

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

R.J. REYNOLDS VAPOR COMPANY

Petitioner

v.

HEALTHIER CHOICES MANAGEMENT CORP.

Patent Owner

Case No. Not Yet Assigned
U.S. Patent No. 9,538,788

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,538,788**

TABLE OF CONTENTS

	Page
I. Introduction.....	1
II. Grounds For Standing Pursuant To 37 C.F.R. § 42.104(a).....	2
III. Background Information For The '788 Patent.....	2
A. Overview Of The '788 Patent	2
B. Overview Of The Prosecution History.....	5
C. A “Bulb Containing A Heating Wire . . . Wherein The Heating Wire Heats The Bulb, And Wherein The Bulb Heats Fluid Introduced To And Coming In Contact With The Bulb” Was A Known Configuration For Electronic Cigarettes	9
D. Level Of Skill In The Art.....	15
IV. Identification Of Challenge Pursuant To 37 C.F.R. § 42.104(b).....	15
A. 37 C.F.R. § 42.104(b)(1): Claims For Which IPR Is Requested	15
B. 37 C.F.R. § 42.104(b)(2): The Prior Art And Specific Grounds On Which The Challenge To The Claims Is Based.....	15
C. 37 C.F.R. § 42.104(b)(3): Claim Construction	18
D. 37 C.F.R. § 42.104(b)(4): How The Construed Claims Are Unpatentable.....	18
E. 37 C.F.R. § 42.104(b)(5): Supporting Evidence	18
V. There Is A Reasonable Likelihood Claims 1, 7-8, and 11 Of The '788 Patent Are Unpatentable	19
A. Brief Overview Of The Prior Art.....	19
1. Overview of Gilbert	19
2. Overview Of Lee.....	20
3. Overview Of Weigensberg.....	22
4. Overview of Cohen	32
5. Overview of Levin	34
B. Ground 1a: Claims 1 And 11 Are Obvious Over Gilbert in view of Cohen.....	35
1. Independent Claim 1	35
2. Dependent Claim 11.....	47
C. Ground 1b: Claims 7 and 8 Are Obvious Over Gilbert In View Of Cohen and Weigensberg.....	48

TABLE OF CONTENTS
(continued)

	Page
D. Ground 2a: Claims 1 and 11 Are Obvious Over Lee In View Of Gilbert and Levin	52
1. Independent Claim 1	52
2. Dependent Claim 11	63
E. Ground 2b: Claims 7 and 8 Are Obvious Over Lee In View Of Gilbert, Levin, and Weigensberg.....	64
VI. Discretionary Institution.....	64
A. The <i>Fintiv</i> Factors Favor Institution	64
B. The <i>Becton</i> Factors Favor Institution.....	66
VII. Conclusion	67
VIII. Mandatory Notices Pursuant to 37 C.F.R. § 42.8(a)(1)	68
A. 37 C.F.R. § 42.8(b)(1): Real Parties-In-Interest.....	68
B. 37 C.F.R. § 42.8(b)(2): Related Matters	68
C. 37 C.F.R. § 42.8(b)(3), (4): Lead And Back-Up Counsel And Service Information.....	68
CERTIFICATE OF SERVICE	69
CERTIFICATE OF WORD COUNT UNDER 37 C.F.R. § 42.24(a)	71

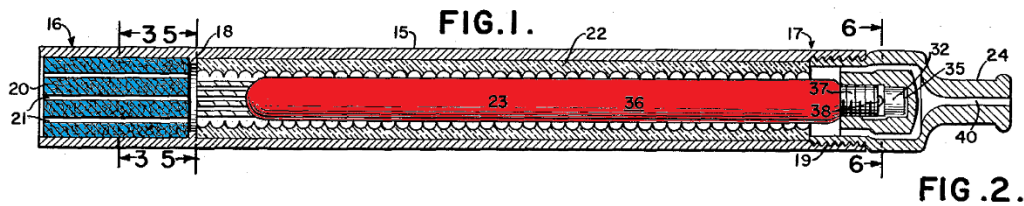
PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

I. Introduction

The '788 patent is directed to an electronic cigarette. Its claims recite a number of components that the applicants conceded were known in the art, including a casing comprising two chambers located sequentially within the casing, a battery, a fluid containing member, a heating assembly, a fluid passageway communicating between the fluid containing member and the heating assembly, a tube element communicating between the two chambers, a sealing element between the two chambers, and an air inlet on an external wall of the casing.

During prosecution, the Examiner found that these limitations and their claimed combinations were known, and rejected the original claims as obvious in view of the prior art. In response, the applicants added a group of limitations, all related to the requirement that the “heating assembly” be limited to a “bulb containing a heating wire,” to secure allowance.

But these “bulb” limitations were present in prior art not before the Examiner, including in the primary reference presented in Ground 1 of this petition: Gilbert (U.S. Patent No. 3,200,819). Gilbert FIG. 2, annotated below, shows a bulb containing a heating wire (colored in red), whereby fluid from the cartridge 20 (colored in blue) is heated as it moves around and contacts the bulb:



If this art (and the other art in this Petition) had been before the Examiner, the Examiner would have found the '788 patent claims to be anticipated or obvious. Therefore, the Board should grant this petition.

II. Grounds For Standing Pursuant To 37 C.F.R. § 42.104(a)

Petitioner certifies the '788 patent is available for IPR and Petitioner is not barred or estopped from requesting IPR challenging the patent claims on the grounds identified herein.

III. Background Information For The '788 Patent

A. Overview Of The '788 Patent

The '788 patent issued with two independent and eleven dependent claims directed to an electronic cigarette. Ex. 1001 at claims 1-13. The '788 patent generally relates to “an electronic cigarette” comprising “a cylindrical casing, or tube” that includes two or more chambers located within the cylindrical casing. *Id.* at 2:60-66; 4:61-65. The '788 specification describes various embodiments of the cylindrical casing that include, among other features, a battery, fluid, a sealing element that forms a partition between the chambers, a tube element providing air passage between the chambers, and a fiber element that transfers fluid to a heating assembly. *Id.* at 4:61-5:44.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

FIGS. 1-3 are representative of the patent disclosure. FIG. 1 shows the electronic cigarette comprising “a cylindrical casing, or tube” with “three chambers located sequentially within the cylindrical casing 15.” Ex. 1001 at 2:60-67. The figure shows “[a] battery 35 is located in the first chamber 20,” “a liquid, or fluid 40 is located in the second chamber 25,” and “heating element 45 is located in the third chamber 30.” *Id.* at 3:1-3. The figure further shows a “first seal 50 forms a partition between the first 20 and second 25 chambers” and a “second seal 60 forms a partition between the second 25 and third 30 chambers.” *Id.* at 3:12-13, 19-20. A “tube 55 extends substantially the length of the second chamber 25 allowing passage of air from the first chamber 20 into the third chamber 30.” *Id.* at 3:16-18. Also shown is a “fiber material 65 that has a first segment in contact with the heating element 45, and a second segment located in the second chamber 25” to allow the fiber material to carry or transfer the fluid 40 from the second chamber 25 to the heating element. *Id.* at 3:27-32.

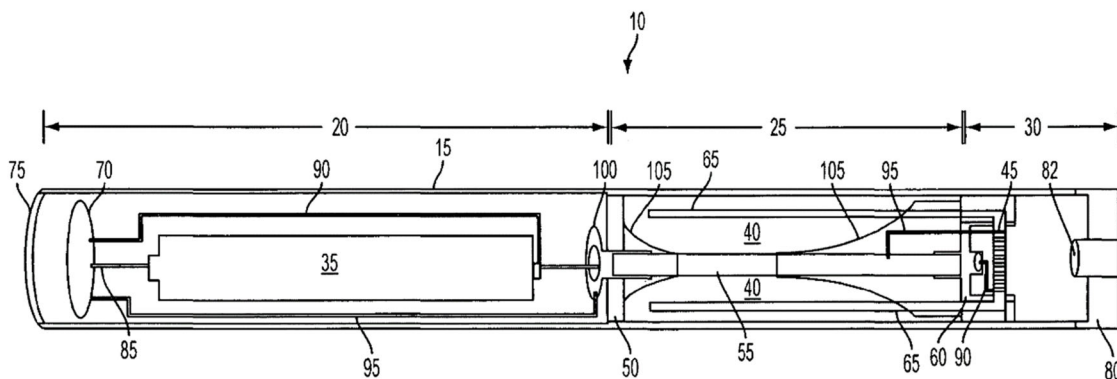


FIG. 1

FIG. 2 shows another embodiment of the electronic cigarette with only two

chambers located within the cylindrical casing. *Id.* at 4:61-67. This figure shows a “battery 35 is located in the first chamber 20, and a fluid container 205 is located in the second chamber” with a “seal 50 form[ing] a partition between the first 20 and second 25 chambers.” *Id.* at 5:1-2, 5:8-9. A heating assembly is located between the first and second chambers and a “tube 55 extends into a heating assembly 220 and allows passage of air from the first chamber 20 into the second chamber 25.” *Id.* at 5:12-14.

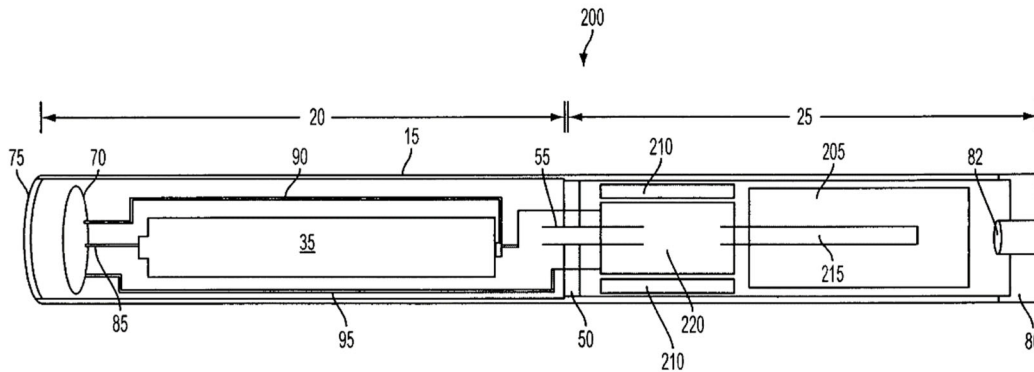


FIG. 2

FIG. 3 (annotated below) shows the air passage tube shaped into a “T” where the “leg” of the “T” forms the “hollow cylinder that comprises one end of the tube 55” and the “top” portion of the “T” forms “two arms that hold, or fix a tempered glass bulb 230 [shown in yellow below] in position in the heating assembly 220.” *Id.* at 5:15-21. The tempered glass bulb contains “a heating wire 225 [shown in red below] that heats the glass bulb 230” which further “heats the fluid that is introduced into the heating assembly 220 through fiber element 215.” *Id.* at 5:21-24.

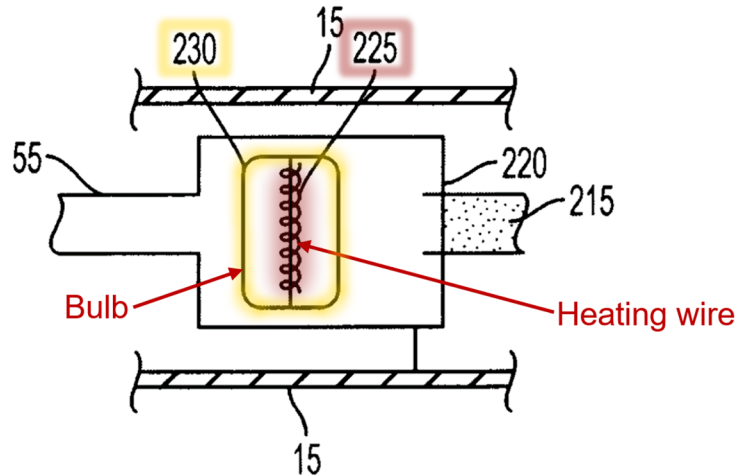


FIG. 3

Importantly, FIG. 3 depicts two “bulb” limitations from independent claim 1 as issued: (i) “a bulb containing a heating wire” and (ii) “wherein the heating wire heats the bulb, and wherein the bulb heats fluid introduced to and coming in contact with the bulb.” *Id.* at claim 1. It was these added limitations upon which the Examiner relied to find the ’788 patent claims allowable.

B. Overview Of The Prosecution History

The ’788 patent was filed on March 14, 2014, as U.S. Patent Application No. 13/999,652 (“the ’652 application”), and claims priority to Provisional Patent Application No. 61/852,336 (“the ’336 application”), which was filed on March 15, 2013. Ex. 1002 1, 5.

The originally filed claims in the ’652 application included many of the components and structures depicted in FIGS. 1-2 of the ’788 application. Notably, the original claims also included just a “heating assembly,” generally. Originally filed

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

claim 1 is reproduced below:

An electronic cigarette, comprising:

- a casing comprising a first chamber and a second chamber, the two chambers located sequentially within the casing;
- a battery located in the first chamber;
- a fluid containing member located in the second chamber;
- a heating assembly located in the second chamber;
- a fluid passageway communicating between the fluid containing member and the heating assembly;
- a tube element communicating between the first and second chambers, with a first distal end of the tube element located in the first chamber, and a second distal end of the tube element located in the second chamber, the tube element providing an air passage between the first and second chambers;
- a sealing element forming a partition between the first and second chambers, the sealing element structured to prevent a fluid from passing from the second chamber into the first chamber; and
- an air inlet provided on an external wall of the casing.

Id. at 24.

Claim 1 was rejected under 35 U.S.C. 103(a) as obvious over a combination of two prior art references: Sebastian (US 2014/0000638) and Alarcon (US 2011/0265806). *Id.* at 150-51. In an effort to overcome this prior art, Patent Owner amended claim 1 to add the following limitations (underlined below), specifically requiring the “heating assembly” to be comprised of a “bulb containing a heating wire”:

- a heating assembly located in the second chamber, the heating assembly comprising a bulb containing a heating wire in communication with the battery;
- a tube element communicating between the first and second chambers, with a

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

first distal end of the tube element located in the first chamber, and a second distal end of the tube element located in the second chamber and affixed to the bulb, the tube element providing an air passage between the first and second chambers;

- an air inlet provided on an external wall of the casing[[]]; wherein the heating wire heats the glass bulb, and wherein the glass bulb heats fluid introduced to and coming in contact with the bulb through the fluid passageway.¹

Id. at 174.

Patent Owner represented to the USPTO that all of the independent claims were “amended to more specifically claim the structure of the heating assembly so as to include a bulb and heating wire arrangement,” and stated that the applicants “believe[d] such amendments overc[a]me the § 103 rejections.” *Id.* at 178.

First, Patent Owner argued that the prior art was “entirely devoid” of a configuration that included the bulb limitations, noting that “Sebastian does not disclose the use of a bulb,” and that Alarcon, Monsees (US 2013/0042865), Tucker (US 2013/0192620), and Scatterday (US 2013/0247924) all fail to “disclose[] the use of a bulb vaporization or heating device.” *Id.* at 179. And second, while acknowledging

¹ Patent Owner also deleted “the sealing element structured to prevent a fluid from passing from the second chamber into the first chamber” from the claim limitation describing the sealing element. *Id.* at 174.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

that Levin (US 2013/0298905) (Ex. 1009) “discloses a bulb heater,” Patent Owner argued that Levin describes a “convection-oven style configuration” that is “the exact opposite” of the configuration claimed in the ’652 application. *Id.* at 180. As explained in more detail below, Patent Owner’s arguments were inaccurate and selectively omitted other express disclosures in Levin.

In a final rejection, the Examiner once again rejected claim 1 under 35 U.S.C. § 103(a) as obvious over the combination of Sebastian, Alarcon, and Hunter (US 4,074,111). *Id.* at 190-191. The Examiner stated that Hunter, which “teaches a medicament vaporizer comprising a glass bulb containing a heating filament,” in view of Sebastian discloses the bulb limitations. *Id.* at 191.

In response, Patent Owner first argued that the prior art did not disclose each claim limitation because “the art fails to show an [*sic*] tube wherein the seconded (*sic*) [end] of the tube is affixed to the bulb heater.”² *Id.* at 211. Patent Owner next argued that Hunter is non-analogous art because Hunter’s “fragrance device in which perfume, essence, or crystals may be placed” is not in the same field of endeavor as an electronic cigarette. *Id.* at 212-214. Patent Owner stated that the problem the claimed invention solved is to “provide an electronic cigarette or vaporizer that heats an inhalation fluid

² Patent Owner also amended claim 1 to change “the glass bulb” to “the bulb” and claim 18 to change “the air pressure switch” to “an air pressure switch” in response to the examiner’s 35 U.S.C. §112 rejection. *Id.* at 207, 209.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

without the fluid coming into direct contact with the heating wire” whereas the invention in *Hunter* is designed to “provide a device ... in which various fragrances or the like can be permeated through the area within which the light bulb is being used ...” *Id.* at 213. Finally, Patent Owner argued that Hunter cannot be combined with “any other prior art without destroying the respective methods and functions of the the [sic] individual inventions.” *Id.* at 214.

The Examiner was persuaded by Patent Owner’s arguments—which were directed *only* to the “bulb” limitations—and issued a notice of allowance. *Id.* at 225. The Examiner stated only that, “Applicant’s arguments filed 8/31/2016 have been fully considered and are persuasive[,]” without further explanation. *Id.* Therefore, the Examiner allowed claim 1 of the ’652 application based solely on the newly added “bulb” limitations and Patent Owner’s arguments based thereon.

C. A “Bulb Containing A Heating Wire . . . Wherein The Heating Wire Heats The Bulb, And Wherein The Bulb Heats Fluid Introduced To And Coming In Contact With The Bulb” Was A Known Configuration For Electronic Cigarettes

As noted above, Patent Owner argued during prosecution that Levin, while disclosing a bulb heater, did not disclose the limitations of the claims, as amended. Focusing only on ¶ [0049] of Levin, Patent Owner argued that Levin describes a “convection-oven style configuration” that is “the exact opposite” of the configuration claimed in the ’652 application because the “claimed configuration relies on conduction heat (physical contact), not convection (air flow) heat, in order to vaporize the fluid

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

introduced thereto.” *Id.* at 180. According to Patent Owner, because Levin “has no fluid passageway, instead using an open space configuration where solid or gel burning material is disposed,” Levin teaches away from the claimed invention and cannot be modified “to function as a conduction heater” because “such a modification would destroy the essential structure, function, and purpose of the convection-oven style invention therein.” *Id.*

Patent Owner’s description of the Levin device was incomplete and not accurate. Not only could the Levin device function as a conduction heater, Levin *specifically described* such a configuration:

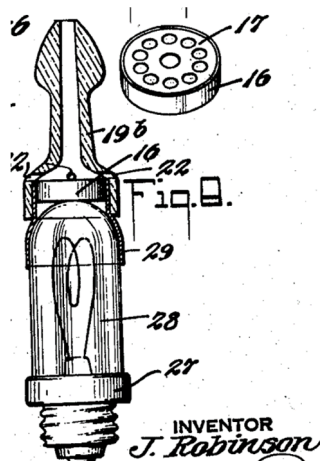
In certain embodiments, such as shown in FIGS. 15A-15C, the device includes a bulb heater mounted on a lamp holder within a bulb chamber. The bulb may be any bulb suitable for sufficiently heating the substance to vaporize an active ingredient therein for inhalation by the user. In certain embodiments, the bulb heater comprises a halogen tungsten quartz bulb, which are particular useful when used in a vaporization device in accordance with the present invention since such bulbs have a high visible-near infrared output with little UV, a smooth spectrum and stable output. These characteristics allow for a consistent and reliable heat source that can be controlled to maintain a desired temperature level within a chamber in which the bulb is disposed. In certain embodiments, the bulb may be disposed in a separate chamber adjacent a cavity in which the substance is disposed and may be adapted to heat and vaporize the selected substance ***using one or more of radiative, convective and conductive heating. In an embodiment***

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

utilizing conductive heating in combination with radiative and convective heating, the bulb heater may protrude directly into the cavity or into the grinding cavity so that the glass bulb directly contacts the contents of the grinder.

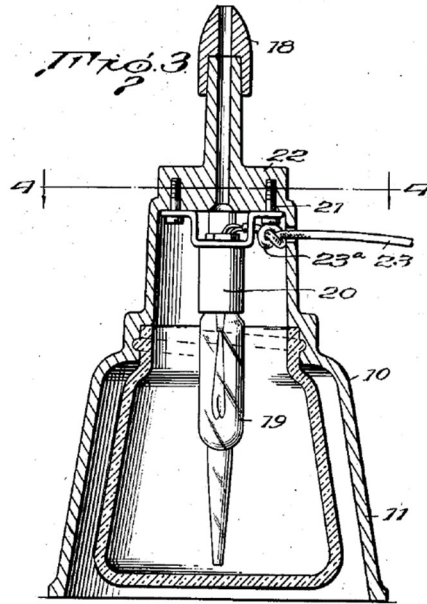
Ex. 1009 at ¶ [0056] (emphasis added).

Patent Owner also argued during prosecution that the “prior art” was “entirely devoid” of a configuration including a bulb with a heating wire, wherein the heating wire heats the bulb, and the bulb heats fluid that comes into contact with it. Ex. 1002 at 179. Notwithstanding the disclosures of Levin, the concept of using a bulb with a heating element to vaporize a liquid goes back almost 100 years. As one example, U.S. Patent No. 1,934,887, which was filed in 1928, describes an “electric vaporizer” that provides “for the generation of fumes from volatile medicinal preparations or substances,” and that can include a “lamp bulb type of heating element.” Ex. 1010 at 1:1-3, 1:88-90. As seen in Figure 8, the “medicament unit 16” is directly contacting the bulb:



PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

As another example, U.S. Patent No. 2,204,312, filed in 1936 (Ex. 1011), depicts a vaporizer device whereby a bulb with a heating element is placed in direct contact with vapor-yielding jelly that is volatilized into a vapor to be inhaled:



U.S. Patent No. 2,588,471, filed in 1951, is another example, describing “a vaporizer of the type which is applicable to an electric light bulb from which it obtains the necessary heat required to volatilize the substance to be evaporated.” Ex. 1012 at 1:1-5.

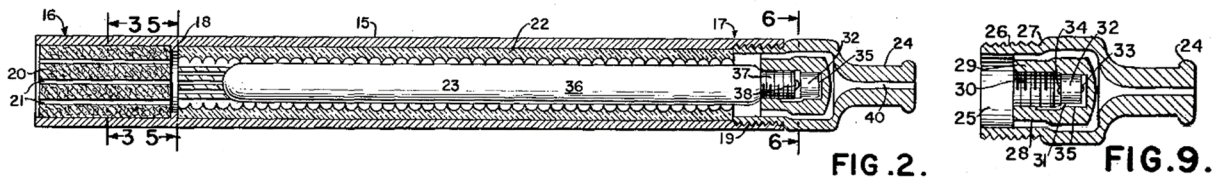
U.S. Patent No. 2,694,771, filed in 1952, describes “a novel vaporizer attachment for a conventional electric light bulb whereby the radiant heat emitted from a light bulb may be utilized for heating and vaporizing a vaporizable substance in any desired form.”

Ex. 1013 at 1:15-19. More recently, U.S. Patent No. 7,458,374, filed in 2002, describes a device for vaporizing a drug that includes a “glass bulb” with a “combustible element” inside, whereby the drug to be vaporized is coated directly onto the glass bulb.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

Ex. 1014 at 6:4-45, Figs. 7-8. And U.S. Patent Application Publication No. 2013/0220316, filed in 2011, describes “a portable handheld vaporising device for vaporising a liquid to produce a vapour thereof” that may use a “halogen lightbulb” as the electrically powered heat source. Ex. 1015 at ¶¶ [0001], [0080].

Moreover, at the time of the application leading to the '788 patent, using a bulb with a heating wire configuration to heat fluid coming into contact with the bulb was known specifically in the field of electronic cigarettes. In addition to Levin, U.S. Patent No. 3,200,819 to Gilbert (“Gilbert”), which was not before the Examiner, illustrates such a configuration.³ Specifically, Gilbert discloses a bulb heating element where the bulb is “similar to a light bulb.” Ex. 1004 at 2:46-50. The “tip end” of the bulb “engage[s] the inner battery contact 33 and complete[s] the circuit through the filament of the bulb.” *Id.* at 2:71-3:3.



³ To the extent Patent Owner contends that the Petition should be denied pursuant to 35 U.S.C. § 325(d) because Levin was before the Examiner, or because Gilbert is cumulative of Levin, such argument should be rejected. As explained above, Patent Owner expressly argued to the Examiner that Levin did *not* teach a conduction heater. While Patent Owner was wrong, the Examiner relied on that characterization of the reference in allowing the claims. Patent Owner cannot now claim that a reference that teaches conductive heating is cumulative of a reference that Patent Owner expressly argued *did not* teach conductive heating.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

Id. at Figures 2, 9. While Gilbert does not explicitly use the words “heating wire,” a person of ordinary skill in the art would have understood that a “filament of the bulb” that causes the bulb to “be illuminated or energized” is a “heating wire.” *See id.* at 3:1-3 (“Thus the bulb 36 will be illuminated or energized before assembly to the external tube 15”); *see also* Ex. 1003 (Declaration of Kelly Kodama) at ¶47. Additionally, Gilbert discloses that the bulb is “similar to a light bulb.” Ex. 1004 at 2:50. Therefore, it would have been known or obvious to a person of ordinary skill in the art that Gilbert’s bulb that is “similar to a light bulb” included a suitable “heating wire,” like a standard light bulb. Ex. 1003 at ¶47.

Additionally, in the Gilbert device, the liquid is introduced into the air *before* it is drawn into contact with the heating bulb. And as Gilbert explains, an “object of the invention is to provide a smokeless non-tobacco cigarette in which provision is made for circulating the fluid around the heating element in a turbulent manner to suitably raise the temperature of the inhalant [sic] mixture.” Ex. 1004 at 1:23-27. Therefore, the fluid, which is part of the “inhalent [sic] mixture” has its “temperature” “raise[d]” as it contacts the bulb. Ex. 1003 at ¶48.

If the Examiner had the Gilbert reference (and other prior art) presented in this Petition (and/or if Patent Owner had not inaccurately characterized Levin’s disclosure), the Examiner would not have allowed the ’788 claims on the basis of the “bulb containing a heating wire” limitation, or the “wherein the heating wire heats the bulb,

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

and wherein the bulb heats fluid introduced to and coming in contact with the bulb” limitation.

D. Level Of Skill In The Art

Petitioner maintains that a person of ordinary skill in the art (“POSA”) at the time of the alleged invention for the ’788 patent would possess at least a Bachelor’s degree in mechanical engineering, electrical engineering, industrial design or product design or product design engineering, chemistry, or physics, or a related field, and at least three to four years of industry experience, or a Master’s degree in mechanical engineering, electrical engineering, industrial design or product design or product design engineering, chemistry, or physics, or a related field, and at least one to two years of industry experience. Ex. 1003 at ¶18. Such a POSA would have been familiar with electrically powered cigarettes and their components and underlying technologies or similar components and technologies. *Id.*

IV. Identification Of Challenge Pursuant To 37 C.F.R. § 42.104(b)

A. 37 C.F.R. § 42.104(b)(1): Claims For Which IPR Is Requested

IPR is requested for claims 1, 7-8, and 11 of the ’788 patent.

For the Board’s easy reference, attached at Exhibit 1026 is a chart showing the challenged claims of the ’788 patent.

B. 37 C.F.R. § 42.104(b)(2): The Prior Art And Specific Grounds On Which The Challenge To The Claims Is Based

Petitioner requests IPR based on two primary references: Gilbert (Ground 1) and

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

Lee (Ground 2). Each of these references discloses all, or nearly all, of the limitations of the '788 patent claims. Petitioner cites combinations of Gilbert with Cohen, as well as with Weigensberg, which discloses, for example, a removable sleeve that a POSA would have been motivated to use with Gilbert. Petitioner also cites combinations of Lee, primarily with Gilbert and Levin, which disclose, for example, the “bulb” limitations, as well as with Weigensberg, which discloses a removable sleeve, both of which would have been obvious to use with Lee.

Accordingly, IPR is requested in view of the following references:

- U.S. Patent No. 3,200,819 to Gilbert (“Gilbert”) (Ex. 1004), filed on April 17, 1963, issued on August 17, 1965, and prior art to the '788 patent under at least pre-AIA 35 U.S.C. § 102(b) and post-AIA 35 U.S.C. § 102(a)(1).
- Korean Patent Pub. No. 10-2012-0080287 to Lee (“Lee”) (Ex. 1005), filed on January 7, 2011, published on July 17, 2012, and prior art to the '788 patent under at least pre-AIA 35 U.S.C. § 102(a) and post-AIA 35 U.S.C. § 102(a)(1).
- U.S. Patent No. 9,943,107 to Weigensberg, *et al.* (“Weigensberg”) (Ex. 1006), issued on April 17, 2018, claiming priority to a provisional application filed on December 17, 2012, and prior art to the '788 patent under at least pre-AIA 35 U.S.C. § 102(e) and post-AIA 35 U.S.C. § 102(a)(2).
- U.S. Patent Pub. No. 2011/0036346 to Cohen (“Cohen”) (Ex. 1007), filed on August 26, 2010, published on February 17, 2011, and prior art to the '788 patent under

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

at least pre-AIA 35 U.S.C. § 102(b) and post-AIA 35 U.S.C. § 102(a)(1).

- U.S. Patent Pub. No. 2013/0298905 to Levin, *et al.* (“Levin”) (Ex. 1009), filed on March 12, 2013, published on November 14, 2013, and prior art to the ’788 patent under at least pre-AIA 35 U.S.C. § 102(e) and post-AIA 35 U.S.C. § 102(a)(2).

The statutory grounds and prior art for each ground are as follows:

Ground 1a: Claims 1 and 11 are unpatentable under 35 U.S.C. § 103 over Gilbert in view of Cohen.

Ground 1b: Claims 7 and 8 are unpatentable under 35 U.S.C. § 103 over Gilbert in view of Cohen and Weigensberg.

Ground 2a: Claims 1 and 11 are unpatentable under 35 U.S.C. § 103 over Lee in view of Gilbert and Levin.

Ground 2b: Claims 7 and 8 are unpatentable under 35 U.S.C. § 103 over Lee in view of Gilbert, Levin, and Weigensberg.

The application that led to the ’788 patent was filed on March 14, 2014—after the effective date of post-AIA 35 U.S.C. § 102. The ’788 patent also claims priority to a provisional application that was filed on March 15, 2013—one day *before* the effective date of post-AIA 35 U.S.C. § 102. While Petitioner does not concede that any of the claims of the ’788 patent are entitled to claim the earlier filing date of the provisional application, each of Gilbert, Cohen, Lee, Levin, and Weigensberg qualifies as prior art to the ’788 patent under *both* pre-AIA and post-AIA 35 U.S.C. § 102.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

C. 37 C.F.R. § 42.104(b)(3): Claim Construction

In this proceeding, claims are interpreted under the same standard applied by Article III courts. *See* 37 C.F.R. § 42.100(b); *see also* 83 Fed. Reg. 197 (Oct. 11, 2018); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*). Under this standard, words in a claim are given their plain meaning, which is the meaning understood by a person of ordinary skill in the art (POSA) in view of the patent and file history. *Phillips*, 415 F.3d 1303, 1312-13. Petitioner interprets the meaning of the claims herein at least in part based on Patent Owner's construction of the claims as informed by its allegations of infringement in co-pending litigation, as best Petitioner is able to understand such allegations. *See, e.g.*, Exs. 1016-1017. Petitioner does not waive, and expressly reserves, claim scope arguments, constructions, and evidence it may raise in other proceedings.

D. 37 C.F.R. § 42.104(b)(4): How The Construed Claims Are Unpatentable

An explanation of how claims 1, 7-8, and 11 are unpatentable, including where each claim feature is found in the prior art and the motivation to combine the prior art, is set forth below in Section V.

E. 37 C.F.R. § 42.104(b)(5): Supporting Evidence

An Appendix of Exhibits supporting this petition is attached. Exhibit 1003 is a Declaration of Kelly Kodama, an experienced designer of electronic cigarettes.

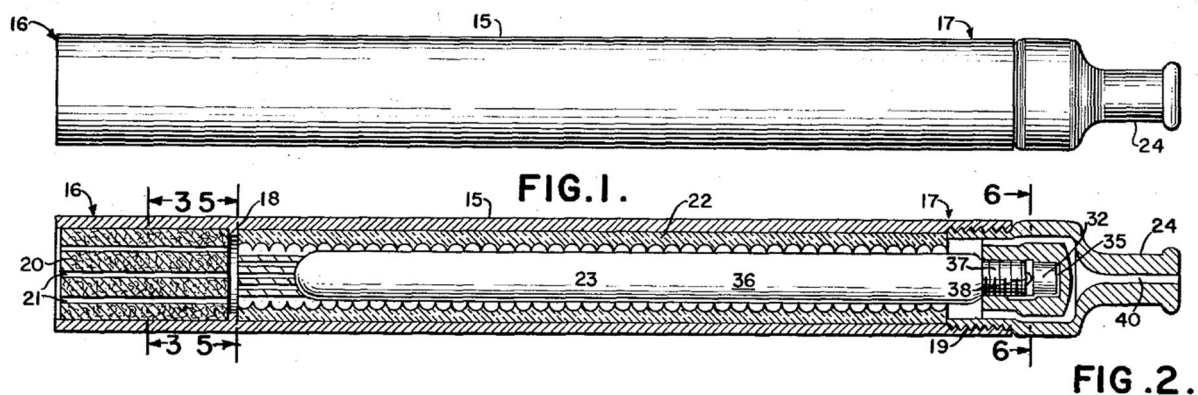
V. There Is A Reasonable Likelihood Claims 1, 7-8, and 11 Of The '788 Patent Are Unpatentable

A. Brief Overview Of The Prior Art

None of the references relied on in Grounds 1 and 2 were of record during the examination of the application leading to the '788 patent. Thus, each presented combination provides new evidence of obviousness that warrants consideration by the Office. *See* 35 U.S.C. § 325(d).

1. Overview of Gilbert

Gilbert, entitled "Smokeless Non-Tobacco Cigarette," is directed to an electronic cigarette as shown in FIGS. 1 and 2. Ex. 1004 at p. 1.



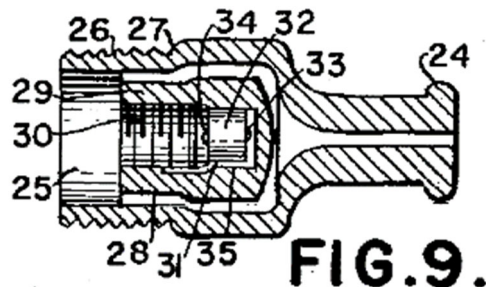
The Gilbert electronic cigarette device comprises an external tube 15 that is subdivided into different spaces by an internal shoulder 18. *Id.* at 1:62-71. The device has an outer end portion 16 with a detachable flavor cartridge 20 and an inner end portion 17 with internal threads 19 used to affix a mouthpiece 24 to the tube. *Id.* at 1:72-2:5.

The device has a battery 32 and a heating element that "is preferably a vacuum

tube or bulb 36” that is “similar to a light bulb.” *Id.* at 2:46-50.



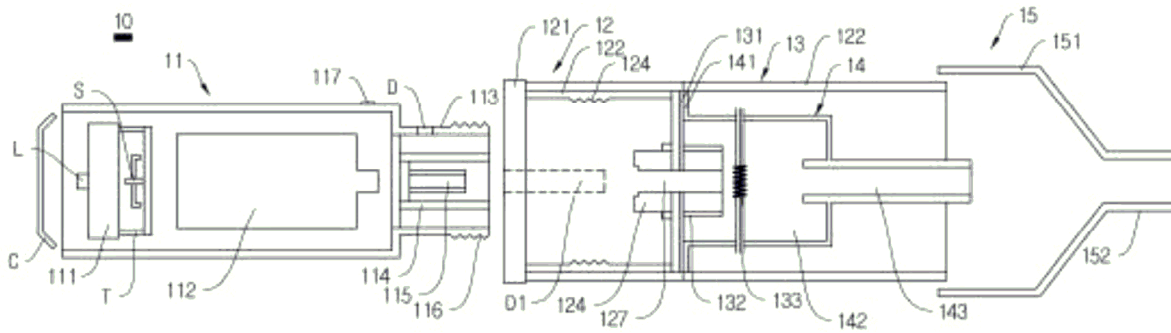
Id. at Fig. 10. The bulb 36 is mounted to a socket 30 and the tip end of the bulb engages an “inner battery contact 33 and complete[s] the circuit through the filament of the bulb 36 by the contact strip 35.” *Id.* at 2:72-3:2.



Id. at Fig. 9. When the user inhales through the mouthpiece 24, air is drawn into the passages 21 of the cartridge 20 that have “been impregnated with suitable flavoring material” and then passes into the heating chamber and around the heating bulb. *Id.* at 3:8-14. Gilbert discloses that the device is purposefully designed to “circulat[e] the fluid around the heating element in a turbulent manner to suitably raise the temperature of the inhalant mixture.” *Id.* at 1:23-29. The “heated and flavored air” then passes through the mouthpiece and into the mouth of the user. *Id.* at 3:15-16.

2. Overview Of Lee

Lee, entitled “External Air Inlet Structure Applied To An E-Cigarette,” is directed to an electronic cigarette as shown in Figure 1a. Ex. 1005 at Figure 1a.



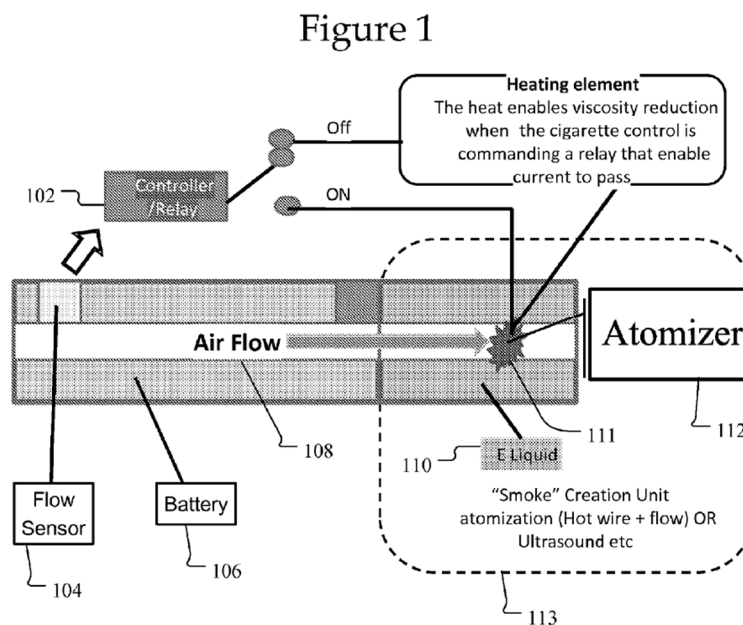
The Lee device comprises a storage housing (13) and a guide chamber (12) that are physically separated by a separating plate (131). *Id.* at [0028]. A battery assembly (11) connects to the guide chamber (12) through a connection chamber (113). *Id.* at [0023]. Air flows into the device through an inlet hole (D) along a guide groove (D1) through the connection chamber (113) into the guide chamber (12). *Id.* at [0024]. The air then flows into the storage housing (13) through an air conduit (127a). *Id.* at [0029].

A vaporization unit (14) that includes a vaporization chamber (142) and a supply passage (143) is coupled to the inside of the storage housing (13). *Id.* at [0030], [0032]. The vaporization chamber (142) accommodates a heating element (133) and the supply passage (143). *Id.* at [0032]. The supply passage (143) has “a shape of a through-hole formed in the circumferential surface of the vaporization chamber (142)” and supplies a nicotine solution to the heating element (133) from the storage housing (13). *Id.* at [0032]. The air flowing into the storage housing (13) then flows to the heating element (133) and the heating element vaporizes the nicotine solution with the air. *Id.* at [0029]. The vapor is then discharged through a discharge tube (144) and sucked through an inhalation piece (15) that consists of a coupling portion (151) and a

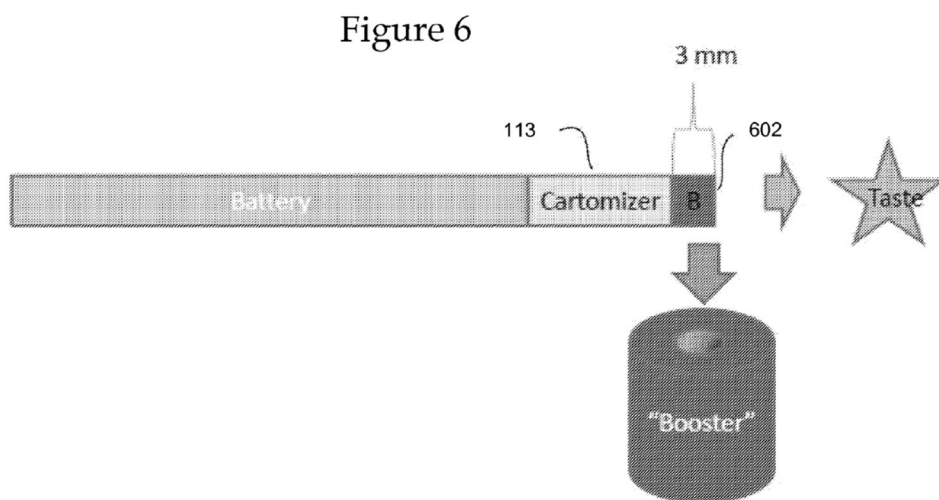
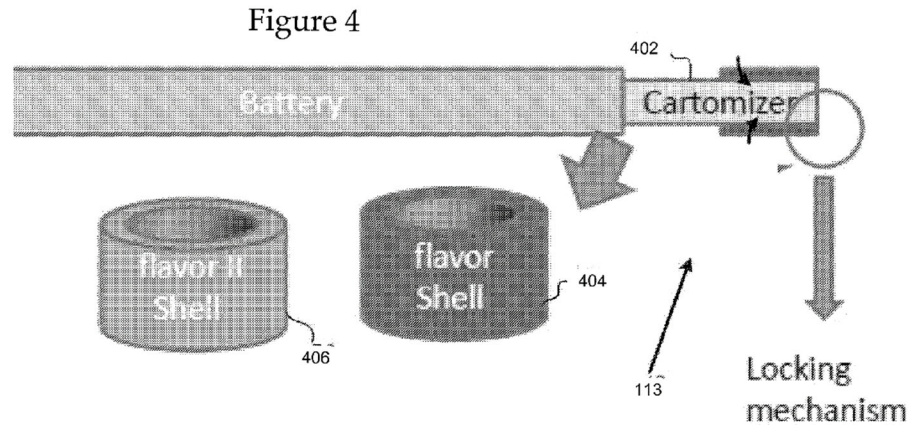
discharge portion (152). *Id.* at [0033].

3. Overview Of Weigensberg

Weigensberg, entitled “Cartomizer Flavor Enhancement,” is directed to a cartomizer for enhancing the flavor of an electronic cigarette. Ex. 1006 at Abstract. Weigensberg describes an electronic cigarette with a battery 106 that powers a cartomizer 113 containing an atomizer 112 and e-liquid 110. *Id.* at 3:43-4:11. The e-liquid is heated in the cartomizer to generate a vapor or mist through the atomization process. *Id.* at 2:29-45.



Id. at Fig. 1. Flavor enhancements such as flavor shells 404, 406 or flavor booster 602 (among others) can be added to the cartomizer 113 as shown in Figures 4 and 6. *Id.* at 6:45-64; 7:23-40.



Id. at Fig. 4. The Weigensberg device can also include a “special external (removable) wrap or container or packaging for the flavor booster 602 or for the cartridge” designed to “seal in and preserve the flavor during storage or between uses.” *Id.* at 7:41-44.

Weigensberg claims priority to provisional application 61/737,847 (the ‘847 Provisional) (Ex. 1018), filed December 17, 2012. The specification of the ‘847 Provisional supports at least claims 1, 3, 8, and 10 of Weigensberg, and therefore Weigensberg is entitled to the priority filing date of the ‘847 Provisional, and is prior art as of that date.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

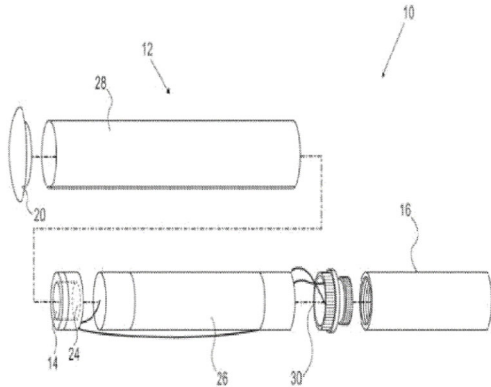
A later patent enjoys the priority date of the provisional on which it is based so long as the provisional specification “contain[s] a written description of the invention . . . in such full, clear, concise, and exact terms, to enable an ordinarily skilled artisan to practice the invention claimed in [the later patent or published patent application].” *Amgen Inc. v. Sanofi*, 872 F.3d 1367, 1380 (Fed. Cir. 2017) (quotation omitted). Similarly, “the written description of the provisional must adequately support the claims of the non-provisional application.” *Id.* (quotation omitted); *see also Apple Inc. v. Int’l Trade Comm’n*, 725 F.3d 1356, 1372 (Fed. Cir. 2013).

As shown in the chart below, Weigensberg enjoys the December 17, 2012 priority date of the ’847 Provisional because the ’847 Provisional fully supports at least claims 1, 3, 8, and 10 of Weigensberg:

Weigensberg (9,943,107) (Ex. 1006)	Provisional Application (61/737,847) (Ex. 1018)
1[a] An electronic vaping device comprising:	“This invention relates to smoking articles. More particularly, this invention relates to improvements in electronic cigarettes.” Ex. 1018 at 4. “According to disclosed embodiments of the invention, methods and apparatus provide gustatory and olfactory enhancements to an electronic cigarette by addition of flavoring agents.” Ex. 1018 at 5. “Fig. 1 is a semi-schematic exploded view of a smoking device in accordance with an

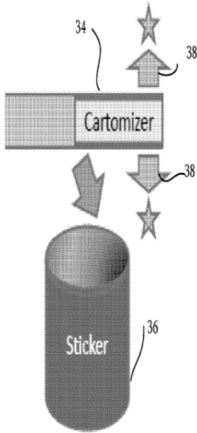
PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

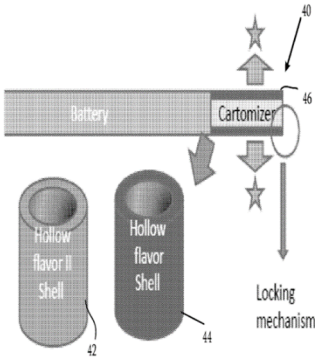
Weigensberg (9,943,107) (Ex. 1006)	Provisional Application (61/737,847) (Ex. 1018)
	embodiment of the invention;” Ex. 1018 at 6. “Fig. 2 is a schematic view of a cartomizer of the electronic cigarette shown in Fig. 1, in accordance with an embodiment of the invention;” Ex. 1018 at 6.
1[b] a battery portion configured to provide power to the electronic vaping device;	“The device 10 has a barrel comprising a battery section 12. The battery section 12 may include power control circuitry 14, which is typically encased as a unit with a pressure differential sensor 24, and which may be enclosed in a plastic holder.” Ex. 1018 at 7. “The electronic power control circuitry 14 linked to the sensor 24 activates the atomizer in the section 16, which is powered, typically by a lithium ion battery 26 that is housed in a barrel 28 of the battery section 12.” Ex. 1018 at 8.
1[c] a cartridge coupled with the battery portion, the cartridge configured to generate a mist; and	“The device 10 has a barrel comprising a battery section 12. The battery section 12 may include power control circuitry 14 . . . The device 10 includes a cartridge section 16, including an atomizer having a high resistance electrical wire, which heats a liquid or gel when the atomizer is powered. . . . The components of the section 16 may be integral . . . In such case, the section 16 is known as a “cartomizer”. In some embodiments the power control circuitry 14

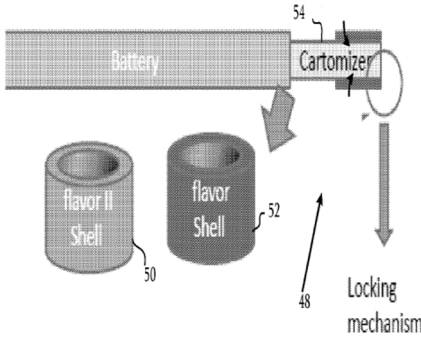
Weigensberg (9,943,107) (Ex. 1006)	Provisional Application (61/737,847) (Ex. 1018)
	may be disposed in the section 16 rather than the battery section 12 as shown in Fig. 1.” Ex. 1018 at 7-8.  FIG. 1 Ex. 1018 at Fig. 1. “The electronic power control circuitry 14 linked to the sensor 24 activates the atomizer in the section 16, which is powered, typically by a lithium ion battery 26 that is housed in a barrel 28 of the battery section 12.” Ex. 1018 at 8. “An adaptor 30 connects the section 16 and the battery section 12, and may comprise a threaded connector.” Ex. 1018 at 8. “During use, gentle warming of the impregnated material facilitates release of the flavoring agent into the cartomizer, and thence to the heating coil where vapor is produced, having an enhanced flavor as a result of the addition of the flavoring agent.” Ex. 1018 at 9.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

Weigensberg (9,943,107) (Ex. 1006)	Provisional Application (61/737,847) (Ex. 1018)
1[d] a flavor enhancement mechanism separate from and coupled with the cartridge, the flavor enhancement mechanism including one of a flavor sticker coupled with the cartridge and a flavor shell coupled to one of an inside of the cartridge and an outside of the cartridge.	“A layer of flavoring is added to the cartomizer of an electronic cigarette and optionally to other parts of the electronic cigarette.” Ex. 1018 at 5. “In one embodiment, to flavoring is incorporated in a sticker that wraps around the cartomizer. In another embodiment the flavoring agent is added to the actual cartomizer itself. The flavor is noticeable on the user’s lips after using the electronic cigarette, and via olfactory experience. This provides enhanced dimensions of flavor and scent experience for the user.” Ex. 1018 at 5. “Reference is now made to Fig. 2, which is a schematic view of a cartomizer 34 of the section 16 (Fig. 1) , in accordance with an embodiment of the invention. A sticker 36 is impregnated with a flavoring agent, and is adhered to the interior wall of the cartomizer 34, where it is exposed to air flow.” Ex. 1018 at 8.

Weigensberg (9,943,107) (Ex. 1006)	Provisional Application (61/737,847) (Ex. 1018)
	FIG. 2  Ex. 1018 at Fig. 2. “Reference is now made to Fig. 3, which is a schematic view of a cartomizer 40 of the section 16 (Fig. 1), in accordance with an alternate embodiment of the invention. In this embodiment, shells 42, 44 are impregnated with flavoring agent. . . . As shown in Fig. 3, the shells 42, 44 extend along the entire length of interior wall 46 cartomizer 40, providing maximum area for release of flavoring agent.” Ex. 1018 at 9-10.

Weigensberg (9,943,107) (Ex. 1006)	Provisional Application (61/737,847) (Ex. 1018)
	FIG. 3  Ex. 1018 at Fig. 3.
3 The electronic vaping device of claim 1, wherein the flavor enhancement mechanism include[s] the flavor shell, and the flavor shell is coupled to the outside of the cartridge.	“Reference is now made to Fig. 3, which is a schematic view of a cartomizer 40 of the section 16 (Fig. 1), in accordance with an alternate embodiment of the invention. In this embodiment, shells 42, 44 are impregnated with flavoring agent. . . . As shown in Fig. 3, the shells 42, 44 extend along the entire length of interior wall 46 cartomizer 40, providing maximum area for release of flavoring agent.” Ex. 1018 at 9-10. “Reference is now made to Fig. 4, which is a schematic view of a cartomizer 48 of the section 16 (Fig. 1), in accordance with an alternate embodiment of the invention. In this embodiment selected shells 50, 52 are mounted on the exterior of wall 54 of the cartomizer 48, and release flavoring agent through the wall 54.” Ex. 1018 at 10.

Weigensberg (9,943,107) (Ex. 1006)	Provisional Application (61/737,847) (Ex. 1018)
	FIG. 4  Ex. 1018 at Fig. 4.
10 The electronic vaping device of claim 8, wherein the mouthpiece is attached to an end of the electronic vaping device and is removable from the cartridge. [Claim 8 The electronic vaping device of claim 1, wherein the flavor enhancement mechanism comprises a mouthpiece.]	“In this embodiment a mouthpiece extension is added to the exterior of the cartomizer and becomes a point of contact with the lips of the smoker. This variant further enhances the flavor as experienced by the smoker.” Ex. 1018 at 11-12. “Reference is now made to Fig. 9 which is a detailed sectional view of a portion of the electronic cigarette 89. A chamber 91 is formed in the mouthpiece 85 as shown, and is filled with an agent, such as candy. The candy could include sugar or an artificial sweetener. Caffeine may be added to create additional effect to the nicotine or other e-liquid in the cigarette.” Ex. 1018 at 13.

Weigensberg (9,943,107) (Ex. 1006)	Provisional Application (61/737,847) (Ex. 1018)
	Ex. 1018 at Fig. 9. “The mouthpiece 85 is made of plastic with a recess 93 formed therein such that its inner diameter fits over the cartomizer 87 and enables fast mounting and dismounting from the cartomizer 87. It should be flexible enough to create a firm hold on the cartomizer 87 to enable smoking the cigarette without being dislodged.” Ex. 1018 at 13. “Reference is now made to Fig. 8 which is a schematic sectional view of an electronic cigarette 89, in accordance with an alternate embodiment of the invention. A mouthpiece 85 is attached to a cartomizer 87.” Ex. 1018 at 13. Ex. 1018 at Fig. 8.

See also Ex. 1003 at ¶65.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

Additionally, the '847 provisional application describes the subject matter that Petitioner relies upon as prior art in the Weigensberg publication. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1380-81 (Fed. Cir. 2015). As described herein, Petitioner relies on Weigensberg for its disclosure of a “removable sleeve” as recited in dependent claims 8 and 9 of the '788 patent. These disclosures are supported by the Weigensberg '847 provisional as demonstrated above with respect to claim 3 (a “flavor shell” that is “coupled outside of the cartomizer”) and claims 8 and 10 (the flavor enhancement mechanism is a mouthpiece, and the mouthpiece is “removable from the cartridge”).

4. Overview of Cohen

Cohen is directed to a personal inhalation device – which may be an “electronic cigarette” – that includes three principal components: an electronics section 12, an atomization unit 14, and a cartridge 16. FIG. 2 of Cohen depicts one device according to the invention.

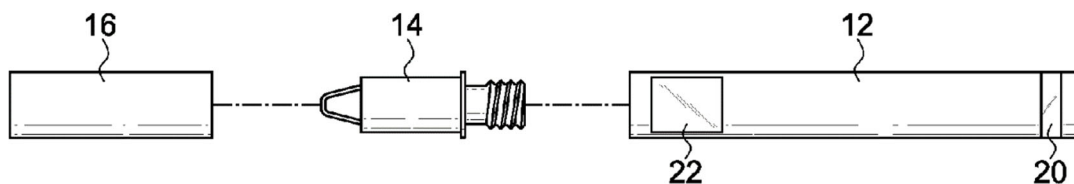


FIG. 2

“The electronics section 12 is connected to one end of the atomizing unit 14 by means of a screw-on connection, and the cartridge 16 is connected to the other end of

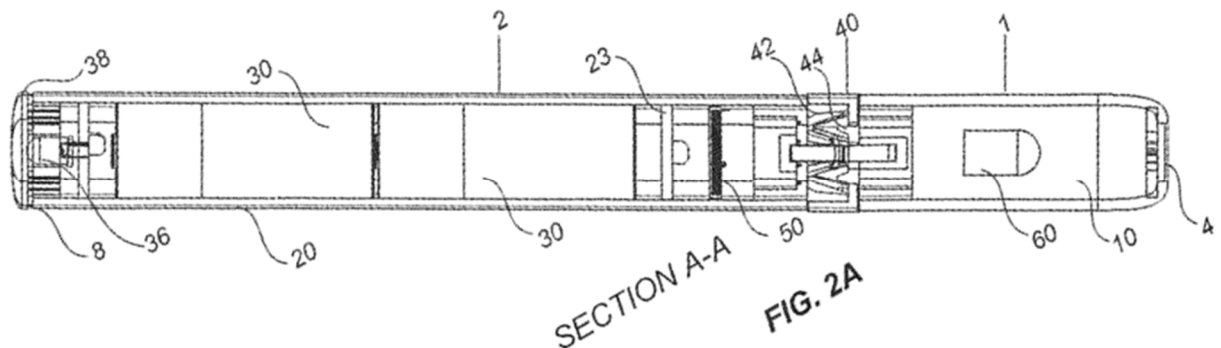
PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

the atomizing unit 14 by an interference fit,” and when assembled “defines an elongated, cylindrical shape having a length-to-diameter ratio that is similar to the length-to-diameter ratio of a standard cigarette.” Ex. 1007 at [0018]. “[T]he cartridge 16 stores a deliverable-containing medium which is atomized in the atomizing unit 14 when a user draws or puffs on the cartridge end of the inhalation device 10,” thus creating a vapor that the user inhales. *Id.* Cohen also discloses an indicator light 20 at the end of the electronics section 12 that illuminates when the user draws on the device, as well as a display 22 for outputting additional information to the user. *Id.* Operation of the device is controlled by micro-electronic components contained in the electronics section. *Id.*

The electronics section includes a pressure transducer, an electronic circuit board, and a power source. *Id.* at [0021]. “The pressure transducer 38 is designed to react to a pressure increase due to air flowing through the first housing 24 to actuate the control electronics on the electronic circuit board 40 and other electric components of the inhalation device 10.” *Id.* The electronic circuit board includes a “logic circuit” that is used for controlling the electronics in the device. The logic circuit is connected to “one or more input devices 124, as well as the atomizing device 108, the indicator light 20, and the display 22.” *Id.* at [0032]. “The control electronics are programmable such that a user is able to selectively determine the operation of the inhalation device 10.” *Id.* at [0033].

5. Overview of Levin

Levin is directed to an electronic vaporizing device that includes a portable power source, a heating portion, an inhalation sensor, a temperature sensor, a distal light source, and a grinding portion. Figure 2A of Levin depicts one device according to the invention.



Levin explains that “the invention provides a portable electronic vaporizing device having an outer shell housing internal components that facilitate heating and vaporizing of the selected substance disposed within for inhalation by a user.” Ex. 1009 at [0033]. Levin further explains that the device “allow[s] for an enhanced ‘smoking’ experience, similar to actual traditional smoking using combustion without the associated drawbacks.” *Id.*

Levin explains that the device can include a power source such as rechargeable or replaceable batteries, an inhalation sensor for sensing airflow, and a heating unit to heat and vaporize the selected substance. *Id.* at [0038-0041]. Levin explains that the heating unit comprises “a heating element 51, such as a coil, and a reflector 52, distal

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

of the coil so as to reflect and direct radiant heat so as to increase the efficiency of heating the air drawn through the device.” *Id.* at [0049]. Levin further explains that “[t]he heating element may be a Nickel Chromium alloy wire, which may be miniaturized and optimized for maximum surface area and minimized mass, or may be a heater bulb, such as a Tungsten filament in quartz bulb.” *Id.* Levin explains that “[t]hese configurations allow relatively high energy dissipation per unit time with relatively low energy input to achieve a desired operating temperature, when compared to conventional devices.” *Id.* Further, as explained in Section III(C) above, Levin also describes that the heater may be a bulb heater that functions as a conduction heater.

B. Ground 1a: Claims 1 And 11 Are Obvious Over Gilbert in view of Cohen

Gilbert, either alone or in combination with Cohen, discloses and/or renders obvious all of the limitations of claims 1 and 11, as described below.

1. Independent Claim 1

(a) Preamble: “An electronic cigarette comprising:”

The Federal Circuit “has recognized that as a general rule preamble language is not treated as limiting.” *Arctic Cat Inc. v. GEP Power Prod., Inc.*, 919 F.3d 1320, 1327 (Fed. Cir. 2019) (*citing Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1347 (Fed. Cir. 2012)). The Federal Circuit has also “long ruled that ‘a preamble is not limiting where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.’” *Id.* at

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

1328 (quoting *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002)). Here, claim 1 of the ’788 patent defines a structurally complete invention, and “electronic cigarette” is only an intended use for that invention. *See id.* at 1329-1330 (finding that “structural” preamble language “personal recreation vehicle” was only an intended use and thus not limiting).

To the extent the preamble of claim 1 is limiting, Gilbert, either alone or in view of Cohen, discloses it. Gilbert discloses a “smokeless non-tobacco cigarette” which “replace[s] burning tobacco and paper with heated, moist, flavored air.” Ex. 1004 at 1:9-11. The instrument in Gilbert uses a battery and heating element to heat air that has been impregnated with a fluid flavoring material. *Id.* at 3:9-18. A POSA would have understood that the device in Gilbert is what typically would have been described as an “electronic cigarette” at the time of the alleged invention. *See, e.g.*, Ex. 1006 at 1:19-24 (“An electronic cigarette (‘e-cigarette,’ ‘e-Cig,’ or ‘eCig’) is a device that emulates tobacco cigarette smoking, by producing smoke replacement that may be similar in its physical sensation, general appearance, and sometimes flavor (i.e., with tobacco fragrance, menthol taste, added nicotine etc.”); Ex. 1007 at [0004] (“personal inhalation devices are often used to deliver nicotine by inhalation, and when so used are sometimes referred to as an ‘electronic cigarette’ or ‘e-cigarette.’”); Ex. 1003 at ¶80.

At a minimum, it would have been obvious to a POSA at the time of the invention to modify Gilbert to include standard electronic components that were well known at

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

the time, at least in view of Cohen. Ex. 1003 at ¶¶81-83. Cohen discloses an electronic cigarette that includes a logic circuit and various electronic controls that can be used to improve the electronic cigarette and customize the user's experience. A Cohen disclosure that is particularly relevant to the Gilbert device is the use of control electronics in combination with a pressure sensor that is "designed to react to a pressure increase due to air flowing through the first housing 24 to actuate the control electronics on the electronic circuit board 40 and other electric components of the inhalation device 10." Ex. 1007 at [0021].

A POSA would have been motivated to modify the Gilbert device to include such a pressure sensor, including the associated circuit board and electronics, because the Gilbert device does not expressly disclose starting or stopping the heating element other than by unplugging the bulb. Ex. 1003 at ¶82. Modifying Gilbert to only heat up when a user draws on the device would provide numerous benefits, including ease of use for the user, prolonging the life of the heating element, controlling the amount of the deliverable that is vaporized, and protecting the user. *Id.* As Cohen explains, the control electronics can be programmed to not only turn on the device when the pressure transducer is activated, but can also be used to control and/or vary the metering of the deliverable such as by limiting the "on" time or controlling the temperature of the heating element. Ex. 1007 at [0040]-[0041]. The device disclosed in Cohen can also be programmed to only activate the atomization device a certain number of times for a

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

given period of time. *Id.* at [0043]. The electronic technology described in Cohen can also increase the life of the electronic cigarette and prevent overheating by limiting the amount of time that the heating element is energized. Ex. 1003 at ¶82; Ex. 1007 at [0054]. In the Gilbert device, this can only be achieved by removal of the bulb.

To the extent the battery-operated Gilbert device is not already considered by a POSA to be an “electronic” device, the addition of such circuitry and controls would indisputably make the Gilbert device an “electronic cigarette.” Ex. 1003 at ¶83. Given the ubiquitous nature of such pressure sensors and associated controls, not only would a POSA have been motivated to make such a change, a POSA would have had a high probability of success in doing so. *Id.*

(b) Element 1a: “a casing comprising a first chamber and a second chamber, the two chambers located sequentially within the casing;”

Gilbert discloses element 1a. Ex. 1003 at ¶¶84-85. Gilbert discloses a “casing” as claimed. *See* Ex. 1004 at Figure 1.

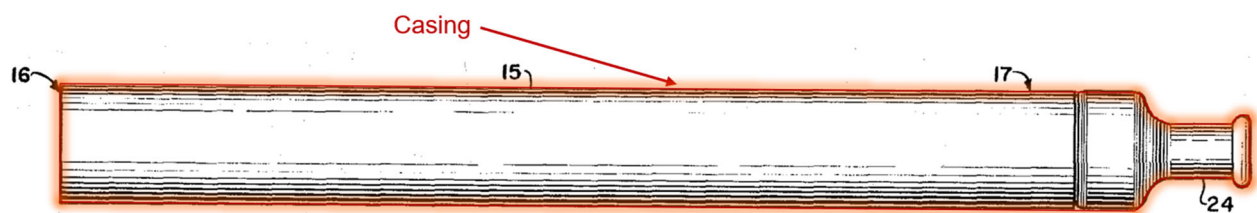
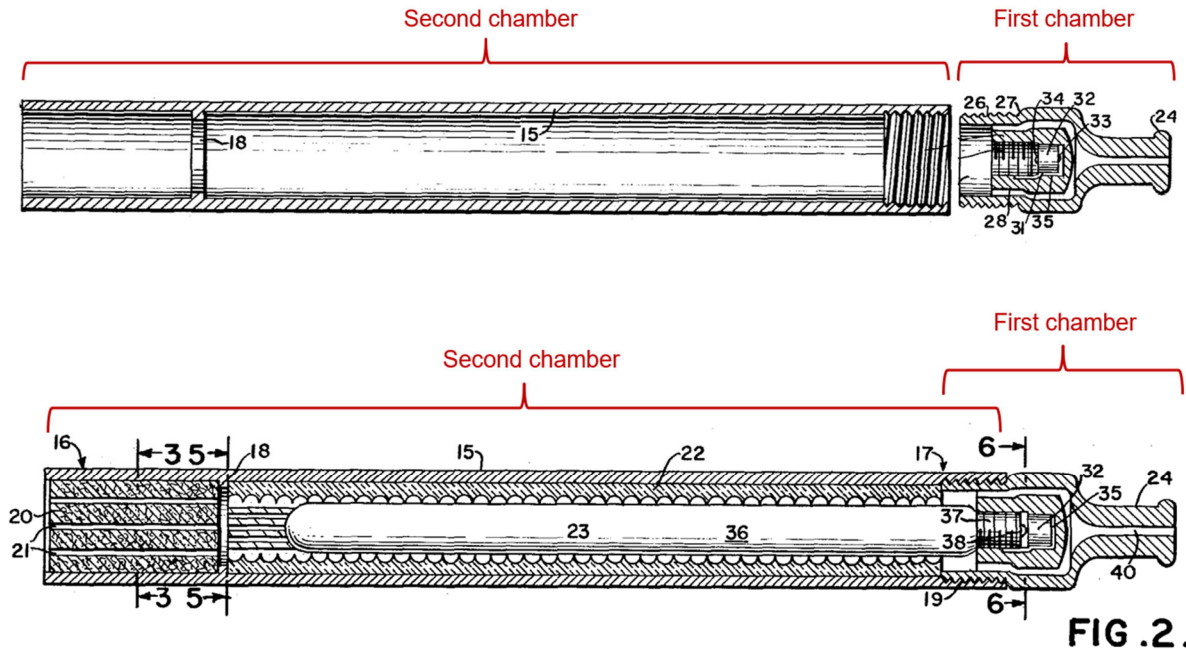


FIG. 1.

Gilbert further discloses “an external tube . . . having an outer end portion 16 and an inner end portion 17.” *Id.* at 1:62-65. The tube 15 has internal threads 19 to affix a mouthpiece 24 to the inner end portion 17 of the tube 15. *Id.* at 1:72-2:2, 2:16-17. The

interior of the mouthpiece 24 represents a “first chamber” and the interior of the tube 15 represents a “second chamber,” and these two chambers are “located sequentially within the casing.” *See id* at Fig. 2.⁴

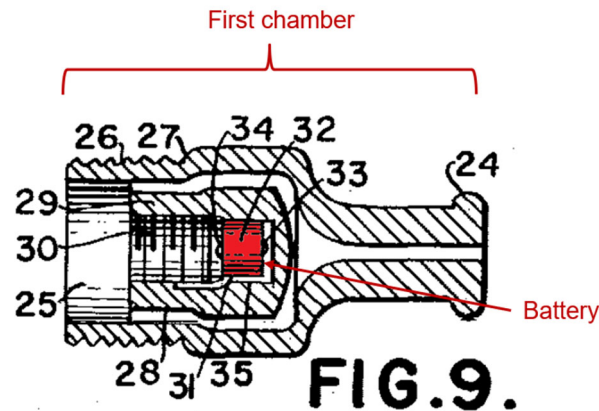


(c) **Element 1b: “a battery located in the first chamber;”**

Gilbert discloses element 1b. Ex. 1003 at ¶86. Gilbert discloses a battery located in the first chamber, as shown below, and as described at, *e.g.*, Ex. 1004 at 2:41-45 (“Within the inner ring 29 is a threaded electric socket 30 and forwardly thereof a battery cavity 31 for detachably receiving a battery 32 having an inner contact 33 and an outer contact 34 with a contact strip 35 between the inner contact 33 and the socket

⁴ The portions identified above constitute a “first chamber” and a “second chamber” as claimed in the ’788 Patent. Gilbert also describes dividing tube 15 (i.e., the “second chamber”) into additional, smaller chambers. *See, e.g.*, Ex. 1004 at 1:66-70.

30”).

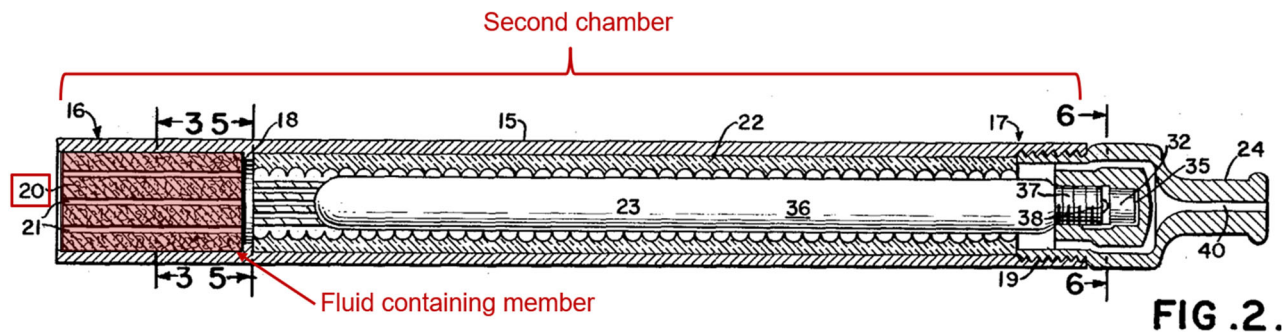


(d) Element 1c: “a fluid containing member located in the second chamber;”

Gilbert discloses element 1c. Ex. 1003 at ¶¶87-88. Gilbert discloses a detachable flavor cartridge 20 disposed at one end portion of the tube. Ex. 1004 at 2:3-4. The cartridge is composed of a “porous, moisture-holding substance”. *Id.* at 3:23-25. When the user inhales, air is “drawn in through the passages 21 of the cartridge 20 which has been impregnated with suitable flavoring material” and “is picked up by the inhaled air” *Id.* at 3:9-14. The air mixed with the flavoring material “then passes into the heating chamber and is caused to flow around the heating bulb 36.” *Id.* at 3:14-15. Gilbert states that one advantage is that “[b]y changing the liquid employed to moisten the cartridge 20, a variety of tastes may be imparted to the warm moist air which serves to duplicate the smoking sensation.” *Id.* at 3:56-59. Further, Gilbert discloses that an object of this invention is to provide a device capable of “circulating the fluid around

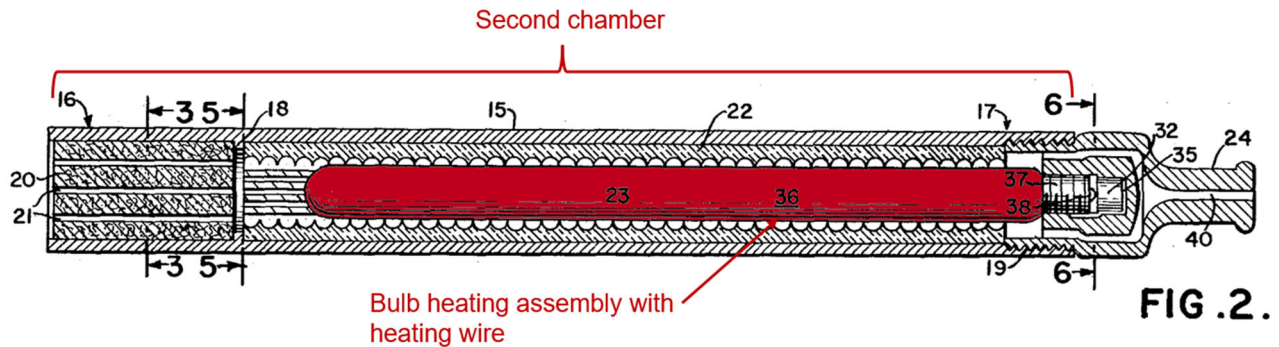
PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

the heating element in a turbulent manner to suitably raise the temperature of the inhalent mixture”. *Id.* at 1:23-27. Therefore, Gilbert discloses a “fluid containing member” (the flavor cartridge) “located in the second chamber” (the tube). *See also, id.* at Figure 2.



- (e) **Element 1d: “a heating assembly located in the second chamber, the heating assembly comprising a bulb containing a heating wire in communication with the battery;”**

Gilbert discloses element 1d. Ex. 1003 at ¶¶89-90. For example, Gilbert discloses a heating assembly that “is preferably a vacuum tube or bulb 36” and is “similar to a light bulb.” Ex. 1004 at 2:45-46, 2:50. Gilbert further explains that “[w]hen the bulb 36 is assembled to the socket 30 its tip end 38 will engage the inner battery contact 33 and complete the circuit through the filament of the bulb 36 by the contact strip 35.” *Id.* at 2:71-3:2. Thus, a heating wire (“filament”) is in communication with the battery 32 through battery contact 33 and contact strip 35. The heating assembly including the bulb is located in the second chamber, as shown below.



Id. at Fig. 2.

A POSA would have understood that the “filament of the bulb” as described in Gilbert, and as was typically used inside a “bulb” or “light bulb,” is a “heating wire.” Tungsten, a metal with a high melting temperature and predisposition to heat, was used in the coiled wire of most traditional lightbulbs at the time of Gilbert. Ex. 1003 at ¶¶47, 54, 90. The coiled metal wire inside a traditional lightbulb is a “heating wire” because the wire would get hot and light up when energy is supplied through the filament. *Id.*

(f) **Element 1e: “a fluid passageway communicating between the fluid containing member and the heating assembly;”**

Gilbert discloses element 1e. Ex. 1003 at ¶¶91-93. Gilbert discloses a tubular liner 22 with an internal wall 23 “of a form and character to tumble the air or create turbulence therein”. Ex. 1004 at 2:11-14; *see also, id.* at FIG. 8:

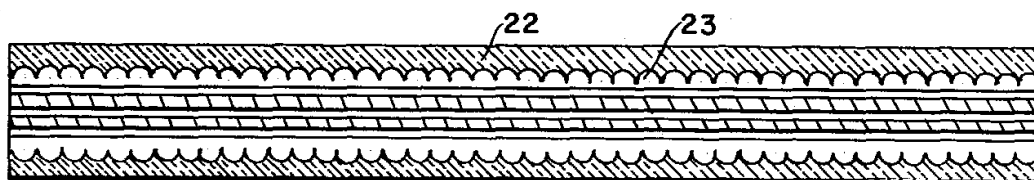
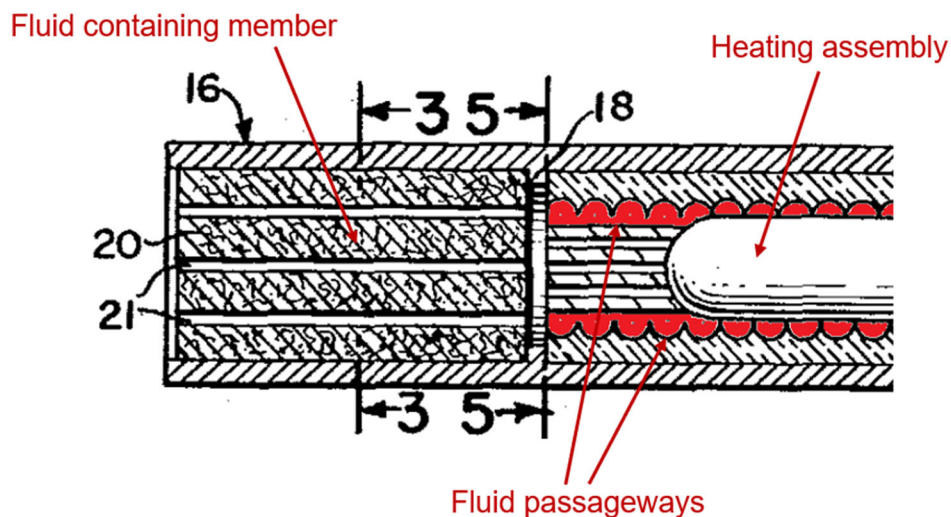


FIG. 8.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

The bulb 36 is “preferably elongated and of a diameter to fit within the insert 22 in such manner as to provide an elongated heating passage throughout the length of the bulb and around the complete circumference of the bulb 36.” Ex. 1004 at 2:50-54. When the user inhales, air is “drawn in through the passages 21 of the cartridge 20 which has been impregnated with suitable flavoring material” and “is picked up by the inhaled air” *Id.* at 3:11-14. The air mixed with the flavoring material (*i.e.*, the “fluid”) “then passes into the heating chamber and is caused to flow around the heating bulb 36.” *Id.* at 3:13-15. In addition to the textual description above, the fluid passageways between the fluid containing member and the heating assembly can also be seen in FIG. 2 of Gilbert, as annotated below:



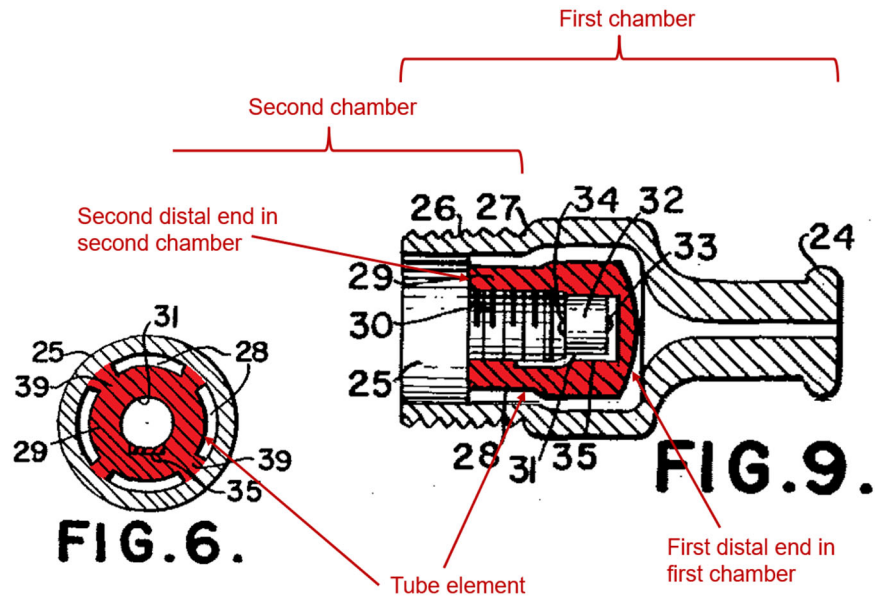
Id. at Fig. 2.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

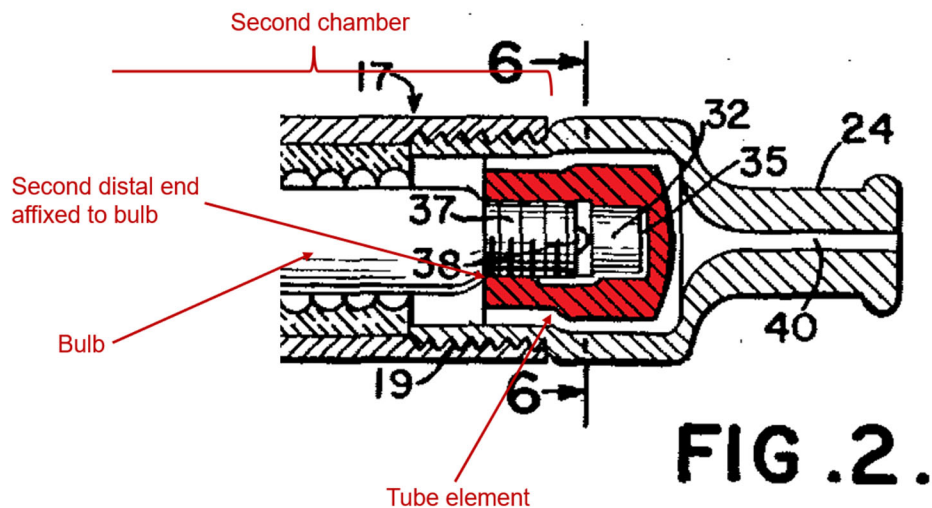
Gilbert further discloses that “[t]he tumbling of the air around the heat source provides for uniformity of heat transfer while the insert 22 also serves to insulate the basic tube 15 so that it does not become hot to the hand of the user.” *Id.* at 3:19-22.

- (g) Element 1f: “a tube element communicating between the first and second chambers, with a first distal end of the tube element located in the first chamber, and a second distal end of the tube element located in the second chamber and affixed to the bulb, the tube element providing an air passage between the first and second chambers;”**

Gilbert discloses element 1f. Ex. 1003 at ¶¶94-95. Gilbert discloses a hollow shank 25 communicating between the mouthpiece 24 (the first chamber) and the tube 15 (the second chamber). As shown in FIGS. 6 and 9, the hollow shank portion 25 of the mouthpiece has “air draft spaces 28 between the hollow shank 25 and an inner ring 29 spaced inwardly from the hollow shank 25 and connected therewith by radial arms 39. The air draft spaces 28 communicate with the suction orifice 40 of the mouthpiece at the inner end and at the outer end with the space circumscribed by the inner wall 23 of the tubular insert 22.” Ex. 1004 at 2:31-40; *see also* FIG. 2. The tube element, which provides the air passageways (28) between the first and second chambers, is shown in annotated FIGS. 6 and 9 below, and includes inner ring 29 and radial arms 39.



Id. at FIGS. 6 and 9. The second distal end of the tube element is affixed to the bulb, which is screwed into the tube element:

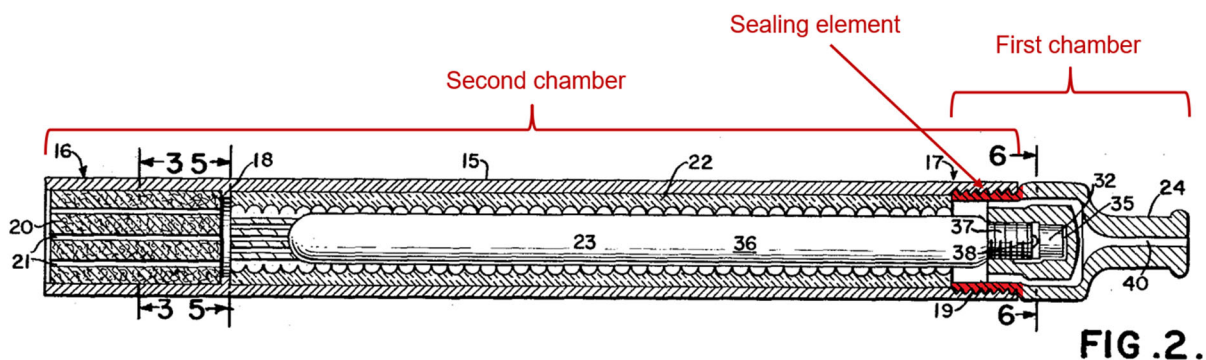


(h) Element 1g: “a sealing element forming a partition between the first and second chambers; and”

Gilbert discloses element 1g. Ex. 1003 at ¶96. Gilbert discloses that “[a] mouthpiece 24 is affixed to the inner end portion 17 of the tube 15 in any appropriate

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

manner, preferably detachably as by external threads 26 on the hollow shank 25 of the mouthpiece which mate with the internal threads 19 in the inner end portion of the outer tube 15.” Ex. 1004 at 2:16-20. Gilbert further discloses that “the hollow shank 25, when fitted home in the outer tube, will encounter and push the insert 22 against the inner wall of the internal shoulder 18 thus holding the insert 22 immovably in place.” Ex. 1004 at 2:21-25; FIG. 2. The hollow shank 25 has “an outstanding shoulder 27 forwardly of the threads 26 to engage the inner end of the tube 15 in the completely assembled position of the mouthpiece 24 relatively to the outer tube 15.” *Id.* at 2:26-29; *see also id.* at FIGS. 2, 9 (annotated below). The hollow shank 25 with threads 26 and shoulder 27 acts as a sealing element forming a partition between the first chamber and the second chamber. Ex. 1003 at ¶96.

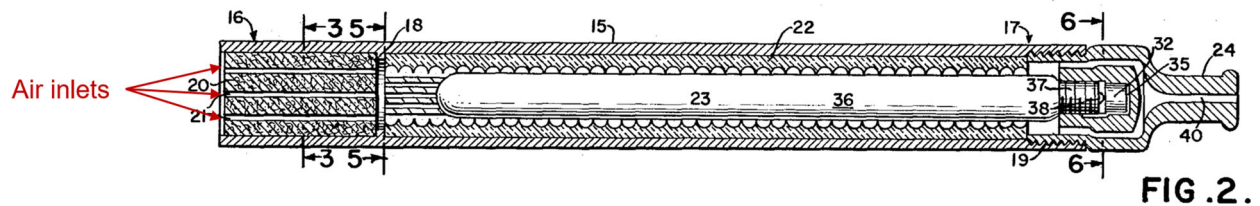


(i) Element 1h: “an air inlet provided on an external wall of the casing;”

Gilbert discloses element 1h. Ex. 1003 at ¶97. Gilbert explains that “[b]y the act of inhalation through the mouthpiece 24, air from the ambient atmosphere is drawn in through the passages 21 of the cartridge 20 which has been impregnated with suitable

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

flavoring material which is picked up by the inhaled air and such air then passes into the heating chamber and is caused to flow around the heating bulb 36, the heated and flavored air finally passing through the mouth piece 24 into the mouth and also, if desired, into the lungs.” Ex. 1004 at 3:9-18. The air inlets, as described, are shown in annotated FIG. 2 below.



- (j) **Element 1i: “wherein the heating wire heats the bulb, and wherein the bulb heats fluid introduced to and coming in contact with the bulb through the fluid passageway.”**

Gilbert discloses element 1i. Ex. 1003 at ¶¶98-99. Gilbert discloses that the heating element “is preferably a vacuum tube or bulb 36” that is “energized,” and that the air mixed with the flavoring material “passes into the heating chamber and is caused to flow around the heating bulb 36.” Ex. 1004 at 2:46-47, 3:2-3, 3:12-15. Gilbert further explains that an object of this invention is to provide a device capable of “circulating the fluid around the heating element in a turbulent manner to suitably raise the temperature of the inhalent mixture.” *Id.* at 1:23-29. *See also* Ex. 1003 at ¶¶98-99.

2. Dependent Claim 11

Claim 11 depends from claim 1 and adds the limitation “wherein the fluid is selected from a group consisting of: a glycol fluid, a fluid containing nicotine, a water-

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

based ‘regular’ cigarette flavored fluid, a water-based ‘menthol’ cigarette flavored fluid, and combinations thereof.” Gilbert discloses this limitation. Ex. 1003 at ¶¶100-101. Gilbert discloses a “flavor cartridge 20” that is “impregnated with suitable flavoring material.” Ex. 1004 at 2:3-4, 3:12-13. More specifically, Gilbert explains that “[t]he impregnation will be by a harmless flavored chemical compound” which “may be solutions ranging from **slightly mentholated water** to a solution which would simulate artificially the flavor of Scotch whisky.” *Id.* at 3:27-32 (emphasis added); *see also* Ex. 1003 at ¶100 (“slightly mentholated water” is “a water-based ‘menthol’ cigarette flavored fluid.”). Finally, Gilbert also discloses that “[b]y changing the liquid employed to moisten the cartridge 20, a variety of tastes may be imparted to the warm moist air which serves to duplicate the smoking sensation.” Ex. 1004 at 3:56-59. A POSA would have understood that a “regular cigarette flavored fluid” would duplicate the smoking sensation. Ex. 1003 at ¶101.

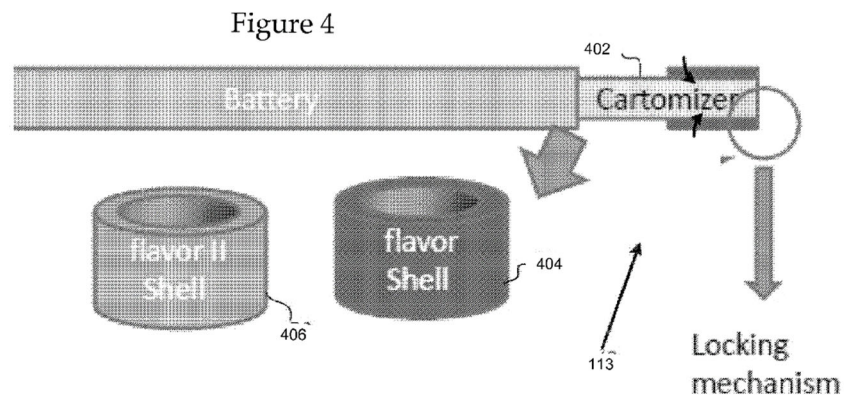
C. Ground 1b: Claims 7 and 8 Are Obvious Over Gilbert In View Of Cohen and Weigensberg

Claim 7 depends from claim 1 and adds the limitation “further comprising a removable sleeve positioned about a portion of an exterior of the casing.” Claim 8 also depends from claim 1 and adds the limitation “further comprising a removable sleeve located around an exterior of the casing.” Weigensberg discloses these limitations. Ex. 1003 at ¶¶102-105. Weigensberg discloses an e-cigarette that can include “a special external (removable) wrap or container or packaging for the flavor booster 602 or for

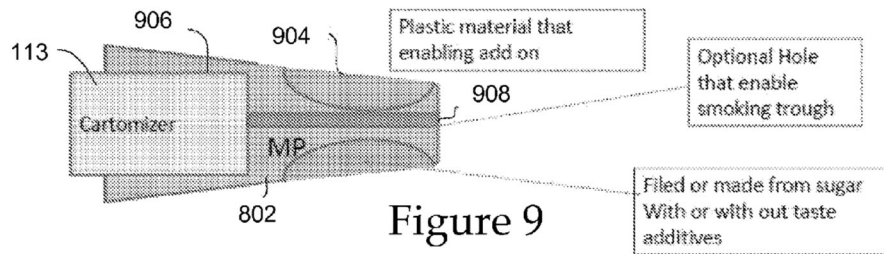
PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

the cartridge that will seal in and preserve the flavor during storage or between uses. It may insulate against heat, light, moisture, or oxygen, etc.” Ex. 1006 at 7:41-45.

Weigensberg further discloses that removable cylindrical flavor shells 404, 406 (*i.e.*, “sleeves”) can be placed around the outside of the cartomizer (the portion of the device that includes the e-liquid to be vaporized and the heating element). *Id.* at FIG. 4:



Weigensberg also discloses a removable mouthpiece that can be placed around the outside of the cartomizer. *Id.* at 8:20-23 (“The mouthpiece 802 may be made of plastic with a recess 906 formed therein such that its inner diameter fits over the cartomizer 113 and enables fast **mounting and dismounting** from the cartomizer 113.”) (emphasis added); *see also id.* at Figure 9:



A POSA would have been motivated to combine the teachings of Gilbert with the “removable sleeve” teachings in Weigensberg because flavored vaping liquids were known to improve the user’s experience when using vaping devices. Ex. 1003 at ¶¶106-107. A POSA would have been motivated to modify the flavor of the vaping liquid according to user preference. *Id.* In 2013, it was well known to the POSITA that cartridges for electronic vaping devices typically contained chemical additives and flavors, such as various brands of tobacco, chocolate, coffee, mint, or fruit. *Id.* at ¶102. A POSA would have had a reasonable expectation of success in modifying the Gilbert device to include flavored vaping liquid as taught by Weigensberg, as it was known in the field of electronic vaping devices at the time and flavorings were routinely incorporated in devices like the one in Gilbert. *Id.* And Weigensberg itself explains that different flavors and scents provide gustatory and olfactory enhancements to the e-cigarette by, for example, improving the experience for the user by allowing the user to taste and smell the flavor, and also potentially overcoming any initial burning smell. Ex. 1006 at 4:39-52; 8:36-55. Weigensberg also explains that “[p]roviding a selection of different shells and flavoring agents facilitates tailoring the cartomizer 113 according

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

to the needs of different consumers.” *Id.* at 6:34-36.

A POSA would also have been motivated to use the removable sleeve arrangement disclosed in Weigensberg at least for its simplicity and ease with which a user could alternate between different flavors. Ex. 1003 at ¶107. For example, although Gilbert discloses a flavor cartridge, the Gilbert flavor cartridge (20) is internal to the device, which could limit the size of the flavor cartridge (and hence the amount of flavoring) due to Gilbert’s goal of making the device similar in size to a cigarette. Alternatively, the Weigensberg sleeve could be made larger without affecting the overall size of the device. *Id.* Additionally, Gilbert’s flavor cartridge is at the distal end of the device, whereas Weigensberg’s shell/sleeve is at the proximal end, next to the cartomizer/mouthpiece. This offers two advantages recognized by Weigensberg (*see* Ex. 1006 at 7:52-67). First, the flavoring is mixed with the vapor, whereas Gilbert’s flavor is introduced before the vapor is created. This would reduce its effectiveness, as dry air would be less efficient extracting flavoring than wet vapor. Ex. 1003 at ¶107. Second, the user of a device with the Weigensberg sleeve will better taste the flavoring due to the sleeve’s proximity to the mouth. *Id.* A POSA would have been further motivated to use the Weigensberg sleeve because it would provide additional benefits that are not provided by the flavored liquid in Gilbert. Specifically, the Weigensberg sleeve acts as a “booster” that can provide, among things, additional/enhanced flavors (including even multiple flavors in a single sleeve) and/or

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

additional/enhanced scents for the user. *See, e.g.*, Ex. 1006 at 4:39-52, 5:43-62. The sleeve can also be used to provide enhancements such as sweet substances, sugar, or caffeine. *Id.* at 8:6-19. As Weigensberg explains, the benefits that would motivate a POSA to make this modification would be both gustatory and olfactory. *Id.*; *see also* Ex. 1003 at ¶ 107.

For at least these additional reasons, a POSA would have been motivated to combine the Weigensberg sleeve with the device of Gilbert.

D. Ground 2a: Claims 1 and 11 Are Obvious Over Lee In View Of Gilbert and Levin

Lee discloses all of the limitations of claims 1 and 11 except the limitations requiring “the heating assembly comprising a bulb containing a heating wire” and “wherein the heating wire heats the bulb, and wherein the bulb heats fluid introduced to and coming in contact with the bulb through the fluid passageway.” As explained above in Sections III(C), V(B)(1)(e) and V(B)(1)(j), Gilbert and Levin teach these limitations, and it would have been obvious to a POSA to combine the teachings of these references.

1. Independent Claim 1

(a) Preamble: “An electronic cigarette comprising:”

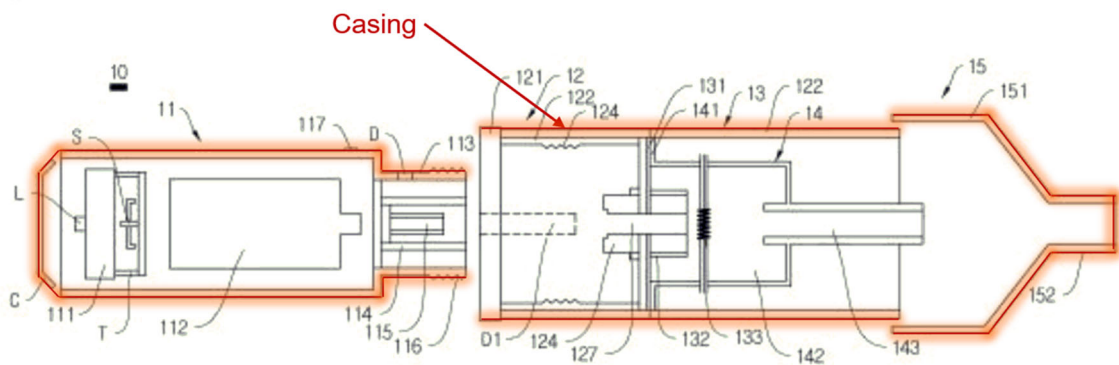
As explained in Section V(B)(1)(a) above, the preamble of claim 1 is not limiting. To the extent the preamble of claim 1 is limiting, however, it is disclosed by Lee. Ex. 1003 at ¶109. Lee discloses that “[t]his invention is about an external air

inflow structure applied to an e-cigarette”. Ex. 1005 at [0001].

- (b) **Element 1a: “a casing comprising a first chamber and a second chamber, the two chambers located sequentially within the casing;”**

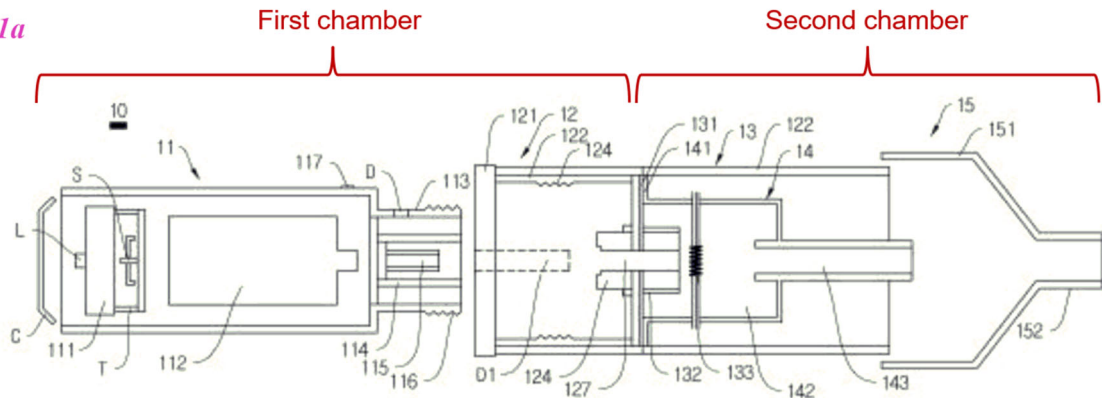
Lee discloses element 1a. Ex. 1003 at ¶¶110-111. Lee discloses an electronic cigarette with a casing. Ex. 1005 at Figure 1a:

FIGURE 1a



Lee discloses a battery assembly (11) connected to a guide chamber through a connection chamber (113) that is formed in the battery assembly (11). Ex. 1005 at [0019]. The interior of the battery assembly and connected guide chamber together form a “first chamber.” Lee discloses a “switch that controls the electrical connection between the circuit board and the heating element” that “can be activated by sensing the inhaled air or it can be operated manually.” *Id.* at [0036]. Lee also discloses a storage housing (13). The storage housing (13) is physically separated from the guide chamber (12) by a separating plate (131). *Id.* at [0028]. The interior of the storage housing is a “second chamber” that is located sequentially in the casing with the battery assembly/guide chamber assembly, as shown in the annotated image below.

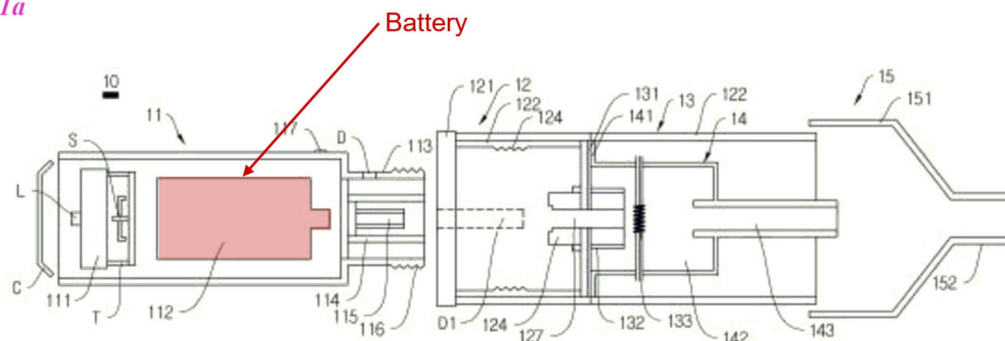
FIGURE 1a



(c) Element 1b: “a battery located in the first chamber;”

Lee discloses element 1b. Ex. 1003 at ¶112. Lee discloses that the battery assembly (connected to the guide chamber forming the “first chamber” of the casing) includes “an electric circuit board (111), a battery (112), and a connection chamber (113)”. Ex. 1005 at [0022] (emphasis added).

FIGURE 1a

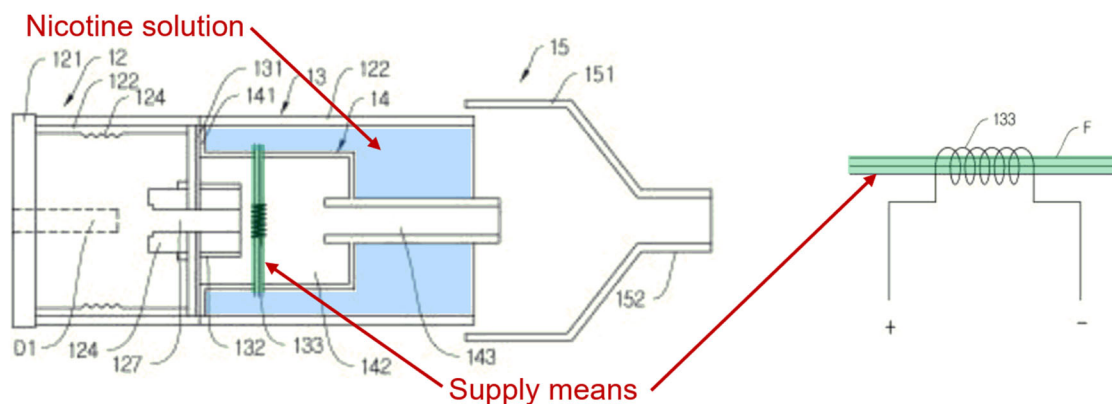


Id. at Fig. 1a.

(d) Element 1c: “a fluid containing member located in the second chamber;”

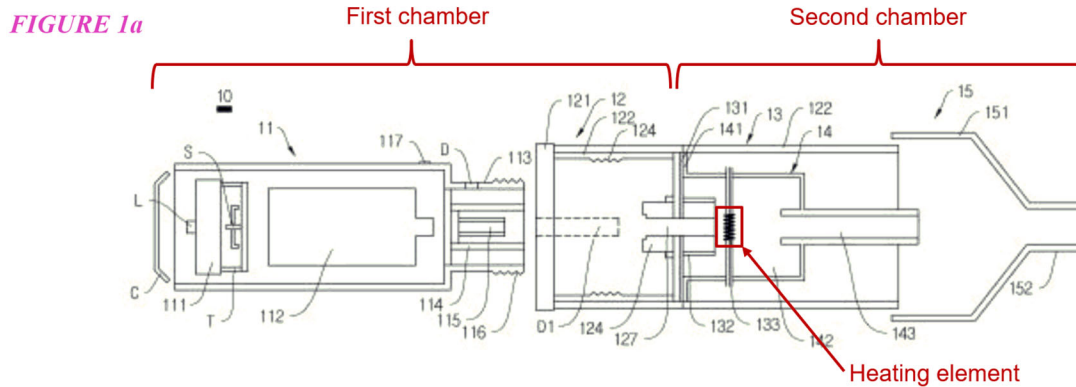
Lee discloses element 1c. Ex. 1003 at ¶113. Lee discloses that the device “includes a storage housing (13) [the “second chamber” of the casing] in which a

nicotine solution is contained”. Ex. 1005 at [0020]. Lee further explains that “[t]he nicotine solution stored in the storage housing (13) may be delivered to the heating element (133) through a nicotine solution supply means. The nicotine solution supply means may be a fiber aggregate (F) described below, but is not limited thereto, and various nicotine solution supply means may be used according to the structure of the heating element (133).” *Id.* at ¶[0029]. As shown below in annotated Figures 1a and 1c, the nicotine solution (shown in blue) is stored in the storage housing, and is delivered to the heater via supply means “F” (shown in green); both the storage housing and the supply means are fluid containing members:



- (e) **Element 1d: “a heating assembly located in the second chamber, the heating assembly comprising a bulb containing a heating wire in communication with the battery;”**

Lee discloses a heating assembly located in the second chamber – heating element 133, shown below and described at least in Lee [0020]. *See also* Ex. 1003 at ¶¶114-115.



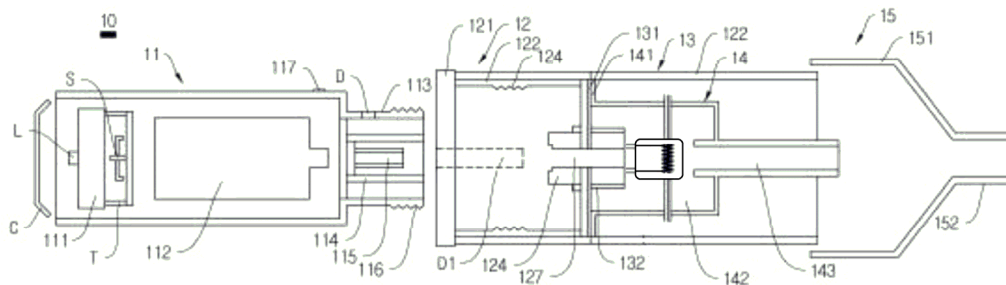
As shown above and in Figures 1b and 1c, the heating element 133 may be a wire. More specifically, Lee describes at least one embodiment where the heating element 133 is a nichrome wire. Ex. 1005 at [0029] (“In the embodiment shown in FIGS. 1a and 1b, the nicotine solution stored in the storage housing (13) has a structure penetrating the inside of the heating element (133) such as nichrome wire, but this invention is not limited thereto”). Finally, Lee further discloses that the heating element 133 is in communication with the battery: “In the e-cigarette, the wiring for supplying power from the battery (112) to the electric circuit board (111) and the heating element (133) may be made in various ways.” *Id.* at [0024].

Lee does not disclose a “bulb” containing a heating wire, however such an alternative heating assembly would have been obvious to a POSA at least in view of Gilbert. As described above in Section V(B)(1)(e), Gilbert discloses a heating assembly that comprises a “bulb containing a heating wire.” It would have been obvious to modify Lee to include a bulb structure like that of Gilbert. Notably, the ’788 patent discloses that a heating wire wrapped around a wick – similar to that used in Lee – is

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

an acceptable alternative to the heating wire inside a bulb arrangement. *See, e.g.*, Ex. 1001 at FIGS. 1, 3; 3:1-38; 5:15-35; Ex. 1003 at ¶116.

Lee describes a nichrome wire as one embodiment, which is not limiting, and a POSA would have been motivated to explore other types of heating elements to address issues that designers and users encountered with e-cigarettes at the time, such as metallic taste issues or inhalation risks associated with the use of a metal wire heating element. Ex. 1003 at ¶117. A POSA would have explored heat-conducting materials that could vaporize the nicotine liquid without making direct contact with the heating wire. *Id.* A POSA would have been motivated to implement a heating element within a glass bulb to address the inhalation risks and metallic taste issues associated with the use of a metal wire heating element directly contacting a vaporizable fluid. *Id.* at ¶¶117-118. As explained above, it has been known to use bulb heaters for vaporizing fluids for almost 100 years. One example of a possible implementation of the Gilbert bulb heater in the Lee device is pictured below:



Id. at ¶118.

Additionally, a POSA would have been motivated to implement a heating

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

element within a glass bulb to increase the life of the heating element and prevent failure of the device. *See, e.g.*, Ex. 1009 at [0004] (“Vaporizing the solution by directly contacting the heating element often severely reduces the life of the heating element so that such devices often require frequent replacement. . . . Due to the difficulties associated with these configurations, such devices are prone to premature failure and often don’t work particularly well even when functioning normally.”); Ex. 1003 at ¶119.

In addition to Gilbert, Levin also describes a heating element inside a bulb. Specifically, Levin explains that “[t]he heating element may be a Nickel Chromium alloy wire, which may be miniaturized and optimized for maximum surface area and minimized mass, or may be a heater bulb, such as a Tungsten filament in quartz bulb.” Ex. 1009 at [0049]. The bulb heater 53 of Levin is depicted in Figures 15A-15D and 16A-16B of Levin, and is most readily seen in Figure 16B shown below.

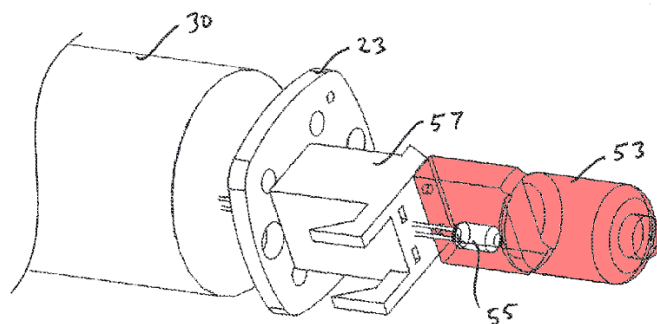


FIG. 16B

Levin explains that “[t]he bulb may be any bulb suitable for sufficiently heating the substance to vaporize an active ingredient therein for inhalation by the user.” *Id.* at

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

[0056]. And contrary to Patent Owner’s statements to the Examiner, Levin *does* describe the use of a bulb for *conductive* heating of an aerosol generating solution. *See* Section III(C) above; *see also* Ex. 1009 at [0056].

A POSA would have been motivated to implement a heating element within a glass bulb like that described in Levin for all of the reasons described above. In addition, Levin itself explains that using, for example, a halogen tungsten in quartz bulb will “allow for a consistent and reliable heat source that can be controlled to maintain a desired temperature level within a chamber in which the bulb is disposed.” Ex. 1009 at [0056]. Levin further explains that such a configuration “allow[s] relatively high energy dissipation per unit time with relatively low energy input to achieve a desired operating temperature, when compared to conventional devices.” *Id.* at [0049].

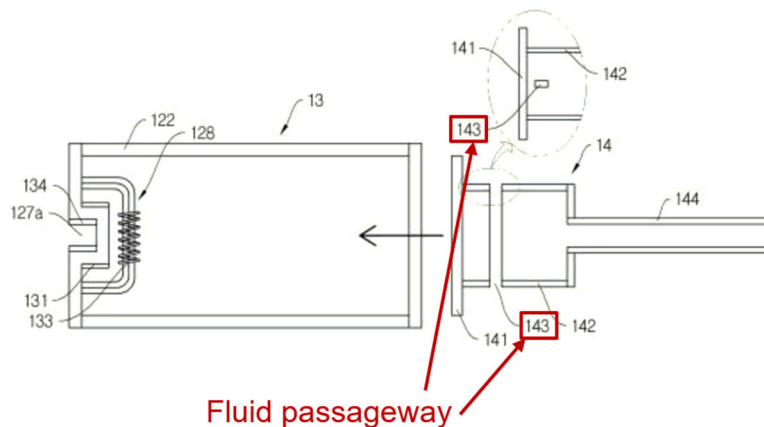
For all of the reasons above, a POSA would have been motivated to implement a bulb heater in the Lee device, and, due at least to the ubiquitous nature of such heaters, the implementation of such a heater would have been well within the knowledge and skill of a POSA. As such, a POSA would have had a reasonable expectation of success in making such a modification. Ex. 1003 at ¶123.

(f) Element 1e: “a fluid passageway communicating between the fluid containing member and the heating assembly;”

Lee discloses element 1e. Ex. 1003 at ¶124. Lee discloses that “the nicotine solution is supplied to the heating element (133) by the fiber assembly (F).” Ex. 1005

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

at [0032]. A supply passage (143) with “a shape of a through-hole formed in the circumferential surface of the vaporization chamber (142)” allows the “fiber assembly (F) to pass.” *Id.* Lee further discloses that “[t]he nicotine solution stored inside the storage housing (13) and outside the vaporization unit (14) may be supplied to the heating element (133) disposed inside the vaporization unit (14) through the supply passage (143).” *Id.* at [0032]; *see also id.* at Figure 1c:



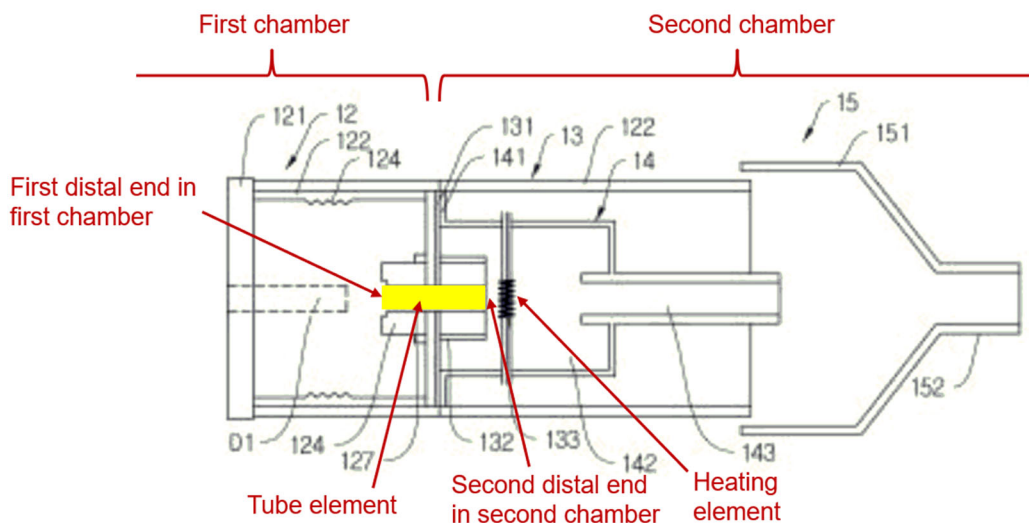
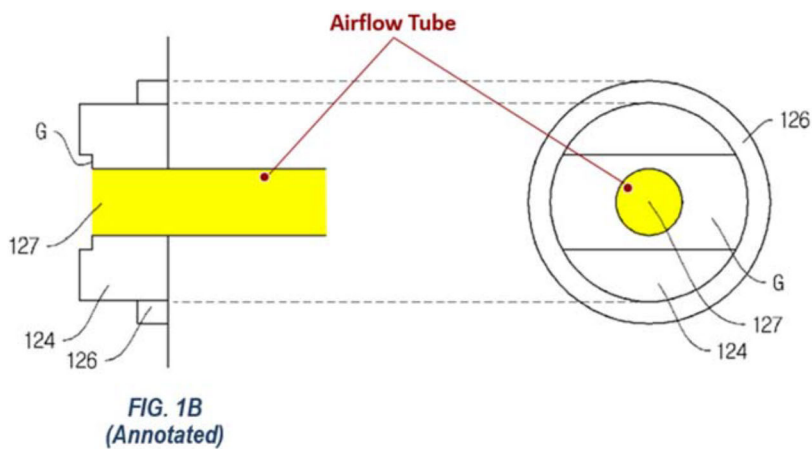
- (g) Element 1f: “a tube element communicating between the first and second chambers, with a first distal end of the tube element located in the first chamber, and a second distal end of the tube element located in the second chamber and affixed to the bulb, the tube element providing an air passage between the first and second chambers;”**

Lee discloses element 1f. Ex. 1003 at ¶¶125-127. Lee discloses an air inlet path (127). Ex. 1005 at [0025]-[0029]. The “structure of the inlet groove (G) allows the air present in the connection chamber (113) or the guide chamber (12) to flow along the inlet groove (G) to be introduced into the air inlet passage (127).” *Id.* at [0026]. The

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

air is then “introduced into the storage housing (13) through the air conduit (127a).” *Id.* at [0029]. Lee further discloses that the air inlet path (127) “is connected to the inside of the storage housing (13)” *Id.* at [0027]. Lee further discloses that “[t]he air introduced into the storage housing (13) through the air conduit (127a) can be supplied to the heating element (133).” *Id.* at [0029].

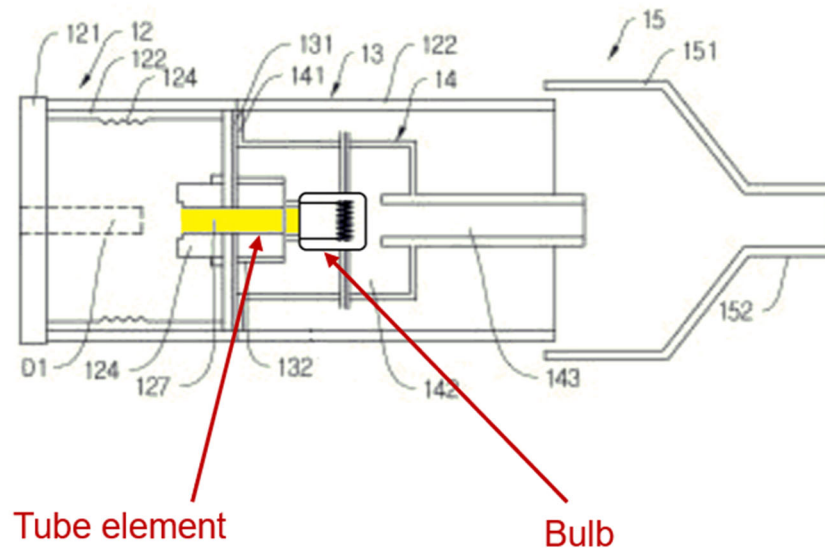
The annotated images below further show the disclosure of this claim limitation.



As shown below in an exemplary modified Lee device, a POSA would understand that using a bulb and heating configuration in the Lee device would result in the tube

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

element being affixed to the bulb on its first distal end, with the airflow path moving around the bulb, in a direction transverse to the image.

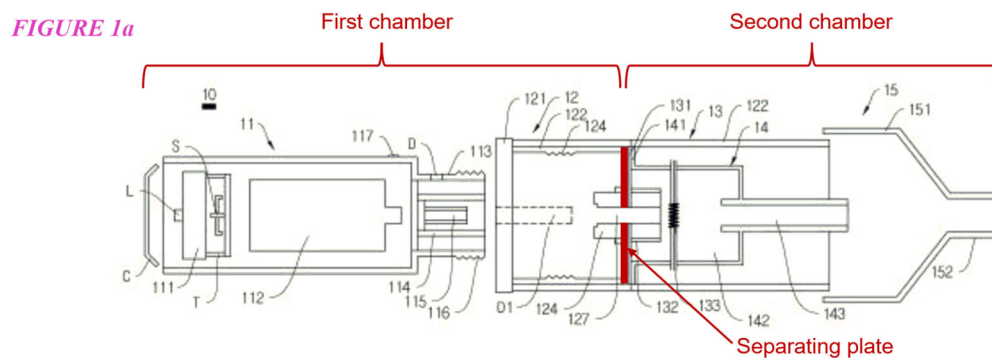


Ex. 1003 at ¶127.

(h) Element 1g: “a sealing element forming a partition between the first and second chambers; and”

Lee discloses element 1g. Ex. 1003 at ¶128. Lee discloses a separating plate 131 that “physically separates the guide chamber (12) and the storage housing (13).”

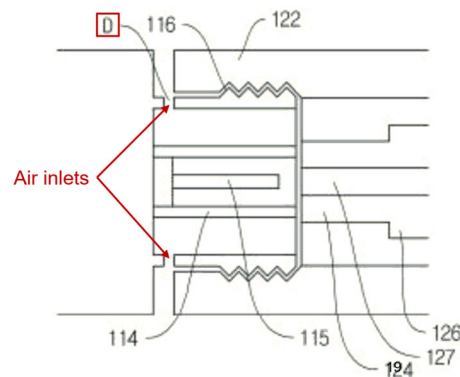
Ex. 1005 at [0028].



Id. at Fig. 1a.

(i) **Element 1h: “an air inlet provided on an external wall of the casing;”**

Lee discloses element 1h. Ex. 1003 at ¶129. Lee explains that “external air flows in through the inlet hole (D) and flows along the guide groove (D1) to the inside of the connection chamber (113) and the guide chamber (12).” Ex. 1005 at [0024].



Ex. 1005 at Fig. 2a.

(j) **Element 1i: “wherein the heating wire heats the bulb, and wherein the bulb heats fluid introduced to and coming in contact with the bulb through the fluid passageway.”**

As explained in Sections V(B)(1)(e) and V(D)(1)(d), Gilbert discloses the bulb and heating wire assembly and it would be obvious to a POSA to use such a configuration with the Lee device. Ex. 1003 at ¶130.

2. Dependent Claim 11

Claim 11 depends from claim 1 and adds the limitation “wherein the fluid is selected from a group consisting of: a glycol fluid, a fluid containing nicotine, a water-based ‘regular’ cigarette flavored fluid, a water-based ‘menthol’ cigarette flavored

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

fluid, and combinations thereof.” Lee discloses this limitation. Ex. 1003 at ¶131. Lee discloses a “storage container for supplying nicotine solutions.” Ex. 1005 at [0017]. Lee also refers to this nicotine solution as “nicotine liquid,” which is a “fluid containing nicotine.” *Id.* at [0003].

E. Ground 2b: Claims 7 and 8 Are Obvious Over Lee In View Of Gilbert, Levin, and Weigensberg

Claim 7 depends from claim 1 and adds the limitation “further comprising a removable sleeve positioned about a portion of an exterior 30 of the casing.” Claim 8 also depends from claim 1 and adds the limitation “further comprising a removable sleeve located around an exterior of the casing.” Weigensberg discloses these limitations. *See* Section V(C). A POSA would have been motivated to combine the removable sleeves of Weigensberg with the Lee device for the same reasons described above. Ex. 1003 at ¶132.

VI. Discretionary Institution

The Board should not exercise its discretion under either §§ 314(a) or 325(d) to deny this Petition.

A. The *Fintiv* Factors Favor Institution

Factor 1 is neutral. There is district-court litigation that is not currently stayed. The district court has not indicated whether it would grant a motion to stay if one were filed.

Factor 2 weighs strongly against discretionary denial. The district court has not

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

set a scheduling order or trial date. The latest Judicial Caseload Statistics⁵ report a median time of 41.1 months to trial in the Middle District of North Carolina, which projects trial in February 2027—approximately one year after the Board’s projected deadline for a final written decision.

Factor 3 weighs against discretionary denial. The district-court case is in its early stages. Petitioner (who is defendant in the district-court case) moved to dismiss the complaint in November 2023. Fact discovery has not begun. Infringement and invalidity contentions have not been served. Claim construction has not commenced. Even at the time of expected institution, the district-court litigation will be in its infancy.

Factor 4 weighs against discretionary denial. This factor considers the overlap of issues raised in the petition and in the parallel proceeding. Because only claim 1 of the ’788 patent is mentioned in the complaint for the district-court litigation and the IPR petition addresses additional ’788 claims, there is a lack of overlap between the claims at issue in the IPR petition.

Factor 5 weighs against discretionary denial. Although Petitioner is a defendant in the district-court litigation, trial will likely not occur until at least one year after the projected statutory deadline for a final written decision.

Factor 6. Because factors 2, 3, and 5 weigh against discretionary denial and factor

⁵ <https://www.uscourts.gov/file/78140/download>.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

1 is neutral, the balance of factors favors institution, and the Board need not engage in a compelling merits determination. In any event, the merits are compelling because claims 1, 7-8, and 11 recite the combination of conventional and generic elements that were well-known.

B. The *Becton* Factors Favor Institution

Through primary prior art references Gilbert and Lee, and secondary references Weigensberg, Cohen, and Levin, and supported with comprehensive testimonial evidence about the true state of the art, Petitioner has demonstrated that the central premise of the '788 patent is fundamentally incorrect: In March 2013 there was nothing new or non-obvious about a “bulb containing a heating wire,” “wherein the heating wire heats the bulb, and wherein the bulb heats fluid introduced to and coming in contact with the bulb” Ex. 1001 at 8:65-67, 9:12-14. The Examiner allowed the claims based solely on the addition of these limitations, but the Examiner did so without having been presented with, or having reviewed, the Gilbert patent. Gilbert, Lee, Weigensberg, and Cohen, were not before the Examiner during prosecution of the '788 patent. Although Levin was before the Examiner, Patent Owner expressly argued to the Examiner that Levin did not teach a conduction heater. While Patent Owner was wrong, the Examiner relied on that characterization of the reference in allowing the claims. Nor can Patent Owner argue that Gilbert is cumulative of Levin. Patent Owner cannot now claim that a reference that teaches conductive heating is cumulative of a reference that Patent

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

Owner expressly argued did not teach conductive heating.

In view of the particularly strong merits of this Petition and the substantial new questions of patentability, the resolution of which are ideally suited for the Board and its expertise, the Board should institute.

VII. Conclusion

Petitioner respectfully requests that the Patent Office order an IPR trial and then proceed to cancel claims 1, 7-8, and 11.

Dated: September 18, 2024

Respectfully submitted,

/John A. Marlott/

John A. Marlott (Reg. No. 37,031)

jamarlott@jonesday.com

JONES DAY

110 N. Wacker Dr., Suite 4800

Chicago, IL 60606

T: 312-269-4236

F. 312-782-8585

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,143,788

VIII. Mandatory Notices Pursuant to 37 C.F.R. § 42.8(a)(1)

Pursuant to 37 C.F.R. § 42.8(a)(1), the mandatory notices identified in 37 C.F.R. § 42.8(b) are provided below as part of this petition.

A. 37 C.F.R. § 42.8(b)(1): Real Parties-In-Interest

R.J. Reynolds Vapor Company, RAI Innovations Company, R.J. Reynolds Tobacco Company, Reynolds Asia-Pacific Limited, and Shenzhen Smoore Technology Limited are the real parties-in-interest for Petitioner.

B. 37 C.F.R. § 42.8(b)(2): Related Matters

The '788 patent is currently the subject of litigation in *Healthier Choices Management Corp. v. R.J. Reynolds Vapor Company*, No. 1:23-cv-00813 (M.D.N.C.), filed on September 26, 2023. No trial date has been scheduled.

C. 37 C.F.R. § 42.8(b)(3), (4): Lead And Back-Up Counsel And Service Information

Petitioner provides the following designation of counsel:

Lead Counsel	Back-up Counsel
John A. Marlott (Reg. No. 37,031) jamarlott@jonesday.com JONES DAY 110 N. Wacker Dr., Suite 4800 Chicago, IL 60606 T: 312-269-4236 F. 312-782-8585	David M. Maiorana (Reg No. 41,449) dmaiorana@jonesday.com Kenneth S. Luchesi (Reg. No. 58,673) kluchesi@jonesday.com JONES DAY 901 Lakeside Ave., North Point Cleveland, OH 44114 T: 216-586-7499 T: 216-586-7059 F: 216-579-0212 Joshua R. Nightingale (Reg. No. 67,865) jrnightingale@jonesday.com

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,538,788

	JONES DAY 500 Grant Street, Suite 4500 Pittsburgh, PA 15219 T: 412-394-7950 F: 412-394-7959
--	---

Pursuant to 37 C.F.R. § 42.10(b), a Power of Attorney accompanies this petition. Please address all correspondence to lead and back-up counsel at the addresses above. Petitioner also consents to electronic service by email at the email addresses listed above.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing petition for *Inter Partes* Review of U.S. Patent No. 9,538,788, including all Exhibits, was served on September 18, 2024 via UPS delivery directed to the attorney of record for the patent at the following address:

Geoffrey A. Lottenberg
BERGER SINGERMANN LLP
201 E Las Olas Blvd
Suite 1500
Ft. Lauderdale, FL

Additionally, a courtesy copy of the foregoing petition for *Inter Partes* Review of U.S. Patent No. 9,538,788, and the accompanying Declaration of Kelly Kodama was sent on September 18, 2024 to Healthier Choices Management Corp.'s litigation counsel via UPS delivery, addressed as follows:

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,538,788

Barry Paul Golob
Thomas J. Fisher
COZEN O'CONNOR
1200 19th Street, NW
3rd Floor
Washington, D.C. 20036
T: 202-912-4815
T: 202-912-4800
Email: bgolob@cozen.com
Email: tfisher@cozen.com

Kurt E. Lindquist, II
COZEN O'CONNOR
301 South College Street
Suite 2100
Charlotte, NC 28202
T: 704-348-3142
Email: klindquist@cozen.com

Date: September 18, 2024

/John A. Marlott/

John A. Marlott (Reg. No. 37,031)
jamarlott@jonesday.com
JONES DAY
110 N. Wacker Dr., Suite 4800
Chicago, IL 60606
T: 312-269-4236
F. 312-782-8585

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,538,788

CERTIFICATE OF WORD COUNT UNDER 37 C.F.R. § 42.24(a)

I, the undersigned, do hereby certify that the attached petition contains 13,113 words, as measured by the Word Count function of Microsoft Word for Microsoft 365. This is less than the limit of 14,000 words as specified by 37 C.F.R. § 42.24(a)(i).

Date: September 18, 2024

By: /John A. Marlott/

John A. Marlott (Reg. No. 37,031)
jamarlott@jonesday.com
JONES DAY
110 N. Wacker Dr., Suite 4800
Chicago, IL 60606
T: 312-269-4236
F. 312-782-8585

APPENDIX OF EXHIBITS

EXHIBIT NO.	TITLE
1001	U.S. Patent No. 9,538,788 (“the ’788 patent”)
1002	Prosecution History of Application No. 13/999,652 (issued as Patent No. 9,538,788)
1003	Declaration of Kelly Kodama
1004	U.S. Patent No. 3,200,819 to Gilbert
1005	Korean Patent Pub. No. 10-2012-0080287 to Lee
1006	U.S. Patent No. 9,943,107 to Weigensberg, <i>et al.</i>
1007	U.S. Patent Pub. No. 2011/0036346 to Cohen, <i>et al.</i>
1008	Kelly Kodama’s curriculum vitae
1009	U.S. Patent Pub. No. 2013/0298905 to Levin, <i>et al.</i>
1010	U.S. Patent No. 1,934,887 to Robinson
1011	U.S. Patent No. 2,204,312 to Huxter
1012	U.S. Patent No. 2,588,471 to Bauer
1013	U.S. Patent No. 2,694,771 to Cox

1014	U.S. Patent No. 7,458,374 to Hale, <i>et al.</i>
1015	U.S. Patent Pub. No. 2013/0220316 to Oglesby, <i>et al.</i>
1016	Complaint (Dkt 1), <i>Healthier Choices Management Corp. v. R.J. Reynolds Vapor Company</i> , No. 1:23-cv-00813 (M.D.N.C.)
1017	Plaintiff's Opposition to Defendant's Motion to Dismiss (Dkt. 20), <i>Healthier Choices Management Corp. v. R.J. Reynolds Vapor Company</i> , No. 1:23-cv-00813 (M.D.N.C.)
1018	U.S. Provisional Patent Application No. 61/737,847
1019	U.S. Patent No. 2,057,353 to Whittemore
1020	International Pub. No. WO 2009/132793 to Thorens, <i>et al.</i>
1021	U.S. Patent No. 8,314,591 to Terry, <i>et al.</i>
1022	U.S. Patent Pub. No. 2005/0016550 to Katase
1023	U.S. Patent No. 9,408,416 to Monsees, <i>et al.</i>
1024	U.S. Patent No. 7,920,777 to Rabin, <i>et al.</i>
1025	Challenged Claims Chart for U.S. Patent No. 9,538,788