

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NJOY, LLC,
NJOY HOLDINGS, INC.,
Petitioners,

v.

JUUL LABS, INC.,
Patent Owner

Case IPR2024-00567
U.S. Patent No. RE49,114

**DECLARATION OF DR. JOHN COLLINS
IN SUPPORT OF PATENT OWNER'S PRELIMINARY RESPONSE**

1. I have been retained on behalf of JUUL Labs, Inc. (“Patent Owner”) in connection with the above-captioned *inter partes* review (IPR). I have been retained to provide my opinions in support of Patent Owner’s Preliminary Response. I am being compensated for my time at the rate of \$450 per hour. I have no interest in the outcome of this proceeding.

2. In preparing this declaration, I have reviewed and am familiar with the Petition for IPR2024-00567, U.S. Patent No. RE49,114 (“the ’114 patent”) and its file history, and all other materials cited and discussed in the Petition (including the declaration of Petitioner’s expert Joseph McAlexander), and cited and discussed in this Declaration.

3. The statements made herein are based upon my own knowledge and opinion. This Declaration represents only the opinions I have formed to date. I may consider additional documents as they become available or other documents that are necessary to form my opinions. I reserve the right to revise, supplement, or amend my opinions based on new information and on my continuing analysis.

I. QUALIFICATIONS

4. I have been employed since 2008 at the Consortia for Improving Medicine with Innovation and Technology (“CIMIT”) and am currently the Director of Innovation Platforms. CIMIT is a non-profit consortium of Boston’s leading teaching hospitals and universities along with a growing network of national and

international affiliates. CIMIT is an operating unit within Massachusetts General Hospital where I have a faculty appointment.

5. Much of my responsibility at CIMIT is to facilitate collaboration among scientists, engineers, clinicians, and entrepreneurs to speed the discovery, development, and implementation of medical innovations into practice. I focus on assisting investigators in moving technologies from the lab into products and services that improve patient care. My focus has been on developing and implementing CIMIT's CoLab and GAITS platforms.

6. By way of example of CIMIT's work, it was recently responsible for the National Institute of Biomedical Imaging and Bioengineering (NIBIB) sponsored RADx Tech program. The program has committed more than \$1.5 Bn to develop and accelerate the commercialization of innovative point of care SARS-CoV-2 (COVID) tests into practice. That program supported more than 100 organization and resulted in 55 FDA authorized tests, including the 1st over-the-counter test for home use, and the production of over 7 billion tests¹.

7. Also since 2008, I have been employed as the Chief Technology and Innovation Officer for Reed Collins, LLC. At Reed Collins, I provide consulting to

¹ See NIH Website, accessed 2/28.2024: <https://www.nibib.nih.gov/covid-19/radx-tech-program>

non-profits as well as start-ups. Non-profit clients include Oxford University in the UK and Howard University in the US.

8. I received a Ph.D. (1988) and M.S. (1982) in mechanical engineering from the Massachusetts Institute of Technology (“MIT”), as well as a B.S. (1980) in mechanical engineering, with a minor in economics, from Rensselaer Polytechnic Institute (“RPI”). At MIT, I worked in the Fluids Lab under the direction of Professors Asher Shapiro and Roger Kamm. My academic work focused on mechanical engineering with a concentration on fluid dynamics and heat/mass transfer, with my Ph.D. and M.S. theses applying these principles to pulmonary dynamics. My M.S. thesis was on high frequency ventilation: at the time a novel way to ventilate babies without over-pressurization of the lung, avoiding damage to the lung during ventilator assist. My Ph.D. thesis was on analytical and numerical modeling of forced exhalation from the lung. The results were a computational model of the lung that allowed for more sophisticated diagnostics based on the results of the simple Forced Expiration Pulmonary Function (“FEPF”) test.

9. I now have over 40 years of product design, development, and consulting experience covering a wide range of industries and products. Over that time, I have had a consistent focus on medical devices and related technologies, which includes my particular expertise in design, fluid mechanics and heat/mass transfer. In addition to doing engineering work, my responsibilities have included

assembling and managing teams to develop new consumer, industrial, and medical products.

10. I also have experience as an innovator and inventor. I am a named inventor on more than twenty U.S. patents, with foreign counterparts in addition, on new products and manufacturing processes. My CV is attached as Exhibit 2002 and contains a list of my US Patents and all the publications that I have authored in the last 10 years.

11. Prior to my time at CIMIT and Reed Collins LLC in 2008, I held various leadership positions at technology and product development companies. From 1982-1986, I worked at Booz, Allen & Hamilton, where I developed a number of consumer and industrial products. After taking time to return to MIT and complete my Ph.D., I was then employed by Arthur D. Little (“ADL”) until 1988. I then joined ADL as a design engineer and helped form its medical products business. I progressed to being responsible for the Technology and Innovation (“T&I”) Directorate, with more than 250 staff as Sr Vice President until 2002.

12. From 2002-2008, I worked in close collaboration with CEO and owner, Dr. Kenan Sahin, to form TIAX LLC from the resources of the ADL T&I Directorate. TIAX is and was a privately held technology transformation organization focused on advancing and developing technologies for commercialization in several core technology areas, including clean energy and

materials, health and wellness, appliances and HVAC systems, and enhanced security. During my tenure at TIAX, part of which I served as president, the World Economic Forum recognized TIAX as a Technology Pioneer in 2002 and as a New Champion in 2007. For a full list of my employment history, see my CV, attached as Exhibit A to this report.

13. My experiences cover a broad technology base across a diverse set of industries, including in the areas of medical devices, energy, consumer products, emission technology for automobiles, and alternative smoking products.

14. By way of example, while at ADL, I worked with an operating unit within Philip Morris USA (“PM USA”) called Chrysalis Technologies, Inc. (“Chrysalis”) on an alternative smoking product that was battery-powered and puff-activated. Also, while at ADL, and then continuing that work at TIAX, I continued that work with Chrysalis on several related projects. These projects built off of and utilized the prior capillary aerosol generator research and development at PM USA and Chrysalis (the results of which are reflected in patents such as U.S. Pat. No. 5,743,251 to Howell et al.; U.S. Pat. No. 6,501,052 to Cox et al.; and U.S. Pat. No. 6,491,233 to Nichols) and applied it to efforts to atomize very low flow rates of liquid fuel for efficient combustion. One application was for a low-power, fuel based electric power generator (U.S. Pat. App. No. 2006/0093977 to Pellizzari I), and

another was for a clean emission “coldstart” fuel injector for automobiles (U.S. Pat. No. 7,059,307 to Pellizzari II).

15. By way of further examples of products that I have worked on, I worked with Baxter Healthcare to develop a blood/fluid warmer based on the analytical optimization of the thermal performance of “conventional” resistance heating technology; Bausch & Lomb to develop a microsurgical fluid delivery system that allowed the surgeon to control the flow or pressure of irrigation fluid; and Johnson & Johnson to develop Trocars and clip appliers for minimally invasive surgery.

16. I have also performed services in numerous patent disputes as an independent technical expert and consultant and as an expert witness. I have consulted as an expert in matters involving the design of a variety of medical devices. See Exhibit 2002 for a list of matters in which I have offered expert opinions or testified in court in the last 4 years as well as all prior e-cigarette cases in which I testified or offered expert opinions. In total, I have worked on, testified or offered expert opinions in eight other e-cigarette cases.

II. LEGAL UNDERSTANDING

A. The Person of Ordinary Skill in the Art (“POSITA”)

17. I understand that a person of ordinary skill in the relevant art at the time of the invention (also referred to herein as “ordinary artisan”) is presumed to be

aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity—not an automaton.

18. I have been asked to consider the level of ordinary skill in the field that someone would have had at the time the claimed invention was made. In deciding the level of ordinary skill, I considered the following:

- the levels of education and experience of persons working in the field;
- the types of problems encountered in the field; and
- the sophistication of the technology.

19. A person of ordinary skill in the art relevant to the '114 patent at the time of the invention would have a B.S. in mechanical engineering, electrical engineering, or an equivalent degree, and either at least two years of experience designing electro-mechanical consumer products or an advanced degree in mechanical engineering, electrical engineering, or an equivalent field.

20. I have reviewed the declaration of Mr. McAlexander, including his opinions regarding the Person of Ordinary Skill in the Art. Mr. McAlexander provides a similar definition of a POSITA: “at least a B.S. degree in Mechanical Engineering, Electrical Engineering, Industrial Design, Product Design, or similar field, with at least two years of industry experience in one of these fields; and such

POSA would have been familiar with electrically powered vaporizing articles, their components, or the underlying technologies.” Ex. 1003, ¶27.

21. My opinions set forth in this Declaration would be the same under either my or Mr. McAlexander’s proposal.

22. I am well-qualified to determine the level of ordinary skill in the art and am personally familiar with the technology of the ’114 patent. I was a person of at least ordinary skill in the art at the time of the priority date of the ’114 patent regardless of which definition used. Regardless if I do not explicitly state that my statements below are based on this timeframe, all of my statements are to be understood as an ordinary artisan would have understood something as of the priority date of the ’114 patent.

B. Legal Principles

23. I am not a lawyer and will not provide any legal opinions. Though I am not a lawyer, I have been advised that certain legal standards are to be applied by technical experts in forming opinions regarding the meaning and validity of patent claims.

1. Anticipation

24. I understand that to obtain a patent, a claimed invention must have, as of the priority date, been novel. I understand that to prove that a prior art reference anticipates a patent, the four corners of the prior art reference must describe element

of the claimed invention, either expressly or inherently. I also understand that the prior art reference must describe the elements arranged as in the claim and that it is improper to combine disparate embodiments to establish anticipation unless a POSITA when reading the reference could at once envisage such a combination. I understand that it is improper to allege anticipation by combining different aspects of distinct embodiments.

25. I also understand that in order to anticipate, a reference must enable one of ordinary skill in the art to make the invention without undue experimentation. The reference must enable the subject matter that falls within the scope of the claims at issue. I understand that enablement requires that POSITA would know how to make and use the invention based on the reference's disclosure. In other words, a POSITA must know how to practice or to carry out the disclosures in the prior art.

2. Obviousness

26. I understand that to obtain a patent, a claimed invention must also have, as of the priority date, been nonobvious in view of prior art in the field. I understand that an invention is obvious when the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.

27. I understand that to prove that prior art, or a combination of prior art, renders a patent obvious, it is necessary to: (1) identify the particular references that singly, or in combination, make the patent obvious; (2) specifically identify which elements of the patent claim appear in each of the asserted references; and (3) explain how the prior art references could have been combined to create the inventions claimed in the asserted claim.

28. I understand that a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art, and that obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention.

29. I also understand that a reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. Even if a reference is not found to teach away, I understand its statements regarding preferences are relevant to a finding regarding whether a skilled artisan would be motivated to combine that reference with another reference.

3. *My Understanding of Claim Construction Law*

30. I have been informed that patent claims are construed from the viewpoint of a person of an ordinary artisan and that patent claims generally should be understood consistent with their ordinary and customary meaning at the time of the invention. A review of the patent claim language, the patent specification, and its prosecution history are also necessary to determine the proper meaning and scope of the term at issue.

31. I have further been informed that in the specification and prosecution history the patentee may define a claim term in a way that differs from the ordinary and customary meaning. I understand that during prosecution of the patent before the U.S. Patent and Trademark Office, the Applicant may make representations or provide definitions of terms that may affect the scope of the patent claims. In particular, the Applicant may, during the course of prosecution, limit the scope of the claims to overcome prior art and/or disavow claim coverage by making clear and unambiguous statements to that effect.

32. I have been informed that an ordinary artisan may, among other things, consider dictionaries, publications, other patents, and treatises (*i.e.*, “extrinsic evidence”). I understand that extrinsic evidence may generally not be relied on if it contradicts the meaning of claim language provided by the intrinsic evidence, such as express definitions given for terms in the specification.

4. *Secondary Considerations of Non-Obviousness*

33. I understand that one of the factual inquiries when determining the obviousness of a patent is to consider objective evidence related to the issue of obviousness, sometimes called “secondary considerations of non-obviousness” or “objective indicia of non-obviousness.” I understand that such evidence can often be probative of the issues of obviousness.

34. I understand that examples of objective evidence include (1) commercial success, (2) copying, (3) industry praise, (4) skepticism, (5) long-felt but unsolved need, and (6) failure of others.

35. I understand that there must be a nexus between the patented invention and the evidence of secondary considerations. I further understand that there is a presumption of such a nexus if the claims of the patent are coextensive with a product or products that are the subject of the secondary considerations evidence. I further understand that in order for a claim to be coextensive with a product, one must look at the claims at the whole and not just the new claimed feature. In addition, the claimed invention should not be merely a subcomponent of the products sold but should encompass the entire apparatus.

III. CLAIM CONSTRUCTION

36. In my opinion, all claim terms should be given their ordinary meaning in light of the specification.

37. Petitioners mention several terms which were in dispute in the parallel ITC litigation. Pet. 8. However, I agree with Petitioners that none of those terms need to be resolved by the Board at this stage of the proceeding.

38. It is, however, my opinion that Claim 1's preamble is limiting.

39. It is my understanding that a preamble is limiting if it recites essential structure or steps or if it is necessary to give life, meaning, and vitality to the claim. I also understand that if the preamble merely states a purpose or intended use for the invention, it is not limiting. I understand that I am to look at the specification and prosecution history to determine whether a preamble is limiting.

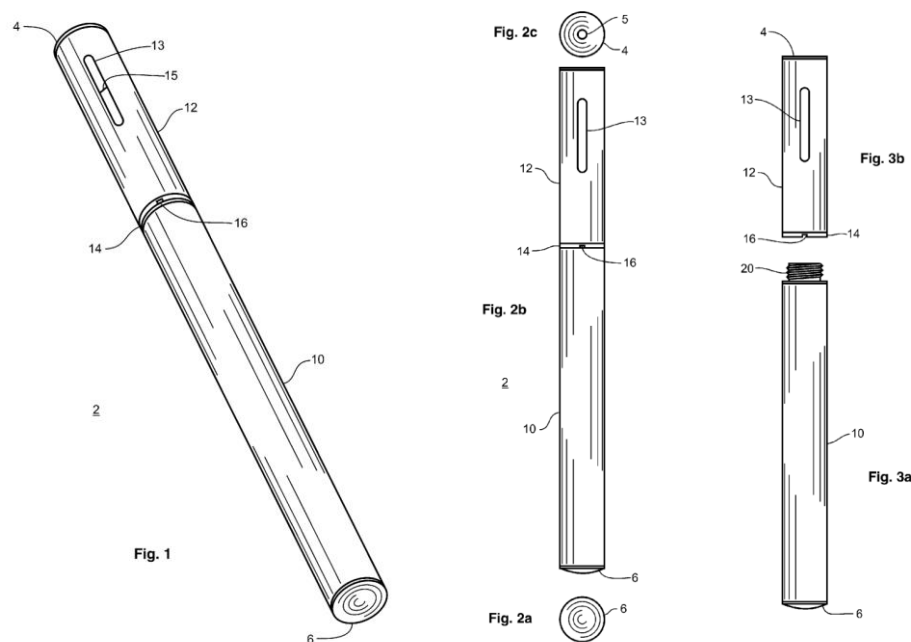
40. Both claim 1 and claim 44 of the '114 patent recite "an electronic cigarette" in their preamble. It is my opinion that the preamble is essential structure and necessary to give meaning to the claims.

41. The specification of the '114 patent frequently and consistently treats "electronic cigarette" as essential structure of the invention. The title of the patent is "Electronic cigarette with liquid reservoir" and the abstract states that the invention is "[a]n electronic cigarette." Ex. 1001, Title, Abstract. In the description of related art, the specification notes that "[e]lectronic cigarettes have become increasingly popular in recent times" and that they "emulate a tobacco cigarettes, but without the combustion of tobacco during use." *Id.*, 1:19-21. The specification further notes that with electronic cigarettes, "[r]ather than burning tobacco, a liquid

is atomized within the electronic cigarette.” *Id.*, 1:22-24. The background also describes “certain prior art electronic cigarettes.” *Id.*, 1:28-39.

42. The specification also describes the “invention” as “advanc[ing] the art of electronic cigarettes by teaching an electronic cigarette that provides a liquid reservoir, which effectively delivers liquid ... from the reservoir to an atomizer.” *Id.*, 4:1-5. Figures 1 through 6 of the patent, which are illustrative embodiments of the invention, are described as depicting “an electronic cigarette.” *Id.*, 2:46-3:25.

43. The below figures show that an “electronic cigarette” is essential to the invention because it describes the purpose of the apparatus, which is the delivery of nicotine by atomizing liquid instead of burning tobacco.



44. For these reasons, I believe that the term “electronic cigarette” is limiting because it provides essential meaning to the invention as a nicotine delivery

system replacement for a tobacco cigarette. Such functionality is important to the invention because one of the primary purposes of electronic cigarettes is to replace tobacco cigarettes with a safer, non-combustible alternative to nicotine consumption.

IV. GROUND 1: PETITIONERS DO NOT SHOW THAT CHO ANTICIPATES THE CHALLENGED INDEPENDENT CLAIMS

45. Petitioners have challenged claims 1, 43, and 44 as anticipated by the Cho reference. In my opinion, Cho does not anticipate those claims for at least two reasons. First, for the limitation “liquid reservoir at least partially defined by an interior of the cartridge housing and an exterior of the atomizing chamber” from claims 43 and 44, Cho does not disclose any such liquid reservoir, and the non-descript teaching in Cho of an “integrated” embodiment likewise does not disclose anything about its liquid reservoir and cannot be combined with Cho’s other embodiments. Second, Cho does not disclose an “electronic cigarette.”

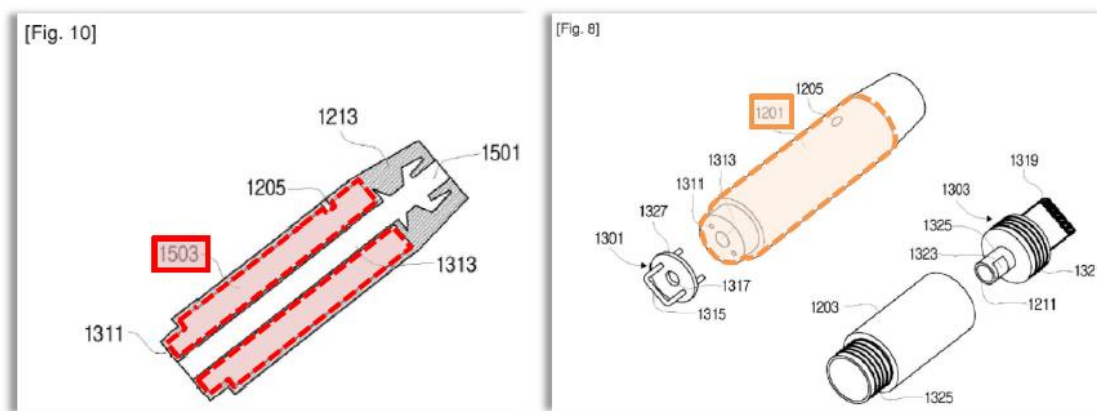
A. Cho does not anticipate or enable a “liquid reservoir at least partially defined by an interior of the cartridge housing and an exterior of the atomizing chamber” (claims 43 and 44)

46. Claims 43 and 44 require that the liquid reservoir is “defined by an interior of the cartridge housing and an exterior of the atomizing chamber.” In my opinion, Cho does not disclose this limitation. Instead, Cho’s alleged liquid reservoir is defined entirely by the interior of its storage container 1201.

47. Petitioner relies on Cho’s “loading portion 1503” as the liquid reservoir. Pet. 49. However, it is clear in Cho that this “loading portion 1503” is

completely defined by the interior of “storage container 1201” and nothing else.

Ex. 1005, Figs. 8, 10, ¶89 (“the storage container 1201 has a loading portion 1503 as the remaining space ...”). Nothing about Cho’s disclosure here indicates that the liquid reservoir is partially defined by the exterior of an atomizing chamber. I have shown this in the two figures below, where loading portion 1503 is entirely enclosed by the storage container 1201.



48. Petitioner also relies on a non-descript disclosure in Cho where “the storage container 1201 and atomization container 1203 are integrated into a single structure.” Pet. 49 (citing Ex. 1005, ¶74). I will refer to this as the “integrated” embodiment, and the other embodiments relied on in the Petition as the “separated” embodiment.

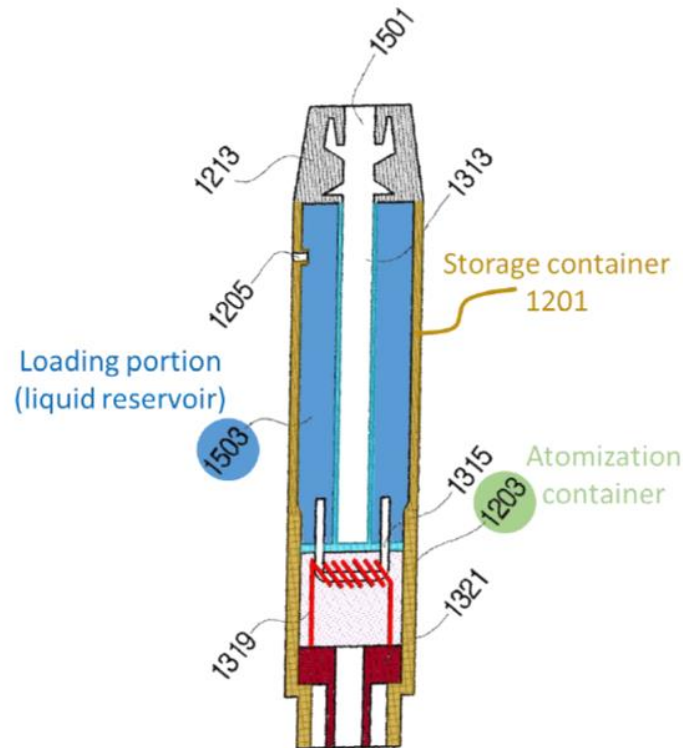
49. But in my opinion, there are several problems with Petitioner’s theory and this short, non-descript disclosure in Cho. First, Cho does not say anything about the loading portion in this “integrated” embodiment, much less that it is partially defined by an exterior of the atomizing chamber. Second, the

“integrated” embodiment is distinct and mutually incompatible with the “separated” embodiments, it is therefore my understanding that the combination of such distinct embodiments is not proper for anticipation. Finally, Petitioner’s proposed version of the “integrated” embodiment (which is not found anywhere in Cho) is not enabled.

1. *The “integrated” embodiment does not disclose a liquid reservoir partially defined by the exterior of the atomization chamber*

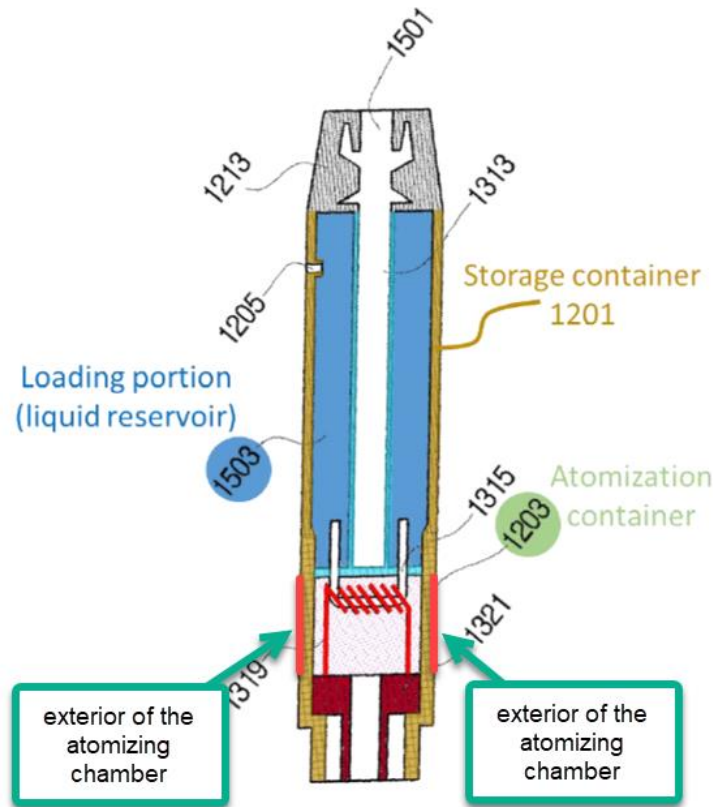
50. Cho’s “integrated” embodiment does not provide any explanation as to how it is integrated. Cho merely states that “the atomization container and the storage container are molded into a mutually integrated structure.” Ex. 1005, ¶74. But Cho does not provide any figures that depict such an integrated structure, or explain how the two components are molded into an integrated structure, or discuss in any way how the “loading portion” (which Petitioner has asserted is the liquid reservoir) is defined within the integrated structure.

51. Petitioner provides a mock-up of such an integrated embodiment, which I have reproduced below, but I note that Cho does not in any way disclose such a device.



EX1005, Fig. 11 (integrated embodiment, annotated).

52. Regardless, even looking at Petitioner's modified figure, there is no disclosure that the loading portion (in blue) is partially defined by the exterior of the atomizing chamber (in pink). Within Petitioner's integrated structure, the exterior is one seamless piece that is no longer defined by separate portions. Thus, the exterior of the atomizing chamber can only be those portions of the exterior co-located with the atomizing chamber, as shown in the annotations below that I have made (where the red lines indicate the exterior of the atomizing chamber):



EX1005, Fig. 11 (integrated embodiment, annotated).

53. As one can clearly see, the loading portion (in blue) is not defined by the actual exterior of the atomizing chamber. Petitioner’s theory relies on the exterior of the atomizing chamber component in the “separated” embodiment, but being a completely different, mutually incompatible embodiment, that component’s exterior does not have any bearing on what is the exterior of the atomizing chamber in Petitioner’s “integrated” embodiment.

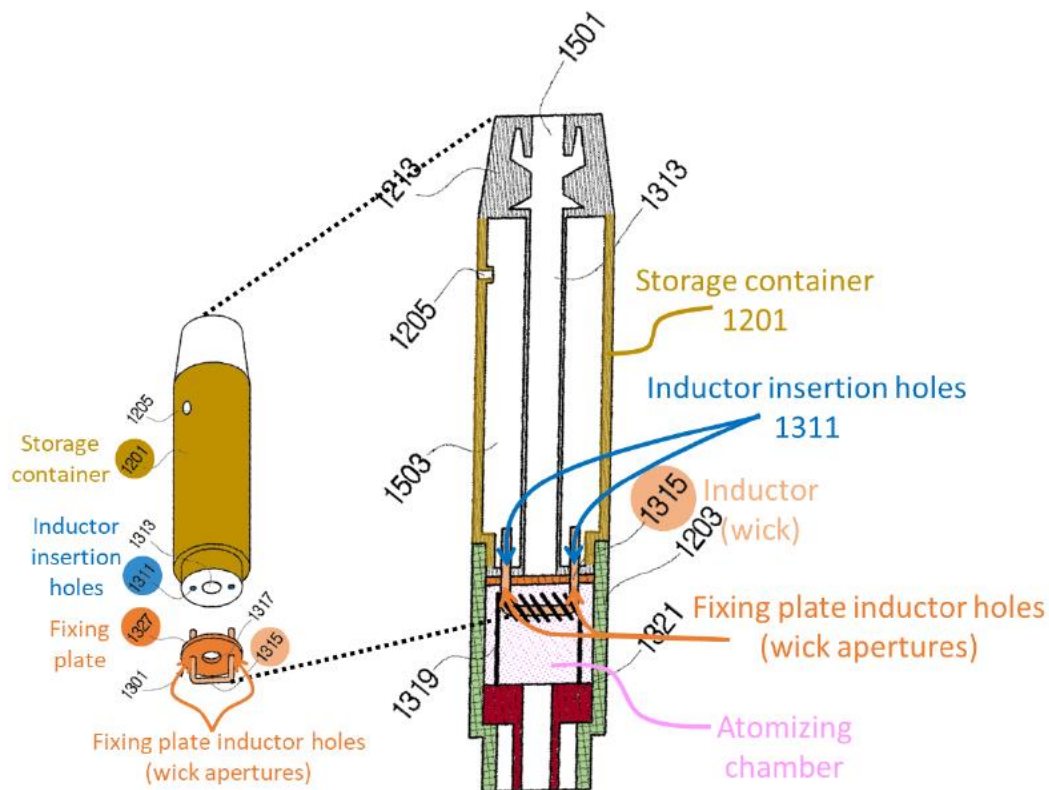
2. The “integrated embodiment” is a distinct, mutually incompatible embodiment

54. Again, it is my understanding that in an anticipation challenge, one cannot combine features of different, distinct embodiments unless a POSITA can at once envisage the combination.

55. Cho’s “integrated” embodiment is a different, distinct and mutually incompatible embodiment than the “separated” embodiments that Petitioner otherwise relies on. All that is disclosed by Cho is that, unlike the “separated” embodiment where “the atomization container and the storage container as a structure [are] separated from each other as an embodiment,” the “integrated” embodiment’s “atomization container and the storage container are molded into a mutually integrated structure,” and thus “the shape of the atomization container itself becomes unnecessary.” Ex. 1005, ¶74. Clearly, these are two distinct, mutually incompatible embodiments—a “separated” embodiment and an “integrated” embodiment.

56. The Petition clearly relies on the “separated” embodiment for other limitations. *See, e.g.*, Pet. 46-47 (relying on Figure 11, which depicts a “separated” embodiment). Most of the Petition’s Claim 43 analysis relies on its Claim 1 analysis that expressly relies on the structures being separate. For example, for limitation [43.F], the Petition solely relies on “limitation [1.F].” Pet. 48. However, for limitation [1.F], the Petition argues that in Cho, “inductor 1315 (wick) **pass[es] through** the first and second holes in fixing plate 1327 and also

through the insertion holes 1311 in storage container 1201” (Pet. 22-23), disclosures which could only apply to the “separated” embodiment. This is clearly seen in Petitioner’s modified and annotated versions of Figures 8 and 11, wherein the fixing plate 1327 and inductor 1315 is clearly depicted as being inserted into the bottom of a storage container that must be separated from the atomizing chamber.



57. In my opinion, a POSITA would not at once envisage Petitioner’s combination. In fact, it would not be possible for a POSITA to envisage the claimed arrangement, because the two embodiments are mutually incompatible. Again, for example, whereas for limitation [43.F] Petitioner relies on the fixing

plate being inserted into the bottom of a storage container separated from the atomizing chamber, for this limitation here [43.G], Petitioner relies on the storage container being integrated with the atomizing chamber.

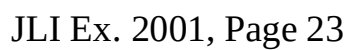
3. Cho's "integrated" embodiment is not enabled

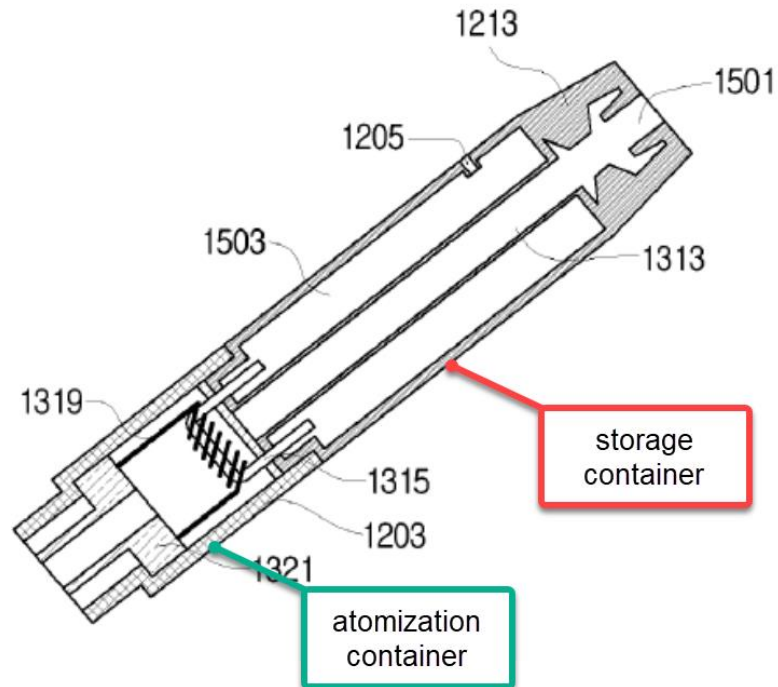
58. In my opinion, Cho's "integrated" embodiment does not inform a POSITA as to how to make and use the invention, and thus is not enabled. This is especially the case for Petitioner's modified figure.

59. Cho does not provide any explanation as to how "the atomization container and the storage container are molded into a mutually integrated structure." Ex. 1005, ¶74. Cho does not explain to a POSITA how the integrated structure would be constructed or formed, what it would look like, or what surfaces would be defined in the device. On this basis alone, it is my opinion, that there is no enablement of this integrated embodiment.

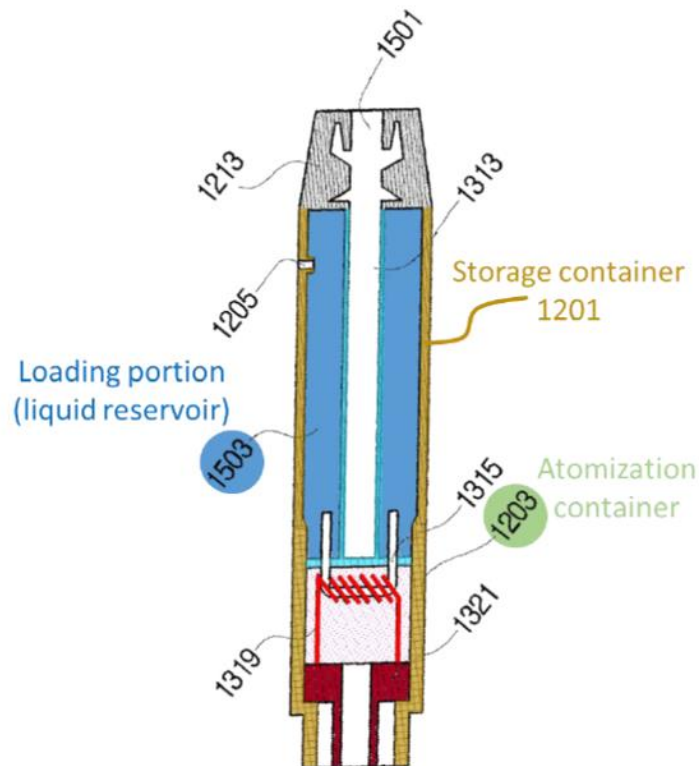
60. Moreover, looking at Petitioner's modified figure, there are additional issues making the structure impossible to make or use. Specifically, in Petitioner's modification, it is not possible to install the heating module, fixing plate, and inductors as described by Cho.

61. Cho describes that in the "separated" embodiment, the heating module, fixing plate and inductors are assembled together as shown in Figure 10, which I have annotated below. Ex. 1005, ¶88.



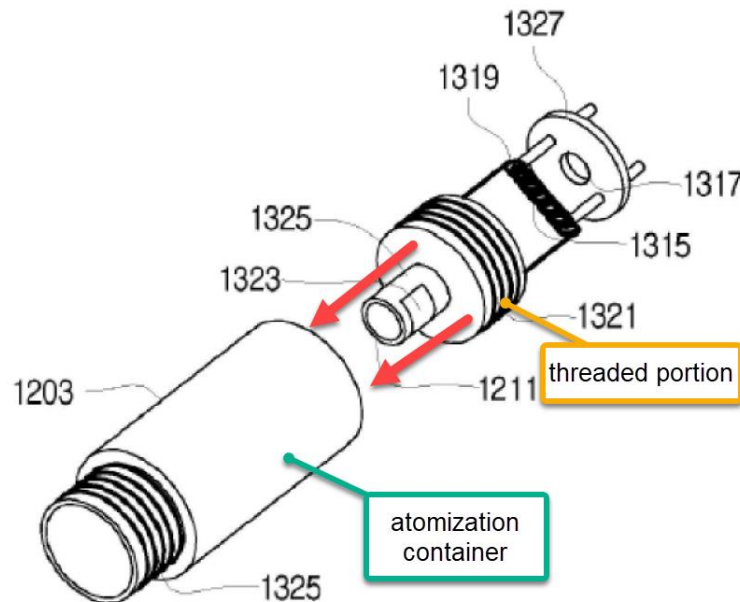


64. However, this process of assembly that Cho describes is impossible with Cho's "integrated" embodiment, especially in the example from Petitioner's modified Figure 11, reproduced below.



65. With the storage container and atomization container being “molded into a mutually integrated structure” (Ex. 1005, ¶74), it is not possible to insert the combined heating module, fixing plate, and inductors into the integrated structure. Indeed, in Petitioner’s modified figure, there is no fixing plate to which the inductors are fastened (the blue strip in the middle is instead the bottom of the loading portion containing the inductor insertion holes). Because the body is integrated and not separate components, there is no mechanism to insert the necessary elements into the integrated body, because the internal area where they must be placed is closed off. Similarly, it is not possible to screw the heating

module/inductor module structure into the inside of the atomization container (which again is closed off) as instructed by Cho. See Fig. 10.



66. Even assuming the fixing plate is manufactured as part of the integrated structure (which Cho does not disclose and which Petitioner does not propose), there is no mechanism to insert the inductors into it, or wind the heating module around the inductors, or fasten those elements to the atomizing chamber by screwing them in.

B. Cho does not disclose an “electronic cigarette” (claims 1 and 44)

67. In my opinion, Cho does not disclose an “electronic cigarette,” whose purpose is to atomize a nicotine-based liquid as a replacement for a tobacco cigarette. Instead, Cho describes what it calls a “vaporisation unit” or a “vaporisation and inhalation device” that is specifically and solely directed to vaporizing “a substance beneficial to the human body.” Ex. 1005, ¶¶1, 33

(referring to “the present invention”). There is no dispute that nicotine is not such a substance and, indeed, where Cho identifies exemplary substances for its vaporizer, it refers to mint, lavender, grapefruit, ginseng, and other similar health supplements—nowhere even hinting at nicotine. *Id.*, Abstract, ¶¶12, 15.

68. I note that the entire focus of Cho is on therapeutic substances, not nicotine. *Id.*, ¶¶57-61, 66 (listing therapeutic substances for various “therap[ies]”—none of which relate to or even suggest the use of nicotine). Cho states that the “object of the present invention is to provide a device for vaporisation and inhalation [of] highly viscous target substances ... such as ***amino acids, vitamins, and minerals***.” *Id.*, ¶8; see also ¶11 (“minerals, vitamins, and amino acids as target substances”). Table 1 of Cho lists various “substances to be vaporized belonging to a part of the ***present invention***,” and includes their effects, all of which are therapeutic, such as “concentration enhancement,” “memory enhancement, senile dementia,” “insomnia,” “bronchitis, asthma,” “indigestion,” “arthritis,” “acne,” “cystitis,” “constipation,” “enhancing sexual function,” “bad breath removal,” “oral ulcers,” “osteoporosis,” “cancer prevention,” and “nutrition.” *Id.*, ¶¶57-58. The provision of such therapeutic substances and benefits by Cho’s apparatus is the direct opposite of the ’114 patent’s claimed electronic cigarette—which is to “emulate a tobacco cigarette[.]” by providing

nicotine when “a liquid is atomized” “[r]ather than burning tobacco.” Ex. 1001, ¶¶1:19-24.

69. Thus, Cho consistently and exclusively refers to the use of health supplements and a POSITA would, thus, understand it does not disclose an electronic cigarette but instead discloses something entirely different.

V. GROUND 2 SAME REASONS AS ABOVE

70. Petitioner’s Ground 2 challenges claim 80, which depends on claim 43.

71. In my opinion, Petitioner’s Ground 2 also fails for the same reasons I discuss above. Petitioner’s Ground 2 relies on its analysis for Ground 1, and does not otherwise assert that any of the limitations in claim 43 are obvious.

VI. CONCLUSION

72. In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

73. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on the information and belief are believed to

be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed: May 28, 2024

/s/ John Collins

John Collins, Ph.D.