (implementing Takeuchi's control circuit 46 using known circuitry and/or logic to carry out Pienemann's various power supply control operations) to yield predictable results (e.g., implementation of control circuit 46 having the ability to regulate the power supplied to heater 42 and/or heater plates 421 and 422 during the user's draw, and based on the characteristics of that draw). EX1003, ¶253.

(c) Motivation to modify Takeuchi's flavor-generating devices to incorporate removable end caps

As discussed above, Takeuchi discloses that flavor-generating devices 10 and 100 include various components that are designed to be exchangeable, including liquid container 32 (at least as implemented in device 100 (the Figure 8 embodiment)), and the battery used for power source 44. EX1004, 6:15-17, 9:23-26, claim 9. However, Takeuchi does not explicitly disclose how a user could access these internal components to perform the disclosed exchange. As Dr. Deevi explains, a POSA would have thus looked to the prior art for guidance on what modification could be made to Takeuchi such that at least liquid container 32 and power source 44 could be accessed and exchanged. EX1003, ¶254. Pienemann is such a prior art reference.

Pienemann specifically discloses that its inhaling device includes housing 50, which “has a screw-off cap 53 at the front end through which a battery or accumulator 51 can be replaced.” EX1006, 10:18-20. A POSA would have therefore recognized that Pienemann fills in the missing details about how Takeuchi's devices 10 and 100 could be designed to allow access to the internal components such that they can be exchanged/replaced. EX1003, ¶255.

A POSA would have recognized that Pienemann's teachings are applicable to Takeuchi, and that implementing Takeuchi's devices 10 and 100 having Pienemann's removable end cap would have required minimal modifications. In

the combined system, all or a portion of the left side of casing 12 of Takeuchi's device 10 would be implemented as a removable end cap, as taught by Pienemann. Similarly, all or a portion of the left side wall of upper chamber 121 and the left side wall of lower chamber 122 of Takeuchi's device 100 would also be implemented as a removable end cap, as taught by Pienemann. A POSA would have understood that the left side of casing 12, the left side wall of upper chamber 121, and the left side wall of lower chamber 122 could each be removably connected to the remainder of their respective housings via a variety of well-known means, such as by friction fit, interlocking grooves, a latching mechanism, a threaded screw mechanism, or the like. EX1003, ¶256.

Additionally, as Dr. Deevi explains, a POSA would have understood that modifying Takeuchi's flavor-generating devices 10 and 100 to incorporate removable end caps would have numerous added benefits. EX1003, ¶257.

A POSA would not have experienced any unreasonable technical hurdles in implementing these modifications. Additionally, a POSA would have understood that modifying Takeuchi's flavor-generating devices 10 and 100 to incorporate removable end caps would merely amount to combining prior art elements (Takeuchi's devices 10 and 100 and Pienemann's removable end cap) according to known methods (implementing the left side of casing 12, the left side wall of upper chamber 121, and the left side wall of lower chamber 122 such that each is

removably connected to the remainder of their respective housings) to yield predictable results (e.g., a flavor-generating device that offers a user the ability to access internal components such that they can be repaired or exchanged/replaced). EX1003, ¶258.

* * *

In addition to the above, a POSA would have been further motivated to combine Takeuchi and Pienemann because both are in the same general field of aerosol-generating inhaling devices, and address the same problems. EX1004, 1:17-20, 1:34-38, 1:49-51; EX1006, 1:15-18, 2:13-17, 2:29-33, 4:1-5. Accordingly, a POSA would have had a reasonable expectation of success in implementing each of the above three modifications to Takeuchi's devices 10 and 100 based on the teachings of Pienemann. EX1003, ¶259.

2. Claim 6

To the extent that Takeuchi does not itself render obvious that liquid container 32 (at least in the Figure 8 embodiment, the claimed "*cartridge*") is "*circumscribed with a wrapping material*," Pienemann discloses this limitation. EX1003, ¶260.

As discussed in Section IX.B.1.a., Pienemann discloses that substrate portion 1 is removable from a housing of an inhaling device, and contains an "aerosol-forming material **within a wrapper**." EX1006, 3:10-14, Abstract, 9:4-5,

9:26-29, 10:20-28. Thus, a POSA would have understood that Pienemann's substrate portion 1, like Takeuchi's liquid container 32 (at least in the Figure 8 embodiment) is a "*cartridge*." EX1003, ¶261.

As discussed in Section IX.B.1.a., a POSA would have been motivated to implement Takeuchi's liquid container 32 (at least in the Figure 8 embodiment) using Pienemann's "wrapper." EX1003, ¶262.

3. Claim 7

To the extent that Takeuchi does not itself render obvious that liquid container 32 (at least in the Figure 8 embodiment, the claimed "*cartridge*") comprises "*a plastic material*," Pienemann discloses this limitation. Specifically, Pienemann discloses the wrapper used to circumscribe substrate portion 1 (the "*cartridge*") "may consist of ... a **plastic** foil." EX1006, 6:10-15; EX1003, ¶263.

As discussed in Section IX.B.1.a., a POSA would have been motivated to implement Takeuchi's liquid container 32 (at least in the Figure 8 embodiment) using Pienemann's plastic foil wrapper. EX1003, ¶264.

4. Claim 14

To the extent that Takeuchi does not explicitly disclose that control circuit 46 "*regulate[s] the current flow through the electrical resistance heater during the draw on the electrically-powered, aerosol-generating smoking article*," Pienemann discloses this limitation. EX1003, ¶265.

As discussed in Section IX.B.1.b., Pienemann discloses that its puff detector and electronic circuit 32 “*regulate the current flow through the electrical resistance heater during the draw*” through a variety of different control operations, including supplying power to different “zones” along the substrate portion 1, controlling the power “in such a way that the heating power is set to a higher value on the first puff than on the following puffs, as well as interrupting the power supply after a defined puff time to avoid overheating.” EX1006, 11:10-16, claims 17-20; EX1003, ¶266.

As discussed in Section IX.B.1.b., a POSA would have been motivated to implement Takeuchi’s control circuit 46 such that it is capable of carrying out a variety of Pienemann’s power supply regulation operations. EX1003, ¶267.

5. Claim 15

To the extent that Takeuchi does not explicitly disclose that device 10 and/or device 100 includes “*an end cap defined at a second of the two ends*,” Pienemann discloses this limitation. Specifically, Pienemann discloses that its inhaling device includes housing 50, which “has a screw-off cap 53 at the front end through which a battery or accumulator 51 can be replaced.” EX1006, 10:18-20; EX1003, ¶268.

As discussed in Section IX.B.1.c., a POSA would have been motivated to implement Takeuchi’s devices 10 and 100 having Pienemann’s removable end cap. EX1003, ¶269.

6. Claim 18

The Takeuchi-Pienemann combination discloses claim 18 for the same reasons discussed for claim 18 in Ground 1. To the extent that Takeuchi does not explicitly disclose that control circuit 46 “*regulate[s] current flow through the electrical resistance heater during a draw*,” Pienemann discloses this limitation for the same reasons discussed for claim 14. EX1003, ¶270.

7. Claims 19-29

The Takeuchi-Pienemann combination discloses claims 19-29 for the same reasons as discussed for claims 19-29 in Ground 1, respectively. EX1003, ¶271.

C. Ground 3: The combination of Kim and Pienemann renders obvious claims 1-30.

1. A POSA would have been motivated to combine Kim and Pienemann.

A POSA would have been motivated to make three modifications, individually or collectively, to Kim’s cigarette substitute device (1). First, a POSA would have been motivated to modify Kim’s technique of activating the heater to use a puff detector, as taught by Pienemann. Second, a POSA would have been motivated to implement Kim’s porous chip 5 to be removable and to use a wrapper material, as taught by Pienemann. Third, a POSA would have been motivated to modify Kim’s cigarette substitute device (1) to incorporate a removable end cap, as taught by Pienemann. EX1003, ¶272.

(a) Motivation to modify Kim's technique of activating the heater using Pienemann's puff detector and electronic circuit 32

Kim's device (1) includes two metal plates (9-U) and (9-L) that connect when a user presses on the mouth piece (3). EX1007, [0018]-[0019]; EX1003, ¶273.

However, as Dr. Deevi explains, a POSA would have understood that Kim's technique for activating the heater would have been error prone and potentially frustrating to a user. For example, the heater would activate simply if the tip is compressed when the device is in a user's pocket, bag, or held in their hand, frustrating a user. A POSA would have thus looked to the prior art for ways to control the heater that would not be error prone. Pienemann is such a prior art reference. EX1003, ¶274.

As discussed in Section IX.B.1.b. Pienemann discloses a puff detector that performs a variety of different control operations, and in conjunction with electronic circuit 32, adjusts the power supply in response to the user's inhalation. EX1006, 11:10-16, claims 17-20. A POSA would have therefore recognized that Pienemann would have addressed the problems in Kim's device (1). EX1003, ¶275.

Based on these teachings, a POSA would have been motivated to implement Pienemann's puff detector and electronic circuit 32 in Kim's device (1) to control

the power supplied to a heater in response to detection of inhalation by a user.

EX1004, 7:50-56, 6:55-62; EX1006, 11:10-16, claims 17-20. And a POSA would have been motivated to implement Pienemann's puff detector and electronic circuit 32 in Kim's device (1) to carry out a variety of power supply control operations, including setting the heating power "to a higher value on the first puff than on the following puffs," and "interrupt[ing] the power supply after a defined puff time to avoid overheating." EX1003, ¶276.

Thus, a POSA would have recognized that Pienemann's teachings are applicable to Kim, and that implementing Pienemann's various power supply control operations within Kim would have required minimal modifications. EX1003, ¶277. In the combined system, Kim's device (1) would be implemented with the ability to perform Pienemann's various power supply control operations so as to regulate the power supplied to heater (8) during the course of a user's draw, and based on the characteristics of that draw. *Id.*

Additionally, as Dr. Deevi explains, a POSA would have understood that implementing Pienemann's various power supply control operations within Kim would have numerous added benefits. EX1003, ¶278.

A POSA would not have experienced any unreasonable technical hurdles in implementing these modifications. Additionally, a POSA would have understood that implementing Pienemann's power control operations within Kim would have

merely amounted to combining prior art elements (Kim's device (1) and Pienemann's puff detector/ electronic circuit 32) according to known methods (implementing Pienemann's puff detector/ electronic circuit 32 in place of Kim's rudimentary contact-based circuit) to yield predictable results (e.g., implementation of puff detector/ electronic circuit 32 having the ability to regulate the power supplied to heater (8) during the user's draw, and based on the characteristics of that draw). EX1003, ¶279.

(b) Motivation to implement Kim's porous chip to be removable/replaceable and wrapped

As discussed above, Kim's device (1) includes a porous plastic chip (5), which may be "manufactured as a slim plate or a rod with a porous polymeric material, preferably in the form of polymeric fibers, and having absorbed therein the volatile liquid composition of mixture of nicotine and volatile palatability enhancing agents." EX1007, [0015], [0004], [0014], [0017], [0019], Abstract. However, Kim is silent on certain details relating to porous chip (5), including how to install and/or replace the chip, and how to prevent the liquid from seeping out of the chip and into the device. A POSA would have thus looked to the prior art for guidance, including Pienemann. EX1003, ¶280.

As discussed in Section IX.B.1.a., Pienemann discloses substrate portion 1 that contains an "aerosol-forming material within a wrapper." EX1006, 3:10-14, 6:10-15, Abstract. Pienemann explains that substrate portion 1 is configured to be

inserted (and removed) from a housing of the inhaling device. EX1006, 9:4-5, 9:26-29. A POSA would have therefore recognized that Pienemann fills in the missing details about how to implement Kim's liquid containing chip (5). EX1003, ¶281.

Based on the teachings of Pienemann, a POSA would have been motivated to implement Kim's liquid containing chip (5) to be removable and to have a wrapper material. Kim's liquid containing chip (5) and Pienemann's substrate portion 1 are both designed for use within an aerosol-generating inhaling device. *Compare* EX1007, [0004], [0014]-[0015], [0017], [0019], Abstract *with* EX1006, Abstract, 3:10-14; EX1003, ¶282.

Thus, a POSA would have recognized that Pienemann's teachings are applicable to Kim, and that implementing Kim's liquid containing chip (5) to be removable and to have a wrapper material would have required minimal modifications. In the combined system, Kim's liquid containing chip (5) would have been removable/replaceable—e.g., by providing a pivoting flap having a slot for knob 10—and implemented using Pienemann's wrapper material—e.g., formed from either a paper wrapper or plastic wrapper to avoid the liquid from seeping out into the device and potentially contacting the batteries. EX1003, ¶283.

Additionally, as Dr. Deevi explains, a POSA would have understood that implementing Kim's liquid containing chip (5) to be removable/replaceable would have numerous added benefits. EX1003, ¶284.

A POSA would not have experienced any unreasonable technical hurdles in implementing these modifications. Additionally, a POSA would have understood that implementing Kim's liquid containing chip (5) to be removable/replaceable and using a wrapper material would merely amount to combining prior art elements (Kim's liquid containing chip (5) and Pienemann's pivoting flap 52 and wrapping material) according to known methods (implementing Kim's liquid containing chip (5) to be removable/replaceable and using a wrapper material consisting of either paper or plastic) to yield predictable results (e.g., a container having the ability to house an aerosol-generating material without leaking, and being configured to be removably inserted from in an inhaling device). EX1003, ¶285.

(c) Motivation to modify Kim's device to incorporate a removable end cap and mouthpiece

Kim's device (1) includes batteries (6) and a mouth tip (3). EX1007, [0012], [0016], [0018], [0020], Abstract. However, Kim does not explicitly disclose how a user could access the batteries to replace them once they are dead or how to replace the mouthpiece after extended use. A POSA would have thus looked to the prior art for guidance on what modification could be made to Kim (e.g., how batteries

(6) or mouth piece (3) could be accessed and exchanged) and Pienemann is such a reference. EX1003, ¶286.

Pienemann specifically discloses that its inhaling device includes housing 50, which “has a screw-off cap 53 at the front end through which a battery or accumulator 51 can be replaced.” EX1006, 10:18-20. Pienemann also discloses that “mouthpiece 10’ is inserted into a base 42, which is screwed to the housing 40 after insertion of the substrate portion 1’ into a smoking device comprising a housing 40.” EX1006, 10:1-3. A POSA would have therefore recognized that Pienemann fills in the missing details about how Kim’s device (1) could be designed to allow access to the internal components such that they could be exchanged/replaced using a removable mouthpiece and end cap. EX1003, ¶287.

A POSA would have recognized that Pienemann’s teachings are applicable to Kim, and that implementing Kim’s device having Pienemann’s removable end cap and mouthpiece would have required minimal modifications. In the combined system, the LED end of Kim’s device would be implemented as a removable end cap and the mouthpiece would be removable, as taught by Pienemann. A POSA would have understood that the LED end and mouthpiece of Kim’s device could be removably connected to the remainder of housing 2 via a variety of well-known means, such as by friction fit, interlocking grooves, a latching mechanism, a threaded screw mechanism, or the like. EX1003, ¶288.

Additionally, as Dr. Deevi explains, a POSA would have understood that modifying Kim's device to incorporate a removable end cap and mouthpiece would have numerous added benefits. EX1003, ¶289.

A POSA would not have experienced any unreasonable technical hurdles in implementing these modifications. Additionally, a POSA would have understood that modifying Kim's device to incorporate a removable end cap and mouthpiece would merely amount to combining prior art elements (Kim's device and Pienemann's removable end cap and mouthpiece) according to known methods (implementing the LED end and mouthpiece such that they are removably connected to the remainder of housing 2) to yield predictable results (e.g., a flavor-generating device that offers a user the ability to access internal components such that they can be repaired or exchanged/replaced). EX1003, ¶290.

* * *

In addition to the above, a POSA would have been further motivated to combine Kim and Pienemann because both are in the same general field of aerosol-generating inhaling devices, and would have addressed similar problems. EX1007, Abstract, ¶¶[0002], [0003]; EX1006, 1:15-18, 2:13-17, 2:29-33, 4:1-5.

Accordingly, a POSA would have had a reasonable expectation of success in implementing each of the above three modifications to Kim's device (1) based on the teachings of Pienemann. EX1003, ¶291.

2. Claim 1

As noted above, RAI admits that each element of claim 1 was well known and in public use before the '202 patent. Section IX.A.1(a); EX1003, ¶292.

(a) [1.P]

Kim discloses this preamble (e.g, a “**spot-heating cigarette substitute device**, which, in response to an electric power supplies and suction by a user, evaporates nicotine mixture and delivers them to the user”). EX1007, Abstract, [0012]; EX1003, ¶292.

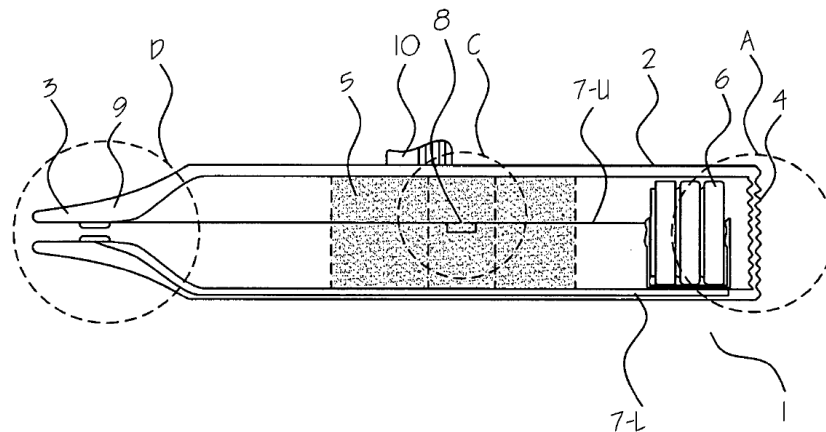


FIG.1

Kim’s device (1) is “*electrically-powered*”: “cigarette substitute device (1) ... is comprised of ... three 3 Volt mini-battiest (sic) (6)” EX1007, [0012], Abstract, [0018], [0019]. Device (1) is further configured to be “*aerosol-generating*”: “in response to an electric power supplies and suction by a user,

evaporates nicotine mixture and delivers them to the user.” EX1007, Abstract, [0019]. EX1003, ¶¶293-95.

(b) [1.a]

Kim discloses this limitation. EX1003, ¶296.

As illustrated in Figure 1, Kim’s device (1) includes “a housing (2) in the form of an elongated tube, a mouth tip (3), an LED (Light Emitting Diode) (4).” EX1007, [0012], [0013], [0016], [0020]; EX1003, ¶297.

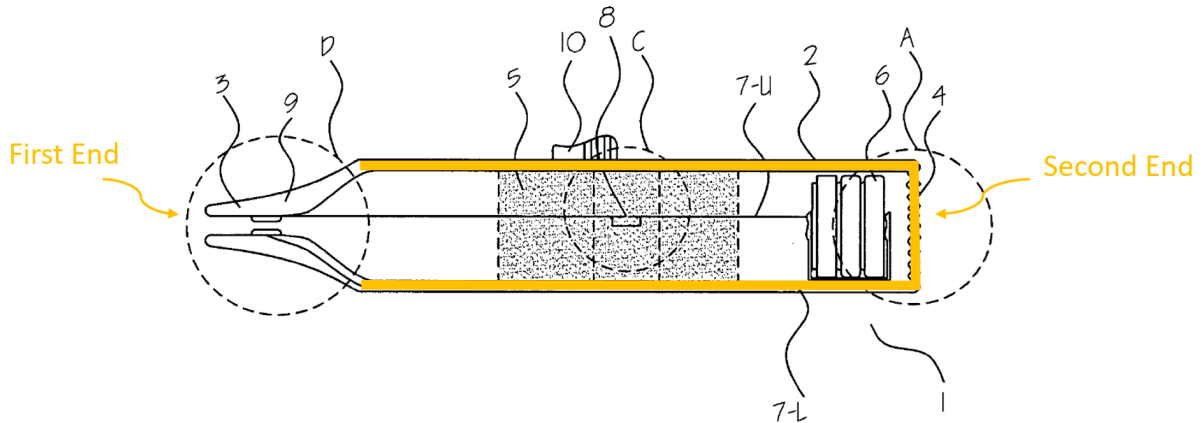


FIG. 1

(c) [1.b]

Kim discloses this limitation. EX1003, ¶299.

As illustrated in Figures 1 and 6, device (1) includes “a mouth tip (3)” defined at one of the two ends. EX1007, [0012], [0016], [0020]; EX1003, ¶300.

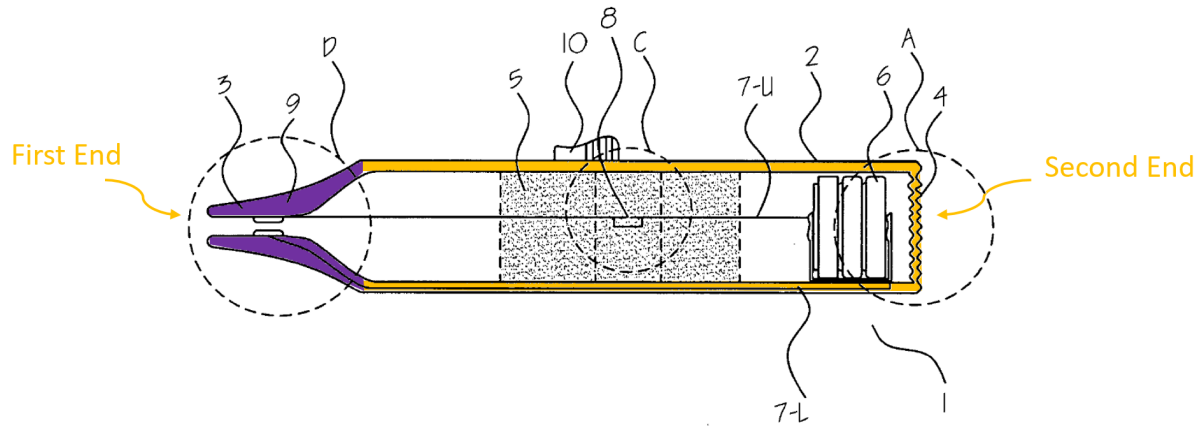


FIG.1

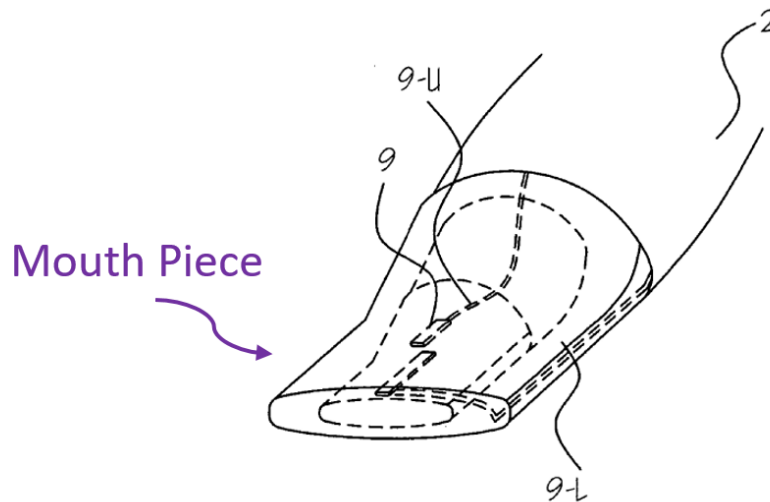


FIG.6

(d) [1.c]

Kim discloses this limitation. EX1003, ¶302.

As discussed for element [1.P], Kim's device (1) includes "*an electrical power source arranged within the outer housing.*" EX1007, [0012], Abstract, [0018], [0019], [0020]; EX1003, ¶303.

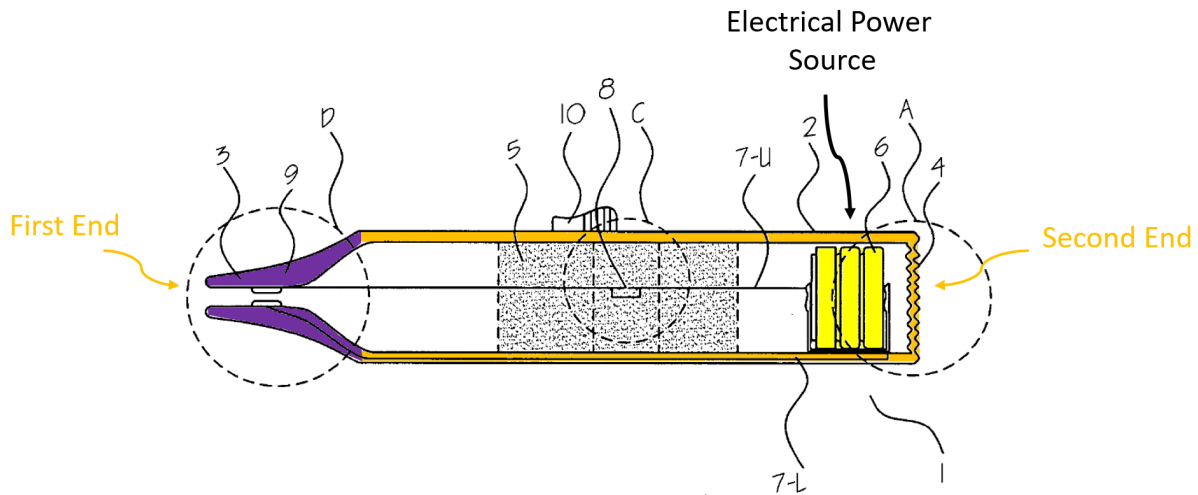


FIG. 1

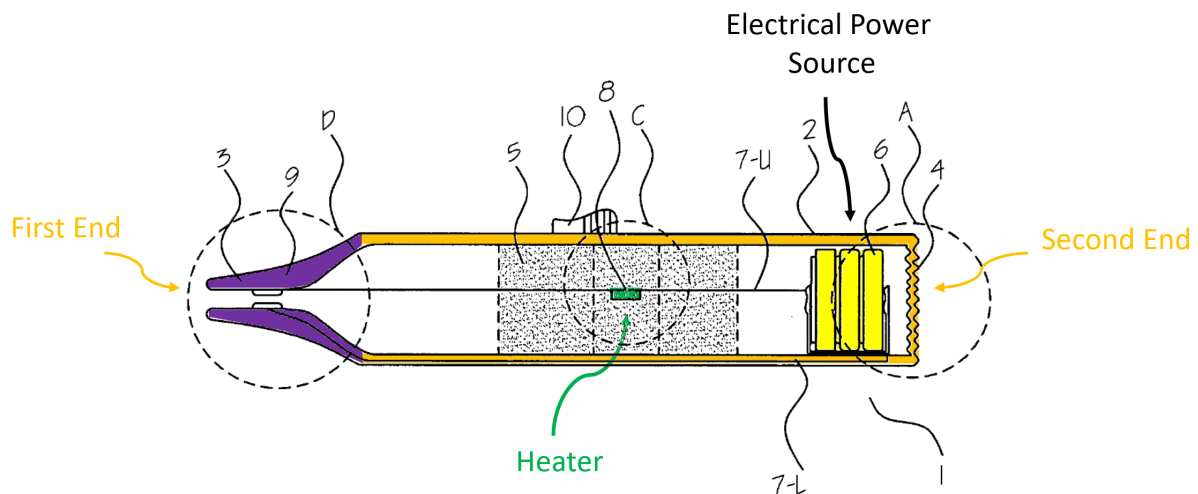
(e) [1.d]

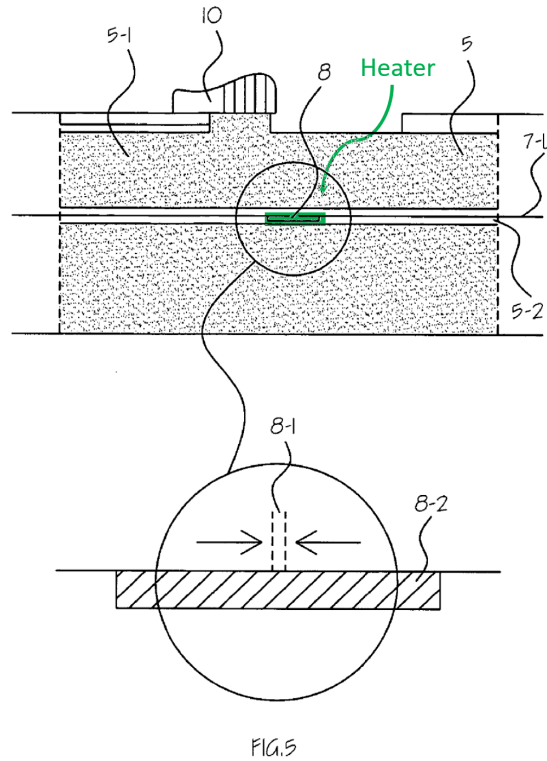
Kim discloses this limitation in two ways. EX1003, ¶305.

First, Kim discloses "an electric shorting connector (8)" that is "comprised of two electric wires (7-U) whose ends are spaced 0.01 mm part (8-1) on a non-conductive ceramic support (8-2) plate of 1.0 mm thickness, 1.0 mm width and 5 mm length." EX1007, [0015], [0018], [0019]; EX1003, ¶306.

Second, Kim discloses an "electric heating coil (8-3) ... instead of the shorting connector." EX1007, [0015], [0020]; EX1003, ¶307.

Both electric shorting connector (8) and electric heating coil (8-3) are
“configured for electrical connection with the electrical power source”: “When a habitual smoker put the cigarette substitute device (1) of the current application between his lips and presses the lipping tip (3) of the device, the two metal plates (9-U) and (9-L) of the on/off electric connector (9) is connected. Then the electric circuit is connected through the electric wires (7-U) and (7-L), three batteries (6), and the red color LED (4).” EX1007, [0018]; EX1003, ¶308.





(f) [1.e]

Kim discloses this limitation. EX1003, ¶310.

Kim discloses a porous chip (5), which may be “manufactured as a slim plate or a rod with a porous polymeric material, preferably in the form of polymeric fibers, and having absorbed therein the **volatile liquid composition of mixture of nicotine and volatile palatability enhancing agents.**”¹¹ EX1007,

¹¹ If it is argued that the claimed “*storage compartment*” requires more than storing a liquid—e.g., that it must be replenishable—the Kim-Pienemann combination would still disclose this limitation because the combination would have included a removable/replaceable porous chip (5) as discussed in Section IX.C.1.b.

[0015], [0004], [0014], [0017], [0019], Abstract. Figures 1 and 4-5 illustrate that the porous chip (5) is within housing (2). EX1007, FIGS. 1, 4-5; EX1003, 311.

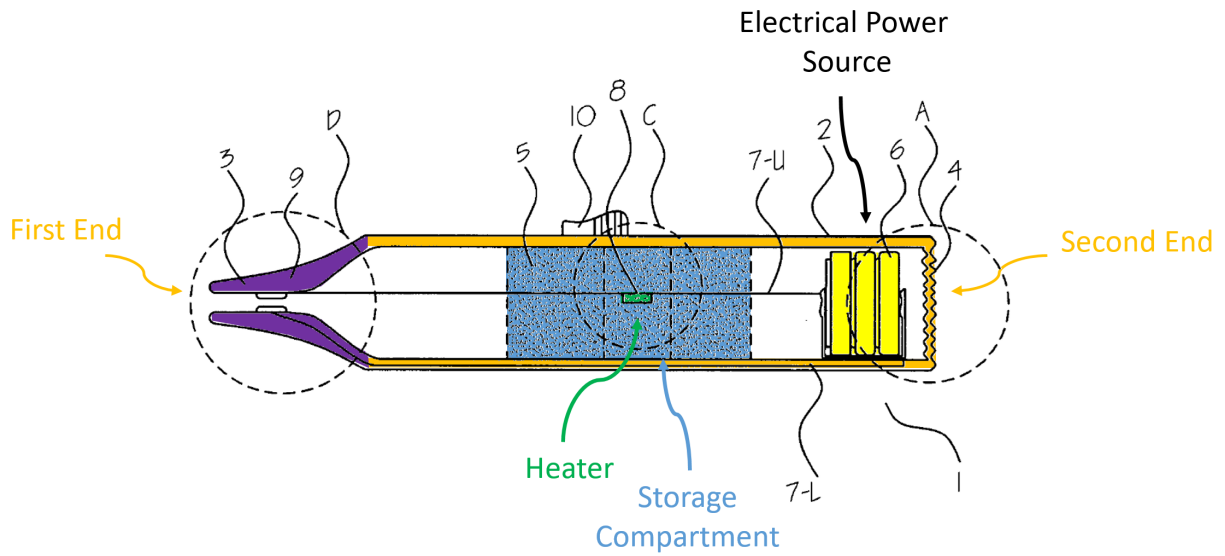


FIG. 1

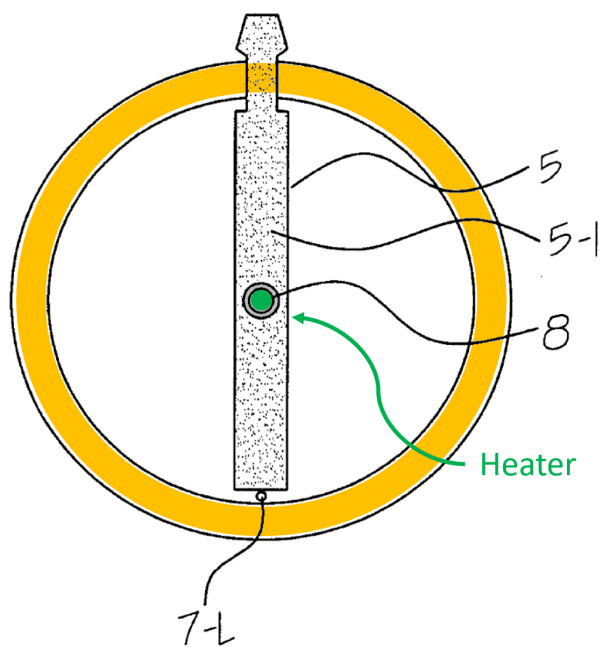


FIG.4

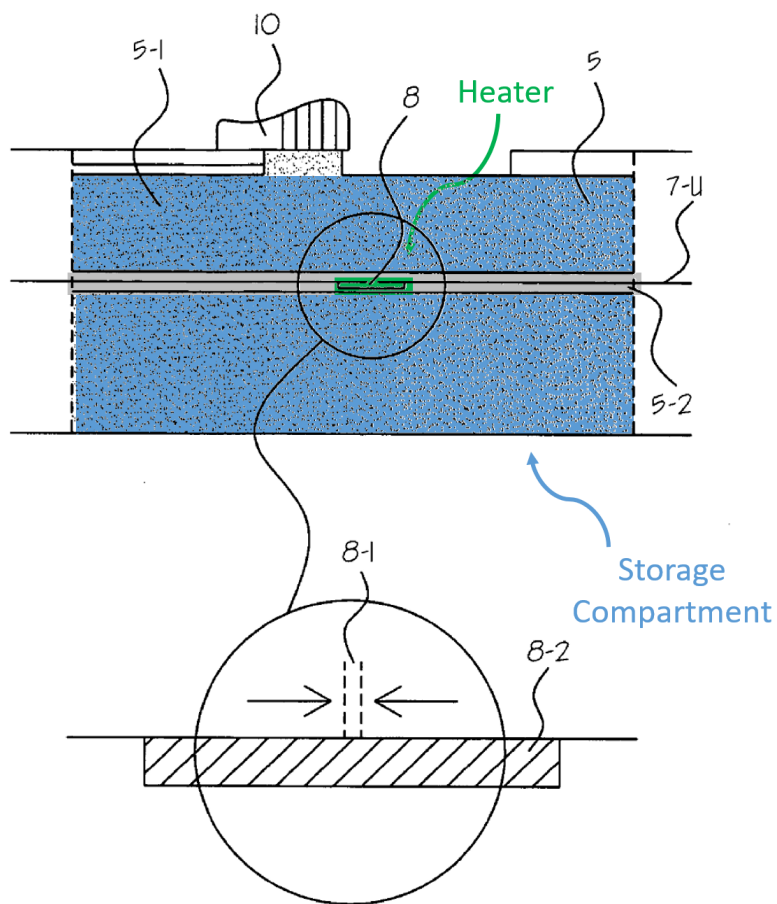
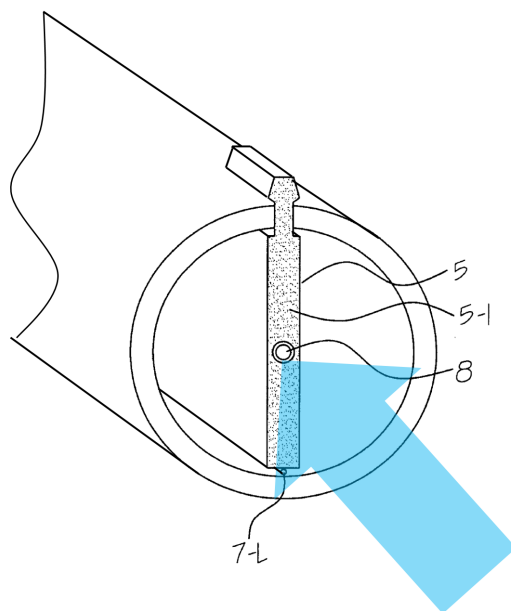


FIG. 5



As discussed in Section VII.E.1, this limitation should be construed to mean “wicked into contact (1) with the heater, or (2) with an area in close proximity to, and exposed to the heat produced by, the heater.” EX1003, ¶312.

Kim’s porous chip (5) similarly causes the liquid aerosol-forming material to be “*wicked into contact with the electrical resistance heater.*” Chip (5) is in the form of either “an electric shorting connector (8)” that is “comprised of two electric wires (7-U)” or “electric heating coil (8-3).” EX1007, [0015]. The “heat from the spark evaporates the mixture of the Nicotine and volatile palatability enhancing agents out of the porous chip (5) from the pores (5-1)” such that “[a]s the smoker puffs, the evaporated mixture is delivered to the smokers mouth by the air stream which comes from the out side through the porous hemi circle (11).” EX1007, [0019]. Initially, the porous chip (5) is placed at the most rearward of the device such that the nicotine mixtures absorbed at the most front side of the porous chip evaporates and is consumed first and as the mixture is consumed, a user slides knob (10) to the front side of the device (2) to make the unevaporized mixture with the sparking spot (8). EX1007, [0019]; EX1003, ¶313.

A POSA would have understood that the porous chip (5), which may be polymeric fibers, thus wicks the aqueous mixture into contact with the heater (8), or with an area in close proximity to, and exposed to the heat produced by, the

heater (8). And a POSA would have understood that heater (8) evaporating the aqueous mixture discloses this limitation. EX1003, ¶¶314-16.

(g) [1.f]

Kim discloses this limitation. EX1003, ¶317.

Kim's device includes a porous hemi-circle (11) air inlet. EX1007, [0013], FIG. 2; EX1003, ¶318.

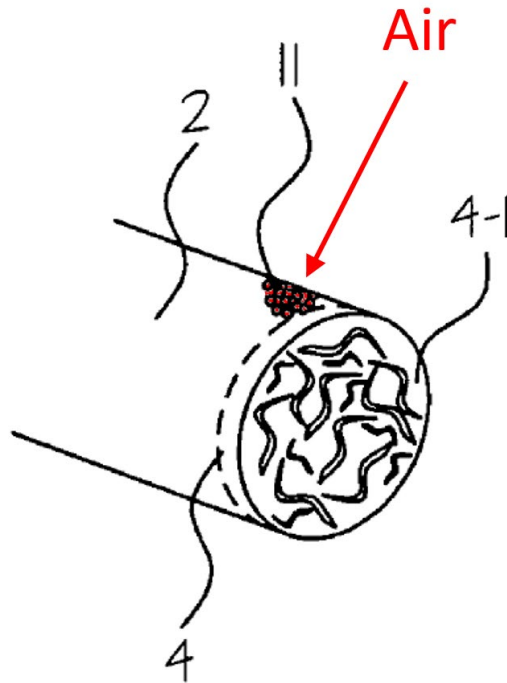
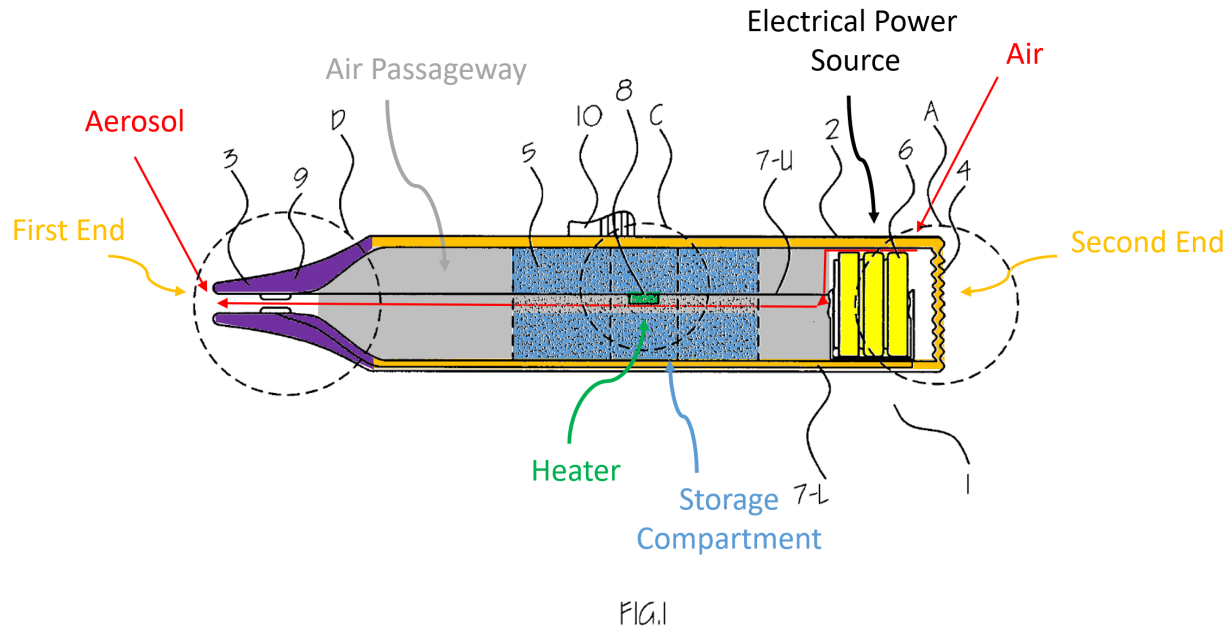


FIG. 2

When the “two metal plates (9-U) and (9-L) of the on/off electric connector (9) [are] connected,” “heat from the spark evaporates the mixture of the Nicotine and volatile palatability enhancing agents out of the porous chip (5) from the pores

(5-1).” EX1007, [0018]-[0019]. Thus, “[a]s the smoker puffs, **the evaporated mixture is delivered to the smokers mouth by the air stream which comes from the out side through the porous hemi circle (11).**” EX1007, [0019]; EX1003, ¶319.



(h) [1.g]

The Kim-Pienemann combination discloses this limitation. EX1003, ¶320.

As explained above, the Kim-Pienemann combination includes a controller configured to activate current flow through the electric circuit and heater (8) in

response to a draw on the electrically-powered, aerosol-generating smoking article.¹² Section IX.C.1.a. EX1003, ¶321.

3. Claim 2

Kim discloses claim 2. Figure 1 illustrates porous chip (5) (“*storage compartment*”) arranged within the housing (2) and proximate the mouth tip (3) (“*mouthpiece*”). EX1007, [0012], FIG. 1. Indeed, Kim teaches positioning the chip (5) proximate the mouth tip (3) via knob (10). EX1007, [0019]; EX1003, ¶322.

¹² If the claimed “*controller*” is found to invoke §112(f), which it should not be, the Kim-Pienemann controller would still disclose and/or render obvious this limitation. Both the claimed “*controller*” and the Kim-Pienemann controller perform the same function in substantially the same way, and produce substantially the same results. EX1003, ¶321; MPEP 2183; *Caterpillar*, 224 F.3d 1374, 56 USPQ2d 1305 (Fed. Cir. 2000); *Electronic Arts*, IPR2016-00928, FWD, 22-23 (P.T.A.B. Oct. 23, 2017).

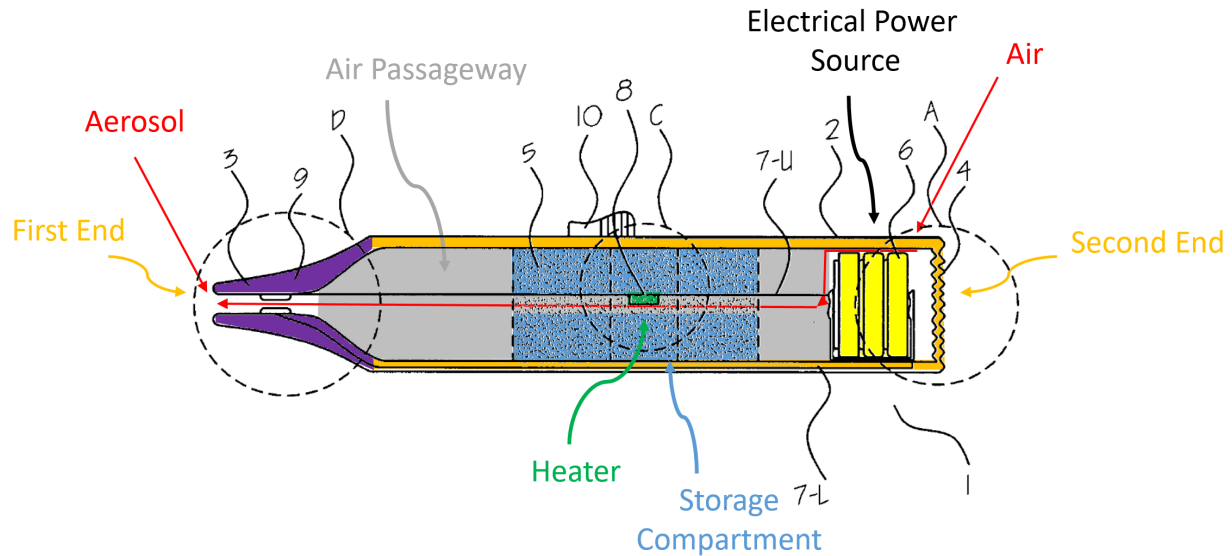


FIG. 1

4. Claim 3

Kim discloses claim 3. Kim's porous chip (5) may be a porous polymeric material in the form of polymeric fibers. EX1007, [0015] *compare to* EX1001, 22:26-32 (describing fibers of polyethylene terephthalate); EX1003, ¶323.

5. Claim 4

The Kim-Pienemann combination discloses claim 4. EX1003, ¶324.

In Kim-Pienemann, “heat from the spark evaporates the mixture ... out of the porous chip (5) from the pores (5-1).” EX1007, [0018]-[0019]. Thus, “[a]s the smoker puffs, the evaporated mixture is delivered to the smokers mouth by the air stream which comes from the out side through the porous hemi circle (11).” EX1007, [0019], Abstract, [0014], [0015]. A POSA would have thus understood that the air passes from the porous hemi circle (11) through the chip (5), where it is

then combined with the mixture of the Nicotine and volatile palatability enhancing agents that has been evaporate by the heater to produce an aerosol which passes to the front edge of the chip and to the mouthpiece. EX1003, ¶325.

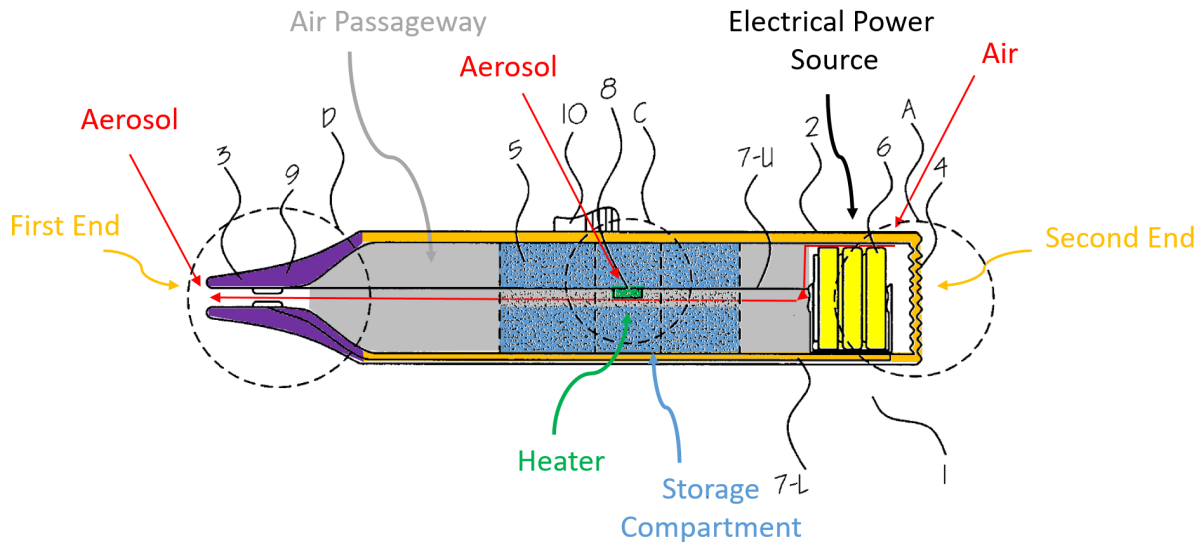


FIG. 1

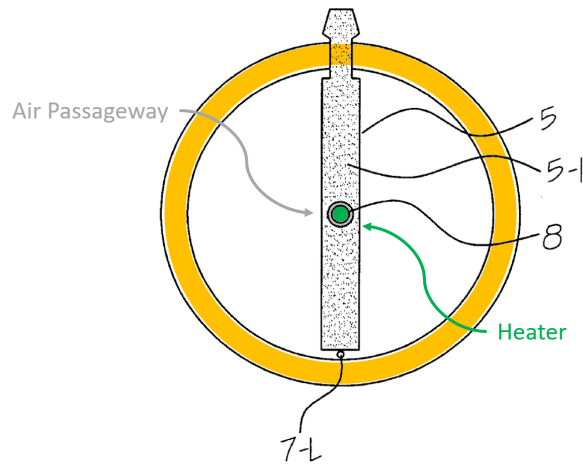


FIG. 4

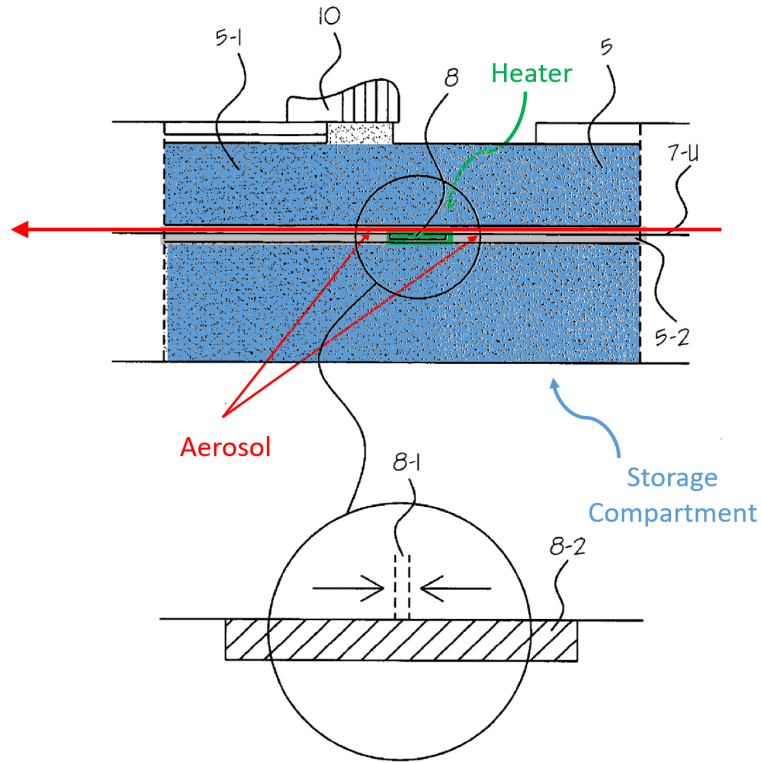
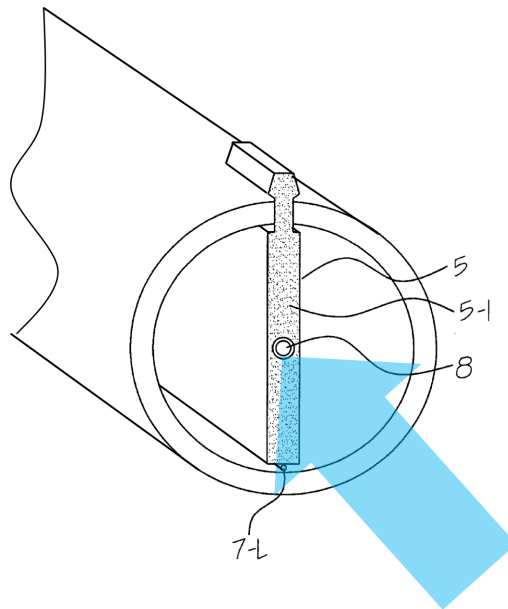


FIG. 5



6. Claim 5

The Kim-Pienemann combination discloses claim 5. EX1003, ¶326.

As noted above, the '202 patent does not explicitly define a “*cartridge*” and merely states that it can be “removed from the outer housing of the device.” EX1001, 5:57-61, 8:17-23. Nonetheless, the Kim-Pienemann combination discloses this limitation because it would have included a removable/replaceable porous chip (5) (Section IX.C.1). EX1003, ¶¶327-28.

7. Claim 6

RAI admits that implementing smoking materials “*circumscribed with a wrapping material*,” as recited in claim 6, was well known and in public use before the '202 patent. EX1001, 18:19-19:24, 25:27-37. Additionally, the Kim-Pienemann combination discloses a wrapping material around the porous chip (5) to prevent leakage. Section IX.c.1; EX1003, ¶329.

8. Claim 7

The Kim-Pienemann combination discloses claim 7. EX1003, ¶330. In particular, Kim states that the chip (5) may be a “porous plastic chip.” EX1007, [0020].

9. Claim 8

Kim discloses claim 8 for the reasons discussed for [1.e]. EX1007, [0004], [0014]-[0015], [0017], [0019], Abstract; EX1003, ¶331.

10. Claim 9

Kim discloses claim 9 for the reasons discussed for [1.d]. For example, the heat from the electric shorting connector or coil (8) “evaporates the mixture ... out

of the porous chip (5) from the pores (5-1).” EX1007, [0019]. A POSA would have understood, or at least found it obvious, for the heater to be arranged in contact with the chip (5). EX1007, [0015]. EX1003, ¶332.

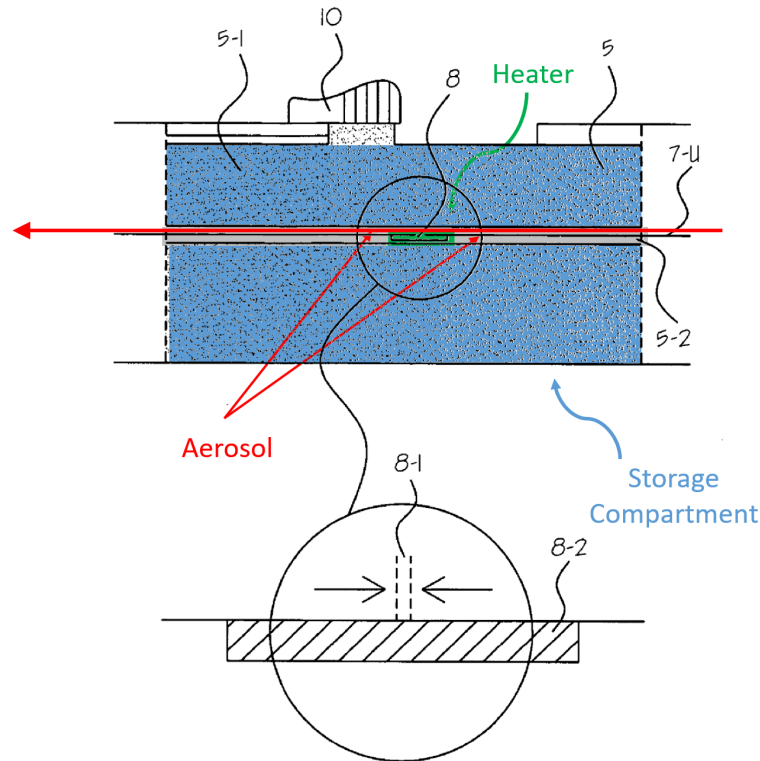


FIG. 5

11. Claim 10

The Kim-Pienemann combination discloses claim 10. EX1003, ¶333.

As noted above, porous chip (5) (e.g., a porous polymeric material and “[d]isposed within the porous chip” is electric shortening connector or coil (8). EX1007, [0015]. The heat from the electric shorting connector or coil (8) “evaporates the mixture ... out of the porous chip (5) from the pores (5-1) therein.”

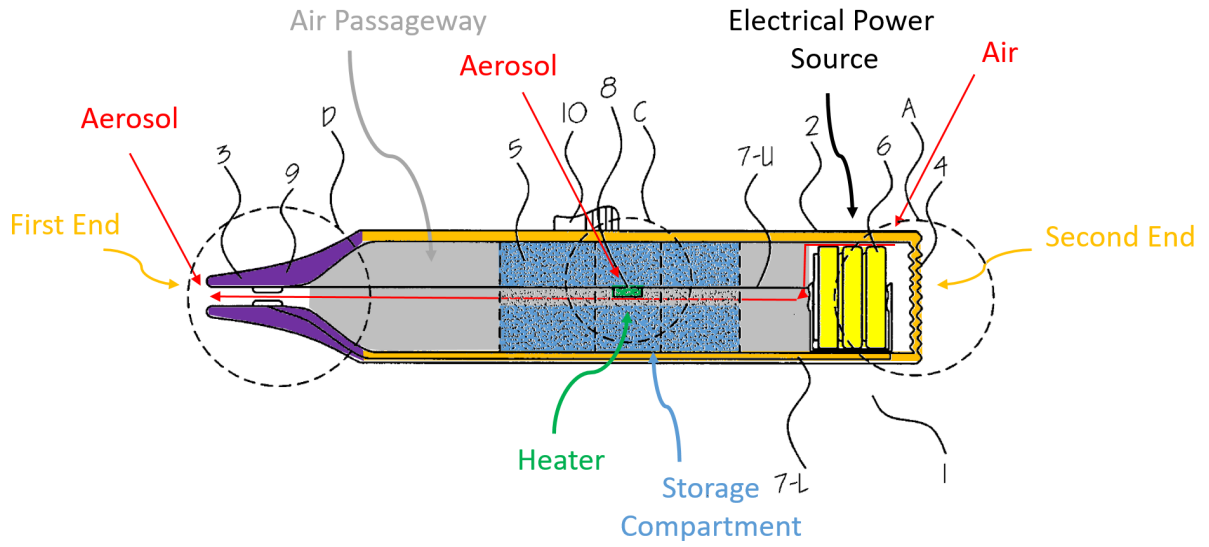
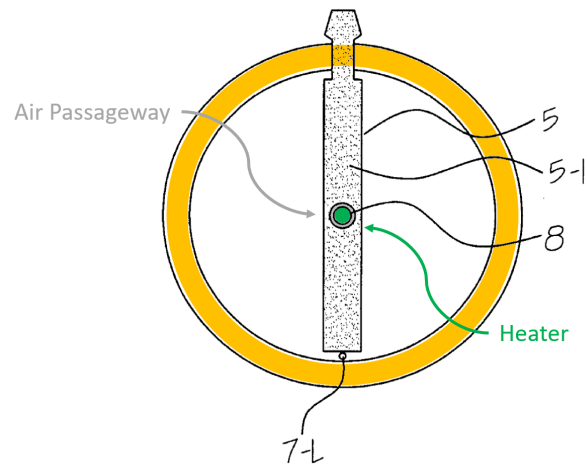
EX1007, [0019]. A POSA would have thus understood that the connector or coil (8) (“*heater*”) is arranged proximate to Kim’s polymeric fibers. EX1003, ¶333.

12. Claim 11

The Kim-Pienemann combination discloses claim 11. As noted above, “[d]isposed within the porous chip (5)” is an electric shortening connector or coil (8). EX1007, [0015]; EX1003, ¶334.

13. Claim 12

The Kim-Pienemann combination discloses claim 12. “Disposed within the porous chip (5)” is an electric shortening connector or coil (8) and the heat therefrom “evaporates the mixture ... out of the porous chip (5) from the pores (5-1).” EX1007, [0015], [0019]. A POSA would have understood that air passes from porous hemi circle (11) through the chip (5) and coil (8) (“*heater*”) to produce the aerosol which then passes to the front edge of the chip and to the mouthpiece. As such, a POSA would have thus understood that the connector or coil (8) (“*heater*”) is configured to allow airflow there through (e.g., via hole 5-2) to mix to form the aerosol. EX1003, ¶335.



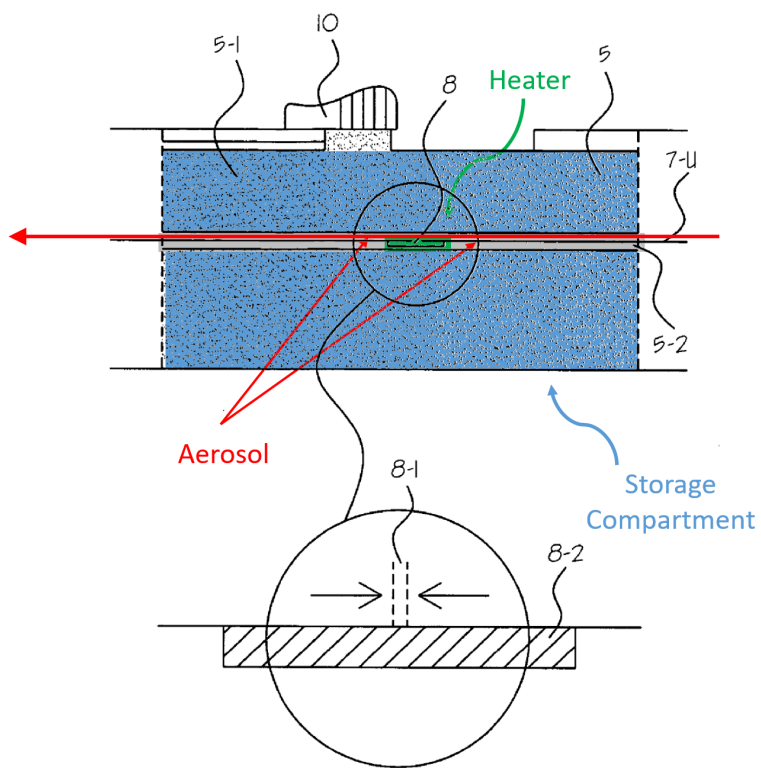
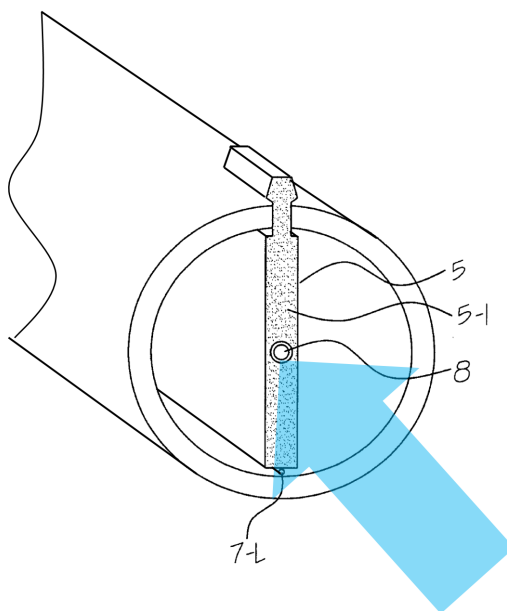


FIG. 5



14. Claim 13

Pienemann discloses that “control can be carried out, for example, via a puff detector, which reacts to the pressure change when the user announces air and causes the power supply to one of the zones 13 or 15 via a switching device.”

EX1006, 11:10-13. For at least the reasons discussed in Section IX.C.1, a POSA would have been motivated to implement Pienemann’s puff detector in Kim. Thus, the Kim-Pienemann combination, which includes the puff detector, discloses this limitation. EX1003, ¶336.

15. Claim 14

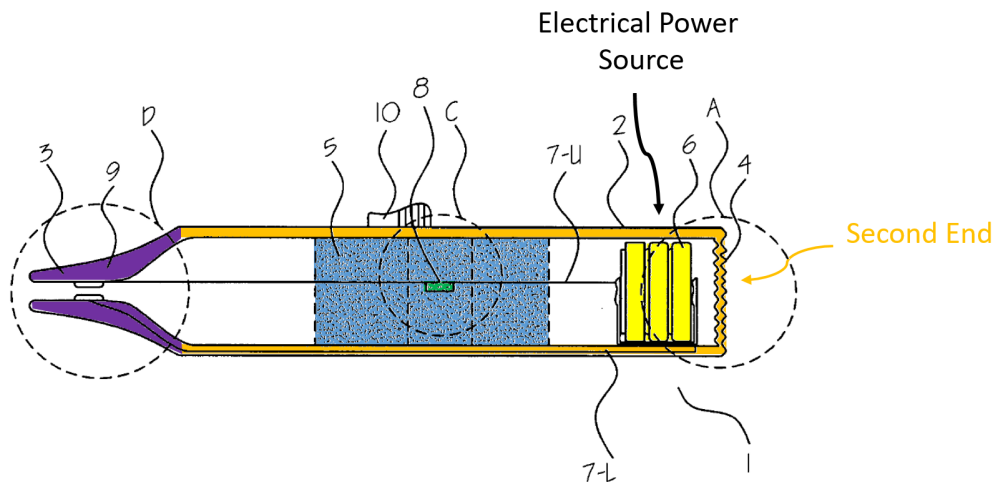
For at least the reasons discussed in Section IX.C.1, and for claim 14 in Ground 2, it would have been obvious to modify Kim to incorporate Pienemann’s puff detector and electronic circuit 32 and control functionality. The Kim-Pienemann combination thus this limitation. EX1003, ¶337.

16. Claim 15

Pienemann discloses that its inhaling device includes housing 50, which “has a screw-off cap 53 at the front end through which a battery or accumulator 51 can be replaced.” EX1006, 10:18-20. For at least the reasons discussed in Section IX.C.1, a POSA would have been motivated to implement the LED end of Kim’s device 1 with Pienemann’s removable end cap. EX1003, ¶338. Therefore, the Kim-Pienemann combination renders obvious claim 15. *Id.*

17. Claim 16

Kim discloses that the device (1) includes batteries (6) that are proximate the LED end, as shown in Figure 1. EX1007, [0018]; FIG. 1. And for at least the reasons discussed in Section IX.C.1, a POSA would have been motivated to implement the LED end of Kim's device 1 having Pienemann's removable end cap. Therefore, the Kim-Pienemann combination renders obvious claim 16. EX1003, ¶339.



18. Claim 17

Kim discloses claim 17. For example, Kim states that the “housing (2) is preferably manufactured of a stiff plastic sheet with a diameter, length and weight which approximate the size of a conventional combustible cigarette, and with the appropriate color and texture, a white paper like look with proper commercial trade

mark on it, to present the same appearance as a conventional combustible cigarette.” EX1007, [0012]; FIG. 1; EX1003, ¶340.

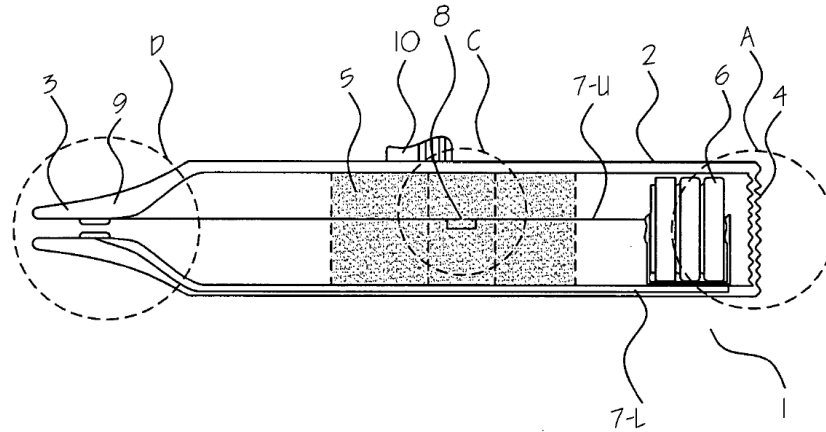


FIG. 1

19. Claim 18

The Kim-Pienemann combination discloses claim 18 for the same reasons discussed for claims 1 and 14. EX1003, ¶341.

Claim 18 is nearly identical to claim 1, but with three minor differences as described. Section IX.A.15. None of these differences impact the patentability analysis set forth above for claim 1. EX1003, ¶342.

To the extent that RAI argues that “*regulat[ing] current flow through the electrical resistance heater during a draw ...*” (as recited in claim 18) is somehow different from “*activat[ing] current flow through the electrical resistance heater in response to a draw*” (as recited in [1.g]), such an argument would be misplaced, as discussed above for claim 14. Nonetheless, even if “*regulat[ing] current flow*

through the electrical resistance heater during a draw” was construed to mean something different, which it should not be, Pienemann would still disclose this limitation for the same reasons discussed in Section IX.C.1 above. EX1003, ¶343.

20. Claim 19

The Kim-Pienemann combination discloses claim 19 for the same reasons as discussed above for claim 13. EX1003, ¶344.

21. Claim 20

The Kim-Pienemann combination discloses claim 20. EX1003, ¶345. The ’202 patent does not provide any guidance for this limitation. Section IX.A.21. Nonetheless, a POSA would have understood that that Pienemann’s puff detector/controller 32 (“*the puff-actuated controller*”) include several different control circuitry components, any number of which could represent the claimed “*additional control circuitry*.” Additionally, switch 23 is electrically coupled to the puff detector, and thus also constitutes “*additional control circuitry*.” EX1006, 11:10-13; EX1003, ¶¶346-47.

As discussed in Section IX.C.1, it would have been obvious to modify Kim to incorporate Pienemann’s puff detector/electronic circuit 32 and control functionality. EX1003, ¶348.

22. Claim 21

The Kim-Pienemann combination discloses claim 21 for the same reasons as discussed for [1.b] and as described above, a POSA would have made Kim's mouthpiece attachable to the outer housing. EX1003, ¶349.

23. Claims 22-30

The Kim-Pienemann combination discloses claims 22-30 for the same reasons as discussed above. EX1003, ¶¶350-58.

Claim 22	<i>See claim 8</i>
Claim 23	<i>See claim 3</i>
Claim 24	<i>See claim 4</i>
Claim 25	<i>See claim 9</i>
Claim 26	<i>See claim 10</i>
Claim 27	<i>See claim 11</i>
Claim 28	<i>See claim 12</i>
Claim 29	<i>See [1.b] & claim 15</i>
Claim 30	<i>See claim 17</i>

D. Ground 4: The combination of Kim, Pienemann, and Susa renders obvious claims 1-30.

1. A POSA would have been motivated to combine Kim, Pienemann, and Susa

To the extent that the term “*smoking article*” is construed to mean “tobacco containing smoking article” (as discussed in Section VII.E.2), then a POSA would have been motivated to incorporate a tobacco component in the Kim-Pienemann device, as taught by Susa. EX1003, ¶359.

Kim’s porous chip (5) has “absorbed therein the volatile liquid composition of mixture of nicotine and volatile palatability enhancing agents.” EX1007, [0015], [0004], [0014], [0017], [0019], Abstract. However, Kim does not provide additional detail regarding the liquid mixture (e.g., how to achieve a desired nicotine concentration or flavor agents, or a source of the nicotine). As Dr. Deevi explains, a POSA would have thus looked to the prior art for guidance on this issue. Susa is such a prior art reference. EX1003, ¶360.

Like Kim, Susa discloses a container 32 for storing a liquid material 36 for generating a flavor to be inhaled but further explains that “a tobacco component, e.g., a tobacco extracted component or a tobacco smoke condensate component, may be contained in the liquid material 36.” EX1018, 6:18-25. A POSA would have therefore recognized that Susa fills in additional details about the volatile liquid composition absorbed into Kim’s liquid containing chip (5) (e.g., nicotine

concertation and/or flavor agents, and nicotine source). And based on the teachings of Susa, it would have been obvious for the volatile liquid composition absorbed into Kim's liquid containing chip (5) to contain a tobacco component to supply the nicotine in the mixture. EX1003, ¶361.

A POSA would not have experienced any unreasonable technical hurdles in combining Susa's teaching of a liquid containing a tobacco component with Kim to achieve nicotine in the volatile liquid composition. Indeed, a POSA would have known from Kim alone that the nicotine in the volatile liquid composition could come from tobacco. A POSA would have understood that implementing Kim's liquid containing chip (5) with a tobacco component would merely amount to combining prior art elements (Kim's liquid containing chip (5) and Susa's teaching of a liquid containing a tobacco component for nicotine) according to known methods (including a tobacco component for nicotine in Kim's volatile liquid composition) to yield predictable results (e.g., a liquid containing nicotine and tobacco). EX1003, ¶362.

2. Claim 1

(a) [1.P]

To the extent that the term "*smoking article*" is construed to mean "tobacco containing smoking article" (as discussed in Section VII.E.2), the Kim, Pinemann, and Susa combination discloses this preamble because it would have been obvious

for Kim’s volatile liquid composition to include a tobacco component as taught by Susa. Section IX.D.1; EX1003, ¶363.

(b) [1.a]-[1.g]

The Kim, Pienemann, and Susa combination disclose the remainder of claim 1 for the same reasons discussed for claim 1 in Ground 3. EX1003, ¶364.

3. Claims 2-30

The Kim, Pienemann, and Susa combination disclose the remainder of claims 2-30 for the same reasons discussed for claim 1, and for claims 2-30 in Ground 3, respectively. EX1003, ¶365.

E. Ground 5: Claims 1-30 lack written description support.

All claims of the ’202 patent are invalid for lack of written-description support in the specification. Section 112(a) contains a written description requirement separate from the enablement requirement. *Ariad*, 598 F.3d at 1344. Neither the original specification of the ’202 patent nor any parent/grandparent thereto (all of which have identical specifications, and thus are subject to the same written-description analysis below) contains written-description support for a “smoking article” that does not contain tobacco. *Compare* EX1001 *with* EX1032-1039.

The title of the ’202 patent is “**TOBACCO-CONTAINING SMOKING ARTICLE.**” EX1001, (54). The “Summary of the Invention” section of the specification defines the invention accordingly: “the present invention relates to

smoking articles for **providing tobacco enjoyment.**” EX1001, 4:46-8:38; *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1308 (Fed. Cir. 2007) (“When a patent . . . describes the features of the ‘present invention’ as a whole, this description limits the scope of the invention.”). Every figure depicts an article for smoking a (tobacco) cigarette. EX1001, FIGS. 1-5. Every single embodiment disclosed relates to smoking tobacco leaves or tobacco leaf extracts. EX1001, Abstract (“The smoking article possesses **at least one form of tobacco**”), 1:28-29, 4:48-67, 5:14-19, 5:41-43, 5:57-58, 5:62-63, 6:15-19, 6:44-47, 6:62-63, 7:43-44, 8:66-9:9, 9:28-44, 9:48-52, 11:4-6, 17:53-19:24, 21:14-45, 22:14-15, 23:15-56, 25:1-27:11, 26:6-19, 27:45-29:40, 30:24-37. In fact, the ’202 patent explicitly states that its lone (alleged) point of novelty was to replace a known, publicly available cartridge that contained an aerosol-forming liquid with a cartridge containing both aerosol-forming liquid **and tobacco.** *Id.*, 22:9-23:34 (“Representative types of cartridges are of the type incorporated within a device available as Ruyan Atomizing Electronic Cigarette from Ruyan SBT Technology and Development Co., Ltd. **can be modified by adding tobacco extract thereto,** or by removing at least a portion of the substrate and nicotine-containing material incorporated therein and **replacing that removed portion with a tobacco composition**”). EX1003, ¶368.

There is no suggestion anywhere in the specification that the device claimed and described could be used with any substance that does not contain tobacco, nor that such a tobacco-free device would be “the present invention.” EX1001, 4:48-51. In fact, the specification specifically excludes embodiments that would be “essentially pure nicotine, extracts composed predominantly of nicotine, or formulations composed predominantly of nicotine.” EX1001, 23:30-34 (stating that such arrangements “are *not* incorporated within the liquid storage container 85 or elsewhere within the smoking article.”), 12:53-59. EX1003, ¶369.

Where a patent describes an invention in terms of a single embodiment (here, *tobacco-containing* smoking articles) it fails to provide written description support for alternate embodiments (here, a tobacco-free embodiment). *LizardTech v. Earth Resource Mapping*, 424 F.3d 1336, 1346 (Fed. Cir. 2005). Similarly, where an original specification describes the invention in the context of a particular element, the written description fails to support later claim sets that seek to eliminate that element. *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1159-60 (Fed. Cir. 1998) (finding that a specification that described the invention in terms of a particular limitation (there, a conical shape) did not support more generic claims (there, shapes other than conical); *Cf. also In re Float’N’Grill LLC*, Case No. 22-1438, Slip Op. at 10-12 (Fed. Cir. July 12, 2023) (finding a lack of written description support in the context of a reissue patent). An express statement of

criticality (here, the criticality of tobacco) is not necessary, as criticality is assessed in the context of the disclosure as a whole. *Float 'N' Grill*, Slip Op. at 11.

Furthermore, whether one of skill in the art would know that a tobacco-free version of the described invention was possible is inapposite. *Id.*

Under such circumstances, the Federal Circuit has found that “claims may be no broader than the supporting disclosure,” and are invalid if they attempt to expand beyond what is described as the invention. *Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473, 1479-81 (Fed. Cir. 1998) (invalidating claims for lack of written description where the patent described sofas with recliner controls located on a central console but the claims read on sofas with recliner controls located elsewhere); *ICU Medical, Inc. v. Alaris Medical Systems, Inc.*, 558 F.3d 1368, 1378-1379 (2009) (finding claims that did not require a valve with a spike to lack written description support when the only disclosed embodiment described a medical valves with spikes). The applicant’s attempt here to expand the scope of its exclusive right beyond the supporting disclosure is even more egregious here than in *Gentry Gallery*, and are akin to the claims invalidated in *ICU Medical*.

Here, the applicant prosecuted an entire family of tobacco-related applications, with tobacco-limited claims. In the application for the ’202 patent, the applicant deleted all tobacco limitations from the original claims, without submitting any remarks explaining the impact of that change. EX1002, 0008-10,

0055-59 (deleting “tobacco-containing” limitations from all claims). After those claims issued, RAI asserted the claims against tobacco-free vaporizer devices and vaporizer manufacturers. *In re Certain Disposable Vaporizer Devices*, Inv. No. 337-TA-1410 Decision on Institution (U.S.I.T.C. July 17, 2024). RAI has clearly expanded the scope of its claim language beyond what the specification supports.¹³ Accordingly, the claims are invalid.

¹³ To the extent that RAI argues that U.S. Patent No. 11,785,978 (“the ’978 patent”) provides written-description support for the claims of the ’202 patent, such an argument would be flawed. Even though the originally-filed claims of the ’978 patent (which recited a “tobacco-containing ... smoking article”) were canceled during prosecution and replaced with a new claim set devoid of any mention of tobacco, the specification of the ’978 patent still does not provide written description support for those new claims, and does not contain *any* disclosure explaining *how* such a tobacco-free device could be implemented. Thus, the ’978 patent similarly lacks written-description support for a tobacco-free device.

X. DISCRETIONARY CONSIDERATIONS UNDER 324(A) AND 325(D) STRONGLY FAVOR INSTITUTION.

A. The Petition should not be denied under *Fintiv*.

The '202 patent is not currently, and has never been asserted in a district court litigation. Instead, the '202 patent has only ever been asserted in *Certain Disposable Vaporizer Devices* (Inv. No. 337-TA-1410), which is currently pending before the International Trade Commission. As explained in the June 21, 2022 Memorandum: Interim Procedure for Discretionary Denials in AIA Post Grant Proceedings with Parallel District Court Litigation ("June 2022 Memo"), "[t]he PTAB will not discretionarily deny petitions based on applying *Fintiv* to a parallel ITC proceeding." June 2022 Memo, 7, 9. Therefore, the instant Petition should not be denied under *Fintiv*. *Unified Patents, LLC v. Causam Enterprises, Inc.*, IPR2022-00404, Paper 10, 3-4 ("we decline to exercise discretion to deny institution under *Fintiv*" based on the parallel ITC proceeding).

B. The *Advanced Bionics* two-part framework strongly favors institution.

Applying the two-part framework from *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH* demonstrates that denial under §325(d) is not appropriate. IPR2019-01469, Paper 6 at 8-9 (P.T.A.B. Feb. 13, 2020) (precedential). Under part one, the same or substantially the same art or arguments were *not* previously presented to the Office, ending the inquiry in favor of institution.

As discussed above, even though Takeuchi, Kim, and Pienemann are listed on the face of the '202 patent, the Examiner was not afforded the opportunity to seriously consider any of these references, as they were buried in a massive IDS dump of over 1,000 references by RAI during prosecution. Following the submission of this unwieldy number of references, the Examiner stated: if applicant is “aware of any particular reference or portion of a reference in the list which the examiner should take pay [sic] particular attention to it is requested that it be specifically pointed out in response to this Office Action.” EX1002, 0174. However, Applicant ignored this request. As a result, none of these references (let alone in the combinations presented herein) were applied in any office action during prosecution of the '202 patent. In fact, the Examiner did not issue a single art-based rejection.

The “new, noncumulative prior art asserted in the Petition” therefore strongly favors institution of IPR. *Oticon Medical AB v. Cochlear Ltd.*, IPR2019-00975, Paper 15 at 20 (P.T.A.B. Oct. 16, 2019) (§§II.B and II.C precedential). Should RAI attempt to analogize the art and arguments presented herein to any art or arguments previously considered during prosecution of any related application(s), Petitioner reserves the right to respond.

XI. CONCLUSION

For the reasons above, post-grant review and cancellation of claims 1-30 is requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX PLLC

/Ryan C. Richardson, Reg. No. 67,254/

Ryan C. Richardson (Reg. No. 67,254)
Attorney for Petitioner Ecto World, LLC and
SV3, LLC

Date: August 13, 2024

1101 K Street, N.W., 10th Floor
Washington, D.C. 20005
(202) 371-2600

XII. CLAIMS APPENDIX

1. **[1.P]** An electrically-powered, aerosol-generating smoking article comprising:

[1.a] an outer housing having two ends;

[1.b] a mouthpiece defined at one of the two ends;

[1.c] an electrical power source arranged within the outer housing;

[1.d] an electrical resistance heater positioned within the outer housing, the electrical resistance heater being configured for electrical connection with the electrical power source

[1.e] a storage compartment defined within the outer housing, the storage compartment being configured for storage of a liquid aerosol-forming material and being arranged such that the liquid aerosol-forming material can be wicked into contact with the electrical resistance heater to volatilize the liquid aerosol-forming material;

[1.f] an air passageway through at least a portion of the outer housing, the air passageway being arranged so that air drawn into the outer housing combines with volatilized liquid aerosol-forming material to produce an aerosol that can be drawn into the mouth of a user of the electrically-powered, aerosol-generating smoking article through the mouthpiece; and

[1.g] a controller configured to activate current flow through the electrical resistance heater in response to a draw on the electrically-powered, aerosol-generating smoking article.

2. The electrically-powered, aerosol-generating smoking article of claim 1, wherein the storage compartment is arranged within the housing proximate the mouthpiece.

3. The electrically-powered, aerosol-generating smoking article of claim 1, wherein the storage compartment comprises a fibrous substrate.

4. The electrically-powered, aerosol-generating smoking article of claim 1, wherein the aerosol that is produced passes at least partially through the storage compartment before exiting through the mouthpiece.

5. The electrically-powered, aerosol-generating smoking article of claim 1, wherein the storage compartment is configured as a cartridge.

6. The electrically-powered, aerosol-generating smoking article of claim 5, wherein the cartridge is circumscribed with a wrapping material.

7. The electrically-powered, aerosol-generating smoking article of claim 5, wherein the cartridge comprises a plastic material.

8. The electrically-powered, aerosol-generating smoking article of claim 1, wherein the storage compartment is configured as a container for holding liquid.

9. The electrically-powered, aerosol-generating smoking article of claim 1, wherein the electrical resistance heater is arranged in contact with the storage compartment.

10. The electrically-powered, aerosol-generating smoking article of claim 1, wherein the electrical resistance heater is arranged proximate to an absorbent wicking material configured for transferring the liquid aerosol-forming material to the electrical resistance heater.

11. The electrically-powered, aerosol-generating smoking article of claim 1, wherein at least a portion of the electrical resistance heater extends into the storage compartment.

12. The electrically-powered, aerosol-generating smoking article of claim 1, wherein the electrical resistance heater is configured to allow airflow therethrough.

13. The electrically-powered, aerosol-generating smoking article of claim 1, further comprising a sensor adapted for sensing the draw by a user on the electrically-powered, aerosol-generating smoking article.

14. The electrically-powered, aerosol-generating smoking article of claim 1, wherein the controller is configured to regulate the current flow through the electrical resistance heater during the draw on the electrically-powered, aerosol-generating smoking article.

15. The electrically-powered, aerosol-generating smoking article of claim 1, further comprising an end cap defined at a second of the two ends.

16. The electrically-powered, aerosol-generating smoking article of claim 15, wherein the electrical power source is arranged within the housing proximate the end cap.

17. The electrically-powered, aerosol-generating smoking article of claim 1, wherein the electrically-powered, aerosol-generating smoking article is generally rod-shaped.

18. **[18.P]** An electrically-powered, aerosol-generating smoking article comprising:

[18.a] an outer housing;

[18.b] an electrical power source arranged within the outer housing;

[18.c] an electrical resistance heater positioned within the outer housing, the electrical resistance heater being configured for electrical connection with the electrical power source

[18.d] a liquid storage arranged within the outer housing such that liquid aerosol-forming material in the liquid storage can be wicked into contact with the electrical resistance heater to volatilize the liquid aerosol-forming material;

[18.e] an air passageway through at least a portion of the outer housing, the air passageway being arranged so that air drawn into the outer housing combines with volatilized liquid aerosol-forming material to produce an aerosol that can be drawn into the mouth of a user of the electrically-powered, aerosol-generating smoking article; and

[18.f] a puff-actuated controller configured to regulate current flow through the electrical resistance heater in response to a draw on the electrically-powered, aerosol-generating smoking article.

19. The electrically-powered, aerosol-generating smoking article of claim 18, wherein the puff-actuated controller comprises a sensor that senses the draw on the electrically-powered, aerosol-generating smoking article.

20. The electrically-powered, aerosol-generating smoking article of claim 18, wherein the puff-actuated controller comprises additional control circuitry.

21. The electrically-powered, aerosol-generating smoking article of claim 18, further comprising a mouthpiece attached to the outer housing.

22. The electrically-powered, aerosol-generating smoking article of claim 18, wherein the liquid storage is configured as a container in which the liquid aerosol-forming material can be stored.

23. The electrically-powered, aerosol-generating smoking article of claim 18, wherein the liquid storage is configured as an absorbent fibrous material.

24. The electrically-powered, aerosol-generating smoking article of claim 18, wherein the aerosol that is produced passes at least partially through the storage before exiting through the electrically-powered, aerosol-generating smoking article.

25. The electrically-powered, aerosol-generating smoking article of claim 18, wherein the electrical resistance heater is arranged in contact with the liquid storage.

26. The electrically-powered, aerosol-generating smoking article of claim 18, wherein the electrical resistance heater is arranged proximate to an absorbent wicking material configured for transferring the liquid aerosol-forming material to the electrical resistance heater.

27. The electrically-powered, aerosol-generating smoking article of claim 18, wherein at least a portion of the electrical resistance heater extends into the liquid storage.

28. The electrically-powered, aerosol-generating smoking article of claim 18, wherein the electrical resistance heater is configured to allow airflow therethrough.

29. The electrically-powered, aerosol-generating smoking article of claim 18, wherein the outer housing comprises a mouthpiece defined at a first end thereof and an end cap defined at a second end thereof.

30. The electrically-powered, aerosol-generating smoking article of claim 18, wherein the electrically-powered, aerosol-generating smoking article is generally rod-shaped.

**CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATION,
TYPEFACE REQUIREMENTS, AND TYPE STYLE REQUIREMENTS**

1. This Petition complies with the type-volume limitation of 18,700 words, comprising 18,699 words, excluding the parts exempted by 37 C.F.R. § 42.24(a).

2. This Petition complies with the general format requirements of 37 C.F.R. § 42.6(a) and has been prepared using Microsoft® Word 2016 in 14-point Times New Roman.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX PLLC

/Ryan C. Richardson, Reg. No. 67,254/

Ryan C. Richardson (Reg. No. 67,254)
Attorney for Petitioner Ecto World, LLC and
SV3, LLC

Date: August 13, 2024

1101 K Street, N.W., 10th Floor
Washington, D.C. 20005
(202) 371-2600

CERTIFICATION OF SERVICE (37 C.F.R. §§ 42.6(e), 42.105(a))

The undersigned hereby certifies that on August 13, 2024, true and correct copies of the foregoing **PETITION FOR POST-GRANT REVIEW OF U.S. PATENT NO. 11,925,202** and all associated exhibits were served in their entirety on the following parties via U.S.P.S. Priority Mail Express®:

WOMBLE BOND DICKINSON (US) LLP
ATTN: IP DOCKETING
P.O. Box 570489
ATLANTA, GA 30357-0037
UNITED STATES
Correspondence Address of Record for U.S. Patent No. 11,925,202

David M. Maiorana
Jones Day
North Point, 901 Lakeside Avenue
Cleveland, Ohio 44114-1190
Additional Address Known to Petitioner as Likely to Effect Service

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX PLLC

/Ryan C. Richardson, Reg. No. 67,254/

Ryan C. Richardson (Reg. No. 67,254)
Attorney for Petitioner Ecto World, LLC and
SV3, LLC

Date: August 13, 2024

1101 K Street, N.W., 10th Floor
Washington, D.C. 20005
(202) 371-2600