

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NJOY, INC., CB DISTRIBUTORS, INC.,
DR DISTRIBUTORS, LLC, FIN BRANDING GROUP, LLC,
ELECTRONIC CIGARETTES INTERNATIONAL GROUP, LTD.
f/k/a VICTORY ELECTRONIC CIGARETTES CORPORATION;
and LOGIC TECHNOLOGY DEVELOPMENT LLC,
Petitioner,

v.

FONTEM HOLDINGS 1 B.V.,
Patent Owner.

Case IPR2015-01302
Patent 8,893,726 B2

Before JOSIAH C. COCKS, DONNA M. PRAISS, and
JO-ANNE M. KOKOSKI, *Administrative Patent Judges*.

PRAISS, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

NJOY, Inc., CB Distributors, Inc., DR Distributors, LLC, FIN Branding Group, LLC, Electronic Cigarettes International Group, Ltd. f/k/a Victory Electronic Cigarettes Corporation, and Logic Technology Development LLC (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–4, 8–10, and 12–17 of U.S. Patent No. 8,893,726 B2 (Ex. 1001, “the ’726 patent”). Paper 2 (“Pet.”). Fontem Holdings 1 B.V. (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 6 (“Prelim. Resp.”).

We have jurisdiction under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Upon considering the Petition and Preliminary Response, we determine that Petitioner has not established a reasonable likelihood that it would prevail in showing the unpatentability of claims 1–4, 8–10, and 12–17. Accordingly, we decline to institute an *inter partes* review of those claims.

A. *Related Proceedings*

Petitioner identifies as related matters the following cases filed by the Patent Owner in the United States District Court for the Central District of California against the indicated defendants: (i) Ballantyne Brands, LLC, Nos. 2:14-cv-09269, 2:14-cv-08157, and 2:14-cv-01652; (ii) VMR Products, LLC, Nos. 2:14-cv-09273, 2:14-cv-08161, and 2:14-cv-01655; (iii) Spark Industries, LLC, Nos. 2:14-cv-09270, 2:14-cv-08158, and 2:14-cv-01653; (iv) Vapor Corp., Nos. 2:14-cv-09267, 2:14-cv-08155, and 2:14-cv-01650; (v) CB Distributors, Inc. and DR Distributors, LLC, Nos. 2:14-cv-09266,

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2:14-cv-08154, and 2:14-cv-01649; (vi) LOEC, Inc., Nos. 2:14-cv-09265, 2:14-cv-08149, and 2:14-cv-01648; (vii) Logic Technology Development LLC, Nos. 2:14-cv-09271, 2:14-cv-08160, and 2:14-cv-01654; (viii) NJOY, Inc., Nos. 2:14-cv-09263, 2:14-cv-08144, and 2:14-cv-01645; (ix) FIN Branding Group, LLC and Electronic Cigarettes Int'l Group Ltd., Nos. 2:14-cv-09268, 2:14-cv-08156, and 2:14-cv-01651. Pet. 4–5.

Petitioner concurrently filed petitions for *inter partes* review of related patents in IPR2015-01299 (US 8,910,641 B2), IPR2015-01301 (US 8,863,752 B2), and IPR2015-01304 (US 8,899,239 B2). *Id.* at 5. Petitioner also identifies the following petitions for *inter partes* review of related patents: IPR2013-00387 (US 8,156,944 B2), IPR2014-01300 (US 8,490,628 B2), IPR2014-01289 (US 8,393,331 B2), IPR2014-01529 (US 8,689,805 B2), IPR2015-00098 (US 8,375,957 B2), IPR2015-00859 (US 8,365,742 B2), IPR2015-01027 (US 8,689,805 B2), IPR2015-01513 (US 8,375,957 B2), IPR2015-01587 (US 8,365,742 B2), IPR2015-01578 (US 8,689,805 B2), and IPR2015-01604 (US 8,863,752 B2). *Id.*; Paper 5.

B. The '726 patent (Ex. 1001)

The '726 patent relates to an electronic atomization cigarette that functions as a cigarette substitute. Ex. 1001, 1:59–60. The electronic cigarette comprises, among other components, a shell, a mouthpiece, an air inlet, an electronic circuit board, a sensor, an atomizer, and a “liquid-supply” in contact with the atomizer. *Id.* at 1:59–2:3. Figures 1, 6, and 11 of the '726 patent are reproduced below.

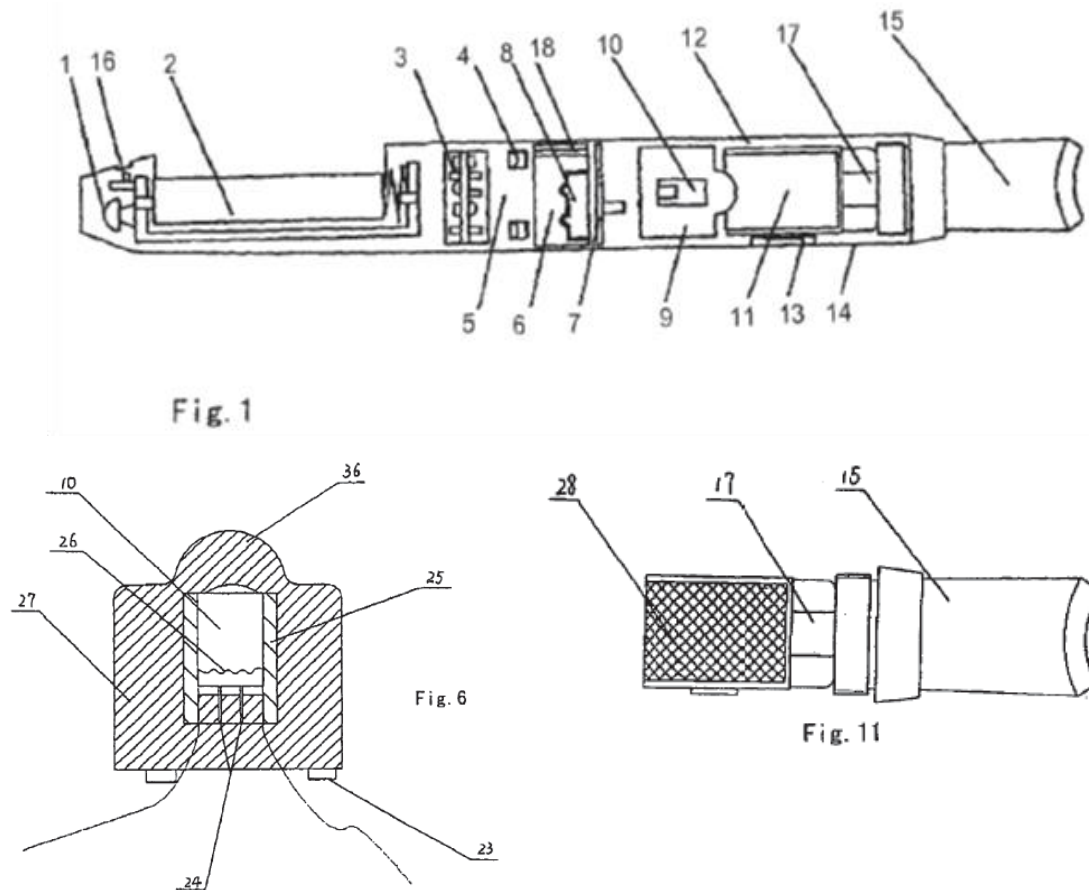


Figure 1 depicts a schematic diagram of an embodiment of the electronic cigarette, Figure 6 depicts a structural diagram of atomizer within the electronic cigarette, and Figure 11 depicts a liquid-supplying bottle with a mouthpiece. *Id.* at 2:11, 18, 25–26. In Figure 1, the electronic cigarette comprises LED 1, cell 2, electronic circuit board 3, air inlet 4, normal pressure cavity 5, sensor 6, vapor-liquid separator 7, atomizer 9, liquid-supplying bottle 11, and mouthpiece 15, sequentially provided within shell 14. *Id.* at 2:36–40. In Figure 6, the atomizer (shown as atomizer 9 in Figure 1) comprises heating element 26 and atomization cavity wall 25 surrounded by porous body 27, which includes bulge 36. *Id.* at 2:51–57, 66–67. In Figure 11, solution storage porous body 28 is provided in liquid-supplying bottle 11 with gas vent 17 and mouthpiece 15. *Id.* at 3:11–20. As described

in the '726 patent, “the solution storage porous body 28 in the liquid-supplying bottle 11 is in contact with the bulge 36 on the atomizer 9, thereby achieving the capillary infiltration liquid-supplying.” *Id.* at 3:64–67.

C. Illustrative Claims

Claims 1, 14, and 15 of the '726 patent are independent.

Claims 1 and 15 are illustrative and are reproduced below:

1. An electronic cigarette, comprising:

[A] a housing having an inlet and an outlet;

[B] a liquid storage body in the housing holding a liquid;

[C] an air flow path through the housing; and

[D] an atomizer in the housing between the inlet and the outlet including:

[E] a porous body in contact with the liquid storage body;
and

[F] a heating wire in the atomizer surrounded by the porous body.

15. An electronic cigarette, comprising:

[A] a housing having an inlet and an outlet;

[B] an electronic circuit board and

[C] an atomizer having a heating element, within the housing;

[D] a battery electrically connected to the electronic circuit board;

[E] a stream passage within the housing leading from the inlet to the atomizer;

[F] a liquid storage body including fiber material in a cylindrical section of the housing,

[G] with the liquid storage body in physical contact with the atomizer; and

[H] an aerosol passage from the atomizer to the outlet.

Id. at 5:2–10, 6:17–28 (indentation and paragraph lettering added).

Independent claim 14 is similar to claim 1, but recites “a porous cylindrical atomizer,” “the porous cylindrical atomizer in contact with the liquid storage body,” and “a heating wire coil within and surrounded by the porous cylindrical atomizer.” *Id.* at 6:12–16.

D. The Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–4, 8–10, and 12–17 of the ’726 patent on the following grounds:

References	Basis	Claims
Takeuchi ¹ and Counts ²	§ 103	1, 3, 4, 8, 9, 10, 12, and 14
Takeuchi and Kaufmann ³	§ 103	15 and 16
Takeuchi, Counts, and Kaufman	103	2, 13, and 17

II. ANALYSIS

A. Person of Ordinary Skill in the Art

The parties dispute the proper definition of a person of ordinary skill in the art. Petitioner contends that a person of ordinary skill in the art would have had a bachelor’s degree in electrical engineering, mechanical engineering, biomedical engineering, or a related discipline, with two years of experience in designing electromechanical devices. Pet. 16. Patent

¹ Takeuchi, US 6,155,268, issued Dec. 5, 2000 (Ex. 1003).

² Counts et al., US 5,144,962, issued Sep. 8, 1992 (Ex. 1004).

³ Kaufmann et al., US 6,322,268 B1, issued Nov. 27, 2001 (Ex.1005).

Owner includes an industrial design degree or equivalent work experience for the education level of one of ordinary skill in the art, but disagrees with Petitioner's degree of practical experience. According to Patent Owner, a person of ordinary skill in the art would have had experience on the order of 5–10 years in the area of electromechanical devices. Prelim. Resp. 7.

For purposes of this Decision, we do not discern an appreciable difference between Petitioner's and Patent Owner's proposed levels of ordinary skill in the art that would impact our ultimate conclusions. We also consider the cited prior art as representative of the level of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (finding the absence of specific findings on "level of skill in the art does not give rise to reversible error 'where the prior art itself reflects an appropriate level and a need for testimony is not shown'" (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985))).

B. Claim Construction

In an *inter partes* review, the Board interprets claim terms in an unexpired patent according to the broadest reasonable construction in light of the specification of the patent in which they appear. *See In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278 (Fed. Cir. 2015); 37 C.F.R. § 42.100(b). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms must be set forth with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

1. “*electronic cigarette*”

Each independent claim recites in its preamble an “electronic cigarette.” Petitioner requests that the term be construed consistent with the decisions on institution in IPR2014-01289 and IPR2014-01300, which involve related patents that share the ’726 patent Specification. Pet. 17–19; see Ex. 2001, 7–8; Ex. 2002, 7–8. While Patent Owner agrees that the term “‘electronic cigarette’ does not need to be shaped like a traditional cigarette or mimic the look and feel of a traditional cigarette,” Patent Owner asserts that the Board’s earlier construction is too broad. Prelim. Resp. 8. Patent Owner asserts that the term should be construed to mean “an electronic device that simulates the feel and experience of a cigarette without burning.” *Id.* at 9.

The Specification summarizes the invention as “An electronic atomization cigarette that functions as substitutes for quitting smoking and cigarette substitutes” Ex. 1001, 1:59–61. Components of the device are generically described as including “a shell; a mouthpiece; an air inlet.” *Id.* at 1:61. The Specification states that nicotine is the active ingredient in a cigarette and that tar is the major harmful substance in tobacco. *Id.* at 1:35, 42–43. Prior cigarette substitutes that are free from tar are described in the Specification as a nicotine patch, nicotine mouthwash, nicotine chewing gum, and nicotine drink, which have a major disadvantage of not reaching an effective peak concentration due to slow absorption of nicotine. *Id.* at 1:45–52. According to the Specification, the prior art substitutes also “can not satisfy habitual smoking actions of a smoker, for example, inhaling action, and thus are not likely to be widely accepted as effective substitutes for smoking.” *Id.* at 1:52–55.

We find that these disclosures of an electronic atomization cigarette and other cigarette substitutes do not limit the shape, size, look, feel, or other sensations of the electronic cigarette of the invention beyond delivering atomization to satisfy the need for a user to experience an inhaling action. Accordingly, on the current record, we determine the broadest reasonable interpretation of the term “electronic cigarette” to be “a device for generating liquid droplets for inhalation by a user, where the device functions as a substitute for smoking, e.g., by providing nicotine without tar.”

2. “atomizer”

Each of the independent claims recites an “atomizer.” Petitioner asserts that this limitation should be construed as in prior related *inter parties* review proceedings to mean “a part of the electronic cigarette that includes components that participate in facilitating atomization, but not components included in other recited parts of the electronic cigarette, such as the liquid supply.” Pet. 19. Patent Owner disagrees with Petitioner’s construction “to the extent it extends beyond components that cause atomization (i.e., converting liquid into aerosol or vapor) to components that do not cause atomization (e.g., components that merely transport liquid to the atomizer or components that receive atomized particles after atomization has occurred).” Prelim. Resp. 13. According to Patent Owner, a skilled artisan would understand that the term refers to “a component that converts liquid into aerosol or vapor.” *Id.*

The Specification does not limit an “atomizer” to a single component that converts liquid into a vapor. The Specification depicts an “atomizer” embodiment having multiple components, e.g., heating element 26, atomization cavity 10, atomization cavity wall 25, and porous body 27.

Ex. 1001, Fig. 6, 2:18, 2:48–3:4. The atomizer depicted in Figure 6, above, also includes first piezoelectric element 23. *Id.* at 3:2–3. The first piezoelectric element subjects the nicotine solution to ultrasonic atomization and is further atomized by heating element 26. *Id.* at 3: 52–58.

Accordingly, based on the record before us, we determine that the broadest reasonable interpretation of the term “atomizer” is “a part of the electronic cigarette that includes components that participate in facilitating atomization.”

3. “contact”/“physical contact”

Independent claims 1 and 14 require, respectively, “a porous body” or a “porous cylindrical atomizer” in contact with “the liquid storage body.”

Ex. 1001, 5:8, 6:13–14. Independent claim 15 requires a “liquid storage body in physical contact with the atomizer.” *Id.* at 6:26–27. Patent Owner asserts that the broadest reasonable construction of “contact” and “physical contact” is “direct contact” because “[a]ll of the embodiments disclosed in the ’726 Patent specification show a liquid storage body in direct contact with the atomizer.” Prelim. Resp. 19. Petitioner does not propose a construction for these terms, but notes that “physical contact” was construed to mean “direct contact” in IPR2014-01289. Pet. 18 n.3.

The Specification does not explicitly state “physical contact,” but uses the term “contact” when it describes that “[t]he liquid-supply is in contact with the atomizer,” “[t]he atomizer 9 is in contact with the liquid-supplying bottle 11 via the bulge 36,” and “[t]he solution storage porous body 28 in the liquid-supplying bottle 11 is in contact with the bulge 36 on the atomizer, thereby achieving the capillary infiltration liquid-supplying.” Ex. 1001, 2:2–3, 2:48–49, 3:64–67. We determine that, based on the current record, the

broadest reasonable interpretation of the terms “contact” and “physical contact” is “direct contact.”

4. *Remaining Claim Terms*

The parties propose constructions for other claim terms in the ’726 patent. Based on the current record, however, we determine that the remaining claim terms need not be construed explicitly for purposes of this Decision. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (only terms in controversy need to be construed and only to the extent necessary to resolve the controversy).

C. *Obviousness over Takeuchi and Counts*

Petitioner asserts that claims 1, 3, 4, 8, 9, 10, 12, and 14 would have been obvious under 35 U.S.C. § 103 over the combination of Takeuchi and Counts. Pet. 21–42. Petitioner relies on the testimony of its declarant, Samir Nayfeh, Ph.D. (Ex. 1002). Patent Owner opposes Petitioner’s assertions. Prelim. Resp. 27–48. Based on our review of the Petition and the Preliminary Response, we determine that Petitioner has not established a reasonable likelihood that it would prevail in showing the claims are unpatentable as having been obvious over the cited references.

1. *Takeuchi (Ex. 1003)*

Takeuchi describes a “flavor-generating device for enjoying inhalation of flavor or for enjoying simulated smoking.” Ex. 1003, 1:3–6. Takeuchi teaches “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.” *Id.* at 5:43–46. One embodiment of the device is shown in Figure 1, reproduced below.

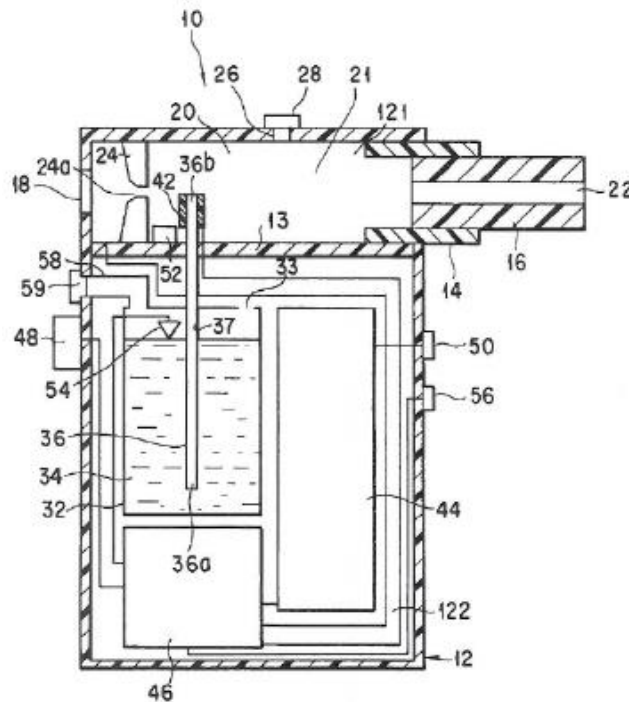


Figure 1 depicts a sectional view of a flavor-generating device. *Id.* at 3:55. The device comprises casing 12, gas passageway 20 “for forming a gaseous stream of a flavor which is to be inhaled by a user,” mouth piece 16, lamp 56 (such as “a light emitting diode”), air intake port 18, battery 44, control circuit 46, sensor 52, heater 42, capillary tube 36, liquid 34, and liquid container 32. Ex. 1003, 4:29–47, 5:28–35, 6:4–14, 6:55–62, 7:2–9, 7:51–8:15.

Takeuchi teaches the “inner space of the casing 12 is partitioned into an upper chamber 121 and a lower chamber 122 by a partition wall 13.” *Id.* at 4:31–33. In addition, Takeuchi teaches “capillary tube 36 defines a liquid passageway 37 for the liquid flavor source, and its lower end 36a is positioned in the vicinity of the bottom of the liquid container 32.” *Id.* at 5:49–52. Capillary tube 36 also includes outlet portion 36b, where “liquid flavor source 34 within the outlet port 36[b] 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.* at 7:57–8:4. Takeuchi further teaches that “cooling chamber 21,” in upper chamber 121, constitutes a part of gas passageway 20. *Id.* at 5:1–7.

Figure 4 of Takeuchi, which presents an embodiment of capillary tube 36 with heater 74, is reproduced below.

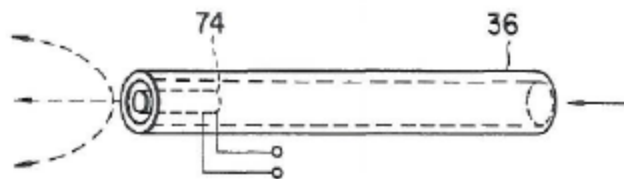


FIG. 4

Figure 4 depicts a perspective view of rod-like heater 74 inserted into outlet port 36b of capillary tube 36. *Id.* at 2:53–55, 8:22–26.

Figure 15 of Takeuchi, which depicts an embodiment of the liquid passageway for a liquid flavor source with pore structure 302 and heater 425, is reproduced below.

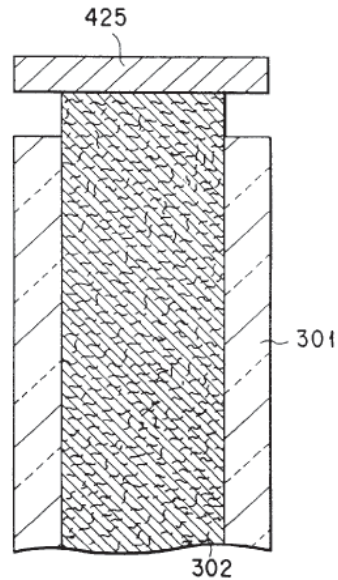


FIG. 15

Figure 15 illustrates a liquid passageway for a liquid flavor source in which an intercommunicating pore structure 302 fills enclosure 301, which may be a tube. *Id.* at 10:50–67. “[A] heater 425 can be provided on the protruded end of the intercommunicating pore structure 302.” *Id.* at 10:61–63.

2. Counts (Ex. 1004)

Counts relates to a flavor generating device that uses an electric heating element. Figure 1, below, is a fragmentary perspective view of one embodiment.

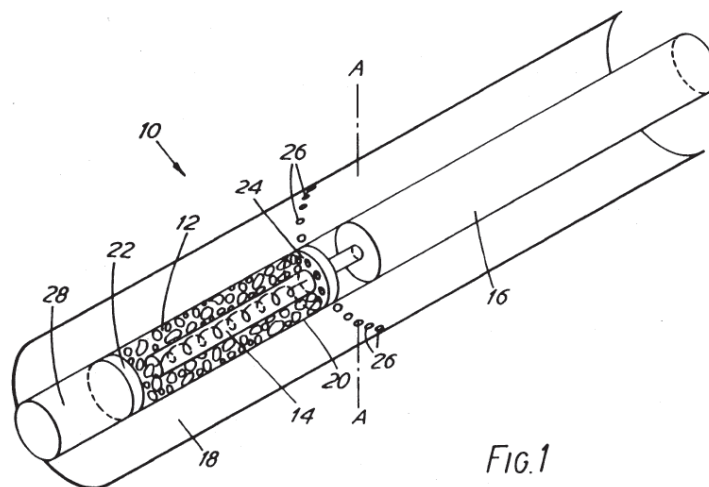


FIG. 1

Figure 1 depicts heating element 14 surrounded by flavor-generating medium 12 in thermally-insulating tube 20. Ex. 1004, 1:16–54. In a preferred embodiment, the heating element is a resistive wire coil. *Id.* at 4:5–7.

3. Analysis

Petitioner asserts the combination of Takeuchi and Counts would have rendered obvious claims 1, 3, 4, 8, 9, 10, 12, and 14. Pet. 21. Petitioner contends “Takeuchi’s ‘rod-like heater 74’ could be implemented with one of several known heating components, including Counts’ ‘resistive wire coil . . . disposed within an insulating tube,’ with predictable results. *Id.* at 25 (citing Ex. 1002 ¶ 46). Because such a combination would have been “a combination of known elements with predictable results, . . . a [person of ordinary skill in the art] would have had reason to combine the teaching of Takeuchi and Counts in this way.” *Id.* at 27 (citing Ex. 1002 ¶ 48).

Regarding claim 1, Petitioner provides a summary and claim chart identifying the disclosures of Takeuchi and Counts that purportedly teach or suggest each limitation. Pet. 27–34. For example, Petitioner asserts that Takeuchi discloses an electronic cigarette because Takeuchi’s device “is used as a simulated smoking article” and contains “tobacco components such as tobacco extracts and a tobacco smoke condensate.” *Id.* at 30 (citing Ex. 1003, 5:43–46); *id.* at 27 (citing Ex. 1002 ¶ 51). Petitioner also identifies in Takeuchi’s disclosure a housing (casing 12) having an inlet (intake port 18) and outlet (inhalation port 22), a liquid storage body (liquid container 32) in the housing holding a liquid (liquid flavor source 34), and an air flow path through the housing (gas passageway 20 in upper chamber 121) as required by claim 1 (elements A–C). *Id.* at 27–28 (citing Ex. 1002 ¶¶ 52–54), 30–31 (citing Ex. 1003, 2:1–7, 4:29–50, 5:28–30, Fig. 1).

Regarding the atomizer required by claim 1 (element D), Petitioner contends that Takeuchi's atomizer comprises the liquid passageway that is in fluid communication with the liquid at one end and a gas passageway at a second end where a heater is mounted for gasifying or evaporating the liquid transported from the liquid container to outlet portion 36b of capillary tube 36. *Id.* at 28 (citing Ex. 1002 ¶¶ 55, 56, 70), 31–32 (citing Ex. 1003, 2:1–16, 6:4–7, 5:1–37). Petitioner contends that the intercommunicating pore structure 302 of Takeuchi reads on the porous body in contact with the liquid storage body required by claim 1 (element E). *Id.* at 28 (citing Ex. 1002 ¶¶ 56, 70), 32–33 (citing Ex. 1003, 2:1–10, 3:36–50, 10:50–59, Figs. 1 and 14).

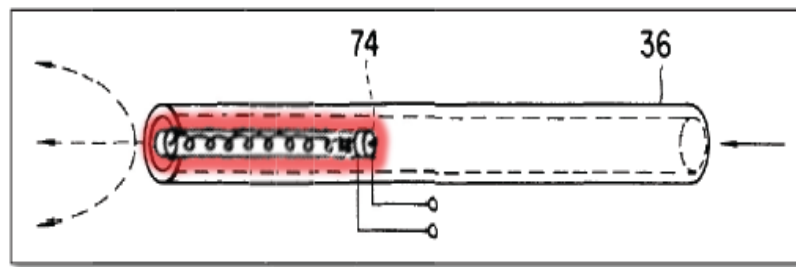
Petitioner asserts that the combination of Takeuchi and Counts discloses a “heating wire in the atomizer surrounded by the porous body” as recited in claim 1 (element F). *Id.* at 29 (citing Ex. 1002 ¶¶ 59, 63, 72), 33–34 (citing Ex. 1003, 8:16–23, 8:27–36, 10:57–59, Figs. 1, 4, 6, 14; Ex. 1004, Abstr., 1:29–34, 3:15–29, 4:1–11, Figs. 1, 2). Petitioner's argument explaining how the combination discloses this element of claim 1 is presented in the Petition as follows:

Takeuchi and Counts disclose a heating wire in the atomizer surrounded by the porous body, as recited in element F of Claim 1 (by the porous cylindrical atomizer, as recited in element F of claim 14). Takeuchi explains that a “rod-like heater 74” can be inserted into the “liquid passageway 37,” which, again, may be contain a “intercommunicating pore structure 302.” Ex. 1003 at 8:16-23; *id.* at 8:30-36; *id.* at 5:49-50; *id.* at 8:27-29; *id.* at 10:57-59; Nayfeh Decl. at ¶¶ 59 and 70. Counts provides a way to implement Takeuchi's “rod-like heater 74” using a heating wire (a “resistive wire coil” “heating element”). Ex. 1004 at 4:5-11; Nayfeh Decl. at ¶ 72. Therefore, the combination of Takeuchi and Counts disclose[s] a heating wire coil within and surrounded by the porous body or cylindrical atomizer. Nayfeh Decl. at ¶ 63.

Id. at 29.

Paragraph 59 of the Nayfeh Declaration describes Takeuchi's disclosure of rod-like heater 74. Paragraph 63 states that

Combining Takeuchi and Counts in the way described in Part V.A.1 above would lead to a configuration similar to the following, which is presented below for demonstration purposes only. In this configuration, the "intercommunicating pore structure 302" (porous body) surrounds the "resistive wire coil" (heating wire).



Ex. 1002 ¶ 63 (citing Ex. 1004, Fig. 2, Ex. 1003, Fig. 4).

Part V.A.1 is a heading in the Nayfeh Declaration that precedes paragraphs 38–48, which do not mention the intercommunicating pore structure 302 of Takeuchi. Paragraphs 70 and 72 refer to claim 14 (paragraph 70 states that Takeuchi's intercommunicating pore structure 302 is a disclosure that the atomizer can include a porous body and paragraph 72 states that Takeuchi's liquid passageway can be a porous cylindrical tube and is part of the atomizer because it facilitates atomization). *Id.* ¶¶ 70, 72.

Petitioner relies on essentially the same support and analysis for claim 1 in order to show that independent claim 14, which further requires that the atomizer is a "porous cylindrical atomizer," would have been obvious over the combination of Takeuchi and Counts. *See* Pet. 27–29, 34–35.

In response, Patent Owner argues that the disclosures in Takeuchi relied upon by Petitioner and Dr. Nayfeh "do[] not support incorporating 'rod-like heater 74' into an embodiment that includes intercommunicating

pore structure.” Prelim. Resp. 25–26 (citing Ex. 1003, 8:27–29, 1057–59, Fig. 1). Patent Owner argues that “[i]n all of the specific embodiments disclosed by Takeuchi that utilize an intercommunicating pore structure, the heater is located outside of the tube (see, e.g., Figures 14 and 15 of Takeuchi)”. *Id.* Patent Owner challenges Dr. Nayfeh’s opinion that one of ordinary skill in the art ““would have had a reason to combine those elements from the prior art in the same arrangements shown in the claims I examined”” as conclusory and insufficient for an obviousness analysis. *Id.* at 26–27 (quoting Ex. 1002 ¶ 37).

Section 103(a) forbids issuance of a patent when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 13 (1966). In *Graham*, the Court set out a framework for applying the statutory language of § 103:

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

Id. at 17. “While the sequence of these questions might be reordered in any particular case, the factors continue to define the inquiry that controls.” *KSR Int’l. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007).

The Supreme Court has made clear that we apply “an expansive and flexible approach” to the question of obviousness. *Id.* at 415. Whether a patent claiming the combination of prior art elements would have been

obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. To reach this conclusion, however, requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention. *Id.*

Against this general background, we have considered Petitioner's arguments and evidence together with the Preliminary Response. On this record, we agree with Patent Owner that Petitioner has not met the threshold for instituting an *inter partes* review of the '726 patent. Petitioner and Dr. Nayfeh state that "the combination of Takeuchi and Counts disclose[s] a heating wire coil within and surrounded by the porous body or cylindrical atomizer." Pet. 29; see Ex. 1002 ¶ 63. However, Petitioner cites insufficient evidence to support this statement. For example, Petitioner and Dr. Nayfeh assert that Takeuchi discloses that a liquid passageway portion of the atomizer is in contact with a liquid storage body and may be porous. Pet. 28; Ex. 1002. Petitioner also asserts that Takeuchi discloses "a 'rod-like heater 74' [that] can be inserted into the 'liquid passageway 37.'" Pet. 29; see Ex. 1002 ¶¶ 59, 70. Because the liquid passageway of Takeuchi "may [] contain [an] 'intercommunicating pore structure 302'" and because "Counts provides a way to implement Takeuchi's 'rod-like heater 74' using a heating wire," Petitioner and Dr. Nayfeh conclude that "the combination of

Takeuchi and Counts disclose[s] a heating wire coil within and surrounded by the porous body or cylindrical atomizer.” Pet. 29; *see* Ex. 1002 ¶ 63.

We are not persuaded, however, that these observations of the prior art provide a rational basis for combining the separate embodiments of Takeuchi, namely the intercommunicating pore structure 302 and the rod-like heater 74, together with the resistive wire coil of Counts, in the configuration required by independent claims 1 and 14. Where the claimed subject matter cannot be fairly characterized as involving the simple substitution of one known element for another, there must be a showing of “an apparent reason to combine the known elements in the fashion claimed” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)).

We acknowledge that the Petition and Dr. Nayfeh provide an overview of the scope and content of the prior art and the relationship to the ’726 patent. Pet. 9–14, 21–27; Ex. 1002 ¶¶ 23–36. We also acknowledge that the Petition includes a claim chart for claim 1 (and element F) that quotes Takeuchi’s disclosures that “[a]ny of these modifications permits producing the particular function described previously in conjunction with the embodiment shown in FIG. 1” and “[i]n this embodiment [referring to Figure 14], a heater or heaters (not shown) may be arranged as in FIG. 1.” Pet. 33 (citing Ex. 1003, 8:27–29, 10:57–59). Despite that background information and the citations to the prior art, we determine that Petitioner has not explained sufficiently why a person of ordinary skill in the art would have had a reasonable expectation of success

combining the various embodiments disclosed in the prior art references in the manner claimed by the '726 patent. Simply stating that Takeuchi's liquid passageway may contain an intercommunicating pore structure is insufficient. Petitioner fails to explain why one of ordinary skill in the art would have selected the rod-like heater configuration instead of other heater configurations disclosed by Takeuchi, specifically, the heater configuration depicted with the intercommunicating pore structure in Figure 15 of Takeuchi. See Prelim. Resp. 26.

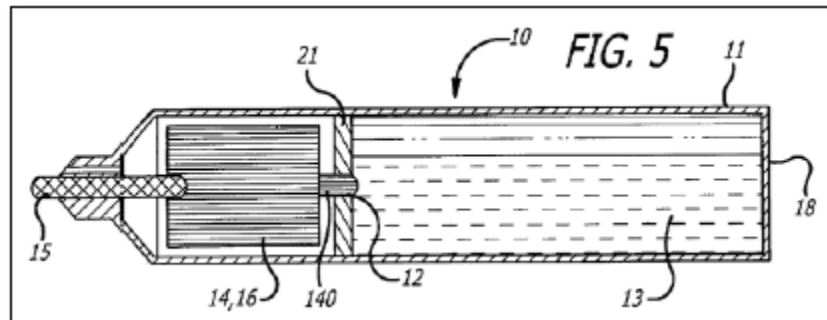
Without such an explanation regarding the combination of Takeuchi and Counts, we determine that Petitioner has failed to establish a reasonable likelihood that it would prevail in its assertion that claims 1 and 14, as well as dependent claims 3, 4, 8–10, and 12, are unpatentable as obvious over Takeuchi and Counts.

D. Obviousness over Takeuchi and Kaufmann

Independent claim 15 requires “a liquid storage body including fiber material in a cylindrical section of the housing, with the liquid storage body in physical contact with the atomizer.” Ex. 1001, 6:25–28. Claim 16 depends from independent claim 15 and requires a “sensor electrically linked to the electronic circuit board.” *Id.* at 6:29–31. Petitioner argues that claims 15 and 16 are unpatentable as obvious over Takeuchi and Kaufman. Pet. 42–54. Specifically, Petitioner argues “Kaufmann recognizes the problems of fluid dispensers like Takeuchi's that have a ‘large volume of fluid . . . in a non-capillary container,’ a ‘capillary conveying line’ through which fluid is ‘transferred from the container to the delivery end,’ and an air inlet through which air enters to maintain an appropriate pressure.” Pet. 43 (citing Ex. 1005, 1:23–44; Ex. 1002 ¶ 86).

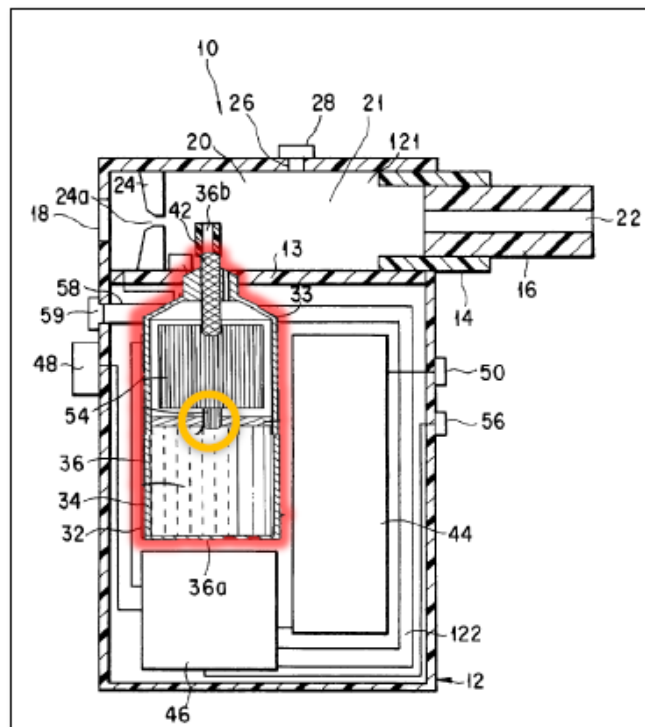
According to Petitioner, “Kaufmann’s solution is to use a porous material (*e.g.*, a fiber) in part of the storage container as a buffer between the air inlet and the liquid.” *Id.* (citing Ex. 1005, 3:12–41; Ex. 1002 ¶ 88).

Kaufman’s fluid dispenser is depicted in Figure 5, below:



Petitioner describes the embodiment shown in Figure 5, above, as including a capillary storage (16) and conveying line (14) that are tapered in a rear portion (140) to interface with the liquid storage area (11). *Id.* at 43–44.

Petitioner contends that substitution of Kaufmann’s fluid dispensing utensil for Takeuchi’s liquid storage portion would lead to the configuration shown below:



The configuration shown above merges Figure 5 of Kaufman (outlined in red) with Figure 1 of Takeuchi. *Id.* at 46–47. According to Petitioner, “[b]ecause both Kaufmann’s ‘tip (15)’ and Takeuchi’s ‘liquid passageway’ can be porous, the ‘liquid passageway’ could be modified as an extension of ‘tip (15)’ — characterized at the outlet by Takeuchi and at the interface with the ‘capillary storage (16)’ by Kaufman.” *Id.* at 47 (citing Ex. 1005, 10:35–38, Ex. 1003, 10:50–59, Ex. 1002 ¶ 97).

Regarding the element of claim 15 labeled F, which recites “a liquid storage body including fiber material in a cylindrical section of the housing,” Petitioner contends that “Takeuchi discloses a liquid storage area in the housing” and that “the advantage of Kaufmann’s fluid dispenser over Takeuchi is the ‘fibrous materials’ that ‘create porous paths by being bundled together’ in the liquid storage body.” *Id.* at 49 (citing Ex. 1005, 9:8–41, Ex. 1002 ¶ 106). Petitioner asserts that Takeuchi provides a reason for configuring container 32 to be in the cylindrical upper chamber 121 in order to beneficially limit condensation on the inside wall of upper chamber 121 and enhance aerosol formation. *Id.* at 49 (citing Ex. 1003, 9:59–10:12, Ex. 1002 ¶ 107). This configuration, Petitioner argues, provides even stronger reason to use Kaufman “so as not to ‘clog the air intake port 18.’” *Id.* (citing Ex. 1003, 9:23–26, Ex. 1002 ¶ 108).

Patent Owner contends that one of ordinary skill in the art would not have combined Takeuchi with Kaufman because Kaufman relates to writing utensils and not smoking devices and also because Takeuchi avoids leakage from opening 33, even if turned upside down, by providing a sufficiently small diameter. Prelim. Resp. 51–52 (citing Ex. 1003, 6:1–3). Patent Owner further argues that Takeuchi does not disclose an atomizer because “[c]apillary tube 36 functions solely to transport liquid from the liquid

storage body to heater 42, and plays no role in atomizing the liquid from the liquid supply to an aerosol.” *Id.* at 51.

We agree with Patent Owner that Petitioner has not shown sufficiently that one of ordinary skill in the art would have had a reason to combine Kaufman’s fibers in a particular arrangement of Takeuchi’s device. We also are not persuaded that, because Kaufmann’s liquid dispensing system has porous tip 15 and Takeuchi’s flavor-generating device has a porous liquid passageway, one of ordinary skill in the art would have modified Takeuchi to incorporate Kaufmann’s liquid delivery system. We are not persuaded that Petitioner’s combinations and reasons for inserting the disclosures of Kaufmann into the system of Takeuchi in the manner of claim 15 have rational underpinnings instead of improper hindsight.

We determine that Petitioner has failed to show sufficiently that claim 15 and, for the same reasons, dependent claim 16, are unpatentable as obvious over the cited references.

E. Obviousness over Takeuchi, Counts, and Kaufmann

Claims 2 and 13 depend from claim 1 and claim 17 depends from claim 15. Claim 2 requires “the liquid storage body including fiber material.” Ex. 1001, 5:11–12. Claim 13 requires that “the porous body comprises a porous bulge section which projects into the liquid storage body.” *Id.* at 6:5–7. Claim 17 requires that “the heating element compris[es] a wire coil in a cavity in the atomizer.” *Id.* at 6:32–33. Petitioner argues that claims 2, 13, and 17 are unpatentable as obvious over Takeuchi, Counts, and Kaufman. Pet. 54–60. Petitioner relies on the same reasons for combining Takeuchi with Counts and Kaufman as argued previously. *Id.* at 54. For the same reasons stated above with respect to claims 1 and 15, we determine that Petitioner has failed to demonstrate

sufficiently that claims 2, 13, and 17 are unpatentable as obvious over the cited references.

III. CONCLUSION

We conclude that Petitioner has not established a reasonable likelihood of prevailing on its assertions that claims 1–4, 8–10, and 12–17 of the '726 patent are unpatentable as obvious.

IV. ORDER

In consideration of the foregoing, it is hereby ordered that the Petition is *denied*.

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