

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CB DISTRIBUTORS, INC. and
DR DISTRIBUTORS, LLC
Petitioner

v.

RUYAN INVESTMENT (HOLDINGS) LIMITED
Patent Owner

Case IPR2013-00387
Patent 8,156,944 B2

Before JACQUELINE WRIGHT BONILLA, BRIAN J. McNAMARA, and
TRENTON A. WARD, *Administrative Patent Judges*.

BONILLA, *Administrative Patent Judge*.

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

I. INTRODUCTION

CB Distributors, Inc. and DR Distributors, LLC (collectively “CB Distributors”) filed a petition (Paper 1, “Pet.”) to institute an *inter partes* review of claims 1-12, 15-26, and 33-41 of U.S. Patent No. 8,156,944 B2 (Ex. 1001) (“the ’944 patent”) pursuant to 35 U.S.C. § 311 *et seq.* Ruyan Investment (Holdings) Limited (“Ruyan”) did not file a preliminary response. We have jurisdiction under 35 U.S.C. § 314.

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides:

THRESHOLD—The Director may not authorize an *inter partes* review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

For the reasons set forth below, we conclude that CB Distributors has established a reasonable likelihood that it will prevail in showing the unpatentability of at least one challenged claim. Pursuant to 35 U.S.C. § 314, we institute an *inter partes* review of claims 1-12, 15-26, and 33-38, but not claims 39-41, of the ’944 patent.

A. Related Matters

CB Distributors indicates that a third party, Fin Branding Group, LLC (“Fin”), requested *inter partes* reexamination of the ’944 patent, i.e., reexamination proceeding 95/002,235. Pet. 1. In an Order entered July 24, 2013, the Board stayed that reexamination in view of this *inter partes* review. Paper 6.

CB Distributors also indicates that Ruyan filed lawsuits asserting infringement of the ’944 patent against nine different defendants in U.S. District

Court for the Central District of California, including *Ruyan Investment (Holdings) Limited v. CB Distributors, Inc. and DR Distributors, LLC*, No. CV12-5456, and *Ruyan Investment (Holdings) Limited v. Fin Branding Group, LLC*, No. CV12-5468. Pet. 1-2. The district court consolidated all nine cases for pre-trial purposes as *Ruyan Investment (Holdings) Limited v. Sottera, Inc.*, No. CV12-5454. *Id.* at 2. On February 25, 2013, the district court stayed all proceedings in light of the *inter partes* reexamination requested by Fin. *Id.*

B. The '944 Patent (Ex. 1001)

The '944 patent relates generally to an aerosol electronic cigarette that contains nicotine, but not tar, and “substitutes for cigarettes and helps the smokers to quit smoking.” Ex. 1001, 1: 5-7, 57-60. Figure 1 of the '944 patent, as reproduced in better quality in the petition, is reproduced below.

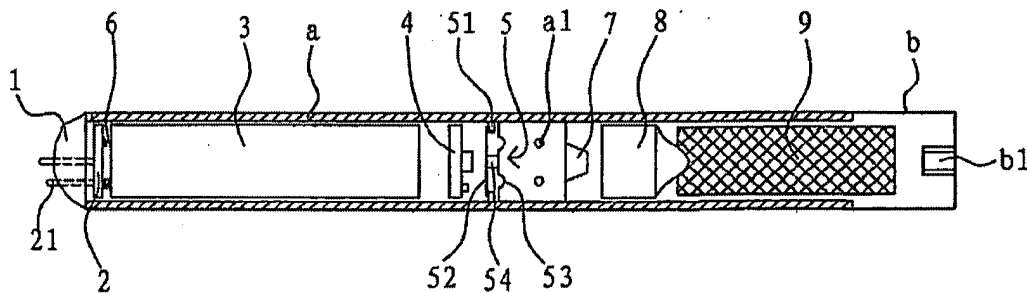
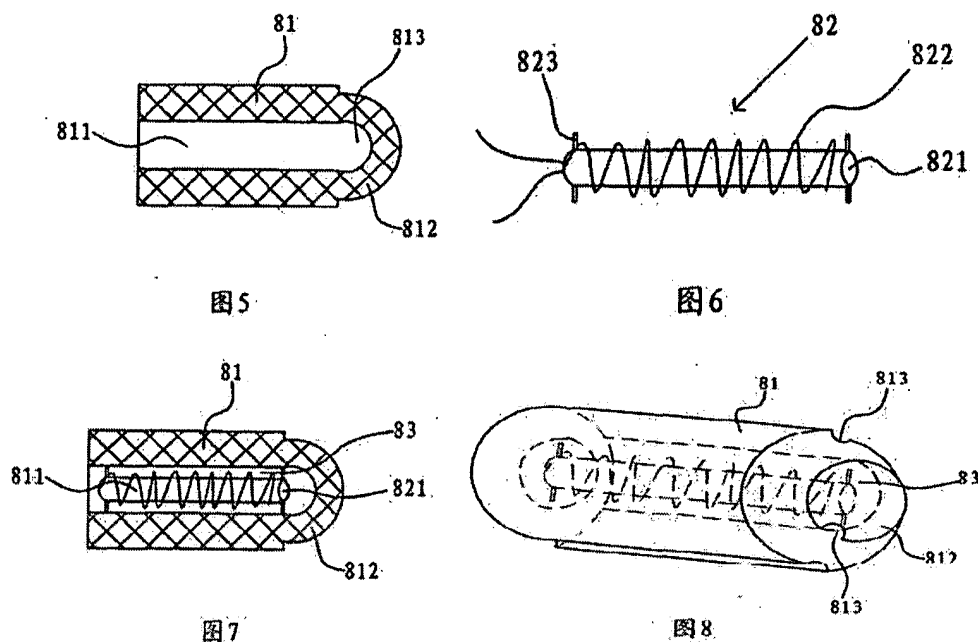


图 1

Pet. 4; Ex. 1001, Fig. 1. Figure 1 depicts a side section view of an aerosol electronic cigarette comprising a battery assembly, an atomizer assembly, a cigarette bottle assembly, and shell a. *Id.* at 5:38-42; 1:62-65. The battery assembly includes battery 3, operating indicator 1, electronic circuit board 4, and airflow sensor 5. The atomizer assembly is atomizer 8. *Id.* at 6:13-15. The cigarette bottle assembly includes a perforated component for liquid storage 9 inside hollow cigarette holder shell b. *Id.* at 6:56-58.

Figures 5-8 of the '944 patent, as reproduced in better quality in the petition, are reproduced below.



Pet. 5; Ex. 1001, Figs. 5-8. Figure 5 depicts a side section view of porous component 81 and run-through atomizing chamber 811 of atomizer 8 (shown in Figure 1). Figure 6 depicts electric heating rod 82 of atomizer 8. Figure 7 depicts a side section of atomizer 8, including porous component 81, electric heating rod 82 (shown in Figure 6), and negative pressure cavity 83. Figure 8 depicts a cubic structure of atomizer 8. Ex. 1001, 4:44-55; 6:13-42.

C. Illustrative Claims

Claims 1, 10, 39, and 41 are independent. Claims 2-9 depend, directly or indirectly, on claim 1, which is reproduced below:

1. An aerosol electronic cigarette, comprising:
a battery assembly, an atomizer assembly, a cigarette-solution storage area, and a hollow shell having a mouthpiece;

the battery assembly connects with the atomizer assembly, and both are located in the shell;

the *cigarette solution storage area* is located in one end of the shell adjacent to the mouthpiece, and *fits with at least a portion of the said atomizer assembly inside it*;

the shell has through-air-inlets;

the atomizer assembly includes an atomizer comprising an electric heating rod and a run-through atomizing chamber;

the electric heating rod comprises a cylinder and a heating element provided at the wall of the cylinder,

the electric heating rod is in the said atomizing chamber *and there is a negative pressure cavity in the atomizing chamber*.

Id. at 9:2-16 (emphasis and indentation added).

Claims 11, 12, 15-26, and 33-38 depend, directly or indirectly, on claim 10, which is reproduced below:

10. An aerosol electronic cigarette, comprising:

a battery assembly, an atomizer assembly, a cigarette solution storage area, and a shell that is hollow and comprises a mouthpiece;

the said battery assembly connects with the said atomizer assembly, and both are located in the said shell;

the said *cigarette solution storage area* is located in one end of the shell proximal to the mouthpiece, and *fits with at least a portion of the said atomizer assembly inside it*;

the said shell has through-air-inlets;

the atomizer assembly is an atomizer, which includes a porous component and an electric heating rod;

wherein the electric heating rod comprises a cylinder and a heating element provided at the wall of the cylinder, *the said porous component has a run-through atomizing chamber*;

the electric heating rod is in the said atomizing chamber *and there is a negative pressure cavity in the atomizing chamber*.

Id. at 9:36-52 (emphasis and indentation added). Independent claims 39 and 41 are similar to claim 10, but further recite elements relating to the heating element, as well as additional elements relating to “a protuberance on one end” of the porous component. *Id.* at 11:23-12-37. Claim 40 depends on claim 39. *Id.* at 12:9-12.

D. Prior Art Relied Upon

CB Distributors relies upon the following prior art references:

Liu	WO 2007/078273 A1	July 12, 2007	Ex. 1019
Susa	EP 0 845 220 A1	June 3, 1998	Ex. 1020
Hon '494	WO 2005/099494 A1	Oct. 27, 2005	Ex. 1008 (English translation Ex. 1009)

E. Alleged Grounds of Unpatentability

CB Distributors contends that claims 1-12, 15-26, and 33-41 of the '944 patent are unpatentable under 35 U.S.C. §§ 102(b) and 103(a) based on the following five grounds. Pet. 11.

Reference(s)	Basis	Claims Challenged
Liu	§ 102	1, 2, 5-8, 10, 33, 35, 37, and 38
Liu	§ 103	20
Liu and Susa	§ 103	3, 4, 12, 15, 17, and 26
Hon '494 and Liu	§ 103	1-4, 8-12, 15-26, 33, 34, 36, and 38
Hon '494, Liu, and Susa	§ 103	39-41

II. ANALYSIS

A. Claim Construction

Consistent with the statute and legislative history of the Leahy-Smith America Invents Act, Pub. L. 112-29, 125 Stat. 284, 329 (2011), the Board

construes claims in an unexpired patent by applying the broadest reasonable interpretation in light of the specification. 37 C.F.R. § 42.100(b); *see also* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012). Claim terms are also given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

1. “Run-through atomizing chamber”

All challenged independent claims recite an atomizer assembly that “includes an atomizer comprising an electric heating rod and a run-through atomizing chamber.” CB Distributors contends that “run-through atomizing chamber” means “a chamber having a flow in which atomization occurs along the length thereof,” and does not require “that the input and output ends of the chamber be unblocked.” Pet. 13-14. For the purposes of this decision, we adopt that claim construction, which is logical when reading each challenged claim as a whole, and is consistent with disclosures in the Specification of the ’944 patent.

For example, one embodiment of the atomizing chamber is “run-through atomizing chamber (811),” as described in the Specification and shown in Figures 5, 7, and 8 of the ’944 patent. Ex. 1001, 6:13-16; Figs. 5, 7, 8. The Specification discloses that the “diameter of the electric heating rod (82) is less than the diameter of the atomizing chamber (811),” and that “electric heating rod (82) enters into the atomizing chamber (811), and there is a clearance between the electric heating rod (82) and interior wall of the atomizing chamber (811), which forms a negative pressure cavity (83).” *Id.* at 6:16-21. Independent claims 1 and 10, and the Specification, indicate that the electric heating rod includes “a cylinder and a heating element provided at the wall of the cylinder.” *Id.* at 2:44-46.

Consistently, a “run-through atomizing chamber” in the challenged claims refers to a chamber inside an atomizer, where that chamber is defined by an interior wall of a component in the atomizer creating the chamber, e.g., the interior wall of cylindrical porous component 81, as shown in Figures 5 and 7 of the ’944 patent. Although the Specification does not define “run-through” per se, a reading of independent claim 1, 10, 39, or 41, in view of the Specification, indicates that this phrase means that the atomizing chamber runs through, i.e., inside and along the length of, the atomizer and its electric heating rod, and atomization occurs along (i.e., runs through) the length of the chamber.

2. *“Negative pressure cavity in the atomizing chamber”*

All challenged independent claims recite an atomizer assembly where “there is a negative pressure cavity in the atomizing chamber.” As noted above, the ’944 patent Specification discloses that a clearance exists between the heating rod and an interior wall of a component in the atomizer that defines the run-through atomizing chamber. *Id.* at 2:40-42; 6:13-21, 40-41. The Specification also discloses that the “clearance forms a negative pressure cavity.” *Id.* The Specification describes that when a person inhales, within shell b, “one end of the airflow sensor (5) forms a normal pressure cavity, while the other end forms a negative pressure cavity.” *Id.* at 7:8-11. As further described in the Specification, and shown in Figure 1, “air enters the normal pressure cavity through the air inlet (a1), passes the check valve (7) via the airflow passage in the airflow sensor (5), and flows to the negative pressure cavity (83) in the atomizer (8).” *Id.* at 7:22-25; Fig. 1.

In addition, the Specification discloses that because “negative pressure cavity (83) provides the negative pressure compared with the outside, the air flow sprays into it, bringing the cigarette liquid from the porous component (81) to

spray into the negative pressure cavity (83) in the form of fine drips.” *Id.* at 7:25-29. After the fine drips enter into the negative pressure cavity, the heating rod heats the drips for atomization. *Id.* at 7:30-32. After atomization, the drips form a “gasoloid, which is discharged through the negative pressure cavity (83) and run-through hole (813),” and into shell b, and absorbed by air channel b1. *Id.* at 7:32-43.

In other words, negative pressure in cavity 83 causes an air and liquid mixture to form fine drips as the mixture leaves the porous component and enters cavity 83. The above-mentioned disclosures in the Specification, as a whole, indicate that cavity 83 has a negative pressure compared to pressure outside that cavity, i.e., outside the run-through atomizing chamber, e.g., outside porous component 81, as depicted in Figures 5 and 7 of the Specification.

For the purposes of this decision, consistent with each independent claim as a whole, an ordinary meaning of the phrase “negative pressure”¹ in relation to a distinct cavity, as well as disclosures in the Specification, we interpret “negative pressure cavity” to refer to a cavity within the run-through atomizing chamber of the atomizer, where pressure inside that cavity is negative compared to pressure outside the cavity. For example, pressure inside the negative pressure cavity is negative compared to pressure outside the atomizer assembly, within the recited shell of the electronic cigarette.

¹ See, e.g., OXFORD DICTIONARY OF SCIENCE 633 (4th ed. 1999) (defining “pressure” as the “force normally acting on unit area of a surface or the ratio of force to area”).

3. “Cigarette solution storage area”

All challenged independent claims recite a “cigarette solution storage area” that is “located in one end of the shell” and “fits with at least a portion of the said atomizer assembly inside it.”

An example of the recited “cigarette solution storage area” is “perforated component for liquid storage (9),” located inside shell b, as shown in Figure 1 and described in the ’944 patent Specification. *Id.* at 6:56-58. Dependent claim 2, for instance, recites “a cigarette solution in the cigarette solution storage area, the cigarette solution comprising nicotine.” *Id.* at 9:34-36. Such claim language indicates that the cigarette solution storage area is capable of storing a cigarette solution, such as one comprising nicotine. *See also id.* at 11:21-23 (claim 38, reciting “a cigarette solution comprising nicotine”).

As depicted in Figures 1, 5, and 7, and described in the Specification, porous component 81 of atomizer 8 (part of the atomizer assembly) “has a protuberance on one end,” i.e., protuberance 812, that fits inside perforated component for liquid storage 9. *Id.* at 2:46-50; 4:44-45; 6:23-30; *see* Figure 1 (depicting a protuberance on atomizer 8 fitting inside perforated component for liquid storage 9).

For the purposes of this decision, consistent with each claim as a whole, as well as disclosures in the Specification, a “cigarette solution storage area” that “fits with at least a portion of the said atomizer assembly inside it” means that at least a part of an atomizer, such as a protuberance on a component of an atomizer, is located inside the cigarette solution storage area, which is capable of storing a cigarette solution, such as one comprising nicotine. *See also*, Ex. 1001, claim 2, 9:17-19.

4. “*Porous component*”

Independent claims 10, 39, and 41 recite an atomizer that “includes a porous component.” Claim 20, which depends on claim 10, recites that the “porous component is made of foamed nickel, stainless steel fiber felt, polymer or ceramics.”

An example of the porous component is porous component 81, shown in Figures 5, 7, and 8 of the Specification of the '944 patent (reproduced above). Pet. 5; Ex. 1001, Figs. 5, 7, 8. The Specification describes that “porous component (81) is made of foamed nickel, stainless steel fiber felt, macromolecular polymer foam or foamed ceramics, providing the remarkable capabilities in liquid absorption and diffusion, and the ability to absorb the liquid stored in the cigarette bottle assembly.” Ex. 1001, 6:30-34. The Specification also states that porous component 81 “absorbs the cigarette liquid from the perforated component for liquid storage (9).” *Id.* at 7:3-7. The Specification further describes that “[a]fter atomization, the big-diameter fine drips are re-absorbed by the porous component (81) under the action of vortex.” *Id.* at 7:32-37.

For the purposes of this decision, consistent with disclosures in the Specification as well as an ordinary meaning of the phrase “porous,”² we interpret a “porous component” to be a component of the atomizer assembly in the electronic cigarette that includes pores and is permeable to liquid, such as cigarette solution from the cigarette solution storage area.

² See, e.g., Random House Webster’s College Dictionary 1051 (1995) (defining “porous” as “permeable by water, air, etc.” or “full of pores”).

B. Discussion

1. 35 U.S.C. § 102(b) Ground Based on Liu

CB Distributors contends that Liu anticipates 1, 2, 5-8, 10, 33, 35, 37, and 38. Pet. 11, 18-29. CB Distributors uses claim charts to explain how the reference allegedly discloses the claimed subject matter. *Id.*

a. Liu (Ex. 1019)

Liu relates generally to a no-tar electronic smoking utensil. Ex. 1019, 1:6-7. Figures 1-6 in Liu illustrate an embodiment described in this reference. Figures 1-6 are reproduced below.

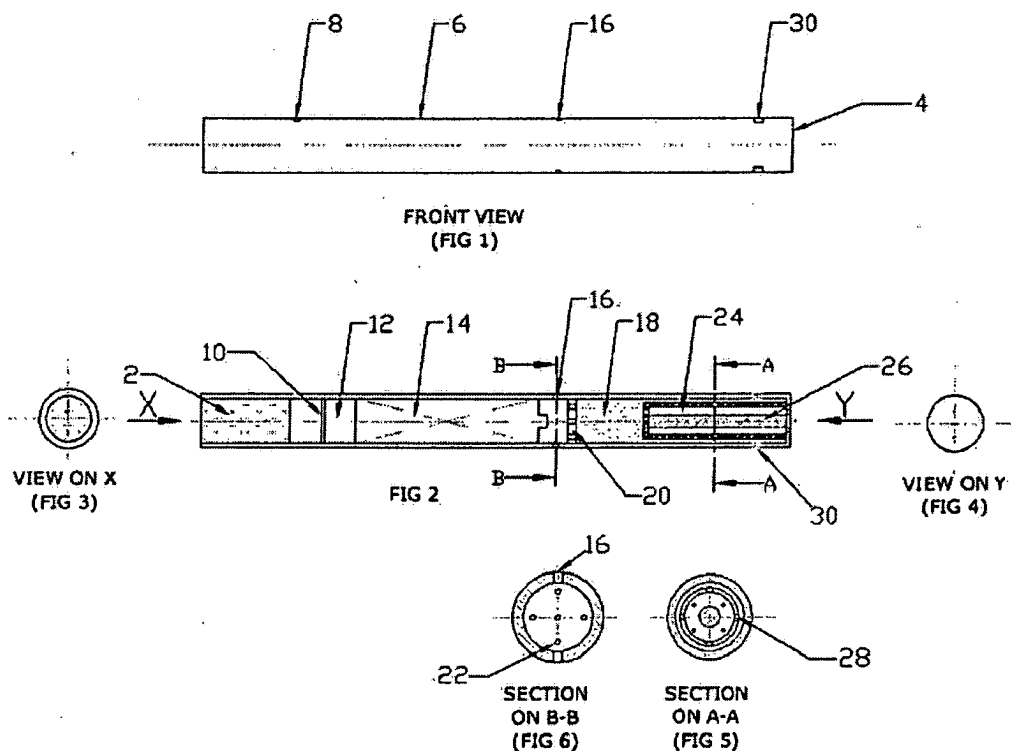


Figure 1 depicts a side view of a “simulated cigarette,” including outer casing 6. *Id.* at 4:15-16; 5:14-15. Figures 2-6 present different sectional viewpoints of the simulated cigarette of Figure 1. *Id.* at 4:18-31. Figure 3 depicts a tip end view,

looking in the direction of arrow X in Figure 2. Figure 4 depicts mouthpiece end 4 (as shown in Figure 1), looking at the direction of arrow Y in Figure 2. As depicted in Figures 2 and 6, the simulated cigarette comprises battery chamber 12 including a plurality of apertures 16, and cylinder liquid container 18 separated from the battery chamber by dividing wall 20 that comprises a plurality of apertures 22. Liquid container 18 “is formed of porous inorganic material,” which “facilitates the distribution and the mixing of the air and liquid mixture.” *Id.* at 6:11-14.

As shown in Figures 2 and 5, the simulated cigarette also comprises cylindrical vapouriser heater assembly housing 24, which is “mounted within a central bore provided in the mouthpiece end of the liquid container 18.” *Id.* at 6:16-18. Housing 24 houses heater wire 26 spirally wound on a central ceramic insulating rod. *Id.* at 6: 18-19. As described in Liu, “walls of the heater housing 24 are provided with a plurality of apertures 28 to permit entry of the liquid/air from the liquid container 18 into the heater housing 24.” *Id.* at 6:20-22.

Liu describes that as “the user draws on the cigarette mouthpiece, air is drawn into the battery chamber [12], into the liquid container [18] to mix with the liquid mixture, and into the heater assembly [24],” and the “resulting vapour is drawn into the mouth of the user.” *Id.* at 7:16-19. Liu further describes that “in use, suction on the mouthpiece by the user causes air to be drawn through the porous container for liquid [18], over the heated vapouriser, into the mouthpiece and into the mouth of the user.” *Id.* at 4:6-8; *see also* 9:21-24.

b. Analysis

As noted above, CB Distributors uses claim charts to explain how Liu allegedly discloses every element recited in each of claims 1, 2, 5-8, 10, 33, 35, 37, and 38. Pet. 11, 18-29.

For example, CB Distributors points to disclosure in Liu as corresponding to certain elements recited in independent claims 1 and 10 as follows:

'944 patent claim element	Disclosure in Liu
"an atomizer assembly"	Vapouriser heater assembly housing 24
"a cigarette solution storage area"	Liquid container 18
"negative pressure cavity in the atomizing chamber"	"suction on the mouthpiece by the user causes air to be drawn through the porous container for liquid, over the heated vapouriser, into the mouthpiece and into the mouth of the user" (citing Ex 1019, 4:6-9; 9:22-24, Fig. 2)
"porous component" (claim 10)	Walls of heater assembly housing 24 "provided with a plurality of apertures 28 to permit entry of the liquid/air from the liquid container 18 into the heater housing 24" (citing Ex. 1019, 6:20-11, Fig. 5)

Pet. 21, 25, 26, and 28.

As stated in Liu, a portion of liquid container 18 "is formed of a porous material to facilitate distribution of the liquid through the container, prior to being fed to the heater means." Ex. 1019, 3:1-3; Pet. 21. That liquid mixture may contain nicotine. *Id.* at 3:10-13. Thus, CB Distributors argues that Liu discloses that "liquid container 18" stores a cigarette solution. Pet. 21. Liu also discloses that "vapouriser heater assembly housing 24" houses an electric heating rod (i.e., "heater wire 26 spirally wound on a central ceramic insulating rod"), which is capable of vaporizing for inhalation, i.e., atomizing, a cigarette solution. *Id.* at 6:16-22; 7:16-19; Pet. 21, 24. As shown in Figure 1 of Liu, housing 24 (an atomizer assembly) fits inside liquid container 18 (a cigarette-solution storage

area), as recited in the challenged independent claims. *Id.* at Fig. 1; Pet. 23. CB Distributors argues that Figure 1 of Liu identifies these components and depicts a “run-through atomizing chamber,” i.e., a chamber inside housing 24 that contains the heating rod, which runs along the length of housing 24. *Id.*

In relation to the “negative pressure cavity in the atomizing chamber” recited in independent claims 1 and 10, CB Distributors argues that Liu discloses that after a user draws on a cigarette mouthpiece, air goes into battery chamber 14, and “air in the battery chamber is sucked into the liquid container 18 through apertures 22 where it mixes with the liquid solution.” Pet. 19 (citing Ex. 1019, 7:16-19). According to CB Distributors, “air and liquid solution mixture is then drawn into the porous walls of the vapouriser heater assembly [24] which contain apertures 28.” *Id.* (citing Ex. 1019, Fig. 5; 6:20-22; 7:16-19). CB Distributors also contends that “flow of air through the cigarette indicates the space in between the vapouriser housing 24 and the heating rod 26 forms a negative pressure cavity as the user inhales.” *Id.*

As discussed above, we interpret this “negative pressure cavity” element as referring to a cavity within a run-through atomizing chamber of an atomizer, where pressure inside that cavity is negative compared to pressure outside the cavity. CB Distributors contends this cavity in Liu, as shown in Fig. 2 of that reference, is located between the inner wall of heater assembly housing 24 and heater wire 26. Pet. 25; Ex. 1019, Fig. 2. Consistent with CB Distributors’s arguments, in a claim chart, CB Distributors points to disclosure in Liu stating that “suction on the mouthpiece by the user causes air to be drawn through the porous container for the liquid, over the heated vapouriser, into the mouthpiece and into the mouth of the user.” Pet. 25, 28 (citing Ex 1019, 4:6-9; 9:22-24). Along these lines, we note that Liu describes that “the flow of fluids through the cigarette is caused solely or

principally by the suction of the user.” Ex. 1019, 2:24-26. In addition, as CB Distributors points out, Liu discloses that “walls of the heater housing 24 are provided with a plurality of apertures 28 to permit entry of the liquid/air from the liquid container 18 into the heater housing 24.” *Id.* at 6:20-22; Pet. 28.

In other words, Liu indicates that when a user inhales, liquid from container 18 moves into the atomizing chamber inside housing 24. *See, e.g.*, Ex. 1019, 7:16-19. CB Distributors argues that negative pressure, via suction on the mouthpiece, exists necessarily inside vapouriser housing 24 relative to pressure outside housing 24 in order for liquid to move in that direction. Pet. 25. Thus, while Liu does not mention “negative pressure” per se, by virtue of its discussion of suction and how liquid flows inside the cigarette, Liu discloses inherently (necessarily) that pressure in the cavity between the inner wall of heater assembly housing 24 and heater wire 26 is negative as compared to pressure existing inside liquid container 18. We are persuaded that CB Distributors has shown a reasonable a likelihood that it will prevail on its contention that Liu anticipates independent claim 1.

In addition, we are persuaded likewise that CB Distributors has shown a reasonable likelihood that it will prevail on its contention that Liu anticipates independent claim 10. For example, as discussed above, the “porous component” of claim 10 refers to a component in the electronic cigarette that includes pores and is permeable to liquid, i.e., allows liquid to pass through it. CB Distributors contends that Liu discloses that an “air and liquid solution mixture is [] drawn into the porous walls of the vapouriser heater assembly which contain apertures 28.” Pet. 19 (citing Ex. 1019, Fig. 5; 6:20-22; 7:16-19). In other words, apertures 28 in the walls housing 24 correspond to pores, and therefore the “walls of heater housing 24” correspond to a porous component. *Id.* at 28.

Based on the record before us, CB Distributors has demonstrated a reasonable likelihood of prevailing on its assertion that Liu anticipates independent claims 1 and 10.

In addition, CB Distributors argues that Liu discloses the claimed subject matter recited in dependent claims 2, 5-8, 33, 35, 37, and 38, as presented in the petition and claim charts. Liu describes that the liquid in container 18 may contain nicotine, as recited in claims 2 and 38. Pet. 25, 29; Ex. 1019, 6:29-30. Liu also describes a “heater wire 26 spirally wound on a central ceramic insulating rod” that corresponds to a “coiled wire” that “extends along the length of” and “on the outer surface of,” or “on the outside of,” a cylinder, as recited in dependent claims 5-8, 33, 35, and 37. Pet. 26, 28-29; Ex. 1019, 6:18-19. We are persuaded that CB Distributors has demonstrated a reasonable likelihood of prevailing on its assertion that Liu anticipates dependent claims 2, 5-8, 33, 35, 37, and 38.

2. 35 U.S.C. § 103(a) Ground Based on Hon '494 and Liu

CB Distributors contends that claims 1-4, 8-12, 15-26, 33-34, 36, and 38 of the '944 patent would have been obvious over Hon '494 and Liu. Pet. 11, 36-47. Again, CB Distributors uses claim charts to explain how the references allegedly teach or suggest the claimed subject matter. *Id.* We discuss Liu above.

a. Hon '494 (Ex. 1009)

Hon '494 relates to an aerosol electronic cigarette. Ex. 1009, 1:35-37. Figures 1 and 6 in Hon '494 are reproduced below.

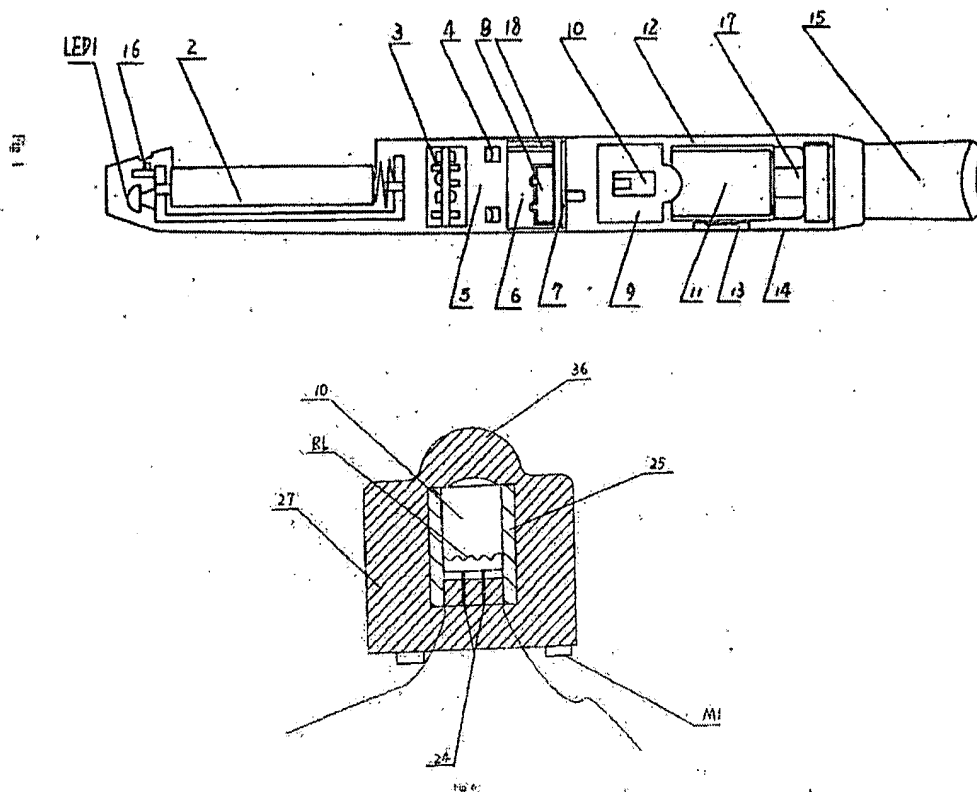


Figure 1 depicts the structure of an electronic cigarette, which includes air inlet 4, normal pressure cavity 5, sensor 6, negative pressure cavity 8, vapor-liquid separator 7, atomizer 9, liquid-supplying bottle 11, mouthpiece 15, and shell 14. Ex. 1009, Fig. 1, 3:14-21. Figure 6 depicts a structural diagram of the atomizer, which includes atomization cavity 10, heating element RL, first piezoelectric element M1, atomization cavity wall 25, and porous body 27. *Id.* at 2:48, 3:26-29, 35-38.

As described in Hon '494, "solution storage porous body 28 in the liquid-supplying bottle 11 will be in contact with the bulge 36 on the atomizer 9, thereby achieving the capillary infiltration liquid-supplying." *Id.* at 4:31-33; 3:24-25; Figs. 1, 6, and 11. Hon '494 further discloses that heating element RL "can be made of platinum wire, nickel chromium alloy or iron chromium aluminum alloy

wire with rare earth element” and “can also be made into a sheet form.” *Id.* at 3:27-29. Porous body 27 in atomizer 9 “can be made of foam nickel, stainless steel fiber felt, high molecular polymer foam and foam ceramic,” and that “atomization cavity wall 25 can be made of aluminum oxide or ceramic.” *Id.* at 3:35-38; Fig. 6.

In addition, Hon ’494 describes that “[w]hen a smoker smokes, the mouthpiece 15 is under negative pressure, the air pressure difference or high speed stream between the normal pressure cavity 5 and the negative pressure cavity 8 will cause the sensor 6 to output and actuating signal,” which causes the cigarette to go into operation. *Id.* at 4:11-14. Hon ’494 teaches that air enters normal pressure cavity 5 through air inlet 4, goes through a hole in vapor-liquid separator 7, and flows into atomization cavity 10 of atomizer 9. *Id.* at 4:21-24. A “high speed stream passing through the ejection hold drives the nicotine solution in the porous body 27 to eject into the atomization cavity 10 in the form of droplet,” where the nicotine solution is atomized by element M1 and further atomized by heating element RL. *Id.* at 4:24-27. After atomization, larger diameter droplets are reabsorbed by porous body 27, and smaller diameter droplets form aerosols, which are sucked out via passage 12, gas vent 17 and mouthpiece 15. *Id.* at 4:28-31.

b. Analysis

As noted above, CB Distributors uses claim charts to explain how Hon ’494, in view of Liu, allegedly teaches or suggests every element recited in each of claims 1-4, 8-12, 15-26, 33-34, 36, and 38. Pet. 11, 36-47.

For example, CB Distributors points to disclosure in Hon ’494 as corresponding to certain elements recited in independent claims 1 and 10 as follows:

'944 patent claim element	Disclosure in Hon '494
"an atomizer assembly"	Atomizer 9 with atomization cavity 10 and heating element RL
"a cigarette solution storage area" that "fits with at least a portion of the said atomizer assembly inside it"	Liquid-supplying bottle 11 that fits with bulge 36 of atomizer 9 inside it
"porous component" (claim 10)	Porous component 27

Pet. 37, 39-42.

Hon '494 also indicates that inhalation ("smoking") by a user causes a "high speed stream," which leads to liquid ("nicotine solution") flowing from porous body 27 into atomization cavity 10 of atomizer 9. Ex. 1009, 4:11-27. In other words, it is a reasonable position that a "negative pressure cavity" exists necessarily in atomization cavity 10 in relation to pressure outside that cavity. CB Distributors recognizes, however, that Hon '494 does not describe a run-through atomizing chamber or electric heating rod comprising a cylinder, and therefore, does not disclose a negative pressure cavity in that atomizing chamber, as required in claims 1 and 10. Pet. 40-42. CB Distributors points to Liu for such disclosures, as discussed above. *Id.*

CB Distributors contends that it "would have been obvious to employ a vapouriser assembly as disclosed by Liu (including the central rod extending lengthwise along the vapouriser with a spirally wound heater wire inside the vapouriser assembly) in the electronic cigarette of Hon '494." *Id.* at 39. According to CB Distributors, the "combination is simply applying a known technique (a run-through atomization chamber) to a known device (the electronic cigarette of Hon '494) to yield predictable results." *Id.*

Based on the record before us, we are persuaded by CB Distributor's arguments. Liu and Hon '494 describe similar electronic cigarettes. Atomizer 9 in Hon '494 uses a differently shaped heating element, located in a different place in atomizing chamber 10, as compared to the location of such elements in Liu's atomizer (housing 24). Atomizer 9 (comprising porous body 27) in Hon '494 does not have a "run-through atomizing chamber" as construed above, because, for example, heating element RL does not run along the length of cavity 10, but rather is perpendicular to it. *See* Ex. 1009, Figs. 1, 6. Liu, on the other hand, discloses an atomizer assembly (housing 24) including a cylinder electric heating rod ("heater wire 26 spirally wound on a central ceramic insulating rod") that runs along a run-through atomizing chamber, as discussed previously.

As stated in *KSR*, the "combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). Based on the record before us, we are persuaded that CB Distributors provides an articulated reasoning to substitute a cylinder electric heating rod (as taught in Liu) that runs along the length of atomizing chamber 10 for the heating element RL (as taught in Hon '494), because such a substitution appears to be merely a "predictable use of prior art elements according to their established functions." *KSR*, 550 U.S. at 417.

Based on the record before us, CB Distributors has demonstrated a reasonable likelihood of prevailing on its assertion that independent claims 1 and 10 would have been obvious over Hon '494 in view of Liu.

In addition, CB Distributors argues that Hon '494 and Liu teach the claimed subject matter recited in dependent claims 2-4, 8, 9, 11, 12, 15-26, 33-34, 36, and 38, as presented in the petition and claim charts. For instance, in relation to claim 18, as noted by CB Distributors, Hon '494 discloses a first magnetic steel, a second

magnetic steel, and a Reed switch between them, as well as a silicon gel check valve, within sensor 6. Ex. 1009, 2:4-9; Figs. 1, 4, 10; Pet. 44. In addition, Hon '494 describes a third magnetic steel in the silicon gel check valve, and a Reed switch outside the valve. *Id.* In relation to claim 20, Hon '494 discloses that porous body 27 in atomizer 9 "can be made of foam nickel, stainless steel fiber felt, high molecular polymer foam and foam ceramic." *Id.* at 3:35-38; Fig. 6; Pet. 45. CB Distributors has demonstrated a reasonable likelihood of prevailing on its assertion that dependent claims 18 and 20, as well as dependent claims 2-4, 8, 9, 11, 12, 15-17, 19, 21-26, 33-34, 36, and 38, would have been obvious over Hon '494 in view of Liu.

3. 35 U.S.C. § 103(a) Ground Based on Hon '494, Liu and Susa

CB Distributors contends that claims 39-41 of the '944 patent would have been obvious over Hon '494 in view of Liu and Susa. Pet. 11, 47-54. CB Distributors uses claim charts to explain how the references allegedly teach or suggest the claimed subject matter. *Id.* We discuss Liu and Hon '494 above.

c. Susa (Ex. 1020)

Susa describes a simulated smoking article, or "flavor generation article." Ex. 1009, 1:14-17; 2:13-21. Figure 1 in Susa is reproduced below.

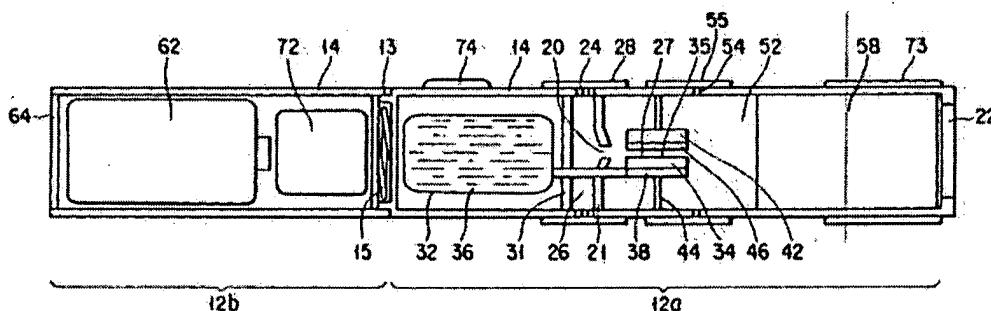


FIG. 1

Figure 1 depicts a schematic view of a flavor generation article that includes casing 12 comprising portion 12a held by a user's mouth, suction port 22, gas flow path 26 defined in casing 12 as between air intake ports 24 and suction port 22, material container 32 for storing a liquid material 36, and ceramic heater 42 including "liquid-absorbing porous layer 46" on its surface. *Id.* at 5:12-57; 6: 21-25; 7:29-8:5.

Figure 9 in Susa is reproduced below.

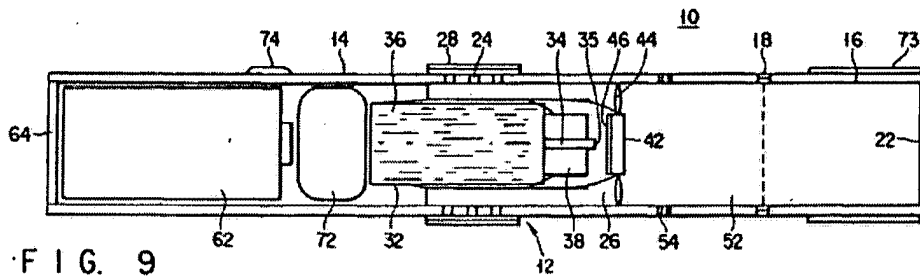


Figure 9 depicts another embodiment of a flavor generation article including liquid material 36, discharge head 34, ceramic heater 42, *inter alia*, incorporated in one casing main body 14. *Id.* at 12:54-13:5. Relevant to both Figures 1 and 9, Susa discloses that "ceramic heater 42 is fixed on the inner surface of the casing main body 14 through a support member 44." *Id.* at 7:30-44.

b. Analysis

Independent claims 39 and 41 are similar to independent claim 10, except both further recite, *inter alia*, that "on the wall of both ends of the [said] cylinder, there are mandrils respectively," and that the porous component of the atomizer "has a protuberance" that "fits with the [said] cigarette solution storage area" and is "a half sphere, on the side of which there is a run-through hole connecting to the [said] atomizing chamber."

CB Distributors contends that most elements of claims 39-41 are disclosed in Hon '494 and/or Liu. For example, above and beyond the elements discussed above, CB Distributors contends that that Hon '494 discloses atomizer 9 including porous body 27 with bulge 36 on one end that is in contact with liquid supplying bottle 11. Pet. 48. CB Distributors contends that Susa discloses the “mandrils” element of the challenged claims. *Id.*

Notably, CB Distributors further contends that Hon '494 describes a relevant protuberance that is a half sphere, “on the side of which there is a run-through hole connecting to the atomizing chamber,” as recited in claims 39 (“39[q]”) and 41. Pet. 52, 54 (citing Ex. 1009, Figs. 2, 6; 2:8-9; 5:12-14). As argued by CB Distributors, Hon '494 discloses that “bulge 36 is a protruding half sphere on the side of which there is a run-through hole (vapor-liquid separator 7) connecting to the atomizing chamber.” *Id.*; *see also id.* at 49 (citing Ex. 1009, 2:8-9; 5:12-14).

As indicated by CB Distributors, Hon '494 describes, and depicts in Figures 1 and 6, porous body 27 (i.e., a “porous component”) of atomizer 9 having a protruding half sphere that fits with liquid supplying bottle 11 (i.e., a “cigarette solution storage area”). We are not persuaded, however, that CB Distributors establishes reasonably that Hon '494 describes or suggests a “protruding half sphere, *on the side of which there is a run-through hole* connecting to the [said] atomizing chamber,” as recited in independent claims 39 and 41 (emphasis added).

The '944 patent Specification depicts an example of the “run-through hole” in Figure 8, and states that “protuberance (812) is a protruding half sphere, on the side of which there is a run-through hole (813) connecting to the atomizing chamber (811).” Ex. 1001, 6:23-28. By contrast, CB Distributors contends that vapor-liquid separator 7 in Hon '494 corresponds to the recited “run-through hole.” Pet. 49, 52, 54.

Hon '494 discloses that "air enters the normal pressure cavity 5 through the air inlet 4, passes through the air passage 18 of the sensor and then the through hole in the vapor-liquid separator 7, and flows into the atomization cavity 10 in the atomizer 9." Ex. 1009, 4:21-24. As described in Hon '494 and depicted in its figures, however, the "through hole in the vapor-liquid separator 7" is not located on the side of the protruding half sphere of porous body 27 on atomizer 9. Rather, the through hole of vapor-liquid separator 7 is located on the opposite end of the atomizer. *See, e.g.*, Ex. 1009, Figs. 1 and 9. CB Distributors does not explain adequately, nor cite evidence of record explaining, how Hon '494, or other cited reference, discloses or suggests a run-through hole connecting to a run-through atomizing chamber, where that hole is located on the side of a protruding half sphere of the porous component of an atomizer.

Thus, we are not persuaded that CB Distributors has demonstrated a reasonable likelihood of prevailing on its assertion that independent claims 39 and 41, and therefore claim 40, which depends on claim 39, would have been obvious over Hon '494 in view of Liu and Susa.

4. Remaining § 103(a) Grounds of Unpatentability

CB Distributors asserts two other grounds, contending that claim 20 would have been obvious over Liu, and that claims 3, 4, 12, 15, 17, and 26 would have been obvious over Liu in view of Susa. Pet. 11, 29-36. Those grounds of unpatentability are redundant in light of the obviousness ground discussed above, and on the basis of which we institute *inter partes* review of the same claims. We do not authorize an *inter partes* review on the redundant grounds. *See* 37 C.F.R. § 42.108(a).

III. CONCLUSION

For the foregoing reasons, we are persuaded that CB Distributors has demonstrated that there is a reasonable likelihood of its proving unpatentability of claims 1-12, 15-26, and 33-38, but not claims 39-41, of the '944 patent by a preponderance of the evidence. CB Distributors also challenges dependent claims 3, 4, 12, 15, 17, 20, and 26 on additional obviousness grounds. We consider these additional grounds to be redundant to the ones listed above, and deny the petition as to them. The Board has not made a final determination on the patentability of the challenged claims.

IV. ORDER

For the reasons given, it is

ORDERED that the Petition is *granted* as to claims 1-12, 15-26, and 33-38 of the '944 patent with respect to the following alleged grounds:

1. Claims 1, 2, 5-8, 10, 33, 35, 37, and 38 under 35 U.S.C. § 102 as anticipated by Liu; and
2. Claims 1-4, 8-12, 15-26, 33, 34, 36, and 38 under 35 U.S.C. § 103 as obvious over Hon '494 in view of Liu;

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(a), *inter partes* review of the '944 patent is hereby instituted commencing on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial;

FURTHER ORDERED that all other grounds presented in CB Distributors's petition are *denied*, and no ground other than those specifically

granted above is authorized for the *inter partes* review as to claims 1-12, 15-26, and 33-38; and

FURTHER ORDERED that an initial conference call with the Board is scheduled for 11 AM Eastern Time on January 31, 2014. The parties are directed to the Office Trial Practice Guide, 77 Fed. Reg. 48756, 48765-66 (Aug. 14, 2012) for guidance in preparing for the initial conference call, and should be prepared to discuss any proposed changes to the Scheduling Order entered herewith and any motions the parties anticipate filing during the trial.

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