
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GCE GAS CONTROL EQUIPMENT INC.,

Petitioner,

v.

VBOX, INC.,

Patent Owner.

Inter Partes Review No. IPR2023-00326
Patent No. 11,389,614

PATENT OWNER’S SUR-REPLY¹

¹ This filing is timely. See Doc. 14 (Notice of Joint Stipulation modifying due date for Sur-Reply to February 1, 2024).

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TABLE OF EXHIBITS

Exhibit	Description
2001	Declaration of Orhan Talu, Ph.D.
2002	CV of Orhan Talu, Ph.D.
2003	Transcript of Deposition of Kent Knaebel, Ph.D.
2004	Article titled “From Drawing Board to Design Excellence,” dated 2006 (Exhibit 5 from Knaebel Deposition)
2005	U.S. Patent No. 5,226,933 to Knaebel et al. (Exhibit 6 from Knaebel Deposition)
2006	Government Accountability Office Report to the Subcommittee on Courts, Intellectual Property, and the Internet, Committee on the Judiciary, House of Representatives
2007	Transcript of Deposition of Geoffrey Deane, Ph.D. in <i>GCE Gas Control Equipment, Inc., v. 3B Medical Manufacturing, LLC</i> , 8:22-cv-02550-TDC (D. Maryland)
2008	Errata sheet to the deposition transcript of Orhan Talu, Ph.D.
2009	Transcript of Second Deposition of Kent Knaebel, Ph.D.

I. INTRODUCTION

In a belated effort to demonstrate that *Deane* (Ex. 1004) renders the claims obvious, Petitioner either ignores the claim language, or relies on *Deane* for teachings that are neither disclosed nor suggested by *Deane*. In doing so, Petitioner has failed to prove, by a preponderance of the evidence, that the claims are unpatentable. Petitioner seems to believe that all it needs to do is prove that its positions are not “impossible.” *See* Reply at page 1. A mere possibility falls far short of the preponderance of the evidence.

Petitioner also raises several improper new arguments in an effort to retreat from theories that Patent Owner has already proven to be flawed. As an example, Patent Owner has shown that the removal direction limitations are not taught or suggested by *Deane*. Now, despite not proposing a construction in the Petition, Petitioner seeks a construction of a sub-phrase of the removal direction limitations. Not only is Petitioner’s late construction an improper new argument, it is not the correct construction.

For the below reasons, and for the reasons set forth in the Patent Owner Response and the testimony of Dr. Orhan Talu, Petitioner’s patentability challenges should fail.

II. REMOVAL DIRECTION LIMITATIONS

The removal direction limitations of claims 1-11 recite “a separation cartridge selectively removable from a receptacle by movement relative to the receptacle in a first direction.” *See* ’614 Patent at Claim 1. The claims also recite that the separation cartridge comprises “an inlet” and “an outlet” oriented in a “second direction.” *Id.* The “first direction” is opposite the “second direction” that the “inlet” and “outlet” are oriented. *Id.*

In the Petition, Petitioner originally took the position that the claimed receptacle read on either *Deane’s* manifold or the combination of *Deane’s* manifold and shell. *See* Petition (Paper 1) at pages 32-43. However, as noted in the Patent Owner Response (Paper 13), and supported by the Declaration of Dr. Talu (Ex. 2001), Petitioner has not proven that *Deane’s* housing (which Petitioner alleges meets the claimed cartridge) is removable from either alleged receptacle by movement in a “first direction.” *See* Patent Owner Response at pages 33-46. In general, Petitioner either ignored or failed to appreciate that *Deane’s* alleged cartridge rests on a chassis, which rests on a surface such as the floor, which prevents movement in the “first direction.” *Deane* otherwise lacks any teachings regarding how, precisely, the alleged cartridge might be detached from the manifold and shell. *Id.*

This Board has already correctly indicated that Petitioner has not demonstrated that *Deane* teaches the removal direction limitations in the Institution Decision in this case (Paper 10), and in the Institution Decision and Decision on Rehearing in related IPR2023-00527 (Papers 9 and 11).

On Reply, Petitioner makes three main arguments. First, Petitioner argues that Patent Owner is reading the claims too narrowly, and that any relative movement between *Deane*'s alleged cartridge and alleged receptacle can meet the removal direction limitations. Second, Petitioner argues that even if the claims require the cartridge to be able to be moved, then *Deane* meets that limitation under a “disassembly” theory. Third, Petitioner argues one would modify *Deane* in view of *Berntson* to reach this aspect of the claims. Petitioner is wrong on all accounts.

A. Claims 1-11 do not recite mere “relative movement”

The removal direction limitations state, “a separation cartridge selectively removable from a receptacle by movement relative to the receptacle in a first direction.” See '614 Patent at Claim 1. According to the plain language of this claim phrase, the separation cartridge is required to be removable from the receptacle by movement of the cartridge relative to the receptacle. A stationary cartridge, and a moveable receptacle, does not meet the claims. This is how this Board correctly understood the removal direction limitations, both in the Institution Decision in this

proceeding (see Paper 10 at page 34), and in the parallel related IPR (see IPR2023-00527, Paper 9 at page 21; and Paper 11).

Petitioner now argues that the claims only require “relative, not absolute, movement.” See Reply at page 12. This is a new argument. It is not responsive to Patent Owner’s argument, because Patent Owner never argued that the claims require absolute movement of the cartridge. Petitioner is seeking a new claim construction in light of Patent Owner’s showing, and the Board’s institution decisions in this IPR and the related IPR, that *Deane* does not meet the removal direction limitations. This is improper. *MModal LLC, v. Nuance Communications, Inc.*, IPR2018-01355, Paper 45 at page 23 (“we require a petition to identify ‘[h]ow the challenged claim is to be construed’ (37 C.F.R. § 42.104(b)(3)), as well as ‘[h]ow the construed claim is unpatentable’ (37 C.F.R. § 42.104(b)(4)).”).

Regardless, in response to Petitioner’s belated “relative movement” argument, Patent Owner can only reiterate so many times that the claims do not recite “relative movement.” The removal direction limitations specify that the separation cartridge itself must be the structure that is able to be removed from the receptacle by “movement relative to” the receptacle. The phrase “movement relative to” must be considered in the context of the claim language as a whole, the specification, and the file history. Petitioner’s interpretation of “movement relative to” as mere “relative movement” does not meet this standard.

In arguing that the claims cover mere “relative movement,” Petitioners are ignoring the frame of reference for the movement of the cartridge that is specified in the claims. As explained by Dr. Talu, “the frame of reference is the receptacle.” *See* Ex. 1074 at page 22 (native cite 82:13-19). Dr. Knaebel also admitted that “if one places the frame of reference on the receptacle, then the cartridge moves away from it.” *See* Ex. 2009 at pages 114:14-116:2. Since the claims do place the frame of reference on the receptacle (to use Dr. Knaebel’s words), there is no meaningful dispute here that Petitioner’s theory is incorrect.

Petitioner is also incorrect when it states that “PO argues this limitation would cover only absolute movement of the cartridge away from a stationary receptacle in a first direction.” *See* Reply at pages 12-13. Patent Owner has never argued that the receptacle must be stationary. Rather, Patent Owner’s position is simply that the cartridge cannot be stationary.

Petitioner identifies three possible techniques for removing a cartridge from a receptacle. *See* Reply at page 17. The claims expressly rule out Petitioner’s example (Y), because in that example the cartridge is stationary. The claims expressly require the cartridge to be removable by being moved relative to the receptacle. The claims encompass Petitioner’s examples (X) and (Z) because in those examples the cartridge is removable by moving relative to the receptacle. However, *Deane* does not disclose or suggest examples (X) or (Z).

While Petitioner has cast this aspect of its argument as a claim construction controversy, Patent Owner does not believe an express claim construction is needed. The plain and ordinary meaning of the removal direction limitations resolves any alleged dispute between Petitioner and Patent Owner. Further, Petitioner did not raise the removal direction limitations for construction in this Petition, its parallel petition (*see* IPR2023-00527 at Paper 1), or in the parallel district court proceedings, despite extensive and now complete claim construction briefing (*see* claim construction briefing, Exs. 1070-1073).

B. Deane’s alleged cartridge is not removable by movement relative to the alleged receptacle

There is no disclosure in *Deane* as to how, precisely, the alleged receptacle and alleged cartridge are detached from one another. All Petitioner presents is its own speculation as to how one might detach *Deane*’s alleged receptacle from the alleged cartridge. However, as the party challenging patentability, Petitioner must do more than speculate. *See* 37 CFR § 42.1(d) (petitioner has the burden of establishing unpatentability by a “preponderance of the evidence”). Even though it is not Patent Owner’s burden to do so, Patent Owner has provided a reasoned explanation, based on the disclosure of *Deane* and supported by Dr. Talu, that one would likely detach *Deane*’s alleged receptacle by moving it while the alleged cartridge is stationary, contrary to what is claimed. *See* Patent Owner Response at

pages 36-44. The absence of any express teachings in *Deane*, coupled with Patent Owner's reasoned explanation suggesting the removal direction limitations would not be met by *Deane*, proves that Petitioner has not met their burden of establishing that *Deane* meets the claims.

As noted in the Patent Owner response, one of the main issues with the Petition is that it did not acknowledge, let alone address, that *Deane*'s chassis would prevent the alleged cartridge from being moved in the "first direction." See Patent Owner Response at pages 37-38.

Now, in order to try to avoid the clear teachings of *Deane* and the issue with the chassis, Petitioner argues on Reply that the alleged manifold and alleged cartridge can be removed from the chassis, and then, at that point, the alleged cartridge can be removed from the alleged manifold to meet the removal direction limitations. See Reply at pages 15-18. This "disassembly" argument was not presented in the Petition or in Dr. Knaebel's original Declaration. At best, Dr. Knaebel described the manner in which certain of *Deane*'s components are assembled—not disassembled. See Ex. 1003 at ¶ 355. Dr. Knaebel's discussion of how certain components are allegedly assembled (importantly, not disassembled) falls short of teaching the precisely-claimed removal direction limitations.

Further, the "disassembly" argument is not responsive to any argument by Patent Owner, but is instead an attempt to take a second bite at presenting a new

theory of invalidity once the theories in the original Petition were proven to be flawed. *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1329-31 (Fed. Cir. 2019) (rejecting a new theory of unpatentability where petitioner argued for the first time in its reply that a reference disclosed a limitation); *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1364 (Fed. Cir. 2015) (reply cited previously unidentified embodiments of the prior art reference “to make a meaningfully distinct contention.”).

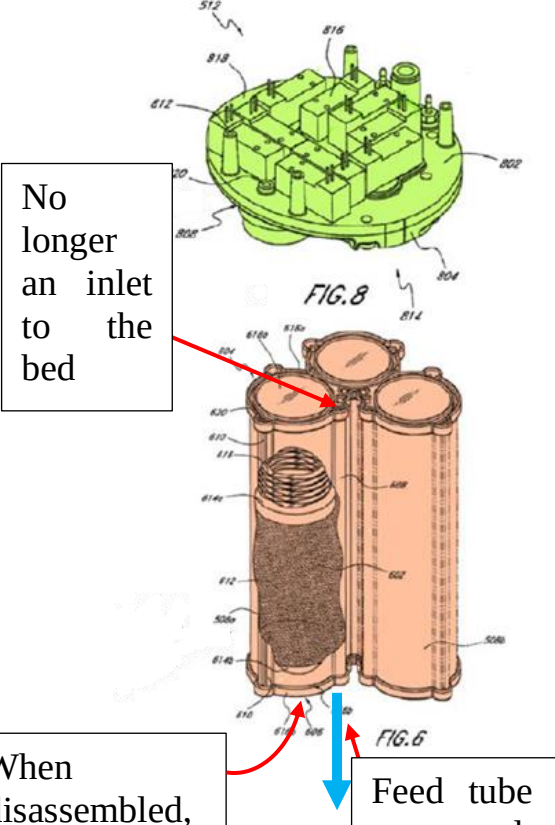
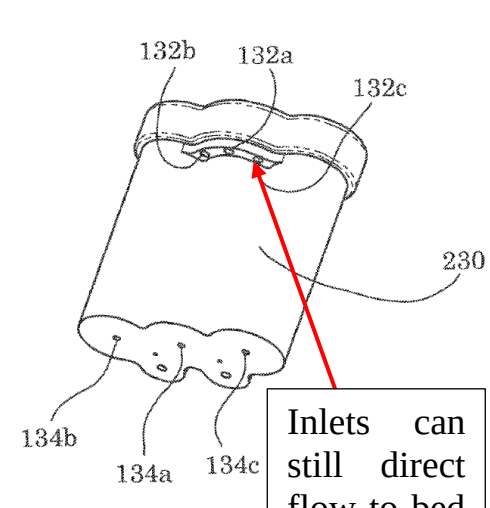
Regardless, *Deane* does not teach any specific technique for detaching its housing from its manifold after those components are removed from the chassis. As one potential issue, it is not clear how or if *Deane*’s housing/manifold assembly could be supported in a way that would allow the housing to be removed from the manifold according to the removal direction limitations. As noted by Dr. Talu, the springs within *Deane*’s housing would bias the manifold upward, away from the housing, making it such that removing the housing by moving it away from the manifold would either be difficult or impossible. See Patent Owner Response at page 42 citing Ex. 2001 at ¶ 129. Further, *Deane* appears to teach that long screws attach the housing to the chassis and also affix the two separable plates of the manifold together and to the housing. See Patent Owner Response at pages 41-43. So, if the housing/manifold were removed from the chassis together, then the two unsecured plates of the manifold would be loosely sitting on top of the housing. *Id.* All of this

suggests that Petitioner's new theory does not reflect *Deane's* reality. Therefore, not only is it a new argument, but it is not supported by any evidence.

Further, while Petitioner uses the term "partial disassembly," the term "partial" is a misnomer. In practice, if *Deane's* shell, circuit board, manifold, and housing are removed from the remainder of its unit, then *Deane* has been largely if not fully disassembled. Dr. Knaebel agreed. *See* Ex. 2009 at pages 49:5-50:7.

Petitioner's desperation for a new theory of unpatentability has presented another issue. Namely, when *Deane's* manifold and housing are disassembled and removed from the chassis, *Deane's* feed tube no longer functions as an "inlet" because it is no longer able to direct fluid to the bed. Dr. Knaebel agreed. Ex. 2009 at 39:5-15 ("Q. When you take the housing and manifold off of the chassis as you suggest, what you're calling the inlet, that feed tube can no longer provide fluid to the absorbent [sic] bed at that point, correct? A. If by that you mean -- if you, say, provided gas to the inlet at the top, it would -- yes, the gas would flow downwards, out and not contact the absorbent [sic]. Q. Right. It would go out the bottom of the feed tube into the atmosphere? A. Yes, sir.").

This point may be clearer with reference to *Deane* in its disassembled state, in comparison with the cartridge of the '614 Patent when removed from the receptacle.

Deane, disassembled (see Reply at page 2, with annotations added by Patent Owner)	'614 Patent, when removed from receptacle (see '614 Patent at Figure 15)
 No longer an inlet to the bed When disassembled, true inlet is here Feed tube is connected to atmosphere, cannot direct flow to bed	 Inlets can still direct flow to bed even when cartridge is removed

Claim 1 plainly requires a “separation cartridge” to include “an inlet oriented in a second direction opposite the first direction” and “an outlet oriented in the second direction.” See '614 Patent at Claim 1. In the '614 Patent, the orientation and structure of the inlet and outlet of the separation cartridge does not change during removal.

Petitioner is so far down a line of argumentation aimed at meeting the removal direction limitations that Petitioner left the claimed “inlet” behind. While Patent Owner does not believe *Deane* supports Petitioner’s “disassembly” theory at all, even if one were to follow Petitioner’s line of argument, the argument collapses because *Deane*’s alleged separation cartridge no longer includes the claimed “inlet” in that “disassembled” state.

Petitioner also argues the removal direction limitations would have been obvious in light of an “art-recognized methodology.” See Reply at page 4. This is another new theory of obviousness that was not in the Petition, nor is it fully developed in the Reply. See MPEP § 2144 (“Simply stating the principle (e.g., ‘art recognized equivalent,’ ‘structural similarity’) without providing an explanation of its applicability to the facts of the case at hand is generally not sufficient to establish a prima facie case of obviousness.”); *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369-70 (Fed. Cir. 2016) (petition asserted that a single reference disclosed a limitation and then improperly argued in its reply that there was a motivation to combine references to arrive at that limitation.).

Dr. Knaebel also believes one could mount *Deane*’s internal structures (including the circuit board, manifold, housing, etc.) to the shell. See Ex. 1078 at ¶¶ 156-157. This is a new argument. Regardless, Dr. Knaebel admitted this configuration is not taught by *Deane*, and also admitted that *Deane* teaches that its

shell should be removed to access the internal components. *See* Ex. 2009 at 68:10-70:17.

C. Berntson does not cure the deficiencies in Deane

There is no disclosure in *Deane* as to how, precisely, the alleged receptacle and alleged cartridge are detached from one another. The same is true for *Berntson*. When these two teachings are combined, Petitioner has not moved the needle any closer to showing that one skilled in the art would have found the claimed combination to be obvious. Patent Owner also maintains that the two references are not properly combinable because the combination would move *Deane's* heat sensitive components closer to its heat generating components, contrary to *Deane's* teachings. *See* Patent Owner Response at pages 31-32.

It is also worth mentioning that Dr. Knaebel recently testified that *Berntson* does not even disclose a portable oxygen concentrator (POC), making its teachings even less relevant. *See* Ex. 2009 at 92:25-93:21. Dr. Knaebel's admission is inconsistent with how Petitioner has described *Berntson*. *See, e.g.*, Petition at page 28 (incorrectly stating that "*Berntson* teaches a POC.") and page 29 (incorrectly arguing that *Deane* and *Berntson* "relate to POCs.").

III. NON-CONTACT LIMITATIONS

Each independent claim of the '614 Patent recites the non-contact limitations. Independent claim 1, for example, recites "wherein the separation cartridge is

configured such that, when fluid flows through the separation cartridge, ... fluid flowing along the second line does not contact the adsorbent material of the bed.” See ’614 Patent at Claim 1. The “second line” is parallel to the first and second directions and passes through the inlet. Petitioner alleges that this feature is met by *Deane*, as shown by Petitioner’s annotated green line. See Petition at page 49. Yet, Petitioner’s green line passes through *Deane*’s feed tube and directly contacts adsorbent, which is contrary to the claim language. Dr. Knaebel testified that it would be impossible to draw the green line in Figure 6 without contacting adsorbent. See Ex. 2003 at 47:15-48:8. Petitioner did not attempt to address this glaring discrepancy in the Petition. Once Patent Owner raised the issue, Petitioner was forced to scramble and point to a litany of tenuous teachings in *Deane* which, in Petitioner’s view, suggest the green line would, in reality, not contact adsorbent despite clearly being drawn through adsorbent. Patent Owner even argued that Petitioner’s own evidence suggests that pre-beds were known, which provides a reason why *Deane* may be showing adsorbent in its feed tube. The fact is, *Deane* does not disclose, expressly or inherently, that its feed tube lacks adsorbent such that the green line would not contact adsorbent, as claimed. Each of Petitioner’s theories to the contrary are unsupported.

A. “Feed gas”

In Petitioner’s Reply to Patent Owner’s Preliminary Response, Petitioner argued that because *Deane* teaches “feed gas” flowing through its feed tube, that *Deane* does not have adsorbent in that location, because, as a matter of definition, a “feed gas” has not passed through adsorbent. See Reply to POPR at pages 1-2. Patent Owner completely dispelled this theory. See Sur-Reply at page 2. Dr. Knaebel agreed in his first deposition that “feed gas” could refer to gas that has passed through adsorbent. See Ex. 2003 at 64:7-9 (“Q. So you can - - you could refer to gas that has nitrogen removed as feed gas, correct? A. Yes.”). Dr. Knaebel attempted to walk back his admission, but in order to do so Dr. Knaebel ignored *Deane*’s incorporation by reference to Dr. Knaebel’s own patent. See *Deane* at ¶ [0035] (incorporating by reference U.S. Patent No. 5,226,933 to Knaebel (Ex. 2005), which refers to “feed gas” even after that gas passed through adsorbent); and see Ex. 2009 at 90:19-21 (“What I’ve understood is that the patent should be judged based on its own conventions, not based on anybody else’s, even mine.”). In other words, Dr. Knaebel is willing to ignore his own understanding and his own previous use of the term “feed gas” in order to maintain that *Deane* meets the claims. In sum, there is no support for Petitioner’s claim that *Deane*’s use of the term “feed gas” proves there is no adsorbent in *Deane*’s feed tube.

B. The lack of filters/springs

Petitioner also argues that *Deane's* feed tube would not have adsorbent because it lacks retaining disks and springs. *See* Reply at page 29. Patent Owner and Dr. Talu demonstrated that this theory was incorrect because not all adsorbents require disks and springs, including “monolithic adsorbents.” *See* Patent Owner's Response at pages 59-60, *citing* Ex. 2001 at ¶ 150. In response, Dr. Knaebel asserted that “neither Patent Owner nor Dr. Talu provide evidence that ‘monolithic adsorbents’ were a known alternative used in POCs as of 2004-2005.” *See* Ex. 1078 at ¶ 187. However, Dr. Knaebel quickly retreated during his second deposition, when presented with Petitioner's own exhibit (Ex. 1029, a patent to *Hill*), which explicitly demonstrates that monolithic adsorbents were known for use in POCs at the relevant time. *See* Ex. 2009 at 17:11-25 (“Q. In Paragraph 187, what you say is that there's no evidence that the monolithic absorbents [sic] were a known alternative, correct? A. That's correct. Q. And Hill existed as of 2004-2005, the Hill reference we were just talking about? A. Yes. Q. So monolithic absorbents [sic] were known for portable oxygen concentrators based on Hill, correct? MR. MASTERS: Objection. Asked and answered. A. It does say that, yes.”).

C. “Cut-out” view

In Dr. Knaebel's second Declaration, Dr. Knaebel refers to *Deane's* Figure 6 as a “cut-out” view. *See, e.g.*, Ex. 1078 at ¶¶ 176-178, 182. However, Patent Owner

is unsure which testimony of Dr. Knaebel to believe as during Dr. Knaebel's first deposition, he admitted that *Deane* does not refer to its drawing as a cut-out view. *See* Ex. 2003 at 58:14-18 ("I don't think it uses that term, no."). Regardless, taking Dr. Knaebel's new position that the drawing of *Deane*'s Figure 6 is a cut-out view as true, this actually supports Patent Owner's position that adsorbent is in the feed tube. A cut-out view, also known as a cutaway view, is a view where surface elements are removed to make internal features visible. So, if *Deane*'s Figure 6 is a cut-out view, then there is adsorbent in the feed tube.

Critically, Petitioner believes Figure 6 "is a 'cut out' view of housing 602." *See* Reply at page 27. But Figure 6 could be showing a cut-out view of the housing and feed tube, which would even more clearly show adsorbent in the feed tube.

Petitioner's reliance on *Deane*'s Figure 6 has Petitioner stuck between a rock and a hard place. Either Figure 6 is accurate and shows contact contrary to the claims, or Figure 6 is inaccurate, and therefore cannot fairly be relied upon as Petitioner has asserted elsewhere in this IPR. Petitioner cannot have it both ways.

IV. SPRINGS

Two dependent claims recite springs that are arranged on an opposite side of an adsorbent bed as what is shown in *Deane*. *See* '614 Patent at Claims 2 and 15. Specifically, claims 2 and 15 require springs to be arranged adjacent a "second end" of the adsorbent bed, which is opposite the "first end" adjacent the outlets. In *Deane*,

the spring is on the same side of the bed as the outlet. In order to meet the claims, Petitioner argues that one would move *Deane*'s spring to the bottom, or add a second spring to the bottom of *Deane*'s bed. See Petition at pages 51-53. Patent Owner, citing to Dr. Talu's testimony, explained that one would not simply move *Deane*'s spring to the bottom because it would introduce issues with loading the bed. See Patent Owner Response at pages 62-63; Ex. 1074 at pages 19-20 (native cite 74:21-77:1). Patent Owner and Dr. Talu further explained that adding a second spring to *Deane* would add cost and complexity without a tangible benefit. *Id.* In other words, doing so would be hindsight.

Dr. Knaebel opines, in his second Declaration, that "[i]nstalling adsorbent and a top retaining disk on a bottom retaining disk biased upward by a spring is a common and manageable task in the art." See Ex. 1078 at ¶ 199. Yet, neither Dr. Knaebel nor Petitioner cite a single reference explaining this allegedly simple task. Further, Dr. Knaebel admitted in his second deposition that adding a second spring would increase the "dead volume" in the housing. See Ex. 2009 at 86:22-87:5. Per *Deane*, dead volume, or head space, is "undesirable." See Ex. 1004 at ¶ [0067]. Consistent with Dr. Talu's testimony, adding a second spring to *Deane* is undesirable.

V. RECEPTACLE

The parties agree that a receptacle must “at least partially contain” something, which here is the separation cartridge. *See* Patent Owner Response at pages 47-48. Petitioner has identified two alleged receptacles in *Deane*—the manifold alone, or the combination of the manifold and shell. *See* Petition at pages 35-39. As noted in the Patent Owner response, *Deane*’s manifold does not at least partially contain the alleged separation cartridge—if anything, the opposite appears to be true. *See* Patent Owner Response at pages 48-49. Further, it is improper to deem the combination of *Deane*’s shell and manifold, together, to be the claimed receptacle, because those structures are independently moveable and otherwise distinct. *Id.* at pages 50-51.

In the Reply, Petitioner maintains that *Deane*’s drawings do indeed show the manifold “at least partially contain[ing]” the alleged cartridge. *See* Reply at page 21. However, Dr. Knaebel admitted during his deposition that *Deane* only ever describes the manifold as being “mounted” to the alleged cartridge. *See* Ex. 2009 at 78:11-13 (“Q. And the only description Deane provides for that is that the manifold is mounted, correct? A. Yes.”). In the absence of any written description in *Deane* supporting that its manifold acts as a receptacle, Dr. Knaebel applies a similar argument as with the non-contact limitations. Dr. Knaebel states that “[t]he diagrams show sort of in two dimensions but the 3D structure where one can anticipate how the housing 602 I think mates with the manifold.” *Id.* at 78:7-10. Dr. Knaebel has to

caveat his position with “sort of” while also “anticipat[ing]” how the alleged cartridge interfaces with the alleged receptacle. *Id.* In other words, Dr. Knaebel is guessing.

Petitioner now also presents an improper new argument that *Deane’s* manifold forms an “overhang” relative to the alleged cartridge. *See* Reply at page 22. Regardless, a mere “overhang” is not necessarily a receptacle. A structure that extends laterally outward of another does not necessarily “at least partially contain” the other structure.

VI. CLAIM CONSTRUCTION

Patent Owner will close by addressing Petitioner’s claim construction arguments. Patent Owner continues to believe no constructions are necessary.

A. Separation Cartridge

Initially, Patent Owner agrees with Petitioner that “separation cartridge” does not need to be construed in this case. *See* Reply at page 6.

If the Board is inclined to construe the term, however, Patent Owner maintains each of its previously-presented arguments regarding the impropriety of Petitioner’s proposed construction of separation cartridge, namely that it is improper to read multiple adsorbent columns into the claims, and, more generally, the term “separation cartridge” does not need to be construed to require any additional structures, such as columns, inlets, or outlets, because the claims already specify the

extent to which those structures are claimed. *See* Patent Owner Response at pages 13-20.

Patent Owner disagrees with nearly every point in Dr. Knaebel's new Declaration on the topic of how "separation cartridge" should be construed. Of note, however, is Dr. Knaebel's attempt to distance himself from the '614 Patent's express teaching that the disclosed adsorption process could be performed using a single bed of adsorbent, which is directly contrary to Petitioner's repeated arguments that every embodiment of the '614 Patent requires multiple beds. To be clear, Dr. Knaebel is not arguing that an adsorption process cannot work with only one bed. *See* Ex. 2009 at 105:4-7 ("Q. So single bed systems did work for oxygen concentrators, right? A. Oh, sure. I've even published on the subject."). Rather, Dr. Knaebel's position amounts to his personal belief that a portable oxygen concentrator with a single bed would be sub-optimal because it would not meet some undefined performance metrics and would be heavy. *See* Ex. 1078 at ¶ 47. Dr. Knaebel further testifies that he is "unaware of any single-bed commercial POC implementation at all." *Id.* at ¶ 49. Commercialization of a disclosed embodiment is not a relevant consideration for claim construction.

Further, Dr. Knaebel's opinion as to how a certain configuration may perform or weigh does not override the fact that the configuration is indeed disclosed as an embodiment in the '614 Patent. Dr. Talu and Dr. Deane himself (the same Deane

from the *Deane* reference) have both testified that a portable oxygen concentrator could function with a single bed. Ex. 2001 at ¶ 73; Ex. 2007 at 102:5-15. Speaking of Dr. Talu, Dr. Knaebel attempts to minimize Dr. Talu's opinions because of an alleged lack of design experience (Ex. 1078 at ¶ 34), but Dr. Talu has designed a portable oxygen concentrator (Ex. 1074 at page 5 (native cite 15:17-16:20)), and Dr. Knaebel conceded during his deposition that Dr. Talu qualifies as a POSA. Ex. 2009 at 7:6-8:8. Regardless, there is no material dispute that a single bed embodiment is disclosed, which is inconsistent with Petitioner's construction.

Patent Owner also maintains that the dependent claims in this patent (and in the related '628 Patent) that recite multiple beds strongly undermine Petitioner's proposed claim construction. During his deposition, Dr. Knaebel was pressed on how to resolve his position in light of the clear claim differentiation issue. Dr. Knaebel admitted that the dependent claims reciting multiple adsorbent beds are "distinct" from claim 1, which recites only a single bed. *See* Ex. 2009 at 101:3-11. Faced with additional questions on the topic, Dr. Knaebel took a cue from Petitioner's counsel and stated, "I'm not qualified to answer that I don't believe." *Id.* at 101:16-24. Dr. Knaebel's testimony cuts strongly against Petitioner's construction.

B. Receptacle

The parties have proposed definitions of “receptacle” with some overlap. Specifically, the parties agree that a receptacle must “at least partially contain” something, which here is the separation cartridge. *See* Patent Owner Response at pages 20-23; Reply at pages 7-9. Patent Owner maintains its position that a “receptacle” does not need to be construed to require a “structure” or “releasably interfaces,” as proposed by Petitioner.

In the Reply, Petitioner proposes a second definition for receptacle. *See* Reply at page 7. That definition is still flawed because it reads a “structure” into the definition of a “receptacle” while also reading in the term “releasably receive.” *Id.*

Further, Patent Owner’s construction of “receptacle” is consistent with the manner in which the term is used elsewhere in the ’614 Patent, namely to refer to a receptacle for a battery pack. *See* Patent Owner Response at pages 20-21. When asked how to resolve Petitioner’s proposed constructions, which read a “separation cartridge” into the term “receptacle,” relative to the battery pack receptacle of the ’614 Patent, Dr. Knaebel avoided addressing the issue, again stating that he is “not qualified” to comment on it. *Id.*

Finally, Patent Owner has not argued that a “‘receptacle’ must be fixed to, and directly accessible from outside, a POC housing.” *See* Reply at page 8. Petitioner’s

arguments addressing this point, which Patent Owner never made, should be disregarded.

C. Selectively Removable [From a Receptacle]

Patent Owner maintains that “selectively removable” does not require construction. Minimally, Patent Owner maintains that its construction of “selectively removable” is correct, and that Petitioner’s is incorrect because it reads out the term “selectively” and improperly interjects “as a whole” into the term. *See* Patent Owner Response at pages 23-25.

Petitioner now offers a second construction of “selectively removable.” *See* Reply at pages 9-11. However, Dr. Knaebel admitted that he does “not believe that the dispute between the parties’ constructions... affects the patentability analysis of the challenged claims.” *See* Ex. 1078 at ¶ 84. Accordingly, the Board should not construe this term.

D. By Movement Relative to the Receptacle in a First Direction

The removal directions recite “a separation cartridge selectively removable from a receptacle by movement relative to the receptacle in a first direction.” *See* ’614 Patent at Claim 1. Petitioner now seeks an overly broad construction of a subphrase of the removal direction limitations because Petitioner realizes it failed to appreciate that *Deane* lacks any teaching or suggestion that its alleged cartridge is

able to be removed from *Deane's* alleged receptacles by movement relative to the alleged receptacles in a first direction.

Petitioner is now seeking to correct their oversight by belatedly arguing that the parties have a claim construction controversy. However, there is no claim construction dispute. Petitioner has not raised this term for construction in either of its two IPR petitions or in the parallel district court case between the parties. At the very least, there is no dispute that cannot be resolved by construing the removal direction limitations according to their plain and ordinary meaning.

To be clear, Patent Owner is not taking the position Petitioner alleges Patent Owner is “[a]pparently” taking. *See* Reply at page 11. Nor does Patent Owner believe the removal direction limitations cover only “absolute” movement of the separation cartridge, as Petitioner alleges. *Id.* The claims simply require that the separation cartridge is removable by movement relative to the receptacle in the first direction. Patent Owner is not advocating that the claims are strictly limited to absolute movement (i.e., a stationary receptacle and movable cartridge), although of course absolute movement does come within the scope of the claims.

As explained in the Patent Owner Response and in this Sur-Reply, the claims do not cover mere “relative movement,” as advocated by Petitioner, because that would cover situations where the separation cartridge is detached from the receptacle by holding the separation cartridge stationary and moving the receptacle.

Unfortunately for Petitioner, there is no evidence that *Deane* teaches anything other than this very situation.

Respectfully Submitted,

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(c)(4), the undersigned hereby certifies that the foregoing document contains 5,442 words, excluding a table of contents, a table of authorities, mandatory notices under 37 C.F.R. § 42.8, a certificate of service or word count, or appendix of exhibits or claim listing, as measured by the word-processing system used to prepare this paper.

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CERTIFICATE OF SERVICE

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