

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
RESPONSE

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Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
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I. INTRODUCTION

Pursuant to 37 C.F.R. § 42.120 Air Essentials, Inc. (“Patent Owner”), submits its Response (“POR”) in response to the Institution Decision for *inter partes* review of claims 7-9 and 11 of U.S. Patent No. 9,527,094 (the “’094 Patent). For the reasons set forth herein, the Board should conclude that the challenged claims of the ‘094 Patent remain patentable over the prior art of record.

As will be demonstrated, Petitioner, Aroma360, LLC (“Petitioner”), has failed to carry its burden under 35 U.S.C. § 316(e) to prove, by a preponderance of the evidence, that any of the challenged claims are unpatentable. In particular, Petitioner’s asserted grounds rely on inappropriate characterizations of the prior art in an effort to map disparate disclosures onto distinct claim limitations, and expert testimony that is not grounded in measurements, calculations, or reliable technical analysis. Petitioner further advances combinations of prior art that neither disclose nor suggest the full scope of the claimed limitations. As will also be demonstrated, Patent Owner’s evidence and analysis further forecloses Petitioner’s ability to satisfy its burden under 35 U.S.C. § 316(e) to prove unpatentability by a preponderance of the evidence. For these reasons, the Board should conclude that Petitioner has not, and cannot, establish that claims 7–9 and 11 of the ’094 Patent are unpatentable.

II. STANDARD OF REVIEW

“In an [inter partes review], the petitioner has the burden from the onset to show with particularity why the patent [claims] it challenges [are] unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016); *see also* 35 U.S.C. § 312(a)(3) (requiring inter partes review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”); *and Twitter, Inc. v. VidStream LLC*, 825 F. App’x 844, 851 (Fed. Cir. 2020) (explaining that it is the petitioner’s burden “to establish the scope and content of a prior art reference by a preponderance of the evidence”). This burden of persuasion never shifts to the patent owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

The petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Accordingly, expert testimony that merely repeats the conclusory argument and does not *explain why* the expert’s position is correct is given little weight. *See Xerox Corp. v. Bytemark, Inc.*, No. IPR2022-00624, 2022 WL 3648989, at *5- 6 (PTAB Aug. 24, 2022); *Xerox Corp. v. Bytemark, Inc.*, No. IPR2022-00624, Paper 12 at 3-6 (PTAB Feb. 10, 2023) (Director Vidal designating the Board’s decision as precedential and affirming the decision because little weight

should be given to declarations that “do[] not provide any technical detail, explanation, or statements supporting why the” expert’s position is correct).

Additionally, the petitioner’s case-in-chief must be made in the petition, and “[the] [p]etitioner may not submit new evidence or argument in reply that it could have presented earlier,” such as to bolster an insufficient petition that fails to establish a prima facie case of unpatentability. *VidStream LLC v. Twitter, Inc.*, 981 F.3d 1060, 1064 (Fed. Cir. 2020) (quoting U.S. Patent Trial and Appeal Board, Consolidated Trial Practice Guide 73 (Nov. 2019)); 35 U.S.C. § 312(a)(3) (“the petition” must identify supporting evidence “with particularity”); 37 C.F.R. § 42.104(b)(4) (“The petition must specify where each element of the claim is found in the prior art . . .”).

III. OVERVIEW OF PROSECUTION HISTORY

The ‘094 Patent issued from U.S. Application Serial No. 14/844,650 (Ex. 1004, “the ‘650 Application”), which was filed on September 3, 2015. It is a continuation of U.S. Application Serial No. 13/838,364, which was filed on March 15, 2013, which claimed the benefit of U.S. Provisional Application Serial No. 61/694,500 (Ex. 1006). The ‘650 Application was subject to a non-final refusal on June 8, 2016 (Ex. 1004, p. 67), where the sole ground of rejection was non-statutory double patenting based on Patent Owner’s own U.S. Patent No. 9,126,215. An

appropriate terminal disclaimer was submitted on August 11, 2016 (Ex. 1004, p. 99) and the '650 Application issued as the '094 Patent on December 27, 2016.

IV. CLAIM CONSTRUCTION

Petitioner has indicated that it does not believe any term needs to be construed by the PTAB to decide the petition. Paper 1, page 12. Patent Owner agrees in light of the general proposition that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Patent Owner is not currently aware of any claim term that requires construction to resolve the petition.

V. LEVEL OF ORDINARY SKILL IN THE ART

Patent Owner does not dispute the level of ordinary skill in the art proposed by Petitioner because Patent Owner does not believe it is required at this stage to resolve the petition. Patent Owner reserves the right to address it should new issues materialize. Regardless, Patent Owner's Response is supported by the Declaration of Dr. Gerald J. Micklow, PhD, PE, who meets and exceeds Petitioner's proposed level of skill. *See* Ex. 2002, ¶¶ 2-12.

VI. GROUND 1
(Claims 7-9 and 11 – Sevy)

Although the Board instituted review on Ground 1 noting that Petitioner identifies a “silencer inlet,” “silencer outlet,” and “silencer assembly” in Sevy, Petitioner has not met its ultimate burden to prove claims 7–9 and 11 unpatentable under 35 U.S.C. § 103 by a preponderance of the evidence, supported by substantial evidence. 35 U.S.C. § 316(e). Ultimately, Petitioner’s attempted showing that claims 7-9 and 11 are unpatentable over Sevy fails for at least two independent reasons. First, Petitioner’s theory improperly collapses distinct claimed elements into a single undifferentiated flow path, contrary to the claim language and governing law. *See Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (“[w]here a claim lists elements separately, ‘the clear implication of the claim language’ is that those elements are ‘distinct component[s]’ of the patented invention.”). Second, while Petitioner labels the silencer assembly of clause 7[E] in Sevy’s drawings, Sevy does not disclose nor suggest the claimed silencer assembly.

a. Sevy Was Considered by the USPTO During Prosecution.

Before addressing the merits of Ground 1, Patent Owner notes that Sevy was already considered by the USPTO (the “Office”) during prosecution of the application that matured into the ’094 patent. Sevy is expressly cited on the face of

the issued patent, reflecting that the Examiner evaluated Sevy in determining the patentability of the claims now under review. Ex. 1001.

While the Board is not precluded from reconsidering prior art previously before the Office, the fact that Sevy was already reviewed and deemed insufficient to preclude patentability is nevertheless relevant to the weight of Petitioner's showing. *See Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8–10 (PTAB Feb. 13, 2020) (explaining that previously considered art weighs against Board action where the petitioner does not present materially different arguments showing the Office erred in evaluating the art or arguments).

Here, Petitioner relies on *the same reference the Examiner considered*, without identifying any material disclosure in Sevy that was overlooked during prosecution, and without offering a materially different interpretation grounded in the intrinsic disclosure of Sevy itself. Instead, Petitioner's case depends on *post hoc* annotations, re-labeling, and functional inference, precisely the type of hindsight-driven reconstruction that cannot supply a proper basis for obviousness. *See* MPEP § 2145(X)(A).

Accordingly, Petitioner's reliance on Sevy, standing alone or in combination, should be viewed with appropriate skepticism, particularly where, as here, Sevy does not expressly disclose the claimed "silencer assembly" or its constituent structural

elements, and where its alleged teachings arise only through Petitioner’s litigation-driven re-interpretation, rather than from Sevy’s disclosure itself.

b. Petitioner’s Theory Impermissibly Collapses Distinct Claimed Elements of Clause 7[E].

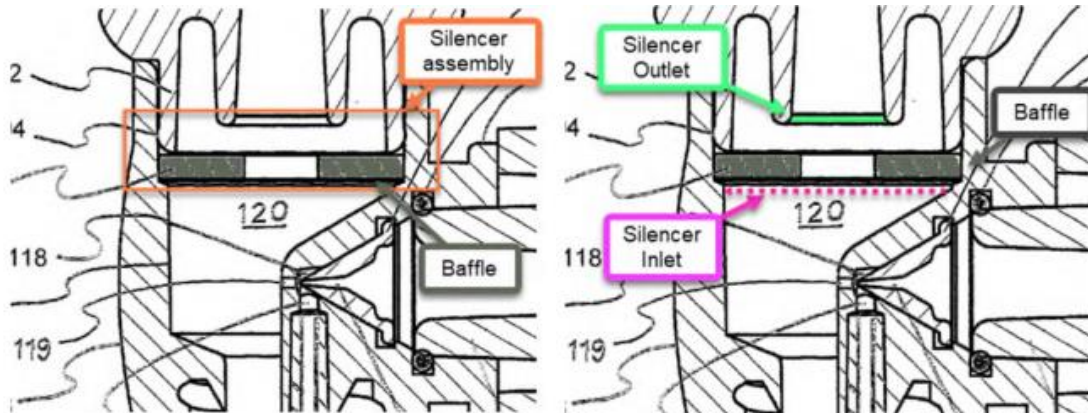
Clause 7[E] of claim 7 recites “a silencer assembly having a silencer inlet, a silencer outlet, and a baffle.” Ex. 1001, Claim 7. The claim language thus requires three distinct structural components, not merely a single flow path that performs multiple functions.

At institution, the Board noted that Petitioner’s showing as to this limitation hinges entirely on annotated versions of Figure 9 of Sevy, in which Petitioner labels portions of the figure as a “silencer inlet,” “silencer outlet,” and “silencer assembly.” Paper 9, 17-18. As the Board also implicitly discusses, Petitioner characterizes Sevy with its own annotations to identify structural elements of the claim. *See* Paper 9, Page 17 (“Petitioner identifies the recited structures . . . in [the] . . . annotated [figure] . . . [via] a text box and orange box identifying a ‘Silencer assembly[,]’ . . . a text box and gray shading identifying a ‘Baffle[,]’ . . . a text box and dotted . . . line identifying a ‘Silencer Inlet,’ and . . . a text box and green line identifying a ‘Silencer Outlet.’”).

Accordingly, Petitioner’s approach is legally impermissible. Where a claim recites separate elements, the “clear implication of the claim language” is that

those elements are “distinct component[s] of the patented invention.” *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (citing *Gaus v. Conair Corp.*, 363 F.3d 1284, 1288 (Fed. Cir. 2004); *Engel Indus., Inc. v. Lockformer Co.*, 96 F.3d 1398, 1404-05 (Fed. Cir. 1996) (concluding that where a claim provides for two separate elements, a “second portion” and a “return portion,” these two elements “logically cannot be one and the same”)). Indeed, prior art cannot be “distorted from its obvious design” to meet claim limitations. *See In re Chudik*, 851 F.3d 1365, 1372 (Fed. Cir. 2017); *see also Topliff v. Topliff*, 145 U.S. 156, 161 (1892) (a reference does not anticipate or render obvious a claim merely because it could be modified to perform the claimed function).

To this end, Petitioner has distorted Sevy from its obvious design to meet claim limitations, specifically via the following annotated figure by adding in a labeled “Silencer Inlet,” (which is undifferentiable from the separator 120, the component of Sevy most akin to the “diffusion chamber” of the ‘094 patent), and a “Silencer Outlet” (which is undifferentiable from either the collar 102 or passage 126):



Paper 2, 28-30. In this regard, Petitioner explained that the component of Sevy analogous to the “silencer inlet” of the ‘094 patent is “the inlet formed by the tapered ledge in the opening of atomizer 16” and the component of Sevy analogous to the “silencer outlet” of the ‘094 patent is “the outlet in fluid communication with passage 126.” Paper 2, 29.

Further, when deposed, Petitioner’s expert could not articulate any meaningful structural basis in Sevy for distinguishing a “silencer inlet” or “silencer outlet” from the surrounding flow path. Rather, Petitioner’s expert relied on the “silencer inlet” being the “tapered section below the separator plate” and was unable to determine another particular point or structure that would distinguish the component of Sevy analogized to the “silencer inlet” to the component of Sevy analogized to the “baffle.” *See* Ex. 2001, Page 18.

As such, it is clear that Petitioner’s position depends entirely on the premise that a Person of Ordinary Skill in the Art (“POSITA”) would understand Sevy’s

separator plate 98 and surrounding flow path to constitute a “silencer assembly” with the claimed subcomponents, even though those components are neither named, described, suggested, nor structurally delineated in Sevy. That is precisely the kind of gap-filling by implication that the Federal Circuit has repeatedly rejected. *See In re Chudik*, 851 F.3d 1365, 1372 (Fed. Cir. 2017) (prior art cannot be “distorted from its obvious design” to meet claim limitations); *see also Topliff v. Topliff*, 145 U.S. 156, 161 (1892) (a reference does not anticipate or render obvious a claim merely because it could be modified to perform the claimed function).

c. Sevy Does Not Disclose Nor Suggest the Claimed Silencer Assembly of Clause 7[E].

Even accepting Petitioner’s labeling of Sevy, a person of ordinary skill in the art would not view Sevy as disclosing a “silencer assembly” as a distinct structural unit, nor as teaching a “silencer inlet,” a “baffle,” or a “silencer outlet.”

As Petitioner itself acknowledges, Sevy “does not explicitly disclose that the separator plate 98 has a sound dampening effect.” Paper 2, Page 37. Rather than identifying any express teaching of sound attenuation in Sevy, Petitioner relies on an inference; asserting that because separator plate 98 “disrupts and restricts the flow of atomized droplets,” it therefore “at least suggests that Sevy would have a dampening effect on sound waves.” *Id.* That inference is technically unsupported and inconsistent with the principles governing fluid flow and acoustics.

As explained by Patent Owner's expert, restricting or disrupting fluid flow does not inherently dampen sound. Ex. 2002, ¶ 19. To the contrary, forcing fluid, particularly air, through constricted or obstructed pathways often increases turbulence, which can *generate or amplify sound rather than suppress it*. Ex. 2002, ¶ 20. In fact, sound-producing devices such as whistles operate on precisely this principle: air is forced through a narrow opening, creating a high-velocity stream that interacts with surrounding edges to produce oscillating vortices and pressure fluctuations that generate sound waves. These oscillations can resonate within a chamber, amplifying sound rather than attenuating it. Ex. 2002, ¶ 21.

Consistent with these principles, separator plate 98 in Sevy is not disclosed as an acoustic element and is not configured to absorb, attenuate, or suppress sound waves. Sevy contains no disclosure of materials, geometries, spacing, or flow paths designed to reduce acoustic output, nor does it describe any interaction between separator plate 98 and sound waves generated during operation. *See* Ex. 1009. At most, separator plate 98 affects the movement of atomized droplets, which does not equate to silencing or sound suppression. Indeed, as Patent Owner's expert explains, such flow disruption would be expected to *increase turbulence and associated noise, not dampen it*. Ex. 2002, ¶ 22.

In light of the above, it is clear that the separator plate 98 of Sevy would not "have a dampening effect on sound waves," and thus does not attenuate sound. Ex.

2002, ¶ 23. Accordingly, Sevy does not, either explicitly or implicitly, teach a structure that performs the silencing functions required of the claimed “silencer assembly” in clause 7[E] of the ’094 patent. Petitioner therefore cannot rely on Sevy alone to satisfy this limitation and instead must turn to secondary references, including Zeng, in an attempt to cure Sevy’s deficiencies. *See* Paper 2, 37–43. As explained below, that proposed combination likewise fails to arrive at the claimed invention.

d. Sevy Operates on a Fundamentally Different Principle and Solves a Different Technical Problem Than the Invention of the ’094 Patent.

Independent of Petitioner’s failure to identify structurally distinct components of Sevy corresponding to the “silencer assembly” of clause 7[E], Sevy is further inapposite because, compared to the invention of the ’094 patent, Sevy is directed to a fundamentally different type of diffusion device that operates according to a different principle of operation and solves a different technical problem. As the Federal Circuit has recognized, prior art that is directed to solving a different problem, or that operates according to a different principle, is a poor, and often improper, basis for an obviousness challenge. *See, e.g., In re Klein*, 647 F.3d 1343, 1351–52 (Fed. Cir. 2011) (referencing *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992) (“If [a reference] is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it.”)).

Sevy is directed to a small, self-contained fragrance diffuser intended for use in very small spaces, such as on a dresser, table, or nightstand. Ex. 1009, ¶ 0006 (“it would be an advance in the art to provide an integrated system having suitable weight for stability, *a sufficiently small size so excessive footprint and volume are not occupied on a dresser, table, or a night stand*”) (emphasis added). Sevy’s design goals thus center on size, weight, and convenience for use in small, enclosed spaces—such as bedrooms or similar residential environments. *Id.*

Consistent with that purpose, Sevy does not disclose or contemplate operation at elevated pressures, high volumetric flow rates, or sustained forced-air delivery of atomized fluid. *See* Ex. 1009. Nor does Sevy identify operational noise as a design concern or problem requiring mitigation. *Id.* A person of ordinary skill in the art would therefore understand that Sevy’s device, by virtue of its low-pressure and small-scale operation, does not raise the acoustic issues associated with high-capacity fluid dispersion systems.

By contrast, the invention as recited in the ’094 patent is directed to high-capacity fluid dispersion systems intended for large or commercial environments, such as offices or other places of business, where significantly higher airflow and pressure are required to distribute scent effectively. The ’094 patent expressly identifies operational noise as a central technical problem arising from such systems, particularly those utilizing forced air. Ex. 1001, 1:24–28 (“One drawback of many

known fluid diffusion devices utilizing forced air is that they tend to make an undesirable and often, depending on the location, such as an office or other place of business, a disruptive amount of noise when in operation.”). The ’094 patent further explains that its diffusion unit must be constructed to withstand compressed air at operative pressures, ranging anywhere from about 5 to 50 psig, reflecting a scale and operating regime far removed from Sevy’s compact diffuser. Ex. 1001, 3:33–37.

Because Sevy’s device is designed for low-pressure operation in small, personal spaces, it does not encounter, and therefore does not attempt to solve, the noise problems that arise in high-pressure, large-space diffusion systems like those claimed in the ’094 patent. As a result, a person of ordinary skill in the art would not look to Sevy for guidance on designing an assembly capable of mitigating noise generated at commercial-scale operating pressures. Sevy’s design choices reflect a different set of constraints, objectives, and operating conditions, and thus a different principle of operation altogether.

Accordingly, Sevy is not only structurally deficient with respect to clause 7[E], but also non-analogous in principle and purpose. The invention of the ’094 patent and Sevy are directed to different operating environments, different performance constraints, and different technical problems, which further underscores why Sevy cannot serve as a proper primary reference for the claims at issue.

e. Claims 8, 9, and 11

As claims 8, 9, and 11 depend from claim 7, and because Petitioner failed to establish the unpatentability of claim 7 under Ground 1, the dependent claims cannot be shown to be unpatentable under the theory that Sevy renders them obvious. IPR2015-00592, Paper 72, 2016 Pat. App. LEXIS 13343, at *38 (finding that where a petitioner has not shown, by a preponderance of the evidence, that an independent claim is unpatentable, the claims that depend on it likewise cannot be shown to be unpatentable).

f. Conclusion

Ground 1 should be rejected in the Final Written Decision, as Petitioner has not met its burden to show that claims 7–9 and 11 are unpatentable under 35 U.S.C. § 103. Sevy does not disclose the claimed “silencer assembly” seen in clause 7[E], and Petitioner’s attempt to supply missing structural limitations through annotated figures and functional inference is legally insufficient. The deficiencies alluded to at institution persist on the full record and compel a finding in Patent Owner’s favor, towards patentability.

VII. GROUND 2
(Claims 7-9 and 11 – Sevy in view of Zeng)

Although the Board instituted review on Ground 2 noting that Petitioner identifies a “silencer inlet,” “silencer outlet,” and “silencer assembly” in Zeng,

Petitioner has not met its ultimate burden to prove claims 7–9 and 11 unpatentable under 35 U.S.C. § 103 by a preponderance of the evidence, supported by substantial evidence. 35 U.S.C. § 316(e). Ultimately, Petitioner’s attempted showing that claims 7-9 and 11 are unpatentable over the combination of Sevy and Zeng fails for at least two independent reasons. First, the proposed combination teaches away from the claimed invention, contrary to established obviousness principles. *See* MPEP § 2145; *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984). Second, Petitioner fails to establish that a person of ordinary skill in the art would have been motivated to combine Sevy and Zeng with a reasonable expectation of success, as required under controlling precedent. *See* MPEP § 2143.

a. The Combination of Sevy and Zeng Would Render the Prior Art Inoperable and Teaches Away from the ’094 Patent.

Petitioner attempts to rely on Zeng as a secondary reference to cure Sevy’s failure to disclose the limitations of clauses 7[E] and 7[F]. That attempt fails because the proposed combination of Sevy and Zeng would (1) render the resulting device inoperable for its intended purpose and (2) teach away from the invention of the invention of the ’094 patent. Both defects independently defeat Petitioner’s obviousness theory.

As set forth in MPEP § 2143, a proper obviousness analysis requires “some articulated reasoning with some rational underpinning” to support a proposed

combination. Where a proposed modification would render the prior art device unsatisfactory for its intended purpose, or where the reference discourages the modification, the combination is legally improper. *See* MPEP § 2145; *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984).

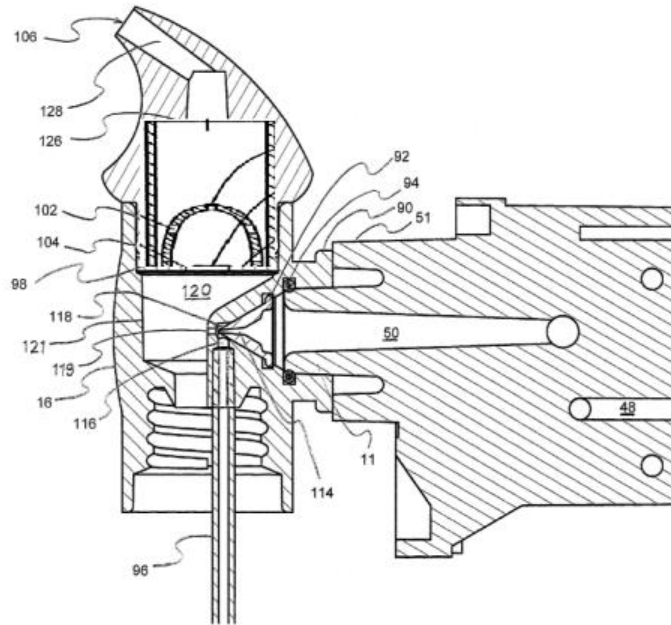
b. Zeng Relies on a Fluid Membrane Mechanism That Would Be Destroyed by Petitioner’s Proposed Combination.

Zeng discloses a noise-reduction head 20 having an opening hole 21 at the top that is designed to form a “*tension film*” (*i.e., a fluid membrane*) across the opening during operation. Ex. 1011, Page 5. As described in Zeng, essential oil molecules are sprayed from the opening above the atomizer 10, positioned below the noise-reduction head 20, causing the oil to expand and form a thin fluid membrane across opening hole 21. *Id.* That membrane is critical to Zeng’s operation: it prevents essential oil molecules from being directly expelled through the opening, thereby ensuring complete atomization and controlled dispersion. *See id.*

In other words, Zeng’s noise-reduction head 20 is not a passive flow-through structure. It depends on a *precise spatial and functional relationship* between the atomizer and opening hole 21 in order to generate and maintain the fluid membrane. Without that membrane, Zeng’s device would not operate as intended.

Petitioner’s proposed combination destroys this operative principle. Petitioner proposes situating Zeng’s noise-reduction structure downstream of Sevy’s separator

plate 98, as seen below; far removed from the location and configuration necessary to form the fluid membrane described in Zeng. Under Petitioner’s theory, essential oil molecules would already be atomized and dispersed before reaching Zeng’s opening hole 21, making formation of the fluid membrane impossible.



As a result, the proposed Sevy–Zeng combination would *eliminate the very mechanism Zeng relies on to function*, rendering the combined device inoperable for Zeng’s intended purpose. A proposed combination that “would . . . [render the prior art device] inoperable” cannot support an obviousness finding. *In re Gordon*, 733 F.2d at 902; *see also* MPEP § 2145 (“A proposed modification cannot render the prior art unsatisfactory for its intended purpose”).

c. Zeng Teaches Away from Petitioner’s Proposed Modification.

Zeng further teaches away from Petitioner’s proposed combination. A reference teaches away when it “criticize[s], discredit[s], or otherwise discourage[s]” the modification proposed by the challenger. MPEP § 2145; *see In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994).

Zeng’s disclosure emphasizes the importance of preventing direct expulsion of essential oil molecules through opening hole 21, expressly relying on the fluid membrane to avoid incomplete atomization. *See* Ex. 1011, Pages 5-6. Petitioner’s combination, seen above, does the opposite: it would permit atomized fluid to pass directly through Zeng’s opening *without membrane formation*, precisely the condition Zeng seeks to avoid. A person of ordinary skill in the art would therefore be discouraged from implementing Petitioner’s proposed modification, as it undermines Zeng’s stated objectives and compromises its functionality.

Accordingly, Zeng does not merely fail to cure Sevy’s deficiencies—it affirmatively teaches away from Petitioner’s proposed arrangement.

d. A Person of Ordinary Skill in the Art (POSITA) Would Not Have Been Motivated to Combine Sevy and Zeng.

Even if Petitioner could overcome the fundamental operability and teaching-away problems discussed above, which it cannot, a person of ordinary skill in the art still would not have been motivated to combine Sevy and Zeng in the manner

proposed. Obviousness requires more than the mere ability to physically combine references; it requires a reasoned motivation to do so that would lead a POSITA to expect success. MPEP § 2143.

Here, a person of ordinary skill in the art would understand that Petitioner's proposed incorporation of at least Zeng's noise-reduction head 20 and inner cover 30 downstream of Sevy's separator plate 98, seen above, ***would inhibit atomization, not improve it, due to the well-known phenomenon of fuel coalescence.***

Fuel coalescence occurs when fine, suspended liquid droplets collide and merge into larger, heavier droplets. In aerosol and atomization systems, coalescence is undesirable because larger droplets are more likely to adhere to nearby surfaces and less likely to remain entrained in airflow for effective dispersion. As Patent Owner's expert explains, Zeng's noise-reduction head 20 creates precisely these conditions. Droplets expelled from round hole 14a would adhere to the outer surface of noise-reduction head 20, which, in turn, would lead to the merging of similar droplets adhering to the same surface, ultimately resulting in an appreciable gain in size. Ex. 2002, ¶ 24.

As these droplets coalesce on the outer surface of the noise-reduction head 20, they would ***obstruct the passage of subsequently atomized droplets, preventing at least some portion of the fluid from being expelled*** through opening 31 of inner cover 30. The result would be reduced atomization efficiency and impaired scent

dispersion, directly contrary to the operational goals of both Sevy and the invention recited in the '094 patent. *Id.* A POSITA would therefore understand that substituting Zeng's structure into Sevy would ***degrade performance, not enhance it.***

Consistent with this understanding, Patent Owner's expert disagrees with Petitioner's expert's assertion that a POSITA would have been motivated to incorporate at least Zeng's noise-reduction head 20 and inner cover 30 downstream of Sevy's separator plate 98. To the contrary, such a substitution would be expected to inhibit atomization due to fuel coalescence. Ex. 2002, ¶ 25.

Moreover, even from an acoustic perspective, a POSITA would not expect Zeng's noise-reduction head to meaningfully improve performance in Sevy. As Patent Owner's expert further explains, the incorporation of at least Zeng's noise-reduction head 20 and inner cover 30 would not appreciably dampen sound waves generated during operation of a fluid dispersion assembly, aside from any incidental interaction with fluid flow. Ex. 2002, ¶ 26. Indeed, introducing a thin metal structure into an unsteady flow may increase vibration-induced noise rather than suppress it. Ex. 2002, ¶ 27.

Accordingly, Petitioner's proposed combination would not have been pursued by a POSITA because it would (1) inhibit atomization through fuel coalescence, (2) compromise droplet expulsion, and (3) fail to provide any predictable acoustic

benefit. Under these circumstances, Petitioner has not articulated, and cannot articulate, a rational motivation to combine Sevy and Zeng with a reasonable expectation of success, as required by MPEP § 2143 and controlling Federal Circuit precedent.

e. Petitioner’s Combination Is the Product of Impermissible Hindsight.

Petitioner’s reliance on Zeng reflects impermissible hindsight reconstruction, using the ’094 patent as a blueprint to extract isolated features from Zeng while ignoring the operative context in which those features function. Such hindsight-driven assembly is legally insufficient. MPEP § 2143.

Neither Sevy nor Zeng suggests modifying Sevy in the manner proposed by Petitioner, nor do they suggest abandoning Zeng’s “tension film” mechanism. Only with knowledge of the ’094 patent does Petitioner arrive at its proposed combination—an approach the Federal Circuit has repeatedly rejected. *In re Kahn*, 441 F.3d 977, 986 (Fed. Cir. 2006) (discussing rationale underlying the motivation-suggestion-teaching test as a guard against using hindsight in an obviousness analysis); MPEP § 2143.

f. Conclusion

Ground 2 should be rejected in the Final Written Decision, as Petitioner has not met its burden to show that claims 7–9 and 11 are unpatentable under 35 U.S.C. § 103. Petitioner’s proposed combination of Sevy and Zeng would render the prior

art inoperable, teaches away from the invention of the '094 Patent, and relies on impermissible hindsight. Accordingly, Petitioner has failed to establish that claims 7–9 and 11 would have been obvious under Ground 2, and the combination thus cannot support a finding of unpatentability.

VIII. GROUND 3
(Claims 7-9 and 11 – Goubet)

Petitioner's Ground 3 fails to demonstrate that Claims 7-9 and 11 are unpatentable under 35 U.S.C. § 103 in view of Goubet because Goubet does not disclose an atomizer assembly disposed between an upper and lower chamber.

a. Goubet Does Not Disclose Nor Suggest the Invention as Claimed.

Petitioner's argument improperly relies on one indivisible feature of Goubet to satisfy two structurally and functionally distinct requirements in Claim 7 of the '094 Patent. Claim 7 recites “a discharge port disposed in fluid communication between said diffusion chamber and the surrounding airspace.” Ex. 1001, Claim 7. The specification of the '094 Patent identifies this discharge port as numbered element 132 of Figures 1-4. *Id.* at 3:63-65. Separately, Claim 7 recites “a silencer assembly having . . . a silencer outlet.” *Id.* at Claim 7. The specification of the '094 Patent identifies this silencer outlet as numbered element 137 of Figures 1 and 2. *Id.* at 7: 55-57.

It is well-established in the Federal Circuit that “[w]here a claim lists elements separately, the clear implication of the claim language is that those elements are distinct components of the patented invention.” *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010). In *Becton*, the Federal Circuit reversed as “erroneous” a claim construction that combined two separately enumerated claim elements, holding that such a combination completely disregarded the specification of the asserted patent and “render[ed] the . . . limitation functionally meaningless.” *Id.* at 1257.

As in *Becton*, Petitioner seeks to conflate the separately required discharge port and silencer outlet elements of Claim 7 with a unitary feature of the prior art in direct opposition to the claim structure and meaning given by the specification. Petitioner asserts that “Goubet teaches a discharge port (*e.g.*, outlet 16)” and “a silencer outlet (*e.g.*, opening of inner enclosure 13 leading to outlet 16).” Paper 2, Pages 49-50, 57-58. Despite attempting to create an “opening . . . leading to outlet 16” where Goubet teaches no such separate opening, Petitioner’s annotated figures identically highlight outlet 16 in Figure 3 of Goubet as an analog to both the discharge port and the silencer outlet. *Id.*; *see generally* Ex. 1016. Petitioner’s expert witness endorses this conflation with no discussion of the function or structural position of any of the discharge port, the silencer outlet, or Goubet’s outlet 16. Ex. 1002, ¶¶ 242, 264.

The specification of the '094 Patent supports interpretation of the discharge port and silencer outlet as distinct components. The '094 Patent teaches that “[t]he fluid dispersion assembly 10 includes a diffusion unit 100 at least partially defin[ing] a diffusion chamber 112, and in at least one embodiment, the diffusion chamber 112 is substantially enclosed within diffusion unit 100.” Ex. 1001, 3:22-27. Uniform droplet formation occurs “prior to discharge from the diffusion chamber 112 through discharge port 132.” *Id.* at 5:60-61. Further, “the fluid dispersion assembly 10 in accordance with the present specification **also includes** a silencer assembly 134 **in communication with** the discharge port 132, such as is illustrated in FIGS. 1 and 2.” *Id.* at 7:49-52 (emphasis added). This separate “silencer assembly 134 comprises . . . a silencer outlet 137.” *Id.* at 7:55-57. The specification therefore clearly identifies the fluid dispersion assembly as including a diffusion unit with a discharge port and “also” a silencer assembly comprising a silencer outlet, the silencer assembly “in communication with” the discharge port.

“In short, the specification comports with the plain language of the claims, fully supporting the conclusion that” the silencer outlet “is a separate structural component of the patented invention.” *Becton*, 616 F.3d at 1255; *see also Engel Indus., Inc. v. Lockformer Co.*, 96 F.3d 1398, 1404-05 (Fed. Cir. 1996) (concluding that where a claim provides for two separate elements, a “second portion” and a “return portion,” these two elements “logically cannot be one and the same”).

Petitioner's position is deficient in relying on improper conflation of separate claim requirements.

b. Goubet Cannot Create a Fluid Dispersion as Claimed.

Petitioner's Ground 3 also fails to demonstrate that Claims 7-9 and 11 are unpatentable under 35 U.S.C. § 103 because Goubet does not disclose or suggest an apparatus capable of creating a "fluid dispersion" as defined in the specification of the '094 Patent and required by all claims therein. Specifically, a POSITA would appreciate that the circular shape of the baffle formed by enclosures 12 and 13 and passage 14 necessitates that the droplets undergo multiple twists and turns, which would cause the droplets to remain in close contact and eventually coalesce into larger droplets. Ex. 2002, ¶ 29. Additionally, fine atomization of a liquid to create the uniform microdroplets required for a "fluid dispersion" is time-dependent; the relatively short time spent traversing the baffle of Goubet would result in a non-uniform spray. *Id.* Petitioner's assertions to the contrary are based on the testimony of their expert who has not conducted any testing or analysis of any embodiment of Goubet and should not be permitted to carry Petitioner's burden. *See* Ex. 2001, Page 38-39.

Additionally, it is known in the art that the inner chamber 13 of Goubet would not function as a baffle, nor the inner chamber 13 in conjunction with the passage 14 and the outlet 16 as a silencer. It is likely that the turbulent airflow therein, in

connection with the like diameters of passage 14 and outlet 16, would have no quieting effect on the ultimate ejection of the essential oil. Ex. 2002, ¶ 28-29.

c. 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 which are not taught by Goubet as explained above. Accordingly, because Petitioner has failed to show that Goubet 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).

IX. GROUND 4
(Claims 7-9 and 11 – Goubet in view of Kaiser)

Petitioner's Ground 4 fails to demonstrate Claims 7-9 and 11 are unpatentable under 35 U.S.C. § 103 for at least two independent reasons. First, Petitioner does not establish that Goubet discloses nor suggests the invention, as claimed above. Second, Petitioner has not met its burden to show that Kaiser is analogous art, nor that a POSITA would have been motivated to combine Kaiser with Goubet. Along these lines, the Board itself recognized at institution that the record is insufficient on Kaiser being analogous art and if there was a motivation-to-combine Goubet and Kaiser. Paper 9, Pages 39-40.

a. Kaiser Is Not Analogous Art.

The Board expressly noted at institution that “the record on the analogous art issue is incomplete” and that there is no conclusion as to “whether Petitioner has made a sufficient showing that one of ordinary skill in the art would have combined Goubet and Kaiser as proposed.” Paper 9, Pages 39-40. Ultimately, Petitioner bears the burden to prove unpatentability by a preponderance of the evidence, supported by substantial evidence. 35 U.S.C. § 316(e).

Along these lines, Petitioner is unable to effectively address the issue that Kaiser is analogous art because Kaiser is so patently distinct from the ‘094 Patent. Indeed, in the case cited by the Board, *Sanofi-Aventis*, the Federal Circuit reasons that the petitioner must establish, with substantial evidence, that ***each relied-upon reference is analogous to the challenged patent***. See *Sanofi-Aventis Deutschland GmbH v. Mylan Pharms. Inc.*, 66 F.4th 1373, 1379-80 (emphasis added). It is insufficient to argue that a reference is analogous only to another prior art reference in the asserted combination, because obviousness must be assessed from the perspective of the claimed invention, not from a daisy-chain of prior art analogies. *See id.*

As such, here, Petitioner offers no evidence that Kaiser is analogous to the ‘094 Patent. Rather, Petitioner provides testimony of Dr. White, who only attempts to describe *how* a POSITA may combine Goubet and Kaiser to achieve the novel

effects produced by the '094 Patent as claimed, not *why* one might consider the references in light of, or their analogousness to, the '094 Patent. Ex. 1002, ¶¶ 297-303. Accordingly, Dr. White, nor Petitioner describes why or how Kaiser is analogous to the challenged patent.

Along these lines, Petitioner cannot show that Kaiser is analogous to the challenged patent. Rather, Kaiser is directed to electrospray injection and combustion in mesoscale power-generation systems, using high-voltage electric fields to generate charged fuel droplets for controlled combustion in catalytic micro-combustors. Ex. 1014 at 42–44. Its objective is efficient fuel burning, emissions reduction, and thermal efficiency in power systems, not scent dispersion, consumer appliances, or acoustic attenuation.

More specifically, as Dr. Micklow explains, Kaiser operates in a fundamentally different atomization regime from the fluid-flow-driven mechanisms of the '094 Patent, one based on electrosprays, in which charged droplets are formed from capillaries and dispersed through Coulombic repulsion. Ex. 2002, ¶ 30. As such, the droplets in Kaiser are generated from a semi-conducting liquid, not from an operative fluid as described and claimed in the '094 Patent. Ex. 2002, ¶ 31. In Kaiser, droplets are formed and electrically charged via a capillary tube under a high potential relative to a nearby ground electrode, rather than introduced as an uncharged fluid into a mixing chamber as taught in the '094 Patent. Ex. 2002, ¶ 32.

Further, dispersion in Kaiser occurs through Coulombic repulsion (an electrostatic force) of charged droplets, not through a gas-flow and liquid-particle interaction as found in the '094 Patent. Ex. 2002, ¶ 33. Accordingly, the atomization in Kaiser is electrostatic and entirely decoupled from gas-flow processes, making the underlying physical mechanisms markedly different from the fluid-flow-based atomization of the '094 Patent. Ex. 2002, ¶ 34. For these reasons, a POSITA would not look to an electrostatic atomizer such as Kaiser when considering the teachings of the '094 Patent, as such a POSITA would generally lack coursework or practical experience with this type of electrostatic system in the context of the claimed technology. Ex. 2002, ¶ 35.

Therefore, the above demonstrates that Kaiser is of a different field of endeavor than that of the '094 patent as claimed as not reasonably pertinent to the problem faced by the inventor. *See generally Virtek Vision Int'l ULC v. Assembly Guidance Sys. Inc.*, 97 F.4th 882, 886-87 (Fed. Cir. 2024) (describing that a reference is analogous art only if it is (1) from the same field of endeavor, or (2) reasonably pertinent to the problem faced by the inventor). As a result, Kaiser should not be considered prior art, nor should it be combinable with any reference to qualify as prior art.

b. Petitioner Fails to Articulate a Legally Sufficient Motivation to Combine.

Even if Kaiser were analogous art (which it is not), Petitioner still fails to provide a substantial reasoned explanation for why a POSITA would combine the references in the manner proposed. Ultimately, it is not enough that two systems were merely “known” to combine them for purposes of evaluating obviousness; there must be a reason a skilled artisan would have made the specific substitution or combination. *Id.*

The Board noted at institution that it reached “no conclusion as to whether Petitioner has made a sufficient showing that one of ordinary skill in the art would have combined Goubet and Kaiser as proposed.” Paper 9, Page 40. Indeed, Petitioner’s asserted motivation boils down to the conclusory statement that given Goubet and Kaiser, “it was well known in the field... to produce uniform droplets.” Paper 1, Pages 63–64. That is precisely the kind of generic, outcome-driven rationale rejected by the Federal Circuit. *See Palo Alto Networks, Inc. v. Centripetal Networks, LLC*, 122 F.4th 1378, 1384–86 (Fed. Cir. 2024) (legal error to rely on isolated disclosures without articulating a concrete rationale for integration).

The testimony of Dr. White is equally void of a sufficient showing that a POSITA would have combined Goubet and Kaiser. Paper 1002, ¶¶ 297-303. Rather, Dr. White merely describes the ability to achieve the effect as in the claimed patent, not why a POSITA would look to the field of electrospray injection and combustion

in mesoscale power-generation systems, using high-voltage electric fields to generate charged fuel droplets for controlled combustion in catalytic micro-combustors when considering atomization for scents. *Id.*

The fact of the matter is that a POSITA would not look to an electrostatic atomizer such as Kaiser when considering the '094 Patent, as such a POSITA would generally lack coursework or practical experience with this type of electrostatic system in the context of the claimed technology. Ex. 2002, ¶ 35.

c. Claims 8, 9, and 11

As claims 8, 9, and 11 depend from claim 7 and because Petitioner fails to establish unpatentability of claim 7 under Ground 4, the dependent claims cannot be shown to be unpatentable under the theory that Goubet and Kaiser renders them obvious. IPR2015-00592, Paper 72, 2016 Pat. App. LEXIS 13343, at *38 (finding that where a petitioner has not shown, by a preponderance of the evidence, that an independent claim is unpatentable, the claims that depend on it likewise cannot be shown to be unpatentable).

d. Conclusion

Ground 4 should be rejected in the Final Written Decision. Petitioner has not met its burden to show that claims 7–9 and 11 are unpatentable under § 103. Goubet does not disclose nor suggest the claimed invention; Kaiser is non-analogous art; and Petitioner has failed to articulate a legally sufficient motivation to combine. The

deficiencies identified by the Board at institution persist and compel a finding in Patent Owner's favor that Claims 7-9 and 11 are not obvious in light of the references presented.

X. GROUND 5
(Claims 7-9 and 11 – Gao)

Although the Board instituted review on Ground 5 noting that Petitioner identifies a “silencer inlet,” “silencer outlet,” and “silencer assembly” in Gao, Petitioner has not met its ultimate burden to prove Claims 7–9 and 11 unpatentable under 35 U.S.C. § 103 by a preponderance of the evidence, supported by substantial evidence. 35 U.S.C. § 316(e). Ultimately, Petitioner's attempted showing that Claims 7-9 and 11 are unpatentable over Gao fails for at least two independent reasons. First, Petitioner's theory impermissibly collapses distinct claimed elements into a single undifferentiated flow path, contrary to the claim language and governing law. *See e.g. Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (“[w]here a claim lists elements separate, the clear implication of the claim language is that those elements are distinct components of the patented invention.”). Second, while Petitioner labels the silencer assembly of clause 7[E] in Gao's drawings, Gao does not disclose nor suggest the claimed silencer assembly.

a. Petitioner’s Theory Impermissibly Collapses Distinct Claimed Elements of Clause 7[E].

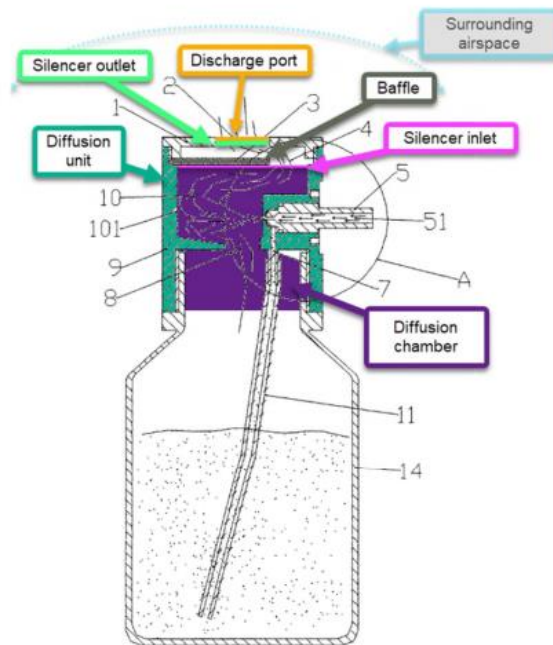
Clause 7[E] of claim 7 recites “a silencer assembly having a silencer inlet, a silencer outlet, and a baffle.” Ex. 1001. The claim language thus requires three distinct structural components, not merely a single flow path.

At institution, the Board noted that Petitioner’s showing as to this limitation hinges entirely on annotated versions of Figure 1 of Gao, in which Petitioner labels portions of the figure as a “silencer inlet,” “silencer outlet,” and “silencer assembly.” Paper 9, 43–44. As the Board also recognizes, Gao itself discloses none of these structures. Paper 9, Page 45 (“[T]he features relied on are not expressly discussed or given reference numerals in Gao (even if they are in the challenged patent) does not undermine Petitioner’s showing at this stage of the proceeding.”).

Accordingly, Petitioner’s approach is legally impermissible. Where a claim recites separate elements, the clear implication of the claim language is that those elements are distinct components of the patented invention. *See e.g. Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010). Indeed, prior art cannot be “distorted from its obvious design” to meet claim limitations. *See, e.g., In re Chudik*, 851 F.3d 1365, 1372 (Fed. Cir. 2017); *see also Topliff v. Topliff*, 145 U.S. 156, 161 (1892) (a reference does not anticipate or render

obvious a claim merely because it could be modified to perform the claimed function).

To this end, Petitioner has distorted Gao from its obvious design to meet claim limitations, specifically via the following annotated figure by adding in a labeled silencer inlet, (which is undifferentiable from the diffusion chamber), and a silencer outlet (which is undifferentiable from the discharge port):



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

Further, when deposed, Petitioner’s expert could not articulate any meaningful structural basis in Gao for distinguishing a “silencer inlet” or “silencer outlet” from the surrounding flow path. Rather, Petitioner’s expert relied on the silencer inlet being the “line drawn in pink” as the “silencer inlet” of Gao, and a having to specify that a line could be drawn (*i.e.* the lime green line in the figure

above) about the reference numeral 1 to form a “control surface,” which could be a “silencer outlet.” Ex. 2001, Pages 26-30.

As such, it is clear that Petitioner’s position depends entirely on the premise that a POSITA would understand Gao’s baffle and surrounding flow path to constitute a silencer assembly with the claimed subcomponents, even though those components are neither named, described, suggested, nor structurally delineated in Gao. That is precisely the kind of gap-filling by implication that the Federal Circuit has repeatedly rejected. *See, e.g., In re Chudik*, 851 F.3d 1365, 1372 (Fed. Cir. 2017) (prior art cannot be “distorted from its obvious design” to meet claim limitations); *see also Topliff v. Topliff*, 145 U.S. 156, 161 (1892) (a reference does not anticipate or render obvious a claim merely because it could be modified to perform the claimed function). Accordingly, Petitioner should not be afforded credibility when considering its unpatentability assertions related to Gao.

Further to this point, Petitioner and Patent Owner differ on the translation of Gao. Specifically, while Petitioner alleges that the term pertaining to reference numeral 3 is “baffle,” Patent Owner’s certified translation sets forth that the term is a “panel.” *See* Ex. 2004.

This distinction is not merely semantic. As discussed in the following section, a “baffle” denotes a structure designed to perform a specific function, whereas

nothing in Gao attributes such a function to the component identified by reference numeral 3.

b. Gao Does Not Disclose Nor Suggest the Claimed Silencer Assembly.

Even accepting Petitioner's labelling of Gao, a person of ordinary skill in the art would not view Gao as disclosing a silencer assembly as a distinct structural unit, nor as teaching a baffle.

As explained by Patent Owner's expert and the patent itself, the '094 Patent's silencer assembly as claimed is a purpose-built acoustic structure in which the silencer inlet, baffle, and silencer outlet cooperate to attenuate sound, ultimately through controlled disruption and recombination of the fluid stream. Ex. 2002, ¶ 36. By contrast, the structure identified by Petitioner in Gao consists only of a flat divider plate that merely forces fluid to flow around it, without any mechanism to split flow, phase pressure waves, or reduce unsteady pressure peaks. Ex. 2002, ¶ 37. Such a plate therefore does not function as a baffle in the acoustic sense claimed by the '094 Patent. *Id.* Indeed, simply obstructing fluid flow, without contoured geometry or phased flow paths, does not dampen sound but instead increases turbulence and amplifies unsteady pressure fluctuations. Ex. 2002, ¶ 38. Those effects would be expected to increase, rather than reduce, the sound generated during operation. *See id.*

Accordingly, the structure in Gao identified by Petitioner would not be understood by a POSITA as a silencer assembly because it lacks the very physical mechanisms required to reduce operational noise. *See id.* at ¶ 38. That outcome stands in stark contrast to the '094 Patent, which uses controlled flow disruption within the silencer assembly to manage acoustics. *Id.* at ¶ 39.

In sum, Petitioner's challenge to the limitations of Claim 7[E] fails on two independent grounds. Petitioner impermissibly collapses distinct claimed elements into a single undifferentiated flow path, contrary to the claim language and controlling precedent. Factually, even under Petitioner's own labeling, Gao does not disclose, and a POSITA would not recognize, a silencer assembly within the prior art reference.

c. Claims 8, 9, and 11

As claims 8, 9, and 11 depend from claim 7 and because Petitioner fails to establish unpatentability of claim 7 under Ground 5, the dependent claims cannot be shown to be unpatentable under the theory that Gao renders them obvious. IPR2015-00592, Paper 72, 2016 Pat. App. LEXIS 13343, at *38 (finding that where a petitioner has not shown, by a preponderance of the evidence, that an independent claim is unpatentable, the claims that depend on it likewise cannot be shown to be unpatentable).

d. Conclusion

Ground 5 should be rejected in the Final Written Decision. Petitioner has not met its burden to show that Claims 7–9 and 11 are unpatentable under 35 U.S.C. § 103. Gao does not disclose the claimed silencer assembly of clause 7[E], and Petitioner’s attempt to supply missing structural limitations through annotated figures and functional inference is legally insufficient. The preliminary deficiencies identified at institution persist on the full record and compel a finding in Patent Owner’s favor towards patentability.

XI. GROUND 6
(Claims 7-9 and 11 – Gao in view of Zeng)

Although the Board instituted review on Ground 6 noting that “For the same reasons discussed in the context of the ground based on Sevy and Zeng, we determine that Petitioner has made sufficient showing that Zeng discloses or suggests clause 7E.” Paper 9, Page 47. Still, Petitioner has not met its ultimate burden to prove claims 7–9 and 11 unpatentable under 35 U.S.C. § 103 by a preponderance of the evidence, supported by substantial evidence. 35 U.S.C. § 316(e). Ultimately, Petitioner’s attempted showing that claims 7-9 and 11 are unpatentable over the combination of Gao in view of Zeng fails.

a. Gao in View of Zeng Does Not Render the Claimed Patent Obvious.

As an initial point, Gao, as described above, does not render the '094 Patent unpatentable because Petitioner's theory depends on collapsing multiple, distinct claim elements into a single, undifferentiated flow path that Gao simply does not disclose. Claim 7[E] requires a silencer assembly comprising three structurally distinct components, a silencer inlet, a baffle, and a silencer outlet, yet Gao nowhere names, describes, or structurally delineates these elements. Instead, Petitioner relies entirely on annotations to retrofit Gao's drawings with labels that do not exist in the reference itself. Ex. 2001, Pages 26-30. That approach runs directly contrary to Federal Circuit precedent, which prohibits distorting prior art from its obvious design or filling structural gaps by implication. Without express disclosure or clear structural teaching, Gao cannot meet the claim's requirement for a purpose-built silencer assembly with distinct subcomponents.

Even on Petitioner's own terms, Gao still fails factually. The component identified as a "baffle" is, at most, a flat divider plate, described in Patent Owner's certified translation as a "panel" that merely redirects flow. *See* Ex. 2004. It lacks the acoustic functionality that defines a true baffle in the context of the '094 Patent, which requires controlled disruption and recombination of fluid streams to attenuate sound. A simple obstruction that increases turbulence and unsteady pressure, which would actually increase noise, cannot reasonably be understood by a POSITA as a

silencer assembly designed to reduce noise. Ex. 2002, ¶ 42. Thus, both legally and technically, Gao falls short: it neither discloses the required structural elements nor teaches the functional cooperation necessary to satisfy claim 7[E]. As a result, Petitioner has not met its burden to show unpatentability by a preponderance of the evidence. The introduction of Zeng is of no assistance to render the claim of the '094 Patent obvious either.

As also described above in connection with Ground 2, Zeng does not render the '094 Patent unpatentable, and its introduction here does not salvage Petitioner's deficient reliance on Gao. Zeng's noise-reduction head is not a passive, downstream flow structure that can simply be appended to another system. Rather, it depends on the formation of a fluid "tension film" across an opening to control atomization and dispersion. Ex. 1011, Page 5. That mechanism requires a precise spatial and functional relationship between the atomizer and the opening hole, conditions that are entirely absent from Gao. Incorporating Zeng into Gao's undifferentiated flow path would therefore disrupt the very operative principle on which Zeng relies, eliminating the membrane formation that defines Zeng's functionality. The result would be a combined device that is inoperable for Zeng's intended purpose. Under settled law, a proposed modification that renders the prior art unsatisfactory for its intended use cannot support a finding of obviousness, and Zeng therefore cannot

cure Gao's failure to disclose the claimed silencer assembly. *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984).

Even apart from operability, Zeng also teaches away from Petitioner's proposed Gao-Zeng combination and supplies no motivation to combine with a reasonable expectation of success. Zeng emphasizes preventing the direct expulsion of atomized fluid through its opening, expressly relying on the tension film to ensure controlled dispersion. Gao, by contrast, relies on an open, turbulent flow path that would permit precisely the condition Zeng seeks to avoid. A POSITA would therefore be discouraged from combining Gao and Zeng, as doing so would undermine Zeng's stated objectives and compromise its functionality. Ex. 2002, ¶¶ 24-27. Moreover, introducing Zeng's noise-reduction structures into Gao's flow regime would predictably promote fuel coalescence, degrading atomization efficiency and offering no reliable acoustic benefit. *Id.* Accordingly, Zeng, whether considered alone or in combination with Gao, fails both legally and technically to render claims 7-9 and 11 of the '094 Patent unpatentable.

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 which are not taught nor rendered obvious by Gao in view of Zeng. Accordingly, because Petitioner has failed to show that Goubet 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).

XII. CONCLUSION

For the foregoing reasons, the evidentiary record confirms that Petitioner has not met, and cannot meet, its burden under 35 U.S.C. § 316(e) to prove the unpatentability of claims 7–9 and 11 by a preponderance of the evidence. Petitioner’s case rests on legally impermissible labelling of prior art, unsupported technical assumptions, and assertions that find no footing in the prior art or in reliable expert analysis. By contrast, Patent Owner has demonstrated that the asserted references neither disclose nor suggest the full scope of the challenged claims, and that Petitioner’s theories fail both as a matter of law and as a matter of fact. Accordingly, Patent Owner respectfully asks the Board enter a Final Written Decision confirming the patentability of claims 7–9 and 11 of the ’094 Patent and denying all grounds of unpatentability.

Dated: January 15, 2026

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CERTIFICATE OF COMPLIANCE WITH WORD COUNT LIMIT

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that this Patent Owner's Response (the "POR") contains **9,280** words, excluding the parts of the POR 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.

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of Patent Owner’s Response (the “POR”) has been served in its entirety on January 15, 2026, by causing the POR and accompany documents (if any) to be electronically mailed to the following attorneys of record for the Petitioner:

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