

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LEXION MEDICAL, LLC,
Petitioner,

v.

SURGIQUEST, INC.,
Patent Owner.

Case IPR2017-00518
Patent 9,095,372 B2

Before KEVIN W. CHERRY, TERRENCE W. McMILLIN,
and JOHN F. HORVATH, *Administrative Patent Judges*.

McMILLIN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318 (a); 37 C.F.R. § 42.73

I. INTRODUCTION

A. *Background*

Petitioner, Lexion Medical, LLC, filed a Petition requesting an *inter partes* review of claims 1–11 of U.S. Patent No. 9,095,372 B2 (Ex. 1001, “the ’372 patent”) under 35 U.S.C. §§ 311–319. Paper 1 (“Petition” or “Pet.”). Patent Owner, SurgiQuest, Inc., filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). Upon consideration of the Petition and Preliminary Response, we instituted an *inter partes* review of claims 1–11 of the ’372 patent. Paper 9 (“Dec. Inst.”).

Subsequent to institution, Patent Owner filed a Response (Paper 13, “Resp.”) and Petitioner filed a Reply (Paper 16, “Reply”). An oral argument was held on April 17, 2018, and a transcript was entered into the record. Paper 36, (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(b). This is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, we find that a preponderance of the evidence establishes that claims 1–11 of the ’372 patent are unpatentable.

B. *Real Parties in Interest*

Petitioner identifies Lexion Medical, LLC, as the real party in interest. Pet. 1. Patent Owner identifies SurgiQuest and its parent ConMed Corporation, which wholly owns SurgiQuest, as the real parties-in-interest. Paper 5, 2.

C. *Related Proceedings*

Patent Owner has asserted infringement of the ’372 patent in *ConMed Corporation and SurgiQuest, Inc. v. Lexion Medical, LLC*, Case No. 6:16-cv-944-DNH/ATB (E.D.N.Y.). Paper 5, 2; Pet. 1.

The '372 patent claims priority to U.S. Patent Application No. 14/268,408, which is currently pending. Paper 5, 2; Pet. 1. We note that this application was allowed on June 8, 2018, and that the issue fee was paid on June 11, 2018.

D. The '372 Patent

The '372 patent is titled, "System and Method for Improved Gas Recirculation in Surgical Trocars with Pneumatic Sealing." Ex. 1001, (54). It also claims priority to U.S. Patent Application No. 12/587,584, filed October 9, 2009, and to U.S. Provisional Application No. 61/104,448, filed on October 10, 2008. *Id.* at (60), (63). The '372 patent "relates to systems and devices for surgical access, and is particularly directed [to] devices adapted and configured to create a fluidic seal, and to systems for supplying pressurized fluid to such devices, which are also capable of recirculating such pressurized fluid." *Id.* at 1:33–37.

According to the "Background of the Invention" provided in the '372 patent, "[l]aparoscopic, or 'minimally invasive' surgical techniques are becoming increasingly more common" and "are typically performed through a device known as a trocar or cannula, which facilitates the introduction of laparoscopic instruments into the abdominal cavity of a patient." *Id.* at 1:45–52. The '372 patent states, "such procedures commonly involve filling or 'insufflating' the abdominal (peritoneal) cavity with a pressurized fluid, such as carbon dioxide, to create what is referred to as a pneumoperitoneum." *Id.* at 1:53–56. The '372 patent provides this further description of these surgical techniques:

During typical laparoscopic procedures, a surgeon makes three or four small incisions, usually no larger than about twelve millimeters each, which are typically made with the trocar

devices themselves, typically using a separate inserter or obturator placed therein. Following insertion, the inserter is removed, and the trocar allows access for instruments to be inserted into the abdominal cavity. Typical trocars often provide means to insufflate the abdominal cavity, so that the surgeon has an open interior space in which to work.

Id. at 1:62–2:3.

The '372 patent contains 11 claims. Independent claims 1 and 7 are directed to “[a] surgical access device” and independent claim 4 is directed to a “system for delivering humidified insufflation gas.” Claims 2 and 3 depend from claim 1, claims 5 and 6 depend from claim 4, and claims 8–11 depend from claim 7. Claim 1 is illustrative of the subject matter in this proceeding, and is reproduced below (emphasis added).

1. A surgical access device comprising:
 - a) an elongated outer tubular member having opposed proximal and distal end portions and having a longitudinal axis extending therethrough;
 - b) an elongated inner tubular member having opposed proximal and distal end portions and being arranged coaxially within the outer tubular member, ***the inner tubular member defining a central lumen for introduction of a surgical instrument therethrough;***
 - c) an insufflation conduit defined between the inner and outer tubular members in communication with a source of humidified insufflation gas; and
 - d) a plurality of apertures extending through an outer surface of the distal portion of the outer tubular member in fluid communication with the insufflation conduit and configured to laterally discharge humidified insufflation gas from the insufflation conduit into the peritoneum of a patient,

wherein the distal end portion of the outer tubular member and the distal end portion of the inner tubular member ***cooperate to enclose*** the insufflation conduit such that the humidified insufflation gas is discharged only from the plurality of apertures.

The system of independent claim 4 comprises 2 elements: (1) a trocar assembly (defined using language substantially identical to that of claim 1); and (2) a source of humidified insufflation gas. The limitations of the devices of independent claims 7 and 1 are identical, except for 2 word differences: (1) ***humidified*** (claim 1) vs. ***conditioned*** (claim 7) insufflation gas; and (2) ***laterally*** (claim 1) vs. ***radially*** (claim 7) discharged insufflation gas.

E. Evidence Relied Upon

Petitioner relies upon the following prior art references.

Mantell	US 6,905,489	Jun. 14, 2005	Ex. 1005
Ott (“Ott ’095”)	US 2006/0184095	Aug. 17, 2006	Ex. 1009
Ott (“Ott ’474”)	US 5,411,474	May 2, 1995	Ex. 1006

Petitioner contends that Mantell, Ott ’095, and Ott ’474 are prior art to the ’372 patent under pre-AIA 35 U.S.C. § 102(b). Pet. 9, 12. The cited references consist of two US patents issued, and a US patent application published, more than one year before the earliest possible priority date of the ’372 patent. They, therefore, qualify as prior art under section 102(b), which Patent Owner does not contest.

Petitioner relies upon the Declaration of William DuBrul (“DuBrul Decl.”), Exhibit 1003. Patent Owner relies on the Declaration of David Lipson (“Lipson Decl.”), Exhibit 2012.

F. Instituted Grounds of Unpatentability

Petitioner asserts that claims 1–11 of the '372 patent are unpatentable based on the following ground:

References	Basis	Challenged Claims
Mantell, Ott '095, and Ott '474	§ 103(a)	1–11

II. ANALYSIS

A. Introduction

1. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007).

The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness.¹ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

2. Contentions of the Parties

Petitioner contends that claims 1–11 are unpatentable under 35 U.S.C. § 103(a) as obvious over Mantell, Ott '095, and Ott '474. Pet. 14–65. Petitioner contends Mantell teaches all the limitations of claims 1–11 of the '372 patent except the insufflation gas is humidified and the gas is

¹ Neither party presents any objective evidence of nonobviousness (secondary considerations) for us to consider.

discharged from a plurality of apertures. Pet. 14. Petitioner contends Ott '095 teaches all the limitations of claims 1–11 of the '372 patent except the insufflation gas is humidified and the end of the insufflation conduit is enclosed. *Id.* Petitioner relies on Ott '474 to teach humidification of insufflation gas. *Id.* Petitioner relies on Ott '095 to teach the use of multiple apertures to discharge insufflation gas. *Id.* Petitioner relies on Mantell to teach the use of an insufflation conduit with an enclosed end. *Id.* In support of its contentions, Petitioner provides a detailed mapping of limitations of claims 1–11 to structures described in the cited art. *Id.* Petitioner cites the Dubrul Declaration for support. See Ex. 1003 ¶¶ 108–184.

Patent Owner does not discuss any claim individually in its Response but instead refers to the claims throughout the response as the “Challenged Claims.” See *generally* Resp. As such, Patent Owner does not argue that the differences in the independent claims are material to patentability or that any of the limitations recited in the dependent claims are material to patentability. *Id.* In its Response, Patent Owner argues: (1) the cited references do not teach the “cooperate to enclose” limitation; (2) Mantell does not teach an inner tubular member that both defines a central lumen and has a distal end that cooperates with an outer tubular member to enclose an insufflation conduit; and (3) there is no valid reason or motivation to combine Mantell with Ott '095 to enclose the insufflation conduit. Resp. 1, 18–47. Patent Owner cites the Lipson Declaration for support. See Ex. 2012 ¶¶ 69–101.

We have reviewed the parties’ contentions and supporting evidence. Notwithstanding Patent Owner’s evidence and arguments to the contrary, we

are persuaded that Petitioner has established by a preponderance of the evidence that claims 1–11 are unpatentable as obvious in view of Mantell, Ott '095, and Ott '474.

B. Claim Construction

We interpret claims in an unexpired patent using the “broadest reasonable construction in light of the specification of the patent in which [they] appear[].” 37 C.F.R. § 42.100(b). *See, also, Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–2145 (2016). “Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history.” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016). Only those terms which are in controversy need be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner asks that we construe “**conditioned** insufflation gas” as recited in claims 7–11 (claims 1–6 recite “**humidified** insufflation gas”). Pet. 13–14. Petitioner argues:

the BRI of “conditioned insufflation gas” includes, **at a minimum**, insufflation gas that has been heated, humidified, or both. Ex. 1003[Dubrul Decl.], ¶¶ 91–92. Although “conditioned insufflation gas” **may include additional meanings**, no further construction is needed for purposes of this IPR, given the clear disclosures of the prior art (discussed below).

Id. (emphasis added). Petitioner cites to evidence that Ott '474, Ott '095, and Mantell teach the use of conditioned insufflation gas. *See, e.g.*, Pet. 62. Patent Owner does not discuss construction of “conditioned insufflation gas”

in its Response. *See* Resp. 1–18. Patent Owner acknowledges the prior art teaches humidifying and heating insufflation gas and cites a prior art paper (Ex. 2007) that includes such teachings. *See* Resp. 45. On the current record, there is no dispute relating to the meaning of “conditioned insufflation gas” that we need to resolve. Consequently, we do not find it necessary to explicitly construe this term.

Patent Owner asks that we construe “central lumen” and “cooperate to enclose” in its Response. Resp. 1–18. Indeed, the dispute between the parties primarily relates to the construction of these terms and whether the cited art teaches them.

“central lumen”

Independent claims 1, 4, and 7 recite, “the inner tubular member defining a **central lumen** for introduction of a surgical instrument therethrough.” Ex. 1001, 33:36–38, 34:7–9, 34:36–38 (“the ‘central lumen’ limitation”) (emphasis added). No party requested construction of this limitation or the term “central lumen” prior to institution of trial, and we did not construe this limitation or “central lumen” in our Decision to Institute. *See generally* Dec. Inst.

In its Response, Patent Owner argues, “**central lumen** should be construed to mean a lumen that extends longitudinally through the center of an operational device.” Resp. 4 (emphasis added). In support of this construction, Patent Owner cites a sentence from the Specification which states, “[t]he trocar includes a **central lumen 107**, which is defined by various elements, and which extends longitudinally, through the center of the trocar.” Resp. 1 (citing Ex. 1001, 10:54–56) (emphasis added). This sentence relates to Figure 2 of the ’372 patent (reproduced below).

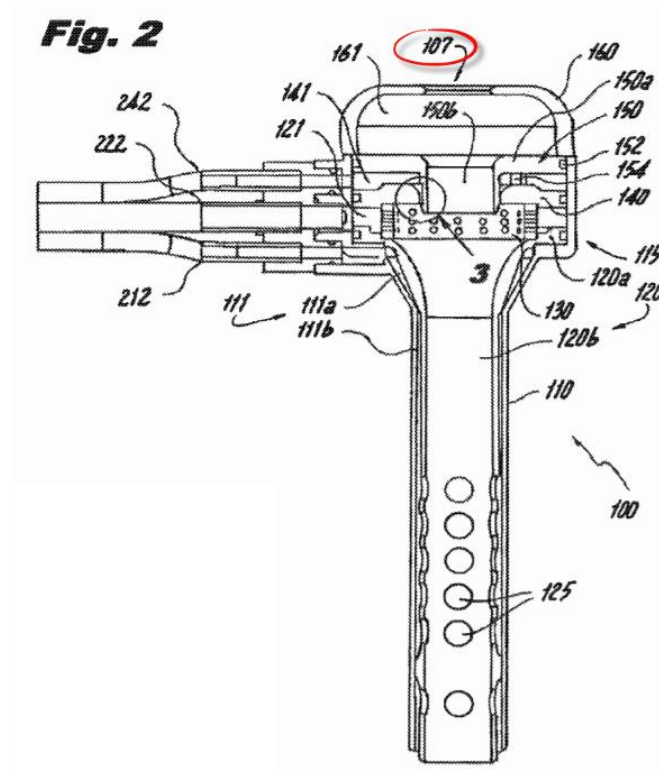


Figure 2 depicts a “cross-sectional view of a trocar 100 constructed in accordance with the invention” (*id.* at 10:52–53) which has been annotated by placing a red circle around reference number 107 at the top, center of the depicted device. Patent Owner also cites to Figures 6, 7, 8A, and 8B of the ‘372 patent and the related descriptions. Resp. 2. Figures 6, 7, 8A, and 8B

are reproduced below.

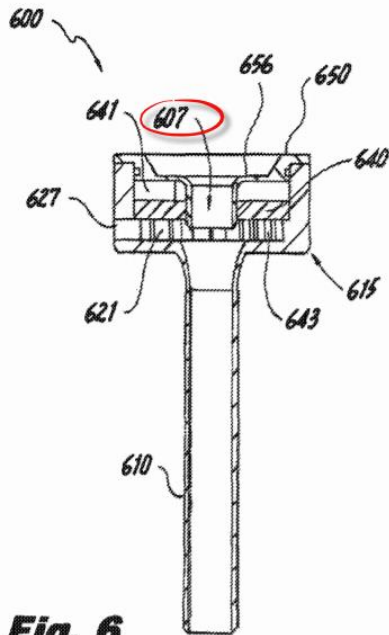


Fig. 6

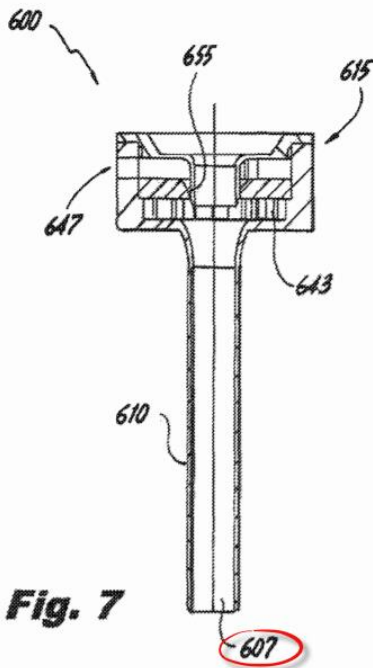


Fig. 7

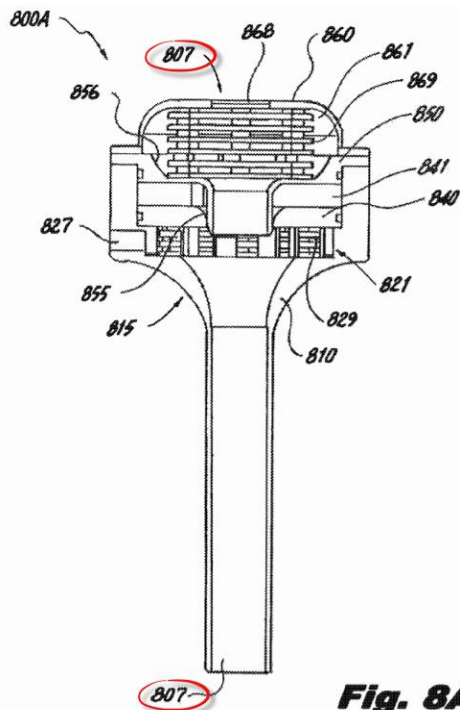


Fig. 8A

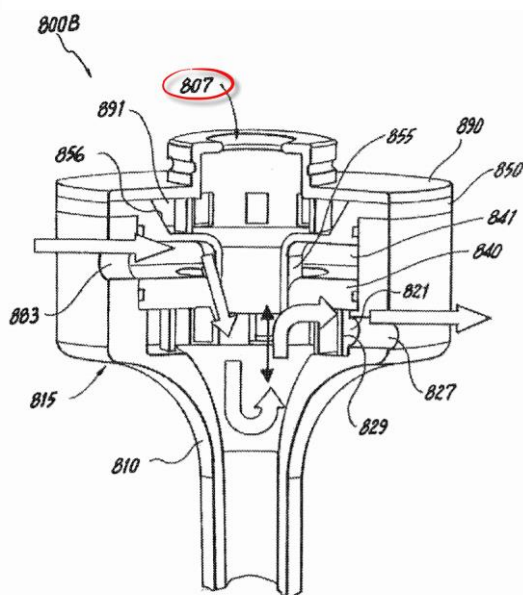


Fig. 8B

Figures 6, 7, 8A, and 8B depict cross-sectional views of a trocar in accordance with two further embodiments of the invention (*id.* at 8:30–43)

which have been annotated by placing a red circle around the reference numbers relating to “central lumen 607” (*id.* at 12:63) and “central lumen 807” (*id.* at 13:10, 13:36). The experts, Dr. Lipson and Mr. Dubrul, agree that the term “central lumen,” as used in the ’372 patent, has its plain and ordinary meaning. Ex. 1038, 132:3–7; Ex. 1037 ¶¶ 7, 11, 12.

Petitioner contends “central lumen” should be construed as “the bore of a tube that extends longitudinally through the center of the device.” Reply 1. Citing to a general purpose dictionary (Ex. 1017, 1345), Petitioner contends “[t]he most relevant dictionary definition of ‘lumen’ is the bore of a tube.” Reply 1. We find this definition is in accordance with the plain and ordinary meaning of “central lumen” and how that term is used in the claims and throughout the Specification of the ’372 patent.

Petitioner objects to the language in Patent Owner’s construction including “a requirement that the lumen extend through the center of an **‘operational device.’**” Reply 2 (emphasis added). Petitioner argues that there is no language in the patent that limits the meaning of “central lumen” as proposed by Patent Owner. *Id.* at 1. Patent Owner does not offer any argument or evidence to support adding the unrecited limitation of an “operational device” to the construction of “central lumen,” and we discern no reason from the language of the claims or the Specification for doing so. In addition, the meaning of “operational device” is unclear, as it could refer to a device in operation (i.e., as it is currently being used) or a device that meets some unspecified minimum functional standard for use. The indefiniteness of “operational device” would itself add uncertainty to the scope of the “central lumen” limitation.

An additional shortcoming with Patent Owner's proposed construction is that it uses the word "lumen" in the construction of the term "central lumen." Thus, if the adjective "central" is not considered, Patent Owner proposes to construe a "lumen" as a "lumen." We conclude that Patent Owner's proposed construction does not contribute to the understanding of the term "central lumen."

Accordingly, based on the dictionary definition of lumen, the use of the term "central lumen" in the Specification, and the depiction of the "central lumen" in the drawings, we conclude the "central lumen" limitation should be construed as "the inner tubular member defining a bore which extends longitudinally through the center of the device for introduction of a surgical instrument therethrough."

"cooperate to enclose"

Independent claims 1 and 4 recite, "the distal end portion of the outer tubular member and the distal end portion of the inner tubular member ***cooperate to enclose*** the insufflation conduit such that the humidified insufflation gas is discharged only from the plurality of apertures." Ex. 1001, 33:48–52, 34:17–21 ("the 'cooperate to enclose' limitation") (emphasis added). Independent claim 7 recites the same limitation except "humidified insufflation gas" is replaced by "conditioned insufflation gas." *Id.* at 34:48–52.

In the Preliminary Response, Patent Owner asked us to construe "cooperate to enclose" recited in independent claims 1, 4, and 7 as "work together to close in." Prelim. Resp. 7–8. In the Decision to Institute, we construed "cooperate to enclose" in the manner requested by Patent Owner. Dec. Inst. 9. In addition, we stated, "our construction does not exclude the

use of agents (such as the silver solder taught in Mantell) to bond the two elongate members together or to plug the opening between them in order to provide a fluidic seal at the distal end of the insufflation conduit.” *Id.*

However, we also indicated, “[w]e may further consider this construction upon development of the record in this proceeding including hearing from the Petitioner on this issue” and invited the parties to further address the construction of this term. *Id.*

In its Response, Patent Owner argues, “the Board should maintain its construction of ‘cooperate to enclose’ as meaning ‘work together to close in,’ but should modify its interpretation of that construction to exclude the arrangement shown in Mantell because that construction is inconsistent with the understanding of one of ordinary skill in the art and the disclosure of the ’372 patent.” Resp. 17. Based on the word “cooperate,” Patent Owner now urges us to “require that the cooperating parts be sized and shaped to fit together and be in either physical contact or close physical proximity.” *Id.* at 22. Patent Owner argues our interpretation is unreasonably broad, “because any tubular member will, simply by virtue of being tubular, necessarily have a distal end; thus, if an enclosed chamber is formed that includes any two tubular members, the ends of those members will necessarily be cooperating to enclose that chamber regardless of the relative positioning and orientation of those tubular members under such a construction.” *Id.* at 21.

In the Decision to Institute, we noted that “there is no written description in the specification as to how the insufflation conduit is sealed at its distal end,” and relied on the portion of the original specification cited by the Applicants when they amended the claims to include the “cooperate to enclose” limitation. Dec. Inst. 8. Patent Owner argues we were wrong to

rely on the original specification because Applicant was citing to a substitute specification , and further argues that no matter which specification was meant, “on an objective basis, it appears there is a problem because these passages do not provide support for the ‘cooperate to enclose’ limitation.” Resp. 8; *see also id.* (“the exact same support identified in the amendment adding the ‘cooperate to enclose’ limitation was cited in the previous amendment that added a different limitation.”); *see also id.* at 9 (“[T]he objective evidence clearly establishes that the citation to these passages was an error, and the Board should have disregarded them accordingly.”).

Although we do not believe we erred by relying on the Applicants’ own statements made during prosecution, or that the objective evidence clearly indicates the Applicants’ citations were a mistake, we agree with Patent Owner that the passages cited by Applicants relate to the proximal end of the trocar and, therefore, do not support or relate to the “cooperate to enclose” limitation, which refers to the distal end of the trocar. Nonetheless, even disregarding the Applicant’s admissions made during the prosecution history, we find the Specification does not support Patent Owner’s proposed interpretation of our “cooperate to enclose” construction.

Patent Owner argues that Figure 45 of the ’372 patent “would be understood by one of ordinary skill in the art as the support for the ‘cooperate to enclose’ limitation.” Resp. 10. Figure 45 of the ’372 patent is reproduced below.

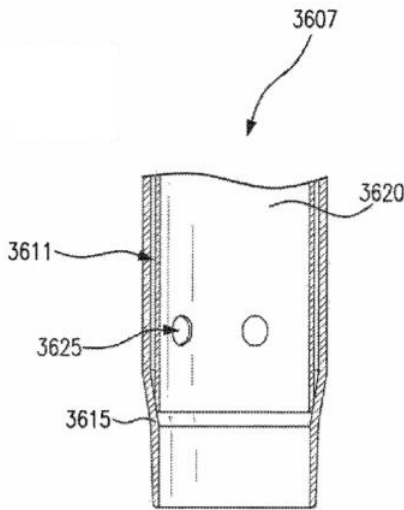


FIG. 45

Figure 45 depicts “an enlarged cross-sectional view of the distal end of the surgical access device of FIG. 36.” Ex. 1001, 10:18–19. Patent Owner argues:

In Fig. 45 of the '372 patent, the distal ends of insert 3620 and housing 3615 cooperate to enclose the insufflation/pressure sense conduit 3611 where the outer surface of the beveled distal end of insert 3620 contacts the interior angled surface of the housing 3615 near its distal end. Ex. 2012 (Lipson Decl.) ¶ 66. However, in other areas, the housing 3615 and the insert 3620 are not “cooperating to enclose” the conduit 3611. *Id.* ¶ 67. While the housing 3615 and the insert 3611 may be said to define the conduit 3611 in those area, they are not cooperating to enclose it because the conduit 3611 would not be enclosed if their distal ends were not sized and shaped to fit together, and in direct physical contact or close physical proximity as shown in Fig. 45.

Resp. 16–17. However, as Petitioner argues, “Figure 45 is not even a claimed embodiment because it has apertures 3625 in the inner tubular member. Thus, not all of the gas discharges out the apertures in outer tubular member as required” by the independent claims. Reply 12. These

apertures 3625 in the inner tubular member are shown in Figure 50 (reproduced below).

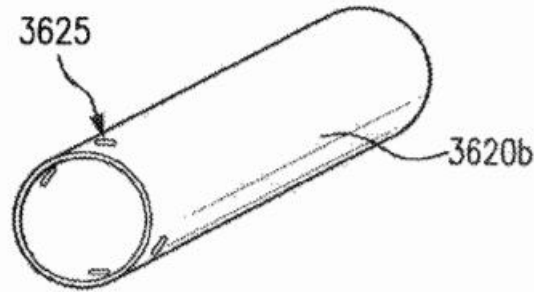


FIG. 50

Figure 50 depicts “the distal end portion 3620b of the lower insert 3620” and “[a]s illustrated, *internal apertures* 3625 are formed in the distal end region of the distal end portion 3620b.” Ex. 1001, 29:58–62 (emphasis added). “[A]pertures 3625 can be provided in the *inner wall* of the trocar 3600, in communication with the lumen 3607 and the insufflation and/or pressure sense conduit 3611.” *Id.* at 30:23–25 (emphasis added). Thus, Figure 45 relates to an embodiment in which the distal end portion of the inner tubular member does not “cooperate to enclose the insufflation conduit such that the insufflation gas is *discharged only from the plurality of apertures* extending through the outer surface of the distal portion of the outer tubular member” as recited in claim 1. Ex. 1001, 33:50–52. We decline Patent Owner’s invitation to rely on this unclaimed embodiment to narrowly limit the meaning of this disputed claim term, and to import additional limitations into our interpretation of the “cooperate to enclose” limitation.

Moreover, we agree with Mr. Dubrul that a person of ordinary skill in the art would understand that O-rings or gaskets would be used to seal the chamber between insert 3620 and housing 3615 in Figure 45. Ex. 1037 ¶ 33. The Specification states that “[s]eals, such as O-rings can be provided in

respective detents to seal between the inserts and the housing 3615, to help seal respective chambers from one another.” Ex. 1001, col. 29:47–50.

Thus, we agree with Mr. Dubral that, even if Figure 45 were relevant to the challenged claims, it does not support the very narrow construction of “cooperate to enclose” that Patent Owner now proposes. Ex. 1037 ¶ 33. We agree with Petitioner and Mr. Dubral that even if we relied on Figure 45, it does not support a construction that would exclude the cooperating arrangement shown in Mantell. *See id.* ¶ 34.

In sum, we conclude there is no support in the claims, the Specification, or the file history for interpreting the term “cooperate to enclose” to include the unrecited limitations that the “the cooperating parts be sized and shaped to fit together and be in either physical contact or close physical proximity.” Resp. 13–14. For these reasons, we do not adopt Patent Owner’s newly proposed interpretation of the “cooperate to enclose” limitation.

Although Patent Owner expresses dissatisfaction with our interpretation of the “cooperate to enclose” construction—i.e., that it does not exclude the use of agents to bond the inner and outer tubular members together or to plug the opening between them—Patent Owner agrees that “the Board should maintain its construction of ‘cooperate to enclose’ as meaning ‘work together to close in.’” Resp. 17. In its Reply, Petitioner does not propose an alternative construction for this term, but instead argues in support of the construction adopted by the Board in the Decision to Institute. Reply 9–15. Both experts, Dr. Lipson and Mr. Dubrul, agree that “work together to close in” is the proper construction as well as the ordinary meaning of “cooperate to enclose.” Ex. 1037 ¶ 28; Ex. 1038, 50, 52–54; Ex.

2012 ¶ 49; Ex. 2029, 145:9–24. Thus, there is no dispute that the proper construction of “cooperate to enclose” is “work together to close in.” Accordingly, we maintain our construction of “cooperate to enclose” as meaning “work together to close in,” and our understanding that this construction does not exclude the use of agents such as O-rings or solder to provide a fluidic seal at the distal end of the inner and outer elongated tubular members.

C. Level of Skill in the Art

Petitioner asserts:

A POSITA would have had a bachelor’s degree in mechanical engineering, biomedical engineering, or a related field and three to five years of practical experience designing medical devices. A person of ordinary skill in the art could also include a surgeon with three to five years of experience with laparoscopic surgery and some experience with developing medical devices used in laparoscopic surgery. A person with less education, but more relevant practical experience, may also meet this standard.

Pet. 13 (citing Ex. 1003 (Dubrul Decl.) ¶¶ 68–69). Patent Owner does not address this issue. *See generally* Resp.

We find Petitioner’s unopposed description of a person of ordinary skill in the art to be reasonable, and we adopt it for purposes of our obviousness analysis in this decision.

D. Summaries of Cited Art References

Mantell (US 6,905,498) (Ex. 1005)

Mantell is titled “Laparoscopic Insertion Device.” Ex. 1005, (54). An exemplary embodiment of Mantell’s device is shown in Figure 4, which is reproduced below.

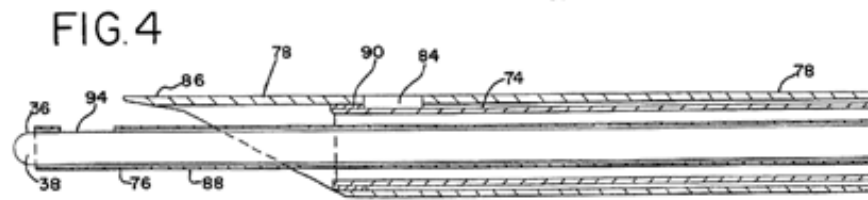


Figure 4 depicts “an enlarged side, partially transparent view of an end of the insertion device.” *Id.* at 3:26–27. As shown in Figure 4, Mantell has an “annular chamber 74 [which] is defined as the space between the housing 78 and a cannula wall 90.” *Id.* at 6:13–15. In operation, fluid “flows into the chamber 74 and exits out of the opening 84 of the housing and the annular space 74 between housing 78 and wall 90 and flows into a target area, such as a body cavity or abdomen.” *Id.* at 6:29–35. With regard to sealing the distal end of annular chamber 74, “silver solder is applied to the housing 78 and wall 90 distally of the opening 84.” *Id.* at 6:19–21. Figure 7 of Mantell is reproduced below.

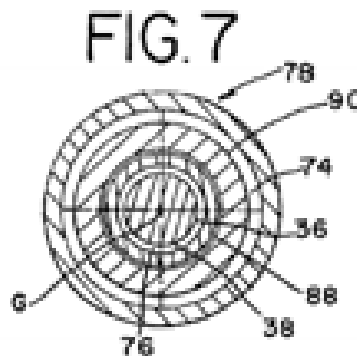
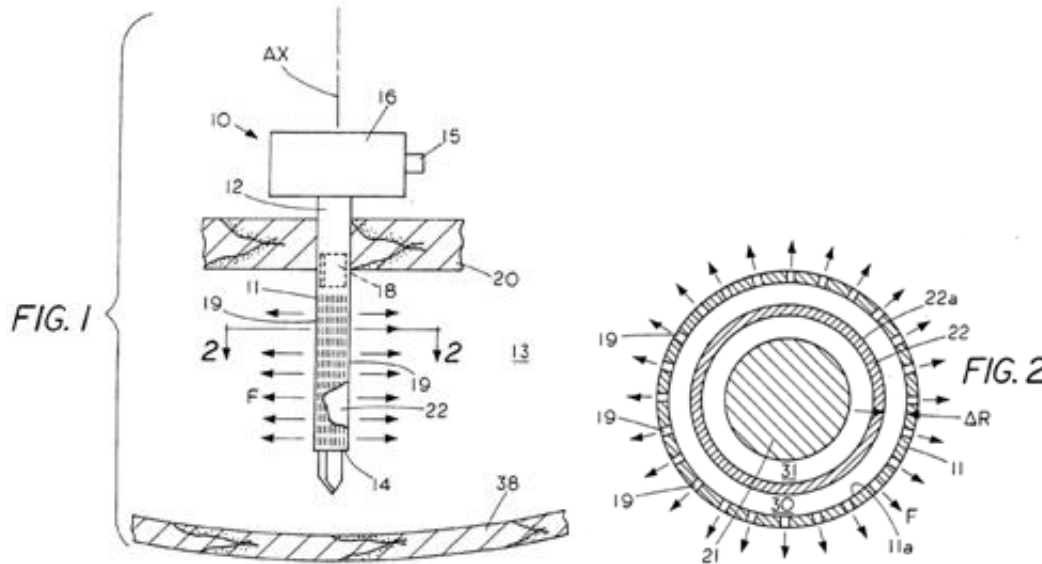


Figure 7 depicts “a cross-sectional view of the insertion device.” *Id.* at 3:32. “As shown in FIG. 7, the housing 78 and the wall 90 are concentric about a common axis G so that the annular chamber 74 is concentric about axis G as well.” *Id.* at 6:23–26.

Ott '095 (US 2006/0184095) (Ex. 1009)

Ott '095 is titled “Trocar Sleeve” and describes “a trocar sleeve for delivery of an insufflation fluid in a non jet-streaming condition regardless of whether instruments are present in the trocar sleeve.” Ex. 1009, (54), ¶ 1. Figures 1 and 2 of Ott '095 are reproduced below.



Figures 1 and 2 depict “a trocar sleeve 10 for insufflating a body cavity while minimizing or eliminating damage to a tissue in the body cavity.”

Id. at ¶ 16. “A spaced plurality of apertures 19 is defined within the exterior of the body surface of the cylindrical member 11.” *Id.* at ¶ 18. The detailed description of the trocar sleeve of Figures 1 and 2 states:

Located concentrically within cylindrical member 11 is a further elongated tube or cylindrical member 22 having the sidewall 22a impervious to fluid flow with sidewall 22a spaced from inner sidewall 11a of tube 11 to form an annular chamber 30 for fluid to flow therethrough. Positioned within lumen 31 of cylindrical member 22 is the instrument comprising trocar 21, which is shown occupying a central portion of the lumen 31.

Id. at ¶ 20.

Ott '474 (US 5,411,474) (Ex. 1006)

Ott '474 is titled “Method and Apparatus for Conditioning Insufflation Gas for Laparoscopic Surgery.” Ex. 1006, (54). The Abstract states:

The present invention provides an apparatus for treating gas prior to its use in a medical procedure comprising a housing that receives gas from an insufflator, a chamber within the housing having a humidification means, a heating means disposed within the humidification means . . . Additionally provided are methods of providing heated, humidified and filtered gas to a patient at a predetermined temperature.

Id. at (57). Figure 1 of Ott '474 is reproduced below.



Figure 1 depicts, “a gas treatment apparatus . . . connected to an insufflator at one end and a means for delivering the gas to a patient at the opposite end, and being broken away at the heating and humidifying chamber to show the heating element within the chamber.” *Id.* at 4:35–41.

E. Obviousness of Claims 1–11

Independent claims 1 and 7 are the same except that claim 1 recites, “humidified insufflation gas” and claim 7 recites “conditioned insufflation gas.” Ex. 1001, 33:30–52, 34:29–52. Independent claim 4 is directed to a system comprising a trocar assembly and a source of humidified insufflation gas. *Id.* at 33:61–34:22. Otherwise, claims 1, 4, and 7 recite the same limitations using identical language. Petitioner cites to the same portions of

the same references for the same limitations in the claims. *See generally* Pet. As noted previously, Patent Owner argues all the claims as a group and does not argue that any of the differences in the claims are material to patentability. *See generally* Resp. Accordingly, we shall treat claim 1 as representative of the claims and will analyze claims 2–11 only to the extent necessary to show the limitations recited in claims 2–11 are taught or suggested in the cited art and that the inventions recited in claims 2–11 would have been obvious to a person skilled in the art.

Claim 1

The preamble² of claim 1 recites, “[a] surgical access device.” Ex. 1001, 33:30. Petitioner cites Mantell and Ott ’095. Pet. 23–24. Patent Owner does not dispute that the prior art discloses a surgical access device. *See generally* Resp.

Mantell states, “[t]he present invention relates generally to instruments for laparoscopic surgery.” Ex. 1005, 1:6–7. Ott ’095 states, “[t]he present invention relates to the field of medical devices, and more specifically to a trocar sleeve for delivery of an insufflation fluid in a non jet-streaming condition regardless of whether instruments are present in the trocar sleeve.” Ex. 1009 ¶ 1. Ott ’095 further states that a surgeon can use such a device to explore the area of the body in which surgery is to be performed and to provide a view of the site to be treated or observed. *Id.*

² “Generally, the preamble does not limit the claims.” *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002) (citation omitted). We need not decide this issue for purposes of this decision, however, because we find that Petitioner has shown that the cited art teaches “[a] surgical access device.”

¶ 5. We find that the cited art teaches a surgical access device as recited in the preamble of claim 1.

The first limitation of claim 1 is, “an elongated outer tubular member having opposed proximal and distal end portions and having a longitudinal axis extending therethrough.” Ex. 1001, 33:31–33. Petitioner cites Mantell and Ott ’095. Pet. 24–28. Patent Owner does not dispute that the prior art teaches this limitation. *See generally* Resp.

Petitioner cites Figures 5, 6, and 7 of Mantell and Figures 1 and 2 of Ott ’095 and the related descriptions as teaching the first limitation of claim 1. Pet. 25–28. These figures clearly depict, and the related descriptions clearly describe, “elongated outer tubular member[s] having opposed proximal and distal end portions and having a longitudinal axis extending therethrough.” We find that Mantell and Ott ’095 teach all the elements recited in the first limitation of claim 1.

The second limitation of claim 1 is “[a] an elongated inner tubular member having opposed proximal and distal end portions and being arranged coaxially within the outer tubular member, [b] the inner tubular member defining a central lumen for introduction of a surgical instrument therethrough.” Ex. 1001, 33:34–38 (bracketed letters added). The Petitioner parses this limitation into the portions labelled [a] and [b] for purposes of its presentation. *See* Pet. 28–35. Patent Owner does not dispute that the cited art teaches portion [a] of this limitation. With regard to portion [b] of this limitation, Patent Owner argues the Petitioner fails to establish that Mantell discloses an inner tubular member that defines the claimed central lumen. Resp. 25–33.

Petitioner cites Figures 6 and 7 of Mantell and Figure 2 of Ott '095 and the related descriptions as teaching portion [a] of the second limitation of claim 1. Pet. 28–30. These figures clearly depict, and the related descriptions clearly describe, “elongated inner tubular member[s] having opposed proximal and distal end portions and being arranged coaxially within the outer tubular member.” We find Mantell and Ott '095 teach portion [a] of the second limitation of claim 1.

Petitioner cites Figure 6 of Mantell and Figure 2 of Ott '095 and the related descriptions as teaching portion [b] of the second limitation of claim 1. Pet. 29–35. Figure 6 of Mantell is reproduced below.

FIG. 6

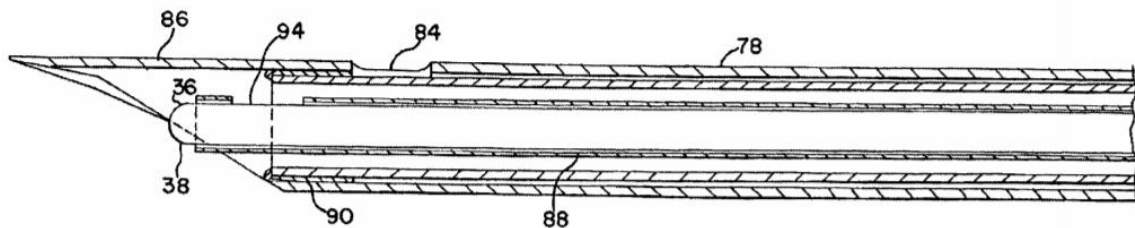


Figure 6 of Mantell depicts the distal end of a laparoscopic insertion device. See Ex. 1005, 3:30–31. Petitioner asserts, “a central lumen is defined by the inner tubular member 90, which is coaxially arranged within the outer tubular member” and “a surgical instrument (the combination of inner needle cannula 88 and obturator 38) is inserted through the central lumen defined by the inner tubular member 90.” Pet. 31. Mantell teaches that various other surgical devices can be inserted through the central lumen of inner tubular member 90. Mantell states:

In another mode of operation during insufflation via chamber 74 [the annular space between the housing 78 and wall 90], the other chamber 76 [defined by wall 88] can be adapted to receive a

medical instrument by the open stopcock 54 [see Figure 5] and removing the obturator 38 when access to that space is required. Possible medical instruments that can be fed into chamber 76 into the abdomen are: 1) fluid pumps, such as hand pumps, syringe pumps, peristaltic pumps, centrifugal pumps, etc., 2) wall suction, or portable vacuum suction pumps, 3) graspers, scissors, electro-surgical tools, suction/irrigation wands, regular or mini endoscopes, etc., 4) catheters (such as aerosolization ala TMI), 5) infusion devices (gravity fluid bags), syringe injection, biopsy needles etc., 6) humidification devices (evaporative media), and 7) filtering devices, passive (filter media) or active (withdraw a fluid, filter it, replace it).

Ex. 1005, 7:44–58.

Patent Owner argues, based on its proposed construction of “central lumen,” that “Mantell’s tubular wall 90 is not the ‘inner tubular member of the Challenged Claims because Mantell’s tubular wall 90 does not define a central lumen as that term is properly construed.” Resp. 25. However, as discussed above, we do not adopt Patent Owner’s construction of “central lumen.” Rather, we construe the “central lumen” limitation to mean “the inner tubular member defining a bore which extends longitudinally through the center of the device for introduction of a surgical instrument therethrough.” We find that, as shown by Petitioner, Mantell teaches an “inner tubular member defining a central lumen for introduction of a surgical instrument therethrough” as recited in portion [b] of the second limitation of claim 1. See Pet. 30–35 (citing Ex. 1003 (Dubrul Decl.) ¶¶ 136–140).

As noted previously, Petitioner also cites Figure 2 and the related description of Ott ’095 as teaching portion [b] or “the inner tubular member defining a central lumen for introduction of a surgical instrument

therethrough” of the second limitation of claim 1. Pet. 33–35. Patent Owner does not dispute that Ott ’095 teaches this limitation.

Figure 2 of Ott ’095 is reproduced below.

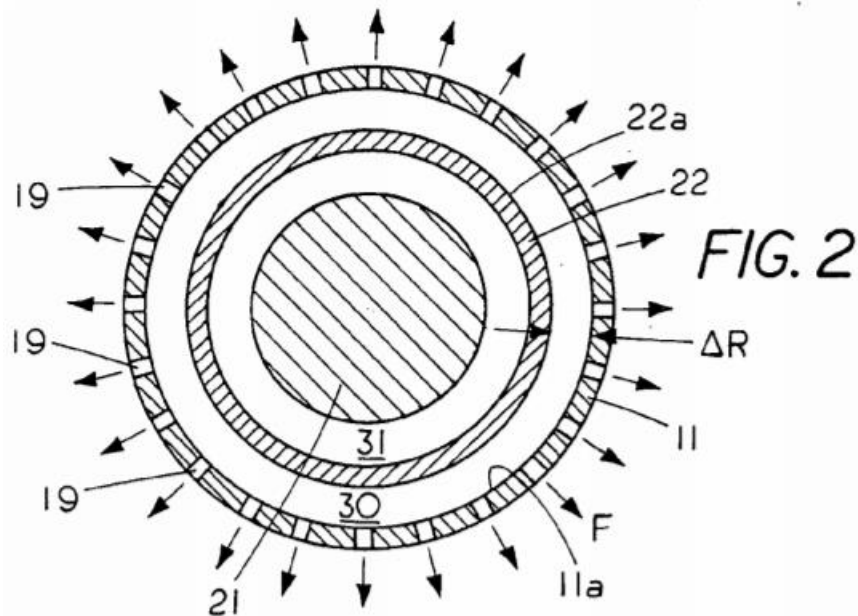


Figure 2 depicts a cross-sectional view of a trocar sleeve. Ex. 1009 ¶ 13.

Ott ’095 states

Positioned within lumen 31 of cylindrical member 22 is the instrument comprising trocar 21, which is shown occupying a central portion of the lumen 31. . . the lumen 31 is used for manipulating the instruments and is isolated from the annular chamber 30. That is, the lumen 31 is not used to deliver the insufflation gas to the patient any consequently manipulation of the surgical device 21 within the lumen does not have any effect on the flow through the annular chamber 30 and hence through the radial apertures 19.

Id. at ¶ 20. In addition to teaching surgical device 21 inserted into the central lumen 31, Ott ’095 also teaches, “[c]ameras and/or surgical devices may be inserted into the sleeve to provide the surgeon with a view of the surgical site or to allow the surgeon to treat the area.” *Id.* at ¶ 7. We find

Ott '095 teaches an “inner tubular member defining a central lumen for introduction of a surgical instrument therethrough” as recited in portion [b] of the second limitation of claim 1.

We, therefore, find that Mantell and Ott '095 teach each and every element of the second limitation of claim 1 for the reasons discussed above.

The third limitation of claim 1 recites, “an insufflation conduit defined between the inner and outer tubular members in communication with a source of humidified insufflation gas.” Ex. 1001, 33:39–41. Petitioner again cites Mantell and Ott '095. Pet. 35–37. Patent Owner does not dispute that the cited art teaches this limitation. *See generally* Resp.

Mantell states:

In operation, the stopcock 72 is opened so that a fluid is received by the opening 82 and delivered into the opening 80 of the housing 78. The fluid then flows into the chamber 74 and exits out of the opening 84 of the housing and the annular space 74 between housing 78 and wall 90 and flows into a target area, such as a body cavity or abdomen. Thus, the opening 84 is in fluid communication with a target area.

Ex. 1005, 6:29–35, *see also* Figs. 4, 7. Ott '095 states:

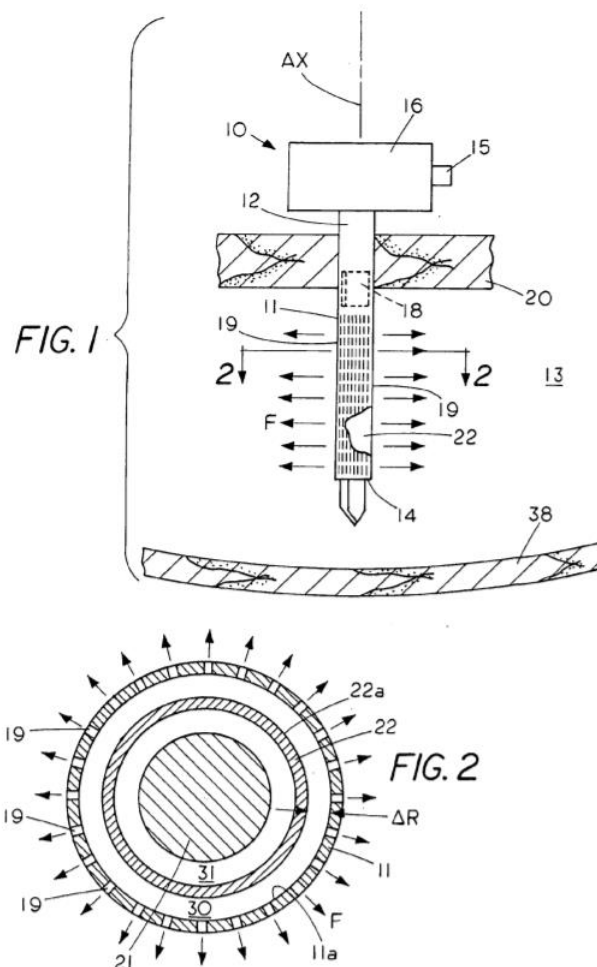
An insufflating fluid, “F”, which may be gas, liquid containing drugs, anesthetic or other substances placed or mixed within a pharmaceutically acceptable carrier or any combination thereof. The fluid “F” is delivered under pressure from an external source via inlet port 15, travels through the annular fluid flow chamber 30 and is discharged at below a “jet streaming velocity” through the plurality of apertures as indicated by the arrows [in Figure 2].

Ex. 1009 ¶ 21. Petitioner relies on Ott '474 to teach humidification of insufflation gas. Pet. 14, 37–39. Ott '474 states the invention relates “to a compact device for, and method of, heating, humidifying and filtering

insufflation gasses at a point immediately prior to passage of the gases into the patient.” Ex. 1006, 1:11–15. We find the cited references together teach all of the elements of the third limitation of claim 1.

The fourth imitation of claim 1 recites “a plurality of apertures extending through an outer surface of the distal portion of the outer tubular member in fluid communication with the insufflation conduit and configured to laterally discharge humidified insufflation gas from the insufflation conduit into the peritoneum of a patient.” Ex. 1001, 33:42–47. Petitioner cites Ott ’095 as teaching this limitation. Pet. 40–47. Patent Owner does not dispute that the cited art teaches this limitation.

Figures 1 and 2 of Ott ’095 are reproduced below.



Figures 1 and 2 of Ott '095 depict a plurality of apertures in the outer surface of the distal portion of the outer tubular member and the lateral discharge of insufflation gas. The related description in Ott '095 states:

A spaced plurality of apertures 19 is defined within the exterior of the body surface of the cylindrical member 11. The plurality of apertures 19 are regularly spaced from one another and extend at least partially from the distal end 14 toward the proximal end 12 of the trocar sleeve.

* * * *

An insufflating fluid, “F”, which may be gas, liquid containing drugs, anesthetic or other substances placed or mixed with a pharmaceutically acceptable carrier or any combination thereof. The fluid “F” is delivered under pressure from an external source via inlet port 15, travels through the annular fluid flow chamber 30 and is discharged at below a “jet streaming velocity” through the plurality of apertures 19 as indicated by the arrows.

Ex. 1009 ¶¶ 18, 21. The cited art teaches all the elements of the fourth limitation of claim 1.

The fifth or “cooperate to enclose” limitation of claim 1 recites, “the distal end portion of the outer tubular member and the distal end portion of the inner tubular member **cooperate to enclose** the insufflation conduit such that the humidified insufflation gas is discharged only from the plurality of apertures.” Ex. 1001, 33:48–52 (emphasis added). Petitioner cites Mantell and Ott '095 as teaching the elements of the “cooperate to enclose” limitation of claim 1. Pet. 47–49. Patent Owner argues the cited art fails to teach this limitation. Resp. 18–24.

Petitioner relies on Figures 4 and 6 and the related descriptions of Mantell as teaching the elements of the “cooperate to enclose” limitation. Pet. 47–49. Petitioner contends, “Mantell discloses that the distal end portions of outer tubular member 78 and inner tubular member 90 are sealed

together with silver solder so as to cooperate to enclose the insufflation conduit 74.” *Id.* at 47. Figures 4 and 6 of Mantell are reproduced below.

FIG. 4

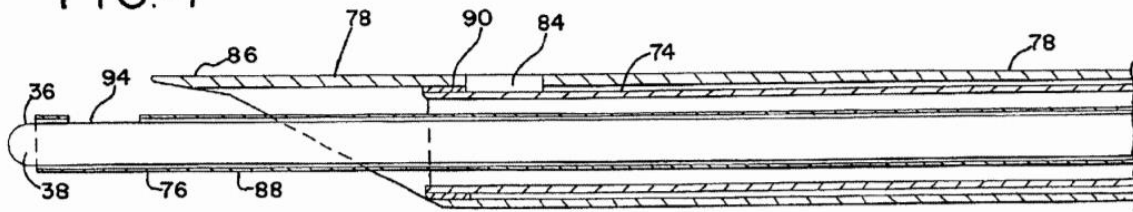
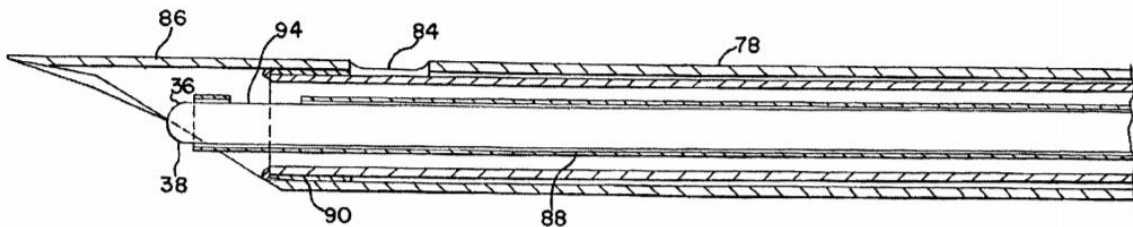


FIG. 6



Figures 4 and 6 depict the distal end portions of a surgical instrument with the obturator 38 extended and retracted, respectively. *Id.* at 3:26–27, 3:30–31. Mantell states, “silver solder is applied to the housing 78 and wall 90 distally of the opening 84. Silver solder is also applied to the housing 78 and wall 90 proximally of opening 82. The silver solder seals the chamber 74 at distal and proximal ends thereof.” *Id.* at 6: 19–23.

Petitioner also contends, “Mantell further teaches that because the insufflation conduit is enclosed in this manner, gas can only exit insufflation conduit 74 through the aperture 84, and not through the central lumen or chamber 76 (which, unlike chamber 74, is in fluid communication with the central lumen).” Pet. 47. Mantell states:

When both stopcocks 54 and 72 are open at the same time, the fluids associated with the stopcocks flow within the Verres needle 20 do not intermingle within the needle 20 since the annular walls 78 and 90 do not define a volume of space that is

common of any volume of space defined by the annular walls 36 and 88. Accordingly, the chambers 74 and 76 are isolated from one another so they are permanently not in fluid communication with one another.

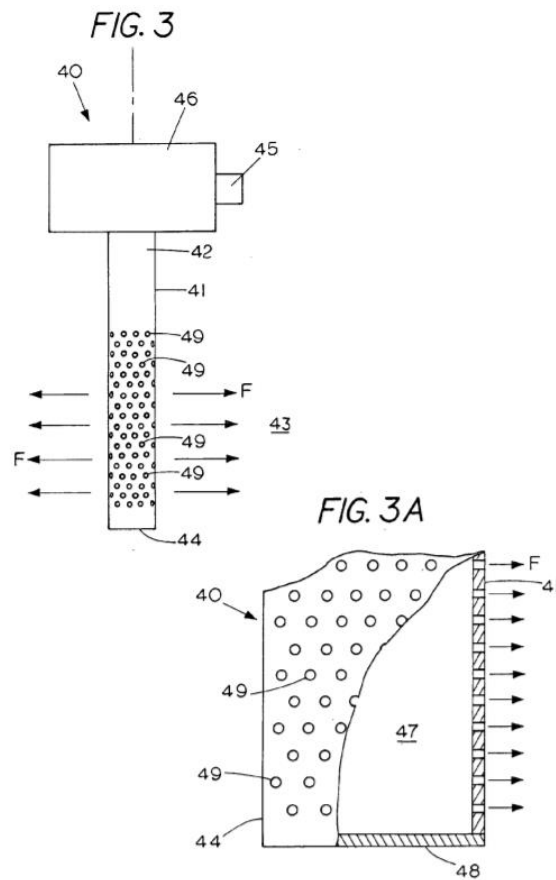
Ex 1005, 6:66–7:6.

Petitioner contends it would have been obvious to modify Ott '095 so that its inner and outer tubes “cooperate to enclose” the space between them.

Pet. 47–49. The Petition states:

Although Ott '095 does not expressly disclose that the distal end of the insufflation conduit 30 is enclosed, that disclosure is expressly made by Mantell as discussed above. Moreover, Ott '095 does disclose sealing the end of the trocar with lateral apertures in the embodiment of Figure 3. For the reasons discussed . . . a POSITA would be motivated to modify Ott '095 to realize the benefit of Mantell's enclosed insufflation conduit in the similar dual-lumen trocar disclosed by Ott '095 [as depicted in Figures 1 and 2]. Thus, this limitation would be disclosed when Ott '095 and Mantell are combined in this manner. Ex. 1003, ¶ 155.

Id. at 47–48. Figures 3 and 3A of Ott '095 are reproduced below.



Figures 3 and 3A depict a trocar sleeve with a plurality of fluid ports or apertures 49 along its exterior surface and in which the distal end 44 is closed by end member 48 blocking the end of cylindrical member 41. Ex. 1009 ¶¶ 22–23. Figures 1 and 2 of Ott '095 depict a dual-lumen device with a plurality of apertures. *Id.* at ¶¶ 18–21.

Patent Owner argues that neither Mantell nor Ott '095 discloses the “cooperate to enclose” limitation “as properly construed.” Resp. 18. As noted above, we have construed “cooperate to enclose” recited in independent claims 1, 4, and 7 as “work together to close in” as originally proposed by Patent Owner. However, as discussed above, we disagree with Patent Owner’s contention that inner and outer tubes whose distal ends are joined via soldering, as taught by Mantell, do not cooperate to enclose the

space between them. *See id.* at 18–24.

Patent Owner specifically argues that “Mantell’s tubular members are concentric and parallel; i.e., they remain spaced apart by a constant distance of approximately 0.0080 inches along their length” and “that it is the silver solder plug, rather than the claimed cooperation of the distal ends of tubular members 78 and 90, that seals the insufflation conduit 74.” *Id.* at 20. We disagree. As noted in our Decision to Institute, the construction of “cooperate to enclose” as “work together to close in” “does not exclude the use of agents (such as the silver solder taught in Mantell) to bond the two elongate members together or to plug the opening between them in order to provide a fluidic seal at the distal end of the insufflation conduit.” Dec. Inst. 9.

Mantell’s use of silver solder to bond two tubular members and to plug the conduit between them supports, rather than contradicts, a finding that the two members work together to close in the conduit. *See* Pet. 47 (citing Ex. 1003 (Dubrul Decl.) ¶ 154). Indeed, Patent Owner concedes that using a third element such as an adhesive to bond two other elements does not preclude a finding that the two elements “cooperate” or “work together.” Tr. 17 (“You can have a third part, a third element, if you will, but that doesn’t preclude, it doesn’t relieve the requirement for the two parts that are in the claim to work together.”); *id.* at 18 (“So our position is not that some third element such as an adhesive precludes cooperation, but something more is required to have cooperation.”).

Moreover, Patent Owner concedes that adhesively bonded parts or parts that are solvent, heat, or ultrasonically welded are cooperating parts because they “are sized and shaped to fit together (i.e., to mate) and are

either in direct physical contact or very close physical proximity.” Resp. 11–14 (citing Ex. 2012 ¶¶ 54–61). Patent Owner’s argument is supported by the testimony of Dr. Lipson, who testifies that a person skilled in the art would have understood that: (a) adhesive bonding involves “joining together two parts that are sized and shaped to overlap to improve joint formation,” (b) “[s]olvent welding unites parts by altering their surfaces in some form and allowing the materials to flow together,” and (c) “[h]eat welding is a process in which surfaces of parts are heated and . . . once the interfaces are sufficiently melted or softened, they are brought together under pressure to form . . . a permanent physical bond, or weld.” Ex. 2012 ¶¶ 56, 57, 59. Moreover, Dr. Lipson testified that in each of these examples, “the cooperating parts are sized and shaped to fit together (i.e., to mate) and are either in direct physical contact or very close physical proximity,” and “fit within the generally understood meaning of ‘cooperate’ in the medical device arts of cooperating parts.” *Id.* ¶¶ 61–62.

Accordingly, we find Mantell’s teaching of joining two tubular members together with silver solder to form the enclosure of the distal end portion of the insufflation conduit expressly teaches the two tubular members “cooperate to enclose” the insufflation conduit as that term has been construed. See Reply 17; Ex. 1037 (Rebuttal Declaration of William Dubrul) ¶¶ 58–60. As Patent Owner admits, Mantell’s tubular members are concentric, parallel, and closely “spaced apart by a constant distance of approximately 0.0080 inches along their length.” Resp. 20. And as Dr. Lipton testifies, parts that are “sized and shaped to fit together (i.e., to mate) and are either in direct physical contact or very close physical proximity,” “fit within the generally understood meaning of ‘cooperate’ in the medical

device arts of cooperating parts.” Ex. 2012 (Lipson Decl.) ¶¶ 61–62. We, therefore, find Mantell teaches “the distal end portion of the outer tubular member and the distal end portion of the inner tubular member cooperate to enclose the insufflation conduit such that the humidified [or conditioned] insufflation gas is discharged only from” the aperture³ in the distal end portion of the device. See Pet. 47–49 (citing Ex. 1003 (Dubrul Decl.) ¶ 154).

Accordingly, we find the cited art teaches all the elements of the “cooperate to enclose” limitation of claim 1. And, for the reasons discussed, we find that the combination of Mantell, Ott ’095, and Ott ’474 teach all the limitations of claim 1 of the ’372 patent.

Claim 4

Independent claim 4 is directed to “[a] system for delivering humidified insufflation gas.” Ex. 1001, 33:61–34:22. The system of independent claim 4 comprises 2 components: (1) a trocar assembly (defined using language substantially identical to that of claim 1); and (2) a source of humidified insufflation gas. Petitioner relies on its presentation with regard to claim 1 for showing that the cited art teaches the limitations of claim 4. See Pet. 55–58. Patent Owner does not specifically address claim 4 and,

³ Mantell teaches an aperture. Ex. 1005, Fig. 4 (opening 84), 4:35–37. The claims of the ’372 patent recite “a plurality of apertures.” Thus, this limitation is directed to a duplication of parts shown in Mantell. Even if Ott ’095 did not teach a plurality of apertures, the recited duplication of a part taught by Mantell would not render the claimed structure patentable through the recitation of a plurality (i.e., two or more) of apertures. See *In re Harza*, 274 F.2d 669, 774 (CCPA 1960) (“It is well settled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced, and we are of the opinion that such is not the case here.”).

thus, does not contend that the differences between claim 4 and claim 1 are material to patentability. *See generally* Resp.

The first element of claim 4 is a “trocar assembly” having the same structural characteristics as claim 1. *Compare* Ex. 1001, 33:61–34:22 *with id.*, 33:30–52. Mantell states, “the present invention can be applied to other insertion devices, such as trocars.” Ex. 1005, 10:59–60. Ott ’095 is titled, “Trocar Sleeve.” Ex. 1009, (54). For the reasons discussed in detail above with regard to claim 1, we agree with Petitioner’s evidence and argument presented with respect to claim 4 and find that the cited art teaches all the limitations of claim 4, including a source of humidified insufflation gas as taught by Ott ’474.

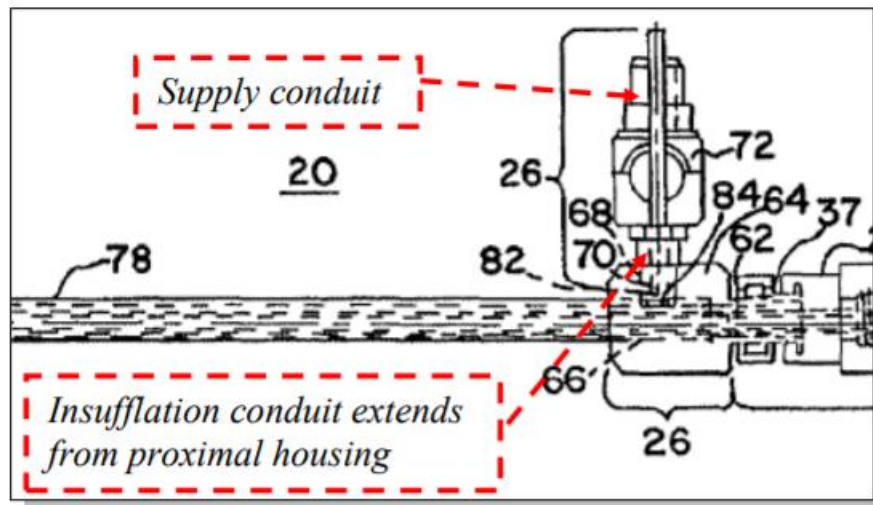
Claim 7

Independent claim 7 is directed to “[a] surgical access device” (as is claim 1). Ex. 1001, 34:30–52. The limitations of the devices of independent claims 7 and 1 are identical except for 2 word differences: (1) **humidified** (claim 1) vs. **conditioned** (claim 7) insufflation gas; and (2) **laterally** (claim 1) vs. **radially** (claim 7) discharged insufflation gas. Petitioner relies on its presentation with regard to claim 1 for showing that the cited art teaches the limitations of claim 7. *See* Pet. 60–63. Patent Owner does not specifically address claim 7 and, thus, does not contend that the differences between claim 7 and claim 1 are material to patentability. *See generally* Resp. Moreover, we agree with Petitioner that the combination of Mantell, Ott ’095, and Ott ’474 accounts for these differences between claim 1 and claim 7. *See* Pet. 60–63. For the reasons discussed in detail above with regard to claim 1, we agree with Petitioner’s evidence and argument presented in the Petition and find that the cited art teaches all the limitations of claim 7.

Claims 2, 5, and 8

Claim 2 depends from claim 1 and recites, “the insufflation conduit extends from a housing at the proximal portion of the surgical access device, the housing in communication with a supply conduit to facilitate supply of the humidified insufflation gas to the insufflation conduit.” Ex. 1001, 33:53–57. Claim 5 depends from claim 4 and is the same as claim 2 except that “surgical access device” is replaced with “trocar assembly.” *Id.* at 34:23–27. Claim 8 depends from claim 1 and is the same as claim 2 except that “humidified insufflation gas” is replaced with “conditioned insufflation gas.” *Id.* at 34:53–57. Petitioner cites Mantell and Ott ’095 as teaching the “housing” and “supply conduit” limitations recited in claims 2, 5, and 8. Pet. 49–52, 58–59, 63. Patent Owner does not argue that the limitations recited in claims 2, 5, and 8 are not taught by the cited art or present any argument directed specifically to claims 2, 5, and 8. *See generally* Resp.

With regard to the limitations recited in claims 2, 5, and 8, Petitioner presents an annotated excerpt of Figure 1 of Mantell (reproduced below).



Pet. 50. Petitioner argues this annotated excerpt of Figure 1 of Mantell depicts, “insufflation conduit 74 extend[ing] from the device housing via

Claims 3, 6, and 9

Claim 3 depends from claim 1 and recites “the source of humidified insufflation gas is external to the surgical access device.” Ex. 1001, 33:58–60. Claim 6 depends from claim 4 and recites “the source of humidified a [sic] insufflation gas is external to the trocar assembly.” *Id.* at 34:28–29. Claim 9 depends from claim 7 and recites “the source of conditioned insufflation gas is external to the surgical access device.” *Id.* at 34:58–60. Petitioner cites Mantell, Ott’474 and Ott ’095 as teaching an external source of humidified or conditioned insufflation gas. Pet. 52–54, 59–60, 63–64. Patent Owner does not dispute that the limitations recited in claims 3, 6, and 9 are taught by the cited art or present any argument directed specifically to claims 3, 6, and 9. *See generally* Resp.

Mantell states, “[a]n insufflating gas is then delivered to the abdominal cavity from a gas supply detachably connected to the Verres needle.” Ex. 1005, 1:39–41. Ott ’474 states, “[t]he present invention provides an apparatus for treating gas prior to its use in a medical procedure comprising a housing that receives gas from an insufflator, a chamber within the housing having a humidification means” Ex. 1006, [57] (Abstract). Ott ’474 further states, “[t]he filtered and temperature/humidity conditioned gas 29 passes directly to a connector 26, designed to attach to a conventional trocar used to inflate the peritonea or other such gas delivery device for the particular medical procedure.” *Id.* at 9:18–22. Ott ’095 states, “[a]n insufflating fluid, ‘F’, which may be gas, liquid containing drugs, anesthetic or other substances placed or mixed with a pharmaceutically acceptable carrier or any combination thereof. The fluid ‘F’ is delivered under pressure from an external source via inlet port 15” Ex. 1009 ¶ 18.

We find the cited art teaches the limitations recited in claims 3, 6, and 9.

Claims 10 and 11

Claim 10 depends from claim 7 and recites “the conditioned insufflation gas is humidified insufflation gas.” Ex. 1001, 34:61–62. Claim 11 depends from claim 7 and recites “the conditioned insufflation gas is heated insufflation gas.” *Id.* at 34:63–64. Petitioner incorporates its presentation relating to claim 7 and cites Ott ’474 as teaching the conditioned insufflation gas is humidified and heated. Pet. 64–65. Patent Owner does not argue the limitations in claims 10 and 11 or present any argument specifically directed to claims 10 and 11. *See generally* Resp.

Ott ’474 “relates to a compact device for, and method of, **heating, humidifying** and filtering **insufflation gases**” and states “the present invention . . . provides a high-efficiency apparatus for **heating, humidifying** and filtering gas, thus allowing the gas to be delivered to the patient at an accurate temperature while also properly humidified and filtered.” Ex. 1006, 1:12–14; 3:31–35 (emphases added). Ott ’474 teaches the limitations recited in claims 10 and 11.

There is no dispute between the parties that the prior art teaches the limitations recited in claims 10 and 11. Patent Owner acknowledges the prior art teaches humidifying and heating insufflation gas and cites a prior art paper (Ex. 2007) that includes such teachings. *See* Resp. 45. The Response states:

The “known advantages” provided by heated and humidified insufflation gas identified in the Petition and in the ’474 patent itself are avoiding drying of the exposed tissue surface within the abdomen and the possibility of adhesion formation within the

peritoneal cavity. Petition at 17 (citing Ex. 1006 at 2:36–41); Ex. 2012 (Lipson Decl.) ¶ 98. This desiccation problem is also discussed in a paper co-authored by Ott that is cited in Ott ’479 at 2:62-67: “*Severe Local Hypothermia From Laparoscopic Gas Evaporative Jet Cooling: A Mechanism To Explain Clinical Observations*” (J. Soc. Laparoendoscopic Surg., August 1999 (Ex. 2007). This paper concludes that “[h]eating and hydrating the gas to a physiologic condition eliminates hypothermia and tissue desiccation.” Ex. 2007 at 171; *see also id.* at 177.

Id. We, therefore, find the combination of Mantell, Ott ’095, and Ott ’474 teaches discharging a conditioned insufflation gas that is a humidified and heated insufflation gas.

Motivation to Combine the Cited References

Petitioner presents reasoning why a person of ordinary skill in the art would have been motivated to combine Mantell, Ott ’095, and Ott ’474 in the manners asserted. Pet. 15–23. In particular, Petitioner contends that a person of ordinary skill in the art would have been motivated to combine the trocar of Mantell or Ott ’095, with the conditioned gas of Ott ’474, in order “to obtain the benefits associated with heated and humidified gas.” *Id.* at 18 (citing Ex. 1003 (Dubrul Decl.) ¶ 115). Petitioner argues that “[t]he structures and functions required to use conditioned (*e.g.*, heated and humidified) gas were well known, and a POSITA would have been capable of combining a gas heating or humidification system with a surgical access device already having a gas input (such as the trocars taught by Mantell and Ott ’095) with predictable results.” *Id.* (citing Ex. 1003 ¶ 116). Petitioner contends that such a modification would merely be the combination of familiar elements according to known methods to do no more than yield predictable results. *Id.* (citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398,

416 (2007)). Patent Owner does not dispute that a person of ordinary skill in the art would have been motivated to combine the trocars of Mantell and Ott '095 with the conditioned (humidified and heated) insufflation gas of Ott '474. *See generally* Resp. And, as shown above, Patent Owner acknowledges the prior art teaches humidifying and heating insufflation gas and cites a prior art paper (Ex. 2007) that includes such teachings. *See* Resp. 45.

Petitioner also contends that a person of ordinary skill in the art would have been motivated to modify the device of Mantell to include Ott '095's plurality of apertures. Pet. 19–22. In particular, Petitioner contends:

Because the use of a plurality of apertures in a separate lumen to disperse insufflation gas had well-known advantages, with regard to trocars generally and with regard to dual-lumen trocars specifically, a POSITA would have been motivated to supplement the single lateral aperture of Mantell with the plurality of apertures as taught by Ott '095 to obtain the benefits associated with the use of multiple apertures, such as reducing tissue damage due to jet streaming, more efficient insufflation gas distribution, and better dispersion of agents within the gas.

Id. at 20 (citing Ex. 1003 (Dubrul Decl.) ¶ 123). Petitioner again cites *KSR*, 550 U.S. at 417 (“if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond that person’s skill.”). Patent Owner does not dispute that a person of ordinary skill in the art would have been motivated to modify the device of Mantell to include Ott '095's plurality of apertures.

Petitioner further contends that a person of ordinary skill in the art would have been motivated to modify the device of Ott '095 to include Mantell's enclosed insufflation conduit. Pet. 21–22. In particular, Petitioner

argues that Mantell teaches sealing the insufflation chamber defined by inner and outer tubes in a dual-lumen trocar so that “the insufflation chamber and the central lumen ‘are isolated from one another so they are permanently not in fluid communication with one another.” *Id.* at 21 (quoting Ex. 1005, 7:4–6). This allows one gas to be introduced through the insufflation conduit, “while another gas or instrument is provided through the central lumen without impacting the first gas dispersed from the insufflation conduit.” *Id.* at 21–22 (citing Ex. 1005, 8:6–20, 8:56–9:2). Petitioner further argues that Ott ’095 also teaches a dual-lumen trocar that isolates the insufflation chamber from the central lumen, but “does not expressly disclose that the distal end of the insufflation conduit is sealed or enclosed.” *Id.* at 21–22. Petitioner further argues that Ott ’095 teaches the need to “avoid activity in the central lumen affecting gas dispersion from the insufflation conduit.” *Id.* at 22 (citing Ex. 1009 ¶¶ 8, 10, 23). Petitioner, therefore, contends “[g]iven Ott ’095’s goal of isolating the central lumen from the insufflation conduit, a POSITA would thus also be motivated to modify Ott ’095 to enclose the end of the insufflation conduit at the distal end in order to further isolate the central lumen from the insufflation conduit, as taught in Mantell.” *Id.* at 22 (citing Ex. 1003 (Dubrul Decl.) ¶ 126).

Patent Owner argues that Petitioner fails to establish a motivation for modifying Ott ’095 by enclosing the insufflation gas conduit as taught by Mantell. Resp. 33–47. We first note, as Patent Owner acknowledges, that this argument is a challenge to only Petitioner’s “second theory” of obviousness.⁴ Resp. 1, 33–34, 46. Accordingly, even if we were to agree

⁴ Petitioner’s “first theory of obviousness” is based on modifying the device in Mantell to include a plurality of apertures as taught by Ott ’095. Pet. 14

with Patent Owner in this regard, we would still conclude that claims 1–11 have been established to be unpatentable under Petitioner’s first theory of obviousness because Petitioner has provided a rational reason to modify Mantell to provide a plurality of apertures in the outer tube of the insufflation conduit in view of the teachings of Ott ’095.

Moreover, we do not agree with Patent Owner’s contention that Petitioner has failed to establish a motivation to modify the embodiment of the device depicted in Figures 1 and 2 of Ott ’095, based on the teachings of Mantell, to enclose the distal end portion of the insufflation conduit such that the insufflation gas is discharged only from the plurality of apertures. Patent Owner first argues that Mantell “does not associate any advantage with sealing the end of the insufflation conduit with silver solder.” Resp. 34. However, the issue is not whether Mantell expressly discloses the advantages of sealing the end of the insufflation conduit, but whether a person of ordinary skill in the art would understand Mantell to teach such advantages. *See In re Lemelson*, 397 F.2d 1006, 1009 (CCPA 1968) (“The use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain.”).

Patent Owner next argues that a person skilled in the art would not modify Ott ’095 to seal the ends of its insufflation conduit as taught by

(“Mantell discloses a surgical access device teaching each limitation of the challenged claims with two exceptions: that the insufflation gas is humidified, and that the gas is discharged from a plurality of apertures, rather than a single aperture.”); Resp. 33 (“[T]he Petition fails to establish the obviousness of the Challenged Claims under it[s] first theory of modifying Mantell’s Device to include Ott ’095’s plurality of apertures.”).

Mantell because Ott '095 teaches a solution to a different problem—that of preventing jet streaming when an instrument is placed in the central lumen of a dual-lumen trocar. Resp. 36–41. Therefore, Patent Owner argues, there would be “no motivation to incorporate Mantell’s sealed insufflation conduit into [the Figure 1 and 2 embodiment of Ott '095] because it cannot improve the device by eliminating jet streaming because there is no remaining jet streaming problem” to eliminate. *Id.* at 41.

We are equally unpersuaded by this argument, which depends upon the separate teachings of Mantell and Ott '095, rather than how a person of skill in the art would understand the combined teachings of these references. See *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991) (“The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art.”); see also *In re Merck & Co.*, 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986) (“Non-obviousness cannot be established by attacking references individually where the [challenge] is based upon the teachings of a combination of references. . . . [A reference] must be read, not in isolation, but for what it fairly teaches in combination with the prior art as a whole.”). Here, Petitioner sets forth reasons to combine the teachings of Mantell and Ott '095, namely “to avoid activity in the central lumen affecting gas dispersion [and causing jet streaming] from the insufflation conduit” and “to enclose the end of [Ott '095’s] insufflation conduit at the distal end in order to *further* isolate the central lumen from the insufflation conduit, as taught by Mantell.” Pet. 22 (citing Ex. 1003 ¶ 126). We find these are sufficient reasons to combine the teachings of Ott '095 and Mantell.

For the reasons discussed above, we find the rationales provided by Petitioner for combining the teachings and suggestions of the cited art are reasonable, and are sufficient to support combining the relevant teachings and suggestions in the manner argued by Petitioner.

III. MOTION TO STRIKE

Pursuant to Board authorization (Paper 21), Patent Owner filed a motion to strike Exhibits 1014, 1016, 1018–20, and 1023–36; paragraphs 74–77, 79–82, 84–86, and 88–89 of Exhibit 1037 (Rebuttal Declaration of William Dubrul); and the corresponding portions (or the entirety) of the Reply “on the grounds that this material constitutes new theories of invalidity that were improperly presented for the first time in Petitioner’s reply (Paper 16).” Paper 24. We did not rely on Exhibits 1014, 1016, 1018–1020, and 1023–36; or paragraphs 74–77, 79–82, 84–86, and 88–89 of Exhibit 1037 (Rebuttal Declaration of William Dubrul); or the corresponding portions of the Reply in reaching this decision. Accordingly, Patent Owner’s motion to strike is dismissed as moot.

IV. CONCLUSION

For the foregoing reasons and considering the evidence and arguments submitted by the parties, we determine that a preponderance of the evidence establishes claims 1–11 of the ’372 patent would have been obvious over the combination of Mantell, Ott ’095, and Ott ’474.

V. ORDER

In consideration of the foregoing, it is
ORDERED that claims 1–11 of the '372 patent are unpatentable; and
FURTHER ORDERED that Petitioner's Motion to Strike (Paper 24)
is dismissed as moot.

Because this Decision is final, a party to this proceeding seeking
judicial review of the Decision must comply with the notice and service
requirements of 37 C.F.R. § 90.2.

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