

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AROMA360, LLC,
Petitioner,

v.

AIR ESSSENTIALS, INC.,
Patent Owner.

Case IPR2025-00705
Patent 9,527,094

**PETITIONER’S SUR-REPLY TO PATENT OWNER’S REPLY
IN SUPPORT OF PATENT OWNER’S REVISED CONTINGENT
MOTION TO AMEND**

I. INTRODUCTION

Patent Owner's Reply in support of its Revised Motion to Amend ("Revised MTA" or "Rev. MTA") confirms the dispositive issue on which Proposed Substitute Claim 21 turns. Patent Owner argues that the added structural relationship—the silencer inlet "substantially direct[ing]" the fluid-dispersion flow toward the baffle—defines when disruption is "maximiz[ed]." Reply at 4-5; Revised MTA at 9-10. Under that reading, the asserted grounds teach or render obvious the relationship using the mappings advanced in the Petition. Pet. 29, 55-59, 71-76; Ex. 1052 ¶¶ 13-19, 24-27, 30-33. On the other hand, if "maximizing" requires content beyond that structural relationship, Proposed Substitute Claim 21 remains unsupported and indefinite because neither the claim nor the specification supplies a metric, baseline, comparator, test, or structural boundary for applying that additional requirement. Ex. 1001, 7:49-8:4; Ex. 1052 ¶¶ 8-10.

Although the Reply contends that Petitioner's Opposition to Patent Owner's Revised Contingent Motion to Amend ("Petitioner's Opposition" or "Pet. Opp.") misstates the Board's Preliminary Guidance and Dr. Micklow's testimony, the Reply does not identify any specific misstatement. Reply at 3; Pet. Opp. at 2-6. The Board's Preliminary Guidance recognized that the lack of clarity surrounding the "maximizing disruption" limitation complicates the prior-art analysis as Petitioner's acknowledge. Board's Prelim. Guidance at 10-12, 15-16. Patent Owner now argues that substantial direction itself defines the maximum. Revised MTA at 9-10; Reply

at 4-5. But claim 21 separately recites “substantially direct” and then “thereby maximizing,” and the patent likewise states that the inlet may “at least partially, if not substantially” direct flow toward the baffle “so as to maximize” disruption. Revised MTA at 15-16; Ex. 1001, 7:53-65. Patent Owner cannot say substantially directing and maximizing disruption have the same meaning for § 112 purposes, while simultaneously arguing they have different meanings to distinguish the asserted art.

II. CLAIM 21 STILL FAILS § 112

A. *CenTrak* and *Alcon* Do Not Cure the Written-Description Defect

Patent Owner states *CenTrak*’s general distinction between written description and enablement but omits the rationale of that holding, which cuts against Patent Owner’s position. Reply at 3-4. *CenTrak* reversed summary judgment because the specification in that case expressly identified record evidence supported that the omitted implementation details were routine and the relevant technologies interchangeable. *CenTrak, Inc. v. Sonitor Techs., Inc.*, 915 F.3d 1360, 1366-69 (Fed. Cir. 2019). Importantly, *CenTrak* also reaffirmed that a passing recitation of generic claim language may fail to support a broad functional scope, and that the required detail depends on the claim’s breadth and the technology’s complexity and predictability. *Id.* at 1368-69.

The record here is materially different than in *CenTrak*. Patent Owner’s own expert witness, Dr. Micklow, refers to the device illustrated in Figure 1 of the ’094

Patent as a “complex engineering system.” Ex. 1046, 87:16-25. When asked to opine whether various embodiments disclosed in the ’094 Patent would reduce noise as a result of disruption, Dr. Micklow testified “I would have to do a simulation and read in detail about this and spend some time thinking about [it]... if you want me to opine on that particular figure in this complex engineering system, it’ll take some time.” Ex. 1046, 88:22 - 83:9.

Patent Owner’s cited figures depict a silencer embodiment, but claim 21 covers inlet, baffle, and chamber arrangements that satisfy the claimed functional maximum. Ex. 1001, Figs. 1-2, 7:49-8:4; Revised MTA at 6-10. Neither the specification nor those figures identify a structural feature or an objective criterion for determining which arrangements contribute to a maximum. Ex. 1001, 7:53-65; Ex. 1052 ¶¶ 8-10. The Board preliminarily credited Dr. White’s explanation that the result depends on inlet orientation and size, baffle geometry and spacing, chamber geometry, flow rate, pressure, pressure drop, droplet-size distribution, and downstream restrictions. Board’s Preliminary Guidance 8-9; Ex. 1047 ¶ 25; Ex. 1052 ¶¶ 8-10. Reciting the desired result in the specification does not demonstrate possession of the full range of structures that achieve it. *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1350-52 (Fed. Cir. 2010) (en banc); *LizardTech, Inc. v. Earth Res. Mapping, Inc.*, 424 F.3d 1336, 1345-46 (Fed. Cir. 2005).

Patent Owner’s *Alcon* reliance is also misplaced. *Alcon Research Ltd. v. Barr Labs., Inc.*, 745 F.3d 1180, 1191 (Fed. Cir. 2014). *Alcon* involved exemplary

formulations and substantial testing data demonstrating possession of the claimed stability-enhancing feature. *Nuvo Pharms. (Ireland) DAC v. Dr. Reddy's Labs. Inc.*, 923 F.3d 1368, 1380-81 (Fed. Cir. 2019) (distinguishing *Alcon*). Here, the single conclusory sentence relied on by Patent Owner states the desired result, but does not identify a common structural feature, objective metric, testing data, or comparison standard defining the broader functional scope. Ex. 1001, Figs. 1-2, 7:49-8:4; Ex. 1052 ¶¶ 8-10; Rev. MTA at 6-10.

B. Patent Owner Does Not Cure the Board-Identified Indefiniteness

The Board already found that the intrinsic record does not provide objective criteria for quantifying disruption or determining when that disruption reaches a maximum. Board's Prelim. Guidance at 10-11. Patent Owner's Reply identifies no metric, baseline, comparator, or test; it instead argues that "substantially direct" defines the maximum. Reply at 4-5. But Proposed Substitute Claim 21 separately recites the structural requirement to "substantially direct" the flow and the resulting requirement of "thereby maximizing" disruption, and the patent uses the same separate formulation. Revised MTA at 15-16; Ex. 1001, 7:53-65. The separate usage of these terms means the "maximizing" disruption result clause thus cannot have the same meaning as "substantially directed" flow.

Sonix does not hold that every term of degree is definite. It holds that such terms can be definite when the intrinsic record supplies guidance and points of comparison, and can be indefinite when that guidance is absent. *Sonix Tech. Co. v.*

Publ'ns Int'l, Ltd., 844 F.3d 1370, 1377-80 (Fed. Cir. 2017). The *Sonix* specification supplied a general design, express requirements, and two concrete examples. *Id.* at 1379-80. Proposed Substitute Claim 21 lacks the objective criteria and comparison points that made the *Sonix* term administrable. Ex. 1001, 7:49-8:4; Ex. 1052 ¶¶ 8-10. Dr. White explains that two arrangements can each substantially direct fluid dispersion toward a baffle yet produce different disruption because inlet size and orientation, baffle geometry and spacing, chamber geometry, flow rate, pressure drop, droplet-size distribution, and downstream restrictions independently affect the flow. Ex. 1052 ¶¶ 8-10. Without a baseline, measurement method, or comparison standard, claim 21 lacks the objective boundaries required by *Nautilus* and *Interval Licensing*. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014); *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371-74 (Fed. Cir. 2014); *see Dow Chem. Co. v. Nova Chems. Corp. (Canada)*, 803 F.3d 620, 633-35 (Fed. Cir. 2015).

III. THE REPLY DOES NOT DISTINGUISH THE ASSERTED GROUNDS

Patent Owner's prior-art response fails because it attacks strawman mappings and imports limitations claim 21 does not recite. PO Reply at 5-10. Obviousness turns on what the prior art would have suggested to a POSITA using arguments actually advanced in the Petition and Petitioner's Opposition to the Revised MTA. *In re Mouttet*, 686 F.3d 1322, 1332-33 (Fed. Cir. 2012); Opp. at 7-18.

A. Grounds 1 and 2: Sevy and Sevy-Zeng Render Claim 21 Obvious

Patent Owner's assertion that exit orifice 119 is the "only possible" silencer inlet misstates Petitioner's mapping to create a strawman argument to attack. PO Reply to MTA at 6-7. The Petition mapped the tapered-ledged opening 100 as the silencer inlet (not orifice 119), separator plate 98 as the baffle, and the downstream outlet in fluid communication with passage 126 as the silencer outlet. Pet. 29. Apertures 99/122 are openings through plate 98, not a silencer outlet. The wall 121 is an intermediate redirection surface within that same path. Ex. 1009 ¶¶ 68-70, 82-84 & Fig. 9; Pet. Opp. to MTA at 8-10; Ex. 1052 ¶¶ 15-19.

Petitioner's mapping neither turns the entire separator 120 into the baffle nor changes Petitioner's original theory of the case. Plate 98 remains the baffle, and the tapered ledge remains the mapped inlet to the baffle-containing region. Pet. at 29; Ex. 1009, ¶¶ 68-70, 82-84, Fig. 9. Sevy's incoming mixture strikes wall 121, comparatively smaller droplets pass through the separator chamber, and the flow proceeds through plate 98 before entering passages 126 and 128 and exiting downstream. Ex. 1009, ¶¶ 82-84. Claim 21 merely requires flow "towards" the baffle before the exit. It does not require an uninterrupted flow path or exclude an intermediate impact that redirects flow toward the plate. Rev. MTA at 15-16; Ex. 1052, ¶¶ 14-19.

Patent Owner's droplet-size argument misreads Sevy. PO Reply at 6-7. Sevy explains that, after wall impact, comparatively smaller droplets pass through the

separator chamber, and the final flow carries droplets typically about 1-5 microns. Ex. 1009, ¶¶ 82-84. The Petition’s unchanged fluid-dispersion analysis explains why that flow satisfies the limitation or, alternatively, why aperture location, size, or number would have been modified by a POSITA to reduce noise. Pet. At 30-32; Opp. at 8. Patent Owner’s assertion that Petitioner offered no obviousness argument disregards both the Petition and the Opposition. Pet. at 27-43; Opp. at 8-12.

Zeng is not merely “generic silencer functionality.” PO Reply to MTA at 7. Zeng identifies hissing or whistling in essential-oil atomizers and uses noise-reduction head 20 and inner cover 30 to intercept larger or incompletely atomized material while allowing fully atomized material to exit. Ex. 1011, 4-7, Figs. 2-4. Ground 2 uses the specific substitution stated in the Petition, namely where Zeng’s noise-reduction head 20 and inner cover 30 replace Sevy’s separator plate 98 and passage 126 in substantially the same space in Sevy’s device. Pet. at 40-43. That substitution preserves Sevy’s upstream atomization and inlet-side delivery while using Zeng’s chambered structure for the downstream silencer function. Dr. White explains the technical reason to modify and reasonable expectation of success. Pet. at 40-43; Ex. 1052, ¶¶ 20-23.

B. Grounds 3 and 4: Goubet and Goubet-Kaiser Render Claim 21 Obvious

Patent Owner’s Goubet argument ignores its express baffle disclosure. Goubet states that outer enclosure 12, inner enclosure 13, and connecting passage 14 together form “at least one baffle.” Ex. 1016, 2:16-19. Inlet 15 opens into outer

enclosure 12 and is substantially diametrically opposed to passage 14, so fluid entering inlet 15 has no downstream route to outlet 16 except through the baffle-forming outer enclosure, passage, and inner enclosure. Ex. 1016, 2:20-30, 4:26-5:16, Fig. 3; Ex. 1052 ¶¶ 24-27. Thus, orienting inlet 15 relative to passage 14 is an orientation relative to part of the expressly disclosed baffle, not merely an orientation “relative to the flow path” as Patent Owner contends. PO Reply to MTA at 7-8.

Patent Owner’s attempt to separate droplet breakup from silencing also contradicts Goubet. The same “particular circular shape” and arrangement force repeated wall impacts and “many shocks,” reduce droplet size, and permit a non-harsh mist to be quietly or silently diffused. Ex. 1016, 2:5-15, 2:26-30, 4:26-5:16. Claim 21 similarly recites a baffle that disrupts dispersion flow thereby dampening sound. Claim 21 does not require Patent Owner’s newly asserted, unclaimed mechanism for separately “manag[ing] acoustic energy.” Ex. 1001, 7:49-8:4; Reply to MTA at 8.

Petitioner need not equate Goubet’s phrase “as much as possible” with a mathematically maximum disruption. Under Patent Owner’s own interpretation, the structural criterion is substantial direction toward the baffle. Rev. MTA at 9-10. Goubet satisfies that criterion because inlet 15 directs flow into the mandatory, diametrically arranged baffle path before outlet 16. Ex. 1016, 2:20-30, 4:26-5:16; Ex. 1052 ¶27. The Board’s preliminary concern arose before Patent Owner supplied

that interpretation and expressly noted that claim ambiguity complicated the obviousness analysis. Board's Prelim. Guidance at 15.

Kaiser need not supply Goubet's silencer structure. Ground 4 relies on Goubet for the chamber, inlet, outlet, baffle, and disruptive quiet-diffusion path, and on Kaiser for the unchanged fluid-dispersion teaching. Pet. 55-59, 63-64; Opp. to MTA at 15; Ex. 1052 ¶¶ 28-29. Patent Owner therefore cannot defeat Ground 4 by attacking Kaiser for not independently disclosing limitation 21[G]. *In re Mouttet*, 686 F.3d at 1332-33; PO Reply at 8-9.

C. Grounds 5 and 6: Gao and Gao-Zeng Render Claim 21 Obvious

Patent Owner's Gao argument targets the wrong component and the wrong point in the flow path. The Petition mapped gas-flow spray hole 12 as the atomizer exhaust channel, not the silencer inlet. Pet. at 71-72. The Petition separately mapped the silencer inlet as the lower opening into the baffle-defined region beneath baffle 3, with hole 4 and outlet 2 providing the downstream path. Pet. at 74-76. After the high-speed gas-liquid mixture exits hole 12 and impacts inner wall 101, Gao states that the smallest particles rise with the gas flow, pass around baffle 3 through hole 4, and exit through atomizing gas outlet 2. Ex. 1013 ¶¶ 19-21, 25, Fig. 1; Ex. 1052 ¶¶ 30-33. That is the chamber/inlet/baffle/outlet relationship addressed in the Opposition. Opp. at 16-18

Calling the flow "passive" does not change Gao's disclosure. PO Reply at 9-10. Gao's air pump creates the gas flow, and Gao expressly states that the smallest

particles rise “with the rising gas flow” toward hole 4 and outlet 2. Ex. 1013, ¶ 25. Claim 21 does not require a second powered nozzle inside the silencer chamber, require the baffle to be separate from the downstream opening, or require the fluid dispersion to be fully formed before it enters the mapped chamber path. Rev. MTA Claim App. Under Patent Owner’s reading, Gao’s pump-driven rising flow is substantially directed into the baffle-defined path before downstream exit. Pet. at 74-76; Ex. 1052 ¶ 33. Patent Owner’s categorical assertion that Gao’s flow is non-uniform ignores Gao’s express teaching that its particles are “finer and more uniform” and that the mist can be controlled below 3 microns. Ex. 1013 ¶¶ 7, 13, 25.

Zeng independently reinforces the Gao grounds through the specific alternatives stated in the Petition, not through generic silencer functionality. Ground 6 either substitutes Zeng’s noise-reduction head 20 and inner cover 30 for Gao’s baffle 3 and cover body 1, or modifies Gao’s existing baffle into the dome-shaped orifice-baffle form taught by Zeng. Pet. at 81-83. Both alternatives preserve Gao’s upstream atomization path while applying Zeng’s express chambered noise-reduction teaching. Ex. 1011, 4-7, Figs. 2-4; Ex. 1013 ¶¶ 7, 13, 25; Ex. 1052 ¶¶ 34-36. Patent Owner’s description of Zeng as merely “generic” does not rebut either petitioned modification, the stated motivation, or the expected success. PO Reply at 10; Ex. 1052 ¶¶ 34-36.

IV. CONCLUSION

For the foregoing reasons, Petitioner respectfully requests that the Board deny Patent Owner's Revised Contingent Motion to Amend and find proposed substitute claim 21 unpatentable.

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Respectfully submitted,

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

The undersigned hereby certifies that a copy of the foregoing Petitioner's Sur-Reply to Patent Owner's Reply in Support of Patent Owner's Revised Contingent Motion to Amend has been served on July 23, 2026, via electronic mail directed to the following counsel of record for Patent Owner:

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