

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AROMA360, LLC,

Petitioner,

v.

AIR ESSSENTIALS, INC.,

Patent Owner.

Case IPR 2025-00706
U.S. Patent No. 10,583,449

PATENT OWNER'S
PRELIMINARY RESPONSE

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Patent Trial and Appeal Board
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I. INTRODUCTION

Pursuant to 35 U.S.C. § 313 and 37 C.F.R. § 42.107, Air Essentials, Inc. (“Patent Owner”), submits its Preliminary Response (“POPR”) in opposition to the Petition for *Inter Partes* Review of claims 1, 4, and 7-10 of U.S. Patent No. 10,583,449, filed by Aroma360, LLC (“Petitioner”) (the “Petition”). Petition (Paper 2). For reasons set forth herein, institution of *inter partes* review should be denied.

As will be demonstrated, the Petition is procedurally and substantively flawed. It fails to establish the threshold requirement of demonstrating a reasonable likelihood that Petitioner will prevail with respect to at least one challenged claim, as required under 35 U.S.C. § 314(a). Among other deficiencies, the Petition mischaracterizes key claim limitations of U.S. Patent No. 10,583,449 (the “’449 Patent”) and distorts the cited references in an effort to create the appearance that the alleged prior art discloses the invention in claims 1, 4, and 7-10 (the “challenged claims”). In reality, the cited prior art falls well short of teaching or suggesting the full scope of the challenged claims, and fails to demonstrate anticipation or obviousness under 35 U.S.C. §§ 102 and 103, warranting denial of institution under § 314(a). *See generally* 35 U.S.C. § 311(b).

II. RESPONSE TO GROUND 1

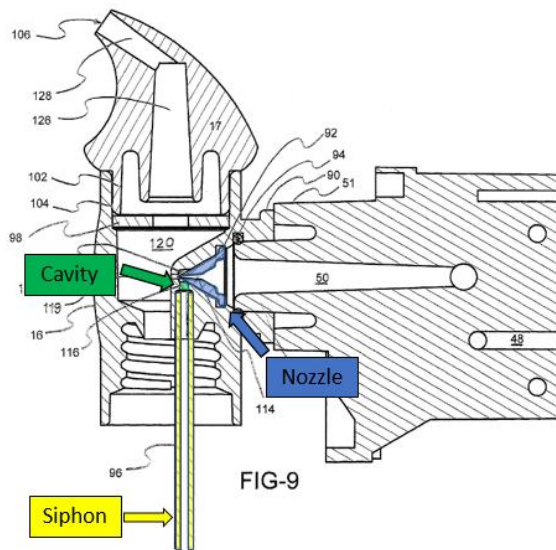
A. Claims 1 and 7

Petitioner's Ground 1 fails to establish that claims 1, 4, and 7–10 of U.S. Patent No. 10,583,449 ("the '449 Patent," Ex-1001) are obvious over U.S. Patent Publication No. 2010/0084484 ("Sevy," Ex-1009). See Paper 2, pages 19–36. Petitioner disaggregates Sevy's components and ascribes to them structural and functional attributes that Sevy neither discloses nor suggests. In reality, Sevy describes a conventional atomizer that produces a heterogeneous spray requiring downstream separation. Petitioner's reliance on Sevy is both factually and legally insufficient to support institution.

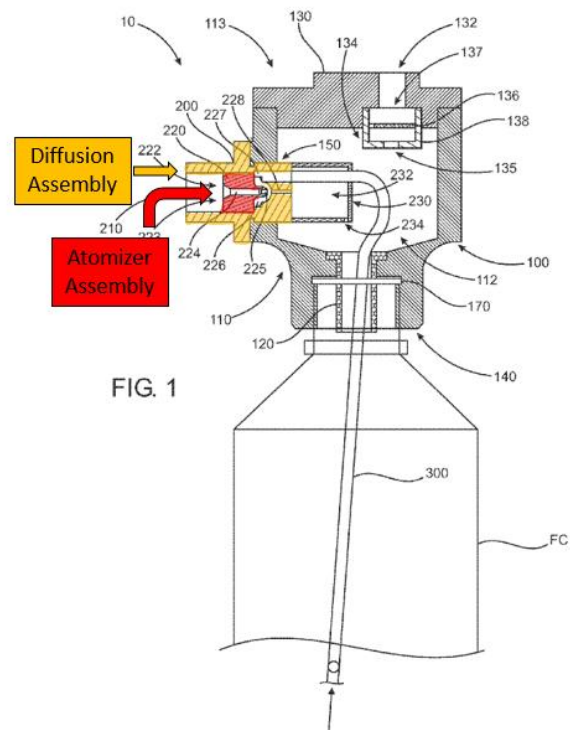
Petitioner argues that Sevy's nozzle (reference numeral 92), siphon (reference numeral 96), and cavity (reference numeral 116) correspond to the claimed diffusion assembly and atomizer assembly of the '449 Patent, recited as "a diffusion assembly disposed in operative engagement with said diffusion unit" and "wherein said diffusion assembly comprises an atomizer assembly." Paper 2, pages 23–24 (citing Ex-1009 ¶¶ 65–81). According to Petitioner, Sevy's nozzle 92 draws liquid through siphon 96 into cavity 116 where it is atomized into droplets before entering a separator chamber. Sevy itself states: "Nozzle 92 encloses a channel 114 leading from passage 50 toward an orifice 118 of the nozzle. When pressure is reduced in cavity 116, liquid is drawn up through siphon 96 and atomized at orifice 118." Ex-

1009 ¶¶ 77–81. Petitioner further cites Sevy’s acknowledgment that the droplets “further atomize into a cloud containing many more droplets of much smaller size.” Ex-1009 ¶ 67; Paper 2, page 16.

These disclosures confirm that Sevy does not teach or suggest the claimed integrated diffusion and atomizer assemblies. The ’449 Patent recites a diffusion assembly and atomizer assembly configured to generate a fluid dispersion within the diffusion chamber prior to discharge. See ’449 Patent (Ex-1001), claim 1, col. 9, lines 30–33; and claim 7, col. 9, lines 60–64. By contrast, Sevy produces a spray of non-uniform droplets and explicitly requires downstream separation. Sevy acknowledges that “droplets that cannot move with the air flow, typically because they have too large a size and mass, will strike the walls of the opening 100 or the separator plate 98.” Ex-1009 ¶ 69. Sevy further describes airflow that “recapture[s] and return[s] most [of] the droplets above [certain] sizes back into the reservoir.” Ex-1009 ¶ 74. The need for such post-formation correction demonstrates that Sevy’s components do not correspond to the claimed integrated diffusion and atomizer assemblies that generate a fluid dispersion within the diffusion chamber before discharge.



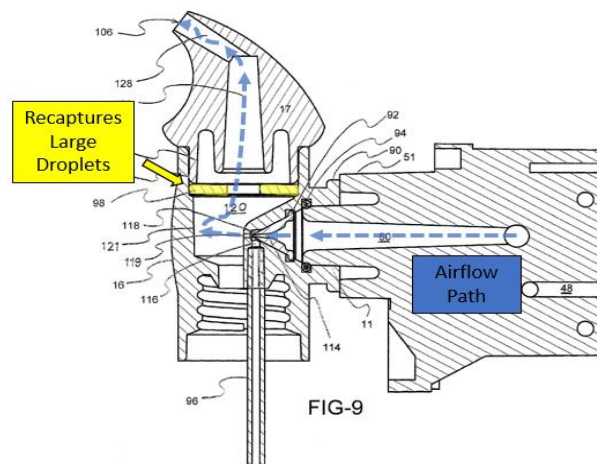
Ex-1009, Figure 9



Ex-1001, Figure 1

Petitioner also asserts that Sevy inherently teaches the claimed “fluid dispersion,” citing Sevy’s description that droplets striking the internal wall of atomizer 16 “further atomize into a cloud containing many more droplets of much smaller size.” Ex-1009 ¶ 67. Petitioner further relies on Sevy’s statement that “it would be an advance in the art to provide an atomizer that provides a better atomization or a smaller mean or average size of droplet in the distribution of atomized droplets.” Ex-1009 ¶ 9. However, Sevy explicitly acknowledges that its atomized spray contains oversized droplets requiring downstream separation. Ex-1009 ¶¶ 69–70. The claims of the ’449 Patent, by contrast, result in a structure that generates a fluid dispersion within the diffusion chamber, without post-atomization

correction. See '449 Patent (Ex-1001), col. 15, lines 53-57. Sevy's reference to "better atomization" and smaller mean droplet size does not equate to producing the claimed fluid dispersion, particularly because a smaller mean size does not imply uniformity. Sevy's own reliance on a separator plate downstream confirms its inability to produce an acceptable fluid dispersion within the diffusion chamber.



Ex-1009, Figure 9

B. Claims 4, 8-10

Dependent claims 4, 8, 9, and 10 all depend from claims 1 and 7 and incorporate their limitations. Petitioner fails to demonstrate that Sevy discloses an assembly in which compressed air and operative fluid are mixed in a mixing chamber to form the fluid dispersion as described by claim 8 (Ex-1001, col. 16, lines 15-21).

Petitioner's arguments reflect *post hoc* rationalization — disaggregating Sevy's components and ascribing to them purposes and configurations not disclosed in Sevy. See *Platronics, Inc. v. Aliph, Inc.* 724 F.3d 1343, 1755 (Fed. Cir. 2013)

(finding that a post hoc analysis of objective considerations related to obviousness as improper). Sevy's components are neither arranged nor configured as claimed, and Sevy explicitly acknowledges that its spray requires correction downstream of the diffusion chamber.

For these reasons, Petitioner has not established a reasonable likelihood of prevailing with respect to any of the challenged claims under Ground 1. Institution of *inter partes* review should therefore be denied.

III. RESPONSE TO GROUND 2

Petitioner's Ground 2 fails to demonstrate that claims 1, 4, and 7–10 of U.S. Patent No. 10,583,449 (“the ’449 Patent,” Ex-1001) are obvious over Sevy in view of Chinese Utility Model Patent No. 201832737 (“Gao”) [Ex-1013]. See Paper 2, Pages 38–41. Petitioner largely repeats its flawed arguments from Ground 1, asserting that Sevy discloses an atomizer assembly and diffusion chamber that produce the claimed fluid dispersion, and relying on Gao only to supply the “substantially uniform” droplet limitation. However, Sevy itself fails to disclose or suggest a substantially uniform fluid dispersion produced *within* the diffusion chamber prior to discharge.

Petitioner contends that Sevy's nozzle 92, siphon 96, cavity 116, and separator plate 98 correspond to the claimed “diffusion assembly disposed in operative engagement with said diffusion unit,” “wherein said diffusion assembly comprises

an atomizer assembly,” and that Sevy already produces droplets in the range of about 1–5 microns. Paper 2, pages 38–39 (citing Ex-1009 ¶¶ 65–81). According to Petitioner, Sevy’s nozzle 92 draws liquid through siphon 96 into cavity 116, where it is atomized at orifice 118 into fine droplets that circulate through the separator plate 98 before discharge. Sevy indeed describes: “Nozzle 92 encloses a ... channel 114 leading from passage 50 toward an orifice 118 of the nozzle.... When pressure is reduced in cavity 116, liquid is drawn up through siphon 96 and atomized at orifice 118.” Ex-1009 ¶¶ 77–81. Petitioner further cites Sevy’s statement that droplets striking the internal walls “further atomize into a cloud containing many more droplets of much smaller size.” Ex-1009 ¶ 67.

These disclosures reveal that Sevy produces a heterogeneous spray of droplets with a wide size distribution, requiring downstream correction. Sevy explicitly acknowledges that “droplets that cannot move with the air flow, typically because they have too large a size and mass, will strike the walls of the opening 100 or the separator plate 98.” Ex-1009 ¶ 69. Sevy further describes an airflow path designed to “recapture and return most [of] the droplets above [certain] sizes back into the reservoir.” Ex-1009 ¶ 74. The continued presence of oversized droplets and the reliance on downstream separation via separator plate 98 contradict the assertion that it can achieve a substantially uniform fluid dispersion *within* the diffusion chamber before discharge. See ’449 Patent (Ex-1001), claim 4, col. 15, lines 53–57 (“wherein

said diffusion chamber facilitates formation of the fluid dispersion prior to discharge of the fluid dispersion from said diffusion chamber and the container”).

Petitioner also points to Sevy’s discussion of droplet sizes in the 1–5 micron range and its acknowledgment that “it would be an advance in the art to provide an atomizer that provides a better atomization or a smaller mean or average size of droplet in the distribution of atomized droplets.” Ex-1009 ¶ 9. This admission undermines Petitioner’s position: Sevy itself concedes that further improvement in atomization and droplet uniformity would constitute an advance. A mean droplet size in the 1–5 micron range does not imply a substantially uniform distribution, nor does Sevy suggest that its device produces such a uniform dispersion without reliance on downstream correction mechanisms.

Sevy’s reliance on a downstream separator plate 98 to remove oversized droplets further demonstrates that the atomizer and diffusion chamber are not configured to produce the claimed fluid dispersion. Instead, Sevy’s atomizer produces a spray requiring additional post-formation correction to achieve an acceptable output — inconsistent with the integrated configuration and functionality required by the ’449 Patent claims.

Because Sevy fails to disclose a diffusion assembly and atomizer assembly integrated within the diffusion chamber that produce a properly conditioned, substantially uniform fluid dispersion before discharge, it cannot satisfy the claim

limitations. Petitioner therefore turns to Gao in an attempt to supply the missing “substantially uniform” limitation. However, as explained below, Gao does not cure Sevy’s deficiencies or disclose the claimed integrated configuration.

Accordingly, Petitioner relies on Gao to cure Sevy’s “[non]-disclos[ure of] its atomizer generat[ing] and discharge[ing] ‘substantially uniform droplets.’” However, Petitioner’s argument nevertheless fails to satisfy the threshold for obviousness, as Gao does not does not disclose or suggest the specific structural configuration set forth in independent claims 1 and 7 of the ‘449 Patent—namely, an atomizer exhaust aperture (which is part of the atomizer assembly and which, as described above, is not present within Sevy). Ex-1001, Claims 1, 7, Figure 6 (reference numeral 228”, not to be confused with the atomizer exhaust channel having reference numeral 228 throughout various other Figures within the ‘449 Patent); *see also Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1361 (Fed. Cir. 2011) (finding that the law has always evaluated the motivation to combine elements based on the combination of prior art references that together disclose all of the elements of the invention) (emphasis added); *see also Eli Lilly v. Zenith Goldine Pharms.*, 471 F.3d 1369, 1380 (Fed. Cir. 2006).

Rather than focusing on the distinct elements that the ‘449 Patent claims, Petitioner merely uses a distracting argument related to how “Gao teaches that its atomizer controls droplet discharge below 3 micros.” Paper 2, Page 38 (citing Ex-

1013, ¶25, 7 (“In this regard, ‘the atomized particles are finer and more uniform’”). Petitioner then goes on to explain how Gao functions, and how a POSITA might have been motivated to combine Sevy and Gao for purposes of droplet size control. Paper 2, Pages 39-42. However, these combinations bear no meaningful resemblance to the claimed structure and offer no indication that they are configured or would operate in the manner described by the ‘449 Patent. Because the claimed atomizer exhaust aperture is not disclosed in Sevy or Gao—nor was it inherently present or indisputably within the common knowledge of those skilled in the art—Petitioner has not met its burden under 35 U.S.C. § 314(a) to show a reasonable likelihood of prevailing on Ground 2. Along these lines, argument Petitioner makes related to claims which depend on claims 1 or 7 of the ‘449 Patent cannot likewise be considered obvious. *See Ortho McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008). Accordingly, institution of *inter partes* review based on Ground 2 should be denied.

IV. RESPONSE TO GROUND 3

Petitioner’s Ground 3 fails to establish that claims 1, 4, and 7–10 of U.S. Patent No. 10,583,449 (“the ‘449 Patent,” Ex-1001) would have been obvious over French Patent Publication No. 2886160 (“Goubet”) [Ex-1016]. *See* Paper 2, Pages 42–58. Petitioner asserts that Goubet’s diffuser head allegedly teaches or suggests the claimed diffusion unit, diffusion chamber, diffusion assembly, atomizer

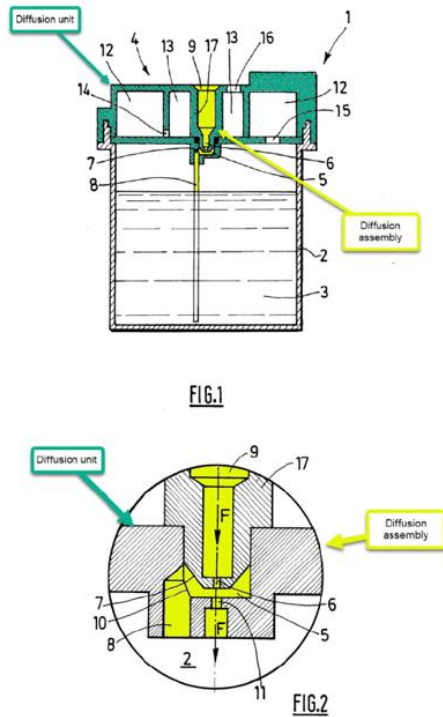
assembly, and fluid dispersion. According to Petitioner, Goubet's structure—with its venturi cone, vaporization means, baffles, and tortuous path—generates the claimed dispersion and satisfies the structural and functional requirements of the claims. These assertions mischaracterize Goubet's disclosures, ignore the explicit claim language, and fail to establish that Goubet teaches the integrated components recited in the '449 Patent.

Petitioner identifies Goubet's diffuser head (reference numeral 4, which comprises venturi cone 7, vaporization means 12/13/14, and diffusion chamber 5 bounded by baffles, as allegedly corresponding to the claimed diffusion assembly and atomizer assembly. See Paper 2, Pages 45–46. Petitioner cites Goubet's description that compressed air enters the diffuser head, draws liquid into the diffusion chamber, and mixes with the liquid to create droplets that are carried along a tortuous path imposed by baffles, where the droplets are progressively broken into microdroplets before being discharged into the surrounding air. Ex-1016, Page 6. Petitioner argues that this structure facilitates atomization of liquid and dispersion of fine droplets into the environment, allegedly meeting the requirements of a diffusion assembly and atomizer assembly disposed in operative engagement. Paper 2, Pages 45–46.

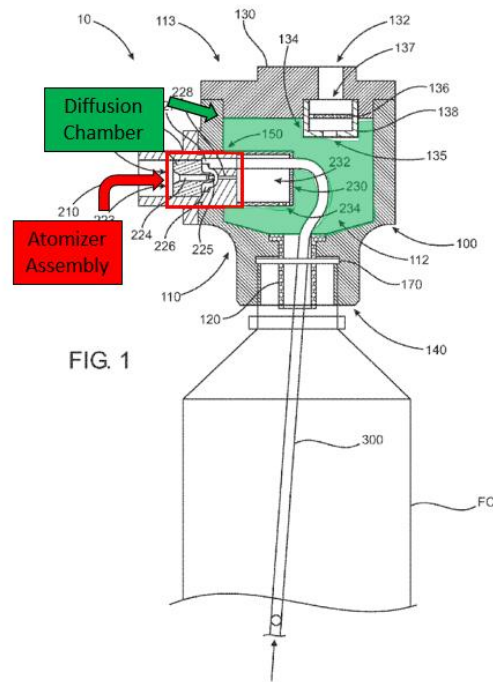
However, this interpretation misrepresents both Goubet's structure and function. Goubet's vaporization means is described as “two concentric circular

enclosures which define a passage that constitutes the baffle” [Ex-1016, Page 6], creating a tortuous path that forces the atomized air–liquid mixture to circulate before discharge. The tortuous path is presented as improving vaporization and controlling the diffusion of droplets, but only passively, and without generating a fluid dispersion within a dedicated diffusion chamber prior to discharge, as explicitly required by the ’449 Patent.

The ’449 Patent, by contrast, requires an atomizer assembly disposed in operative engagement with the diffusion chamber, with defined components — atomizer air inlet, fluid inlet, mixing chamber, and atomizer exhaust aperture — configured to generate a fluid dispersion within the diffusion chamber. *See* Ex-1001, claim 1, Col. 15, Lines 24–45; and claim 7, Col. 7, Lines 66-67 and col. 8, lines 1-15. Goubet describes a system in which droplets travel through a tortuous path to reduce their size “as much as possible” and then discharge into the ambient air — but Goubet does not teach or suggest the claimed active generation of a fluid dispersion within the diffusion chamber prior to discharge.



Ex-1016 Figures 1 and 2



Ex-1001 Figure 1

Petitioner’s suggestion that Goubet’s baffles inherently achieve the claimed fluid dispersion is not supported by Goubet’s disclosures. Goubet acknowledges that the droplets’ size is reduced “as much as possible” during the tortuous path and only “controlled” at discharge — reflecting a passive, downstream correction that contrasts sharply with the claimed invention’s active formation of the fluid dispersion within the diffusion chamber.

Further, Petitioner does not show that Goubet discloses or suggests an atomizer assembly having an atomizer air inlet channel, fluid inlet, mixing chamber, and an atomizer exhaust aperture disposed in operative engagement diffusion chamber and configured to generate the claimed fluid dispersion. Claims 1 and 8

explicitly recite these features: claim 1 describes an atomizer assembly comprising an air inlet channel, fluid inlet, mixing chamber, and exhaust aperture (Ex-1001, Col. 15, Lines 37-39); and claim 8 requires compressed air and operative fluid to mix in the mixing chamber to form the fluid dispersion (Ex-1001, Col. 16, Lines 22-26). Goubet does not disclose or suggest such an assembly or mixing process; its description of a venturi cone and baffles performing passive vaporization falls short of the claimed structure and operation.

Petitioner's argument relies on disaggregating Goubet's components and ascribing to them purposes and configurations that Goubet neither teaches nor suggests. Goubet's components are not integrated in the manner claimed, and its description of passive recirculation within a tortuous path fundamentally differs from the claimed configuration of an atomizer assembly integrated within the diffusion chamber to actively produce a properly conditioned fluid dispersion.

For these reasons, Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to any of the challenged claims under Ground 3. Institution of *inter partes* review should therefore be denied.

V. RESPONSE TO GROUND 4

Petitioner asserts that claims 1, 4, and 7–10 of the '449 Patent (Ex-1001) are unpatentable under 35 U.S.C. § 103 as obvious over French Patent Publication No. 2886160 ("Goubet," Ex-1016) in view of Sebastian Kaiser et al.,

The Electrospray and Combustion at the Mesoscale, 51 J. Mass Spectrom. Soc. Jpn. 42–49 (2003) (“Kaiser”). See Paper 2, Pages 58–60. Petitioner contends that Goubet teaches the claimed diffusion unit, diffusion assembly, atomizer assembly, and properly conditioned fluid dispersion, and that Kaiser allegedly supplies any remaining limitations. See Paper 2, Page 58-60. As explained below, Petitioner’s reliance on Goubet mischaracterizes its disclosures, disregards key differences between Goubet’s structure and the claimed invention, and fails to demonstrate that Goubet teaches or suggests the integrated components recited in the challenged claims.

Petitioner identifies Goubet’s diffuser head (reference numeral 4), comprising venturi cone (reference numeral 7), vaporization means (reference numerals 12, 13, 14), and diffusion chamber (reference numeral 5), as allegedly corresponding to the claimed diffusion unit, diffusion assembly, and atomizer assembly. See Paper 2, Pages 66–67. In support, Petitioner cites Goubet’s description that compressed air enters the diffuser head, draws liquid into the diffusion chamber, and mixes with the liquid to create droplets that are carried along a tortuous path imposed by baffles, where the droplets are progressively broken into microdroplets before being discharged into the surrounding air. Ex-1016, Page 6. Petitioner argues that the baffles atomize the liquid and facilitate dispersion, allegedly satisfying the claim elements requiring “a diffusion assembly disposed in

operative engagement with said diffusion unit” and “wherein said diffusion assembly comprises an atomizer assembly.”

This interpretation mischaracterizes Goubet. Goubet describes its vaporization means as “consisting of two concentric circular enclosures which define a passage that constitutes the baffle.” Ex-1016, Page 6. The baffle creates a tortuous path, forcing the atomized air–liquid mixture to circulate through the diffuser head before it exits into the environment. *Id.* Goubet explains that this arrangement is intended to “reduce [droplet] size as much as possible and subsequently control their diffusion into the ambient air.” Ex-1016, Page 5, lines 12-15. These statements reveal that Goubet relies on the baffles to passively reduce droplet size and control diffusion during discharge, not to generate a properly conditioned fluid dispersion within the diffusion chamber prior to discharge, as described by the claims. By contrast, the ’449 Patent claims describe an active atomizer assembly integrated into a diffusion assembly, configured to generate a properly conditioned fluid dispersion within the chamber before discharge. Ex-1001, Col. 15, Lines 35-36; 53-57.

Specifically, the ’449 Patent claims a diffusion assembly comprising an atomizer assembly that generates the fluid dispersion within the diffusion chamber, operatively engaged with the diffusion unit, and producing the dispersion before it exits the unit. Goubet, however, explicitly describes its device as reducing droplet

size “as much as possible” by forcing the mist through a tortuous path during and after discharge — a fundamentally different mechanism. The claimed invention achieves a controlled, properly conditioned fluid dispersion within the diffusion chamber itself, without relying on downstream paths or baffles to passively correct the spray.

Additionally, Petitioner’s assertion that the vaporization means (reference numerals 12, 13, 14) and baffles disclosed in Goubet satisfy the claimed integration of diffusion and atomizer assemblies ignores the structural and functional integration recited in the claims. Goubet’s vaporization means and baffles act to constrain and guide the mist after atomization has occurred, relying on the confined tortuous path to improve uniformity during discharge. In contrast, the claimed invention integrates the atomizing and diffusing functions to create the desired fluid dispersion before it is discharged.

Dependent claims 4, 8, 9, and 10, which depend from claims 1 and 7 and incorporate their limitations, also remain unsupported by Goubet. Petitioner fails to demonstrate that Goubet discloses an atomizer assembly comprising an atomizer air inlet channel, fluid inlet, mixing chamber, and atomizer exhaust channel, as recited in claim 8 (Ex-1001, col. 16, lines 16–21), or an assembly in which compressed air and operative fluid are mixed in a mixing chamber to form the fluid dispersion, as described by claim 9. Ex-1001, col. 9, lines 22–26. With respect to claim 10,

Petitioner likewise fails to show that Goubet teaches a diffusion chamber that facilitates formation of the fluid dispersion within the chamber itself before discharge, as recited therein. Ex-1001, col. 16, lines 27–29.

For these reasons, Goubet fails to disclose or suggest the claimed diffusion unit, integrated diffusion and atomizer assemblies, or a properly conditioned fluid dispersion formed within the diffusion chamber prior to discharge. Petitioner’s arguments rest on an overreading of Goubet’s disclosures, conflating its baffles’ passive guiding and reducing effects with the claimed active, integrated structure and functionality. As the Petition itself acknowledges, it therefore turns to Kaiser to allegedly supply the missing limitations. As explained in the next section, Kaiser does not remedy these deficiencies or teach the claimed features.

Accordingly, while Petitioner contends that “Goubet alone renders obvious claims 1, 4, and 7-10” [Paper 2, Page 58], Petitioner nevertheless notes Goubet’s deficiencies in that “Goubet does not explicitly disclose that its microdroplets are ‘substantially uniform’ in diameter.” Paper 2, Page 47. For this reason, Petitioner attempts to rely on Kaiser, to argue that “it was well known in the field at the time of the invention that droplets of greater uniformity result in uniform droplet evaporation.” Paper 2, Page 47 (citing Ex-1014, pg. 43 (“critical to uniform evaporation and burning is a good control of the size distribution of the resulting aerosol.”)). A close reading of Kaiser reveals that the reference is a Yale research

paper on electrospray injection for mesoscale combustion systems, where a high-voltage electric field is used to disperse liquid fuel into fine, charged droplets via a “cone-jet” mode. These droplets are directed into a compact catalytic combustor, enabling clean, efficient combustion with minimal emissions. The system is designed for small-scale power generation—such as micro-turbines or portable energy devices—and showcases how precise droplet control can improve fuel-air mixing, evaporation, and thermal efficiency in confined environments.

Therefore, Petitioner concludes its argument by noting that “[i]f...Goubet does not teach a ‘fluid dispersion,’ (*e.g.*, substantially uniform droplets) as presently configured, a POSITA would have been motivated to modify Goubet to include additional enclosures to further reduce the size (diameter) of the droplets for the reasons described above [in Goubet]. A POSITA would have been motivated to add the additional enclosures in view of Kaiser’s teaching that uniform droplets result in uniform evaporation, which, in turn, would improve the smoothness (*i.e.* less harsh) of the aroma generated as the oil droplets evaporate in the surrounding airspace.” Paper 2, Pages 58-59.

However, Patent Owner contends that a person of ordinary skill in the art (POSITA) would not have been motivated to combine Goubet and Kaiser because the references are directed to fundamentally different problems in distinct technical domains—namely, scent dispersion in consumer enclosures versus combustion

dynamics in mesoscale power generation. Under *Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882 (Fed. Cir. 2024), it is not enough that two systems were merely “known”; there must be a reason a skilled artisan would have made the specific substitution or combination. *Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 886-87 (Fed. Cir. 2024). Here, Petitioner fails to articulate any reason—let alone one grounded in design need, technical compatibility, or market demand—that would have led a POSITA to look to high-voltage electrospray injection designed for fuel atomization in a catalytic combustor as a modification to Goubet’s essential oil diffuser. Ex-1014; Ex-1016. Further, Petitioner’s reliance on the Declaration of Christopher White, Ph.D [Ex-1002] is nonetheless persuasive. A close reading of the exhibit does not articulate a cognizable **reason** why a skilled artisan or POSITA would have made the combination of Goubet and Kaiser. See *Virtek Vision Int’l UCL*, 97 F.4th 882,886-87 (Fed. Cir. 2024) (finding it is not enough that two systems were merely “known,” and there must be a **reason** a skilled artisan would have made a specific substitution or combination) (emphasis added).

Moreover, as *Palo Alto Networks, Inc. v. Centripetal Networks, LLC*, 122 F.4th 1378 (Fed. Cir. 2024), makes clear, it is legal error for the Board—or a Petitioner—to rely on isolated disclosures in the references without bridging the rationale for their integration in a way that satisfies the claimed limitations. See *Palo Alto Networks, Inc. v. Centripetal Networks, LLC*, 122 F.4th 1378, 1384-86 (Fed.

Cir. 2024). Petitioner’s assertion that a POSITA “would have modified Goubet” in view of Kaiser is precisely the kind of conclusory, unsupported combination that fails under *Palo Alto Networks* and *Virtek*. Without a clear articulation of why the combination would have been made—the Petition lacks the “necessary bridge” to establish obviousness under § 103. *Id.*

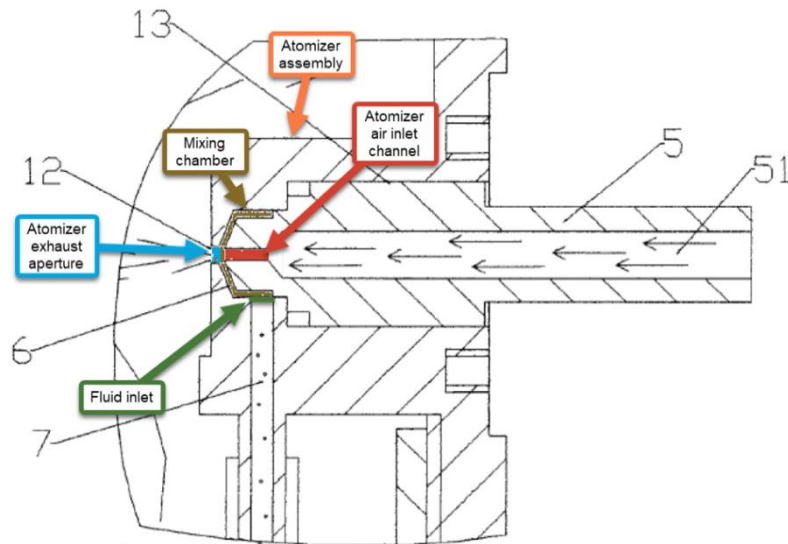
VI. RESPONSE TO GROUND 5

A. Claim 1

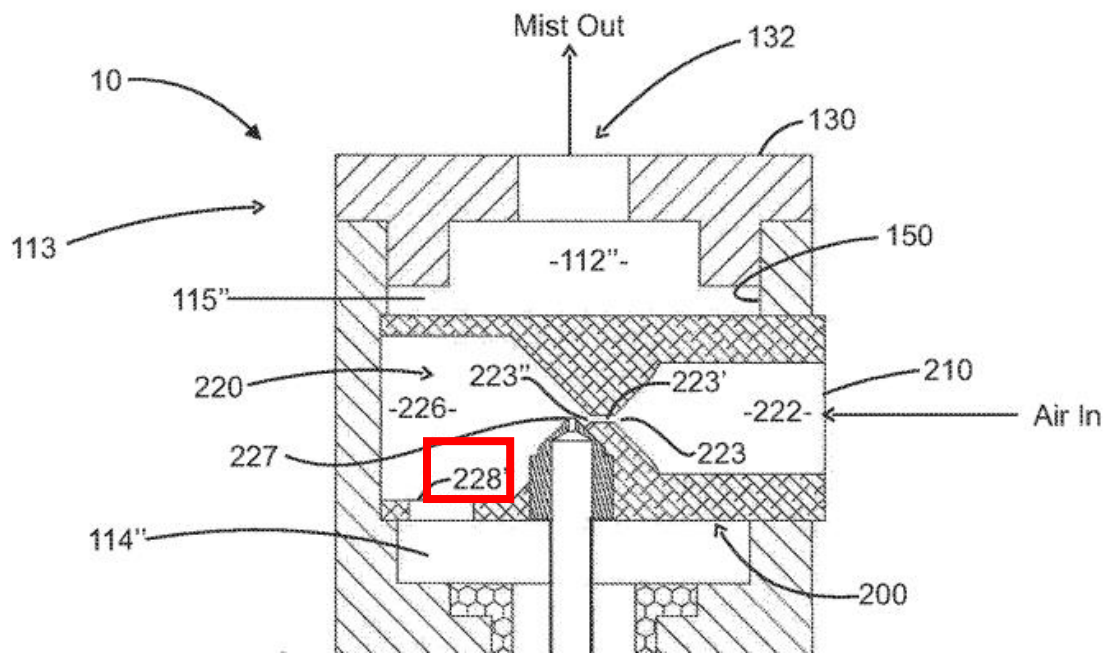
Under Ground 5 of the Petition (Paper 2, Pages 60-72), Petitioner improperly contends that Chinese Utility Model Patent No. 201832737 (“Gao”) renders the challenged claims obvious under 35 U.S.C. § 103, drawing an overreaching and inaccurate parallel between what Gao discloses and what the challenged claims of the ’094 Patent stand for.

With respect to clause [D], Petitioner attempts to equate a “gas flow spray hole 12” of Gao [Ex-1013, ¶19, Figure 2] or the point immediately after which air and essential oil is mixed, to the ’449 Patent’s atomizer exhaust **aperture** (reference numeral 228”).

A brief review of the Figures should provide a fundamental understanding of the difference between the ’449 Patent’s atomizer exhaust aperture (reference numeral 228”) and Gao’s “gas flow spray hole 12” (Figure 2 of Gao [Ex-1013]).



Paper 2, Page 69, with Petitioner's labeling of the gas flow spray hole as the "Atomizer exhaust aperture" Gao's Figure 2 [Ex-1013]



Ex-1001, Figure 2, the red box highlighting reference numeral 228", the atomizer exhaust **aperture**

Gao is entirely silent on a structure other than a plain opening in parallel orientation to airflow that allows a fluid or fluid dispersion to eject from a “mixing chamber.” The atomizer exhaust aperture (reference numeral 228”) is clearly shown in Figure 6 to be at a distinct orientation in relation to the path of airflow that allows from the creation of a fluid or fluid dispersion. Ex-1013. Moreover, this distinct orientation allows for a mixing chamber 226 that is distinguishable from Gao, as well as how a fluid dispersion is produced via components of the atomizer assembly, leveraging fluid dynamics that Gao does not provide for.

“The atomizer air inlet channel 222 includes an inlet aperture 223 and an outlet aperture 223”, as may be seen in FIG. 6. ... [T]he inlet aperture 223 and outlet aperture 223” are substantially equal in diameter, and is the channel 223’ disposed therebetween. Further the mixing chamber 226 comprises a fluid inlet 227 disposed in fluid communication with an operative fluid in the fluid container via a fluid delivery tube 300... [t]he fluid inlet tube is substantially perpendicular to a compressed air flowpath through the atomizer assembly 200. More in particular, and with reference to FIG. 6, the compressed air flowpath extends horizontally through the air inlet 210, atomizer air inlet channel 222, inlet aperture 223, channel 223’, and outlet aperture 223”, into mixing chamber 223, and out through the atomizer exhaust aperture.”
Ex-1001, Col. 10, Lines 31-48.

Accordingly, even if one were to concede that Gao’s spray hole could be analogized to an exhaust channel, such an analogy fails to extend to an aperture as specifically claimed. And to assume otherwise would impermissibly blur critical structural distinctions that are clearly defined in the ’449 Patent and recited with specificity in claim 1, clause [D].

Here again, Petitioner relies on a flawed interpretation of Gao that fails to appreciate these distinctions, it does not—and cannot—establish that Gao renders clause [D] of claim 1 obvious. Instead, it reflects precisely the type of improper reasoning the Federal Circuit has repeatedly cautioned against. *See e.g. Topliff v. Topliff*, 145 U.S. 156, 161 (1892) (noting that a prior art reference is not an anticipation “if it were not designed by its maker, nor adapted, nor actually used, for the performance of such functions”); *Par Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1195–96 (Fed. Cir. 2014) (inherency requires that the limitation be necessarily present or a natural result of the prior art combination).

Therefore, Petitioner’s attempt to rely on Gao to meet clause [D] of claim 1 must fail, and institution of *inter partes* review should be denied on this ground as well.

B. Claim 4

Having failed to establish a reasonable likelihood of prevailing on independent claim 1, as described above, Petitioner’s obviousness challenge to dependent claim 4 under Ground 5 in light of Gao fails as well. Claim 4 depends directly from claim 1, and therefore necessitates the full limitations of claim 1.

Because Petitioner has not shown that Gao teaches or suggests the full combination of elements described by claim 1, Gao necessarily cannot render obvious any dependent claim that incorporates those limitations by reference. *Ortho-*

McNeil Pharm., Inc. v. Mylan Labs., Inc., 520 F.3d 1358, 1365 (Fed. Cir. 2008) (“if [an independent claim] is not obvious then [claims which depend on the independent claim] also cannot be obvious because they all depend from a nonobvious claim); *see also In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.”).

For these reasons, institution of an *inter partes* review under Ground 5 should also be denied with respect to claim 4.

C. Claims 7-10

In challenging independent claim 7, Petitioner asserts that there are no material differences between portions of claim 1, and offers no distinct arguments beyond the blanket assertion that “for the same reasons discussed in this Ground 5 with respect to claim limitations 1[PRE]-[D], Gao teaches all the limitations of claim 7.” Accordingly, Patent Owner reiterates that, for the reasons set forth above (other than those that describe claim 1 clause [A], which delineates that the diffusion unit defines an **enclosed** diffusion chamber whereas claim 7 does not call for an **enclosed** diffusion chamber), Gao does not render claim 1 obvious and, therefore, cannot render claim 7 obvious. As such, institution of *inter partes* review under Ground 5 should likewise be denied with respect to claim 7. Similarly, in challenging dependent claims 8-9, Petitioner contends there are no material differences between those claims and portions of claims 1 and 4 and raises no new arguments in

challenging claims 8-9. That said, in challenging dependent claim 10, having failed to establish a reasonable likelihood of prevailing on independent claim 5, as described above, Petitioner's obviousness challenge to dependent claim 10 under Ground 5 in light of Gao fails as well. *See Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008). Claim 10 depends directly from claim 7, and therefore necessitates the full limitations of claim 7. Accordingly, institution of *inter partes* review under Ground 5 should also be denied with respect to claims 7–10.

VII. CONCLUSION

In view of the foregoing, the Petition fails to meet the threshold requirement of demonstrating a reasonable likelihood that Petitioner would prevail with respect to at least one challenged claim, as required under 35 U.S.C. § 314(a). That said, should the Office institute this proceeding, Patent Owner expressly reserves the right to supplement these arguments and present additional positions as necessary, and nothing herein should be considered limiting. Accordingly, Patent Owner respectfully requests that the Petition be denied and that *inter partes* review not be instituted.

CERTIFICATE OF COMPLIANCE WITH WORD COUNT LIMIT

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that this Patent Owner Preliminary Response (the “POPR”) contains 5167, excluding the parts of the POPR exempted by 37 C.F.R. § 42.24(a)(1), as determined by the word count function of the word-processing program used to prepare this document.

Dated: July 14, 2025

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of Patent Owner's Preliminary Response (the "POPR") has been served in its entirety on July 14, 2025, by causing the POPR and accompany documents (if any) to be electronically mailed to the following attorneys of record for the Petitioner:

Dated: July 14, 2025

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