

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Aroma360, LLC,
Petitioner,

v.

AIR ESSCENTIALS, INC.
PATENT OWNER.

Case IPR2025-00705
Patent 9,527,094

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

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Exhibit 1022	Kaye, J., <i>Making Scents: Aromatic Output for HCI</i> , INTERACTIONS, V. 11, Issue 1, 48-61 (Jan. and Feb. 2004) (hereinafter, “Kaye”)
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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 0-471-44942-3 (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 1029	Perry's Chemical Engineers' Handbook (1997), Ed. R.H. Perry, D.W. Green, and J.O. Maloney McGraw Hill, ISBN 0-07-049841-5 (the "Perry Handbook")
Exhibit 1030	C. Mundi, M. Sommerfeld, and C. Tropea, <i>Droplet-wall collisions: experimental studies of the deformation and breakup process</i> . INT. J. MULTIPHASE FLOW 21: 151-173
Exhibit 1031	Bernoulli, D. (1738) Hydrodynamica, ETH-Bibliothek Zürich https://doi.org/10.3931%2Fe-rara-3911
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)
Exhibit 1034	Sun W, Ji J, Li Y, and Xie X., <i>Dispersion and settling characteristics of evaporating droplets in ventilated room</i> , BUILDING & ENVIRONMENT, 42, 1011-1107 (2007)
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Exhibit 1037	NASA SP-5108, HANDBOOK FOR INDUSTRIAL NOISE CONTROL (1981)
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Exhibit 1046	Transcript for Deposition of Dr. Gerald Micklow taken on March 25, 2026
Exhibit 1047	Supplemental Declaration of Dr. Christopher White
Exhibit 1048	H. M. Taylor and S. Karlin, <i>An Introduction to Stochastic Modeling</i> . Orlando, FL: Academic Press, 1984.
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") Revised Contingent Motion to Amend ("Revised MTA"), which seeks to substitute claim 21 (proposed substitute claim 21 referred to herein as "claim 21") for challenged independent claim 7.

First, the Revised MTA does not cure the defects identified in Petitioner's opposition to the original motion. Although Patent Owner now cites support for the full claim, the revised amendment still turns on the same unsupported and indefinite "maximizing disruption" limitation. The Board already preliminarily agreed that the specification does not identify objective criteria for determining when disruption is "at a maximum," and Patent Owner's revised wording adds no such criteria. Prelim. Guidance at 8, 11. Claim 21 therefore violates § 112. The specification discloses, at most, one embodiment in which the silencer inlet at least partially, if not substantially, directs the flow of the fluid dispersion toward the baffle. It does not describe the full scope of inlet, baffle, chamber, pressure, and flow-rate arrangements that would maximize disruption of that flow, nor does it provide an objective boundary for determining when disruption has been maximized.

Second, the amendments also do not cure unpatentability. If Patent Owner's new explanation is accepted, namely that "maximum disruption" is achieved when the flow of fluid dispersion is substantially directed toward the baffle, then the same asserted references teach the added relationship. Each ground already maps a staged flow path in which the alleged silencer inlet directs the fluid dispersion toward a

baffle structure before downstream exit. Thus, revised substitute claim 21 is either indefinite and unsupported, or obvious under Patent Owner’s own reading.

II. CLAIM 21 VIOLATES § 112

Claim 21 adds written description and indefiniteness problems. In particular, the “maximizing disruption” limitation claims a result across an undefined range of structures and operating conditions, while the specification gives no objective criteria for determining when that result is achieved. The Revised MTA should be denied under § 112 before the Board reaches the prior-art grounds.

A. The Substitute Claim Lacks Written Description Support

Patent Owner’s inlet-orientation limitation lacks written-description support. In particular, the patent does not disclose the full scope of arranging a silencer inlet relative to a baffle to “maximize” disruption of the flow of the fluid dispersion. Claim 21 recites in relevant part:

wherein said silencer inlet is disposed relative to said baffle to substantially direct a flow of said fluid dispersion towards said baffle before said fluid dispersion exits said silencer chamber through said silencer outlet, thereby maximizing disruption of said flow of said fluid dispersion

As the Board recognized in its Preliminary Guidance, “maximizing flow disruption would depend on several variables,” and Patent Owner failed to identify any specification disclosure explaining how a POSITA would adjust those variables “so as to maximize said disruption of flow.” Prelim. Guidance at 8. The Board

further explained that, “for a given baffle, the Specification does not adequately inform a person of ordinary skill how to position the silencer inlet ‘relative to the baffle’ in order to ‘maximize said disruption of flow.’” *Id.* at 9. The Revised MTA suffers from the same defect.

Patent Owner’s revision merely adds that the silencer inlet “substantially” directs the flow of fluid dispersion toward the baffle before the fluid dispersion exits the silencer chamber. Revised MTA at 15-16. That change may address the Board’s new-matter concern about the prior use of unqualified “fluid,” but it does not cure the absence of disclosure explaining what structural or operating variables are needed, or how to adjust them, to maximize disruption of the fluid-dispersion flow. Prelim. Guidance at 8-9.

At most, Patent Owner copied more words from the same specification sentence that uses “maximize.” But the Federal Circuit has “expressly rejected” the argument that written description is necessarily satisfied merely because claim language appears *ipsis verbis* in the specification. *Nuvo Pharms. (Ireland) Designated Activity Co. v. Dr. Reddy’s Lab’ys Inc.*, 923 F.3d 1368, 1380 (Fed. Cir. 2019) (quoting *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 968 (Fed. Cir. 2002)). What remains missing is disclosure showing possession of how to position the silencer inlet relative to the baffle to achieve the claimed “maximizing disruption of said flow of said fluid dispersion.”

The specification provides no objective structural or operational criteria, such

as chamber dimensions, inlet angle, baffle spacing, pressure conditions, or flow-rate parameters, that would allow a POSITA to determine which inlet/baffle arrangements satisfy the limitation across its full scope. Ex. 1047, ¶ 25; Ex. 1052, ¶¶ 8-10; Ex. 1001, Figs. 1-2, 6:1-11; 7:60-8:4; see *LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1346 (Fed. Cir. 2005); *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997).

B. The Substitute Claim Is Indefinite

Claim 21 is indefinite because it requires the silencer inlet to be positioned relative to the baffle in a way that “maximiz[es] disruption” of the fluid-dispersion flow but provides no objective boundary for determining when that result is achieved. The Board preliminarily recognized the same defect, explaining that the specification does “not provide objective criteria for quantifying the disruption of flow or determining when that disruption is at a maximum.” Prelim. Guidance at 11. The Revised MTA does not cure that defect.

wherein said silencer inlet is disposed relative to said baffle to substantially direct a flow of said fluid dispersion towards said baffle before said fluid dispersion exits said silencer chamber through said silencer outlet, thereby maximizing disruption of said flow of said fluid dispersion

Claim 21 is indefinite because it requires the silencer inlet to be positioned relative to the baffle in a way that “maximiz[es] disruption” of the fluid-dispersion flow but provides no objective boundary for determining when that result is

achieved. The claim does not identify a baseline, metric, test, or engineering criterion for measuring “disruption” or determining when disruption has reached a maximum. Ex. 1047, ¶ 25; Ex. 1052, ¶¶ 8-10.

The specification does not cure the problem. It states only that the baffle “further disrupt[s]” the flow and that the silencer inlet may “at least partially, if not substantially,” direct the flow toward the baffle “so as to maximize the disruption of flow.” Ex. 1001, 7:53-65. Those phrases do not define “maximize” or identify the inlet angle, baffle spacing, chamber geometry, flow rate, pressure conditions, or other variables needed to determine whether a particular arrangement maximizes disruption. Ex. 1047, ¶ 25; Ex. 1052, ¶¶ 8-10. At most, the specification identifies a design goal of directing flow toward a baffle without objective boundaries for the claimed result.

The revised claim language does not solve that problem. Patent Owner argues that maximum disruption is achieved when the fluid dispersion is “substantially” directed toward the baffle. Revised MTA at 9-10. But the specification does not say that substantial direction is required or sufficient to maximize disruption. It says only “at least partially, if not substantially,” which confirms that the patent does not define the degree of direction, or the degree of disruption, required by the claim. Ex. 1001, 7:60-8:4. The Board preliminarily recognized this same defect, explaining that the specification does “not provide objective criteria for quantifying the disruption of flow or determining when that disruption is at a maximum.” Prelim. Guidance at 11.

Dr. Micklow’s testimony underscores why objective boundaries are necessary here. He testified that whether flow disruption increases or decreases sound depends on “the geometry and operating conditions,” including downstream conditions. Ex. 1046, 261:1-263:8. He further testified that whether a restriction dampens sound cannot be answered “in general” because it depends on “a particular type of restriction” and device-specific design criteria. Ex. 1046, 133:18-135:13. If the claimed result depends on geometry, operating conditions, and device-specific criteria, the patent needed to disclose objective benchmarks for determining when disruption has been maximized. It does not.

The claim therefore 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). Terms of degree are indefinite when the intrinsic record fails to provide objective boundaries for applying them. *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371-74 (Fed. Cir. 2014); *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1252-56 (Fed. Cir. 2008). District Courts applying that rule have found “maximize” and “minimize” terms indefinite where the specification failed to identify the baseline or objective standard for determining whether the claimed result had been maximized or minimized. *See, e.g., CA, Inc. v. Netflix, Inc.*, 2021 WL 5323413, at *16 (E.D. Tex. Nov. 16, 2021).

III. SUBSTITUTE CLAIM 21 IS UNPATENTABLE OVER PRIOR ART

In its Preliminary Guidance, the Board was not convinced that Petitioner’s

original opposition had shown the asserted grounds taught the “maximizing disruption” limitation, but the Board also recognized that the lack of clarity surrounding that limitation “complicates the discussion as to alleged obviousness.” Prelim. Guidance at 15. Patent Owner now argues that “maximum disruption is achieved when the flow of the fluid dispersion is substantially directed toward the baffle.” Revised MTA at 9-10. Under that reading, the asserted grounds teach or render obvious the added limitation.

Patent Owner cannot have it both ways. If “maximizing disruption” requires some objective maximum beyond substantially directing flow toward the baffle, then claim 21 is indefinite and unsupported for the reasons above. If it means what Patent Owner says it means, then the prior art teaches or renders obvious the limitation because each ground identifies an inlet-side flow path that directs the fluid dispersion toward a baffle before downstream exit. *See* Pet. 29, 40, 42 (Grounds 1-2); *id.*, 57 (Grounds 3-4); *id.*, 78, 82-83 (Grounds 5-6); Ex. 1047, ¶¶ 28-36; Ex. 1052, ¶¶ 14-36.

The same analysis applies to the “silencer chamber” language. Consistent with the Board’s preliminary view and Petitioner’s construction, “silencer chamber” should be read as a chamber within the silencer assembly, not the entire silencer assembly as Patent Owner proposed in the district court. Ex. 1018, Ex. B; Prelim. Guidance, 9-10; Ex. 1052, ¶¶ 11-13. That reading follows the amended claim language, which recites “a silencer assembly having a silencer chamber,” and

confirms that the chambered flow paths identified in Sevy, Goubet, and Gao satisfy the amended chamber limitation. Ex. 1052, ¶¶ 15-16, 20-21, 26-27

A. Grounds 1 and 2: Claim 21 Is Obvious Over Sevy and, Alternatively, Sevy in View of Zeng

Claim 21 remains unpatentable over Grounds 1 and 2 for the same reasons original claim 7 was unpatentable as to the unchanged limitations. The Petition already established unpatentability over Sevy and explained, in the alternative, how Zeng reinforces that result. Pet. at 27-43. Because claim 21 leaves unchanged the preamble and the limitations directed to the diffusion unit, discharge port, diffusion assembly, and atomizer assembly, the Petition’s existing analysis of those limitations continues to apply. Ex. 1001, claim 7; Revised MTA at 15-16. The added silencer limitations do not change that result.

1. Sevy renders substitute claim 21 obvious.

21[E]: “a silencer assembly having a silencer chamber, silencer inlet, a silencer outlet, and a baffle, said baffle being disposed within said silencer chamber”

Sevy teaches this limitation. Sevy’s separator-plate region provides a chambered flow path with an upstream inlet-side region, separator plate 98 disposed within that path, apertures 99 through which sufficiently fine droplets pass, and a downstream outlet path. Ex. 1009, ¶¶ [0068]-[0074], [0082]-[0084]. Because separator plate 98 intercepts larger droplets while allowing finer droplets to pass downstream, Sevy discloses the same type of chambered inlet, outlet, and baffle

arrangement addressed by claim 21. *Id.*; Ex. 1047, ¶¶ 28-29; Ex. 1052, ¶¶ 15-16; Pet., 26-30.

21[F]: “wherein said baffle partially disrupts movement of the fluid dispersion through said silencer chamber from said silencer inlet to said silencer outlet, thereby dampening sound waves generated during operation of said fluid dispersion assembly”

Sevy also teaches this limitation. Separator plate 98 disrupts movement of the fluid dispersion by allowing sufficiently fine droplets to pass through apertures 99 while larger droplets strike opening 100 or separator plate 98 and return to the reservoir. Ex. 1009, ¶¶ [0068]-[0074], [0082]-[0084]. Sevy further explains that the components are sized so airflow “twist[s] and turn[s] sufficiently” to return larger droplets, confirming flow disruption. *Id.*, ¶ [0074]; Ex. 1047, ¶¶ 26-29; Ex. 1052, ¶¶ 17-18.

Changing “restricts” to “disrupts” does not create a technical distinction. The ’094 patent uses “disrupt” for the same baffle function, explaining that baffle 136 “further disrupt[s]” the flow and that this disruption dampens sound waves. Ex. 1001, 7:60-8:4; Ex. 1047, ¶¶ 28-29; Ex. 1052, ¶¶ 17-18. Dr. Micklow likewise could not identify a real-world example of a restriction that was not also a disruption, and he agreed that engineers use both concepts when describing flow-control structures. Ex. 1046, 260:10-20, 260:23-261:24, 262:4-18.

21[G]: “wherein said silencer inlet is disposed relative to said baffle to substantially direct a flow of said fluid dispersion towards said baffle before said fluid dispersion exits said silencer chamber through said silencer outlet, thereby maximizing disruption of said flow of said fluid dispersion”

Sevy teaches this limitation under Patent Owner’s own reading. Patent Owner argues that “maximum disruption” is achieved when the fluid dispersion is substantially directed toward the baffle. Revised MTA at 9-10. Sevy directs incoming atomized flow toward separator plate 98 before downstream exit, while larger droplets are intercepted and returned. Ex. 1009, ¶¶ [0068]-[0074], [0082]-[0084]; Pet. 29; Ex. 1047, ¶¶ 25, 28-29; Ex. 1052, ¶ 19. Thus, to the extent “maximizing disruption” has definite scope under Patent Owner’s explanation, Sevy satisfies it. Ex. 1001, 7:60-8:4; Ex. 1047, ¶¶ 28-29; Ex. 1052, ¶ 19.

2. Sevy in view of Zeng renders substitute claim 21 obvious.

Ground 2 renders claim 21 obvious for the same reasons as Ground 1 for the unchanged limitations and the added “partially disrupts movement” limitation. Pet. at 37-43. Zeng also provides an express teaching of a noise-reduction structure in an atomizer flow path, confirming that the added silencer limitations would have been obvious. Ex. 1011, 4-7.

21[E]: “a silencer assembly having a silencer chamber, silencer inlet, a silencer outlet, and a baffle, said baffle being disposed within said silencer chamber”

Zeng teaches a “noise reduction head 20” positioned within an “inner cover 30,” with opening 31 arranged so only fully atomized material passes through, while larger, incompletely atomized material is intercepted and returned. Ex. 1011, 5-7, Figs. 2-4. Zeng also identifies known problems in conventional essential-oil atomizers, including hissing or whistling noise and incomplete atomization, and

provides the noise-reduction head to address those issues. Ex. 1011, 4-7; Pet., 37-43; Ex. 1052, ¶¶ 20-21. Thus, Sevy in view of Zeng teaches a chambered silencer arrangement with a baffle structure disposed in the flow path.

21[F]: “wherein said baffle partially disrupts movement of the fluid dispersion through said silencer chamber from said silencer inlet to said silencer outlet, thereby dampening sound waves generated during operation of said fluid dispersion assembly”

Sevy teaches the “partially disrupts movement” language through separator plate 98, as explained above. Sevy’s separator plate includes apertures through which sufficiently fine material passes, while larger droplets strike opening 100 or separator plate 98 and are returned. Ex. 1009, ¶¶ [0068]-[0074], [0082]-[0084]; Ex. 1047, ¶¶ 28-29; Ex. 1052, ¶¶ 17-18. That teaching remains part of the Sevy/Zeng combination.

Zeng further confirms that a POSITA would have understood the desirability of a noise-reduction structure in an atomizer flow path. Zeng’s noise reduction head and inner cover control the passage of atomized material and reduce the noise associated with atomization. Ex. 1011, 4-7; Pet., 37-43; Ex. 1052, ¶¶ 20-23. Accordingly, the combined teachings of Sevy and Zeng render obvious a baffle that disrupts movement through a chambered flow path while dampening sound.

21[G]: “wherein said silencer inlet is disposed relative to said baffle to substantially direct a flow of said fluid dispersion towards said baffle before said fluid dispersion exits said silencer chamber through said silencer outlet, thereby maximizing disruption of said flow of said fluid dispersion”

Sevy in view of Zeng teaches this limitation. Sevy directs incoming atomized

flow toward separator plate 98 before downstream exit, and Zeng likewise arranges its noise-reduction head and inner cover so atomized material encounters the noise-reduction structure before exiting through opening 31. Ex. 1009 ¶¶ [0068]-[0074], [0082]-[0084]; Ex. 1011, 5-7, Figs. 2-4; Pet., 37-43; Ex. 1047, ¶¶ 28-29; Ex. 1052, ¶¶ 19-23. Under Patent Owner’s own explanation that “maximum disruption” is achieved when flow is substantially directed toward the baffle, the Sevy/Zeng combination teaches the added limitation. Revised MTA at 9-10.

Dr. Micklow’s testimony supports the combination. He agreed that the same basic physics govern atomization systems across applications and that references from different application areas are not irrelevant for that reason. Ex. 1046, 61:5-16, 73:3-12, 75:16-21. Accordingly, Ground 2 renders claim 21 obvious.

B. Grounds 3 and 4: Claim 21 Is Obvious Over Goubet and, Alternatively, Goubet in View of Kaiser

Claim 21 remains unpatentable over Grounds 3 and 4. The Petition already established that Goubet teaches the unchanged limitations, including the diffusion unit, diffusion chamber, discharge port, diffusion assembly, and atomizer assembly. Pet., 43-55; Ex. 1016, 2:1-3, 3:24-5:7. Because claim 21 leaves those limitations unchanged, the Petition’s existing analysis continues to apply. Ex. 1001, claim 7; Revised Mot., 15-16.

The amended silencer limitations are likewise taught by Goubet.

1. Goubet renders claim 21 obvious.

21[E]: “a silencer assembly having a silencer chamber, silencer inlet, a silencer outlet, and a baffle, said baffle being disposed within said silencer chamber”

Goubet teaches this limitation. Goubet discloses “at least two concentric circular enclosures, an outer enclosure 12 and an inner enclosure 13, communicating with each other via a passage 14,” with “said two enclosures and said passage forming at least one baffle.” Ex. 1016, 2:16-19. Goubet further discloses inlet 15 to the outer enclosure and outlet 16 from the inner enclosure. Id., 2:20-25, Fig. 3. In operation, droplets enter outer enclosure 12, pass through passage 14, strike surrounding walls, receive “many shocks,” break into microdroplets, and exit through outlet 16. Id., 4:26-5:6. That is a chambered inlet/baffle/outlet arrangement. Ex. 1047, ¶¶ 30-33; Ex. 1052, ¶¶ 24-25; Pet., 55-59.

This arrangement mirrors the '094 patent's disclosure that “the silencer assembly 134 comprises a baffle 136 disposed in a silencer chamber 138 between a silencer inlet 135 and a silencer outlet 137.” Ex. 1001, 7:52-57. Goubet discloses the same operative structure, even though it uses different labels. Ex. 1016, 2:16-25, 4:26-5:16; Ex. 1047, ¶¶ 30-33; Ex. 1052, ¶¶ 24-25.

21[F]: “wherein said baffle partially disrupts movement of the fluid dispersion through said silencer chamber from said silencer inlet to said silencer outlet, thereby dampening sound waves generated during operation of said fluid dispersion assembly”

Goubet teaches this limitation. Goubet describes “the particular circular shape and the specific arrangement of the inlet, passage, and outlet” as creating “a very

particular path” in which droplets strike chamber walls, receive “many shocks,” break into microdroplets, and are then “silently diffused.” Ex. 1016, 2:26-30, 4:26-5:16. That is disruption in the same sense the ’094 patent uses the term. Ex. 1001, 7:60-8:4; Ex. 1047, ¶¶ 30-34; Ex. 1052, ¶ 26; Pet., 55-61.

Amending “restricts” to “disrupts” does not create a technical distinction for the same reasons discussed above. Ex. 1047, ¶¶ 28-29, 30-34; Ex. 1052, ¶¶ 17-18, 26. Dr. Micklow could not identify a real-world example of a restriction that was not also a disruption, and he agreed that engineers speak in terms of both disrupting and restricting flow. Ex. 1046, 260:10-20, 260:23-261:24, 262:4-18.

21[G]: “wherein said silencer inlet is disposed relative to said baffle to substantially direct a flow of said fluid dispersion towards said baffle before said fluid dispersion exits said silencer chamber through said silencer outlet, thereby maximizing disruption of said flow of said fluid dispersion”

Goubet teaches this limitation. Goubet discloses inlet 15 “substantially diametrically opposed” to passage 14, and outlet 16 likewise “substantially diametrically opposed” to passage 14. Ex. 1016, 2:20-25; Ex. 1047, ¶¶ 33-34; Ex. 1052, ¶ 27. Goubet explains that, “[t]hus, due to the particular circular shape and the specific arrangement of the inlet, passage, and outlet,” droplets follow “a very particular path” such that their size is reduced “as much as possible.” Ex. 1016, 2:26-30. In operation, droplets are forced through inlet 15 into the enclosure, collide with surrounding walls, pass through passage 14, and sustain “many shocks” before exiting. Id., 4:26-5:4; Ex. 1047, ¶¶ 31-34; Ex. 1052, ¶¶ 25-27.

Under Patent Owner’s own explanation that “maximum disruption” is achieved when the flow is substantially directed toward the baffle, Goubet teaches the added limitation. Revised MTA, 9-10. Goubet already discloses the same directional relationship and purpose, forcing droplets through a particular baffled path so breakup is achieved “as much as possible” before silent diffusion. Ex. 1016, 2:26-30, 5:12-16; Ex. 1047, ¶¶ 31-34; Ex. 1052, ¶ 27.

2. Goubet in view of Kaiser renders claim 21 obvious.

Ground 4 renders claim 21 obvious for the same reasons. The Petition relied on Kaiser for the “fluid dispersion” requirement, while retaining Goubet’s chambered baffle structure. Pet. 44-49, 63-64. Nothing in claim 21’s amendments changes that analysis. Goubet still supplies the silencer chamber, inlet, outlet, and baffle arrangement, and Kaiser confirms that substantially uniform droplets and droplet-size-control principles were known and would have been applied predictably in Goubet’s diffuser. *Id.*; Ex. 1052, ¶¶ 28-29. Thus, Goubet in view of Kaiser renders claim 21 obvious.

C. Grounds 5 and 6: Claim 21 Is Obvious Over Gao and, Alternatively, Gao in View of Zeng

Claim 21 also remains unpatentable over Grounds 5 and 6. The Petition already mapped the unchanged claim architecture to Gao and, alternatively, Gao in view of Zeng. Pet., 73-83. Because the preamble and non-silencer limitations remain unchanged, that analysis continues to apply. Ex. 1001, claim 7; Rev. MTA, 15-16.

The amended silencer limitations likewise do not distinguish Gao or the Gao/Zeng combination.

1. Ground 5: Gao renders claim 21 obvious.

21[E]: “a silencer assembly having a silencer chamber, silencer inlet, a silencer outlet, and a baffle, said baffle being disposed within said silencer chamber”

Gao teaches this limitation. Gao discloses baffle 3 positioned above lower part cavity 10, with through hole 4 forming an outlet for the rising gas flow. Ex. 1013, ¶¶ [0019]-[0025]. The gas-liquid mixture rises through the lower cavity region, encounters baffle 3, collides with inner wall 101, and then exits through hole 4 and atomizing gas outlet 2. *Id.* A POSITA would understand that structure as a chambered flow region containing a disruptive baffle structure and a downstream outlet path. Ex. 1047, ¶¶ 35-36; Ex. 1052, ¶¶ 30-31; Pet., 73-78.

21[F]: “wherein said baffle partially disrupts movement of the fluid dispersion through said silencer chamber from said silencer inlet to said silencer outlet, thereby dampening sound waves generated during operation of said fluid dispersion assembly”

Gao also teaches the “partially disrupts movement” language. Gao’s baffle 3 interrupts the rising gas-liquid flow, causes the mixture to collide with inner wall 101, and allows smaller particles to proceed through hole 4 and atomizing gas outlet 2. Ex. 1013, ¶¶ [0019]-[0025]. The Petition thus showed that Gao’s baffle 3 disrupts the flow path before discharge. Pet., 73-78; Ex. 1047, ¶¶ 35-36; Ex. 1052, ¶¶ 31-32.

The amendment from “restricts” to “disrupts” does not create a technical distinction for the same reasons discussed above. Ex. 1047, ¶¶ 28-29, 35-36; Ex.

1052, ¶¶ 17-18, 32; Ex. 1046, 260:10-20, 260:23-261:24, 262:4-18.

21[G]: “wherein said silencer inlet is disposed relative to said baffle to substantially direct a flow of said fluid dispersion towards said baffle before said fluid dispersion exits said silencer chamber through said silencer outlet, thereby maximizing disruption of said flow of said fluid dispersion”

Gao teaches this limitation. Gao’s rising flow is directed toward baffle 3 before discharge, causing the gas-liquid mixture to collide with inner wall 101 before exiting through hole 4 and atomizing gas outlet 2. Ex. 1013, ¶¶ [0019]-[0025]; Ex. 1047, ¶¶ 35-36; Ex. 1052, ¶ 33. Under Patent Owner’s own explanation that “maximum disruption” is achieved when the flow is substantially directed toward the baffle, Gao teaches the added limitation. Revised MTA, 9-10. Even though Gao does not use the ’094 patent’s “silencer chamber” terminology, it discloses the same operative configuration. Ex. 1047, ¶¶ 35-36; Ex. 1052, ¶¶ 30-33.

2. Gao in view of Zeng renders claim 21 obvious.

Ground 6 renders claim 21 obvious for the same reasons as Ground 5. The Petition explained that Gao already uses a baffle to produce finer, more uniform particles, and that a POSITA would have had a technical reason to apply Zeng’s express noise-reduction teachings to reduce hissing or whistling noise while preserving droplet-size control. Pet., 81-83; Ex. 1011, 4-7; Ex. 1013 ¶¶ [0007], [0019]-[0025]; Ex. 1052, ¶¶ 34-36. The Gao structure discussed above remains part of the combination, and Zeng further confirms the use of a chambered noise-reduction structure in an atomizer flow path. Pet., 81-83; Ex. 1047, ¶¶ 35-36; Ex.

1052, ¶¶ 34-36. Thus, Gao in view of Zeng renders claim 21 obvious.

IV. CONCLUSION

For the foregoing reasons, Petitioner respectfully requests that the Board deny entry of Patent Owner's proposed substitute claim 21.

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Respectfully submitted,

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CERTIFICATE OF SERVICE UNDER 37 CFR § 42.6(e)(4)

The undersigned hereby certifies that a copy of the accompanying Petitioner's Opposition to Patent Owner's Revised Contingent Motion to Amend and all accompanying exhibits have been served on June 25, 2026, via electronic mail directed to the following counsel of record for the Patent Owner:

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