

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AROMA360, LLC,
PETITIONER,
v.
AIR ESSSENTIALS, INC.
PATENT OWNER.

**SECOND SUPPLEMENTAL DECLARATION OF
DR. CHRISTOPHER WHITE**

I. INTRODUCTION

1. I, Dr. Christopher White, submit this second supplemental declaration in support of Petitioner's Oppositions to Patent Owner's Revised Contingent Motions to Amend¹ in *Inter Partes* Review Proceeding Numbers IPR 2025-00705, -00706, and -00707 respectively seeking to amend certain claims in United States Patent Numbers 9,527,094, 10,583,449, and 10,092,918. I have been retained in this matter on behalf of Petitioner Aroma360, LLC. I am being compensated at my usual and customary rate for my time. Such compensation, however, does not influence my opinion nor does the outcome of this proceeding impact my compensation.

2. I have been asked to provide this second supplemental declaration to respond to Patent Owner's Revised MTAs and issues raised by Patent Owner's expert, Dr. Gerald Micklow, related to the same. I make this supplemental declaration based upon my personal knowledge. I am over the age of 18 and am competent to make this declaration.

¹ I note that Patent Owner uses different titles for the motions in the three proceedings: "Contingent Motion to Amend" in IPR2025-00705, "Revised Contingent Motion to Amend" in IPR2025-00706, and "Corrected Revised Contingent Motion Amend" in IPR2025-00707. For simplicity, I refer to them collectively as the "Revised MTAs."

3. I maintain and affirm that I agree with all my opinions as set forth in my declarations previously provided in IPR2025-00705, -00706, and -00707 (“Earlier Declarations”). I set forth my qualifications to opine as to the opinions of a person of ordinary skill in the art in my Earlier Declarations.

4. In addition to the materials reviewed in preparing my Earlier Declarations, I have also reviewed Patent Owner’s three Revised Motions to Amend and the Supplemental Declarations of Dr. Gerald Micklow submitted in IPR2025-00705, -00706, and -00707.

II. OPINIONS IN SUPPORT OF PETITIONER’S OPPOSITION TO PATENT OWNER’S REVISED MOTION TO AMEND IN IPR2025-00705 CHALLENGING U.S. PATENT NO. 9,527,094

5. The Revised MTA in IPR 2025-00705 seeks to substitute proposed claim 21 for challenged independent claim 7. For the reasons discussed below, it is my opinion that proposed substitute claim 21: (1) introduces technical ambiguity because the intrinsic record does not provide objective criteria for determining when disruption of the fluid-dispersion flow has been “maximized”; and (2) does not add any technically meaningful distinction over the asserted prior art under Patent Owner’s own explanation of the added limitation.

A. Technical Opinions Concerning Section 112 Issues Raised by Claim 21

6. I understand claim 21 of the ’094 patent adds language requiring the silencer inlet to be disposed relative to the baffle to substantially direct a flow of

fluid dispersion toward the baffle, thereby maximizing disruption of that flow. I previously addressed the technical issues presented by the phrase “maximizing disruption” in my supplemental declaration (Exhibit 1047). I maintain those opinions and provide the following additional observations in view of Patent Owner’s further revised claim language and Revised MTA.

7. 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.”**

8. From a technical perspective, the degree of disruption produced by an inlet and baffle arrangement is not determined by inlet direction alone. It depends on multiple design and operating variables, including inlet orientation, inlet size, baffle size and shape, spacing between the inlet and baffle, chamber geometry, flow rate, pressure, pressure drop, droplet size distribution, and downstream restrictions. As used in this declaration, “flow disruption” refers to the modification of the incoming fluid-dispersion flow by structures within the flow path through mechanisms such as redirection, impingement, separation, and momentum redistribution. The degree of disruption depends on how these mechanisms alter the velocity field, droplet

trajectories, and mixing within the chamber, rather than on any single geometric feature or operating parameter.

9. The '094 patent describes a baffle that further disrupts flow and states that the silencer inlet may at least partially, if not substantially, direct the flow toward the baffle so as to maximize disruption. Ex. 1001, 7:53-65. Those statements do not identify a metric, test, comparison method, baseline configuration, or set of structural or operating parameters that a POSITA would use to determine when disruption has reached a maximum.

10. Patent Owner's revised language adds that the silencer inlet substantially directs the flow toward the baffle, but that does not provide an objective engineering criterion for maximum disruption. A flow can be directed toward a baffle and still produce different degrees of disruption depending on the geometry and operating conditions described above. A POSITA therefore would not understand the revised wording to identify the full scope of inlet, baffle, and chamber arrangements that achieve maximum disruption.

B. Technical Understanding of the Added Silencer Limitations

11. I understand claim 21 recites a silencer assembly having a silencer chamber, and a baffle disposed within the silencer chamber. From a technical perspective, that language indicates that the silencer chamber is a chamber within the silencer assembly, not the entire silencer assembly itself. That understanding is

consistent with the '094 patent's description of a baffle 136 disposed in a silencer chamber 138 between a silencer inlet 135 and a silencer outlet 137. Ex. 1001, 7:49-53.

12. Claim 21 recites, in relevant part: **“a silencer assembly having a silencer chamber, silencer inlet, a silencer outlet, and a baffle, said baffle being disposed within said silencer chamber.”**

13. Under that understanding, a prior-art structure need not use the words “silencer chamber” to disclose the claimed feature. Because engineers identify chambers by functional flow boundaries rather than terminology, a POSITA would evaluate whether the reference contains a chambered flow region within a silencing or flow-conditioning structure, with an inlet-side flow path, a baffle or baffle-like structure disposed in the chambered region, and a downstream outlet path.

14. I understand Patent Owner now explains that “maximum disruption” is achieved when the flow of fluid dispersion is substantially directed toward the baffle. Applying that understanding, a prior art reference teaches the added inlet/baffle relationship when it intentionally directs the incoming fluid-dispersion flow toward a baffle or other flow-interrupting structure before downstream exit.

C. Sevy, and alternatively, Sevy in View of Zeng

15. In my opinion, Sevy teaches the added silencer-chamber and baffle limitations of claim 21. Sevy discloses a separator-plate region in which atomized

material enters an upstream region, encounters separator plate 98, and passes downstream through apertures 99 if sufficiently fine. Larger droplets strike opening 100 or separator plate 98 and are returned to the reservoir. Ex. 1009, [0068]-[0074], [0082]-[0084].

16. Because separator plate 98 divides the upstream atomization region from the downstream discharge region while forcing atomized droplets to either pass through apertures 99 or be redirected toward the reservoir, a POSITA would recognize this region as a chambered flow path containing a baffle structure. Separator plate 98 is positioned in the flow path and performs the same type of flow-interruption and droplet-separation function that the '094 patent attributes to its baffle.

17. Sevy also teaches the revised “partially disrupts movement” language. Separator plate 98 disrupts the movement of the fluid dispersion by allowing sufficiently fine droplets to pass through apertures 99 while larger droplets are intercepted and returned. Sevy further explains that its components are sized so that airflows “twist and turn sufficiently” to return larger droplets to the reservoir. Ex. 1009, [0074]. A POSITA would understand this to constitute flow disruption through droplet impingement, separation, and redirection, consistent with the definition provided above.

18. In my opinion, the amendment from “restricts” to “disrupts” does not create a technical distinction over Sevy. In this context, a structure that interrupts, redirects, separates, or otherwise interferes with flow through a chambered path disrupts the flow. Sevy's separator plate does that.

19. Sevy also contains the inlet/baffle relationship under Patent Owner's explanation of “maximum disruption.” Sevy intentionally directs incoming atomized flow toward separator plate 98 before downstream exit. The separator plate then intercepts larger droplets while allowing finer droplets to pass through apertures 99. If maximum disruption is understood to mean that the fluid dispersion is substantially directed toward the baffle, a POSITA would understand Sevy's arrangement to provide that relationship.

20. In my opinion, Sevy, in view of Zeng, also teaches the added silencer limitations of claim 21. Zeng discloses a noise reduction head 20 positioned within an inner cover 30, with opening 31 arranged so atomized material passes through while larger or incompletely atomized material is intercepted and returned. Ex. 1011, 5-7, Figs. 2-4.

21. Zeng expressly addresses noise associated with atomizers, including hissing or whistling noise, and teaches a chambered noise-reduction structure for controlling the passage of atomized material. Ex. 1011, 4-7. A POSITA considering

Sevy would have understood Zeng as confirming the known use of chambered flow-control structures to reduce atomizer noise while controlling droplet passage.

22. A POSITA would have had a technical reason to apply Zeng's noise-reduction teachings to Sevy because both references address atomized liquid flow, droplet control, and the handling of incompletely atomized or larger droplets. Applying Zeng's noise-reduction teachings to Sevy's separator-plate arrangement would have been a predictable application of known flow-conditioning and noise-reduction principles to an otherwise similar atomized-fluid flow path.

23. A POSITA would have expected Zeng's teachings to work when applied to Sevy. The application would not require changing Sevy's basic atomization principle. Rather, it would use known chambered noise-reduction and flow-conditioning features in the same type of atomized-fluid flow path.

D. Goubet, and alternatively, Goubet in View of Kaiser

24. In my opinion, Goubet discloses the same type of silencer-chamber and baffle arrangement addressed by claim 21. Goubet discloses outer enclosure 12 and inner enclosure 13 communicating through passage 14, with those structures forming at least one baffle. Ex. 1016, 2:16-19. Goubet also discloses inlet 15 and outlet 16. Ex. 1016, 2:20-25, Fig. 3.

25. Because the concentric enclosures force droplets to follow a tortuous internal path through passage 14 before discharge, repeatedly interacting with

surrounding surfaces, a POSITA would recognize the structure as a chambered flow path containing one or more baffle-forming elements. Droplets enter outer enclosure 12, pass through passage 14, strike surrounding walls, receive “many shocks,” break into microdroplets, and exit through outlet 16. Ex. 1016, 4:26-5:6.

26. Goubet also teaches the “partially disrupts movement” limitation. Goubet describes a “very particular path” created by the arrangement of the inlet, passage, and outlet, in which droplets strike chamber walls and receive “many shocks” before being silently diffused. Ex. 1016, 2:26-30, 4:26-5:16. A POSITA would understand that as disrupting the movement of the fluid dispersion through the chambered path.

27. Goubet also contains the inlet/baffle relationship under Patent Owner’s explanation of “maximum disruption.” Goubet’s inlet 15 is substantially diametrically opposed to passage 14, and the arrangement forces droplets through a particular baffled path before downstream exit. Ex. 1016, 2:20-30. Goubet further explains that this arrangement reduces droplet size “as much as possible.” Id. A POSITA would understand Goubet’s structure as directing the flow into the baffle-forming path and increasing droplet interaction and breakup within that path.

28. In my opinion, applying Kaiser’s droplet-size-control teachings to Goubet would not change the technical features discussed above. The chambered flow path, inlet, outlet, and baffle arrangement are supplied by Goubet. Kaiser

confirms that substantially uniform droplets and droplet-size-control principles were known in the art. Applying those droplet-size teachings to Goubet would not change Goubet's chambered baffle structure.

29. A POSITA would have had a technical reason to apply known droplet-size-control principles to Goubet because Goubet itself seeks to break droplets into microdroplets before diffusion. A POSITA would have expected that application to work because applying known droplet-size-distribution principles to an atomized-droplet diffuser would have involved routine engineering choices.

E. Gao, and alternatively, Gao in View of Zeng

30. In my opinion, Gao discloses the same type of chambered flow and baffle arrangement addressed by the added silencer-chamber and baffle limitations of claim 21. 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].

31. Gao's 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. Ex. 1013, [0019]-[0025]. Because the rising gas-liquid mixture must interact with baffle 3 before passing through hole 4, a POSITA would understand that arrangement as a chambered flow region containing a disruptive baffle structure and a downstream outlet path.

32. Gao also teaches the “partially disrupts movement” limitation. Baffle 3 interrupts the rising gas-liquid flow, causes collision with inner wall 101, and allows smaller particles to proceed through hole 4 and atomizing gas outlet 2. Ex. 1013, [0019]-[0025]. A POSITA would understand that as disrupting the movement of the fluid dispersion through the chambered flow path.

33. Gao contains the inlet/baffle relationship under Patent Owner’s explanation of “maximum disruption.” Gao’s rising flow is directed toward baffle 3 before discharge, causing the gas-liquid mixture to interact with the baffle and inner wall before exiting through hole 4 and atomizing gas outlet 2. If maximum disruption is understood to mean substantially directing the flow toward the baffle, a POSITA would understand Gao’s arrangement to provide that relationship.

34. In my opinion, the combination of Gao and Zeng would have provided the same technical features discussed above. Gao already uses baffle 3 and the lower cavity region to control atomized particles and produce smaller, more uniform particles. Zeng provides an express teaching of using a noise-reduction structure in an atomizer flow path to reduce hissing or whistling noise. Ex. 1011, 4-7; Ex. 1013, [0007], [0019]-[0025].

35. A POSITA would have been motivated to apply Zeng’s noise-reduction teachings to Gao because both references concern atomized fluid flow, droplet control, and improving atomizer performance. Combining Gao’s baffle-based

droplet-control structure with Zeng's noise-reduction teachings would have been a predictable application of known atomizer design principles.

36. A POSITA would have had a reasonable expectation of success because the combination would preserve Gao's basic flow path and baffle structure while applying known noise-reduction teachings to an atomizer flow path. Nothing about Zeng's noise-reduction structure would undermine Gao's use of a baffle to control particle size and downstream discharge.

III. OPINIONS IN SUPPORT OF PETITIONER'S OPPOSITION TO PATENT OWNER'S REVISED MOTION TO AMEND IN IPR2025-00706 CHALLENGING U.S. PATENT NO. 10,583,449

37. The Revised MTA in IPR2025-00706 seeks to substitute proposed claims 20 and 21 for challenged independent claims 1 and 7, respectively. For the reasons discussed below, it is my opinion that proposed substitute claims 20 and 21 introduce technical ambiguity because the intrinsic record does not provide objective guidance for applying the "minimize contact," compressed-air-flow-path, and lateral/transverse exhaust limitations. It is also my opinion that, from a technical perspective, the added limitations describe structures and functional relationships that were already present in, or would have been predictable implementations of, the asserted prior art.

A. Technical Opinions Concerning Section 112 Issues Raised by Substitute Claims 20 and 21

38. I understand substitute claim 20 adds a drip tube limitation requiring the drip tube to direct accumulated operative fluid into the container and to minimize contact between the sealing washer and the operative fluid. From a technical perspective, “minimize contact” is a result-oriented phrase. The claim itself does not identify a baseline amount of contact, a permitted wetted area, a contact duration, a test method, or any other engineering criterion for determining when contact has been sufficiently minimized.

39. Claim 20 recites in relevant part: **“a sealing washer disposed between said diffusion unit and the container, and a drip tube disposed in an interconnecting relation between said enclosed diffusion chamber and said container through said sealing washer, said drip tube disposed to direct operative fluid accumulated in said enclosed diffusion chamber into said container and to minimize contact between said sealing washer and said operative fluid.”**

40. The written description does not supply that missing technical criterion. The specification states that drip tube 120 serves to minimize contact by essentially preventing operative fluid from contacting the sealing washer and by channeling accumulated fluid back into the container without contacting the sealing washer. Ex. 1001, 4:28-43, 9:29-44. A POSITA would understand those statements as describing a general design objective, but they do not explain whether the claimed arrangement

permits some incidental wetting, requires no contact, or is satisfied by any reduction relative to an unstated baseline.

41. I also understand that substitute claim 21 adds limitations directed to a compressed-air flow path through the atomizer assembly, with a fluid-inlet opening and mixing chamber disposed along that path. Patent Owner cites Application 16/154,373 for this limitation, specifically page 71, lines 14-17 and Figures 1-2. Rev. MTA at 9-10. From a technical perspective, an atomizer air inlet channel is only one upstream component in a multi-component atomizer. The path that compressed air follows through the atomizer assembly is defined by the complete sequence of downstream flow-directing structures, including the mixing chamber and atomizer exhaust. Application 16/154,373 elsewhere describes the compressed-air flow path as extending through multiple structures, including the air inlet, atomizer air inlet channel, mixing chamber, and atomizer exhaust. Ex. 1004, 79:6-11, 91:8-14. I do not see disclosure in Patent Owner's cited support, Ex. 1004 at 71:14-17 and Figures 1-2, or in the passages describing the flow path, Ex. 1004 at 79:6-11 and 91:8-14, identifying an atomizer air inlet channel alone as defining the full compressed-air flow path through the atomizer assembly.

42. Claim 21 further recites, in relevant part: **“said fluid inlet disposed in fluid communication with the operative fluid in the container and comprising an opening into said mixing chamber, said opening disposed along said**

compressed-air flow path such that compressed air from the compressed air source flows past said opening of said fluid inlet into said mixing chamber,” and “said mixing chamber disposed along said compressed-air flow path after said atomizer air inlet channel and before said atomizer exhaust aperture.”

43. I further understand claim 21 requires an atomizer exhaust aperture opening laterally from the mixing chamber into the diffusion chamber along an exhaust path transverse to the direction in which operative fluid enters the mixing chamber through the fluid inlet. Patent Owner cites Application 16/154,373 for this limitation, specifically page 79, lines 6-11 and Figures 1-2. Rev. MTA at 10. A POSITA would need a frame of reference to apply those directional terms to a three-dimensional atomizer structure. The portions Patent Owner cites do not identify the relevant plane, axis, or reference direction for determining whether an aperture opens “laterally” or whether an exhaust path is “transverse” to the direction of fluid entry. Ex. 1004, 79:6-11, Figs. 1-2.

44. Claim 21 further recites, in relevant part: **“said atomizer exhaust aperture spaced from said discharge port and opening laterally from said mixing chamber into said diffusion chamber along an exhaust path transverse to a direction in which said operative fluid enters said mixing chamber through said fluid inlet.”**

45. The phrase “direction in which operative fluid enters” can be understood in more than one technical sense in these atomizer structures. It could refer to the direction of fluid movement through the fluid inlet, the direction of fluid movement at the inlet opening, or the direction of fluid movement after the fluid is entrained by compressed air in the mixing region. Patent Owner cites Application 16/154,373 at page 79, lines 6-11 and Figures 1-2 for the lateral/transverse exhaust limitation. Rev. MTA at 10. Those cited portions do not provide a technical rule for selecting among those possible directions when applying the lateral/transverse language. Ex. 1004, 79:6-11, Figs. 1-2.

B. Technical Opinions Concerning the Prior Art and Substitute Claim 20’s Sealing Washer and Drip Tube

46. I understand that claim 20 adds a sealing washer disposed between the diffusion unit and container and a drip tube that directs accumulated operative fluid into the container while minimizing contact between the sealing washer and operative fluid. From a technical perspective, those features reflect routine sealing and liquid-return structures used in bottle-mounted atomizer and diffuser systems.

47. Sevy discloses an atomizer secured to reservoir 18, for example by threads or the like. Ex. 1009, [0041]. Sevy also discloses that droplets may agglomerate and drip down toward reservoir 18. Ex. 1009, [0082]. Where an atomizer/diffuser design allows liquid to agglomerate and drip back toward the reservoir, adding a drip-return tube or drain at the chamber/reservoir interface is a

routine and predictable engineering refinement. Such a structure directs returned liquid, reduces pooling, reduces unintended wetting, reduces mess and residue buildup, and does not change the atomization principle of operation.

48. Once a POSITA provides a washer or other sealing member at the bottle or reservoir interface and a drip-return tube or drain at that same interface, routing the return path through the washer or sealed interface is a predictable implementation. That routing maintains the seal while isolating returned liquid from the washer's annular sealing surface.

49. Van Roemburg confirms that sealing was conventional in essential-oil atomizers. Van Roemburg discloses an essential-oil atomizer having threaded portion 20 that engages the neck of oil bottle 25, and further teaches sealing engagement using appropriate O-rings. Ex. 1053, 2:25-33, 2:58-62, Fig. 2. Using a conventional washer or O-ring at a bottle-mounted atomizer interface would have been routine and predictable.

50. Rosener confirms that drainage tubes were known for this type of liquid-management function. Rosener discloses a fragrance nebulizer having a drainage tube extending from the atomizer complex into the fragrance oil so non-atomized oil drains down the tube toward the reservoir for reuse. Ex. 1054, Abstract, 1:37-45, 7:60-8:5, Figs. 2D-2E. A POSITA would have had reason to implement a

similar drainage path in Sevy or Gao to route returned or non-atomized oil to the reservoir.

51. Gao also teaches a liquid-management context in a bottle-mounted atomizer. Gao discloses an atomizer mounted to an essential-oil bottle, with a gas-liquid mixture ejected into lower part cavity 10, colliding with inner wall 101, and smaller particles drifting upward around baffle 3 and through atomizing gas outlet 2. Ex. 1013, ¶¶ [0019]-[0025]. A POSITA would understand that arrangement as separating finer particles for discharge while managing larger or non-discharged liquid within the bottle-mounted atomizer structure. In that context, a POSITA would have had reason to implement a conventional drain or drip tube through a sealed bottle interface to route returned or non-atomized oil back toward the reservoir.

52. Goubet likewise discloses a diffuser head attached to reservoir 2 and a droplet-flow path directed back toward the reservoir interior. Ex. 1016, 3:26-27, 4:1-2, 4:15-28. Goubet also identifies leakage prevention and product retention as design objectives. Ex. 1016, 2:9-12, 3:1-8, 3:24-27. A POSITA would recognize that adding a sealing washer and drip-return tube or drain at that same head/reservoir interface would have been a routine, predictable refinement that directs return flow and reduces uncontrolled wetting or leakage.

C. Technical Opinions Concerning the Earlier Applications and Gao-2

53. I understand that proposed substitute claim 21 adds limitations directed to the relative arrangement of the atomizer air inlet channel, fluid inlet, mixing chamber, atomizer exhaust aperture, compressed-air flow path, and diffusion chamber. In particular, I understand that claim 21 requires the fluid-inlet opening to be disposed along the compressed-air flow path such that compressed air flows past the opening into the mixing chamber, and further requires the atomizer exhaust aperture to open laterally from the mixing chamber into the diffusion chamber along an exhaust path transverse to the direction in which operative fluid enters the mixing chamber through the fluid inlet.

54. From a technical perspective, the portions of Application 16/154,373 that Patent Owner cites for the atomizer-exhaust-aperture limitation do not disclose the full combination of spatial and directional relationships recited in claim 21. Patent Owner cites page 79, lines 6-11, and Figures 1-2 for that limitation. Rev. MTA at 10; Ex. 1004, 79:6-11, Figs. 1-2. In the embodiments corresponding to Figures 1 and 2, the atomizer exhaust aperture communicates with the suppression chamber, not with the diffusion chamber as claim 21 requires. Those figures therefore do not disclose an atomizer exhaust aperture opening laterally from the mixing chamber into the diffusion chamber.

55. The portions of Application 16/154,373 cited by Patent Owner also do not identify the full claimed exhaust-path geometry. Patent Owner cites page 79,

lines 6-11, and Figures 1-2, but those disclosures do not identify, in the same embodiment, an atomizer exhaust aperture opening laterally from the mixing chamber into the diffusion chamber along an exhaust path transverse to the direction in which operative fluid enters the mixing chamber through the fluid inlet. Rev. MTA at 10; Ex. 1004, 79:6-11, Figs. 1-2. Nor do those cited disclosures provide a technical explanation linking any other embodiment to the specific spatial arrangement recited in claim 21.

56. Figures 3, 5, and 6 of Application 16/154,373 do not cure that technical gap. Patent Owner did not cite those figures for the atomizer-exhaust-aperture limitation. Rev. MTA at 10. But for sake of completion, Figures 3 and 6 depict downward flow paths rather than the claimed lateral opening from the mixing chamber into the diffusion chamber along a transverse exhaust path. Figure 5 also does not disclose the claimed transverse relationship between the exhaust path and the direction in which operative fluid enters the mixing chamber. These are different embodiments, and in my opinion, they do not disclose the full claimed arrangement in a single combined structure. Ex. 1004, Figs. 3, 5, 6.

57. I understand Gao-2 was filed on August 6, 2014 and published by January 7, 2015. Ex. 1042, INID Codes (22), (45). I also understand Patent Owner cites Application 16/154,373 at page 71, lines 14-17 and Figures 1-2 for the compressed-air-flow-path limitation. Rev. MTA at 9-10. Patent Owner also cites

Application 16/154,373 at page 79, lines 6-11 and Figures 1-2 for the atomizer-exhaust-aperture limitation. Rev. MTA at 10; Ex. 1004, 79:6-11, Figs. 1-2. From a technical perspective, those cited materials do not disclose the full spatial and directional arrangement added in claim 21, including a fluid-inlet opening disposed along the compressed-air flow path and an atomizer exhaust aperture opening laterally from the mixing chamber into the diffusion chamber along the claimed transverse exhaust path. I understand counsel may rely on those technical opinions when addressing the effective filing date of the added subject matter.

D. Technical Opinions Concerning Gao-2 and Substitute Claim 21

58. Gao-2 discloses an aroma diffuser that generates fragrant mist. Gao-2 discloses atomization device 3 connected to essential oil bottle 2 and air pump 4. When the pump operates, airflow enters the atomization core, creates negative pressure, draws essential oil from bottle 2 through liquid suction tube 33, mixes the essential oil with the airflow, atomizes the mixture, and discharges fragrant mist through mist outlet 351. Ex. 1042, [0027], [0030], [0034], [0036], [0040], Figs. 2, 4, 5. Thus, to the extent the preamble of claim 21 is limiting, Gao-2 teaches it.

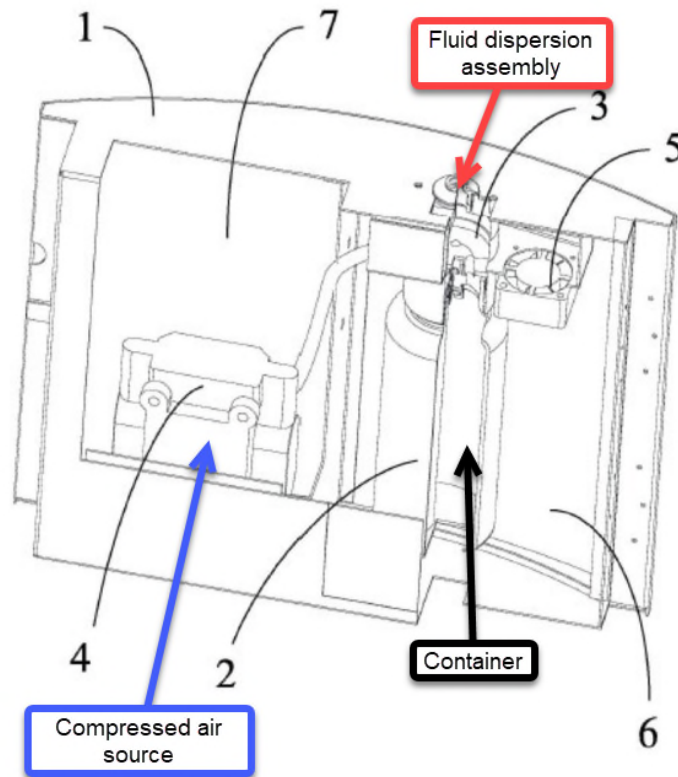


FIG. 2

59. Gao-2 discloses a diffusion unit at least partially defining a diffusion chamber. Atomization device 3 includes cylindrical body 310, atomization head cover 36, and internal chamber regions surrounding atomization core 32. Ex. 1042, [0031]-[0034], Fig. 5. Cylindrical body 310 and cover 36 at least partially define the internal chamber path through which mist travels after atomization. Because the rotating core defines the enclosed volume within which compressed air and essential oil are brought together, interact, and are atomized before discharge, a POSITA would understand that internal chamber path to correspond to the claimed diffusion chamber.

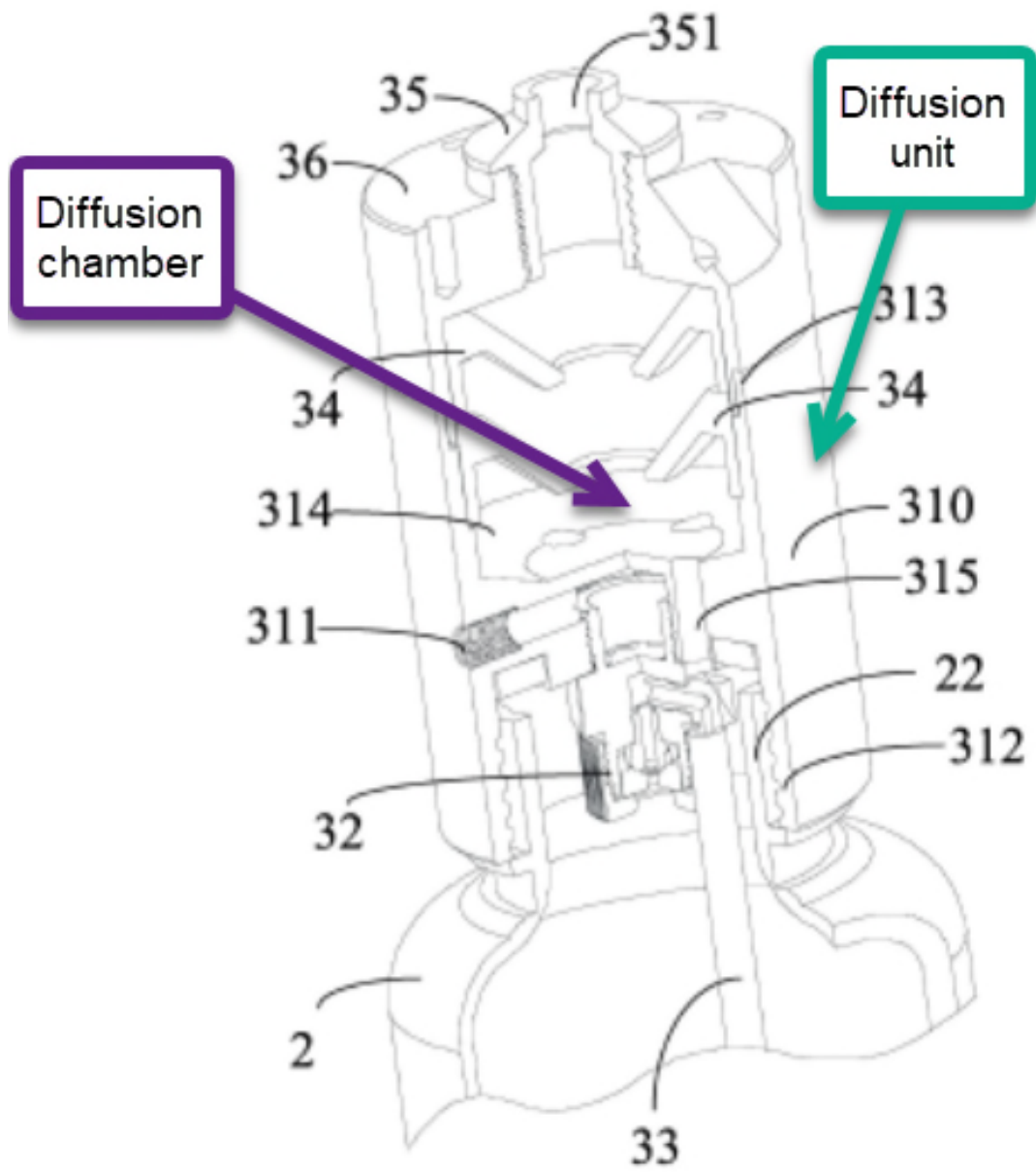
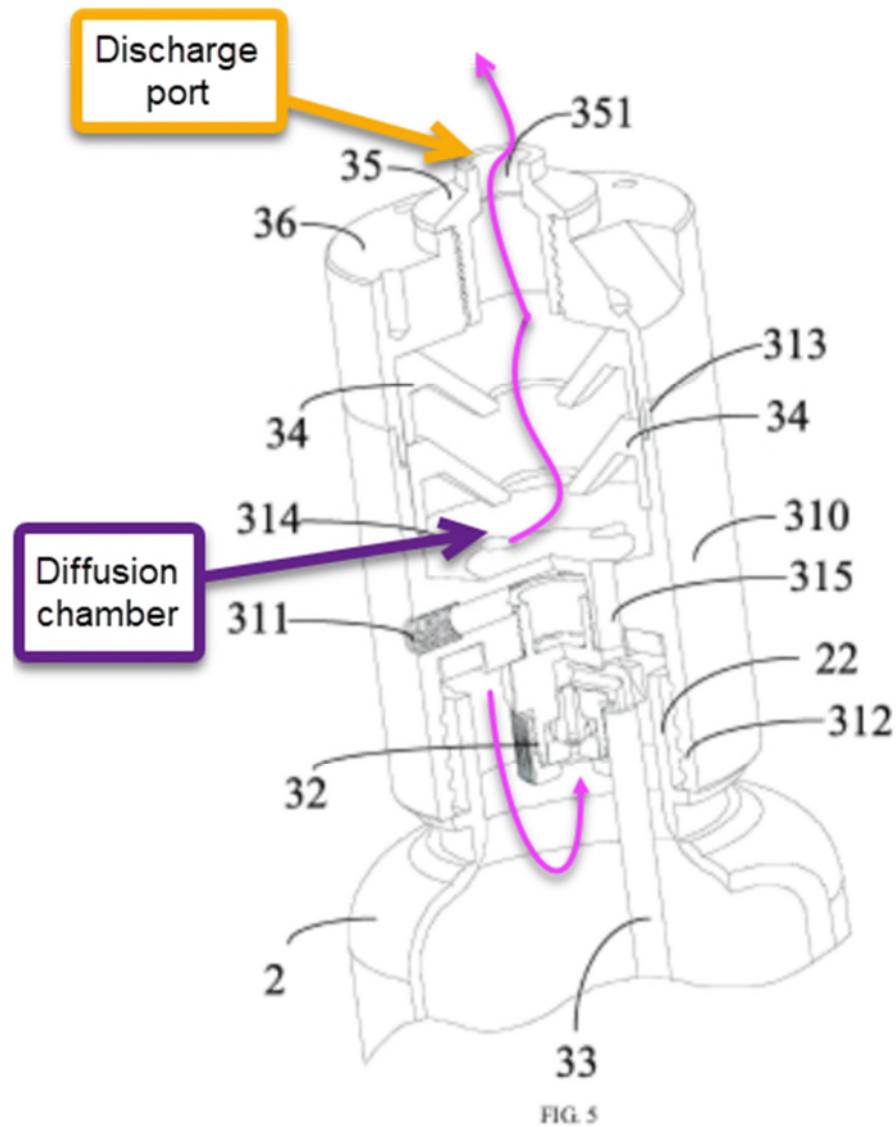
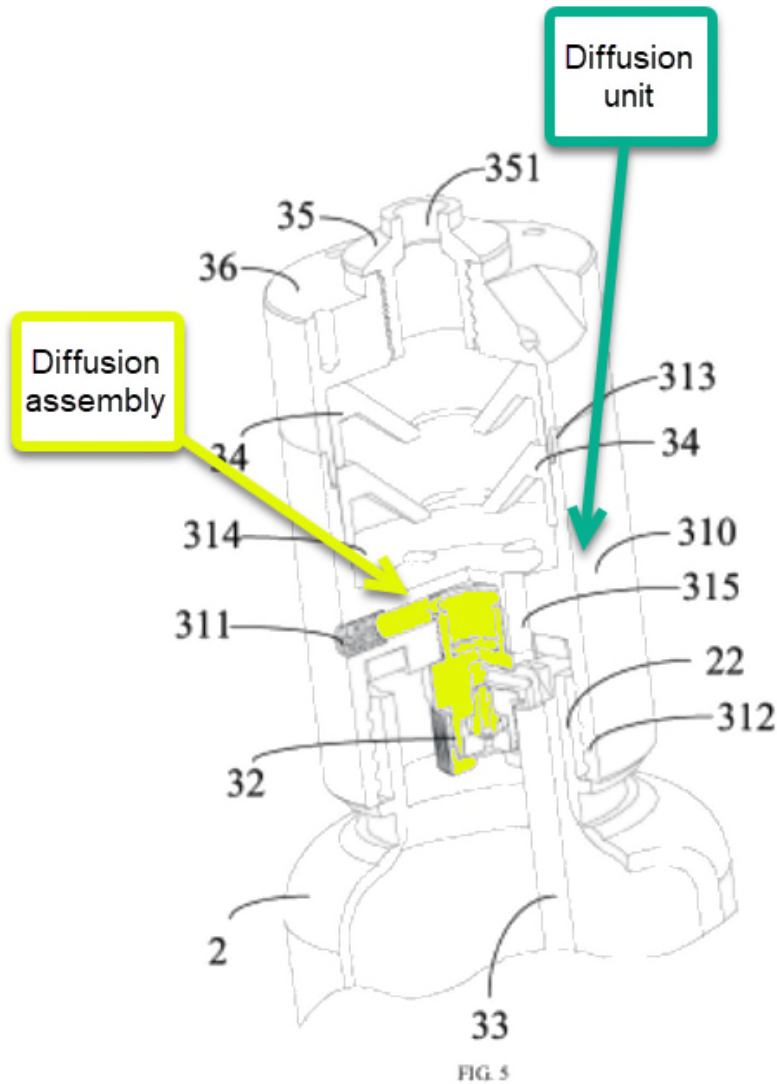


FIG. 5

60. Gao-2 discloses a discharge port disposed in fluid communication between the diffusion chamber and surrounding airspace. Mist outlet 351 is the final discharge port through which mist exits the internal chamber region to the surrounding airspace. Ex. 1042, [0034], Fig. 5.



61. Gao-2 discloses a diffusion assembly disposed in operative engagement with the diffusion unit. Gao-2's diffusion assembly includes atomization core 32 and its air/fluid delivery structures, including air inlet channel 311, liquid suction tube 33, connector 325, liquid suction channel 3216, liquid suction hole 3224, and spray outlet 3231. Ex. 1042, [0031]-[0038], Figs. 5, 7, 10. Those structures are mounted in and operate with cylindrical body 310.



62. Gao-2 discloses an atomizer assembly in atomization core 32. Ex. 1042, [0035]-[0040], Figs. 7, 9-10. The compressed-air path includes air inlet channel 311, vent holes 3215, and guide grooves 3225. The fluid inlet includes liquid suction tube 33, connector 325, liquid suction channel 3216, and liquid suction hole 3224. Gao-2 explains that essential oil is mixed with airflow and atomized at the outlet of liquid suction hole 3224 before being sprayed from spray outlet 3231. Ex. 1042, [0036],

[0040]. A POSITA would understand the mixing chamber to be the chamber/volume defined between the distal end of rotating core 322, including the volume defined by guide grooves 3225, and the surface of cap 323 upstream of the spray outlet 3231. It is in this chamber where the airflow and essential oil meet, mix, and are atomized **before** discharge through spray outlet 3231. Ex. 1042, ¶¶[0036]–[0040]. It is thus my opinion that a POSITA would understand spray outlet 3231 to correspond to the claimed atomizer exhaust aperture.

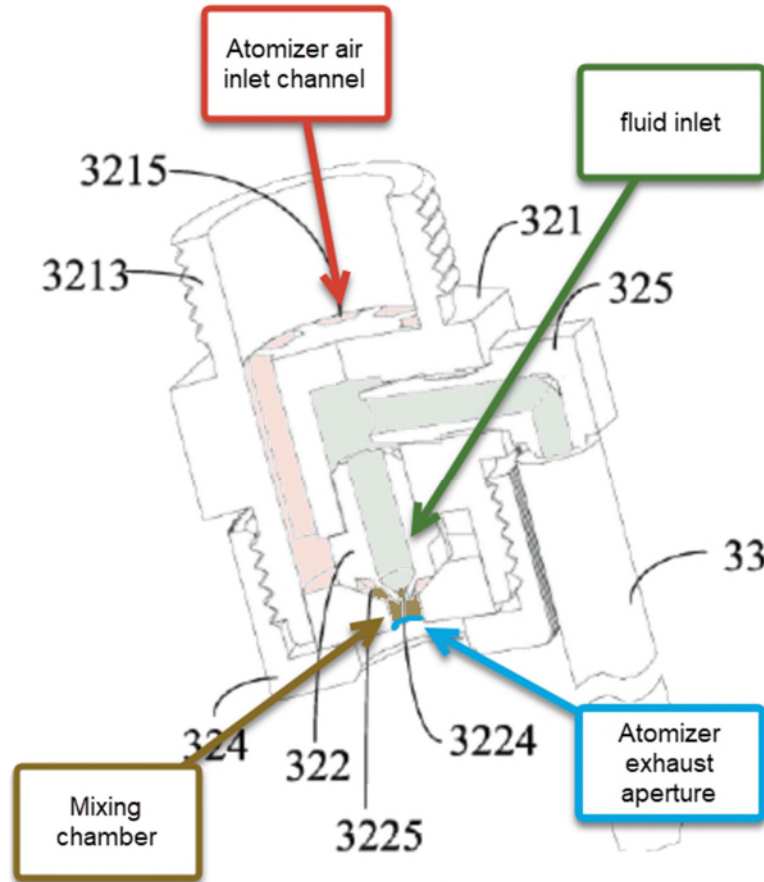


FIG. 10

63. Gao-2 discloses an atomizer air inlet channel interconnected to the compressed-air source and defining a compressed-air flow path through the atomizer assembly. Air pump 4 supplies airflow to air inlet channel 311. Ex. 1042, [0027], [0036]. The airflow passes through vent holes 3215 and guide grooves 3225 to the atomization region near the outlet of liquid suction hole 3224, where essential oil is drawn into the airflow and atomized before the mixture exits through spray outlet 3231. Ex. 1042, [0036]-[0040], Figs. 7, 9, 10.

64. Gao-2 discloses the claimed fluid-inlet opening disposed along the compressed-air flow path. Liquid suction tube 33, connector 325, liquid suction channel 3216, and liquid suction hole 3224 place essential oil in bottle 2 in fluid communication with the atomization region. Ex. 1042, [0035]-[0036], Fig. 10. The outlet of liquid suction hole 3224 is located at the region where high-speed airflow creates negative pressure, draws essential oil into the airflow, and mixes the essential oil with the airflow. *Id.*, [0036], [0040]. A POSITA would understand that region to be part of the mixing chamber/volume, as it is the site of atomization before the mist is sprayed from spray outlet 3231.

65. Gao-2 discloses the claimed sequence of the mixing chamber along the compressed-air flow path after the atomizer air inlet channel and before the atomizer exhaust aperture. Air flows from air inlet channel 311 through vent holes 3215 and guide grooves 3225 into the chamber/volume of rotating core 322, where essential

oil from liquid suction hole 3224 mixes with the airflow and is atomized. Ex. 1042, [0036]-[0040], Figs. 7, 9, 10. The air/oil mixture then exits through spray outlet 3231, which is the atomizer exhaust aperture.

66. Gao-2 discloses an atomizer exhaust aperture spaced from the discharge port. Gao-2's spray outlet 3231 is the atomizer exhaust aperture because the air/oil mixture is atomized in atomization core 32 and sprayed out through spray outlet 3231. Ex. 1042, [0036], Fig. 10. Gao-2's discharge port is the separate downstream mist outlet 351, through which mist exits to the surrounding airspace after passing through the internal chamber region. Ex. 1042, [0031]-[0034], Fig. 5. Spray outlet 3231 and mist outlet 351 are distinct structures at different locations in the flow path.

67. Gao-2 also discloses the lateral/transverse relationship in claim 21. The fluid inlet introduces operative fluid through liquid suction hole 3224 into the mixing chamber/volume of rotating core 322. The atomized mist exits through spray outlet 3231 into the internal chamber region along an exhaust path distinct from, and transverse to, the direction in which operative fluid enters through the fluid inlet. Ex. 1042, [0031], [0036]-[0040], Figs. 7, 9, 10. Thus, Gao-2 teaches an atomizer exhaust aperture opening laterally from the mixing chamber into the diffusion chamber along an exhaust path transverse to the direction of operative-fluid entry.

68. In my opinion, Gao-2 discloses the same functional atomizer architecture described above: a defined compressed-air path, a fluid inlet located

where the air stream creates suction and entrains fluid, a mixing chamber/volume in rotating core 322 where the airflow and essential oil mix and are atomized before spray outlet 3231, an atomizer exhaust aperture, a downstream diffusion chamber, and a separate final discharge port. To the extent any minor dimensional or orientation adjustment were required to implement that arrangement, a POSITA would have made that adjustment using routine atomizer-design principles with a reasonable expectation of success.

E. Technical Opinions Concerning Gao-2 and the Dependent Claims

69. In the event Patent Owner seeks to preserve dependent claims 8-10 through its proposed amended claims, I address them here. Specifically, to the extent Patent Owner seeks to preserve claims 8-10 by making those claims depend, directly or indirectly, from proposed amended claim 21, my technical opinions concerning Gao-2 and those dependent claims are set forth below. The amended independent claim does not change those opinions because the dependent claims add only the additional limitations addressed below.

70. Claim 8 recites that “said diffusion assembly comprises an atomizer assembly,” and that the atomizer assembly comprises “an atomizer air inlet channel interconnected to said compressed-air source, a fluid inlet disposed in fluid communication with said operative fluid in said container, and a mixing chamber wherein said compressed air and said operative fluid mix together to form said fluid

dispersion.” A POSITA would identify these structures in Gao-2. Gao-2 discloses atomization core 32, which includes the atomizer assembly. Air pump 4 supplies compressed air through air inlet channel 311, vent holes 3215, and guide grooves 3225. Ex. 1042, [0027], [0036]-[0040], Figs. 7, 9, 10. Essential oil is drawn from bottle 2 through liquid suction tube 33, connector 325, liquid suction channel 3216, and liquid suction hole 3224. *Id.*, [0035]-[0036], Figs. 5, 7, 10. Gao-2 explains that essential oil mixes with airflow and is atomized at the outlet of liquid suction hole 3224 before being discharged through spray outlet 3231. *Id.*, [0036], [0040]. A POSITA would understand the mixing chamber to be the chamber/volume of rotating core 322, including the volume defined by guide grooves 3225 and cap 323, where the airflow and essential oil mix and are atomized before discharge through spray outlet 3231.

71. Claim 9 recites: “wherein said diffusion chamber facilitates further formation of said fluid dispersion before said fluid dispersion exits said diffusion chamber through said discharge port and into said surrounding airspace.” Gao-2 teaches this limitation. Gao-2 sprays the atomized mixture into the internal chamber path of atomization device 3, where coarse fragrant mist falls back into the essential-oil bottle while fine fragrant mist proceeds through the downstream mist-passage structures and exits through mist outlet 351. Ex. 1042, [0030]-[0034], [0040], Fig. 5. A POSITA would understand that Gao-2’s diffusion chamber facilitates further

formation and conditioning of the fluid dispersion before discharge to the surrounding airspace.

72. Claim 10 recites “a container interconnect operatively interconnecting said diffusion unit to said container.” Gao-2 teaches this limitation. Gao-2 discloses atomization device 3 connected to essential oil bottle 2, with liquid suction tube 33 extending into bottle 2 so essential oil can be drawn into atomization core 32 during operation. Ex. 1042, [0027], [0030]-[0031], [0035]-[0040], Figs. 2, 5. A POSITA would understand the bottle-mouth connection between atomization device 3 and bottle 2 to be a container interconnect that operatively interconnects the diffusion unit to the container.

F. Response to Dr. Micklow's Supplemental Opinions Concerning the '449 Patent

73. I have reviewed Dr. Micklow's supplemental declaration submitted as Exhibit 2016 in IPR2025-00706. I understand that Dr. Micklow offers opinions concerning Sevy, Goubet, the proposed drip-tube limitation, the fluid-inlet/air-inlet/mixing-chamber relationship, and the atomizer-exhaust-aperture limitation. Ex. 2016, ¶¶ 5-32. I disagree with those opinions for the reasons below.

74. For Sevy, Dr. Micklow opines that a POSITA would not have been motivated to add a drip tube at the diffusion-unit/container interface because Sevy already includes a droplet-return mechanism, and he further opines that adding a drip tube would alter Sevy's fluid-return behavior and change Sevy's principle of

operation. Ex. 2016, ¶¶ 5-11. I disagree. Sevy already teaches that larger droplets are separated and returned toward reservoir 18. Ex. 1009, ¶¶ [0069]-[0070], [0082]-[0084]. A drip-return tube or drain would not change Sevy's atomization or downstream separation principle. It would merely provide a directed return path for liquid that Sevy already teaches returns toward the reservoir.

75. In particular, Sevy would still use pump 14, nozzle 92, siphon tube 96, cavity 116, separator 120, wall 121, separator plate 98, and port 106 to atomize, separate, and discharge droplets. Ex. 1009, ¶¶ [0075]-[0084]. Adding a drain or drip tube at the reservoir interface would not alter those components or how Sevy generates and separates droplets. It would only guide returned liquid in a more controlled manner. From a technical perspective, that is a routine liquid-management refinement, not a change in Sevy's principle of operation.

76. Dr. Micklow also opines that Sevy does not disclose or suggest a sealing washer disposed between a diffusion unit and container, or a drip tube extending through such a sealing washer to minimize contact between the washer and operative fluid. Ex. 2016, ¶ 11. I understand that Sevy itself does not use the exact words "sealing washer" or "drip tube." But a POSITA would not evaluate Sevy only by labels. Sevy discloses a reservoir-mounted atomizer and liquid returning toward the reservoir. Ex. 1009, ¶¶ [0041], [0082]-[0084]. In that context, using a conventional washer or O-ring at the bottle interface and routing returned liquid through a drain

or drip tube would have been a predictable implementation to reduce leakage, pooling, and wetting of sealing surfaces.

77. For Sevy's air/fluid inlet arrangement, Dr. Micklow opines that Sevy does not clearly disclose the claimed arrangement in which compressed air flows over the fluid inlet and into the mixing chamber, and that modifying Sevy to provide that arrangement would require redesigning Sevy's nozzle, air passage, fluid inlet, and atomizing region. Ex. 2016, ¶¶ 12-19. I disagree. Sevy discloses air delivered through channel 114 and orifice 118 into cavity 116, while reduced pressure draws liquid from reservoir 18 through siphon tube 96 into cavity 116, where the liquid is comminuted by high-speed air and the mixture exits through exit orifice 119. Ex. 1009, ¶¶ [0079]-[0082]. A POSITA would understand that disclosure as a Venturi-style eductor arrangement in which compressed air passes across or past the region of the siphon-tube opening to create suction and mixing.

78. To the extent any adjustment in the relative placement of Sevy's siphon-tube opening and air-flow path were needed, that adjustment would not change Sevy's principle of operation. It would implement the same suction-based entrainment that Sevy already describes. Sevy would still use pump-driven compressed air, siphon-fed liquid entrainment, cavity 116, exit orifice 119, separator 120, and port 106 to atomize, separate, and discharge droplets. Ex. 1009, ¶¶ [0075]-[0084]. A POSITA would have expected that type of relative positioning to work

because it is the ordinary configuration used to draw liquid into a high-speed air stream in an eductor-style atomizer.

79. Dr. Micklow further opines that Sevy does not disclose or suggest an atomizer exhaust aperture spaced from a discharge port and opening laterally from a mixing chamber into a diffusion chamber along an exhaust path transverse to the direction in which operative fluid enters the mixing chamber. Ex. 2016, ¶ 20. I disagree. Sevy's exit orifice 119 is spaced from downstream port 106 and opens from cavity 116 toward separator chamber 120, while the fluid inlet from siphon tube 96 enters cavity 116 from below. Ex. 1009, ¶¶ [0072], [0080]-[0082], Fig. 9. A POSITA would understand that arrangement to disclose, or at least suggest, an exhaust path transverse to the direction in which operative fluid enters through the fluid inlet.

80. For Goubet, Dr. Micklow opines that a POSITA would not have been motivated to add a drip tube at the diffusion-unit/container interface because Goubet already manages droplet flow through its diffuser-head geometry and tortuous path, and he further opines that adding a drip tube would change Goubet's principle of operation. Ex. 2016, ¶¶ 21-26. I disagree. Goubet already discloses a diffuser head attached to reservoir 2 and teaches droplet routing within the diffuser-head/reservoir structure. Ex. 1016, 3:24-4:28. Adding a drain or drip-return tube at the diffuser-head/reservoir interface would not change Goubet's compressed-air supply, venturi-

driven oil entrainment, mixing in diffusion chamber 5, or downstream droplet path. It would simply provide a directed liquid-return feature at the interface.

81. Dr. Micklow also opines that Goubet does not disclose or suggest a sealing washer or a drip tube extending through a sealing washer to minimize contact between the washer and operative fluid. Ex. 2016, ¶ 26. I understand that Goubet does not use those exact words. But Goubet discloses a reservoir-mounted diffuser head and identifies leakage prevention and product retention as design concerns. Ex. 1016, 2:9-12, 3:1-8, 3:24-27. A POSITA would have understood that using a conventional washer or O-ring at that interface and routing returned liquid through a drain or drip tube would predictably help control leakage, reduce pooling, and reduce uncontrolled wetting of the sealing interface.

82. For Goubet's air/fluid inlet arrangement, Dr. Micklow opines that Goubet discloses only a general Venturi-type atomization arrangement and does not necessarily disclose the specific claimed relationship between the air inlet path, fluid inlet opening, and mixing region. Ex. 2016, ¶¶ 27-31. I disagree. Goubet discloses compressed-air inlet 6, venturi cone 7, and the upper end 10 of dip tube 8, and states that when compressed air flows into diffusion chamber 5, essential oil is drawn into the chamber by the vacuum created and mixed with air. Ex. 1016, 3:31-4:22, Fig. 2. A POSITA would understand that disclosure to require the air path and fluid inlet to

be positioned so that airflow creates suction at the fluid inlet and entrains oil into the mixing region.

83. To the extent Dr. Micklow suggests that satisfying the claimed arrangement would require redesigning Goubet's venturi cone, compressed-air inlet, oil inlet, or diffusion chamber geometry, I disagree. Ex. 2016, ¶¶ 30-31. The claimed relationship is consistent with the ordinary operation of Goubet's disclosed venturi structure. Goubet would still use compressed air entering through inlet 6, venturi cone 7, dip tube 8, oil inlet 10, and diffusion chamber 5 to draw oil into the air stream and form droplets. Ex. 1016, 3:31-4:22, Fig. 2. Positioning the dip-tube inlet relative to the air path to obtain suction and entrainment is not a change in principle of operation; it is how the disclosed structure operates.

84. Finally, Dr. Micklow opines that Goubet does not disclose or suggest an atomizer exhaust aperture spaced from a discharge port and opening laterally from a mixing chamber into a diffusion chamber along a transverse exhaust path. Ex. 2016, ¶ 32. I disagree. Goubet discloses an outlet from diffusion chamber 5 and a downstream release path through the reservoir/head structure. Ex. 1016, 3:31-5:7. From a technical perspective, Goubet's venturi structure includes a mixing region, a separate downstream outlet path, and a flow path in which oil is entrained by compressed air and then discharged from the mixing region toward the downstream chamber structure. A POSITA would understand that arrangement to provide the

same type of spatial and directional relationship addressed above. Gao-2 also discloses the same lateral/transverse atomizer-exhaust arrangement discussed above.

IV. OPINIONS IN SUPPORT OF PETITIONER’S OPPOSITION TO PATENT OWNER’S REVISED MOTION TO AMEND IN IPR2025-00707 CHALLENGING U.S. PATENT NO. 10,092,918

85. The Revised MTA in IPR2025-00705 seeks to substitute proposed substitute claims 16 and 17 for challenged independent claims 1 and 5, respectively. For the reasons discussed below, it is my opinion that proposed substitute claims 16 and 17: (1) introduce technical ambiguity surrounding the frame of reference of the added orientation/directional claim limitations; and (2) do not add any technically meaningful distinction over the asserted prior art.

A. Technical Opinions Concerning Section 112 Issues Raised by Substitute Claims 16 and 17

86. I understand substitute claims 16 and 17 add several new direction, or orientation based, limitations. From a technical perspective, a POSITA cannot understand the meaning of “laterally” or “transverse,” with reasonable certainty, unless a frame of reference is provided. Substitute claims 16 and 17 do not identify any such frame of reference and the written description is equally devoid.

(1) “opening laterally from said mixing chamber into said lower chamber”²

87. A POSITA would understand the term laterally to mean from side to side rather than up and down or forward and backwards. The term “lateral” is therefore dependent on a frame of reference that is absent from the proposed substitute claims.

88. In attempt to reconcile the ambiguous claim language, I reviewed the specification of the '918 Patent. In doing so, I observed that Patentee consistently utilizes the frame of reference provided by the drawings. For example, in describing FIG. 6, Patentee refers to chamber 115' as the “upper chamber” and chamber 114' as the lower chamber. Similarly, in describing the compressed air flow path generated by the embodiment of FIG. 6, Patentee describes the flow path as extending “horizontally through the air inlet (210).”

² Claim 17 recites a substantially similar limitation and my opinions herein are equally applicable to that limitation as well.

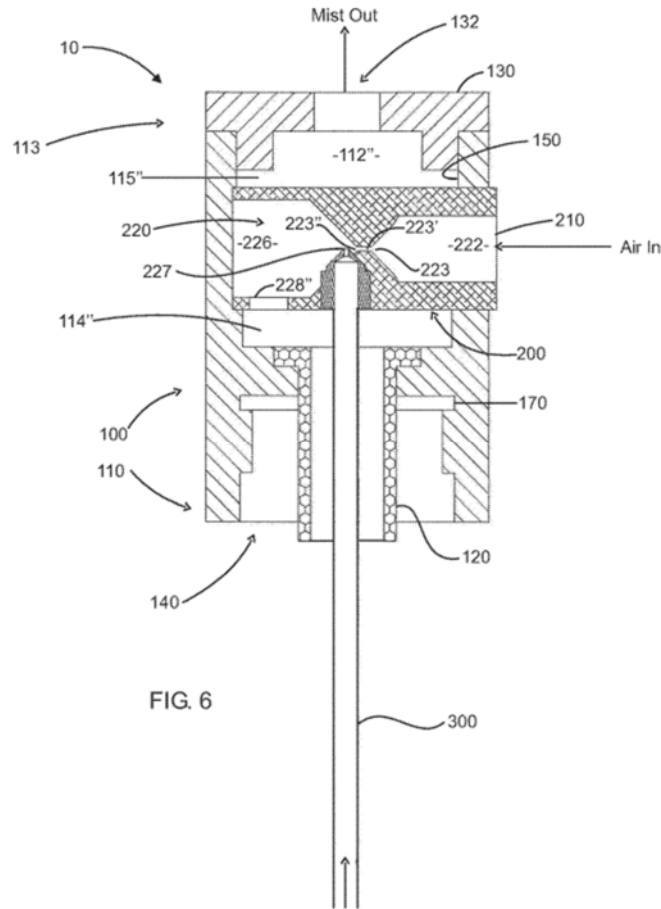


FIG. 6

89. I also discerned that FIG. 6 is the only embodiment in which droplets are discharged from the mixing chamber into the lower diffusion chamber. From this frame of reference, however, it is unclear how the droplets can be discharged “laterally” (*e.g.*, side to side) *but also* downwardly and into the lower chamber 114’.

90. The written description does not use the word “laterally” or provide a technical frame of reference for applying that directional term. Based on the drawing alone, the atomizer assembly appears to be a three-dimensional structure. A POSITA would need to know the relevant plane, axis, or reference direction to determine whether an aperture opens “laterally” from the mixing chamber. In my opinion,

proposed substitute claims 16 and 17 and the specification do not identify that plane, axis, or reference direction.

(2) “said atomizer exhaust aperture . . . opening . . . along an exhaust path transverse to a direction in which the operative fluid enters said mixing chamber through said fluid inlet”

91. It is also my opinion that this limitation lacks the necessary frame of reference to convey its meaning with any reasonable certainty. For example, the direction in which fluid enters the mixing chamber could be interpreted to mean the direction in which fluid is carried through the fluid inlet (*e.g.* vertical in Figure 6) or the direction in which fluid is blown by the compressed air source across the fluid inlet and into the mixing chamber (horizontal in Figure 6). While the term “enters” suggests initial entrance on its face, it is my opinion that this interpretation is contradictory to the intrinsic evidence.

92. Based on the written description, I understand that fluid initially enters the mixing chamber in an upward direction through the fluid inlet, before the liquid is atomized and blown horizontally by the compressed air. From there, the atomized droplets exit the mixing chamber 226 downwardly—through exhaust aperture 228—into the lower chamber lower chamber 114′′. The exhaust aperture, however, has a vertical axis that is parallel to the fluid inlet, and two parallel axes are not transverse to one another.

(3) “said opening disposed along said compressed-air flow path”

93. While attempting to construe the term “said compressed-air flow path,” I observed the term “said compressed-air flow path” lacks antecedent basis, and brings confusion to the term. In attempt to reconcile its meaning, I looked towards the alternative proposed substitute claim 17 set out in the appendix of the Revised MTA, which is equally unclear. The alternative substitute claim recites “said atomizer air inlet channel is interconnected to the compressed air source and defines a compressed-air flow path through said atomizer assembly.” However, it is not clear how the atomizer inlet channel, which is interconnected to an upstream compressed air source can “define” a flow path through the atomizer assembly itself, as the components of the atomizer assembly—including the mixing chamber and the atomizer exhaust—are located downstream of the compressed-air flow path as that term is defined by alternative claim 17.

A. Goubet Alone, and Alternatively, Goubet in view of Kaiser

94. It is my opinion that the newly added limitations of proposed substitute claim 16 are disclosed in Goubet for the reasons set forth in my Earlier Declarations. To the extent Patent Owner contends the limitation, “**said atomizer exhaust aperture spaced from said discharge port and opening laterally from said mixing chamber into said lower chamber along an exhaust path transverse to a direction in which the operative fluid enters said mixing chamber through said fluid inlet,**” requires a horizontal side-wall opening rather than the claim-recited

transverse exhaust path, this would have been an obvious modification given Goubet's structure and geometry.

95. FIG. 1 of Goubet is depicted below. As shown, the floor of the diffusion unit dips in the middle where the diffusion assembly, and particularly, the mixing chamber (chamber 5) is located. In this regard, if the exhaust (outlet 11) were to extend from chamber 5 in a horizontal plane (*e.g.*, sideways), the droplets would still exit the mixing chamber and flow into the lower chamber before continuing along the flow path taught by Goubet.

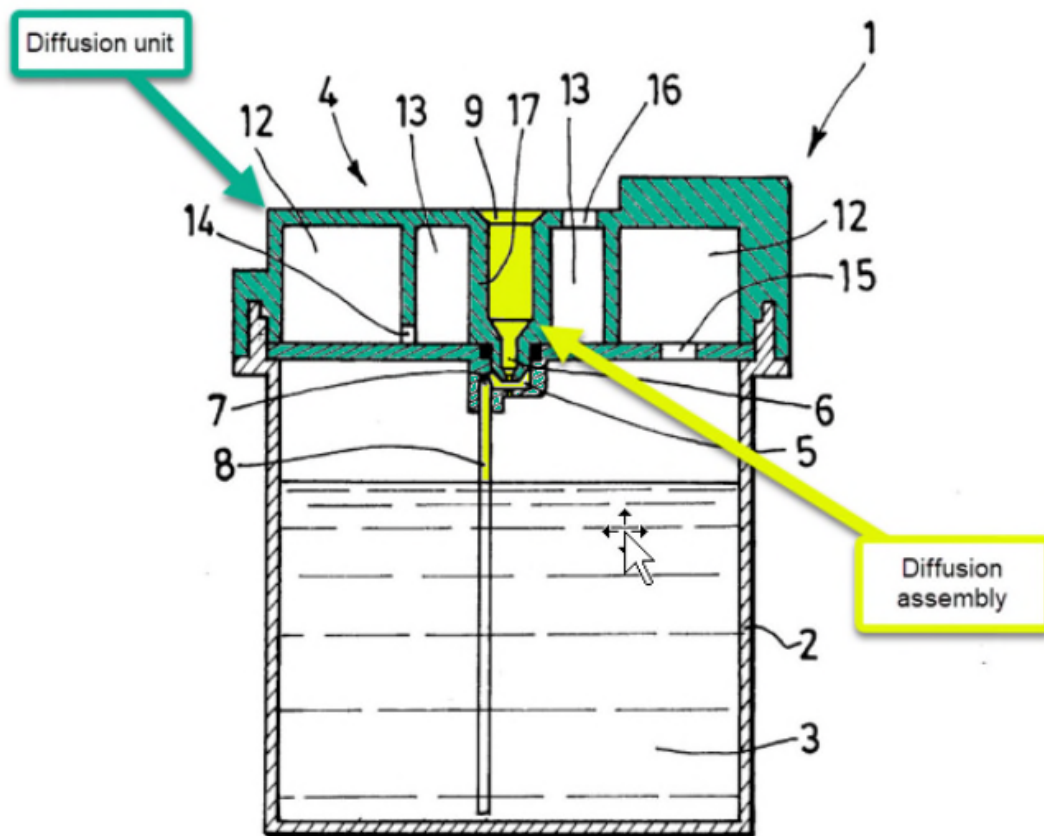


FIG. 1

96. It is also my opinion that a POSITA would be motivated to modify Goubet in this manner as it would increase the length of time the droplets spend in chamber 5, and in turn, increase the frequency of droplet collisions. A POSITA would appreciate that each collision would result in the droplets breaking into smaller, and more uniform droplets, before the droplets exit the exhaust. Goubet

discloses this well-known phenomenon. Ex. 1016, 4:28–5:4, 5:12–16. Thus, Goubet’s explicit disclosure would motivate a POSITA to make this modification.

97. Moreover, a POSITA would have had a reasonable expectation of success in changing the orientation of the exhaust from downward facing to sideways facing because this modification would not require undue experimentation or modification of the existing components, as the droplets would continue to travel along the same flow path, and for this reason, this modification would not introduce any incompatibilities with Goubet’s existing design.

B. Gao-2 Alone, or Alternatively, Gao-2

98. I have reviewed Dr. Micklow’s Supplemental Declaration. Dr. Micklow argues that Gao-2 does not disclose a mixing chamber within which compressed air and essential are mixed. Ex. 2016 at ¶6-12. Rather, Dr. Micklow contends that “mixing of the essential oil and airflow occurs at the outlet of liquid suction hole 3224,” which is “at a location lower than the volume between guide grooves 3225 and the upper surface of cap 323.” Ex. 2016 at ¶¶6-10.

99. Dr. Micklow is misconstruing Gao-2’s explicit teachings and my earlier testimony. Gao-2 discloses that liquid suction hole 3224 penetrates rotating core 322, essential oil enters through that hole, is mixed with the airflow, and then atomized at the outlet of hole 3224 *before being sprayed from spray outlet 3231*. Ex. 1042 ¶¶ 36, 40. Specifically, the distal end of the rotating core 322, including “the multiple

guide grooves 3225,” define a chamber (along with cap 323), which facilitates atomization before mist is sprayed from spray outlet 3231.

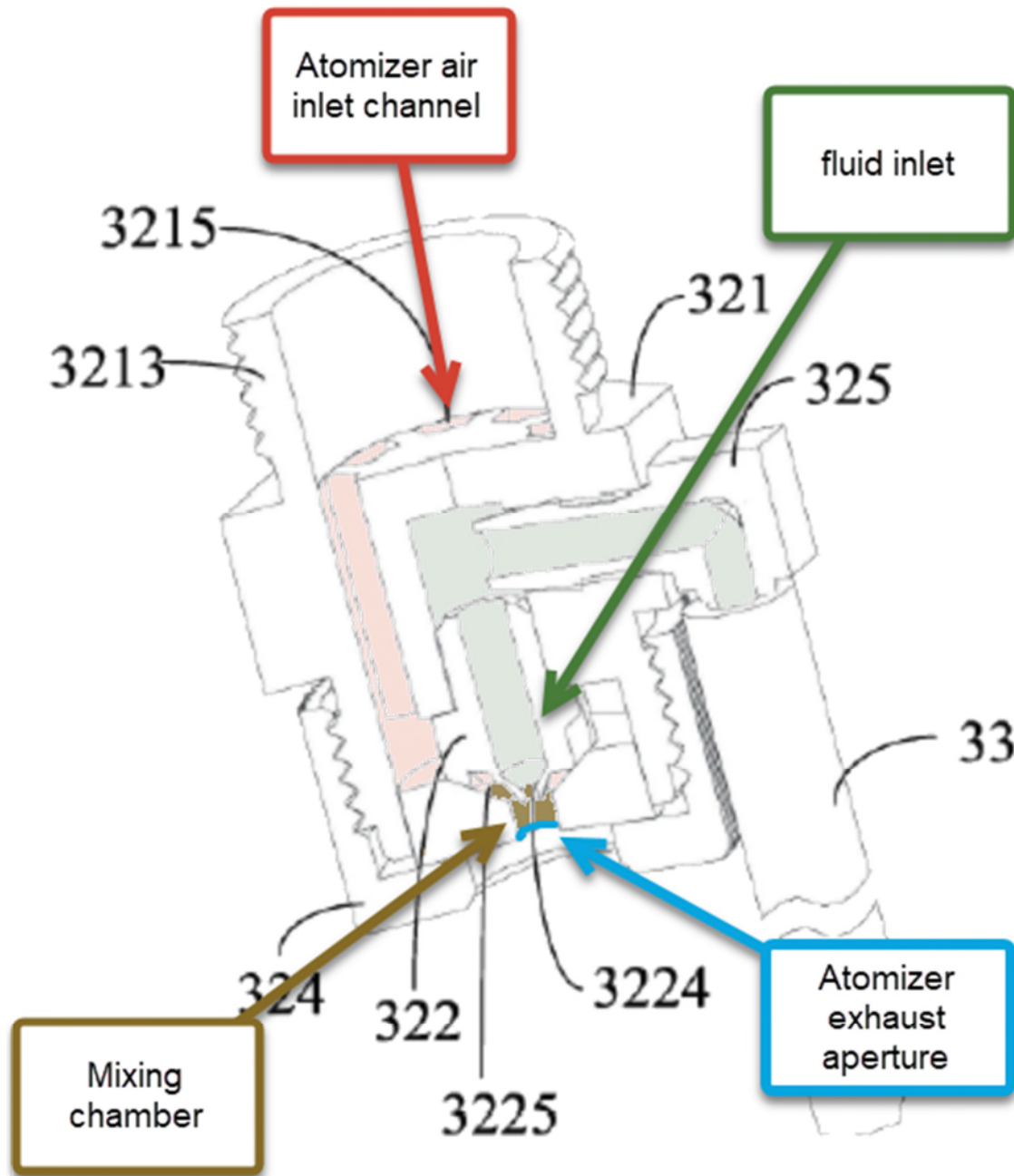


FIG. 10

100. Notably, Dr. Micklow’s argument relies on the liquid suction hole 3224 being at “at a location lower than the volume between guide grooves 3225 and the **upper** surface of cap 323.” I have always construed Gao-2’s “mixing chamber” as the chamber of rotating core 322 (*e.g.*, the volume defined between the lower end of the rotating core 322 and the surface of cap 323), which is not limited to the upper surface. I include an annotation above. This interpretation is consistent with the written description of Gao-2, which teaches that the essential oil is mixed with the airflow and atomized at the outlet of hole 3224 ***before being sprayed from spray outlet 3231***. Ex. 1042 ¶¶ 36, 40. That is, atomization occurs within the chamber located upstream of spray outlet 3231 (*e.g.*, the outlet at the lower surface of cap 323 as annotated in light blue).

V. PERJURY STATEMENT

101. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code..

Respectfully submitted,



Christopher White, Ph.D.

Dated: 06/25/2026