

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

R.J. REYNOLDS VAPOR COMPANY,  
Petitioner,

v.

FONTEM HOLDINGS 1 B.V.,  
Patent Owner

---

Case IPR2017-01120  
Patent 8,899,239 B2

---

Before JOSIAH C. COCKS, RAMA G. ELLURU, and  
JO-ANNE M. KOKOSKI *Administrative Patent Judges*.

COCKS, *Administrative Patent Judge*.

DECISION  
Institution of *Inter Partes* Review  
37 C.F.R. § 42.108(a)

## I. INTRODUCTION

### A. Summary

R.J. Reynolds Vapor Company (“Petitioner”) filed a Petition (Paper 2, “Pet.”) to an institute *inter partes* review of claims 1–3, 5, 7–9, 13–15, 17, and 18 of U.S. Patent No. 8,899,239 B2 (Ex. 1001, “the ’239 patent”). Fontem Holdings 1 B.V. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). With Board authorization (Paper 7), Petitioner filed a Reply to Patent Owner’s Preliminary Response. Paper 9 (“Reply”).

An *inter partes* review may not be instituted unless the information presented in the Petition shows “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). For the reasons set forth below, we conclude that the information presented in the Petition and Patent Owner Preliminary Response establishes a reasonable likelihood that Petitioner will prevail in showing the unpatentability of claims 1–3, 5, and 7–9. Accordingly, pursuant to 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a), we institute an *inter partes* review as to those claims. With respect to claims 13–15, 17, and 18, however, we do not institute an *inter partes* review for the reasons given below.

### B. Related Matters

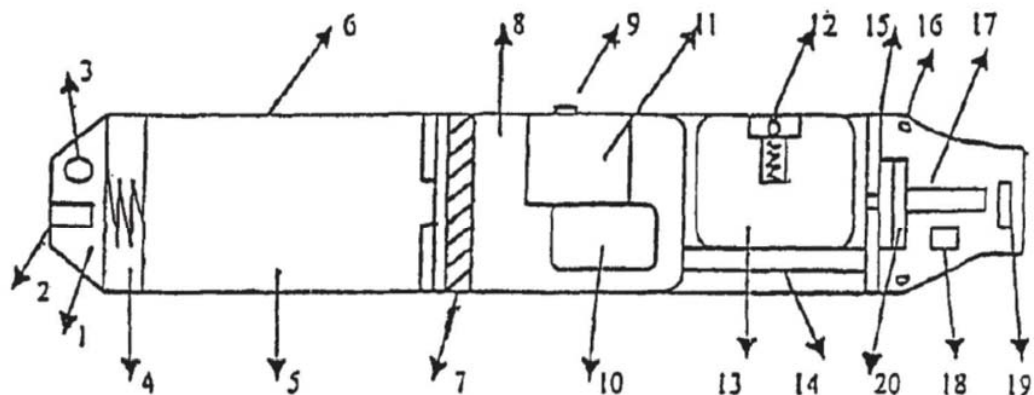
Petitioner and Patent Owner identify numerous proceedings in the U.S. District Court for the Central District of California concerning the ’239 patent. Pet. 5–6; Paper 3, 2–8. The ’239 patent is also involved in co-

pending IPR2016-01272, and was the subject of IPR2016-01302 and IPR2015-01304.<sup>1</sup>

*C. The '239 patent*

The '239 patent is titled “Electronic Cigarette” and is directed to an electronic cigarette that includes a shell, a cell, a control circuit, a nicotine solution, and an electro-thermal vaporization nozzle installed at the air suction end of the shell. Ex. 1001, Abstract. According to the '239 patent, the control circuit provides starting current to an electric heater arranged within the electro-thermal vaporization nozzle, and the cell that provides the power to control circuit can be a disposable or rechargeable battery. *Id.* at 1:64–2:7. The high temperature in the electro-vaporization nozzle causes nicotine liquid to rapidly vaporize to form a puff of smoke. *Id.* at 2:3–5.

Figure 1 of the '239 patent is reproduced below:



<sup>1</sup> Trial was instituted in IPR2016-01272 on December 30, 2016. IPR2016-01272, Paper 11. The proceeding in IPR2016-01302 was terminated before any decision on institution. IPR2016-01302, Paper 13. Institution was denied in IPR2015-01304 on December 9, 2015. IPR2015-01304, Paper 15.

Figure 1 is a structural diagram of an electronic cigarette according to the invention of the '239 patent. *Id.* at 2:15–16. Resistance sensor 19 activates control circuit board 8 when a smoker puts the cigarette holder in his/her mouth, causing circuit board 8 to output two driving voltages, one to supply power to the electric heating element of electro-thermal vaporization nozzle 17, and the other to activate micro pump 11. *Id.* at 3:50–55. Nicotine solution is then pumped to electro-thermal vaporization nozzle 17 by nicotine storage container 13, vaporized into high temperature vapor on the heating element of electro-thermal vaporization nozzle 17, and ejected from the opening end. *Id.* at 3:55–60. In the air, the ejected vapor is expanded and condensed into micro aerosol droplets. *Id.* at 3:60–61.

The electronic cigarette also includes one-way valve for liquid injection 12 that “is sealed by a ball or cone member under the pressure of a spring,” and airflow sensor 18 that “can be comprised of an array of integrated thermal sensitive resistors in the shape of film.” *Id.* at 2:46–49. The '239 patent explains:

The airflow sensor 18 is sensitive to the diluted air which enters through air inlet 16 when a “suction” action take[s] place[.]. The sensed signals are transmitted to the control circuit, and the control circuit then stop[s] to supply power to the micro pump and the electric heater after a certain time delay.

*Id.* at 4:4–9.

Furthermore, the electronic cigarette is configured such that:

A red LED 3 blinks for each smoking action, and a sawtooth wave signal that lasts for 1.2 seconds is given by the control circuit for blinking signals, which provides a gradual change of luminance to imitate the ignition and combustion process of a conventional cigarette.

*Id.* at 4:23–27.

*D. Claims*

Of the challenged claims, claims 1, 13, and 17 are independent. Claims 2, 3, 5, 7–9, 14, 15, and 18 ultimately depend from one of those independent claims. Claim 1, 13, and 17 are reproduced below:

1. An electronic cigarette, comprising:
  - a housing;
  - a control circuit electrically connected to an airflow sensor in the housing;
  - a light source at a first end of the housing, with the light source electrically connected to the control circuit, and with the light source configured to provide a gradual change in luminance via control by the control circuit, when the airflow sensor senses airflow, to simulate a conventional cigarette.
13. An electronic cigarette, comprising:
  - a housing;
  - a control circuit electrically connected to a battery, an airflow sensor, an atomizer and an LED, with the LED at a first end of the housing, configured such that the luminance of the LED changes based on an output of the airflow sensor;
  - and
  - a liquid storage container adjacent to the atomizer.
17. A method of using an electronic cigarette, comprising:
  - sensing airflow in a housing of the electronic cigarette via a sensor;
  - providing a sensed airflow signal from the sensor to an electronic controller in the housing;
  - operating the electronic controller to gradually change a luminance of an LED at a first end of the housing to simulate a conventional burning cigarette tip; and
  - vaporizing a liquid via an atomizer in the housing.

*E. The Prior Art*

Petitioner relies on the following prior art references:

Reference	Date	Exhibit
Chinese patent application publication CN 123436A (“Hongbin”)	Nov. 1999	Ex. 1002 (English translation Ex. 1003) <sup>2</sup>
Japanese unexamined patent application publication 2001-291598 (“JP ’598”)	Oct. 2001	Ex. 1004 (English translation Ex. 1005) <sup>3</sup>
U.S. Patent No. 2,057, 353 (“Whittemore”)	Oct. 1936	Ex. 1006
U.S. Patent No. 6,155,268 (“Takeuchi”)	Dec. 2000	Ex. 1007

*F. Asserted Grounds of Unpatentability*

Petitioner challenges claims 1–3, 5, 7–9, 13–15, 17, and 18 under 35 U.S.C. § 103 based on the following grounds:

References	Challenged Claims
Hongbin and JP ’598	1–3, 9, 13–15, 17, and 18
Hongbin, JP ’598, and Whittemore	3, 5, 7, 8, and 13–15
Hongbin, JP ’598, and Takeuchi	3, 5, 7, 8, and 13–15

---

<sup>2</sup> In this Decision, citations to Hongbin are to its English translation.

<sup>3</sup> Citations to JP ’598 are to its English translation.

## II. ANALYSIS

### *A. Patent Owner's Arguments for Denial of Petition under 35 U.S.C. § 325(d)*

At the outset, we consider Patent Owner's arguments that the Petition should be denied under 35 U.S.C. § 325(d). Patent Owner contends that we should decline to institute trial here with respect to claims 1–3, 5, 7–9, 13–15, 17, and 18 (all challenged claims) “because those claims rely on ‘the same or substantially the same prior art or arguments [that] previously were presented to the office.’” Prelim. Resp. 16. In making that contention, Patent Owner primarily directs us to case IPR2016-01272 (“the ’1272 IPR”). *Id.* at 17–21. In the ’1272 IPR, Petitioner challenged claims 1, 2, and 9 of the ’239 patent based, in part, on U.S. Patent No. 3,479,561 to Janning (“Janning”). According to Patent Owner, Petitioner's reliance on Hongbin here is analogous to its previous reliance on Janning, and that the asserted deficiency in connection with each of those references centers on the same claim feature, namely, “the light source configured to provide a gradual change in luminance . . . to simulate a conventional cigarette.” *Id.* at 18–19.

In the Reply, Petitioner explains the circumstances that led to the filing of the Petition in this proceeding. In particular, Petitioner explains that after it filed the Petition in the ’1272 IPR, and the panel's determination to institute trial in that proceeding, Patent Owner served Petitioner with infringement contentions in District Court alleging infringement of additional claims of the ’239 patent (i.e., claims 3, 5, 7, 8, 13–15, 17, and 18). Reply 1–2. Petitioner also contends that the requirement in claims 3, 5, 7, 8, 13–15, 17, and 18 of additional features of an “atomizer” and a “liquid storage container” that are neither required by claims 1, 2, and 9, nor present

in Janning, necessitate consideration of Hongbin in connection with the grounds proposed in the present Petition. *Id.* at 2. Petitioner further contends that because claim 3, for instance, depends from claims 1 and 2, those claims 1 and 2 must also be analyzed as a part of the Petition, and, thus, their inclusion as a part of the Petition is warranted. *Id.* at 4. Lastly, Petitioner submits that a challenge to claim 9 was included as a part of the Petition as a matter of completeness, and consideration of that claim here cannot reasonably be considered overwhelming or burdensome. *Id.* at 4.

In our view, the circumstances present here do not warrant denial of the Petition under 35 U.S.C. § 325(d). We do not agree with Patent Owner's argument that "Petitioner offers no credible reason" why the previous petition could not have challenged claims 3, 5, 7, 8, 13–15, 17, and 18. Prelim. Resp. 17. That additional claims were added to infringement contentions levied against Petitioner in District Court after the filing of the prior petition seemingly presents a credible explanation for the inclusion of those claims in the instant Petition. Indeed, Petitioner makes it abundantly clear that such was the underlying rationale behind the filing of the present Petition. Reply 3–4. To conclude that a Petitioner is foreclosed from pursuing any additional claims in connection with a subsequent petition when faced with new infringement contentions is, in our view, untenable. Such a conclusion would seemingly compel a Petitioner, in every instance, to challenge every claim of a given patent regardless of the claims that form the basis of a charge of infringement.

Accordingly, we are not persuaded, given the facts and circumstances here, that Petitioner should be precluded from now challenging claims 3, 5, 7, 8, 13–15, 17, and 18. Furthermore, that the content of claims 1 and 2



must also necessarily be considered in association with those newly challenged claims presents a logical basis for their inclusion in this Petition as well.

Finally, Petitioner's inclusion of a challenge to claim 9 as a part of the Petition does not present a situation in which a petitioner seeks to respond to a patent owner's prior preliminary response or use a Board's decision on institution as a "roadmap" to perfect prior deficient grounds. *See Gen. Plastic Indus. Co. v. Canon Kabushiki Kaisha*, Case IPR2016-01357, slip op. at 17 (PTAB Sept. 6, 2017) (Paper 19) (informative). Rather, the proposal of additional grounds of unpatentability applied to claim 9 emerges as the by-product of applying the same ground to newly challenged claims 3, 5, 7, 8, 13–15, 17, and 18. As discussed above, the ground advanced as to those claims resulted from a change of circumstances in the District Court action. We do not discern that, taking into account the situation in this case, there is any unreasonableness or undue burden imposed upon the Patent Owner by the inclusion of claim 9 here that compels denial under 35 U.S.C. § 325(d) as to claim 9.

Therefore, in light of the foregoing, we do not exercise our authority to deny the Petition under 35 U.S.C. § 325(d).

#### *B. Claim Construction*

In an *inter partes* review, a claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). Consistent with the broadest reasonable construction, claim terms are presumed to have their ordinary and customary

meaning as understood by a person of ordinary skill in the art in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Nevertheless, a “claim term will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history.” *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002).

Here, Petitioner offers express construction or discussion for the terms “electronic cigarette” and “section,” and maintains that all remaining terms be afforded their ordinary and customary meaning without need for express construction. Pet. 12–13. Patent Owner addresses proposed constructions for four claim phrases/terms: (1) “gradual change in luminance . . . to simulate a conventional cigarette”; (2) “liquid storage container”; (3) “wire”; and (4) “electronic cigarette.” Prelim. Resp. 5–13. For purposes of this Decision, and based on the record before us, we explicitly address the claim construction of: (1) “electronic cigarette”; (2) “gradual change in luminance . . . to simulate a conventional cigarette”; (3) “liquid storage container”; and (4) “wire.”

*1. “electronic cigarette”*

The term “electronic cigarette” appears in the preamble of all of the challenged claims. Claim 17, however, also includes a recitation of “electronic cigarette” in the body of the claim. “In considering whether a preamble limits a claim, the preamble is analyzed to ascertain whether it states a necessary and defining aspect of the invention or is simply an introduction to the general field of the claim.” *On Demand Machine Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1343 (Fed. Cir. 2006). That analysis

takes into account whether the preamble is “necessary to give life, meaning and vitality” to the claim. *Id.* (quoting *Kropa v. Robie*, 187 F.2d 150, 152 (CCPA 1951)).

With respect to claims 1–3, 5, 7–9, and 13–15, Petitioner contends that the term “electronic cigarette” “serves as a lead-in or introduction to the relevant field of the claims and is not a claim limitation.” Pet. 12–13.<sup>4</sup> Patent Owner seemingly does not contest that contention. Patent Owner, however, contends that the recitation of “electronic cigarette” is a limitation of claim 17 (and claim 18 which depends therefrom) because the term is recited in the body of that claim. Prelim. Resp. 13.

We take note of the divergence between the parties in connection with the limiting nature of “electronic cigarette” at least with respect to claim 17. In reviewing the record before us, however, we discern that the term is not at issue when it comes to any of the challenged claims vis-à-vis the proposed grounds of patentability. For purposes of this Decision, we determine that it is not necessary to opine expressly on the limiting nature of “electronic cigarette” for any of the claims, as it is seemingly not the basis of controversy between the parties in connection with the proposed grounds of unpatentability under consideration. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed.Cir.1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

---

<sup>4</sup> With respect to claims 1, 2, and 9, this panel made the same determination in connection with the Decision on Institution in the '01272 IPR. IR2016-01272, Paper 11.

2. *“gradual change in luminance . . . to simulate a conventional cigarette”*

Petitioner offers no construction for the term “gradual change in luminance . . . to simulate a conventional cigarette.” Patent Owner urges that it should be construed to mean “gradual escalating brightness upon inhalation followed by a gradual de-escalating brightness similar to that of a conventional cigarette.” Prelim. Resp. 5. In support of that construction, Patent Owner points to the ’239 patent’s explanation that “[a] red LED 3 blinks for each smoking action, and a sawtooth wave signal that lasts for 1.2 seconds is given by the control circuit for blinking signals, which provides a gradual change of luminance to imitate the ignition and combustion process of a conventional cigarette.” Prelim Resp. 6 (citing Ex. 1001 at 4:23–27). Patent Owner also points to the Declaration of Mr. Richard Meyst (Ex. 2001, “Meyst Declaration”) in support of the position that “[a] ‘sawtooth wave’ is an asymmetric triangular wave form that has (i) a steep rise time that is shorter as compared to a corresponding slow decay time, or (ii) a slow rise time that is longer as compared to a steeper decay time.” *Id.* (citing Ex. 2001 ¶ 19); *see also* Ex. 2001 ¶¶ 20–25.

In light of the adequate underlying support that Patent Owner provides on the record before us for its proposed construction, we adopt, for purposes of this Decision, Patent Owner’s proposed construction. Accordingly, we construe “gradual change in luminance . . . to simulate a conventional cigarette” as “gradual escalating brightness upon inhalation followed by a gradual de-escalating brightness, similar to that of a conventional cigarette.”

3. *“liquid storage container”*

Claims 3, 8, and 13 include the term “liquid storage container.”

Petitioner does not offer a construction for the term. Patent Owner urges that it means “vessel for storing liquid.” Prelim. Resp. 9. In support thereof, Patent Owner notes that all of the pertinent claims describe the “liquid storage container” as “a separate component from the ‘housing,’ ‘atomizer,’ and other elements.” *Id.* at 10. Patent Owner also points to the ’239 patent’s disclosure that the “liquid storage container” is a structure “made of silicon rubber, alternatively, other polymers.” *Id.* (citing Ex. 1001, 2:41–45). Patent Owner further notes that all of the figures of the ’239 patent depict liquid storage containers “that are separate walled components within the housing for storing liquid.” *Id.* (citing Ex. 1001, Figs. 1 (item 13), 7 (item 113), 8 (item 213), and 9 (item 313)). Patent Owner further references a dictionary definition of “container” as meaning “one that contains: as a: receptacle (as a bowl or jar) for holding goods,” and also cites to testimony in the Meyst Declaration. *Id.* at 11 (citing Ex. 2016, 3; Ex. 2001, ¶¶ 26–29.)

We are mindful that Petitioner offers no construction of the term “liquid storage container,” and Patent Owner has pointed to both intrinsic and extrinsic evidence that generally supports Patent Owner’s construction. We observe, however, that the inclusion of the term “vessel” as a part of the meaning of “liquid storage container” is not well explained. In that respect, we do not discern that the term “vessel”: (1) appears in any of the claims of the ’239 patent; (2) is used as a term in connection with any “liquid storage container” in the Specification; or (3) appears in the extrinsic evidence offered by the Patent Owner. In connection with Patent Owner’s own extrinsic evidence, it is the term “receptacle” that arises in-part from the proffered definition of “container.”

In our view, the record now before us demonstrates a meaning of “liquid storage container” as “a receptacle for storing liquid.” Accordingly, we adopt that meaning for purposes of this Decision.

4. “wire”

Petitioner provides no construction of the term “wire.” Patent Owner contends that the term means “a flexible metal thread or rod.” Prelim. Resp. 11. In advocating for that meaning, Patent Owner points to portions of the ’239 patent describing particular materials for wires used as heating wires, and depictions of such wires in the figures of the patent. *Id.* at 12 (citing Ex. 1001, 3:16–22; Figures 1, 3). Patent Owner also relies on dictionary definitions of “wire” designating it as “metal in the form of a usu[ally] very flexible thread or slender rod” and “a metal drawn out into the form of a thread or thin flexible rod.” *Id.* (citing Ex. 2016, 5; Ex. 2022, 3).

In considering the record at hand, we adopt, for purposes of this Decision, the meaning of “wire” offered by the Patent Owner as “a flexible metal thread or slender rod.”

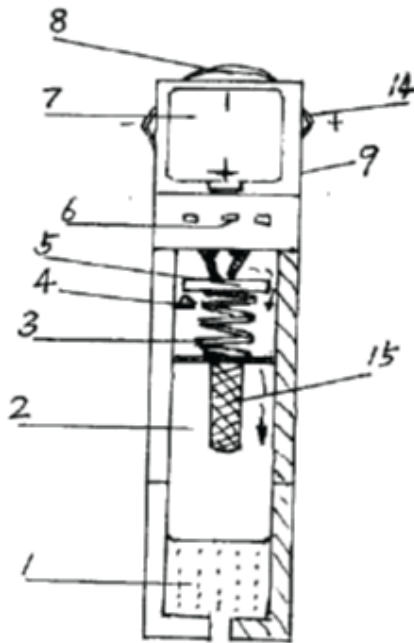
*C. The Ground Based on Hongbin and JP ’598*

*1. Overview of Hongbin*

Hongbin is titled “Liquid Odorous Cigarette.” Ex. 1003, 1.<sup>5</sup> Hongbin explains that “the present invention is intended to design a liquid odorous cigarette which is free of any poison, harm, or environment pollution.” *Id.* at 3. Hongbin’s Figure 1 is reproduced below:

---

<sup>5</sup> We refer to the page numbering of Hongbin appearing in the lower right hand corner of the document.



Hongbin's Figure 1 shows "a cutaway view of the first design scheme of a cigarette holder." *Id.* at 4. Figure 1 depicts filter tip 1, smoking material evaporation chamber 2, spring 3, power contactor 4, valve plate 5, gas inlet 6, power cell 7, indicator lamp 8, outer case 9, inner case 10, interlayer 11, button 12, trigger piece 13, external power source 14, and electronic heater 15. *Id.* Hongbin expresses that "the tip can give out light so that it is more real" and results in "more fun." *Id.*

## 2. Overview of JP '598

JP '598 is titled "Electronic candle." Ex. 1005, Title. JP '598 describes that the problem it addresses is the capability of producing a form of illumination for an artificial candle that is "very natural." *Id.* at Abstract. As part of a solution to that stated problem, JP '598 describes the use of a "light emitter illumination circuit." *Id.* ¶ 10. That illumination circuit allows for the cyclical alteration of the luminous intensity of an electric light emitter, such as a light emitting diode (LED), associated with an electronic

candle. *Id.* ¶ 34. More particularly, JP '598 explains:

It is preferred that the aforesaid light emitter illumination circuit is configured in such a way that the luminous intensity of the aforesaid electric light emitter changes during one cycle to anywhere from a roughly triangular wave shape to a roughly sawtooth shape.

Configuring this invention in this manner causes the changes in brightness in the artificial flame unit illuminated by light from the electric illumination unit to become smooth, with a roughly triangular wave shape to a roughly sawtooth shape, producing flickering in the artificial flame unit that feels very close to that of the flame of an actual candle, resulting in a form of illumination that feels very natural.

*Id.* ¶¶ 12–13.

Such a roughly triangular wave shape is shown in JP '598's Figure 5, and a roughly sawtooth shape is shown in Figure 6. JP '598 also discloses that the “change in luminous intensity is not limited to the roughly triangular wave shape to roughly sawtooth shape indicated in Figs. [5 and 6], and any of various changes including even more complex changes, can be used.” *Id.* ¶ 43.<sup>6</sup>

### *3. Petitioner's Contentions – Hongbin and JP '598*

Petitioner contends that Hongbin discloses many of the features of claims 1–3, 9, 13–15, 17, and 18. In making that contention, Petitioner presents detailed claim charts and relies on the declaration testimony of Dr. Robert H. Sturges (Ex. 1008, “Sturges Declaration”). Pet. 26–60. For instance, with respect to claim 1, Petitioner characterizes Hongbin's

---

<sup>6</sup> Paragraph 43 makes mention of “Figs. 6 and 7;” however, the reference to Figure 7 appears to be a typographical error in lieu of a reference to Figure 5.



electrically heated liquid cigarette as an electronic cigarette that is composed of: (1) a “housing” (casing 9); (2) a “control circuit” including indicator 8, heater 15, valve plate 5, power contactor 4, and their associated wired connections; (3) an “airflow sensor” formed by valve plate 5 and spring 3 that operates to provide suction control of air entering and exiting air intake vents; and (4) a “light source” formed by indicator 8. *Id.* at 26–42. For the feature of a “battery,” such as that recited in claims 2, 9, and 15, Petitioner relies on battery 7. *See, e.g., id.* at 43. In connection with an “atomizer,” e.g., claims 3 and 13, Petitioner relies on Hongbin’s electric heater 15, which operates to “electrically heat the smoking material to promote evaporation.” *See, e.g., id.* at 44–45 (quoting Ex. 1003, 3:20–21).

With respect to the requirement in claims 3 and 13 of a “liquid storage container,” Petitioner points to Hongbin’s smoking material evaporation chamber 2. Pet. 46. Alternatively, Petitioner is of the view that a person of ordinary skill in the art would have recognized that a container may be located in evaporation chamber 2. *Id.* at 46–47 (citing Ex. 1008 ¶¶ 43–45, 76).

Where Hongbin is deficient, according to the Petitioner, is in connection with the claimed requirement that the control circuit provides a “gradual change in luminance” to simulate a conventional cigarette based on the output of an airflow sensor. In accounting for that requirement, Petitioner points to the teachings of JP ’598, and its light emitter illumination circuit. Pet. 35–39. In particular, Petitioner urges that, in view of Hongbin’s desire to simulate smoking in a way that is “more real” and “more fun,” “a [person of ordinary skill in the art] would have consulted JP598 to improve the illumination of the electronic cigarette in Hongbin.”

*Id.* at 36–37. In support of that position, Petitioner relies on the Sturges Declaration and also on Janning. *Id.* at 36–39 (citing Ex. 1008 ¶¶ 67–70, 72–73; Ex. 1018, 1:25–27, 1:42–49, 1:53–55).

Janning is titled “Breath Operated Device” and describes “[a]n electrical apparatus which simulated a burning element such as a candle, includes a switch that is response to an operator’s breath.” Ex. 1018, Title; 1:12–14. More specifically, Petitioner describes Janning as teaching “that it was desirable to use an electric light to simulate illumination of various combustion devices including candles[,] cigarettes, cigars, lighters, and lanterns.” Pet. 37. Petitioner also maintains that a person of ordinary skill in the art “would be motivated to look to JP598 to solve the common problem of simulating combustion as closely as possible using an electric light regardless of what type of combustion was being simulated.” *Id.* at 37–38 (citing Ex. 1008 ¶ 70).

Accordingly, in light of the prior art, Petitioner contends that all of the features of claims 1–3, 9, 13–15, 17, and 18 are disclosed in Hongbin and JP ’598, and that a person of ordinary skill in the art would have had adequate reason to combine those teachings.

#### *4. Patent Owner’s Contentions – Hongbin and JP ’598*

Patent Owner does not agree with Petitioner. The primary basis of Patent Owner’s disagreement is premised on the belief that neither Hongbin nor JP ’598, either alone or taken together, accounts for the claim feature pertaining to a “gradual change in luminance” that simulates a conventional cigarette. The pertinent claim feature in question, as it appears in claim 1, reads in its entirety: “the light source configured to provide a gradual change in luminance via control by the control circuit, when the airflow sensor

senses airflow, to simulate a conventional cigarette.” According to Patent Owner, a skilled artisan would not discern any change in luminance reasonably viewed as “gradual” that operates to simulate a conventional cigarette from the teachings of the prior art. Prelim. Resp. 25–39. More particularly, Patent Owner is of the view that JP ’598’s teachings generally are limited to reproducing the “flicker” of a candle, which, Patent Owner contends, does not amount to a gradual change in luminance that would be recognized as mimicking a conventional cigarette. *Id.*

Patent Owner also questions the viability of Petitioner’s proposed ground of unpatentability with respect to other features of the claims. Specifically, in conjunction with claims 3 and 13, Patent Owner urges that neither Hongbin nor JP ’598 discloses a “liquid storage container.” Prelim. Resp. 40–42; 45–46. In that respect, Patent Owner is of the view that those claims require a liquid storage container that is separate from the housing, and Hongbin does not disclose that evaporation chamber 2 is a “vessel” or structure viewed as separate from casing 9. *Id.* at 41.

Further with regard to claim 13, Patent Owner contends that Hongbin’s valve plate 5, i.e., the structure identified in-part by Petitioner as constituting an air flow sensor, does not operate in connection with changing luminance in the manner required by the claim. Prelim. Resp. 43–45. In particular, claim 13 requires that the luminance of an LED changes “based on an output of the airflow sensor.” Patent Owner contends that to satisfy that requirement, Hongbin’s valve plate 5 “must produce a current, voltage, power or signal,” which Patent Owner maintains it does not. *Id.* at 44.<sup>7</sup>

---

<sup>7</sup> We are cognizant that Patent Owner expresses the following: “[a]ssuming,

Lastly, with respect to claim 17, Patent Owner argues that Hongbin and JP '598 do not account adequately for the claimed feature of “operating the electronic controller to gradually change a luminance of an LED at a first end of the housing to simulate a conventional burning cigarette tip.” Prelim. Resp. 47. To that end, Patent Owner contends that the relied upon prior art does not disclose any gradual change of luminance that simulates a conventional burning cigarette.

Patent Owner also is of the view that the combined teachings of Hongbin and JP '598 do not disclose the claim 17 feature of “a sensed airflow signal from the sensor to an electronic controller in the housing.” Patent Owner contends that Hongbin’s valve plate does not “produce a current, voltage, power or signal,” which Patent Owner submits is required. *Id.* at 47–48. Patent Owner also contends that Hongbin does not disclose an “electronic controller.” *Id.* at 48–49.

## *5. Discussion – Hongbin and JP '598*

### *a. Claim 1*

As is the case with the related '01272 IPR, the issue at the forefront of this proceeding is whether the prior art relied upon by Petitioner conveys the claimed feature of a “gradual change in luminance . . . to simulate a

---

*arguendo*, that the valve plate acts as an airflow sensor in Hongbin.” Prelim. Resp. 44. We take that statement to indicate some doubt that the valve plate does constitute an airflow sensor. Patent Owner, however, does not make any further argument in that regard. Petitioner and Dr. Sturges explain why Hongbin’s valve plate 5 and spring 3 should be regarded as forming an airflow sensor in operating to open and close air vents. Pet. 30–34; Ex. 1008 ¶¶ 40–41. For purposes of this Decision, we acknowledge Petitioner’s position and credit Dr. Sturges’s testimony, in that respect, and regard Hongbin as disclosing an airflow sensor.

conventional cigarette.” The issue centers on the question of whether a person of ordinary skill in the art seeking to illuminate the tip of an electronic cigarette to create a “more real” appearance as taught in Hongbin, would have looked to JP ’598’s teachings with respect to the simulation of a candle flame’s illumination.

As discussed above, and as we have observed previously in instituting trial in the ’01272 IPR (IPR2016-01272, Paper 11), JP ’598 provides that its electrical illumination occurs through “changes in brightness” or changes in “luminous intensity” that are “smooth” based upon patterns characterized as “a roughly triangular wave shape to a roughly sawtooth shape” with a goal of creating an illumination technique that is “natural.” Ex. 1005 ¶¶ 13, 43. Moreover, JP ’598 states that “the change in luminous intensity is not limited to the roughly triangular wave shape to roughly sawtooth shape indicated in Figs. [5 and 6], and any of various changes including even more complex changes, can be used.” *Id.* ¶ 43. Thus, JP ’598 contemplates a variety of possible changes or transitions in the brightness or luminous intensity of electrical illumination in an effort to create natural looking illumination.

Furthermore, we observe that, as a part of its proposed claim construction, Patent Owner contends that gradual increases and decreases in luminance, under the guise of imitating the combustion process of a conventional cigarette, are understood by skilled artisans as being accomplished through a “sawtooth wave signal.” Prelim. Resp. 6 (citing Ex. 2001 ¶¶ 19, 20). Although presented in the context of simulating candle flame illumination, JP ’598 conveys that a signal in the form of a “sawtooth shape” is recognized in the art for a luminance simulation purpose. Ex. 1003

¶ 43. Moreover, as noted by Petitioner, Janning conveys that a skilled artisan knew that there are similar considerations when simulating illumination of an electric candle and an electric cigar. Pet. 37 (citing Ex. 1018 1:25–27, 1: 42–49). Further still, there is no suggestion that the gradual increase and decrease in the luminance of a conventional cigarette is something unknown to one of ordinary skill in the art. Indeed, as Patent Owner expressed in District Court:

One of ordinary skill in the art could determine if the change in luminance is gradual or not by casual observation. Indeed, there are numerous scientific studies of the combustion of cigarettes, including measuring the temperature of a burning cigarette during various puff lengths and volumes, noting that the “visible part of the glowing coal is the hottest spot during puffing.”[] Those studies also discuss the relationship between temperature and puff strength or duration.[] One of skill in the art would have no difficulty comparing the change in luminance in an accused infringing product to that of a conventional cigarette.

Ex. 1019, 5. Thus, Patent Owner is of the view that ascertaining the gradual changes in luminance of a conventional cigarette is not a rigorous exercise in experimentation, but is, instead, readily observable through “casual observation.” *Id.*

We are mindful of Patent Owner’s and Mr. Meyst’s views that the illumination patterns of a flame and a burning cigarette are “fundamentally different.” Prelim. Resp. 28 (citing Ex. 2001 ¶ 52). The inquiry into obviousness, however, mandates that we look at the teachings of the prior art through the lens of a skilled artisan who is a person of ordinary creativity. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007). And, in doing so, we also consider the background knowledge and common sense of the person of ordinary skill. *See Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587

F.3d 1324. 1329 (Fed. Cir. 2009). Here, the prior art conveys that a skilled artisan: (1) desired to make an electronic cigarette “more real” (Ex. 1003, 4); (2) knew that illumination of the tip of an electronic cigarette contributes to its appearance as real; (3) knew to simulate a luminance pattern indicative of a combustion process through “sawtooth” wave signals; and (4) knew what the gradual changes in illumination of real cigarette look like.

In light of the above, and in considering the record presently before us, we find persuasive Petitioner’s arguments and credit the testimony of Dr. Sturges (Ex. 1008 ¶ 68). To that end, we conclude that there is persuasive evidence and argument in the record that, guided by the teachings of the prior art, a skilled artisan combining the teachings of Hongbin and JP ’598, and seeking to simulate a cigarette, would have appreciated reasonably that a circuit may be configured to provide the known “gradual changes” in luminance that simulate a conventional cigarette. We also are satisfied, on the record before us, that Petitioner has accounted for all the features of claim 1 (*see* Pet. 26–42), and has met its burden of showing a reasonable likelihood of success in its challenge to that claim based on the combined teachings of Hongbin and JP ’598.

*b. Claims 2 and 9*

Claim 2 depends from claim 1 and adds “a battery in the housing electrically connected to the control circuit.” Claim 9 depends from claim 2 and adds “with the housing having a first section attached to a second section and with the battery and the light source in the first section.” Petitioner points to Hongbin’s battery 7 and its location at a first end of casing 9 as satisfying claims 2 and 9. Pet. 43–44; 49–51.

On this record, Petitioner's accounting of the features of claims 2 and 9 appears reasonable, and Patent Owner does not challenge the Petition in the respect. We conclude that Petitioner has shown a reasonable likelihood of success in its challenge to claims 2 and 9 based on the combined teachings of Hongbin and JP '598.

*c. Claim 3*

Claim 3 depends from claim 1 and adds "an atomizer in the housing electrically connected to the control circuit and a liquid storage container in the housing adjacent the atomizer." As discussed above, we conclude that a liquid storage container is a "receptacle for storing liquid" that is separate from the housing. Petitioner initially relies on Hongbin's evaporation chamber 2 as being a liquid storage container (Pet. 46), but Hongbin provides little discussion of the structure of the chamber, or that the chamber is anything more than a space within casing 9. We, thus, agree with Patent Owner (Prelim. Resp. 40–41) that it is not apparent readily that chamber 2 amounts to a separate receptacle that is located in casing 9.

Petitioner, however, also alternatively relies on the Sturges Declaration (Pet. 46–47), in which Dr. Sturges testifies that a person of ordinary skill in the art would have understood that smoking material must be stored in evaporation chamber 2, and one such storage approach "is to use a container to hold the liquid" in the chamber. Ex. 1008 ¶ 45. Dr. Sturges also testifies:

The container could be a vessel or an absorbent material such as cotton or another fiber or cellulosic material that retains the liquid. Using a fiber as a container to retain a liquid in electronic cigarettes and other related applications was well-known to a [person having ordinary skill in the art].



*Id.* In support of that testimony, Dr. Sturges makes reference to a variety of prior art patents employing cartridges (U.S. Patent No. 6,598,607 (Ex. 1013)), fibrous materials (e.g., U.S. Patent No. 4,793,365 (Ex. 1014)), and other containers for storing fuel (Takeuchi (Ex. 1007)). *Id.*

Patent Owner challenges Dr. Sturges’s testimony on the theory that an absorbent material cannot constitute a liquid storage container and that “Petitioner does not explain how a separate vessel would work.” Prelim. Resp. 41–42. In support of that challenge, Patent Owner relies on the Meyst Declaration. *Id.* (citing Ex. 2001 ¶¶ 56–57). Neither Patent Owner nor Mr. Meyst, however, explains cogently why an absorbent material that holds liquid does not constitute a liquid storage container. Patent Owner and Mr. Meyst also do not address Dr. Sturges’s discussion of Takeuchi, which discloses “liquid container 32.” *See* Ex. 2001 ¶ 57; Ex. 1007, 4:36–37. We also are not persuaded on this record that Patent Owner’s general contention that Petitioner has not explained how a separate vessel or receptacle “would work” is persuasive without meaningfully addressing the evidence on which Petitioner and Dr. Sturges rely.

We conclude that, on this record, Petitioner has shown a reasonable likelihood of success in its challenge to claim 3 based on the combined teachings of Hongbin and JP ’598.

*d. Claims 13–15*

Independent claim 13 is drawn to an electronic cigarette comprising, in part, an LED and an airflow sensor. Claim 13 also includes the limitation: “the luminance of the LED changes based on an output of the airflow sensor.” Patent Owner urges that Petitioner “ignores the term ‘output’” and that in Hongbin there is no change in the luminance of a light source “based

on the output” of an airflow sensor. Prelim. Resp. 43. Patent Owner takes that view on the theory that “based on an output of the airflow sensor” requires the production of a “current, voltage, power, or signal.” *Id.* at 44. In support of that position, Patent Owner relies on a definition of “output” as meaning “the current voltage, power, or signal produced by an electrical or electronic circuit or device.” *Id.* (citing Ex. 2015, 4). With that meaning in mind, Patent Owner contends that the operation of Hongbin’s valve plate 5 does not produce any of the above-noted outputs. *Id.* at 44. Patent Owner also points to the Meyst Declaration, in which he testifies that Hongbin’s valve plate 5 does not, itself, produce any type of “output” and, instead, “simply provides a conductive medium to allow the output of the battery to be relayed or transmitted to the heater or indicator.” *See* Ex. 2001 ¶ 59.

It is clear from the language of claim 13 that it the change in luminance of the LED is based specifically on the “output” of the airflow sensor. Petitioner provides little explanation in connection with that feature of claim 13. In that regard, Petitioner simply references the action of Hongbin’s valve plate 5 and spring 3 (Pet. 52 (citing Ex. 1003, 3:15–19)), and paragraph 81 of Dr. Sturges’s testimony (*id.*) Dr. Sturges testifies that control plate 5 contacts power contactor 4 to illuminate indicator 8. Ex. 1008 ¶ 81. Dr. Sturges does not use, or explain, the term “output.”

We observe that the ’239 patent generally uses the term “output” in an electrical sense. *See* Ex. 1001, 3:52–53 (“The control circuit board 8 then *outputs two driving voltages . . .*” (emphasis added)). The use of the term “output” in that context is consistent with the meaning of the term proffered by Patent Owner. Although in Hongbin, it is the movement of valve plate 5 that ultimately effects the illumination of indicator 8, Petitioner does not

explain adequately how that movement means that it is the “output” of valve plate 5 that causes a change in luminance. In other words, Petitioner does not provide sufficient explanation as to why claim 13 effectively should be read as requiring only that the change in luminance be “based on the airflow sensor” instead of being “based on the *output* of the airflow sensor.”

Accordingly, we have considered the Petition, its underlying supporting evidence, and the Patent Owner Preliminary Response and, for the foregoing reasons, we are not persuaded that Petitioner has shown a reasonable likelihood of success in challenging claim 13 as unpatentable over the combined teachings of Hongbin and JP ’598. We reach that same conclusion as to claims 14 and 15, which ultimately depend from claim 13.

*e. Claim 17*

Claim 17 is drawn to a method of using an electronic cigarette that includes the steps of “sensing airflow in a housing of the electronic cigarette via a sensor” and “providing a sensed airflow signal from the sensor to an electronic controller in the housing.” Petitioner points to the operation of Hongbin’s valve plate 5 and spring 3 as satisfying those requirements of claims 17. Pet. 57–59 (referencing prior portions of the Petition and citing Ex. 1008 ¶ 85).

As with claim 13, Patent Owner contends that the operation of Hongbin’s valve plate to allow the output of the battery to be transmitted to the components of Hongbin’s cigarette does not mean that the valve plate, itself, provides any “sensed airflow signal” to an electronic controller. Prelim. Resp. 47–48. Patent Owner also contends that the recitation of “electronic controller” is not synonymous with the term “control circuit” that is recited in claims 1 and 13. *Id.* at 48–49 (citing Ex. 2001 ¶ 62). To that

end, Patent Owner argues that the electronic controller of claim 17 is something more than a circuit and is, instead, “a type of control device that could be used as a part of a control circuit.” *Id.* at 49. Patent Owner urges that Petitioner has not demonstrated that Hongbin and JP ’598 disclose the electronic controller required by claim 17.

Claim 17 makes clear that a sensor must provide a “sensed airflow signal” to an “electronic controller.” There is little explanation in the Petition as to how Hongbin accounts for those features, simply referring back to prior discussion in the Petition as to claim 1. Claim 1, however, does not recite either a “sensed airflow signal” or an “electronic controller.” Dr. Sturges also does not provide adequate explanation in that respect. On the record at hand, it simply is unclear why the movement of Hongbin’s valve plate 5 to contact power contactor 4 means that the valve plate is providing a “sensed airflow signal.” It also is not apparent why that same valve plate and power contactor interaction means any signal is being provided to “an electronic controller.” Petitioner and Dr. Sturges fail to explain suitably that the different terms “control circuit” and “electronic controller” should be regarded as synonymous or what component is being relied upon to constitute the recited “electronic controller.” In that respect, we credit Mr. Meyst’s testimony that:

The term “circuit” would be understood by one skilled in the art to include several devices or components that form a conducting path and perform a particular function. A “control circuit” would indicate that the circuit includes some kind of device that imparts control over the function of the circuit. One skilled in the art would understand an electronic controller to be a single control device that can be used in a control circuit, but would not understand a “controller” and a “control circuit” to mean the same thing.

Ex. 2001 ¶ 62.

Accordingly, we are not persuaded that Petitioner has shown a reasonable likelihood of success in its challenged to claim 17 based on the combined teachings of Hongbin and JP '598. We also are not so persuaded with respect to claim 18, which depends from claim 17.

*D. The Ground Based on Hongbin, JP '598, and Whittemore*

Petitioner contends that claims 3, 5, 7, 8, and 13–15 are unpatentable over the combined teachings of Hongbin, JP '598, and Whittemore. In that respect, Petitioner points to content of the prior art and the Sturges Declaration in support of its contentions. Pet. 61–75.

*1. Claims 3, 5, 7, and 8*

Patent Owner disputes Petitioner's position of unpatentability of the claims. Claims 3, 5, 7, and 8 ultimately depend from claim 1. Patent Owner reiterates its contention that the prior art lacks the feature of claim 1 pertaining to a gradual change in luminance. Prelim. Resp. 52–53. For the same reasons discussed above, we are persuaded that Petitioner has accounted for that feature in a manner that is sufficiently persuasive not to deny institution of a trial based on that feature.

Claims 5 and 7 further refine the recited “atomizer” introduced in claim 1 to a heating structure that specifically is a “heating wire.” Hongbin describes an “electronic heater 15,” but does not identify that heater as a “heating wire.” See Ex. 1003, 4. To account for a “heating wire,” Petitioner relies on Whittemore.

Whittemore is titled “Vaporizing Unit for Therapeutic Unit.” Ex. 1006, Title. In one embodiment, Whittemore describes a vaporizing unit that includes a heating structure described as “filament 3.” *Id.* at p. 1, l. 27.

Petitioner and Dr. Sturges characterize that filament as a “heating wire.” Pet. 62; Ex. 1008 ¶ 91. Patent Owner does not dispute that characterization.

Patent Owner disputes Petitioner’s position that a skilled artisan would have had adequate reason to combine the teachings of Whittemore with Hongbin and JP ’598. In that respect, Petitioner argues and Dr. Sturges testifies that a person of ordinary skill in the art would have recognized Whittemore’s filament 3 as being operable in other types of vaporizing devices as well as a heating device that produces “more efficient heating” than Hongbin’s electronic heater. Pet. 62–65; Ex. 1008 ¶¶ 90–93. Patent Owner and Mr. Meyst disagree with the Petitioner’s theory that Whittemore’s filament 3 is an example of a device that produces more efficient heating and would be operable in Hongbin’s cigarette. Prelim. Resp. 54–63; Ex. 2001 ¶¶ 72–83.

It is clear that there is disagreement between Petitioner and Patent Owner, and more particularly, there is dispute as to material facts as between the parties’ declarants, Dr. Sturges and Mr. Meyst. Such a scenario favors the institution of trial to resolve the disagreement. *See* 37 C.F.R. § 42.108(c).

Patent Owner also argues that Petitioner has not shown the “vaporization nozzle” feature of claim 7. Prelim. Resp. 63–64 (citing Ex. 2001 ¶ 68). Petitioner, on the other hand, urges that the combination of Hongbin and Whittemore discloses a vaporization nozzle, arguing that “[t]he evaporation chamber 2 where the heating wire is located is a tube where vaporization occurs, and out of which vaporized gas is provided for inhalation.” Pet. 69–70 (citing Ex. 1008 ¶ 96). Given the different positions as to material facts taken by the parties and their respective declarants, we also think this circumstance favors institution to resolve the dispute.

Having evaluated the Petition, its underlying evidence, and the Preliminary Response, we conclude that institution of trial is warranted in connection with the ground of unpatentability offered for claims 3, 5, 7, and 8 based on the combined teachings of Hongbin, JP'598, and Whittemore.

*2. Claims 13–15*

As discussed above, claim 13 (and, thus, also dependent claims 14 and 15) includes the limitation that “the luminance of the LED changes based on an output of the airflow sensor.” Key to that feature is that the luminance change is “based on an output of the airflow sensor.” Petitioner does not rely on Whittemore to cure the deficiencies noted above for claims 13–15 based only on Hongbin and JP '598.

Accordingly, for the same reasons discussed above, we are not satisfied on the record before us that Petitioner has shown a reasonable likelihood of success in challenging claims 13–15 as unpatentable over the combined teachings of Hongbin, JP '598, and Whittemore.

*E. The Ground Based on Hongbin, JP '598, and Takeuchi*

Petitioner also challenges claims 3, 5, 7, 8, and 13–15 as unpatentable based on the combined teachings of Hongbin, JP '598, and Takeuchi. Patent Owner disputes the unpatentability of claims 3, 5, 7, 8, and 13–15 based on those references.

*1. Takeuchi*

Takeuchi is titled “Flavor-Generating Device.” Ex. 1007, Title. Takeuchi's Figures 1 and 4 are reproduced below.

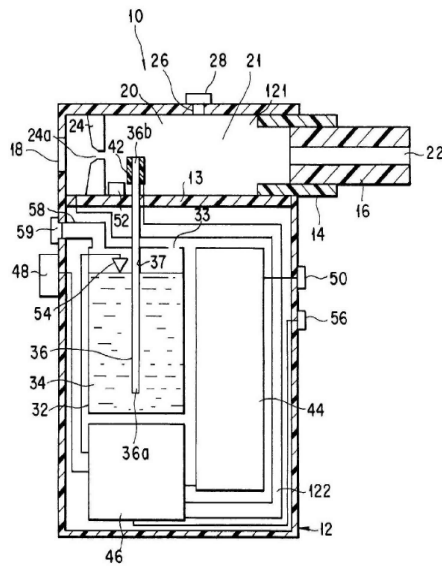


FIG. 1

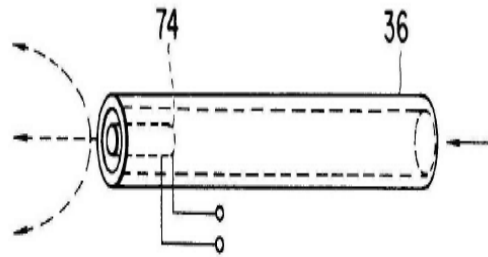


FIG. 4

Figure 1 depicts a flavor-generating device according to a first embodiment of Takeuchi, and Figure 4 shows another embodiment employing a particular mechanism for supplying and gasifying a liquid flavor source. Ex. 1007, 2:51–52, 2:59–61. As shown in Figure 1, flavor-generating device 10 includes, among other components, heater 42, capillary tube 36, and liquid container 32 containing liquid flavor source 34. *Id.* at 4:26–29, 5:1–35. In operation, liquid flavor source 34 is drawn through capillary tube 36, gasified by heater 42, and then directed to inhalation port 22. *Id.* at 7:57–8:15. As shown in Figure 4, in lieu of heater 42, a “rod-like heater 74” maybe inserted into capillary tube 36 and operate as the gasifying mechanism. *Id.* at 8:22–29.

## 2. Claims 3, 5, 7, and 8

With respect to claim 3, Petitioner contends:

As Dr. Sturges explains, a [person having ordinary skill in the art] would have recognized that Takeuchi’s liquid storage



container and heater are power efficient because, like Whittemore, only the liquid that needs to be vaporized is heated. Ex.1008, ¶¶105–106. Specifically, in Takeuchi, the liquid container 32 is spaced away from the heater 42, and only the liquid reaching the heater 42 via the capillary tube 36 is heated to a vapor. *Id.* Limiting the amount of liquid that needs to be heated results in an efficient heating system that would not require a backup for the battery like Hongbin. *Id.* In fact, Takeuchi explicitly discloses that “it is an object of the present invention to provide a flavor-generating device which can be driven with a low energy, which effectively prevents a flavor source from being wasted.” Ex. 1007, col. 1:58–62.

Accordingly, a [person having ordinary skill in the art] would have been motivated to substitute Takeuchi’s liquid container and atomizer for Hongbin’s liquid container and atomizer to improve power efficiency. Ex.1008, ¶106. This is nothing more than the substitution of known elements to obtain the predictable result of improved heating efficiency, as well as applying a known technique to a known device ready for improvement to yield the predicted result of better heating efficiency.

Pet. 78–79.

Thus, relying on Dr. Sturges’s testimony, Petitioner contends that it would have been obvious to incorporate Takeuchi’s liquid container and heater into Hongbin’s cigarette, and a skilled artisan would have done so “to obtain the predictable result of improved heating efficiency, as well as applying a known technique to a known device ready for improvement to yield the predicated result of better heating efficiency.” *Id.*

With respect to claims 5 and 7 (and, by extension, dependent claim 8), Petitioner contends that a skilled artisan would have understood that Takeuchi’s rod-like heater 74 is a “wire.” Pet. 82. In support of that

position, Petitioner points to Dr. Sturges's testimony and a dictionary definition of the term "wire." *Id.* (citing Ex. 1008 ¶¶ 108–109; Ex. 1024).

With respect to claim 3, Patent Owner is of the view that Takeuchi does not remedy deficiencies that it alleged in connection with Hongbin and JP '598. As discussed above, however, at this time we do not agree that denial of the Petition is warranted based on those alleged deficiencies.

With respect to claims 5–8, Patent Owner disputes that Takeuchi's rod-like heater shown, for instance, in Figure 4 above, is considered properly a "heating wire" as recited in each of claims 5 and 7. We observe, however, that both parties have provided evidence of the meaning of "wire" as encompassing a "slender rod." Prelim. Resp. 12; Pet. 82. Takeuchi's rod-like heater is a "rod" that appears "slender" at least with respect to capillary tube 36, and, thus, seemingly constitutes a "wire." We are cognizant that there is, once again, disagreement between Dr. Sturges and Mr. Meyst as to this issue. For similar reasons as those discussed above, the circumstances here favor institution of trial to resolve the dispute. *Compare* Ex. 1008 ¶¶ 108–109 *with* Ex. 2001 ¶¶ 87–90.

Accordingly, for the reasons given above, we conclude that institution of an *inter partes* as to claims 3, 5, 7, and 8 based on the combined teachings of Hongbin, JP '598 and Takeuchi is warranted based on the present record.

### 3. Claims 13–15

As discussed above, claims 13–15 include the limitation that "the luminance of the LED changes based on an output of the airflow sensor." Petitioner's ground of unpatentability that now adds Takeuchi has the same deficiencies as those noted above for the grounds applied to claims 13–15 based on the combined teachings of Hongbin and JP '598, and also based on

those reference taken with Whittemore.

For the same reasons discussed above, we are not satisfied, on the record before us, that Petitioner has shown a reasonable likelihood of success in challenging claims 13–15 as unpatentable over the combined teachings of Hongbin, JP '598, and Takeuchi.

### III. CONCLUSION

Having evaluated the Petition, its underlying supporting evidence, and Patent Owner's Preliminary Response, we determine that Petitioner has shown a reasonable likelihood of success on the following grounds:

A. Claims 1–3 and 9 as unpatentable over the combined teachings of Hongbin and JP '598;

B. Claims 3, 5, 7 and 8 as unpatentable over the combined teachings of Hongbin, JP '598, and Whittemore; and

C. Claims 3, 5, 7 and 8 as unpatentable over the combined teachings of Hongbin, JP '598, and Takeuchi.

We, however, determine that Petitioner has not shown a reasonable likelihood of success on any of the grounds proposed as to claims 13–15, 17, and 18.

### IV. ORDER

It is

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted to determine whether

A. Claims 1–3 and 9 are unpatentable over the combined teachings of Hongbin and JP '598;

B. Claims 3, 5, 7 and 8 are unpatentable over the combined teachings of Hongbin, JP '598, and Whittemore; and

C. Claims 3, 5, 7 and 8 are unpatentable over the combined teachings of Hongbin, JP '598, and Takeuchi.

FURTHER ORDERED that *inter partes* review is not instituted in this proceeding on any other grounds; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial. The trial will commence on the entry date of this decision.

For PETITIONER:

Ralph J. Gabric  
Robert Mallin  
Joshua P. Smith  
BRINKS GILSON & LIONE  
[rgabric@brinksgilson.com](mailto:rgabric@brinksgilson.com)  
[rmallin@brinksgilson.com](mailto:rmallin@brinksgilson.com)  
[jsmith@brinksgilson.com](mailto:jsmith@brinksgilson.com)

For PATENT OWNER:

Michael J. Wise  
Joseph P. Hamilton  
Lara J. Dueppen  
Tyler R. Bowen  
PERKINS COIE LLP  
[MWise@perkinscoie.com](mailto:MWise@perkinscoie.com)  
[Hamilton@perkinscoie.com](mailto:Hamilton@perkinscoie.com)  
[LDueppen@perkinscoie.com](mailto:LDueppen@perkinscoie.com)  
[TBowen@perkinscoie.com](mailto:TBowen@perkinscoie.com)