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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ENTEGRIS, INC.,
Petitioner,

v.

GUDENG PRECISION INDUSTRIAL CO., LTD.,
Patent Owner.

PGR2026-00037
Patent 12,347,711

PATENT OWNER'S PRELIMINARY RESPONSE

37 C.F.R. § 42.207 and 35 U.S.C. § 323

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CLAIM LISTING FOR U.S. PATENT NO. 12,347,711

Claim No.	Claim
1[pre]	A gas diffusion device, installed in a wafer container having an accommodating space, the gas diffusion device comprising:
1[a][1]	a buffering gas chamber, configured at a bottom portion of the wafer container,
1[a][2]	the bottom portion provided with at least one coupling structure, the coupling structure defining a through channel having a center axis,
1[a][3]	the buffering gas chamber having at least one gas intake channel, the gas intake channel, the buffering gas chamber, the through channel and the accommodating space communicating with one another; and
1[b][1]	at least one porous tube, having a longitudinal space, the porous tube installed to the coupling structure of the wafer container, the longitudinal space of the porous tube communicating with the buffering gas chamber, the buffering gas chamber providing a gas to pass through the porous tube and enter the accommodating space,
1[b][2]	a gas intake center axis of the gas and a center axis of the coupling structure being coaxial.
2	The gas diffusion device according to claim 1, wherein the coupling structure is formed as extending from the bottom portion of the wafer container, an open end of the porous tube has a center axis, and the longitudinal space of the porous tube has a center axis; the center axis of the coupling structure, the center axis of the open end of the porous tube and the gas intake center axis are coaxial
3	The gas diffusion device according to claim 1, wherein the coupling structure is formed as extending from the bottom portion of the wafer container, an open end of the porous tube has a center axis, and the longitudinal space of the porous tube has a center axis; the center axis of the coupling structure, the center axis of the open end of the porous tube and the gas intake center axis are coaxial; the center axis of the longitudinal space of the porous tube is offset from the center axis of the coupling structure, the center axis of the open end of the porous tube and the gas intake center axis.
4	The gas diffusion device according to claim 1, wherein the longitudinal space of the porous tube has a closed end and an open

Claim No.	Claim
	end, and the open end receives the corresponding coupling structure, so that the gas enters the longitudinal space by passing through the buffering gas chamber and the open end.
5	The gas diffusion device according to claim 1, wherein a shape of a horizontal cross section of the porous tube is an ellipsoid or an elongated narrow shape having a long axis and a short axis, or a circle having a diameter.
6	The gas diffusion device according to claim 5, further comprising: a first collar, arranged in the open end, the first collar located between the open end and the coupling structure.
7	The gas diffusion device according to claim 6, further comprising: a second collar, located between the first collar and the coupling structure when the second collar is disposed on the coupling structure so as to reinforce airtightness.
8	The gas diffusion device according to claim 6, wherein a material of the first collar is softer than a material of the porous tube to prevent breaking of the open end.
9	The gas diffusion device according to claim 7, wherein the second collar and the porous tube are sintered or bonded into an integral structure to prevent breaking of the open end.
10	The gas diffusion device according to claim 8, wherein the coupling structure, the porous tube, the first collar and/or the second collar are/is made of a thermal resistant material which is one or a combination of at least two selected from a group consisting of PEEK, HTPC, FKM, PPS, PPO, chlorinated polyether, POB, TORLON, EP, PF, PEI, PI and LCP.
11	The gas diffusion device according to claim 1, further comprising: an airflow guiding member, arranged adjacent to one side of the porous tube, the airflow guiding member configured to adjust an airflow direction of the gas entering the accommodating space.
12	The gas diffusion device according to claim 1, further comprising: at least one gas intake module, communicatively coupled to the buffering gas chamber, the gas intake module having the gas intake center axis, supplying the gas in one single gas intake direction to pass through the gas intake channel and enter the buffering gas chamber.

Claim No.	Claim
13[pre]	A gas diffusion device, installed in a wafer container having an accommodating space, the gas diffusion device comprising:
13[a][1]	a gas cartridge, configured at a bottom portion of the wafer container to define a buffering gas chamber,
13[a][2]	the bottom portion provided with at least two coupling structures, each of the coupling structures defining a through channel having a center axis,
13[a][3]	the buffering gas chamber having at least one gas intake channel, the gas intake channel, the buffering gas chamber, the through channel and the accommodating space communicating with one another; and
13[b]	at least two porous tubes, each of the porous tubes having a longitudinal space, the at least two porous tubes respectively installed to corresponding coupling structures of the wafer container, the longitudinal spaces of the two porous tubes communicating with the buffering gas chamber, the buffering gas chamber providing a gas to pass through the at least two porous tubes and enter the accommodating space.
14	The gas diffusion device according to claim 13, wherein the at least two coupling structures are formed as extending from the bottom portion of the wafer container, an open end of the longitudinal space of each of the porous tubes has a center axis, and the longitudinal space has a center axis; the center axis of each of the through channels, the center axis of the open end of each of the porous tubes, the center axis of the longitudinal space of each of the porous tubes and a gas intake center axis along which the gas passes are coaxial.
15	The gas diffusion device according to claim 13, wherein the at least two coupling structures are formed as extending from the bottom portion of the wafer container, an open end of each of the porous tubes has a center axis, and the longitudinal space of each of the porous tubes has a center axis; the center axis of each of the through channels, the center axis of the open end of each of the porous tubes and a gas intake center axis along which the gas passes are coaxial; the center axis of the longitudinal space of each of the porous tubes is offset from the center axis of the through channel, the center axis of the open end of the porous tube and the gas intake center axis.

Claim No.	Claim
16	The gas diffusion device according to claim 13, wherein the at least two coupling structures are formed as extending from the bottom portion of the wafer container, an open end of the longitudinal space of each of the porous tubes has a center axis, and the longitudinal space of each of the porous tube has a center axis; the center axis of each of the through channels, the center axis of the open end of each of the porous tubes, and the center axis of the longitudinal space of each of the porous tubes are coaxial; a position of a gas intake center axis along which the gas passes is offset from the center axis of the through channel, the center axis of the open end and the center axis of the longitudinal space that are coaxial.
17	The gas diffusion device according to claim 13, wherein the at least two coupling structures are formed as extending from the bottom portion of the wafer container, an open end of each of the porous tubes has a center axis, and the longitudinal space of each of the porous tubes has a center axis; the center axis of each of the through channels and the center axis of the open end of each of the porous tubes are coaxial; a gas intake center axis along which the gas passes and the center axis of the longitudinal space are both offset from the center axis of the through channel and the center axis of the open end that are coaxial.
18	The gas diffusion device according to claim 13, wherein the gas cartridge has a bottom portion and a sidewall extending from the bottom portion, and the gas intake channel is formed at the bottom portion of the gas cartridge.
19	The gas diffusion device according to claim 13, wherein the gas cartridge is installed at the bottom portion of the wafer container, such that a bottom portion and a sidewall of the gas cartridge and the bottom portion of the wafer container define the buffering gas chamber.
20	The gas diffusion device according to claim 13, wherein a plurality of annular sidewalls further extend from a lower surface of the bottom portion of the gas cartridge, each of the annular sidewalls defines an installation space for filling with a gas intake module, and the gas intake module has the gas intake center axis; the installation space, the gas intake channel at the bottom portion of the gas cartridge and the

Claim No.	Claim
	buffering gas chamber communicate with one another, such that the gas in one single air intake direction supplied by the gas intake module passes through the gas intake channel and enters the buffering gas chamber.
21	The gas diffusion device according to claim 13, wherein the wafer container comprises a base plate installed at the bottom portion of the wafer container, and the buffer gas chamber is between the bottom portion and the base plate of the wafer container.
22	The gas diffusion device according to claim 21, wherein the base plate is made of a material comprising a self-lubricating material.
23[pre]	A wafer container, comprising:
23[a]	a shell, comprising a bottom portion, the bottom portion configured with a plurality of coupling structures, the coupling structures defining a plurality of through channels;
23[b]	a buffering gas chamber, formed below the bottom portion, the buffering gas chamber having a plurality of gas intake channels, the gas intake channels communicating with the corresponding through channels; and
23[c]	a plurality of porous tubes, each of the porous tubes having an open end, the open end correspondingly connecting with the coupling structure at the bottom portion and communicating with the buffering gas chamber via the corresponding through channel, allowing a gas to pass through the porous tubes and enter an accommodating space of the shell.
24	The wafer container according to claim 23, wherein the porous tube has a longitudinal space, the longitudinal space has a closed end and an open end, and the gas in the buffering gas chamber is capable of passing through the open end to enter the longitudinal space.
25	The wafer container according to claim 23, further comprising: a collar, arranged between the open end and the coupling structure, a material of the collar being softer than a material of the porous tube to prevent breaking of the open end.
26	The wafer container according to claim 23, further comprising: a gas cartridge, having a bottom portion and a sidewall extending from the

Claim No.	Claim
	bottom portion, the bottom portion of the gas cartridge having the gas intake channels formed thereon.
27	The wafer container according to claim 26, wherein the gas cartridge is installed at the bottom portion of the shell, such that the gas cartridge and the bottom portion of the shell define the buffering gas chamber.
28	The wafer container according to claim 26, wherein a plurality of annular sidewalls further extend from the bottom portion of the gas cartridge, and each of the annular sidewalls defines an installation space for filling with a gas intake module.
29	The wafer container according to claim 23, wherein the wafer container further comprises a door detachably combined with the shell, and a pair of support portions configured on an inner side of the shell, and the wafer container is made of a thermal resistance material, which is one or a combination of at least two selected from a group consisting of PEEK, HTPC, FKM, PPS, PPO, chlorinated polyether, POB, TORLON, EP, PF, PEI, PI and LCP.
30	The wafer container according to claim 23, further comprising: a base plate, connected below the shell to support the shell; wherein the buffering gas chamber is between the bottom portion and the base plate of the shell.
31	The wafer container according to claim 30, wherein the base plate is made of a material comprising a self-lubricating material.

EX1001 ('711 Patent), 17:39-21:9.

I. INTRODUCTION

Pursuant to 37 C.F.R. § 42.207(a) and 35 U.S.C. § 333, Patent Owner Gudeng Precision Industrial Co., Ltd. ("PO") submits this Preliminary Response to the Petition for Post Grant Review of claims 1-31 (the "Challenged Claims") of U.S. Patent No. 12,347,711 (EX1001) ("the '711 Patent") filed by Petitioner Entegris, Inc. ("Petitioner") on March 31, 2026 (*see* Paper 1), with a filing date accorded of March 31, 2026 per the notice mailed on April 2, 2026 (*see* Paper 3). Pursuant to the Order Conduct of the Proceeding 37 C.F.R. § 42.5 dated August 17, 2026 granting PO's motion for an extension of time to file its preliminary response (*see* Paper 7), this Preliminary Response is timely filed.

It is Petitioner's burden to show that it is more likely than not that at least one of the Challenged Claims is unpatentable. *See* 37 C.F.R. § 42.208(c) ("Post-grant review shall not be instituted unless the Board decides that the information presented in the petition demonstrates that it is more likely than not that at least one of the claims challenged in the petition is unpatentable. The Board's decision will take into account a patent owner preliminary response where such a response is filed, including any testimonial evidence."). For the reasons discussed below, Petitioner has failed to meet this burden.

II. SUMMARY OF ARGUMENTS

The Petition fails on its qualification of its purported prior art, on the merits, and on its application of the law relating to indefiniteness and written descriptive support. Petitioner admits that U.S. Patent Publication No. 2023/0128154 (“Smith ’154”) (Ex1005), the lead reference of the first five Grounds of the Petition, does not qualify as prior art if the ’711 Patent is entitled to the August 17, 2021 filing date of U.S. Provisional Patent Application No. 63/233,878 (“the ’878 Application”) to which it claims priority. *See* Petition, 11. Petitioner misunderstands that: (i) written descriptive support is based on inventor possession (not claim element labels); (ii) drawings alone can provide such support; and (iii) a species election to ease examiner prior art search burden has no impact on support nor does it constitute a disclaimer of claim scope. A person of ordinary skill in the art (“POSITA”) clearly would have understood the inventors had possession of a buffering gas chamber, porous tubes, and coupling structures as of the filing date of the ’878 Application. Smith ’154 is therefore not prior art to the ’711 Patent.

Implicitly acknowledging the qualification failure of Smith ’154 (although purportedly “for completeness” (*see* Petition, 9)), Petitioner asserts Grounds 6-7 relying on U.S. Patent No. 10,347,517 (“Smith ’517”) (Ex1011) as the primary reference and U.S. Patent No. 10,923,373 (“Ogawa”) (Ex1012) as a secondary reference for dependent claims 10 and 11. Each of these references was before the

Examiner during prosecution of the application for the '711 Patent (as was Smith '154). Further, Smith '517 does not disclose any chamber, buffering gas chamber, or buffering gas chamber having at least one gas intake channel, as required by Challenged Claims 1-12. *See* Ex1001, 17:45-47. Petitioner's hand-waiving annotation of a portion of Smith '517's Figure 19 does not satisfy its burden to show the claimed features are disclosed in that reference, such that it is more likely than not that claim 1 is unpatentable. *See* Petition, 107-108.

In its remaining Ground 8, Petitioner manufactures a new embodiment by modifying a figure of the '711 Patent and then asserts that claim 1 is unclear because it could be interpreted to cover the strawman Petitioner created. The argument fails on its face, because claim 1 does not require the gas intake module Petitioner newly constructed for its hypothetical embodiment. As a last-ditch effort to show unpatentability, Petitioner argues that "a gas intake center axis of the gas" of claim 1 does not provide antecedent basis for "the gas intake center axis" of claims 2, 3, and 12 that depend from claim 1. *See* Petition, 124. There is only one gas intake center axis recited in claim 1, so there is no possible confusion as to the antecedent basis of that term in the dependent claims despite the fact those claims do not repeat the "of the gas" qualifier.

Petitioner has not met its burden to show that it is more likely than not that any of Challenged Claims 1-31 is invalid based on the arguments presented in any of Grounds 1-8. Post-grant review of the '711 Patent should not be instituted.

III. PETITIONER'S GROUNDS

Petitioner proffers eight (8) Grounds for attacking the Challenged Claims (claims 1-31):

Ground	Claims	Basis §	References in Petition
1	23-24, 26-27, 30 & 13, 18-19, 21	102	Smith '154 (EX1008)
2	23-24, 26-28, 30 & 13, 18-21	103	Smith '154
3	23-24, 26-31 & 13, 18-2	103	Smith '154 + Ogawa (EX1012)
4	1-9, 12-21, 23-28, 30	103	Smith '517 (EX1011) + Smith '154
5	1-31	103	Smith '517 + Smith '154 + Ogawa
6	1-9, 12	103	Smith '517
7	1-12	103	Smith '517 + Ogawa
8	1-12	112	—

See Petition, 2 (claims 1, 13, and 23 are independent).

As discussed below, Petitioner has failed to meet its burden to show that it is more likely than not that at least one of the Challenged Claims is unpatentable under the asserted Grounds.

IV. INSTITUTION SHOULD BE DENIED

A. Petitioner Failed to Meet its Burden with Respect to Grounds 1-5 Because Those Grounds Rely on Smith '154, Which Does Not Qualify as Prior Art to the '711 Patent

Petitioner acknowledges that Smith '154 was before the Examiner as a result of a third-party submission. *See* Petition, 11 (“Smith '154 was the subject of a third-party submission during prosecution of the '711 Patent”). Petitioner does not argue that the Examiner made a material error with respect to Smith '154 and, instead, merely asserts that “Smith '154 was not cited or discussed during prosecution.” Petition, 11; *Juniper Networks, Inc. v. Mobile Telecommunications Techs., LLC*, No. IPR2017-00642, 2018 WL 1358386, at *8 (P.T.A.B. Mar. 14, 2018) (“We decline to assume ... that non-action by the Examiner is error....”).

However, the Examiner correctly declined to apply Smith '154 because it does not qualify as prior art. Smith '154 claims priority to a provisional patent application filed on October 27, 2021. Ex1008, cover; Petition, 11. The '711 Patent claims priority to the '878 Application, which was filed August 17, 2021 (i.e., before the earliest priority date of Smith '154). Ex1001, cover; Ex1003, 19; Petition, 6. Petitioner acknowledges Smith '154 is not prior art to the '711 Patent if it is entitled to its earliest claimed priority date of the '878 Application. *See* Petition, 11.

Petitioner asserts that the '711 Patent is not entitled to claim priority to the '878 Application because that application fails to convey to a POSITA “that the

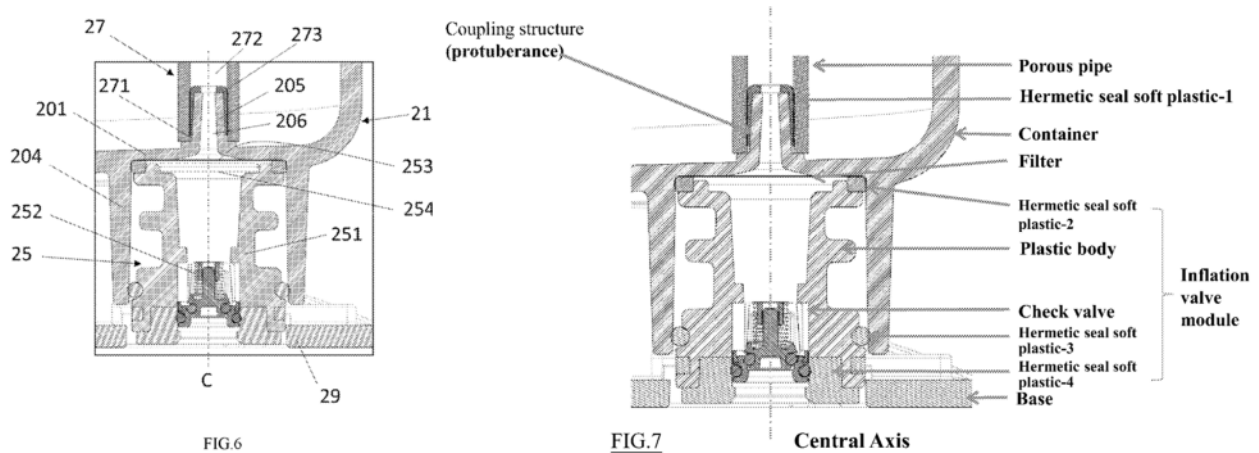
inventors had possession of the ‘buffering gas chamber’ recited in every Challenged Claim” and the “at least two/a plurality of ‘porous tubes’ communicating with a ‘buffering gas chamber’ or at least two/a plurality of ‘coupling structures’ with through channels communicating with the ‘buffering gas chamber,’ as recited in Challenged Claims 13-31.” Petition, 6-7. Each of these structures is clearly disclosed in, and supported by, the ’878 Application such that a POSITA would have understood the inventors of the ’711 Patent had possession of those claimed features as of the filing date of the ’878 Application, thereby disqualifying Smith ’154 as prior art to the ’711 Patent, as explained in detail below.

1. The ’878 Application Conveys to a POSITA that the Inventors Had Possession of the Claimed Buffering Gas Chamber

Confusingly, Petitioner asserts that “PO may argue that ... the 878 Application ... discloses Challenged Claims 1-12 based on an incorrect and overly broad definition of ‘buffering gas chamber’” (Petition, 7), but Petitioner does not offer any construction of its own (*see* Petition, 10). However, PO does not need to construe “buffering gas chamber” in any particular manner for the ’878 Application to have written description support for that element of the Challenged Claims.

Petitioner correctly acknowledges that Figure 6 of the ’711 Patent (below, left), which the specification describes as having a “buffering gas chamber,” is

similar to Figure 7 of the '878 Application (below, right). See Petition, 7-8. In fact, those figures are identical with the exception of the labels.



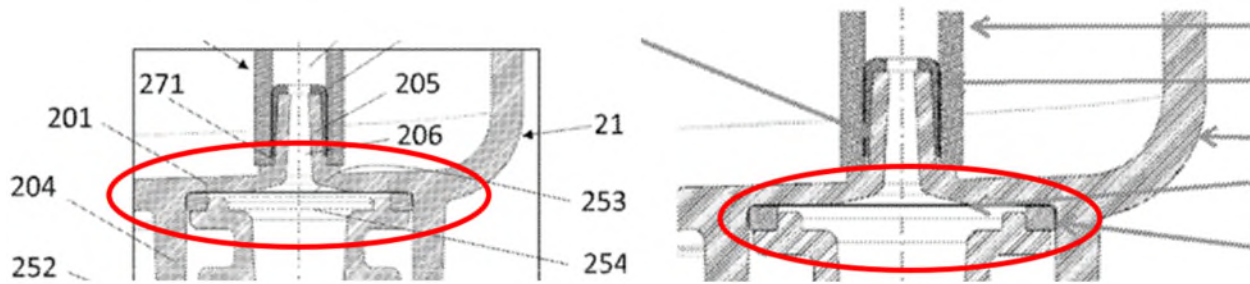
Ex1001, FIG. 6; Ex1003, FIG. 7. Petitioner provides two unavailing arguments as to why Figure 7 in the '878 Application would not have indicated to a POSITA that the inventors had possession of the claimed “buffering gas chamber” that Petitioner acknowledges **is disclosed** in Figure 6 of the '711 Patent. See Petition, 8-9.

First, Petitioner argues that “the 878 Application simply never describes any aspect or component of Figure 7 as a ‘buffering gas chamber.’” Petition, 8. Even assuming, *arguendo*, Petitioner’s assertion is true, the law is clear that “drawings alone may provide a ‘written description’ of an invention as required by § 112.” *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1565 (Fed. Cir. 1991); *see also Hologic, Inc. v. Smith & Nephew, Inc.*, 884 F.3d 1357, 1362 (Fed. Cir. 2018) (holding that “[t]he written description does not require that every claimed element be illustrated in the figures, particularly in predictable arts” and finding adequate written

description support although the claimed “light guide permanently affixed in the first channel” was not separately labeled in the priority application figures). Thus, whether any aspect or component in the '878 Application is described or labeled as a “buffering gas chamber” is irrelevant. Petitioner's analysis is incorrect as a matter of law. *Id.*

Instead, the correct “test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010). A POSITA would have clearly recognized the component labeled 254 of FIG. 6 of the '711 Patent -- as also identically depicted in FIG. 7 of the '878 Application -- to be a “buffering gas chamber.” There is no dispute that the '878 Application discloses a gas chamber but Petitioner asserts that a POSITA would not have recognized Figure 7 of the '878 Application to depict a gas chamber with a recognizable “buffering” function. *See* Petition, 8.

However, the gas chamber clearly expands in diameter proximate the filter, as illustrated in Figure 6 of the '711 Patent (below, left (with the buffering gas chamber labeled 254)) and FIG. 7 of the '878 Application (below, right):



Ex1001, FIG. 6 (excerpted, annotated); Ex1003, FIG. 7 (excerpted, annotated). A POSITA certainly would have understood that the wider diameter of the gas chamber provides a buffer because the gas is spread across a larger volume, thereby reducing its pressure across a wider surface area at the filter membrane (labeled 253 in Figure 6 of the '711 Patent). *See id.* In other words, a POSITA would not have needed an express label beyond Figure 7, nor a reference numeral, to understand the inventors had possession of a buffering gas chamber as of the filing date of the '878 Application.

Petitioner next argues that “the patentee elected the species of Figures 20, 21a-21d (which discloses a buffering gas chamber with multiple tubes and coupling elements) and specifically *excluded* the embodiment of Figure 6 from the scope of the Challenged Claims.” Petition, 9 (emphasis in original). First, PO did not specifically exclude any embodiments from the scope of the Challenged Claims and instead provided a bare species election. *See* Ex1002, 233; *Caterpillar Inc. v. Brookins*, No. IPR2017-01020, 2017 WL 4051055, at *5 (P.T.A.B. Sept. 12, 2017) (“Patent Owner does not cite any authority supporting the proposition that claim

scope of an entire patent is limited by an election made in response to a restriction requirement.”). As in *Plantronics*, the restriction requirement did not suggest that the different species found by the Examiner were based on differences in any particular structure, instead vaguely citing “mutually exclusive characteristics.” See Ex1002, 240 (“The species are independent or distinct because as disclosed the different species have mutually exclusive characteristics for each identified species.”); *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1351 (Fed. Cir. 2013) (“The election of an invention in response to an ambiguous restriction requirement in turn cannot be said to provide any guidance forming a basis for narrowing a broadly drafted claim.”).

The sole case cited by Petitioner, *Focus Prods. Grp. Int'l* (see Petition, 9), supports PO's position. In that case, the Court found disclaimer where the patentee not only elected a species without objecting to the examiner's characterization of that species' boundaries. However, there the patentee also failed to dispute the subsequent withdrawal of newly added dependent claims directed to a non-elected species when the examiner specifically identified those claims as drawn to a non-elected species or traverse the Notice of Allowance in which “the examiner gave the patentee another chance to challenge the examiner's position.” *Focus Prods. Grp. Int'l, LLC v. Kartri Sales Co.*, 156 F.4th 1259, 1275 (Fed. Cir. 2025). Thus, the

Court found that the patentee acquiesced to the examiner's narrowing of claim scope across multiple prosecution events. *Id.*, 1276.

In contrast, the applicant of the '711 Patent merely elected an invention and species for prior art search purposes. The case law is clear that "[r]estriction requirements are discretionary decisions, primarily for administrative convenience." *Biogen MA, Inc. v. Japanese Found. for Cancer Rsch.*, 785 F.3d 648, 659 (Fed. Cir. 2015). Petitioner's attempt to frame a bare species election for purposes of reducing the Examiner's search burden as a clear and unmistakable disavowal of claim scope should be rejected. *See id.* (citing *In re Hengehold*, 58 C.C.P.A. 1099, 440 F.2d 1395, 1403 (1971) (restriction is a "discretionary, procedural or nonsubstantive" matter)); *St. Jude Med., Inc. v. Access Closure, Inc.*, 729 F.3d 1369, 1378 (Fed. Cir. 2013) ("The election of species, like a typical restriction, helps the examiner to focus the examination process.").

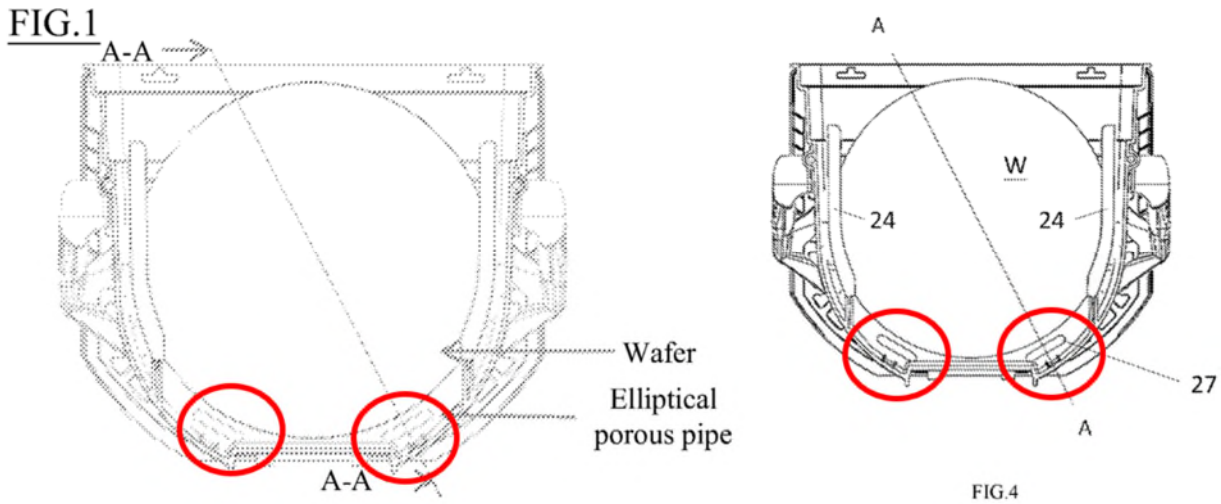
Second, and perhaps more critically, the Examiner asserted that "Claim(s) 1, 8, 20, and 30 is/are generic" to the eight identified species, including species I corresponding to Figure 6 and the elected species corresponding to Figures 20 and 21a-21d, among others. Ex1002, 240. In other words, claim 8, which issued as claim 1, is generic to, and thus supported by, the unelected species illustrated in Figure 6 of the '711 Patent, which the Petitioner acknowledges discloses the claimed buffering gas chamber. *See* Petition, 8. Petitioner's argument that PO's election for

prior art search purposes excluded the embodiment of Figure 6 (and thus is a disclaimer of claim 8 (i.e., claim 1 of the '711 Patent)), is refuted by the intrinsic record.

2. The '878 Application Also Conveys to a POSITA that the Inventors Had Possession of the Claimed Porous Tubes and Coupling Structures

Petitioner asserts that Challenged Claims 13-31 “recite multiple porous tubes or coupling structures, neither of which is disclosed in the 878 Application regardless of the construction of ‘buffering gas chamber.’” Petition, 7. Petitioner again fails to acknowledge the clear disclosure provided in the '878 Application, at least by way of the figures, which are identically reproduced in the '711 Patent except for the labels.

For example, Figure 1 of the '878 Application (below, left) discloses multiple porous pipes in the same manner as Figure 4 of the '711 Patent (below, right (with one of the porous pipes labeled 27)).



Ex1003, FIG. 1 (annotated); Ex1001, FIG. 4 (annotated). The reason most of the figures of both the '878 Application and the '711 Patent expressly call out only one of the porous pipes or tubes is that they are cross-sectional views. See Ex1003, FIG. 2 (illustrating A-A cross-section identified in Figure 1). A POSITA would have understood the inventors had possession of another porous tube as of the filing date of the '878 Application because it is a mirror image of the porous tube that is more thoroughly described and illustrated in accordance with the provided cross-sectional views.

In fact, Figure 12B is the only figure of the '711 Patent that includes two callouts for the porous tubes corresponding to label 27. See, Ex1001, FIG. 12B (below).

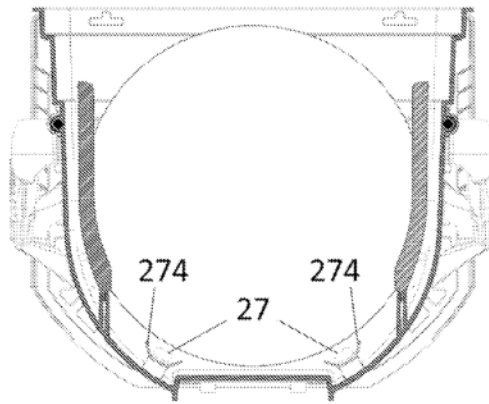
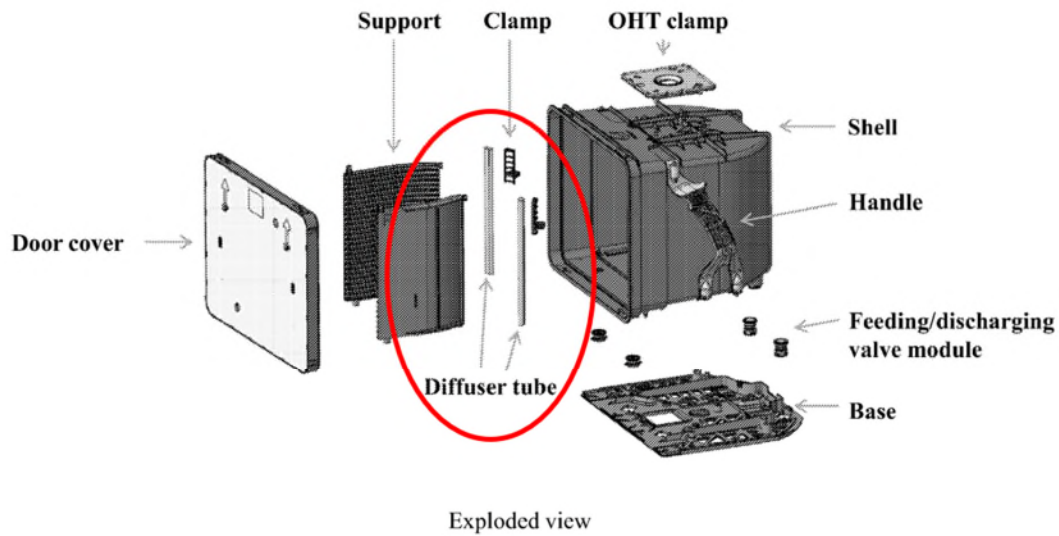


FIG. 12B

Ironically, the figure of the '878 Application (below, top) that corresponds to Figure 2 of the '711 Patent (below, bottom) has two arrows for the porous tubes (referred to as diffuser tubes), whereas only one of the porous tubes is labeled 27 in Figure 2.



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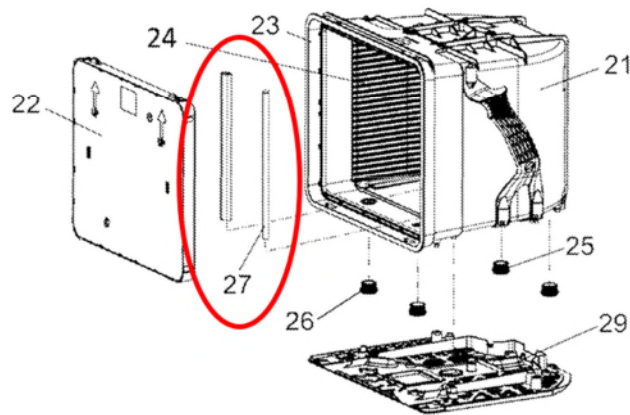
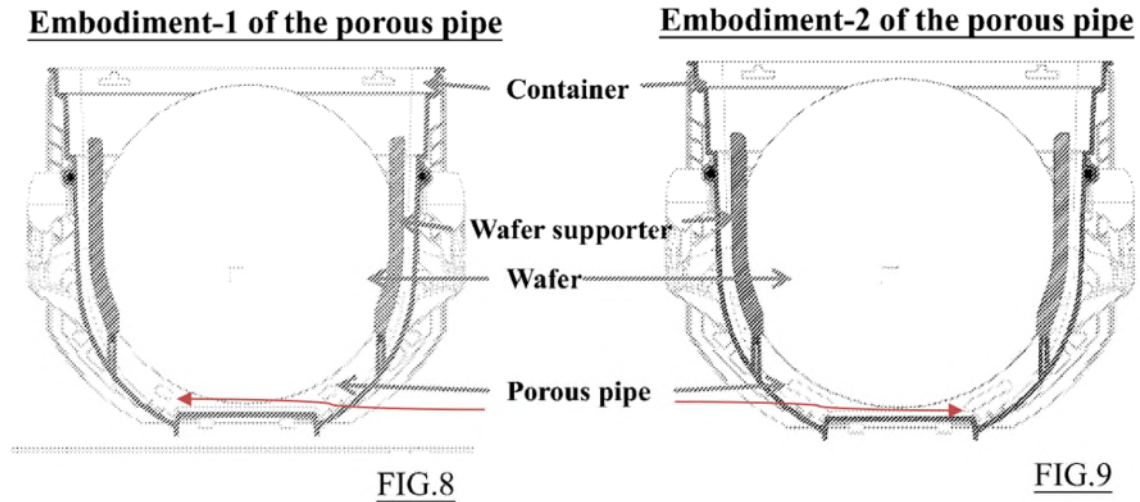


FIG.2

Ex1003, 5 (annotated); Ex1001, FIG. 2 (annotated). Numerous other figures of the '878 Application also disclose multiple porous pipes. *See, e.g.*, Ex1003, FIGS. 8-9 (below, annotated).

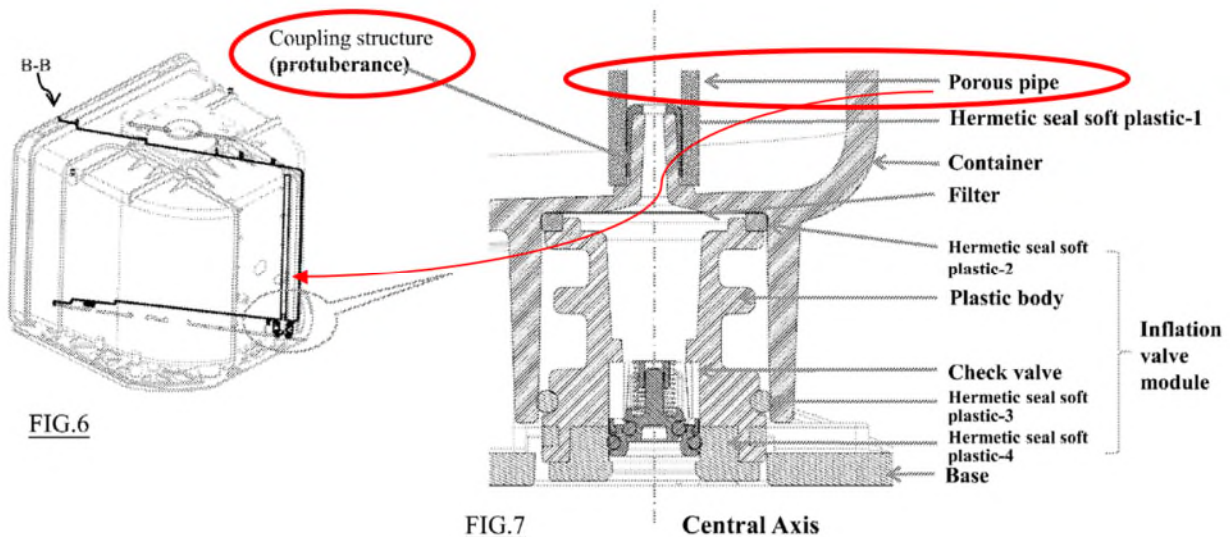


Petitioner's attempt to frame a lack of express labeling of multiple porous pipes in the '878 Application as a lack of written description support for the porous tubes of Challenged Claims 13-31 should be rejected. *See Vas-Cath Inc.*, 935 F.2d at 1565; *see also Hologic, Inc.*, 884 F.3d at 1362. A POSITA clearly would have understood that the inventors of the '878 Application had possession of more than the one porous tube and there is no dispute those claim elements are supported by the '878 Application. *See* Petition, 7.

For the same reasons, the '878 Application provides written description support for the coupling structures of Challenged Claims 13-31. Petitioner acknowledges the '878 Application supports a single coupling structure associated with one porous tube, as recited in Challenged Claims 1-12. *See* Petition, 7. As explained above, many of the figures of both the '878 Application and the '711 Patent represent cross-sectional views in which only one of the porous tubes or pipes (and one of the coupling structures) is present. However, as also explained above, a

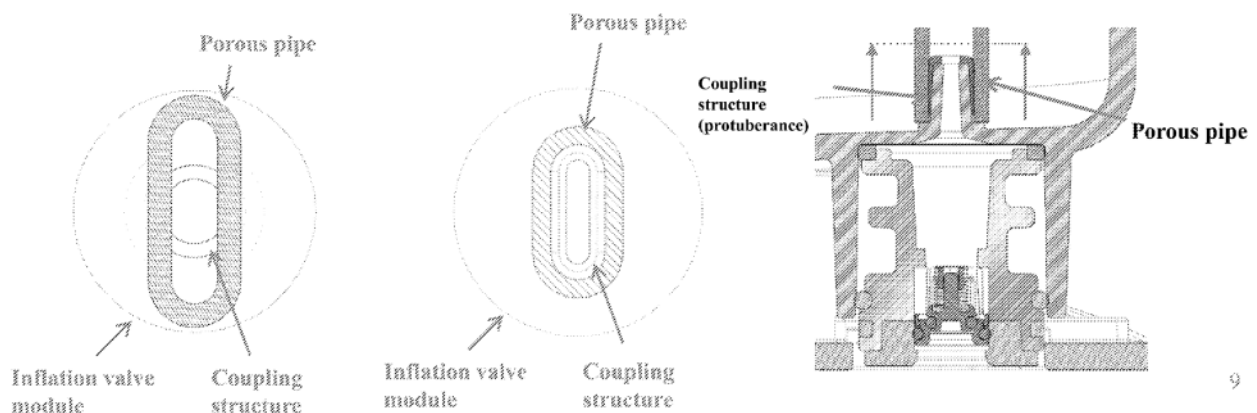
POSITA would have understood that the '878 Application discloses multiple porous tubes, thereby providing written description support for those elements of Challenged Claims 13-31. *See, e.g.*, Ex1003, 4, 8, FIGS. 1, 8-9.

A POSITA also would have understood that the inventors had possession of those multiple porous tubes installed to, or connected with, respective coupling structures, as recited by Challenged Claims 13-31. *See* Ex1001, 19:1-3 (“the at least two porous tubes respectively installed to corresponding coupling structures of the wafer container”), 20:27-29 (“each of the porous tubes having an open end, the open end correspondingly connecting with the coupling structure”). By way of example, Figure 7 of the '878 Application (below, right) discloses a cross-sectional view (*i.e.*, B-B illustrated in Figure 6 (below, left)) with one porous pipe and coupling structure.



Ex1003, FIGS. 6-7 (annotated). However, a second porous tube is present but hidden beyond the shell in Figure 6 of the '878 Application, which a POSITA would have understood based on Figures 1 and 8-9 of the '878 Application. *See also* Ex1003, 4 (exploded view showing two diffuser tubes/pipes). Figure 7 of the '878 Application would show the other porous tube if the cross-sectional cut of Figure 6 was rotated (e.g., clockwise less than 45 degrees). In other words, the porous tubes and coupling structures are mirror images of one another, as explained above.

Thus, a POSITA would have understood that the teachings of the '878 Application with respect to one porous tube and corresponding coupling structure could be equally applied to other porous tubes and corresponding coupling structures. In addition to Figure 7 (above, right), numerous other figures of the '878 Application illustrate the coupling structures that could be used to connect with any number of porous tubes or pipes. *See, e.g.*, Ex1003, 10 (below); *see also id.*, FIG. 11.



A POSITA would have understood that the inventors of the '878 Application had possession of more than the one coupling structure for which there is no dispute is supported by the '878 Application. *See* Petition, 7.

Petitioner fails to meet its burden to show that the '711 Patent is not entitled to its priority date of August 17, 2021 based on an alleged lack of written description support for the Challenged Claims in the '878 Application. Therefore, Smith '154 does not qualify as prior art to the '711 Patent and Grounds 1-5 must fail.

B. Petitioner Failed to Meet its Burden with Respect to Grounds 6-7 Because Smith '517 Fails to Disclose the Claimed “Buffering Gas Chamber Having at Least One Gas Intake Channel”

As with Smith '154 (and Ogawa), Petitioner acknowledges that Smith '517 was before the Examiner during prosecution of the application for the '711 Patent. *See* Petition, 5. Petitioner again asserts that the Examiner erred by overlooking Smith '517 and failing to appreciate its impact on the issued claims. *Id.*; *see also Juniper Networks, Inc.*, No. IPR2017-00642, 2018 WL 1358386, at *8 (“We decline to assume ... that non-action by the Examiner is error...”). However, the Examiner correctly declined to apply Smith '517 because it clearly does not disclose the buffering gas chamber having at least one gas intake channel of Challenged Claims 1-12. *See U.S. Water Servs., Inc. v. Novozymes A/S*, 843 F.3d 1345, 1350 (Fed. Cir. 2016) (“A reference is anticipatory ... if the prior art reference discloses each and

every feature of the claimed invention, either explicitly or inherently.” (internal quotation marks and citation omitted)).

Petitioner's expert devoted a single sentence of his declaration to Smith '517's purported disclosure of the “buffering gas chamber” element of claim 1, relying entirely on Figure 19. See Ex1006, ¶ 285 (“As shown in Figure 19, Smith '517 discloses the same increased diameter (e.g., *buffering gas chamber*) between the gas intake channel (e.g., check valve 518) and the filter assembly 520.” (emphasis in original)); see also Ex1011, FIG. 19 (below).

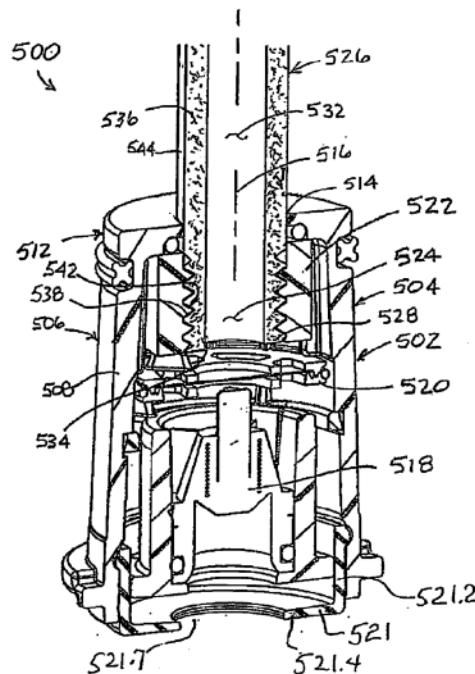


FIG. 19

Thus, Petitioner alleges via its expert that there is an increased diameter between Smith '517's check valve 518 and its filter assembly 520, which discloses the claimed buffering gas chamber. See Ex1006, ¶ 285; Petition, 107-108.

Petitioner's expert provides no fluid dynamics simulations, no mathematical calculations of pressure drop, and no technical evidence to show that the identified spatial clearance actually performs any gas "buffering" function. *See* Ex1006, ¶ 285; *see also Koito Mfg. Co. v. Turn-Key-Tech, LLC*, 381 F.3d 1142, 1152 (Fed. Cir. 2004) ("General and conclusory testimony . . . does not suffice as substantial evidence of invalidity."), *subsequent appeal on other grounds* at 170 Fed. Appx. 127 (Fed. Cir. 2006); *TQ Delta, LLC v. Cisco Sys.*, 942 F.3d 1352, 1358 (Fed. Cir. 2019) ("Conclusory expert testimony does not qualify as substantial evidence.").

As explained in the '711 Patent:

The elastic sleeve (251) has a gas intake channel passing through two ends thereof, and **the check valve (252) is securely accommodated in the gas intake channel.** A filter membrane (253) is configured between the elastic sleeve (251) and the bottom portion (201) of the shell (21) to filter an incoming gas. To prevent an overly large pressure of the incoming gas from causing a deforming or a breaking of the filter membrane (253), **the elastic sleeve (251) has a larger diameter at the inner wall close to the bottom portion (201), and so a buffering gas chamber (254) is formed between the gas intake channel and the filter membrane (253).** Before passing through the filter membrane (253), the gas is dispersed laterally in the buffering gas chamber (254), so as to reduce the pressure applied on the filter membrane (253).

Ex1001, 8:1-15 (emphasis added); *see also* Ex1001, FIG. 6 (below, annotated, with buffering gas chamber labeled 254 and the check valve labeled 252).

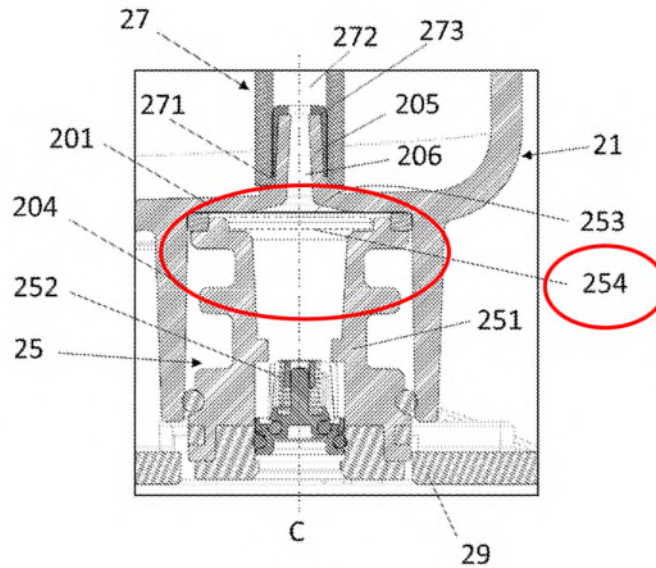


FIG. 6

The Figure 19 embodiment of Smith does not show a buffering gas chamber under any reasonable construction of that term, let alone a buffering gas chamber having at least one gas intake channel.

A POSITA would not understand Figure 19 of Smith '517 to disclose any enclosed space or volume between the check valve and the filter assembly or that such an enclosed space or volume functions to buffer gas. There is no change in diameter of any enclosed space or volume between Smith '517's check valve and its filter assembly that could possibly impact the pressure placed by the gas on that filter assembly. *Compare* Ex1001, FIG. 6 (below, left, annotated to show diameter increase) *with* Ex1011, FIG. 19 (below, right, annotated by Petitioner with check valve labeled 518 and filter assembly labeled 520).

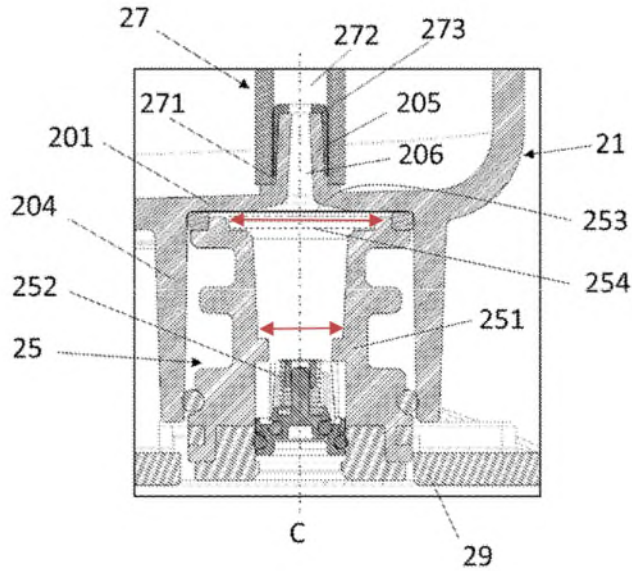


FIG. 6

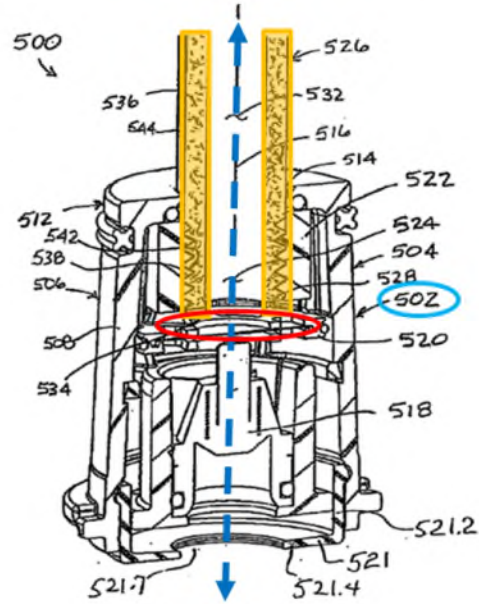


FIG. 19

Figure 19 of Smith '517 is barely legible in the relevant region annotated by Petitioner and would not be understood by a POSITA to disclose a buffering gas chamber.

Smith '517 also does not provide, and Petitioner does not cite, any relevant description in its specification regarding any chamber or gas buffering function, instead relying exclusively on Smith '517's Figure 19. See Ex1006, ¶¶ 284-285; Petition, 107-108. Petitioner is the applicant and assignee of Smith '517 but never described, characterized, or even hinted at any “buffering” or “pressure-reducing” function in its specification for the annotated unnamed space Petitioner now alleges is a buffering gas chamber. See *Cont'l Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991) (“Inherency ... may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a

given set of circumstances is not sufficient.” (internal quotation marks and citations omitted)). Smith '517's specification is completely silent regarding any chamber or enclosed volume or space located between the check valve 518 and the filter assembly 520, any increased diameter designed to accumulate, decelerate, or buffer gas, and any buffering, pressure-stabilizing, flow-regulating, or similar function associated with the annotated spatial junction. As the applicant of Smith '517, Petitioner knew the scope and functionality of its own invention. If that annotated area between the valve 518 and filter 520 was intended to buffer gas, or would have been recognized by a POSITA as buffering gas, Petitioner would have described such functionality in Smith '517's specification. Petitioner's silence effectively admits that Smith '517 does not disclose the claimed “buffering gas chamber.”

Further, the '711 Patent discloses that “the check valve (252) is securely accommodated in the gas intake channel” (Ex1001, 8:2-4) and claim 1 of the '711 Patent recites “the buffering gas chamber having at least one gas intake channel” (Ex1001, 17:45-47). Petitioner has incorrectly asserted that “Smith '517 discloses the buffering gas chamber [e.g., increased diameter before filter assembly 520 (light blue)] having at least one gas intake channel [e.g., check valve 518]....” Petition, 109 (emphasis omitted). Thus, Petitioner has mapped Smith '517's check valve to the claimed gas intake channel when the '711 Patent paradoxically discloses that “the check valve (252) is securely accommodated *in the gas intake channel.*”

Ex1001, 8:2-4 (emphasis added). The check valve cannot be both the gas intake channel itself and “in the gas intake channel.” Petitioner’s application of Smith ’517 to claim 1 fails on its face.

Moreover, Petitioner does not explain how Smith ’517’s allegedly “increased diameter before the filter assembly” (*i.e.*, the purported “buffering gas chamber” of claim 1) could possibly *have* the check valve Petitioner has equated with the claimed at least one gas intake channel. *See* Petition, 109-110. Instead, Petitioner merely asserts that the allegedly increased diameter and check valve are separate. *See* Petition, 109 (“Figure 19 of Smith ’517 shows check valve 518 below the change in diameter”). A POSITA simply would not have understood Smith ’517’s Figure 19 to disclose any buffering gas chamber having at least one gas intake channel nor does it disclose any increased diameter to buffer the gas.

Ogawa does not address the deficiencies of Smith ’517 and Petitioner only combines Ogawa with Smith ’517 for dependent claims 10 and 11, which depend from claim 1. Thus, Petitioner’s combination with Ogawa fails for the same reasons as explained above with respect to claim 1 from which claims 10 and 11 depend. Petitioner has not met its high burden to show more likely than not invalidity of Challenged Claims 1-12, let alone on the basis of the Smith ’517 and Ogawa prior art references already before the Examiner during prosecution. Accordingly, the Board also should not grant institution on the basis of Grounds 6-7.

C. Petitioner Failed to Meet its Burden with Respect to Ground 8 Because Petitioner's Indefiniteness Argument is Legally Deficient and Fails to Show Lack of Written Descriptive Support

The Petition fails to establish that it is more likely than not that Challenged Claims 1-12 of the '711 Patent are invalid under 35 U.S.C. § 112 for indefiniteness or lack of written description. *See* Petition, 120-124.

1. A POSITA Would Understand the Claimed Gas Intake Center Axis of the Gas and Center Axis of the Coupling Structure Being Coaxial, Which is Not Susceptible to Multiple Interpretations

The crux of Petitioner's argument that claim 1 is invalid as indefinite is that the limitation "a gas intake center axis of the gas and a center axis of the coupling structure being coaxial" is subject to at least two interpretations.¹ In support, Petitioner provides a manufactured modification to FIG. 21A of the '711 Patent to purportedly show that the recited limitation of claim 1 is subject to two different interpretations. Petitioner's arguments fail for multiple reasons as discussed below.

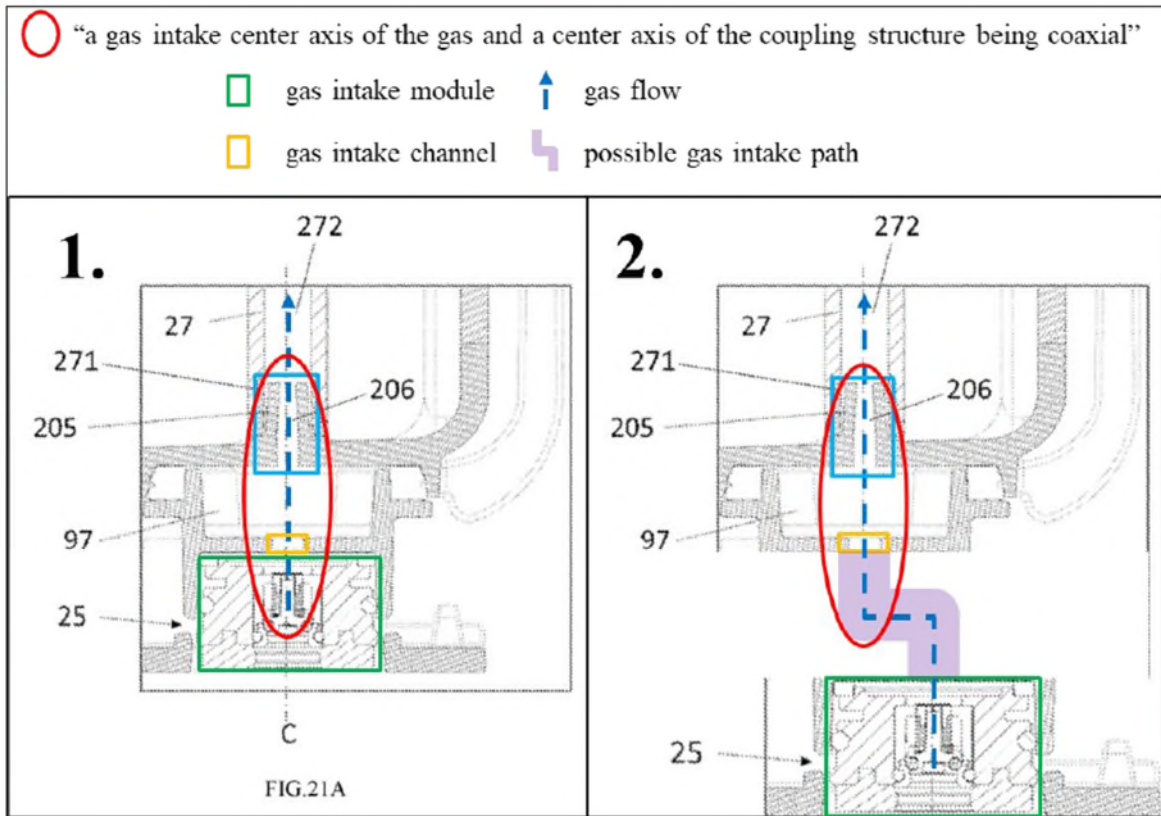
First, the Federal Circuit has noted that "[j]ust because a term is susceptible to more than one meaning does not render it indefinite." *ClearOne, Inc. v. Shure Acquisition Holdings, Inc.*, 35 F.4th 1345, 1351 (Fed. Cir. 2022); *see also Nevro Corp. v. Bos. Sci. Corp.*, 955 F.3d 35, 41 (Fed. Cir. 2020) ("Such a test would render nearly every claim term indefinite so long as a party could manufacture a plausible

¹ Notably, Petitioner does not provide any construction for that term. *See* Petition, 10 ("Petitioner submits that all other terms do not require construction . . .").

construction.”). Even if the recited limitation were open to two equally plausible interpretations as Petitioner argues (it is not), this alone would be legally insufficient to render the claim limitation indefinite. *Id.* In any event, as discussed below, Petitioner fails to establish that the subject limitation is actually subject to more than one interpretation.

Second, Petitioner fails to establish any ambiguity with respect to the actual limitation of claim 1 at issue. Petitioner's purported interpretations of the term “a gas intake center axis of the gas and a center axis of the coupling structure being coaxial” actually demonstrate that Petitioner understands the meaning of the term and there is no difference in how that specific claim term would be construed.

Petitioner relies on the figures reproduced below in which Petitioner highlights the relevant claim term in red:



Petition, 122. As demonstrated in Petitioner’s own manufactured figure, Petitioner highlights the purportedly indefinite limitation of claim 1, *i.e.*, “a gas intake center axis of the gas and a center axis of the coupling structure being coaxial” in *exactly the same manner* in both the original Figure 21A (image 1 above, left) and Petitioner’s modified version (image 2 above, right). Thus, Petitioner clearly understands what it means for the gas intake center axis of the gas and the center axis of the coupling structure to be co-axial, as would a POSITA. Petitioner fails to establish any ambiguity with respect to the meaning of the term and there is no issue regarding multiple interpretations. Accordingly, Petitioner’s indefiniteness position with respect to claim 1 must fail.

Third, Petitioner's argument relies on a legally impermissible construction of claim 1. As illustrated above, to support its argument that there are multiple interpretations of the claim term, Petitioner moves the "gas intake module" to argue that "a POSITA could not know if the claim is met by a gas intake module (green) offset from the coupling structure (light blue) with a path (purple) between the gas intake module (green) and gas intake channel (orange)." See Petition, 121. However, Petitioner's argument ignores that the "gas intake module" is not recited in claim 1.

Accordingly, Petitioner's argument improperly reads a limitation from the specification into claim 1. See *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1340-41 (Fed. Cir. 2001) ("reading a limitation from the written description into the claims" is "one of the cardinal sins of patent law"). As claim 1 does not recite the "gas intake module," Petitioner's argument that the term "a gas intake center axis of the gas and a center axis of the coupling structure being coaxial" is susceptible to different interpretations based on its hypothetical modification to the position of the gas intake module improperly writes that limitation into claim 1.² Accordingly, Petitioner's argument must fail for this additional reason.

² Petitioner's argument that "a POSITA would not have limited claim 1 to the first interpretation at least because it would render claim 12 superfluous" similarly

Petitioner also fails to establish that it is more likely than not that claim 1 is invalid for lack of written description. The Petitioner asserts that if claim 1 were construed to cover the second interpretation shown in image 2 above (which image Petitioner created), claims 1-12 would be invalid for lack of written description. However, Petitioner does not provide any claim construction of claim 1, much less a construction that requires the interpretation created by Petitioner's manufactured embodiment. In fact, claim 1 could not be construed to cover Petitioner's second embodiment because it does not even require a gas intake module. Thus, Petitioner's lack of written description argument also does not support institution.

The Petition does not provide any specific invalidity positions with respect to claims 4-11. Thus, the Petition fails to establish that it is more likely than not that those claims are invalid under 35 U.S.C. § 112 for the same reasons as set forth with respect to claim 1.

2. Claim 1 Clearly Provides Antecedent Basis for the Gas Intake Center Axis Term of Claims 2, 3, and 12

Petitioner argues that claims 2, 3, and 12 are indefinite based on a purported lack of antecedent basis for the term "gas intake center axis." Petition, 124. Petitioner does not dispute that claims 2, 3, and 12, which each depend directly from claim 1, recite "the gas intake center axis," which has antecedent basis in the

attempts to improperly read the limitation of the gas intake module (recited in claim 12) into claim 1. Petition, 122.

recitation of “a gas intake center axis” in claim 1. However, Petitioner argues that the lack of the qualifier “of the gas” in claims 2, 3, and 12 renders those claims unclear, *i.e.*, whether it is the same gas intake center axis recited in claim 1 or a different gas intake center axis. Petitioner fails to establish it is more likely than not that these claims are indefinite.

First, Petitioner's argument must fail because the antecedent basis for the term at issue is express in claim 1. The antecedent basis for the term “the gas intake center axis” in claims 2, 3, and 12 is clearly provided by claim 1, from which those claims depend. Claim 1 recites “a gas intake center axis” which provides the explicit antecedent basis for the term “*the* gas intake center axis” in claims 2, 3, and 12. The mere lack of the qualifier “of the gas” in claims 2, 3, and 12 does not create any uncertainty regarding the antecedent basis for those terms.

Second, even if the antecedent basis were deemed not to be explicit (it is), the Federal Circuit has held that, despite the absence of explicit antecedent basis, “[i]f the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite.” *See Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1359 (Fed. Cir. 2001), *quoting* MPEP § 2173.05(e) (6th ed. Rev. 1, Sept. 1995); *see also Slimfold Mfg. Co. v. Kinkead Indus., Inc.*, 810 F.2d 1113, 1116-17 (Fed. Cir. 1987) (providing that antecedent basis can be present by implication). It is implicit that “the gas intake center axis” recited in claims 2, 3, and 12 refers to the gas intake

center axis of the gas recited in claim 1 despite the lack of the “of the gas” qualifier in those claims. There is only one “gas intake center axis” recited in claim 1.

Bushnell Hawthorne, LLC v. Cisco Sys., Inc., 813 Fed. Appx. 522, 526 (Fed. Cir. 2020) cited by Petitioner is inapposite. There, the Federal Circuit found that the term “said different IP address” was indefinite because the meaning of the limitation was entirely unclear from the record. The Federal Circuit noted that “[w]ith three different IP addresses to choose from, a POSA faced with the ‘said different IP Address’ limitation is left to wonder which of the different IP addresses is ‘said’ different one.” *Id.* Here, it is clear from the claim structure that “the gas intake center axis” recited in claims 2, 3, and 12 refers to the only “gas intake center axis” (*i.e.*, “of the gas”) recited in claim 1. Thus, Petitioner fails to establish that it is more likely than not that claims 2, 3, and 12 are invalid for a lack of antecedent basis.

V. CONCLUSION

For the reasons set forth above, Petitioner has failed to demonstrate that it is more likely than not that at least one of the Challenged Claims is unpatentable. Thus, post-grant review of the '711 Patent should be denied.

Respectfully submitted,

Date: August 24, 2026

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CERTIFICATE OF COMPLIANCE WITH WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), I certify that this preliminary response complies with the type-volume limits of 37 C.F.R. § 42.24(b)(1) because it contains **6,196** words, according to the word-processing system used to prepare this preliminary response, excluding the parts of this preliminary response that are exempted by 37 C.F.R. § 42.24(c) (including the table of contents, a table of authorities, an exhibits list, a listing of facts, a certificate of service or this certificate of word count, or appendix of exhibits).

Date: August 24, 2026

Respectfully submitted,

/Nicholas J. Gallo/
Nicholas J. Gallo (Lead Counsel)
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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), this is to certify that on this 24th day of August, 2026, I caused to be served a true and correct copy of the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE PURSUANT TO 37 C.F.R. § 42.207 and 35 U.S.C. § 323** by e-mail on the following counsel of record (as identified in the Petition):

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