

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AROMA360, LLC,

Petitioner,

v.

AIR ESSSENTIALS, INC.,

Patent Owner.

IPR 2025-00707
U.S. Patent No. 10,092,918

**PETITIONER'S OPPOSITION TO PATENT OWNER'S
CONTINGENT MOTION TO AMEND**

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Exhibit 1025	E.P Spearman, J.A. Sattarty, and M.J., Reader-Harris, <i>Comparison of velocity and turbulence profiles downstream of perforated plate flow conditioners</i> , FLOW MEAS. INSTRUM., Vol. 7 No. 3/4, pp. 181-199 (1996)
Exhibit 1026	Lighthill, M. J., <i>On Sound Generated Aerodynamically</i> , I. General Theory. Proc. Roy. Soc. (London), Ser. A, vol. 211, no. 1107 (Mar. 20, 1952), pp. 564-587 (hereinafter, “Lighthill”)
Exhibit 1027	NOISE AND VIBRATION CONTROL ENGINEERING: PRINCIPLES AND APPLICATIONS (2006), Ed. I.L. Ver and L.L Beranke, Wiley & Sons, ISBN-10 0-471-91842-3 (hereinafter, “the Noise Control Book”)
Exhibit 1028	HANDBOOK OF ATOMIZATION AND SPRAYS: THEORY AND APPLICATION (2011), Ed. N. Ashgriz, Springer, DOI 10.1007/978-1-4419-7264-4 (hereinafter, the “Handbook”)

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Exhibit 1032	White, F.M. (1994), Fluid Mechanics (3rd Edition), New York, NY: McGraw-Hill Higher Education
Exhibit 1033	Maxey M.R. and Riley, J.J., <i>Equation of motion for a small rigid sphere in a nonuniform flow</i> , PHYS. FLUIDS 26, 883-889 (1983)
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Exhibit 1049	R. A. Mugele and H. D. Evans, “ <i>Droplet size distribution in sprays</i> ,” <i>Industrial & Engineering Chemistry</i> , vol. 43, no. 6, pp. 1317–1324, 1951.
Exhibit 1050	[Reserved]
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I. INTRODUCTION

Petitioner opposes Patent Owner's ("PO") Motion to Amend ("Motion") to substitute claims 16 and 17 for challenged independent claims 1 and 5.

First, Patent Owner's Motion does not comply with the requirements for a motion to amend under 37 C.F.R. §42.121(b). Patent Owner fails to show written description support for substitute claims 16 and 17 "as a whole." Instead, Patent Owner provides only a table of "New Claim Recitation[s]," and states those citations are "not considered exhaustive nor meant to limit the meaning or construction" of the corresponding claim terms. PO Mot. to Amend 6–8. That threshold defect alone warrants denial of entry of the proposed amendments. *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 4 (PTAB Feb. 25, 2019) (precedential); 37 C.F.R. § 42.121(b).

Second, the amendments introduce new § 112 defects. In particular, substitute claim 16 adds a new "mixing chamber ... increasing in dimension" limitation that lacks written description support and is indefinite, so the Motion should be denied on § 112 grounds independent of the prior art. And even if the Board accepts PO's apparent view of what "increasing in dimension" means, the asserted prior art disclose that feature as discussed in Section IV.

Third, the amendments do not cure unpatentability. The substitute claims are identical to the challenged claims except that claim 16 adds an additional limitation

regarding the mixing chamber geometry and claim 17 adds new “fluid inlet” limitations. The unchanged limitations remain unpatentable for the reasons already set out in the Petition. And the newly added limitations are also taught by the prior art Grounds cited in the Petition. Thus, the amendments do not support patentability, and the Board should deny Patent Owner’s motion to amend. Pet. 25–49; Ex. 1016, 3:31–4:2, Fig. 2; Ex. 1014, 43.

II. THE AMENDMENTS ARE PROCEDURALLY DEFICIENT

A motion to amend must comply with 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121, including showing written description support and identifying support in earlier-filed applications for benefit claims. The Board’s precedential *Lectrosonics* decision requires that a motion to amend “set forth written description support for each proposed substitute claim as a whole, and not just the features added by the amendment.” *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper No. 15 at 8 (PTAB Feb. 25, 2018) (precedential); *see also Apple Inc. v. Personalized Media Communications LLC*, IPR2016-00754, Paper No. 41 at 65 (PTAB Sept. 19, 2017) (“The requirement that the motion to amend must set forth the support in the original disclosure of the patent is with respect to each claim, not for a particular feature of a proposed substitute claim. In other words, it is inadequate to show written description support for just the claim feature added by the proposed substitute claim.”).

Here, Patent Owner failed to meet this requirement. Patent Owner’s written description support is a table listing “New Claim Recitation,” which only cites alleged support for the new limitations. Patent Owner does not identify support for the remainder of substitute claims 16 and 17, which recite a multi-component “fluid dispersion assembly” including a diffusion unit, a diffusion chamber with upper and lower chambers, a discharge port, a diffusion assembly with an atomizer assembly, air and fluid inlets, a mixing chamber, and multiple functional relationships. Contrary to the Board’s clear requirement, Patent Owner’s Motion does not “set forth written description support for each proposed substitute claim as a whole,” and instead limits such support to “just the features added by the amendment.” *Lectrosonics*, Paper No. 15 at 8. Thus, Patent Owner failed to satisfy the “procedural obligations imposed by the Director” and the proposed amendments cannot be “entered into the IPR.” *Aqua Prods., Inc. v. Matal*, 872 F.3d 1290, 1306 (Fed. Cir. 2017) (en banc); *see also id.* at 1308 (“proposed amended claims are ‘entered into’ and become part of the ‘inter partes review instituted under this chapter’ so long as the patentee shows that they are nonbroadening, *supported by the specification...*”) (emphasis added).

Patent Owner’s disclaimer, stating that its citations are “not considered exhaustive,” only underscores the deficiency. Patent Owner’s non-exhaustive list aimed only at new limitations does not satisfy the Board’s requirement. Thus, the

Board need not reach the question of patentability and the Motion should be denied for failure to satisfy 37 C.F.R. §42.121(b).

III. SUBSTITUTE CLAIM 16 IS INDEFINITE UNDER § 112¹

Substitute claim 16 adds a new geometric and operational requirement. In particular, it requires a “*mixing chamber beginning at said atomizer air inlet channel and increasing in dimension as the compressed air flows past said fluid inlet.*” This added limitation, read in light of the specification and prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). Specifically, the “mixing chamber ... increasing in dimension” phrase does not notify a POSITA with reasonable certainty about what “dimension” must increase (e.g., diameter, cross-sectional area, perimeter, volume, etc.), nor how to determine whether a given device satisfies the limitation. The claim provides no objective boundaries for (i) where along the flow path the “increase” is assessed, (ii) over what distance it must occur, or (iii) along what axis or reference direction the “dimension” is measured.

¹ Petitioner does not waive, and expressly reserves, all other § 112 arguments introduced by the amendments, including (without limitation) any lack of written description or indefiniteness issues related to the substitute claims and may present those later in this proceeding or in the underlying litigation where permitted.

The intrinsic record does not cure these ambiguities, even if Patent Owner points to Figure 6. The patent explains that the air-inlet portion shown in Figure 6 may have constant-diameter features (“inlet aperture ... and outlet aperture ... are substantially equal in diameter, as is the channel ... disposed therebetween”), but it does not define any objective metric for “increasing in dimension” of the “mixing chamber,” nor does it specify how or where any “increase” is measured relative to the fluid inlet. The written description likewise describes the compressed-air “flowpath” in directional terms (e.g., “extends horizontally” through identified components), but it does not translate that narrative into a measurement rule for the amended “increasing in dimension” requirement.

Even assuming Figure 6 is viewed as expanding downstream of the fluid inlet, that figure still does not supply an objective reference direction for measuring whether (or how) a “dimension” is “increasing.” In practice, a mixing chamber is a three-dimensional volume, and a two-dimensional cross-section can only depict a slice through that volume. A POSITA is left to guess which of several plausible “axes” governs the claim:

- The device’s longitudinal centerline (if any);
- The nominal “flow path” direction (which can vary locally as jets develop, entrain, and recirculate); or
- A geometric reference plane (e.g., the plane of the cross-section shown in Fig. 6) that may not correspond to the chamber’s maximum or minimum dimension.

That ambiguity matters because a chamber can “increase” in one cross-sectional direction while remaining constant (or even decreasing) in another. A circular “diameter” is only meaningful if the cross-section is circular and the measurement plane is specified. Nothing in the claim identifies a reference plane, a centerline, or a specific measurement convention. And the patent shows that, when it intends to define orientation relative to flow, it can do so expressly (e.g., describing “axial” versus “transverse” portions and referencing the “direction of flow”), underscoring that the absence of any comparable reference direction for the amended “increasing in dimension” language is not cured by general figure schematics.

Finally, the amendment compounds the problem by coupling two boundary-setting phrases without defining their interaction: the mixing chamber must “begin[] at” the air inlet channel, yet its dimensional “increase” is tied to the condition “as the compressed air flows past said fluid inlet.” A POSITA is left to guess whether the “increase” is evaluated beginning at the channel and mixing-chamber interface, beginning at the fluid-inlet location, or over some other unstated span “past” the inlet. Without objective criteria for these boundaries, reasonable artisans can reach different conclusions about whether a given geometry satisfies the claim.

Accordingly, substitute claim 16 should not be entered because it is indefinite. But even assuming *arguendo* that the Board finds the “increasing in dimension” term

sufficiently definite based on Figure 6, the asserted prior art teaches that same feature, and substitute claim 16 remains obvious.

IV. THE SUBSTITUTE CLAIMS ARE UNPATENTABLE OVER PRIOR ART

As discussed above, Patent Owner's Motion proposes substitute claims 16 (substituting challenged claim 1) and 17 (substituting challenged claim 5) by adding new limitations directed to (i) the geometry of the "mixing chamber" and (ii) the orientation of a "fluid inlet" relative to the compressed-air flow path. PO Mot. to Amend 11–13. Those amendments do not cure unpatentability because (a) the substitute claims retain the same core structure and requirements already mapped in the Petition, limitation-by-limitation, to the asserted prior art, and (b) the newly added limitations are likewise taught by the same asserted prior art. Pet. 25–69. Substitute claims 16 and 17 remain obvious over the four grounds set out in the Petition, as explained below.

A. Grounds 1 and 2 - Substitute Claim 16 is Obvious Over Goubet (and, Alternatively, Goubet In View of Kaiser)

Substitute claim 16 remains unpatentable for the same reasons as original claim 1 as to unchanged limitations. The Petition already provides an element-by-element showing that these identical claim limitations are disclosed or rendered obvious by the asserted prior art, including Goubet under Ground 1, and the same

evidence applies because the claim language is unchanged. Pet. 25–41; PO Mot. to Amend 11–12; Ex. 1001, 11:60–12:19.

The Petition also provided alternative obviousness showings using Kaiser to the extent Goubet is found not to disclose the “fluid dispersion” limitation. Specifically, the Petition explained Kaiser’s teaching of the well-known importance of controlling droplet-size distribution for uniform evaporation, resulting in substantially uniform aerosol. Pet. 44–49; Ex. 1014, 43. The new limitation added to substitute claim 16 does not alter (and does not purport to narrow) the “fluid dispersion” requirement, so the Petition’s existing Kaiser-based analysis continues to apply to that unchanged requirement. PO Mot. to Amend 11–12; Pet. 44–49.

Regarding the new limitation about mixing chamber geometry, that too is taught by Goubet and thus substitute claim 16 is still obvious over Grounds 1 and 2.

1. Goubet teaches the newly added mixing-chamber geometry.

Patent Owner asserts that substitute claim 16 “further clarifies the nature of the mixing chamber” and that “[n]one of the asserted references, individually or in combination, disclose or render obvious the recited claim features.” PO Mot. to Amend 6. But Patent Owner offers no analysis supporting that conclusory assertion. In contrast, Patent Owner’s own expert characterized venturi-driven atomization in consumer fragrance diffusers, like those disclosed in the prior art, as involving “simple devices” that are “as simple as you can get” and “low-end engineering

work.” Ex. 1046, at 59:11-19; 60:16-21. Thus, Patent Owner’s expert confirms that a change to the geometry of the mixing chamber of the prior art would be an obvious modification with a reasonable expectation of success to a person of skill in the art.

A plain reading of substitute claim 16 shows the “mixing chamber” as amended must (a) start at the atomizer air inlet channel and (b) become larger in dimension as compressed air flows past the fluid inlet. PO Mot. to Amend 11–12. While Petitioner believes the new limitation does not provide reasonable certainty about where the mixing chamber begins or about what “dimension” must increase, if PO contends that “increasing in dimension” means what is suggested by ’918 Fig. 6 (a narrow region at/near the atomization site transitioning into a wider downstream region), then Goubet’s venturi-based diffuser head and Figure 2 discloses this same geometry. Goubet discloses a diffusion chamber with a compressed-air inlet, a venturi cone, and an oil inlet (upper end of a dip tube), and Figure 2 depicts airflow (arrows F) entering the chamber at the air inlet and flowing past the oil inlet through the venturi region into a larger downstream region. Ex. 1047, ¶ 45; Ex. 1016, 3:31–4:2, 4:15–16, 4:19–22, Fig. 2. In other words, the chamber begins where compressed air enters from the air inlet path, and Figure 2 depicts the chamber geometry widening downstream past the oil inlet and venturi region. Ex. 1016, Fig. 2. At minimum, configuring the mixing region downstream of an oil inlet to expand, rather than remain constant, is a predictable implementation of the disclosed venturi-based

atomizer in the same diffuser head architecture, and therefore does not confer patentability over Goubet. Ex. 1047, ¶ 45; *see also* Ex. 1016, 3:31–4:2, Fig. 2.

2. Alternatively, Goubet in view of Kaiser render obvious substitute claim 16

Petitioner’s primary showing as to substitute claim 16’s newly added mixing-chamber-geometry limitation does not require any teaching from Kaiser because Goubet alone teaches the venturi-based air inlet, fluid oil-inlet, and mixing-chamber geometry as discussed above. Ex. 1016, 3:31–4:2, 4:15–16, Fig. 2. The Petition’s stated rationale for applying Kaiser, which addresses any “fluid dispersion” uniformity requirement by relying on known principles of droplet-size distribution control, remains unchanged and is not effected by the added limitations of substitute claim 16. Because substitute claim 16 retains all limitations of original claim 1 already shown unpatentable in the Petition and adds only a mixing-chamber-geometry requirement that is taught by Goubet’s venturi-based diffusion chamber (including its venturi cone and depicted geometry in Figure 2), substitute claim 16 is also unpatentable over Goubet in view of Kaiser.

B. Grounds 3 and 4 - Substitute Claim 16 is Obvious Over Gao-2 (and, Alternatively, Gao-2 in View of Goubet)

Substitute claim 16 is unpatentable over Gao-2 for the same reasons set out in the Petition as to the unchanged limitations. The Petition mapped the core architecture of claim 1 to Gao-2 under Ground 3 and provided an alternative under

Ground 4 (Gao-2 in view of Goubet) to alternatively teach the “fluid dispersion” limitation. Pet. 51–69; Ex. 1042. Those showings apply equally to substitute claim 16 because Gao-2 discloses the same venturi-style atomization concepts that Patent Owner now attempts to capture with the amended “mixing chamber” geometry language.

1. Gao-2 teaches the newly added mixing-chamber geometry.

First, Gao-2 discloses a mixing chamber. Patent Owner argues Gao-2 lacks the claimed “mixing chamber” because atomization occurs at the outlet of liquid suction hole 3224. Resp., 14–18 (citing Ex. 1042 ¶[0036]). But this argument does not address the structure in Gao-2 that the Petition reads on the claimed “mixing chamber.” The Petition (and Dr. White’s analysis) map the claimed mixing chamber to the chamber defined by Gao-2’s atomization rotating core 322 (provided with cap 323), where essential oil is mixed with airflow prior to discharge through spray outlet 3231 (e.g., the exhaust aperture). Pet. 56–57; Ex. 1042 ¶[0036]; Figs. 9–10.

Gao-2’s flow path involves (1) air entering through air inlet channel 311 and vent hole(s) 3215, and flowing along guide grooves 3225 defined within atomization rotating core 322; (2) essential oil is drawn into and through liquid suction hole 3224; (3) within the chamber defined by atomization rotating core 322 (with cap 323), the oil and airflow meet, and the oil “then mixes with the airflow and is atomized at the

outlet of the liquid suction hole 3224”; and (4) the atomized mist is then discharged through spray outlet 3231. Ex. 1042 ¶¶[0036], [0038]; Figs. 9–10.

The chamber defined by Gao-2’s atomization rotating core 322 is formed by the “multiple guide grooves 3225” that surround the outlet of liquid suction hole 3224 and cooperate with the cap to define the airflow channel at the tip of the rotating core. Ex. 1042 ¶[0037]; Figs. 9–10. Gao-2 further explains that airflow “flows through the guide grooves 3225” before mist is sprayed from spray outlet 3231. Ex. 1042 ¶[0038]. Because guide grooves 3225 are defined within atomization rotating core 322 and surround suction hole 3224, a POSITA would understand Gao-2 to disclose a chamber within rotating core 322 in which air and oil are mixed before discharge, i.e., a “mixing chamber.” Ex. 1042 ¶¶[36]–[38]; Figs. 9–10; Pet. 56–57.

Patent Owner’s contention that mixing occurs “at 3224” and therefore Gao-2 lacks a “mixing chamber” reads Gao-2 too narrowly. Even if some atomization occurs at the outlet of hole 3224, that does not negate that mixing occurs within the chamber structure defined by rotating core 322 and its liquid-suction path before it is sprayed through spray outlet 3231 of atomization spray cap 323 (*e.g.*, the atomizer exhaust aperture). Ex. 1042 ¶[0036]; Figs. 9–10. That chamber structure satisfies the claim requirement that compressed air and operative fluid are “mixed together in said mixing chamber.” Ex. 1001, 11:60–12:19.

Second, Gao-2 teaches that the mixing region begins at the air-inlet channel. Gao-2 discloses an “air inlet channel 311” on the cylindrical body that connects the air pump to the atomization core and directs airflow into the core. Ex. 1042 ¶ [0031]. It then describes the airflow sequence: airflow “enters the upper end of the atomization core base 321 through the air inlet channel 311,” passes through vent holes (3215), flows through the guide grooves (3225), and is finally sprayed out from the spray outlet (3231). Ex. 1042 ¶ [0038]. Thus, the disclosed mixing/atomization region is directly fed by, and begins at, the air-inlet channel’s delivery of compressed air into the atomization core. Ex. 1042 ¶¶ [0031], [0038].

Third, Gao-2 teaches the “increasing in dimension” concept as air flows past the fluid-inlet (suction/atomization) location. *See* Ex. 1047, ¶ 46. Gao-2 explains that essential oil is drawn through a liquid suction channel (3216) into a liquid suction hole (3224), and that negative pressure forms near the outlet of that hole opposing the spray outlet, where the oil “mixes with the airflow and is atomized” before discharge. Ex. 1042 ¶ [0036]; *see also id.*. In the disclosed geometry, the suction-hole outlet is located on a conical head (3223), and guide grooves (3225) surround the outlet region and cooperate with the inner surface of the cap (323) to form part of the airflow channel. Ex. 1042 ¶ [0037]; *see also* Ex. 1047, ¶ 46. Figures 9 and 10 depict the flow region opening away from the suction/atomization site toward the

spray outlet and discharge path, consistent with an expanding downstream region relative to the suction-hole outlet. Ex. 1042, Figs. 9–10; *see also* Ex. 1047, ¶ 46.

Alternatively, Gao-2 teaches an expanding downstream discharge structure beyond the atomization core: the mist outlet (351) is “a stepped hole that is smaller at the top and larger at the bottom,” confirming that the disclosed device uses increasing cross-sectional geometry along the discharge direction. Ex. 1042 ¶[0034]; *see also* Ex. 1047, ¶ 46. While this stepped outlet is downstream of the atomization core itself, it further supports that Gao-2 discloses expansion of the discharge flow region as the mist travels away from the suction/atomization region. Ex. 1042 ¶[0034].

2. Alternatively, Gao-2 in view of Goubet render obvious substitute claim 16

The Petition’s Ground 4 provides an alternative to meet the “fluid dispersion” limitation based on Gao-2 in view of Goubet. Pet. 61–69. Because substitute claim 16 retains all limitations of original claim 1 already shown unpatentable in the Petition and adds only a mixing-chamber-geometry requirement that is taught by Gao-2, substitute claim 16 is also unpatentable over Gao-2 in view of Goubet.

C. Grounds 1 and 2 - Substitute Claim 17 is Obvious Over Goubet (and, Alternatively, Goubet In View of Kaiser)

Substitute Claim 17 remains unpatentable for the same reasons as original claim 5 as to unchanged limitations. Substitute claim 17 incorporates all limitations

of original challenged claim 5 and adds only two new “fluid inlet” limitations. PO Mot. to Amend 12–13; Ex. 1001, 12:33–47. The Petition already established that original claim 5 is unpatentable over the asserted prior art. Pet. 45; Pet. 25–41.

In addition, the new limitations added to substitute claim 17 are also taught by Goubet for the reasons below.

1. Goubet teaches the newly added “fluid inlet” limitations.

Substitute claim 17 adds: (i) *“said atomizer assembly comprises a fluid inlet in fluid communication with the operative fluid,”* and (ii) *“said fluid inlet is substantially perpendicular to a flow path of compressed air ... as the compressed air flows across said fluid inlet.”* PO Mot. to Amend 12–13. Goubet teaches both limitations.

First, Goubet discloses an oil inlet “in the form of the upper end 10 of a dip tube 8 connected to the essential oil 3 contained in the reservoir 2,” which is in fluid communication with the operative fluid in the reservoir. Ex. 1016, 3:31–4:2; Fig. 2. Goubet further explains that “when the compressed air flows into the diffusion chamber 5, the essential oil 3 is drawn into the diffusion chamber 5 by the vacuum created,” confirming operative fluid is drawn through the dip tube into the mixing region. Ex. 1016, 4:19–22.

Second, Fig. 2 depicts the compressed-air flow path (arrows F) through the diffuser head and shows the dip tube 8/upper end 10 entering the venturi region

laterally relative to that compressed-air flow, i.e., in a transverse (substantially perpendicular) orientation. Ex. 1016, Fig. 2. Dr. White testified that identifying flow communication and boundaries in such a figure is a matter of “classical fluid dynamical analysis” using a control volume and control surfaces. Ex 2001, at 23:7–11. Goubet’s express statement that compressed air flowing into the chamber creates a vacuum that draws oil in further confirms the “flows across” relationship at the inlet opening. Ex. 1016, 4:19–22.

2. Alternatively, Goubet in view of Kaiser render obvious substitute claim 17

As explained above for claim 16, the Petition’s stated rationale for applying Kaiser, which addresses any “fluid dispersion” uniformity requirement by relying on known principles of droplet-size distribution control, remains unchanged and is not effected by the added limitations of substitute claim 17. Because substitute claim 17 retains all limitations of original claim 5 already shown unpatentable in the Petition and adds only requirement that is taught by Goubet, substitute claim 17 is also unpatentable over Goubet in view of Kaiser.

D. Grounds 3 and 4 — Substitute Claim 17 Is Obvious Over Gao-2 (and, Alternatively, Gao-2 in View of Goubet)

Substitute Claim 17 remains unpatentable over Gao-2 for the same reasons set out in the Petition as to the unchanged limitations. Substitute claim 17 carries forward original claim 5 and adds only two “fluid inlet” phrases. PO Mot. to Amend

12–13; Ex. 1001, 12:33–47. The Petition’s Ground 3 already maps the relevant diffusion/atomizer architecture to Gao-2, and those showings apply equally here because the claim language carried over from original claim 5 is unchanged. Pet. 51–69; Ex. 1042. In addition, the newly added “fluid inlet” limitations are taught by Gao-2, as explained below.

1. Gao-2 teaches the newly added “fluid inlet” limitations.

Gao-2 also teaches the newly added “fluid inlet” limitations. It discloses an atomization core connected to a liquid suction tube drawing essential oil from a bottle, and an airflow path from an air pump into and through the atomization core where negative pressure draws oil in and the oil mixes with the airflow for atomization. Ex. 1042, ¶¶[0029], [0031], [0035]–[0036], [0038]; Figs. 4, 7, 10.

First, Gao-2 teaches a fluid inlet in fluid communication with the operative fluid. Gao-2 discloses an operative fluid (essential oil) supplied from a bottle and introduced into the atomization region through a suction structure. Gao-2 describes a “liquid suction tube 33” connected through a “liquid suction tube connector 325” and a “liquid suction channel 3216” to a “liquid suction hole 3224,” allowing essential oil to be drawn into the atomization core for mixing/atomization. Ex. 1042 ¶¶[0035]–[0036]; Figs. 4, 7, 10. Gao-2 further explains that negative pressure forms near the outlet of the liquid suction hole, causing essential oil to be drawn in, and that the oil then mixes with airflow and is atomized before discharge. Ex. 1042

¶[0036]. That is a fluid inlet (the suction-hole inlet/outlet structure) in fluid communication with the operative fluid (essential oil) in the container via the suction tube/channel. Ex. 1042 ¶¶[0035]–[0036]; Figs. 4, 7, 10.

Second, Gao-2 teaches a transverse inlet as air flows across the inlet. Gao-2 depicts the liquid suction channel 3216 entering laterally into the atomization structure while airflow from the air pump enters through the air inlet channel and then proceeds through vent hole(s) 3215 and through guide grooves 3225 toward the spray outlet. Ex. 1042 ¶[0038]; Fig. 7. Gao-2 also explains that high-speed airflow creates negative pressure “near the outlet of the liquid suction hole ... opposing the spray outlet,” which is the functional “flows across” relationship: airflow passes the suction-hole outlet and produces suction drawing the operative fluid into the mixing/atomization region. Ex. 1042 ¶[0036]. In view of Gao-2’s depicted geometry (Fig. 7) and its express suction/negative-pressure description (¶[0036]), a POSITA would understand that the fluid inlet is arranged transverse to the main airflow path such that compressed air flows across the fluid-inlet opening to create suction and entrain oil. Ex. 1042 ¶¶[0036], [0038]; Fig. 7.

2. Alternatively, Gao-2 in view of Goubet render obvious substitute claim 17

To the extent Patent Owner contends Gao-2 does not expressly disclose every aspect of the newly added “substantially perpendicular” language, the Petition’s Ground 4 provides the pleaded alternative combination: Gao-2 in view of Goubet.

Pet. 61–69. Goubet’s Figure 2 depicts a dip-tube oil inlet entering the venturi region laterally relative to the compressed-air flow path (arrows F), and Goubet explains that compressed air flowing into the chamber creates a vacuum drawing oil in through that inlet. Ex. 1016, 4:15–22; Fig. 2. Combining Gao-2 with Goubet as in Ground 4 would, at minimum, render obvious any remaining aspects of the claimed transverse inlet/“flows across” relationship while leaving intact Gao-2’s disclosed suction-based atomization operation and the Petition’s already-articulated rationale for the combination. Pet. 61–69; Ex. 1042 ¶[0036]; Ex. 1016, 4:15–22; Fig. 2.

V. CONCLUSION

For the foregoing reasons, Petitioner respectfully requests that the Board deny entry of Patent Owner’s proposed substitute claims for failing to comply with the regulatory requirements. Even if entered, the Board should deny Patent Owner’s Motion to Amend as the prior art renders the proposed substitute claims obvious.

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Respectfully submitted,

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CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e)(4))

The undersigned hereby certifies that a copy of the accompanying Petitioner's Reply and all accompanying exhibits have been served on April 15, 2026, via electronic mail directed to the following counsel of record for the Patent Owner:

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