

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GCE GAS CONTROL EQUIPMENT INC.,

Petitioner,

v.

VBOX, Inc.,

Patent Owner.

IPR Case No. IPR2023-00527

U.S. Patent No. 10,357,628

**PETITIONER'S REPLY TO
PATENT OWNER'S PRELIMINARY RESPONSE¹**

¹ This Reply was authorized by Board's June 28, 2023 email. EX1080.

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I. PO Applies An Incorrectly Narrow Construction for [1c]/[11c] and *Deane* Invalidates the Claims Under Either Party's Construction

Without expert support, PO argues that [1c]/[11c]'s "separation cartridge selectively removable from the receptacle by movement relative to the receptacle in a first direction" must be narrowly construed to mean downward movement of a **cartridge** away from a stationary **manifold/receptacle** in the annotated *Deane* FIG.

6/8 below. POPR 1-3, 27-45. PO is wrong; the plain meaning is not so narrow. **Relative movement** between two objects is understood to be effected by movement of one object **relative** to the other, or both **relative** to each other.

Thus, while **cartridge** movement in the first direction (see red "1st" arrow) away from a stationary **manifold** meets this

limitation ("Scenario A" herein), **manifold** movement in the second direction away from a stationary **cartridge** also does ("Scenario B"), as does **manifold** and

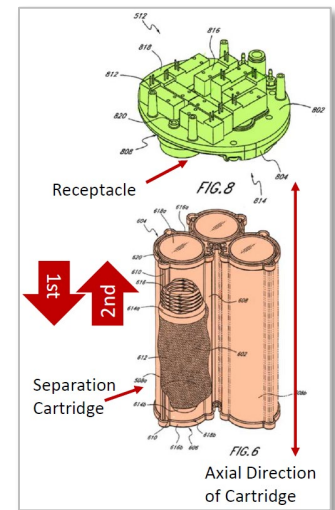
cartridge moving away from each other ("Scenario C"). In each case, the **cartridge**

moves in the first direction in the **manifold's** frame of reference. Dr. Knaebel applied this construction as the plain meaning (EX1003, ¶¶232, 336, 341-352),

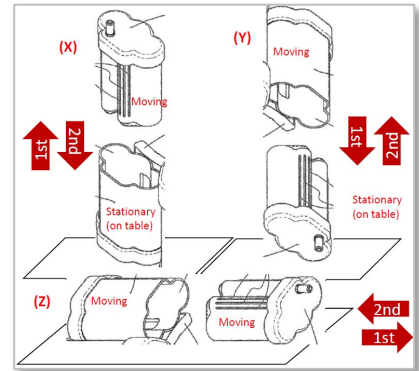
which carries more weight than PO's attorney argument. *Google LLC v. Parus Holdings, Inc.*, IPR2022-00805, Paper 7 at 10 (PTAB Nov. 7, 2022).

PO's reading wrongly makes "movement relative to the receptacle"

superfluous (*Elekta Instrument S.A. v. O.U.R. Scientific Int'l, Inc.*, 214 F.3d 1302,



1307 (Fed. Cir. 2000)) as there would be no difference between the disputed term and a “separation cartridge selectively removable from the receptacle in a first direction.” PO inserted this language into the claims to avoid their being limited to “X” in the illustration here (*e.g.*, receptacle on a table and cartridge pulled out in a first direction). It used “movement relative to ...” to conceptually cover “Y” (cartridge on table, receptacle pulled away) and “Z” (both on table and pulled away from each other). The first/second directions are constructs that exist only to specify the feature PO



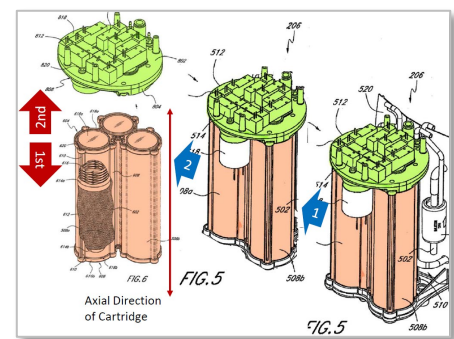
argued was key—inlets/outlets facing the receptacle. EX1052, 271, 475, 546, EX1002, 237. PO should be held to the language it chose and is advancing in the district court action—*where it has not advanced this construction*. EX2001.

Based on its improper construction, PO argues *Deane* cannot teach Scenario A because *Deane*’s chassis 202 prevents “downward” **cartridge** movement (POPR, 36) and what *Deane* really teaches is Scenario B (POPR, 2, 35-42). Neither argument supports institution denial. First, PO’s affirmation that *Deane* teaches Scenario B should alone result in institution as [1c]/[11c] covers Scenario B. Second, PO’s arguments as to how *Deane* is disassembled are attorney conjecture and incorrect as *Deane* clearly teaches Scenarios A, B, and C.

Deane teaches its: (i) components are disconnectable pieces/assemblies

(Pet., 47-48, 52-53, EX1003, ¶¶336-337, 343-346); (ii) *manifold* is “mounted” to *cartridge* (*id.*); and (iii) *cartridge/manifold* together form a discrete PSA unit 506 “mounted” in the POC (EX1004, ¶¶[0062], [0065]; cited at Pet., 48, 52, EX1003, ¶¶336, 343). Based on these teachings and the *cartridge/manifold* interface geometry (*e.g.*, *manifold* cups *cartridge* end), the Petition and Dr. Knaebel explain that it would have been obvious in view of *Deane* (or *Deane/Berntson*) to disconnect the *cartridge* and *manifold* along the *cartridge* axis, whether that be by *Scenario A*, *B*, or *C*. Pet., 54-55, EX1003, ¶352. Each is covered by [1c]/[11c] and, in any case, the Petition and Dr. Knaebel *explicitly identify* the “first direction” as the obvious removal direction in the annotated drawings. *Id.* (stating first direction is “identified in the annotated drawings *herein with a red arrow labeled “1st”*”).

Contrary to PO’s assertions, chassis 202 would not interfere with *Scenario A* (or *C*) as PSA unit 506 (with *manifold/cartridge*) is discretely removable from chassis 202 (blue arrow step 1 here) *before* *manifold/cartridge* disconnection and *cartridge* movement (relative or absolute) in the first direction (step 2). *See above*, Pet., 54-55, and

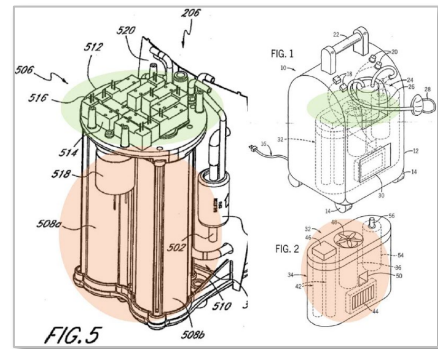


EX1003, ¶352 (*e.g.*, citing annotated figures showing disassembly, including the FIG. 6/8 relationship *after PSA unit 506 is unmounted*). Such disassembly meets [1c]/[11c], as it requires only: (i) provision of POC components; and (ii) cartridge

removability from a receptacle with no other limits as to time, space, or external accessibility. Indeed, the '628 patent's receptacle 208 in module 116 is removable from its belt (EX1001, 13:25-46), providing similar sequential disassembly.

Beyond this, PO does not properly address *Deane's* teachings as to the **cartridge** of the *Deane/Berntson* combination. Specifically, the Petition/Dr. Knaebel explain a POSITA would also have been motivated to apply *Berntson's* cartridge/receptacle teachings to *Deane*. Pet., 53-54. EX1003, ¶¶349-350. As shown in *Deane* and *Berntson's* annotated FIGS.

here, applying *Berntson's* basic teachings to *Deane* as Dr. Knaebel opines would result in a **cartridge** removable **through** the POC bottom in Scenario A,



mooting PO's chassis 202 contact argument. In this combination, *Deane's* teaching that its **manifold/cartridge** interface geometry provides disconnection in a **cartridge's** axial/first direction still applies (Pet., 54-55; EX1003, ¶352), and is consistent with the combination's geometry; teaching Scenario A. PO's argument that the *Deane/Berntson* teachings would not have been combined (POPR 43-45) is an improper bodily-incorporation attack and is unsupported by expert analysis.

Finally, the '628 patent's family prosecution history supports the Petition. PO does not dispute (*see* POPR, 11-12) that Examiner Vasat properly read the '669 Patent's January 20, 2020 application claim 38—**which has the same "movement**

relative to ...” language as here—on *Deane* ’426 and required additional limitations be added. EX1052, 9-20, 152. In fact, Examiner Vasat did not even think the *narrower* claim 24 language without “relatively” (“by movement in a first direction ...”) distinguished over *Deane* ’426. EX1052, 9-20, 149.

II. Discretionary Denial Under a Fulsome *Fintiv* Analysis is Inappropriate

Factor 1 favors institution or is neutral because Petitioner will seek a stay on/before institution of this IPR (EX1081). *Factor 2 favors institution* as no trial date has been set (POPR, 63), the Parties have sought schedule modification (EX1081), and median time-to-trial (43.3 months) is the relevant metric. *Factor 3 favors institution* as PO’s identified investments (POPR at 63-64) are not “significant,” no substantive ’628 patent-related orders have issued, no documents have been produced, and the sole deposition was of GCE’s claim construction expert. *Factor 4 favors institution* as more claims are challenged here (*compare* Grounds with EX1074) and PO’s overlap argument (POPR, 64) is irrelevant due to Petitioner’s *Sotera*-type stipulation for the ’628 patent (Petitioner agrees it applies to the Inogen One). *Factor 5 favors institution* as a FWD will issue first. *Google LLC v. Parus Holdings, Inc.*, IPR2020-00846, Paper 9 at 21 (Oct. 21, 2020). *Factor 6 favors institution* as Dr. Knaebel’s un rebutted expert testimony shows “it is highly likely” Petitioner will prevail. PO’s only technical quarrel with the Petition is its “removal direction” argument that is deficient for the reasons above.

Dated: July 6, 2023

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

Petitioner certify that this Reply complies with the five-page limit set forth in the Board's June 28, 2023 authorizing the filing of this Reply.

Additionally, this Petition complies with 37 C.F.R. § 42.6(a) and has been prepared using Microsoft® Word 2016 in 14-point Times New Roman.

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EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 10,357,628 (<i>the '628 patent</i>)
1002	File History of U.S. Patent No. 10,357,628 (U.S. Application No. 16/006,915) (<i>'628 patent FH</i>)
1003	Declaration of Kent S. Knaebel, Ph.D. (<i>Knaebel Declaration</i>)
1004	U.S. Patent Application Publication No. 2005/0072306 to Deane, Taylor, Bare, Sargent, and Scherer (<i>Deane</i>)
1005	U.S. Patent No. 6,520,176 to Dubois, Bodelin and Vigor (<i>Dubois</i>)
1006	PCT International Patent Application Publication No. WO 2005/009590 to Berntson (<i>Berntson</i>)
1007	U.S. Patent Application Publication No. 2005/0028868 to Basset, Jean and Schmutz (<i>Basset</i>)
1008	U.S. Patent No. 6,311,719 to Hill, Hill and Hansen (<i>Hill '719</i>)
1009	U.S. Patent Application Publication No. 2003/0167924 to McCombs, Casey, Chimiak and Klimaszewski (<i>McCombs '924</i>)
1010	U.S. Patent Application Publication No. 2006/0117957 to McCombs, Bosinski, Casey and Valvo (<i>McCombs '957</i>)
1011	U.S. Provisional Application No. 60/617,834 to McCombs and Bosinski (<i>McCombs '835 Prov</i>)
1012	U.S. Patent Application Publication No. 2002/0033095 to Warren (<i>Warren '095</i>)
1013	U.S. Patent No. 6,651,658 to Hill, Radtke, Schneider and Bixby (<i>Hill '658</i>)
1014	U.S. Patent Application Publication No. 2006/0283325 to Sugano (<i>Sugano</i>)
1015	U.S. Patent Application Publication No. 2003/0005928 to Appel, Winter, Sward, Sugano, Salter and Bixby (<i>Appel '928</i>)

Exhibit No.	Description
1016	U.S. Patent No. 4,802,899 to Vrana and Bansal (<i>Vrana</i>)
1017	U.S. Patent No. 4,404,005 to Hamlin and Taylor (<i>Hamlin</i>)
1018	U.S. Patent No. 4,065,272 to Armond (<i>Armond</i>)
1019	U.S. Patent No. 7,144,446 to Lessi (<i>Lessi</i>)
1020	U.S. Patent No. 5,578,115 to Cole (<i>Cole</i>)
1021	U.S. Patent No. 4,584,001 to Dechene (<i>Dechene</i>)
1022	U.S. Patent No. 4,094,755 to Mueller (<i>Mueller</i>)
1023	U.S. Patent No. 4,530,706 to Jones (<i>Jones</i>)
1024	U.S. Patent No. 6,149,138 to Birdsell (<i>Birdsell</i>)
1025	U.S. Patent Application Publication No. 2006/0000223 to Dickerson (<i>Dickerson</i>)
1026	U.S. Patent No. 5,275,642 to Bassine (<i>Bassine</i>)
1027	U.S. Patent No. 4,916,630 to Miller (<i>Miller '630</i>)
1028	U.S. Patent Application Publication No. 2006/0137522 to Nishimura, Makari, Motoki and Kobayashi (<i>Nishimura</i>)
1029	U.S. Patent No. 6,471,744 to Hill (<i>Hill '744</i>)
1030	U.S. Patent No. 6,344,069 to Smolarek, Sinicropi and Schaub (<i>Smolarek '069</i>)
1031	U.S. Patent No. 5,429,666 to Agrawal, Kumar, Naheiri and Watson (<i>Agrawal '666</i>)
1032	U.S. Patent No. 5,906,672 to Michaels, Birangi and Polaseck (<i>Michaels '672</i>)
1033	U.S. Patent No. 6,547,851 to Warren (<i>Warren '851</i>)
1034	U.S. Patent Application Publication No. 2002/0144596 to Dee, Chiang, Miller and Whitley (<i>Dee '596</i>)
1035	U.S. Patent No. 5,114,440 to Reiss (<i>Reiss '440</i>)
1036	U.S. Patent No. 4,449,990 to Tedford (<i>Tedford '990</i>)

Exhibit No.	Description
1037	U.S. Patent No. 6,544,318 to Dee, Chiang, Miller and Whitley (<i>Dee '318</i>)
1038	U.S. Patent No. 7,135,059 to Deane, Taylor, Bare, Sargent and Scherer (<i>Deane '059</i>)
1039	U.S. Patent No. 7,438,745 to Deane, Taylor and Li (<i>Deane '745</i>)
1040	U.S. Patent No. 7,250,073 to Keefer, McLean and Babicki (<i>Keefer '073</i>)
1041	U.S. Patent No. 6,585,804 to Kleinberg, Pillarella and Guro (<i>Kleinberg '804</i>)
1042	U.S. Patent No. 6,143,056 to Smolarek and Kun (<i>Smolarek '056</i>)
1043	U.S. Patent No. 5,827,358 to Kulish and Swank (<i>Kulish</i>)
1044	U.S. Patent No. 6,802,889 to Graham, Occhialini and Puri (<i>Graham</i>)
1045	U.S. Patent No. 6,691,702 to Appel, Winter, Sward, Sugano, Salter and Bixby (<i>Appel '702</i>)
1046	U.S. Patent No. 4,687,573 to Miller and Verrando (<i>Miller '573</i>)
1047	U.S. Patent Application Publication No. 2005/0072426 to Deane, Taylor, Bare, March, Merchant and Smith (<i>Deane '426</i>)
1048	U.S. Patent Application Publication No. 2005/0045041 to Hechinger and Zarate (<i>Hechinger</i>)
1049	File History of U.S. Patent No. 7,954,490 (U.S. Application No. 11/054,341) (<i>'490 patent FH</i>)
1050	File History of U.S. Application No. 13/096,362 (<i>'362 application FH</i>)
1051	File History of U.S. Application No. 13/795,977 (<i>'977 application FH</i>)
1052	File History of U.S. Patent No. 10,702,669 (<i>'669 patent FH</i>)
1053	<i>Intentionally Omitted</i>

Exhibit No.	Description
1054	<i>Intentionally Omitted</i>
1055	U.S. Patent No. 7,954,490 ('490 patent)
1056	U.S. Patent No. 10,702,669 ('669 patent)
1057	Atmosphere National Geographic Society, https://education.nationalgeographic.org/resource/atmosphere Retrieved December 2, 2022 (<i>National Geographic</i>)
1058	U.S. Patent No. 4,859,217 to Chao (<i>Chao</i>)
1059	The American Heritage Dictionary of the English Language, Fourth Edition, Houghton Mifflin Company, 2000, selected pages (<i>American Heritage</i>)
1060	New Oxford American Dictionary, Oxford University Press, 2001, selected pages (<i>New Oxford</i>)
1061	Bloomsbury English Dictionary, Second Edition, Bloomsbury Publishing, 2004, selected pages (<i>Bloomsbury</i>)
1062	Webster's Third New International Dictionary, Merriam-Webster Inc., 2002, selected pages (<i>Webster</i>)
1063	<i>Intentionally Omitted</i>
1064	United States Courts, <i>U.S. D. Ct.—Judicial Caseload Profile: Maryland</i> (reporting period ending June 30, 2022), https://www.uscourts.gov/sites/default/files/fcms_na_distprofile0630.2022_0.pdf (<i>Judicial Caseload Profile for D. Md.</i>)
1065	<i>Order</i> , filed in <i>In re CTP Innovations, LLC, Patent Litigation</i> , No. 14-cv-2581 (D. Md.) (Dkt. 38)
1066	<i>Order</i> , filed in <i>Paice LLC v. BMW AG</i> , No. 19-cv-03348 (D. Md.) (Dkt. 98)
1067	U.S. Patent Provisional Application No. 60/489,674 to Berntson (<i>Berntson Provisional</i>)
1068	Ruthven et al., Pressure Swing Adsorption (1994) (Ruthven)
1069	<i>Plaintiff/Counter-Defendant GCE Gas Control Equipment Inc.'s Stipulation of Invalidity Contentions</i> , filed in <i>GCE Gas</i>

Exhibit No.	Description
	<i>Control Equip., Inc. v. 3B Medical Mfg., LLC</i> , No. 22-cv-02550 (D. Md.) (Dkt. 34) (<i>D. Ct. Sotera Stipulation</i>)
1070	U.S. Patent No. 11,389,614 (<i>'614 patent</i>)
1071	File History of U.S. Patent No. 11,389,614 (U.S. Application No. 15/931,716) (<i>'614 patent FH</i>)
1072	3B's Alleged Infringement Claim Chart (<i>Infringement Chart</i>)
1073	U.S. Patent Application Publication No. 2005/0257686 A1 to Occhialini, Whitley, Wagner, LaBuda, and Steigerwalt (<i>Occhialini</i>)
1074	3B's Infringement Contentions for U.S. Patent No. 10,357,628 against Petitioner's Zen-O Lite product (<i>Infringement Contentions</i>)
1075	Selected pages of Breck, Donald W., Zeolite Molecular Sieves, 1984 (<i>Breck</i>)
1076	Zeochem Type 5A Adsorbent Product Information Sheet (<i>Zeochem</i>)
1077	Molsiv Type 5A Adsorbent Product Information Sheet (<i>Molsiv</i>)
1078	ARI Type 5A Property Summary Sheet, 2007 (<i>ARI 2007</i>)
1079	ARI Type 5A Property Summary Sheet, 2003 (<i>ARI 2003</i>)
1080	June 28, 2023 Email from Board Authorizing Reply to POPR
1081	June 23, 2023 Joint Request to the Maryland District Court for a Scheduling Conference (Dkt. 46, 33)

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that on July 6, 2023 a complete and entire copy of the foregoing document was filed with the PTAB through P-TACTS and served via email on attorneys of record at the following addresses:

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