

Case IPR2016-01272
Patent 8,899,239

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 **IPR2016-01272**
Patent No. **8,899,239**

PATENT OWNER FONTEM HOLDINGS 1 B.V.'S NOTICE OF APPEAL

Office of the General Counsel
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Notice is hereby given, pursuant to 37 C.F.R. § 90.2(a), that Patent Owner Fontem Holdings 1 B.V. (“Fontem”) hereby appeals under 35 U.S.C. §§ 141 and 142 to the United States Court of Appeals for the Federal Circuit from the Final Written Decision entered on December 21, 2017 (Paper No. 51) (the “Final Written Decision”), and all underlying orders, decisions, rulings, and opinions. A copy of the Final Written Decision is attached.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Fontem further indicates that the issues on appeal include, but are not limited to, the Patent Trial and Appeal Board’s application and use of the broadest reasonable interpretation standard and claim construction, determination of unpatentability of claims 1, 2, and 9 of Fontem’s U.S. Patent No. 8,899,239 under 35 U.S.C. § 103, and any finding or determination supporting or related to those issues, as well as any underlying findings, determinations, rulings, decisions, opinions, or other related issues.

Copies of this Notice of Appeal are being filed simultaneously with the Patent Trial and Appeal Board and with the Clerk's Office for the United States Court of Appeals for the Federal Circuit.

Respectfully submitted,

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CERTIFICATE OF FILING

I hereby certify that the foregoing **PATENT OWNER FONTEM HOLDINGS 1 B.V.’S NOTICE OF APPEAL** was filed with the Director of the U.S. Patent and Trademark Office, at Office of the General Counsel, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 via Priority Mail Express[®] Post Office to Addressee service, Label No. EL 328106659US, on February 20, 2018, in accordance with 37 C.F.R. § 1.10.

CERTIFICATE OF FILING

I hereby certify that a true and correct copy of the foregoing **PATENT OWNER FONTEM HOLDINGS 1 B.V.’S NOTICE OF APPEAL** was filed electronically through the Patent Trial and Appeal Board’s E2E filing system on February 20, 2018.

CERTIFICATE OF FILING

I hereby certify that a true and correct copy of the foregoing **PATENT OWNER FONTEM HOLDINGS 1 B.V.’S NOTICE OF APPEAL**, along with the \$500 filing fee, was filed electronically through the CM/ECF for the United States Court of Appeals for the Federal Circuit on February 20, 2018.

CERTIFICATE OF SERVICE

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

Date of service: February 20, 2018

Manner of service: 1. Electronic submission through the USPTO Patent Trial and Appeal Board End-to-End System
2. Electronic mail

Document(s) served: **PATENT OWNER FONTEM HOLDINGS 1 B.V.'S NOTICE OF APPEAL**

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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 IPR2016-01272
Patent 8,899,239 B2

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

COCKS, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. Summary

R.J. Reynolds Vapor Company (“Petitioner”) filed a Petition (Paper 2, “Pet.”) to institute *inter partes* review of claims 1, 2, and 9 of U.S. Patent No. 8,899,239 B2 (Ex. 1001, “the ’239 patent”). We instituted trial as to claims 1, 2, and 9 to determine whether they are unpatentable under 35 U.S.C. § 103 over the combination of Janning¹ and JP ’598.² Paper 11 (“Institution Decision” or “Inst. Dec.”).

After institution of trial, Fontem Holdings 1 B.V. (“Patent Owner”) filed a Patent Owner Response. Paper 29 (“PO Resp.”). Petitioner filed a Reply. Paper 34 (“Pet. Reply”). Oral argument was conducted on September 20, 2017. A transcript of the oral argument is included in the record. Paper 50.

We have jurisdiction under 35 U.S.C. §§ 6(b) and 318(a). Having considered the evidence and arguments of both parties, we conclude that Petitioner has met its burden of showing, by a preponderance of the evidence that claims 1, 2, and 9 are unpatentable over Janning and JP ’598.

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

¹ U.S. Patent No. 3,479,561 issued on November 18, 1969 (Ex. 1002, “Janning”).

² Japanese unexamined patent application publication 2001-291598 published October 19, 2001 (Ex. 1003 and Ex. 1004 (English translation), “JP ’598”). In this Decision, we refer to JP ’598 as the English translation of the original reference.

patent. Pet. 4–5; Paper 4, 1–4. The '239 patent is also the subject of co-pending IPR2017-01120, and was also involved in IPR2016-01302 and IPR2015-01304.³

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, Abs. 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 1:65–2:7. The high temperature in the electro-vaporization nozzle causes nicotine liquid to rapidly vaporize to form a puff of smoke. *Id.* at 2:2–5.

Figure 1 of the '239 patent is reproduced below:

³ Trial was instituted in IPR2017-01120 on October 23, 2017. IPR2017-01120, Paper 11. The proceeding in IPR2016-01302 was terminated before a decision on institution was issued. IPR2016-01302, Paper 13. Institution was denied in IPR2015-01304 on December 9, 2015. IPR2015-01304, Paper 15.

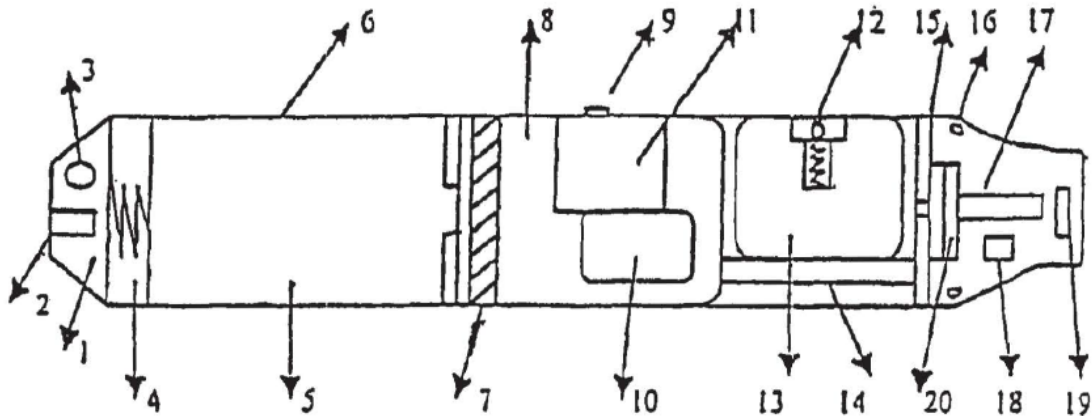


Figure 1 is a structural diagram of an electronic cigarette according to the invention of the '239 patent. *Id.* at 2:15–16. Resistance sensor 19 activates control circuit board 8 when a smoker puts the cigarette holder in his/her mouth, causing circuit board 8 to output two driving voltages, one to 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 following:

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, claim 1 is independent. Claim 2 depends from claim 1, and claim 9 depends from claim 2. Claim 1, 2, and 9 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.

2. The electronic cigarette of claim 1 further including a battery in the housing electrically connected to the control circuit.

9. The electronic cigarette of claim 2 with the housing having a first section attached to a second section and with the battery and the light source in the first section.

II. ANALYSIS

A. *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).

In the Institution Decision, we determined that all claims terms should be given their ordinary and customary meaning. Inst. Dec. 6. We addressed specifically the meaning of the term “electronic cigarette” appearing in the preamble of claim 1, and the term “section” appearing in claim 9. *Id.* at 7–9. In particular, we determined that the recitation of “electronic cigarette” in the preamble was not limiting, and construed the term “section” as “one of a number of parts that can be fitted together to make a whole.” *Id.*

Neither party contends that any claim term has a special meaning, nor does either party dispute the claim constructions of the above-noted terms that were set forth in the Institution Decision. We determine that it is not necessary for purposes of this Final Written Decision to revisit them. We, however, consider the meaning of an additional claim phrase, namely, “gradual change in luminance . . . to simulate a conventional cigarette,” which appears in claim 1.

Patent Owner contends that the phrase means “gradual escalating brightness upon inhalation followed by a gradual de-escalating brightness similar to that of a conventional cigarette.” PO Resp. 9. 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.” *Id.* (citing Ex. 1001, 2:23–27). Patent Owner also explains 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.* at 9–12 (citing Ex. 2016⁴ ¶ 23–27; Ex. 2017⁵ ¶ 13; and Ex. 2003,⁶ 8).

⁴ Exhibit 2016 is the second Declaration of Mr. Richard Meyst (the first Declaration of Mr. Meyst is in the record as Exhibit 2001).

⁵ Exhibit 2017 is the Declaration of Dr. David Schaafsma.

⁶ Exhibit 2003 is a document designated “Electrical Waveforms and Electrical Signals” obtained from <http://www.electronics-tutorials.ws/waveforms/waveforms.html>.

Petitioner disputes Patent Owner’s construction of the phrase “gradual change in luminance . . . to simulate a conventional cigarette.” Reply Br. 2–6. Petitioner, however, does not offer a construction of its own.⁷

In light of the adequate underlying support that Patent Owner provides on the record before us for its proposed construction, we adopt that 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.”

B. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103(a) if 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. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness.⁸ *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We analyze the asserted ground of unpatentability in accordance with those principles.

⁷ Petitioner does contend that even accepting Patent Owner’s construction, claims 1, 2, and 9 of the ’239 would have been obvious based on Janning and JP ’598. *Id.* at 5–6.

⁸ The parties have not presented any objective evidence of non-obviousness.

C. Level of Ordinary Skill in the Art

Petitioner contends that a person having ordinary skill in the art “is a person with at least the equivalent of a Bachelor’s degree in electrical engineering, mechanical engineering, or biomedical engineering or related fields, along with at least 5 years of experience designing electromechanical devices, including those involving circuits, fluid mechanics and heat transfer.” Pet. 10 (citing Ex. 1012, ¶¶ 27–29). Patent Owner contends that “[a] person of skill in the art with respect to the ’239 patent has a mechanical or electrical engineering degree, industrial design degree, or a similar technical degree or equivalent work experience, and 5-10 years of working in the area of electromechanical devices, including medical devices.” PO Resp. 8 (citing Ex. 2016 ¶ 17; Ex. 2017 ¶ 17).

The parties’ assessments of the level of ordinary skill in the art are very similar, if not essentially identical. We do not discern that there is any meaningful disagreement between the parties’ contentions regarding the level of ordinary skill in the art, but, for clarity of record, we adopt Patent Owner’s assessment. We also observe that the level of ordinary skill in the art further is reflected by the asserted prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

D. Overview of Janning

Janning is titled “Breath Operated Device.” Ex. 1002, Title. Janning describes its invention as follows:

An electrical apparatus which simulates a burning element such as a candle, includes a switch that is responsive to an operator’s breath. The switch is placed adjacent the simulated

burning element and, with associated circuitry, controls the operation of the simulated burning element. The apparatus is so arranged that a breathing activity, such as blowing toward the simulated flame, actuates the breath operated switch. In response, the switch and associated electrical circuitry alter the burning element, giving the illusion that the simulated burning element was directly affected by the operator's breath.

Id. at 1:12–22.

Janning presents an embodiment of the invention constituting “a simulated cigar having a lamp at one end thereof to represent burning tobacco which is energized by operator inhalation at the opposite end of the simulated cigar.” *Id.* at 1:28–30. Janning's Figure 5 is reproduced below:

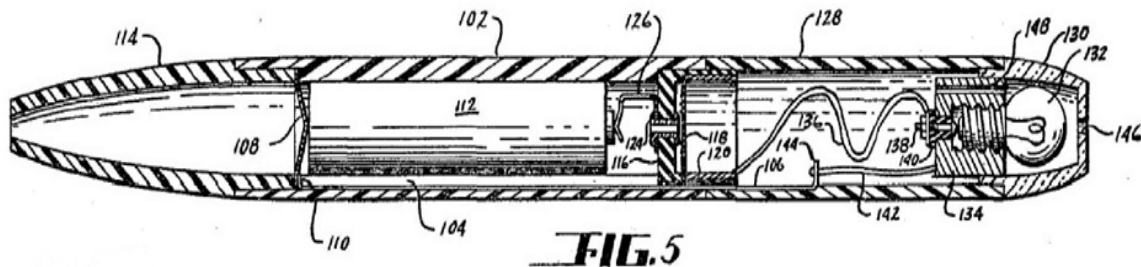


Figure 5 depicts a simulated cigar according to the invention of Janning, which includes mouth piece 114, centrally located body section 102, body section 128, and end piece 130. *Id.* at 5:15–56. Body section 102 contains battery 112, which ultimately may be connected to bulb 132 through contact member 126, rivet 124, diaphragm 118, sleeve 120, conductor wire 136, and conductor 128. *Id.* at 5:72–6:2. “However, this circuit is not complete due to the presence of a small air gap between the diaphragm 118 and rivet 124.” *Id.* at 6:2–4. Janning explains the operation of the simulated cigar as follows:

To operate the simulated cigar a user draws air through the mouth piece 114 as if to draw smoke from a cigar. This causes

air to be evacuated from the left side of the diaphragm 118. As a result the pressure to the left of the diaphragm 118 is reduced below that of the ambient atmosphere. On the other hand the pressure to the right of the diaphragm 118 as viewed in FIGURE 5, remains at substantially the level of the ambient atmosphere due to the presence of the perforation 146 in the end piece 130 and the bore 148 in the socket member 134.

The differential pressure thus produced causes the diaphragm 118, which is flexible, to flex toward the tubular rivet 124 and make electrical contact therewith. This completes the electrical circuit with the result that the light bulb 132 glows. The rivet 124 and diaphragm 118 thus constitute a breath operated switch.

Id. at 6:25–40.

E. Overview of JP '598

JP '598 is titled “Electronic candle.” Ex. 1004, Title. JP '598 describes that the problem its disclosed invention addresses is the capability of producing a form of illumination for an artificial candle that is “very natural.” *Id.* at Abs. 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 the following:

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.* ¶ 43.⁹

F. Discussion

1. Petitioner's Contentions

Petitioner contends that Janning discloses all the limitations of claims 1, 2, and 9, with the exception of the requirement that the control circuit provides a gradual change in luminance to simulate a conventional cigarette. In making that contention, Petitioner presents detailed claim charts and relies on the declaration testimony of Dr. Robert H. Sturges (Ex. 1012). Pet. 26–38. To account for the gradual change in luminance aspect of claim 1, Petitioner points to the teachings of JP '598 and its light emitter illumination circuit. *Id.* at 24–25. In particular, Petitioner urges that, in view of Janning's desire “to simulate real flame experiences in simulated candles, lanterns, cigars, cigarettes or the like,” and given JP '598's similar simulation goal for electric candles, a person of ordinary skill in the art

⁹ 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.

would have looked to the techniques employed by JP '598 “to improve the illumination of the electronic device in [Janning].” *Id.* at 25. Relying also on Dr. Sturges’s testimony, Petitioner contends the following:

[A person of ordinary skill in the art] faced with the task of wanting to simulate as close as possible the known enhanced light emission for real cigars or cigarettes when the smoker inhales (i.e., the gradual change in luminance) as described in [Janning], would look to and use the control circuit from JP ['598] in the simulated cigar of [Janning], and simply calculate the appropriate circuit outputs to provide the desired illumination pattern.

Id. (citing Ex. 1012 ¶¶ 60–61).

2. Patent Owner’s Contentions

Patent Owner disputes Petitioner’s contention that claims 1, 2, and 9 of the '239 patent are rendered obvious based on the teachings of Janning and JP '598. According to Patent Owner, neither of those references accounts appropriately for the required gradual change in luminance limitation. PO Resp. 13–19. In that respect, Patent Owner is of the view that there is no suggestion from the teachings of Janning and JP '598 that any gradual change in luminance disclosed operates “to simulate a conventional cigarette,” i.e., escalation of brightness and de-escalation or brightness that is similar to that of a conventional cigarette. *Id.* More specifically, Patent Owner urges that a skilled artisan would not have reason or motivation to combine the teachings of Janning and JP '598 as such combination “would result in a novelty cigar that flickers like a candle,” and not a device that simulates a conventional cigarette. *Id.* at 14. Patent Owner also discounts Petitioner’s assessment of “design choice” as providing reasoning to combine the teachings of the references. *Id.* at 37–39.

Patent Owner additionally contends that a person of ordinary skill in the art would not have had a reasonable expectation of success in modifying JP '598's control circuit to obtain the required illumination pattern of the claims, and would, thus, not make the combination. *Id.* at 19–27. In staking out that position, Patent Owner argues that the “temporal scale” of the sawtooth luminance intensity pattern disclosed in JP '598 produces a “flicker rate” that is of insufficient duration and appearance to simulate the conventional illumination pattern of a lit cigarette. *Id.*

Patent Owner further maintains that there is a distinction between the simulation of a “flameless” combustion device, such as a lit cigarette or cigar, and simulation of a “flame,” such as a candle. *Id.* at 27–34. In view of that distinction, Patent Owner takes the view that the facilitation of a simulated flicker pattern of JP '598's candle is inapposite to Janning's simulated cigar. Patent Owner, thus, contends that “there are no interrelated teachings” between Janning and JP '598 and there is no “apparent reason” to combine Janning and JP '598. *Id.*

Lastly, Patent Owner challenges Petitioner's characterization of the problem faced by a skilled artisan as one arising due to “improper hindsight analysis.” *Id.* at 35. In mounting that challenge, Patent Owner submits that Petitioner's assessment that “a person of ordinary skill in the art would have been ‘faced with the task of wanting to simulate as close as possible the known enhanced light emission for real cigars and cigarettes when the smoker inhales (i.e., the gradual change in luminance)’” is derived from the '239 patent rather than the prior art. *Id.* at 35–37.

3. *Claim 1*

Claim 1 is directed to an “electronic cigarette” and includes the

features of a “housing,” a “control circuit connected to an airflow sensor in the housing,” and a “light source at a first end of the housing.” Ex. 1001, 6:37–42. Claim 1 further requires that the light source is “electrically connected to the control circuit” and “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.” *Id.* at 6:42–47.

Petitioner points to parts 114, 102, 128 and 130 of Janning’s Figure 5 as showing the required “housing.” Pet. 22 (citing Ex. 1002, 5:16–18, 25–30, and 46–55; Ex. 1012 ¶ 58). Petitioner relies on Janning’s discussion of a “control circuit responsive to an operator’s breath,” which is electrically connected to diaphragm 118 to account for the claimed “control circuit electrically connected to an airflow sensor in the housing.” *Id.* at 23 (citing Ex. 1002 1:66–69; 5:70–6:4; and 6:35–40; Ex. 1012 ¶¶ 43, 58). Petitioner further points to Janning’s light source 132 as the required “light source at a first end of the housing” that is “electrically connected to the control circuit.” *Id.* (citing Ex. 1002, 5:57–64; Ex. 1012 ¶ 58).

Patent Owner does not dispute the above-noted positions of Petitioner as to the content of Janning, and we do not discern that they are incorrect or unreasonable. There does, however, exist disagreement between the parties centering on the requirement that the light source provides “a gradual change in luminance . . . to simulate a conventional cigarette.”

Both Janning and JP ’598 are concerned with the simulation of combustion-type illumination in conjunction with electrical devices. Both references also convey that the simulated illumination is facilitated through the electrical connection of a light source with a control circuit. Janning describes that its invention encompasses “a simulated cigar having a lamp at

one end thereof to represent burning tobacco which is energized by operator inhalation at the opposite end of the simulated cigar.” Ex. 1002, 1:28–30.

Janning also discloses the following:

Electric lamps which resemble candles or lanterns are in common usage and, from time to time, flashlight type devices which resemble cigars or cigarettes have appeared on the market. In all such prior devices, the degree of simulation has been limited for the reason that candles, lanterns, cigars, cigarettes and the like are responsive to the user’s breath whereas the prior simulated devices responsive only to a manually operated electrical switch.

Id. at 1:42–49. Thus, Janning recognizes that the consideration of simulating illumination is similar as between each of an electric candle and an electric cigar, and that the simulated illumination is responsive to a user’s breath.

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. 1004 ¶¶ 13, 43. Moreover, JP ’598 also actively contemplates 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.* at ¶ 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.

Although Janning’s circuit produces a particular simplistic simulated cigar illumination scheme involving turning a light bulb on and off, that does

not foreclose inquiry by one of ordinary skill in the art into other approaches to accomplish simulated illumination, as seemingly advocated by Patent Owner (*see* PO Resp. 13–19). 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, were understood by skilled artisans as being accomplished through a “sawtooth wave signal.” PO Resp. 9–10 (citing Ex. 2016 ¶¶ 22–27; Ex. 2017 ¶ 13). 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. 1004 ¶ 43. Moreover, as noted by Petitioner, Janning conveys that a skilled artisan would have known that there are similar considerations when simulating illumination of an electric candle and an electric cigar. Pet. 24–25 (citing Ex. 1002, 1:41–49).

Further still, there is no suggestion that the gradual increase and decrease in the luminance of a conventional cigarette was something that was unknown to one of ordinary skill in the art. Indeed, as Patent Owner expressed in a related District Court case:

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. 1008, 5-13. Thus, Patent Owner is of the view that ascertaining the

gradual changes in luminance of a conventional cigarette was not a rigorous exercise in experimentation, but was, instead, readily observable through “casual observation.” *Id.*

We are mindful of Patent Owner’s and Mr. Meyst’s view that the illumination patterns of a flame and a burning cigarette are “different.” PO Resp. 29 (citing Ex. 2016 ¶ 46); *see also* Ex. 2001 ¶ 53 (characterizing candle flames and burning cigarettes as “markedly different.”) To that end Patent Owner and Mr. Meyst urge that there is a distinction between a flame of a candle and “flameless” combustion of a cigarette. PO Resp. 28–34; Ex. 2016 ¶ 50. In essence, Patent Owner and Mr. Meyst are of the view that because there is a difference between a candle flame and a lit cigarette, and because JP ’598 makes only explicit reference to a simulated candle flame, a skilled artisan would be unable to configure a circuit operable to provide “a gradual change in luminance . . . to simulate a conventional cigarette,” as required by claim 1. We also take note of the positions of Patent Owner (e.g., PO Resp. 19–27), Mr. Meyst (e.g., Ex. 2016 ¶¶ 43–47), and Mr. Schaafsma (Ex. 2017 ¶¶ 38–46) pertaining to the inadequacies of JP ’598’s circuit. In particular, those positions are grounded in general disparagement of a control circuit as, itself, only capable of generating a candle flicker pattern that is not an illumination pattern of a conventional cigarette.

Even considering that the actual characteristics of a candle flame and a burning cigarette are different, and that JP ’598’s circuit produces an illumination pattern that is different than that of the gradual change of a conventional cigarette, such differences do not end the obviousness inquiry. Rather, that inquiry 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).

The record at hand provides a credible and compelling basis for concluding that a person of ordinary skill and creativity would have sought to apply known illumination simulation practices, such as those taught in JP '598, to devices for which there is a known desire to provide simulated illumination, such as the electronic cigar/cigarette of Janning. In particular, the prior art conveys that a skilled artisan: (1) desired to “simulate[] a burning element” of a smoking device in connection with an electronic cigar or cigarette (Ex. 1002, 1:12–14; 1:41–49); (2) knew that a light source that “glows” at the end of a cigar/cigarette created through a breath operated switch contributes to the simulation affect (*id.* at 6:35–40); (3) knew to simulate an illumination pattern indicative of a combustion process through “sawtooth” wave signals (Ex. 1004 ¶¶ 12, 13, 43, Figs. 5, 6); (4) knew that such “sawtooth” signals are employed to create electric illumination that appears “very natural” (*id.* ¶ 12); and (5) knew what the gradual changes in illumination of a real cigarette look like (Ex. 1008, 5).

We further observe that JP '598, itself, suggests various circuit configurations to produce possible illumination patterns. *See, e.g.*, Ex. 1004 ¶ 43. Even if some change or modification of the particular circuits described in JP '598 for use in Janning's electronic cigar/cigarette may have been necessary, obviousness does not require that the teachings of the prior art be combinable without change. *See In re Sneed*, 710 F.2d 1544, 1550

(Fed. Cir. 1983). The teachings of the prior art, including those noted above, readily lend themselves to a conclusion that producing the gradual change in luminance, i.e. escalating and de-escalating brightness, to simulate a conventional cigarette via control circuitry was a known, viable option. To that effect, we credit the testimony of Dr. Sturges (e.g., Ex. 1012 ¶¶ 49–51, 60–61) over that of Mr. Meyst (e.g., Ex. 2016 ¶¶ 43–47, 55) and Mr. Schaafsma (Ex. 2017 ¶¶ 33–46) as to a skilled artisan’s understanding of the prior art when it comes to configuring circuits for arriving at desired illumination patterns. In crediting Dr. Sturges’s testimony, we conclude that it more accurately reflects what one of ordinary skill would have taken from the teachings of the prior art.

We have carefully considered the entirety of the record before us. In light of the foregoing, we conclude that Petitioner has shown by a preponderance of the record that claim 1 would have been obvious in view of Janning and JP ’598.

4. Claims 2 and 9

Claim 2 depends from claim 1 and adds “a battery in the housing electrically connected to the control circuit.” In accounting for claim 2, Petitioner points to Janning’s disclosures of battery 112 located in section 102, and Janning’s description of the completion of a circuit between battery 112 and light bulb 132. Pet. 26, 37–38 (citing Ex. 1002, 5:26–27, 5:42–45, 5:70–6:40; Ex. 1012 ¶ 62.)

Claim 9 depends from claim 2 and adds the limitation “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 likens Janning’s body section 102, section 128, and end piece 130 to the required “first

section,” and mouth piece 114 to the “second section,” and explains that neither battery 112 nor light bulb 132 resides in the second section that is the mouthpiece. Pet. 26, 38¹⁰ (citing Ex. 1002, 5:16–18, 5:25–30, 5:46–56; Ex. 1012 ¶¶ 38, 62).

In its Patent Owner Response, Patent Owner does not challenge Petitioner’s position as to claims 2 and 9, urging only that those claims are patentable for the same reasons offered as to claim 1. PO Resp. 39. For the reasons set forth above, we do not agree with Patent Owner as to the patentability of claim 1. We also determine that Petitioner has accounted adequately for the features added by claims 2 and 9. Accordingly, we conclude that Petitioner has shown by a preponderance of the evidence that claims 2 and 9 would have been obvious based on Janning and JP ’598.

III. CONCLUSION

Having carefully considered the record before us, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 2, and 9 are unpatentable over Janning and JP ’598.

IV. ORDER

It is

ORDERED that claims 1, 2, and 9 are held unpatentable under 35 U.S.C. § 103 over the combination of Janning and JP ’598; and

FURTHER ORDERED that, because this is a Final Written Decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

¹⁰ We observe that the Petition at page 38 mislabels claim 9 as claim 10.

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