

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AROMA360, LLC,

Petitioner,

v.

AIR ESSSENTIALS, INC.,

Patent Owner.

Case IPR 2025-00705
U.S. Patent No. 9,527,094

PATENT OWNER'S
PRELIMINARY RESPONSE

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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 (hereinafter, the “Petition”) of claims 7-9 and 11 of U.S. Patent No. 9,527,094, filed by Aroma360, LLC (“Petitioner”). Paper 2. For the 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. 9,527,094 (the “’094 Patent”) and distorts the cited references in an effort to create the appearance that the alleged prior art discloses the invention in claims 7-9 and 11 (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

Petitioner’s Ground 1 fails to establish that claims 7–9 and 11 of the ‘094 Patent are obvious in view of U.S. Patent Publication 2010/0084484 (hereinafter, “Sevy”). Paper 2, Pages 19-36. In making its arguments, Petitioner improperly disaggregates elements of the reference and synthetically labels it with structural and functional characteristics that Sevy neither discloses nor suggests. Sevy’s disclosure reflects a conventional atomizer that produces a heterogeneous spray requiring downstream separation, with no indication of a silencer assembly or an integrated configuration capable of producing a fluid dispersion prior to discharge—as is described in claim 7 of the ‘094 Patent. As explained below, Petitioner’s reliance on Sevy is legally and factually insufficient to support institution of *inter partes* review.

A. Claim 7

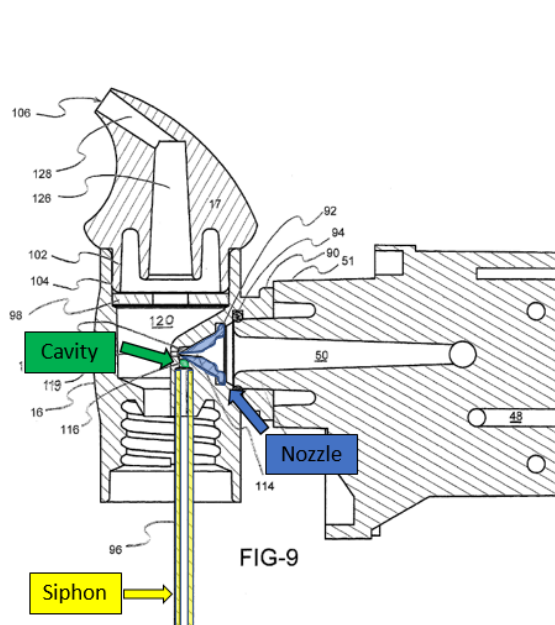
Petitioner asserts that Sevy’s nozzle (reference numeral 92), siphon (reference numeral 96), and cavity (reference numeral 116) satisfy clauses [C] and [D] of claim 7 of the ‘094 Patent reciting “a diffusion assembly disposed in an operative engagement with said diffusion unit” and “wherein said diffusion 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 the separator chamber. But, in reality, Sevy provides that “[n]ozzle 92 encloses a channel 114 leading from

passage 50 toward an orifice 118 of the nozzle . . . [and] [w]hen 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.

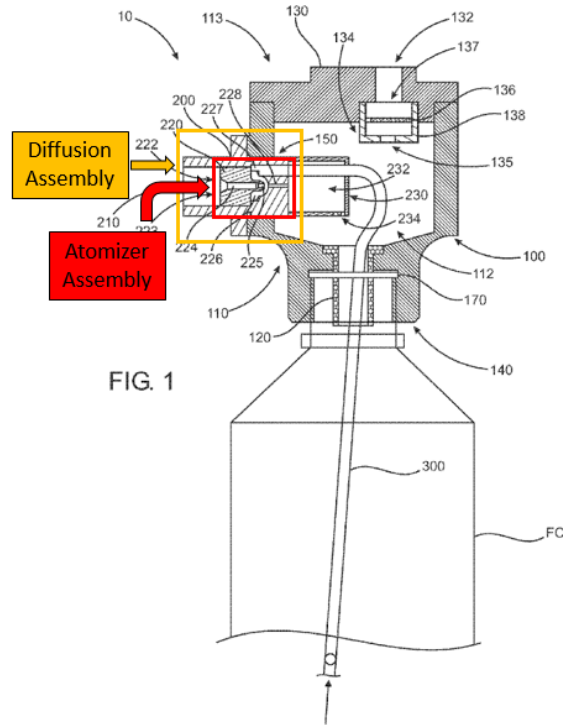
Accordingly, these disclosures reveal that Sevy does not disclose the claimed integrated diffusion and atomizer assemblies. Ex-1001, Claim 7. The ‘094 Patent’s claims and specification are clear in reciting a “diffusion assembly disposed in operative engagement with said diffusion unit” where the diffusion assembly comprises an atomizer assembly. Ex-1001, Claim 7, Col. 9, Lines 30–33; and Claim 11, Col. 9, Lines, 60–64.

Sevy, by contrast, produces a spray of non-uniform droplets that 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 airflows that “recapture and return 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, nor do they generate a fluid dispersion within the diffusion chamber prior to discharge. The below can be used for a brief

visual reference highlighting some of these distinctions (with annotations added) between the '094 Patent and Sevy.



Ex-1009, Figure 9



Ex-1001, Figure 1

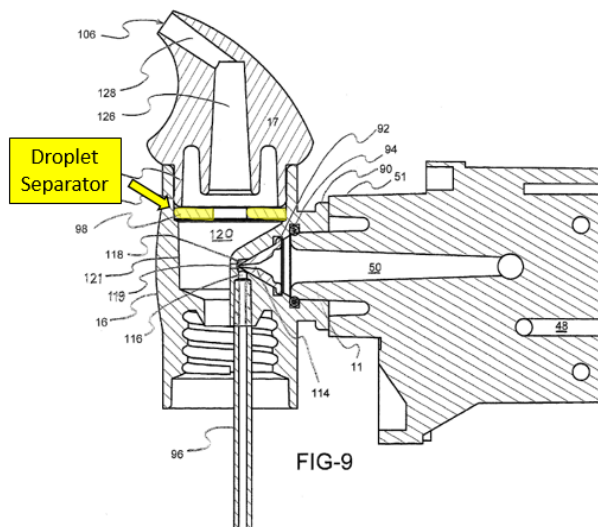
Petitioner's argument that Sevy's separator plate 98 corresponds to the claimed baffle within a silencer assembly likewise fails. Petitioner essentially contends that Sevy's separator plate 98 constitutes the "baffle" of "a silencer assembly having a silencer inlet, a silencer outlet, and a baffle," as recited in the claim, because it disrupts airflow and would inherently reduce noise. Paper 2, Pages 26–30 (citing Ex-1009, ¶¶ 68-70). In reality, Sevy's separator plate 98 is described as follows: "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 does not mention or suggest that the separator plate 98 was intended or configured to dampen sound. Nor does Sevy describe any structure resembling a silencer assembly or silencer chamber configured to attenuate noise.

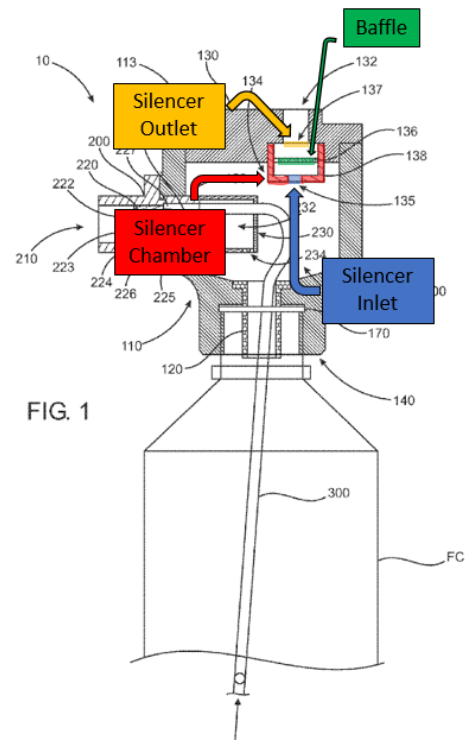
Oppositely, the ‘094 Patent describes a dedicated silencer assembly distinct from the diffusion chamber, including a silencer inlet 135, baffle 136, and silencer outlet 137, configured to reduce noise during operation. Ex-1001, Col. 7, Line 49 through Col. 8, Line 4. While Petitioner relies on the stipulated construction of “baffle” [seen in Ex-1018, Exhibit A] as “a structure that disrupts the flow of fluid dispersion through the fluid dispersion assembly,” for purposes of evaluating Sevy in light of the ‘094 Patent, it would be inappropriate to disregard the structural and functional context of the baffle as part of the silencer assembly specifically configured to dampen sound waves. Ex-1001, Col. 7, Line 49 through Col. 8, Line 4.

Accordingly, Petitioner’s argument is a threadbare reliance on inherency that should be considered legally misplaced. The Federal Circuit has made clear that inherency requires that the limitation is necessarily present in the prior art, not merely possible or incidental. See *Par Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1195–96 (Fed. Cir. 2014). Sevy’s disclosures show no recognition of noise attenuation, and its separator plate is explicitly characterized as a droplet

separator—not as a component of a silencer assembly. *See also* Ex-1009, ¶ 070 (noting only that “finely divided droplets form a cloud moving with the flow of air out of the opening 100 ... through the apertures 99 of the separator plate 98”). Accordingly, the argument that the separator plate inherently functions as part of a silencer assembly goes no further than describing a component that can possibly or incidentally act as a component found in the ‘094 Patent as claimed, but is **not** supported by Sevy’s disclosures and cannot sustain Petitioner’s burden of a reasonable likelihood of prevailing with respect to claim 7. Below is an illustration of marked-up references of structures described herein.

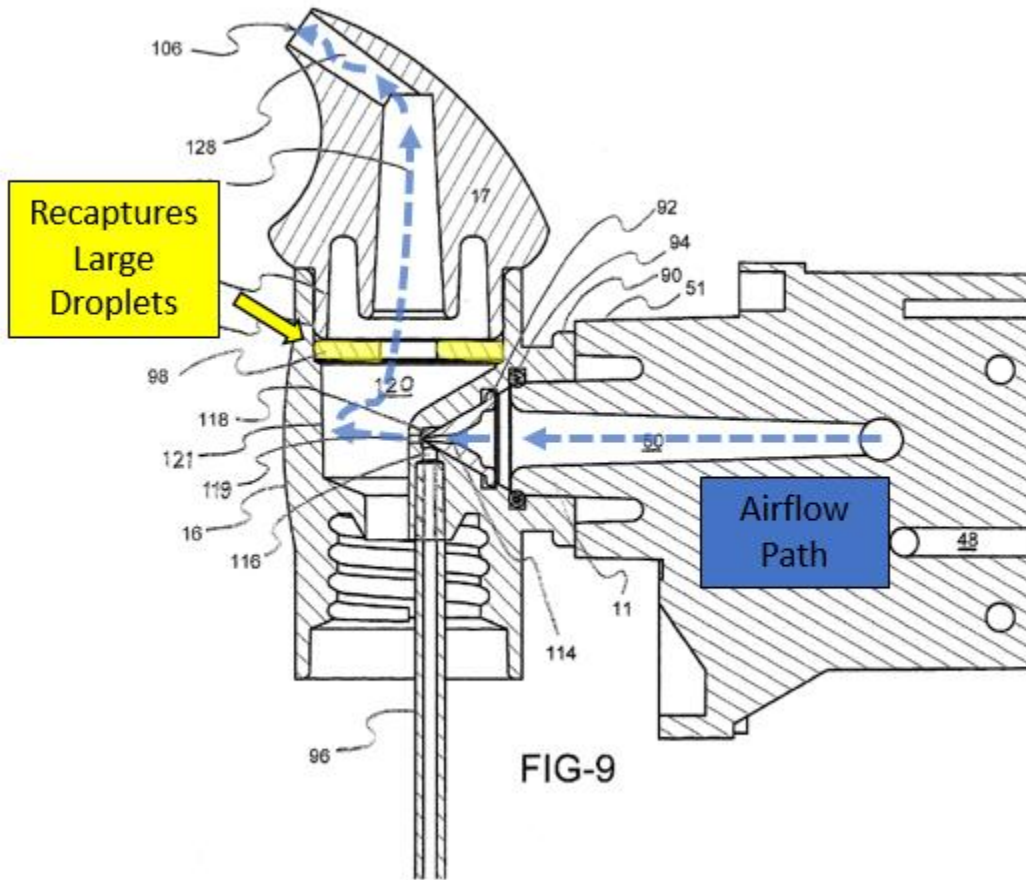


Ex-1009, Figure 9



Ex-1001, Figure 1

Moreover, Petitioner argues that Sevy inherently teaches the claimed “fluid dispersion,” despite Sevy neither using this term nor disclosing droplets having properties similar to what the ‘094 Patent describes as a fluid dispersion. Paper 2, Page 16, citing Ex-1009, ¶¶ 9, 67. Petitioner notes that Sevy describes 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 also cites Sevy’s 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. However, Sevy explicitly acknowledges that its atomized spray still contains oversized droplets requiring downstream separation. Ex-1009, ¶¶ 69, 70. The claimed invention, by contrast, is configured to generate a fluid dispersion suitable for discharge, within the diffusion chamber, without reliance on post-atomization correction. Ex-1001, Col. 9, Lines 60–64. Sevy’s discussion of “better atomization” and smaller mean droplet size does not equate to producing the claimed fluid dispersion, rather, it serves to indicate the ‘094 Patent, as claimed, is not obvious in view of Sevy.



Ex-1009, Figure 9, Illustrating the flow of the “mixture of air and droplets” in ¶ 9

B. Claims 8, 9, and 11

With respect to dependent claims 8, 9, and 11 of the ‘094 Patent, the claims rely on and incorporate the limitations of claim 7. Accordingly, because Petitioner has failed to show that Sevy teaches or suggests claim 7, its arguments as to the dependent claims should also fail. *See Ortho McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008).

Regardless, Petitioner fails to demonstrate that Sevy 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. 9, Lines 47–54. Petitioner likewise does not establish that Sevy discloses an assembly in which air and operative fluid are mixed in a mixing chamber to form a fluid dispersion, as mentioned in claim 9. Ex-1001, Col. 9, Lines 49–54. With respect to claim 11, Petitioner’s assertion that Sevy teaches a diffusion chamber facilitating formation of the fluid dispersion before discharge is contradicted by Sevy’s explicit reliance on a separator plate, downstream of the alleged diffusion chamber, for droplet correction. Ex-1001, Col. 9, Lines 60–64.

As such, Petitioner’s arguments depend on nothing more than reinterpreting Sevy through *post hoc* rationalization, in which it disaggregates components, and imputes to them purposes and configurations that Sevy does not disclose or suggest. *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). Ultimately, Sevy’s components are not arranged or configured as claimed, and its disclosures explicitly contradict the structural and functional integration described by the ‘094 Patent.

For these reasons, Petitioner has not demonstrated 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 asserts that claims 7–9 and 11 of the ‘094 Patent are obvious over Sevy in view of Taiwanese Patent Publication 200528150 (hereinafter, “Zeng”). Paper 2, Pages 37–43. Petitioner argues that Sevy teaches all of the claimed elements except the noise-dampening functionality of the “silencer assembly,” which it contends is supplied by Zeng. Paper 2, Pages 37. However, the Petition fails to establish that Zeng accounts for the deficiencies of Sevy—primarily because Zeng does not disclose the claimed silencer assembly having a silencer inlet, a silencer outlet, and a baffle—or that the combination of Sevy and Zeng renders the claimed invention obvious.

Petitioner claims that Zeng discloses a “noise reduction head 20” and “inner cover 30” that purportedly corresponds to the claimed “silencer assembly having a silencer inlet, a silencer outlet, and a baffle” as recited in claim 7 of the ‘094 Patent. Paper 2, Pages 38–39. According to Petitioner, Zeng describes its atomizer as being “equipped with a silencer, which not only reduces the spray sound of the atomizer when atomizing the essential oil, but also reduces ... the volume of the essential oil molecules, so that the atomization can become better.” Paper 2, Page 38 (citing Ex-

1010, Page 4). However, this description is conclusory and does not demonstrate that Zeng's "silencer" has the specific structure and function recited in the claims.

Petitioner further asserts that Zeng teaches a baffle that "partially restricts movement of the fluid dispersion through said silencer chamber from said silencer inlet to said silencer outlet, thereby dampening sound waves generated during operation of said fluid dispersion assembly," as recited in clause [F] of claim 7 of the '094 Patent. Paper 2, Pages 38. Yet, Zeng merely states that "only the completely atomized essential oil molecules can pass through the opening 31 of the inner cover 30" [Ex-1011, Page 7], which does not explain how this restriction achieves both flow disruption and sound dampening in the manner claimed. The record does not show that Zeng's noise reduction head disrupts the fluid flow within a silencer chamber defined by an inlet, baffle, and outlet as in the '094 Patent. Ex-1001. Instead, Zeng describes an internal component specific to its own atomizer geometry, relying on features absent from Sevy, such as grooves 12b, 14b, diffuser body 1, and outer cover 40. *See* Ex-1011, Page 7.

VI. Claims

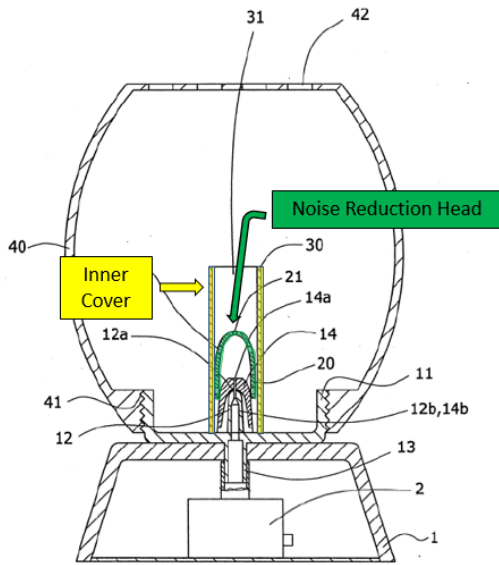


FIG. 3

1. An “atomizer with a noise reduction function,” which is installed on a main body of an aroma diffuser, wherein the atomizer is provided with a noise reduction head, an inner cover and an outer cover, wherein:

the atomizer has a receptacle base part in a center thereof, an air blowing pipe extends upward from a center of the receptacle base part, and an extension pipe extends downward at a bottom thereof, the air blowing pipe is connected to the extension pipe, and the extension pipe is used to connect to an air blowing motor inside a main body of an aroma diffuser, a round hole is provided at a top of the air blowing pipe, and an oil absorbent hood is fixedly installed thereon by means of tightening or screwing, a center of the oil absorbent hood has a space for accommodating the air blowing pipe, and a round hole is opened at a top of the oil absorbent hood, a plurality of oil grooves are opened on an outer wall of the air blowing pipe or an inner wall of the oil absorbent hood, so that after the oil absorbent hood and the air blowing pipe are connected, a channel through which the essential oil can pass is formed, in addition, a threaded part is provided on an inner wall or an outer side wall of an edge opening of the receptacle base part;

a top of the noise reduction head is slightly conical and has an opening hole, and a bottom hereof has an opening, the bottom opening is directly sleeved on the oil absorbent hood, and a plurality of air holes are provided on a side wall of the noise reduction head;

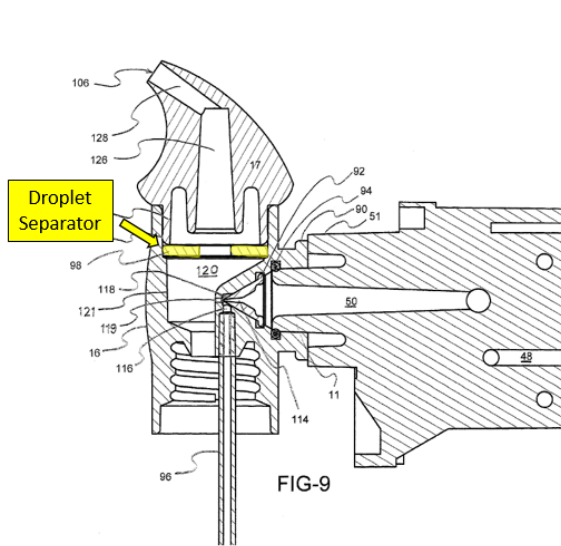
the inner cover is fixed on an outer periphery of the noise reduction head and maintains a certain distance from the noise reduction head, and the inner cover has an opening on its top or bottom;

the outer cover has a thread on an inner side wall or an outer side wall of a bottom opening edge, which corresponds to a threaded part provided on the atomizer, in addition, a plurality of ventilation holes are provided at appropriate positions on the outer cover.

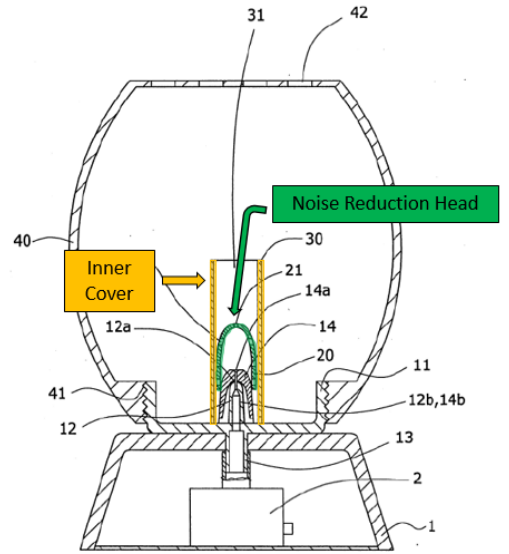
Ex-1011, Page 7, Figure 3.

Petitioner argues that a POSITA (or “Person Of Skill In The Art”) would have been motivated to substitute Sevy’s separator plate 98 and passage 126 with Zeng’s noise reduction head 20 and inner cover 30 to allegedly improve atomization uniformity and reduce noise. Paper 2, Page 42. This rationale is speculative and unsupported. Sevy already discloses a separator plate 98 explicitly designed to separate large droplets after atomization. Ex-1009, ¶¶ 67-70. Sevy acknowledges no need for further noise attenuation, and there is no evidence that a POSITA would replace its separator plate 98—which performs an essential droplet separation function—with Zeng’s components. The Petition fails to explain how Zeng’s noise reduction head 20 and inner cover 30, designed for a different atomizer

configuration, could be integrated into Sevy's system without changing the principles of Sevy's operation.



Ex-1009, Figure 9



Ex-1011, Figure 3

The Sevy and Zeng combination also fails to disclose a structure configured to achieve the claimed dual functions of restricting flow and reducing noise within a defined silencer chamber. Zeng describes the inner cover 30 and noise reduction head 20 as limiting the passage of droplets, but does not show how these components create a defined silencer chamber with inlet, baffle, and outlet arranged as claimed.

Distinctly, figure 1 of the '094 Patent, shown below, explicitly describes a silencer assembly comprising a silencer inlet 135, baffle 136, silencer outlet 137, and silencer chamber 138 configured to reduce noise during operation of the fluid dispersion assembly. Ex-1001, Col. 7, Line 49 through Col. 8, Line 4. Zeng's

disclosures lack this level of structural and functional specificity. Sevy likewise does not account for this deficiency.

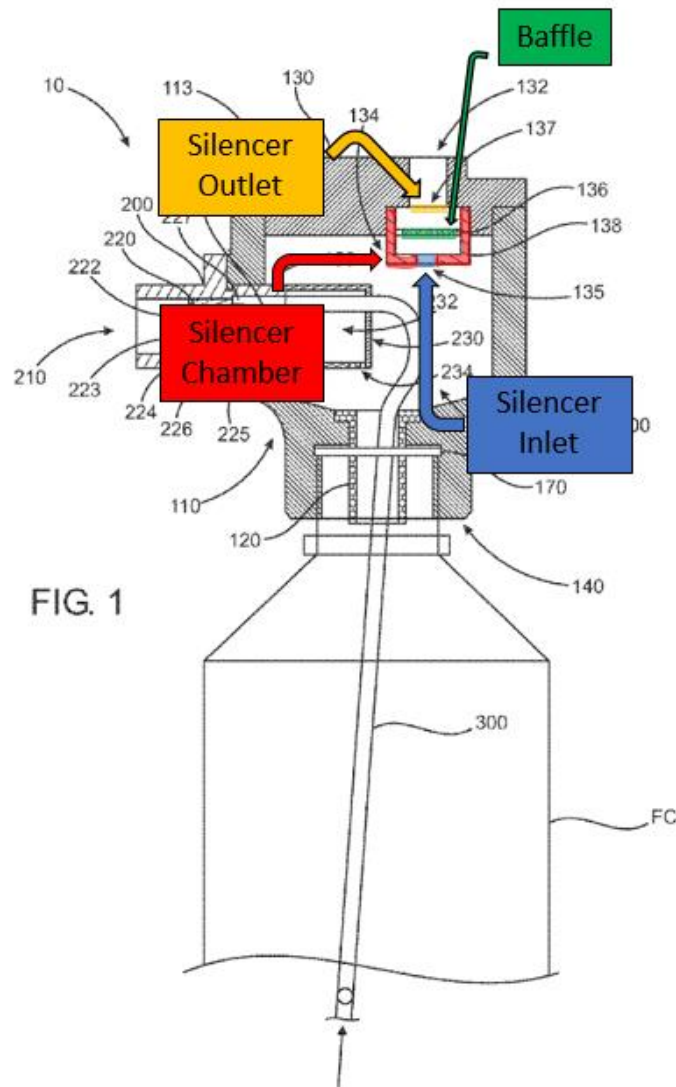


FIG. 1

Ex-1001, Figure 1

Even if Zeng's components could somehow be inserted into Sevy, Petitioner offers no credible evidence that the combination would predictably result in a system meeting the claim requirements. Petitioner simply states that Zeng's noise reduction

head 20 and inner cover 30 could occupy the same space as Sevy's separator plate 98 and passage 126 and perform the same functions. Paper 2, Pages 42–43. But Zeng's components are not mere drop-in replacements; they depend on the specific architecture of Zeng's atomizer, which includes structural elements Sevy lacks, such as grooves 12b, 14b, diffuser body 1, and outer cover 40. Petitioner's argument is once again based on *post hoc* rationalization rather than evidence of an actual teaching, suggestion, or motivation within the prior art. *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).

Finally, Petitioner's *KSR*-based motivation to combine is unpersuasive. Paper 2, Page 43. Sevy acknowledges no deficiency in atomization or noise that would prompt a POSITA to incorporate Zeng's components. While *KSR* allows for some flexibility, it does not relieve Petitioner of its obligation to show that the combination would have produced the claimed invention in a predictable manner. *See, e.g., KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 405-28. Here, Petitioner provides no credible evidence that the combination would achieve the claimed silencer assembly and functions, and the structural and functional differences between Sevy and Zeng preclude such a result.

For these reasons, Petitioner has failed to meet its burden of establishing a reasonable likelihood that claims 7–9 and 11 of the '094 Patent are unpatentable as

being obvious over Sevy in view of Zeng. Institution of *inter partes* review should therefore be denied on Ground 2.

IV. RESPONSE TO GROUND 3

Petitioner contends that claims 7–9 and 11 of the ‘094 Patent are unpatentable under 35 U.S.C. § 103 over French Patent Publication No. 2886160 (hereinafter, “Goubet”). Paper 2, Pages 43–63. Petitioner argues that Goubet’s diffuser head teaches or suggests the claimed diffusion assembly, atomizer assembly, and silencer assembly, asserting that its structure produces a properly conditioned fluid dispersion and attenuates noise. Paper 2, Page 44. These assertions mischaracterize the teachings of Goubet, disregard the structural and functional requirements of the claimed invention, and fail to demonstrate that Goubet discloses or suggests the integrated components claimed in the ‘094 Patent.

Petitioner identifies Goubet’s diffuser head 20, which comprises a venturi cone 7, vaporization means 12, 13, 14, and a diffusion chamber 5 bounded by baffles, as corresponding to the claimed diffusion and atomizer assemblies. 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, Goubet’s disclosure demonstrates that its vaporization means and baffles serve a fundamentally different purpose than the integrated assemblies of the ’094 Patent. Goubet describes its vaporization means as “consisting of two concentric circular enclosures which define a passage that constitutes the baffle.” Ex-1016, Page 6. This structure forces the atomized air–liquid mixture to circulate along a “tortuous” path before being discharged into the environment. *Id.* The tortuous path is asserted as improving vaporization and controlling the diffusion of microdroplets, but not for the purpose generating a fluid dispersion within a dedicated diffusion chamber as described by the claims. Instead, Goubet states that “the droplets follow a very particular path, allowing their size to be reduced as much as possible and subsequently controlling their diffusion into the ambient air.” Ex-1016, Page 6. The claimed invention requires an atomizer assembly integrated into a diffusion chamber to generate a properly conditioned fluid dispersion prior to discharge—as referenced in the ’094 Patent, namely, Col. 9, Lines 30–33 and 60–64—whereas Goubet relies on a confined tortuous path to achieve some degree of droplet size reduction and dispersion. The following annotated figures serve to identify the described distinctions and structures.

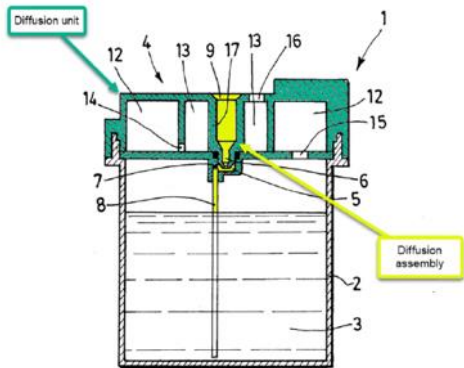


FIG. 1

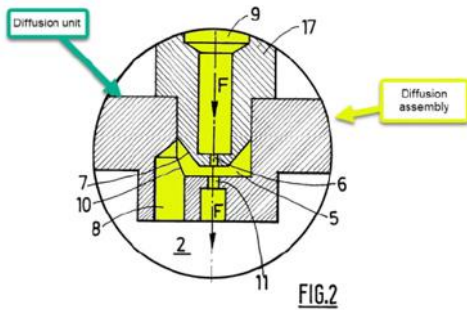


FIG. 2

Ex-1016, Figure 2

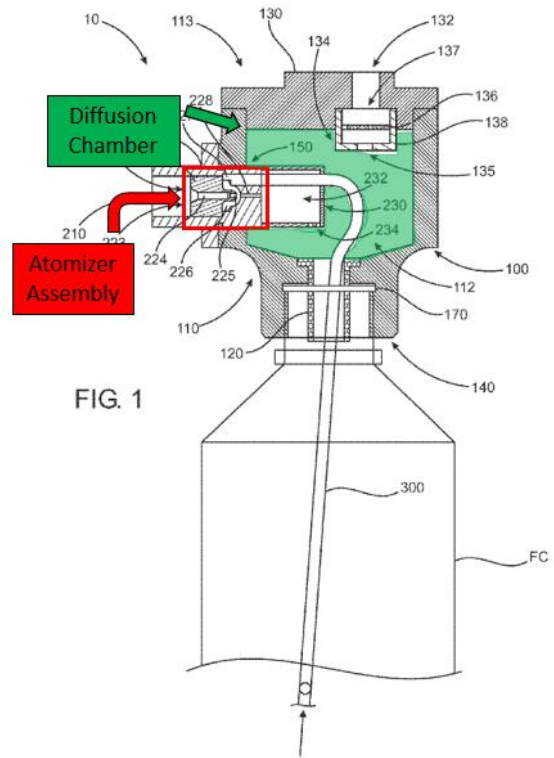


FIG. 1

Ex-1001, Figure 1

Petitioner further asserts that Goubet's baffles correspond to the claimed silencer assembly, arguing that the tortuous path and baffles restrict the flow of the fluid dispersion and allegedly reduce operational noise. Paper 2, Pages 47–48. Petitioner's assertion that Goubet's baffles inherently dampen sound in a manner similar to the '094 Patent's claims is unsupported. Nowhere does Goubet disclose any distinct silencer assembly including a silencer inlet, baffle, and outlet, as claimed in the '094 Patent.

The claimed silencer assembly of the '094 Patent is a distinct structure configured specifically to attenuate sound waves. Ex-1001, Col. 7, Line 49 through Col. 8, Line 4. It includes a silencer inlet 135, baffle 136, and silencer outlet 137, all disposed in operative communication with the diffusion chamber. *Id.* By contrast, Goubet's baffles are embedded within the diffusion path and described as contributing to vaporization and diffusion, with no indication of any dedicated silencer assembly or purpose.

Ultimately, Petitioner's position is based entirely on an inherency argument, arguing that the reference inherently supplies the claimed silencer functionality and structure. But, inherency requires that the limitation necessarily be present in the prior art, not merely possible or probable. *Par Pharm., Inc.*, 773 F.3d at 1195–96 (Fed. Cir. 2014). Goubet does not disclose or even suggest that its baffles dampen sound; it states only that the atomized mist is diffused “silently” in the sense of being gentle and non-harsh in the quality of dispersion—not as a result of a silencer assembly. Ex-1016, Page 6.

Petitioner also argues that a POSITA would have been motivated to use Goubet's baffles as a silencer assembly, reasoning that the tortuous path not only improves droplet uniformity, but also reduces noise. Paper 2, Pages 48–49. This assertion is, once again, based on *post hoc* rationalization, as Petitioner fails to cite any support for this proposition in Goubet's disclosure or the prior art generally, for

that matter. *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). Here, Goubet provides no teaching, suggestion, or motivation to treat its baffles as a silencer assembly, nor does it suggest arranging them in the claimed configuration.

Dependent claims 8, 9, and 11 all depend from claim 7 and incorporate its limitations. Because Petitioner has failed to show that Goubet teaches or suggests the integrated diffusion assembly, atomizer assembly, silencer assembly, and fluid dispersion as described by claim 7, its arguments as to the dependent claims also fail. *See Ortho McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008).

In summary, Petitioner has not established a reasonable likelihood that claims 7–9 and 11 are unpatentable as being obvious over Goubet. The Petition relies on mischaracterizations of Goubet’s baffles and tortuous path and fails to identify any disclosure or motivation suggesting that these features correspond to the claimed silencer assembly or integrated diffusion and atomizer assemblies. Institution of *inter partes* review should therefore be denied as to Ground 3.

V. RESPONSE TO GROUND 4

Petitioner’s Ground 4 again relies on Goubet, this time acknowledging that Goubet “does not explicitly disclose that the droplets are substantially uniform” but

arguing that the structure of its diffuser head, vaporization means, and baffles nevertheless satisfies clause [F] of claim 7 of the '094 Patent because the tortuous path and baffles allegedly restrict flow and reduce noise. Paper 2, Pages 43–49, 63. As explained above in response to Ground 3, Goubet's baffles and vaporization means are integrated into the diffuser head and serve to enhance vaporization and guide liquid back to the tank—not to produce a fluid dispersion of substantially uniform droplets, and not to dampen sound waves as described by clause [F] of claim 7. Ex-1016, Pages 6–7. The claimed invention specifies a distinct silencer assembly comprising a silencer inlet, baffle, silencer outlet, and chamber configured to attenuate sound. Ex-1001, Col. 9, Lines 26–37. Petitioner's suggestion that the tortuous path "inherently" reduces noise or produces substantially uniform droplets is speculative and unsupported. The Federal Circuit has made clear that inherency cannot be established by possibility or supposition but must necessarily flow from the prior art's disclosure. *Par Pharm., Inc.*, 773 F.3d at 1195–96 (Fed. Cir. 2014).

Accordingly, in furtherance of Petitioner's attempt to initiate an *inter partes* review, Petitioner relies on Goubet in view of Sebastian Kaiser et al., *The Electrospray and Combustion at the Mesoscale* (hereinafter, "Kaiser"), baselessly arguing that the references, in view of each other, render clause [F] of claim 7 of the '094 Patent obvious under 35 U.S.C. § 103. Paper 2, Pages 63-64.

In so arguing, Petitioner notes that “Goubet does not explicitly disclose that the droplets are substantially uniform . . . [and] [f]or this reason . . . Petitioner also relies on Kaiser which describes that it was well known in the field at the time of the invention to produce uniform droplets to improve uniform evaporation rates.” Paper 2, Page 63 (citing Ex-1014, Page 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 “if Goubet does not teach a ‘fluid dispersion,’ a POSITA would have been motivated to modify Goubet to include additional enclosures that result in fluid dispersion, as described above [in Goubet and Kaiser].” Paper 2, Page 64.

However, Patent Owner contends that a 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. Per *Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 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. 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.

Moreover, as *Palo Alto Networks, Inc. v. Centripetal Networks, LLC* 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 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

Under Ground 5 of the Petition (Paper 2, Pages 64–80), 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.

A. Claim 7

Specifically, with respect to clause [E] of claim 7, Petitioner argues that Gao “discloses a silencer assembly having a silencer inlet, a silencer outlet, and a baffle...”, Paper 2, Page 73, despite later contradicting itself by admitting “... **Gao does not explicitly recite that baffle 3 has a sound dampening effect.**” Paper 2, Pages 80-81 (emphasis added).

In mischaracterizing Gao, Petitioner points to language explaining that the reference discloses an “upper part of [a] first cavity [that] is provided with a baffle 3[,]” and provides the following figure to illustrate the baffle:

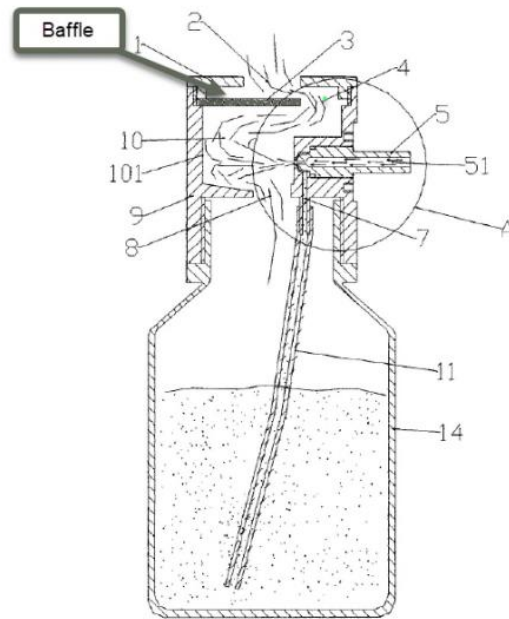
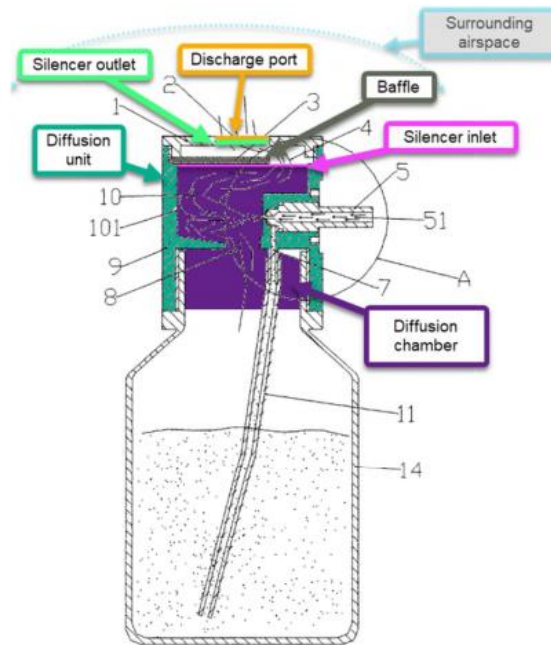


FIG. 1

Paper 2, Page 74. In a strained attempt to equate clause [E] of claim 7 as obvious in light of Gao, Petitioner introduces terminology not found in the reference, and uses that artificial terminology to explain how Gao functions, despite the reference’s silence on such features. In support of this argument, Petitioner provides the following color-coded figure, effectively arguing that the mere presence of a baffle in Gao **inherently** implies the existence of a “silencer inlet” and a “silencer outlet”— the structure and function of which are entirely absent Gao, let alone the fact that such terms are not used either.



Paper 2, Pages, 74-75; Ex-1013, Page 2 and Figure 1.

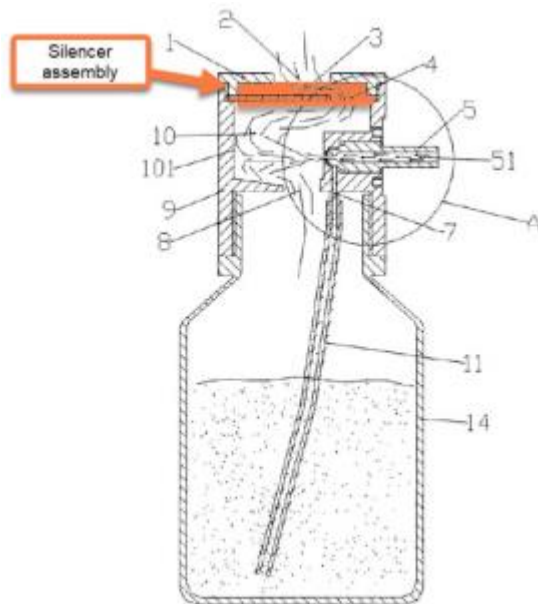
The core argument that Petitioner advances is that “a POSITA would understand that a structure would disrupt fluid dispersion as it flows from the ‘inlet’ to the ‘outlet’, such as a baffle, would also limit sound associated therewith.” Paper 2, Pages 28-29; *see also* Paper 2, Pages, 37-38; Paper 2, Pages 75-76; *but cf.* Paper 2, Pages 80-81 (“... Petitioner noted that Gao discloses an assembly including a baffle 3 that disrupts and restricts the flow of atomized droplets, which therefore, at least suggests that Gao would have a dampening effect on sound waves and meet the “silencer assembly” limitation...**Nevertheless, Gao does not explicitly recite that baffle 3 has a sound dampening effect.**”) (emphasis added). Moreover, what Petitioner artificially labels as **both** the “silencer outlet” **and** “discharge port” is, in

fact, expressly described in Petitioner’s translation of Gao as the “gas outlet,” a distinction that Petitioner wholly ignores and makes no effort to reconcile.

In this regard, despite the ‘094 Patent specifically delineating a silencer outlet 137 and a discharge port 132 as distinct elements (as illustrated in the following figure of the ‘094 Patent), Petitioner nevertheless fundamentally reaches the unsupported conclusion that because a POSITA would understand that a baffle disrupts fluid flow, the baffle of Gao must **inherently** teach a silencer assembly, including a baffle, silencer inlet, and silencer outlet. Paper 2, Pages 75-76. Petitioner’s conclusion reflects a misunderstanding of both Gao and the clear distinctions set forth in the ‘094 Patent. *See e.g. In re Chudik*, 851 F.3d 1365, 1372 (Fed. Cir. 2017) (“a prior art reference that ‘must be distorted from its obvious design’ does not anticipate a patent claim”) (citing *In re Wells*, 53 F.2d 537, 539, 1932 Dec. Comm’r Pat. 40 (C.C.P.A. 1931); *accord Topliff v. Topliff*, 145 U.S. 156, 161, 12 S. Ct. 825 (1892) (“It is not sufficient to constitute an anticipation that the device relied upon might, by modification, be made to accomplish the function performed by the patent in question, if it were not designed by its maker, nor adapted, nor actually used, for the performance of such functions.”)).

The ‘094 Patent does not *merely* recite a generic baffle or fluid flow disruption. Instead, it describes a specific silencer assembly (reference numeral 134) with distinct components: a silencer inlet (reference numeral 135), a baffle

(reference numeral 136), and a silencer outlet (reference numeral 137), each serving separate and defined roles within the system. Ex-1001, Col 7, Line 49 through Col. 8, Line 5, Figure 1. The fluid flow path about these components (that are **not** found in Gao) is also specifically made clear. Ex-1001, Col 7, Line 49 through Col. 8, Line 5. The following, side-by-side comparison of what Petitioner attempts to label as Gao's silencer assembly compared to the '094 Patent's delineated silencer assembly underscores the fundamental differences that Petitioner ignores.



Paper 2, Page 76

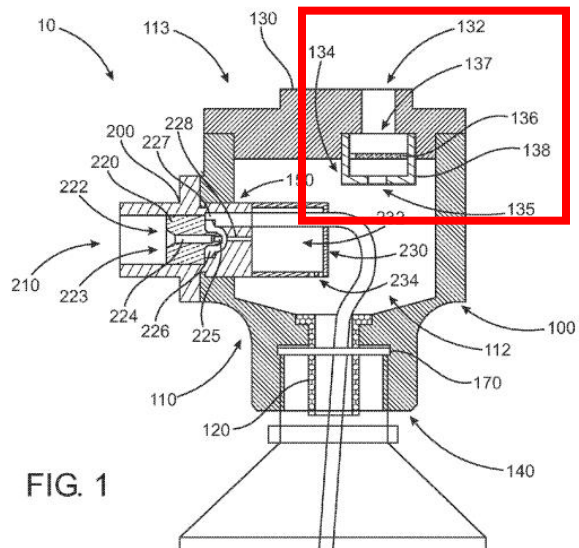


FIG. 1

Ex-1001, Figure 1, The Silencer Assembly as 134, the Silencer Inlet as 135, the Baffle as 136 and the Silencer Outlet as 137.

These deficiencies in Petitioner's reliance on Gao go directly to the heart of why the reference does **not** render claim 7 of the '094 Patent obvious under 35

U.S.C. § 103. Ultimately, Petitioner’s argument hinges on the assumption that Gao **inherently** discloses a silencer assembly with the specific components recited in clause [E]. However, inherency **cannot** be established by mere possibility, probability, or stretched arguments of how a baffle may result in other structures being inherently described in cited references and the Federal Circuit has made this clear. *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (“there mere fact that a certain thing **may** result from a given set of circumstances is not sufficient [to establish inherency]”) (citing *In re Oelrich*, 666 F.2d 578, 581-82 (CCPA 1981)) (emphasis added).

This principle was reaffirmed in *Par Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186 (Fed. Cir. 2014), where the Federal Circuit found that “[a] party must ... meet a high standard in order to rely on inherency to establish the existence of a claim limitation in the prior art in an obviousness analysis—the limitation at issue necessarily **must be present**, or the natural result of the combination of elements **explicitly disclosed** by the prior art. *Par Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1195-96 (Fed. Cir. 2014).

In *Par Pharm.*, the Federal Circuit addressed a similar situation where a party relied on inherency to fill a critical missing claim limitation. *Id.* The patent’s claims specified an outcome based on particle size: “no substantial difference in C_{max}” (a drug concentration measurement in blood) between fed and fasted states in a user.

However, the prior art and expert testimony of the party pursuing invalidation only disclosed general concepts—like how reducing particle size *could* improve bioavailability (*i.e.* absorption of a drug) but said nothing about the specific pharmacokinetics (C_{max} as a function of fed or fasted states) required by the claims. *Id.* As a result, the accused infringer argued that the prior art and expert testimony demonstrated improving bioavailability through reduced particle size would **inherently** reduce the food effect (*i.e.* cause no substantial difference in C_{max}), rendering the claims at issue obvious. *Id.* But the Federal Circuit rejected that argument because the prior art and expert testimony failed to establish that reducing particle size would **necessarily and inevitably** produce the precise “no substantial difference in C_{max}” required by the claims. *Id.* at 1195–96.

The situation here is directly analogous. Petitioner’s argument rests on the generalized proposition that the presence of a baffle inherently results in a silencer assembly with a silencer inlet, a silencer outlet, and a baffle, as mentioned in clause [E] of claim 7. But just as the Federal Circuit rejected the idea that a reduction in particle size necessarily produces the precise pharmacokinetic profile required in the patent’s claims of *Par Pharm.*, Petitioner here has only artificially attempted to show that Gao’s baffle necessarily results in the distinct structural and functional elements described by the ’094 Patent’s silencer assembly.

Gao discloses nothing more than a general baffle. It contains no express disclosure of a “silencer assembly,” “silencer inlet,” or “silencer outlet,” nor any indication that such elements are **necessarily or inevitably** present. Therefore, Petitioner’s attempt to reframe Gao’s disclosure to fit clause [E] is built entirely on unsupported inherency assumptions and misapplied terminology, lacks any meaningful support from the reference itself, and falls far short of justifying institution of *inter partes* review.

B. Claims 8–9 and 11

Having failed to establish a reasonable likelihood of prevailing on independent claim 7, as described above, Petitioner’s obviousness challenge to dependent claims 8, 9, and 11 under Ground 5 in light of Gao fails as well. Claims 8, 9, and 11 each depend directly from claim 7, and therefore all require the full limitations of claim 7, including the silencer assembly with a silencer inlet, silencer outlet, and baffle.

Because Petitioner has not shown that Gao teaches or suggests the full combination of elements described by claim 7, 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 claims 8, 9, and 11.

VII. RESPONSE TO GROUND 6

In Ground 6, Petitioner maintains that Gao alone renders claims 7–9 and 11 obvious, including by asserting that Gao’s baffle “suggests” a dampening effect on sound. However, as described above, this argument improperly relies entirely on artificial labeling of Gao with terminology not found in the reference and impermissibly auguring inherency. *See e.g. Par Pharm., Inc.*, 773 F.3d 1186 (Fed. Cir. 2014) (rejecting the notion that an inherency argument can render a patent’s claim obvious unless a very high bar is met). Ultimately, for purposes of refuting Petitioner’s Ground 5, Gao discloses nothing more than a generic baffle used to redirect fluid, and nowhere does it identify, describe, or even imply a specific silencer assembly (reference numeral 134) with distinct components: a silencer inlet (reference numeral 135), a baffle (reference numeral 136), and a silencer outlet (reference numeral 137), each serving separate and defined roles within the system. Ex-1001, Col 7, Line 49 through Col. 8, Line 5. Moreover, the fluid flow path about these components (**not** described in Gao) is also specifically made clear in the ‘094 Patent. Ex-1001, Col 7, Line 49 through Col. 8, Line 5.

As such, in furtherance of Petitioner’s attempt to initiate an *inter partes* review, Petitioner therefore relies on Gao in view of Taiwanese Patent Publication 200528150 (“Zeng”), wrongly arguing that the references, in view of each other, render clause [E] and [F] of the ‘094 Patent’s claim 7 obvious under 35 U.S.C. § 103.

As an initial point, Patent Owner agrees with Petitioner that a POSITA would have been motivated to combine the teachings of Zeng with Gao to dampen “hissing” or “whistling” noises produced by atomizers during operation. Ex-1002, ¶ 384; Paper 2, Pages 81-82. However, Petitioner’s argument nevertheless fails to satisfy the threshold for obviousness, as Zeng does not disclose or suggest the specific structural configuration set forth in clause [E] of claim 7 of the ’094 Patent—namely, a silencer inlet, a baffle, and a silencer outlet, (with each component performing a distinct function and maintaining a specified spatial and functional interrelationship, including a clear fluid flow path). See Ex-1001, Col. 7, Line 49 through Col. 8, Line 5, Fig. 1; *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 teaching the arrangement as described in claim 7, clause E, Zeng is relied on in its reference to a “noise reduction head” and “inner cover,” which bear no meaningful resemblance to the claimed structure and offer no indication that they are configured or operate in the manner described by the '094 Patent. Moreover, as previously described in detail, Gao discloses nothing more than a generic baffle used to redirect fluid, and nowhere does it identify, describe, or even imply the claimed structure of claim 7 of the '094 Patent, clause [E]. Therefore, the combination of Gao in view of Zeng fails to disclose clause [E] of claim 7.

Petitioner forgoes attempting to bridge this gap, utilizing only generalized reasoning, essentially asserting that a person of ordinary skill in the art (“POSITA”) would have understood Zeng’s components to function as a silencer assembly and would have been motivated to modify Gao accordingly. Ex-1002, ¶ 384; Paper 2, Pages 82-83. But this argument fails to supply the claim limitation missing from the combination (i.e., “a silencer assembly having a silencer inlet, a silencer outlet, and a baffle”), instead, merely offering a motivation to combine and artificially equating the resulting structure to a silencer assembly. Ex-1002, ¶¶ 382-389. While Petitioner provides some support for the motivation to combine, which Patent Owner respectfully submits is nothing more than an application of common sense (i.e., applying a sound deadening device to lessen the noise generated by a device that is undesirably noisy), the Federal Circuit has made clear, “common sense is typically

invoked to provide a known motivation to combine, **not to supply a missing claim limitation.**” *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1363 (Fed. Cir. 2016) (emphasis added). As the Federal Circuit explained in *Arendi S.A.R.L. v. Apple Inc.*, while common sense may be invoked to supply a reason to combine references, it “cannot be used as a wholesale substitute for reasoned analysis and evidentiary support, especially when dealing with a **limitation missing from the prior art references specified.**” *Id.* (emphasis added).

Here, the “silencer assembly” recited in clause [E] of claim 7 of the ‘094 Patent is clearly central to the claimed invention and includes discrete and functionally cooperative structural elements. Neither Gao nor Zeng disclose this structure, nor does Petitioner meet the threshold of showing that this combined configuration as equated to claim 7 clause [E] was “evidently and indisputably within the common knowledge of those skilled in the art.” *Id.* at 1366.

Indeed, Petitioner’s reliance on Zeng is misplaced. Upon close inspection, the so-called “noise reduction head” and “inner cover” bear no meaningful resemblance to the claimed silencer assembly. At most, these components act as rudimentary filters—hardly a substitute for the detailed and delineated structure recited in claim 7 clause [E] of the ‘094 Patent. Analogizing Zeng’s disclosure to the claimed silencer assembly is akin to arguing that a kitchen strainer with small holes inherently

functions as a tuned exhaust muffler. Such reasoning is not only speculative, but fails to engage with the claim's actual requirements.

Because the claimed silencer assembly is not disclosed in Gao or Zeng—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 6. Accordingly, institution of *inter partes* review based on Ground 6 should be denied.

VIII. 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 6807 words, 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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