

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ARROWS UP, LLC,
Petitioner,

v.

OREN TECHNOLOGIES, LLC,
Patent Owner.

IPR2018-01230
Patent 9,248,772 B2

Before KEVIN W. CHERRY, MICHAEL L. WOODS, and
PAUL J. KORNICZKY, *Administrative Patent Judges*.

KORNICZKY, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Arrows Up, LLC (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1–11 (all claims) of U.S. Patent No. 9,248,772 B2 (“the ’722 patent,” Ex. 1001). Pet. 1. We issued a decision to institute an *inter partes* review of these claims. Paper 7. After institution, Oren Technologies, LLC (“Patent Owner”) filed a Patent Owner Response (Paper 14, “PO Resp.”), Petitioner filed a reply (Paper 21, “Reply”), and Patent Owner filed a Sur-Reply to Petitioner’s Reply (Paper 23, “Sur-reply”). Oral argument was held on October 17, 2019, and the transcript of the hearing has been entered as Paper 28.

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–3 and 6–11 of the ’772 patent are unpatentable. *See* 35 U.S.C. § 316(e). Petitioner has not shown that claims 4 and 5 are unpatentable.

II. BACKGROUND

A. *Related Proceedings*

Petitioner identifies the following *inter partes* review proceedings that involve patents that claim priority to the same applications as the '772 patent: IPR2017-01917 (U.S. Patent No. 9,296,518), IPR2017-01918 (U.S. Patent No. 9,403,626), IPR2017-02103 (U.S. Patent No. 9,511,929), IPR2018-00914 (U.S. Patent No. 9,511,929). Pet. 65–66. Petitioner also identifies the following lawsuits: *SandBox Logistics, LLC v. Grit Energy Solutions, LLC*, No. 3:16-cv-00012 (S.D. Tex.), and *SandBox Logistics, LLC v. Proppant Express Investments, LLC*, No. 4:17-cv-00589 (S.D. Tex.). *Id.* at 66.

In addition, we note that Petitioner filed petitions in the following proceedings requesting institution of *inter partes* review of additional patents with priority claims that overlap that of the '772 patent: IPR2018-01231 (US Patent No. 9,617,066), IPR2018-01232 (US Patent No. 9,682,815), and IPR2018-01233 (US Patent No. 9,914,602).

B. *The '772 Patent (Ex. 1001)*

The '772 patent is titled “Method of Delivering, Transporting, and Storing Proppant for Delivery and Use at a Well Site.” Ex. 1001, code (54). Hydraulic fracturing is the propagation of fractures in rock layers to release for extraction fossil fuels, such as petroleum, natural gas, and coal. *Id.* at 1:25–29. Proppant is a material, such as sand, used in hydraulic fracturing. *Id.* at 1:35–37. The injection of proppant into the rock fractures helps to

prevent the fractures from closing. *See id.* at 1:34–38. Typically, large amounts of proppant are required during hydraulic fracturing. *Id.* at 1:59–60. There is a need to ensure proppant is available during fracturing operations; otherwise, fracturing may stall. *Id.* at 2:19–21.

The '772 patent describes a system for delivering proppant that purports to enhance productivity (*id.* at 4:35), reduce liabilities (*id.* at 4:40–41), improve safety (*id.* at 4:44), and increase profits (*id.* at 4:50). To illustrate an embodiment of the '772 patent, Figure 3 is reproduced below:

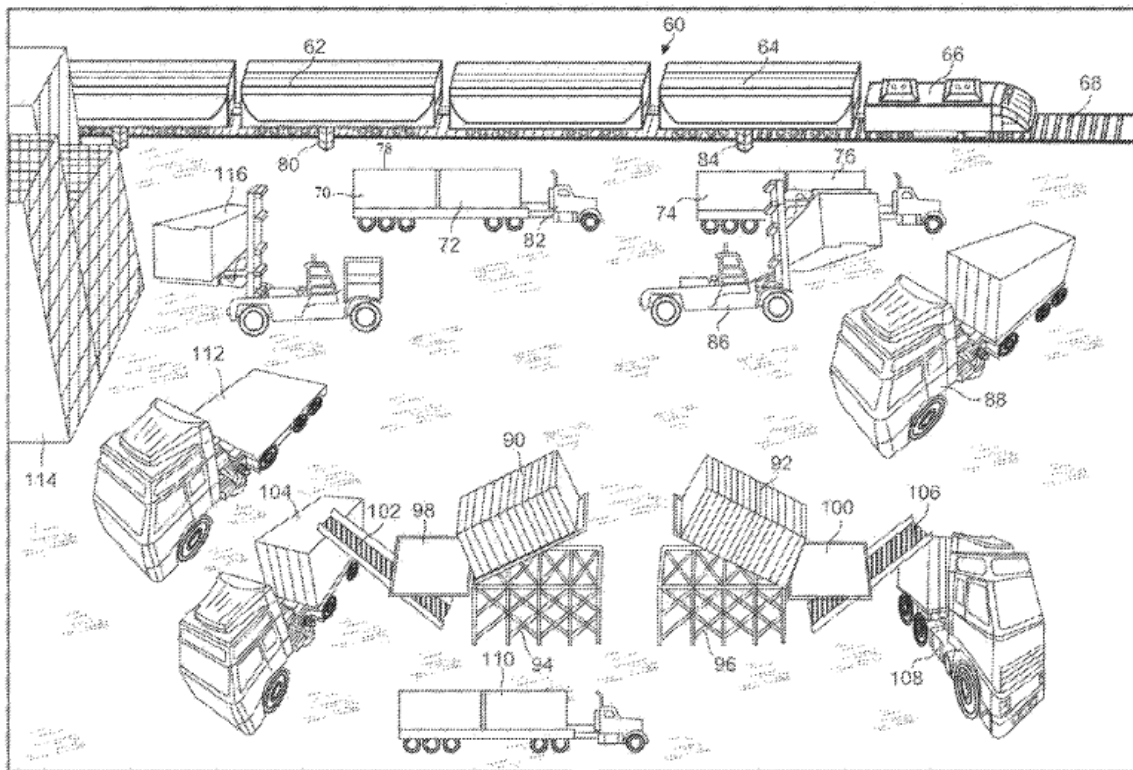


FIG. 3

According to the '772 patent, Figure 3 illustrates system 60 “of the present invention.” *Id.* at 6:19–20, 7:54. Bulk material train 64 transports proppant to a desired location via vessel 62. *Id.* at 7:54–57. The proppant is then unloaded into containers 70, 72, 74, 76, which may be supported on a

bed of a truck. *Id.* at 8:13–18. Loader/unloader 86 moves containers 70, 72, 74, 76 as needed. *Id.* at 8:19–23. Containers 114 are shown stacked and empty, but filled containers may also be stacked. *Id.* at 8:55–65.

To illustrate one of the '772 patent's containers, Figure 1 is reproduced below:

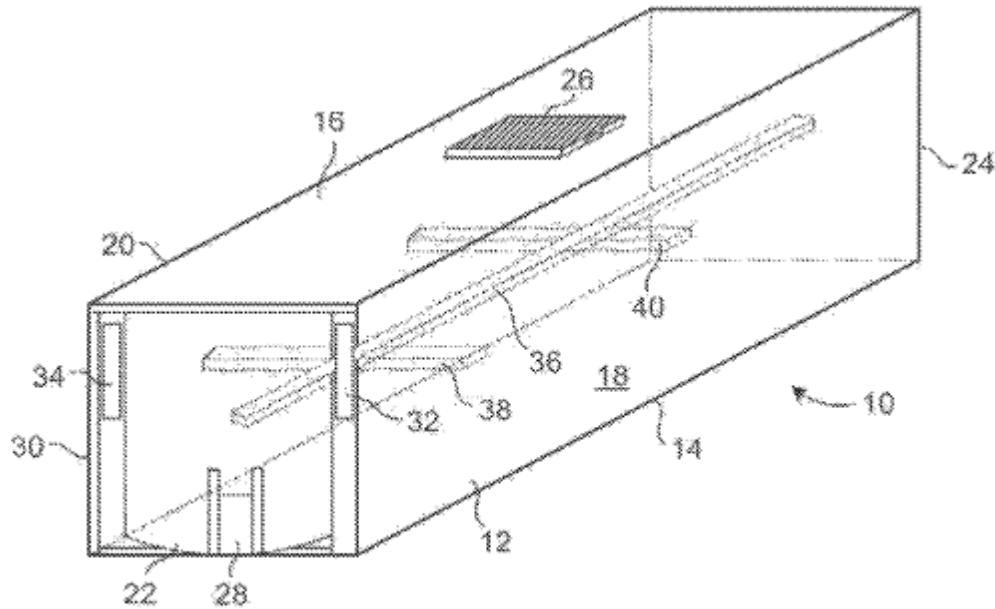


FIG. 1

As shown in the above Figure 1, container 12 has bottom wall 14, top wall 16, side walls 18, 20, and end walls 22, 24. *Id.* at 6:26–29. As can also be seen, end wall 22 is recessed inwardly and has a generally convex shape. *Id.* at 6:42–47.

C. Illustrative Claim

Claim 1 is the sole independent claim and is reproduced below, with emphases added to limitations for which Patent Owner disputes Petitioner's unpatentability showing:

1. A method of transporting proppant, the method comprising:

a) *vertically stacking a plurality of empty proppant containers in close proximity to a rail spur* so that one of the plurality of empty proppant containers overlies another one of the plurality of empty containers thereby to reduce footprint of the area required adjacent the rail spur to store the plurality of empty proppant containers, *each of the plurality of empty containers including at least a first end surface and at least a second different end surface* and each of the first and second end surfaces having a plurality of upright structural support members thereon to enhance integrity of the container so that a large amount of weight can be stacked upon the container and so that heavy weight can be stored therein;

b) filling the plurality of empty proppant containers with proppant from one or more proppant transporting rail vehicles thereby to produce a plurality of proppant filled containers;

c) transferring the plurality of proppant filled containers with a loader onto one or more support platforms associated with one or more proppant transporting road vehicles.

Ex. 1001, 10:2–24 (emphases added).

D. References and Expert Testimony

Reference/Expert Testimony	Date	Exhibit No.
US 2013/0206415 A1 (“Sheesley”)	Aug. 15, 2013	1003
US 8,915,691 B2 (“Mintz”)	Dec. 23, 2014	1004
US 2013/0022441 A1 (“Uhryn”)	Jan. 24, 2013	1005
Schaaf Declaration		1002
Smith Declaration		2008
Schaaf Cross-Examination		2011
Smith Cross-Examination		1016

E. Alleged Grounds of Unpatentability

Petitioner contends that claims 1–11 (all claims) of the '772 patent are unpatentable under 35 U.S.C. § 103(a)¹ based on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 2, 6–10	103(a)	Sheesley
1	103(a)	Sheesley, Mintz
3–5, 11	103(a)	Sheesley, Uhryn

Pet. 3.

III. ANALYSIS

A. Person of Ordinary Skill in the Art

Petitioner proposes that a person having ordinary skill in the art (“POSITA”) would have had either (a) 1–2 years of experience in hydraulic fracturing and logistical support of fracking operations and a bachelor’s degree in an engineering or logistics discipline, or (b) 4–5 years of experience in hydraulic fracturing and logistical support for fracking operations. *See* Pet. 6–7 (citing Ex. 1002 ¶ 37).

Patent Owner does not propose a level of ordinary skill in the art. *See generally* PO Resp.

We adopt Petitioner’s proposed level of ordinary skill in the art because it is consistent with the problems and solutions in the prior art of

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103 effective March 16, 2013. Because the '772 patent has an effective filing date before March 16, 2013, the pre-AIA version of § 103 applies.

record. *See Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007) (“Factors that may be considered in determining level of ordinary skill in the art include: (1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.”).

B. Claim Construction

Because the present Petition was filed before November 13, 2018, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b) (2017); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard).² A presumption exists that a claim term should be construed in light of its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002). “Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification

² The revised claim construction standard for interpreting claims in *inter partes* review proceedings as set forth in the final rule published October 11, 2018, does not apply to this proceeding, because the new “rule is effective on November 13, 2018, and applies to all IPR, PGR, and CBM petitions filed on or after the effective date.” Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (now codified at 37 C.F.R. pt. 42 (2019)).

and prosecution history.” *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016).

Petitioner states that no claim term requires express construction. Pet. 7. Patent Owner, on the other hand, proposes an interpretation of “a second different end surface.” PO Resp. 11.

1. “second different end surface”

Claim 1 recites, *inter alia*, “a first end surface and at least a second different end surface.” Ex. 1001, 10:10–12.

In our decision to institute, we determined that “a broad, but reasonable construction of the claimed ‘second different end surface’ limitation requires that the two end surfaces are structurally different.” Paper 7, 10.

Petitioner does not dispute our construction. *See generally* Reply.

Patent Owner agrees with our construction. PO Resp. 11 (“The evidence shows the Board’s construction is correct and should be maintained.”).

Upon reviewing the claim language in light of the Specification, we maintain our interpretation that a reasonable construction of the claimed “second different end surface” limitation requires that the first and second end surfaces be structurally different, for the reasons given in our decision to institute. *See* Paper 7, 8–10.

2. Other Claim Terms

We determine that no other claim limitation requires express construction for purposes of this Decision. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy.’” (internal citation omitted)).

C. Prior Art

1. Sheesley (Ex. 1003)

Sheesley is a patent titled “Method and Apparatus for Modifying a Cargo Container to Deliver Sand to a Frac Site” and describes cargo containers for carrying “proppant such as sand from a quarry or source to the frac site.” Ex. 1003, codes (54), (57). In particular, Sheesley discloses a method whereby “cargo containers may be taken directly to the quarry and loaded with sand . . . [and the] containers can then move through all of the normal modes of transportation including ship, barge, rail or by truck, all the way to the frac site.” *Id.* ¶ 17. To illustrate an embodiment of Sheesley’s method, Figure 2 is reproduced below:

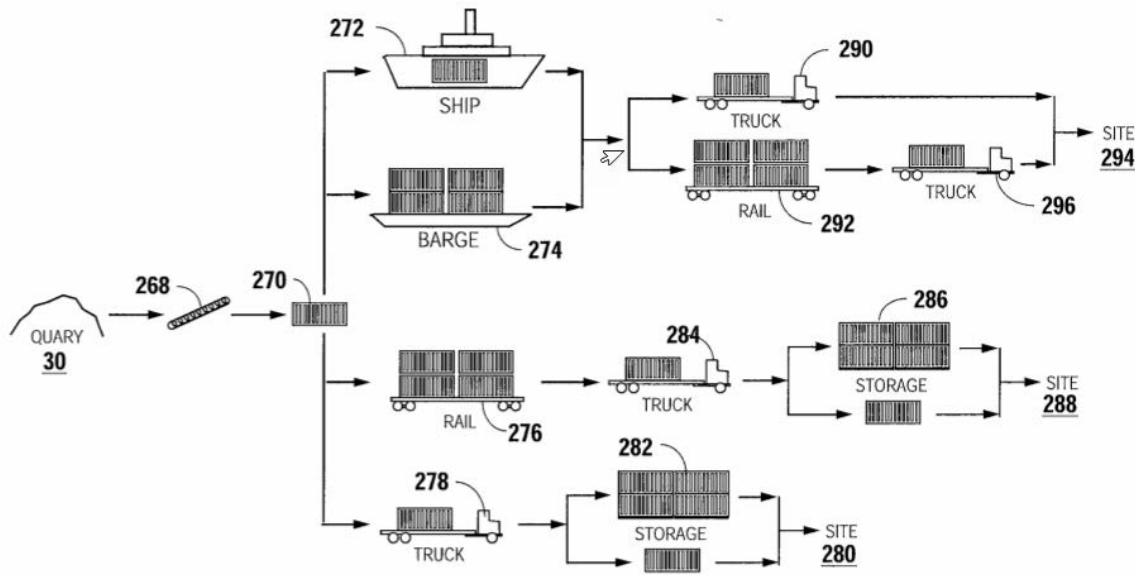


Fig. 2

According to Sheesley, Figure 2 depicts the delivery of “sand from the quarry or source to the frac site.” *Id.* ¶ 20. Sand from quarry 30 or source may be loaded by conveyor 268 and into cargo container 270. *Id.*

¶ 78. Containers 270 may be loaded on ship 272, barge 274, rail 276, or flatbed trailer 278. *Id.* If container 270 is loaded on trailer 278, container 270 may be taken directly to fracing site 280 or placed in storage 282 at fracing site 280. *Id.* ¶ 79.

Sheesley further discloses that the containers can be stacked and that a cargo handler can be used to pick up full or empty containers. *Id.* ¶ 83 (referencing Figs. 3, 4).

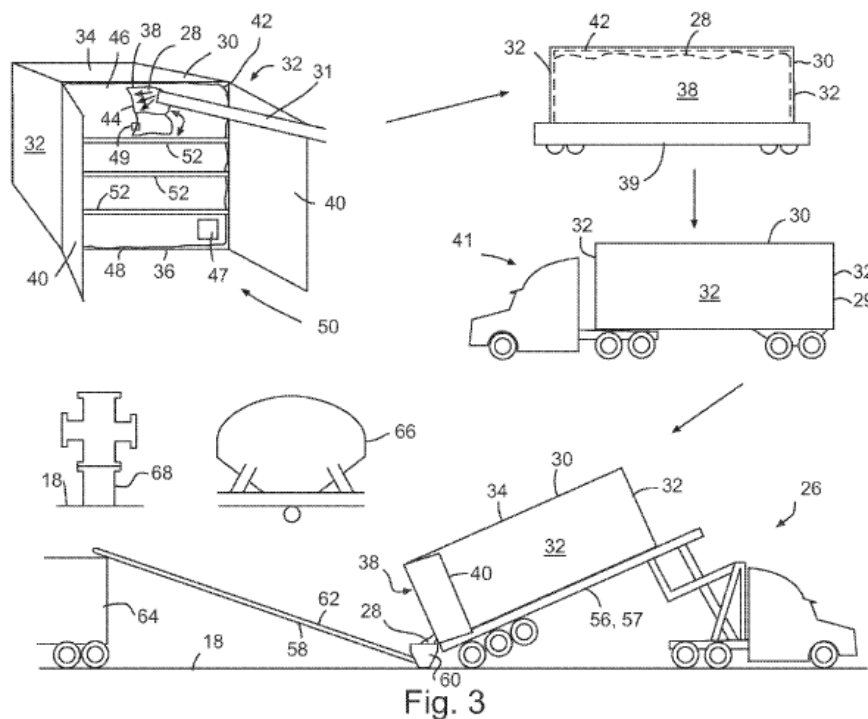
2. Mintz (Ex. 1004)

Mintz is a patent titled “Apparatus for Transporting Frac Sand in Intermodal Container” and describes “internal structure adapted to support

and strengthen the walls and floor of” standard International Organization for Standardization (“ISO”) shipping containers. Ex. 1004, code (54), 1:65–67. In particular, Mintz discloses “[h]orizontal and angular peripheral bracing framework to strengthen the side walls of such standard ISO intermodal shipping container[s].” *Id.* at 2:55–57.

3. Uhryn (*Ex. 1005*)

Uhryn is a patent application titled “Method and Apparatus for Bulk Transport of Proppant.” Ex. 1005, code (54). Uhryn discloses an intermodal transport container with one or more gates used for unloading proppant. *Id.* ¶ 4. “Unloading may be carried out using a container tilter 56, such as a hydraulic fifth wheel tilter Tilter 56 may be mounted on a wheeled trailer” *Id.* ¶ 20. Tilter 56 is shown in Uhryn’s Figure 3, which is reproduced below.



According to Uhryn, Figure 3 is a flow diagram illustrating a method of intercontinental bulk transport of proppant using an intermodal transport container. *Id.* ¶ 11.

D. Ground 1: Claims 1, 2, and 6–10 as Unpatentable over Sheesley

Petitioner asserts that claims 1, 2, and 6–10 are unpatentable as obvious over Sheesley. Pet. 23. Below, we address Petitioner’s and Patent Owner’s contentions for each of these claims.

1. Independent Claim 1

a. A method of transporting proppant, the method comprising:

Petitioner asserts that, to the extent claim 1’s preamble is limiting, Sheesley describes a method of transporting proppant with containers structured to store fracking proppant. Pet. 23 (citing Ex. 1003, Abstract, ¶¶ 2, 78).

Petitioner has shown that Sheesley teaches the preamble.

b. vertically stacking a plurality of empty proppant containers in close proximity to a rail spur so that one of the plurality of empty proppant containers overlies another one of the plurality of empty containers thereby to reduce footprint of the area required adjacent the rail spur to store the plurality of empty proppant containers

Petitioner asserts that Sheesley discloses this limitation, referring in part to Sheesley’s disclosure that Figure 3 “is a pictorial illustration of the stackability of modified cargo containers, with or without sand therein.” Pet. 24 (quoting Ex. 1003 ¶ 21); *see also* Ex. 1003 ¶ 18, Fig. 3. Petitioner also asserts Sheesley teaches that its containers can be filled with proppant at

a rail site, such that they would be stacked while empty in close proximity to a rail spur. Pet. 24–26. In particular, Sheesley teaches that “sand from the sand quarry 30 *or source* can now be loaded by a conveyer 268 to a modified cargo container” (Ex. 1003 ¶ 78 (emphasis added)), and that the source where proppant is obtained “may be any point along a supply chain of said proppant” (*id.* at claim 21). Petitioner asserts Sheesley teaches that the supply chain includes a rail site. Pet. 25 (citing Ex. 1003 ¶¶ 17, 19, 42, 49, 77, 78, Fig. 1).

Petitioner cites Sheesley’s Figure 5 to show that the empty containers may be filled while in a stacked configuration. *Id.* at 25–26. Sheesley’s container 302 can receive sand from auger 303 through upper hatch 305 and may feed sand through lower hatch 308 into container 304 below it. *Id.* (citing Ex. 1003, Fig 5, ¶¶ 23, 84). Petitioner also contends, with support from Mr. Schaaf, that one of ordinary skill in the art would have understood “that Sheesley’s auger could provide proppant received from a rail car on the rail spur (the ‘source’ on the supply chain of proppant) into Sheesley’s empty proppant containers.” *Id.* at 26 (citing Ex. 1002 ¶ 68).

Patent Owner argues that Sheesley does not disclose “stacking empty proppant containers in close proximity to a rail spur.” PO Resp. 15–20. According to Patent Owner, “at best, Sheesley discloses *filling* stacked containers *on* a rail car, not ‘*vertically stacking* a plurality of empty containers *in close proximity to* a rail spur.’” *Id.* at 17 (citing Ex. 2008 ¶ 38). Patent Owner argues that Petitioner’s position that “empty proppant containers could be filled ‘on the rail spur,’ which ‘would necessarily be in ‘close proximity’ to the rail spur’ is simply wrong” (*id.* (citing Pet. 26))

because “[t]he ’772 Patent makes clear that ‘in close proximity to’ is distinct from ‘on’” (*id.* (citing Ex. 2008 ¶¶ 39–41)).

We disagree with Patent Owner’s narrow interpretation of Sheesley. “A reference must be considered for everything that it teaches, not simply the described invention or a preferred embodiment.” *In re Applied Materials, Inc.*, 692 F.3d 1289, 1298 (Fed. Cir. 2012). When read in its entirety, Sheesley teaches the claimed limitation.

Sheesley’s claim 21 recites, in part, “[a] method for delivering proppant to the site of a well-being fraced . . . wherein said source may be any point along a supply chain of said proppant.” Ex. 1003, col. 6, claim 21. According to Petitioner (Pet. 26), and as Mr. Schaaf testifies, a person skilled in the art “would understand that one of the potential sources ‘along a supply chain of said proppant’ in Sheesley would be at a rail spur or rail vehicle” (Ex. 1002 ¶ 66).

As shown in Sheesley’s Figure 2 (reproduced *supra* Part III.C.1), and described in Sheesley’s paragraph 78, Sheesley discloses that “sand from the sand quarry 30 *or source* can now be loaded by a conveyor 268 to a modified cargo container [270] . . . [, which] can be loaded on a . . . flatbed truck trailer.” Ex. 1003 ¶ 78 (emphasis added). To illustrate this point, Sheesley’s Figure 5 is reproduced below:

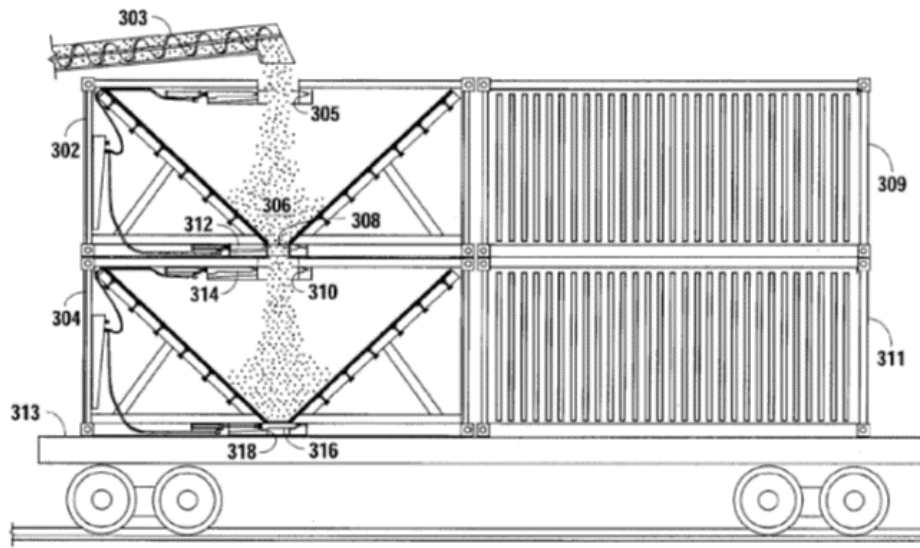


Fig. 5

Figure 5 depicts *empty* containers being filled with proppant after being placed on a *rail car* for transport. As also shown in Sheesley's Figure 5, Sheesley depicts empty containers receiving sand from auger 303.

Based on these figures and their associated descriptions, and after having weighed the competing testimony of Petitioner's expert (Mr. Robert Schaaf (*e.g.*, Ex. 1002)) and Patent Owner's expert (Mr. Fred P. Smith (*e.g.*, Ex. 2008)), we credit Mr. Schaaf's testimony that a person of ordinary skill in the art "would understand Sheesley's auger could provide proppant received from a rail car on the rail spur (the 'source' on the supply chain of proppant) into Sheesley's empty proppant containers, and that such containers would necessarily be in 'close proximity' to the rail spur." Ex. 1002 ¶ 68.

Petitioner has shown that Sheesley discloses "vertically stacking a plurality of empty proppant containers in close proximity to a rail spur so that one of the plurality of empty proppant containers overlies another one of

the plurality of empty containers thereby to reduce footprint of the area required adjacent the rail spur to store the plurality of empty proppant containers,” as recited in claim 1.

- c. each of the plurality of empty containers including at least a first end surface and at least a second different end surface*

Petitioner asserts that Sheesley discloses “each of the plurality of empty containers including at least a first end surface and at least a second different end surface.” Pet. 26–27; Reply 3–9. Figure 16 of Sheesley is reproduced below:

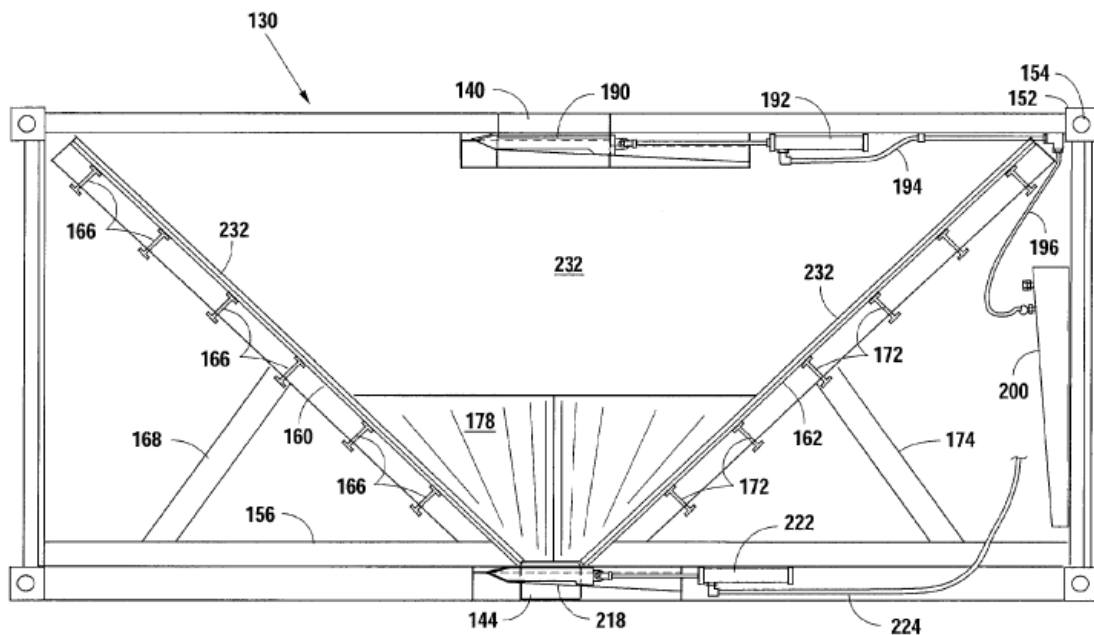


Fig. 16

According to Petitioner, Sheesley’s Figure 16 depicts two end walls that extend between the bottom, top, and side walls of the container. Reply 7 (citations omitted). Petitioner further cites to the presence of doors 132 and 134, as shown in Figure 9 (*id.*) and to the presence of control panel 200 (*see*

Reply 7 (“These control panels provide an additional structural difference between the front wall and the back wall”); *see also* Ex. 1003 ¶ 56 (associating reference numeral 200 as a control panel)).

Patent Owner contends that Sheesley *does not* disclose the claimed “second different end surface.” PO Resp. 24. Specifically, Patent Owner asserts that “[o]nly one of the alleged ‘End Walls’ in Sheesley’s Figure 9 has even been given a reference number.” *Id.* at 26. Patent Owner argues that “there is no discussion of this aspect of the container shown in Figure 9 of Sheesley from which the Board could find that this unreferenced ‘End Wall’ was not the same as the ‘End Wall’ labeled with, *inter alia*, doors 132 and 134.” *Id.*

We disagree with Patent Owner. Rather, we find that Sheesley discloses this limitation, and to illustrate our findings, we begin by reproducing Sheesley’s Figure 9, below:

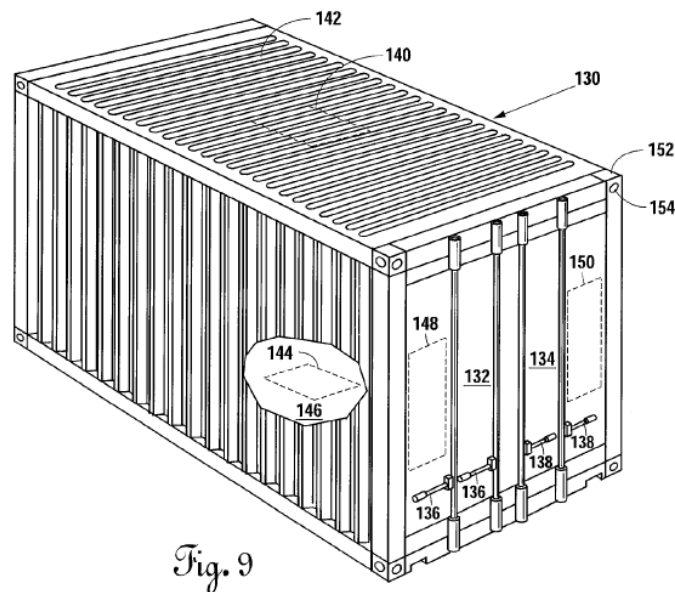


Figure 9 “is a pictorial view of a cargo container illustrating where openings should be cut.” Ex. 1003 ¶ 27. Sheesley further discloses that “cargo

container 130 is made out of corrugated metal and has doors 132 and 134, *on the one end thereof.*” Ex. 1003 ¶ 50 (italicized emphasis added). Sheesley also discloses, “Control panel openings 148 and 150 are cut in doors 132 and 134, respectively.” *Id.*

Sheesley discloses doors “on one end thereof,” which we understand to mean that doors are only present on one end of the container—not both ends. *Id.* The presence of doors on only one end of the container satisfies the claimed limitation of a “second different end surface.”

Moreover, and as shown above in Sheesley’s Figure 16, reproduced above, control panel 200 is only shown on one end of the container. The presence of control panel 200, along with its associated openings 148, 150 (shown in Figure 9), on only one end of the container further meets the claimed limitation of a second different end surface. Ex. 1003, Fig. 16; *see also id.* at Fig. 15 (depicting control panel 200 on door 134).

Accordingly, Petitioner has shown that Sheesley discloses “each of the plurality of empty containers including at least a first end surface and at least a second different end surface,” as recited in claim 1.

d. each of the first and second end surfaces having a plurality of upright structural support members thereon to enhance integrity of the container for stacking and so that heavy weight from the proppant can be stored therein

Petitioner asserts that Sheesley discloses this limitation. Pet. 27–30. Petitioner’s annotated version of Sheesley’s Figure 9 (Pet. 28) is reproduced below:

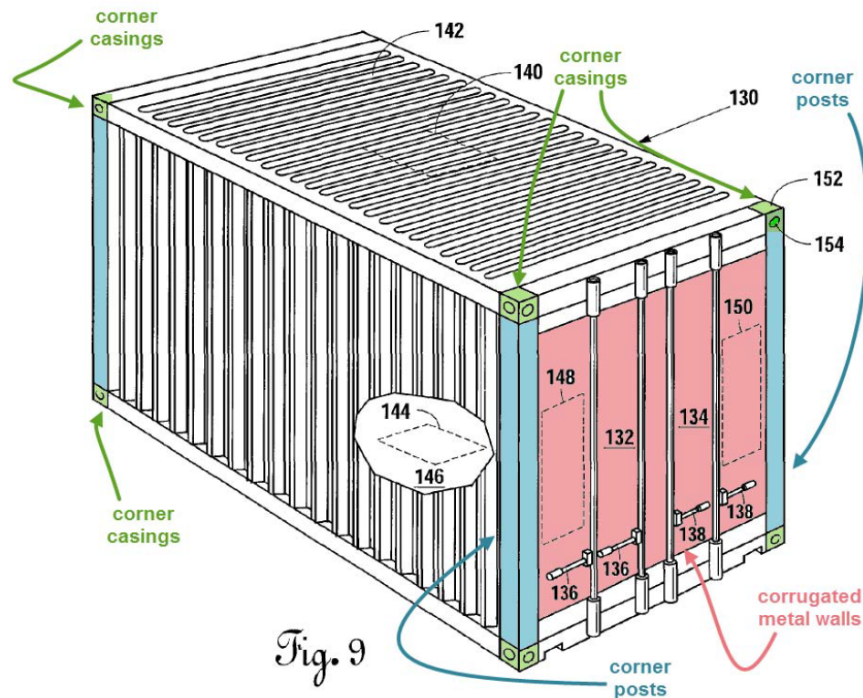


Figure 9 depicts “a cargo container illustrating where openings should be cut.” Ex. 1003 ¶ 27. According to Petitioner, and as shown in the above annotated Figure 9, Sheesley’s end walls include a plurality of vertical support members (corner castings 152 with corner posts) for enhancing the container’s integrity for stacking and for storing proppant. Pet. 28–30.

Petitioner also asserts one of ordinary skill in the art would understand Sheesley’s container to meet strength requirements of an ISO container because Sheesley teaches modifying an ISO container. *Id.* at 29–30 (citing Ex. 1003 ¶¶ 4, 16, 50; Ex. 1002 ¶ 73; Ex. 1013, 8–10 (book on intermodal transportation); Ex. 1012 (ISO standards for freight containers)). Petitioner further asserts that “to the extent that [Patent Owner] argues that certain structural requirements must be met in order for the container to hold a large amount of proppant, Sheesley discloses that the modified container is capable of holding proppant and of being stacked.” *Id.* at 30 (citing Ex.

1003 ¶¶ 18, 21, 80, 84). In addition, Petitioner cites paragraphs 72–75 of the Schaaf Declaration in support of its arguments about this limitation. *See Id.* at 27–30.

Petitioner has shown that Sheesley discloses this limitation.

e. filling the plurality of empty proppant containers with proppant from one or more proppant transporting rail vehicles thereby to produce a plurality of proppant filled containers

Petitioner asserts that Sheesley discloses this limitation, citing in part Sheesley’s disclosure that Figure 5 (reproduced *supra* Part III.D.1.b) “illustrates the loading of multiple modified cargo containers.” Pet. 31 (citing Ex. 1003 ¶¶ 17, 19, 42, 49, 77, 78, Fig. 1, Abstract, claim 15, claim 21; Ex. 1002 ¶¶ 76–77).

Petitioner has shown that Sheesley discloses this limitation.

f. transferring the plurality of proppant filled containers with a loader onto one or more support platforms associated with one or more proppant transporting road vehicle

Petitioner asserts that Sheesley teaches this limitation through its disclosure of a trailer that may be used to transport the modified cargo containers. Pet. 31 (citing Ex. 1003 ¶¶ 25, 78, 79, 88, Figs. 2, 7). Petitioner asserts that Sheesley’s flatbed truck trailer, such as that shown in Figure 2, is a support platform associated with a road vehicle. *Id.* (citing Ex. 1002 ¶ 78). Petitioner also cites to Sheesley’s disclosure of a loader/unloader, including a “Rough Terrain Cargo Handler,” that can be used to move the filled containers. *Id.* at 32 (citing Ex. 1003 ¶ 83). Petitioner also relies on Mr. Schaaf’s testimony that it would have been within the knowledge of one

of ordinary skill in the art that a loader/unloader would be used to load/unload the containers to/from a trailer. *Id.* (citing Ex. 1002 ¶ 79).

Petitioner has shown that Sheesley discloses this limitation.

g. *Summary*

For the reasons given above, Petitioner has shown that independent claim 1 is unpatentable as obvious over Sheesley.

2. *Dependent Claim 2*

Dependent claim 2 recites

2. The method of claim 1, wherein the plurality of proppant filled containers comprises a first plurality of proppant filled containers, and the method further comprising:

filling a second plurality of empty proppant containers with proppant from one or more proppant transporting rail vehicles thereby to produce a second plurality of proppant filled containers: and

vertically stacking the second plurality of proppant filled containers with a loader so that one of the plurality of proppant filled containers overlies another one of the plurality of filled containers to reduce the footprint of the area required for storage of the proppant *in close proximity to the rail spur*.

Ex. 1001, 10:25–37 (emphasis added).

Petitioner asserts that Sheesley discloses the limitations in claim 2, citing Sheesley’s disclosure that “Fig. 3 is a pictorial illustration of the stackability of modified cargo containers, with or without sand.” Pet. 33–34 (citing Ex. 1003 ¶ 21). Petitioner contends one of ordinary skill in the art

would have understood from this disclosure that multiple containers could be filled with proppant and stacked at the rail spur. *Id.* (citing also Ex. 1002 ¶¶ 80– 81).

Patent Owner asserts that Sheesley does not “disclose[] stacking *full* containers in close proximity to a rail spur” for the same reasons discussed above in connection with claim 1. PO Resp. 15–19, 28–31. For the reasons discussed above in connection with claim 1, Patent Owner’s argument is not persuasive, because Sheesley discloses stacking containers in close proximity to a rail spur and Figure 3 and related discussions disclose that the stacked containers may be filled with sand.

Petitioner has shown that dependent claim 2 is unpatentable as obvious over Sheesley.

3. Dependent Claim 6

Claim 6 depends from claim 1 and recites, “moving the plurality of empty proppant containers from the storage location, to the one or more proppant transporting rail vehicles and then to the one or more support platforms located on the one or more proppant transporting road vehicles.” Ex. 1001, 10:56–61.

Petitioner contends that it would have been obvious to move the plurality of empty proppant containers from a storage area to the rail vehicles before moving the containers to the support platforms on the road vehicles. Pet. 35–36. Petitioner cites Mr. Schaaf’s testimony that one of ordinary skill in the art would have understood that Sheesley’s containers are

re-used, and must be stored somewhere after being emptied. *Id.* (citing Ex. 1002 ¶ 83).

Petitioner has shown that dependent claim 6 is unpatentable over Sheesley.

4. Dependent Claim 7

Claim 7 recites:

7. The method of claim 1 wherein the one or more proppant transporting road vehicles comprises a plurality of proppant transporting road vehicles, and wherein the method further comprises:

staging the plurality of proppant transporting road vehicles so that each of the plurality of proppant transporting road vehicles receives one or more of the plurality of proppant filled containers,

delivers the container away from the one or more proppant transporting rail vehicles, thereby increasing the efficiency with which proppant is transferred from the one or more proppant transporting rail vehicles to the plurality of proppant transporting road vehicles.

See Ex. 1001, 10:62–11:7.

With support from Mr. Schaaf’s testimony, Petitioner reasons that it would have been obvious to stage multiple vehicles at the proppant’s source to “facilitate fast and efficient loading.” Pet. 37 (citing Ex. 1002 ¶ 85). Petitioner also contends “it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art,” citing *St. Regis Paper Co. v. Bemis Co.*, 549 F.2d 833, 838–39 (7th Cir. 1977). *Id.*

Regarding the “delivers” step, Petitioner cites Sheesley’s disclosure of transporting containers away from the loading site, which can include a rail site, to the fracking site, and Sheesley’s emphasis on efficiency. *Id.* at 39–40 (citing Ex. 1003 ¶¶ 11, 17, 18, 79, 82; Ex. 1002 ¶¶ 88–90).

Petitioner has shown that dependent claim 7 is unpatentable over Sheesley.

5. Dependent Claim 8

Claim 8 recites:

8. The method of claim 1, wherein step b) further comprises: discharging the proppant from the one or more proppant transporting rail vehicles onto a conveyor; and conveying the proppant on the conveyor from the proppant transporting rail vehicle to an inlet in each of the plurality of empty proppant containers.

Ex. 1001, 11:8–13.

Petitioner asserts that Sheesley discloses that the proppant may be unloaded from the source, which may include a rail vehicle, using a conveyor and loaded into empty containers. Pet. 40–41. Petitioner relies on Sheesley for disclosing the step of “conveying the proppant on the conveyor from the proppant transporting rail vehicle to an inlet in each of the plurality of empty proppant containers.” *Id.* at 40–42 (citations omitted). In support of this assertion, Petitioner cites to Sheesley’s Figures 2, 5, 10, Abstract, and its paragraphs 14, 16, 78, 84. *Id.* We credit Mr. Schaaf’s testimony that, based on these figures and paragraphs, Sheesley discloses this limitation. Ex. 1002 ¶¶ 91–95.

Petitioner has shown that claim 8 is unpatentable as obvious over Sheesley.

6. Dependent Claim 9

Claim 9 recites:

9. The method of claim 1 further comprising:

after transferring the plurality of proppant filled containers to the one or more support platforms associated with the one or more proppant transporting road vehicles, returning another plurality of empty proppant containers to the proppant transporting rail vehicle to be filled [with] proppant.³

Ex. 1001, 11:14–19.

Petitioner asserts that one of ordinary skill in the art would have understood that in order to fill Sheesley's cargo containers at the rail site, there must be empty containers at the rail site. Pet. 43 (citing Ex. 1002 ¶ 96).

Petitioner has shown that dependent claim 9 is unpatentable as obvious over Sheesley.

³ For purposes of this Decision, we interpret claim 9 as if it includes the bracketed addition. Claims 4, 5, and 9–11 appear to have minor typographical or transposition errors. For clarity in our Decision, and not as an amendment to the claims, we added bracketed portions to address these errors. This interpretation appears to be consistent with the parties' understanding of the claims also.

7. *Dependent Claim 10*

Claim 10 recites:

10. The method of claim 1, further comprising:

positioning a conveyor proximate a proppant transporting rail vehicle to receive proppant from the proppant transporting rail vehicle and thereby convey the proppant away from the proppant transporting rail vehicle when the conveyor operates;

positioning the plurality of empty proppant containers to receive proppant from the conveyor sequentially so that as one of the plurality of empty proppant containers is filled to a desired level, such one container then being removed in favor of another one of the plurality of empty proppant containers with the capacity to accept more proppant;

after removal of proppant from the conveyor, transporting each of the plurality of proppant [filled] containers away from the proppant transporting rail vehicle.⁴

Ex. 1001, 11:20–12:14.

Regarding the use of the conveyor to convey proppant away from the rail vehicles to fill the proppant containers, Petitioner relies on the same disclosures of Sheesley relied on for claim 8 (*see* Part III.D.5 *supra*).

Pet. 44. Petitioner acknowledges that “Sheesley does not expressly teach” filling the containers “sequentially,” as claimed. *Id.* at 45. To address this missing limitation, Petitioner reasons, with support from Mr. Schaaf’s testimony, that it would have been obvious to implement this “common filling practice.” *Id.* (citing Ex. 1002 ¶ 100). We credit Mr. Schaaf’s testimony. Regarding transporting each of the filled containers away from

⁴ For purposes of this Decision, we interpret claim 10 as if it includes the bracketed alteration.

the rail vehicle, Petitioner relies on the same disclosure in Sheesley relied on for claim 7 (*see* Part III.D.4 *supra*). *Id.* at 46.

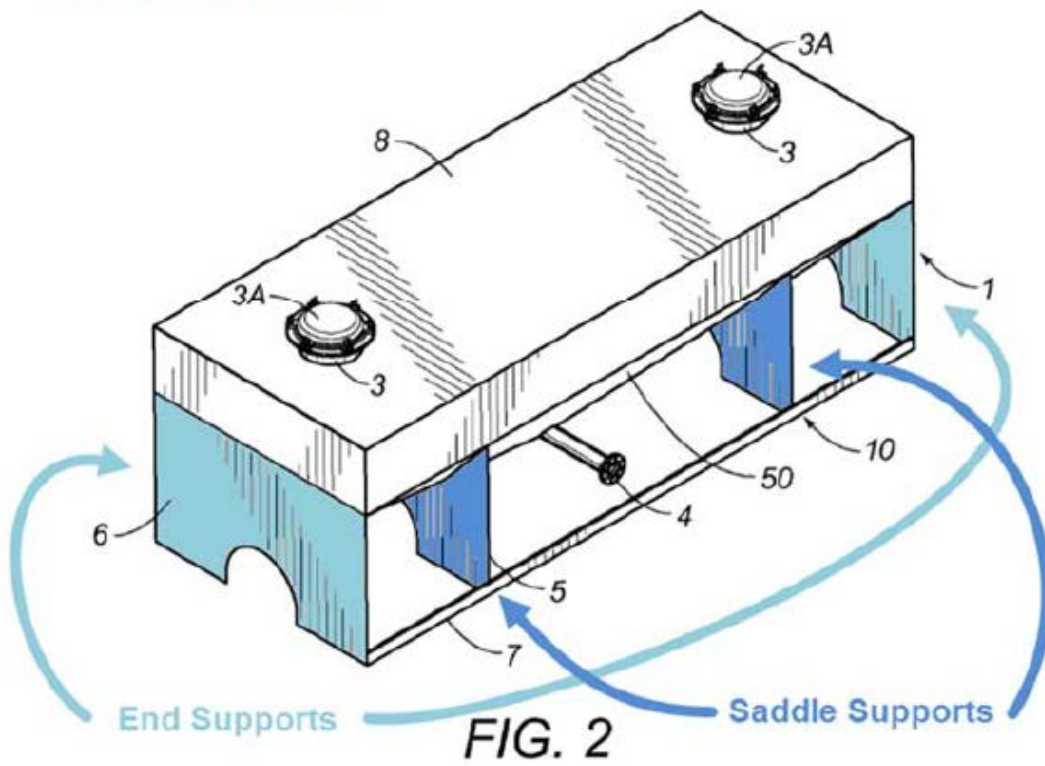
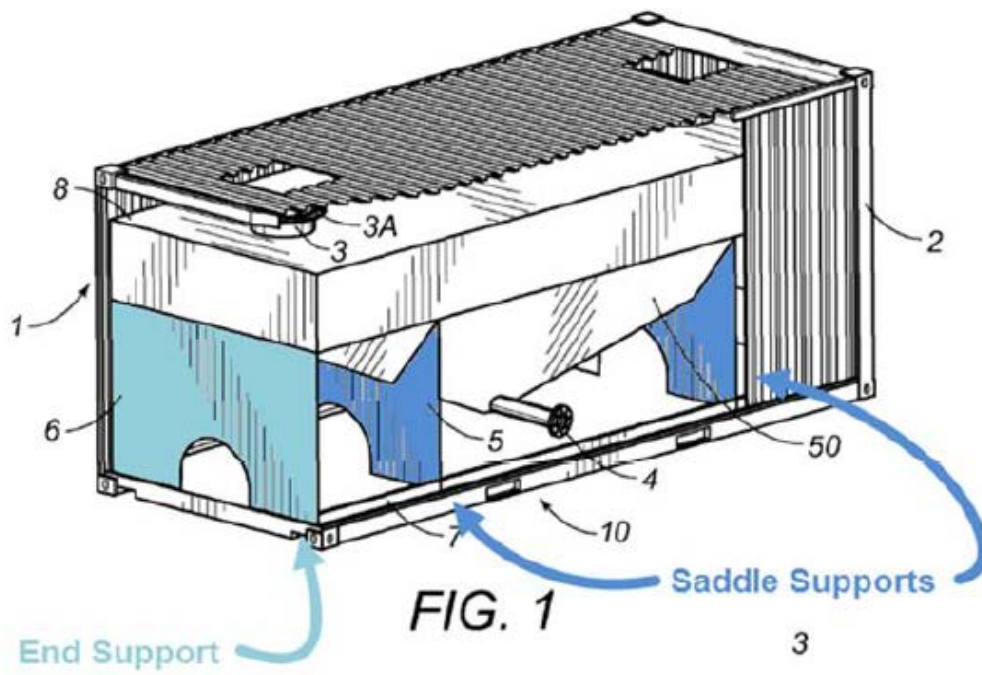
Petitioner has shown that dependent claim 10 is unpatentable as obvious over Sheesley.

8. *Summary*

For the reasons discussed above, Petitioner has shown that claims 1, 2, and 6–10 are unpatentable as obvious over Sheesley.

E. Ground 2: Claim 1 as obvious over Sheesley and Mintz

As discussed above in connection with Ground 1, Petitioner has shown that claim 1 is unpatentable based on Sheesley alone. For Ground 2, Petitioner asserts that, to the extent that Sheesley does not “each of the first and second end surfaces having a plurality of upright structural support members thereon to enhance integrity of the container so that a large amount of weight can be stacked upon the container and so that heavy weight can be stored therein,” as recited in claim 1, Mintz teaches or suggests this limitation. Pet. 46. According to Petitioner, this limitation is taught by Mintz’s disclosure that its container’s external frame “are modified to ‘accommodate an internal structure adapted to support and strengthen the walls and floor of such ISO shipping containers . . . to efficiently and securely achieve prerequisite sand and proppant material transfer from such adapted containers.’” *Id.* at 47 (citing Ex. 1004, 1:63–2:3, 2:16–20, 2:28–31). Petitioner submits an annotated version of Mintz’s Figures 1 and 2 (*id.* at 48), which we reproduce below:



Figures 1 and 2 depict frontal and side views, respectively, of an embodiment of Mintz's invention. Ex. 1004, 3:43–46. According to Petitioner, Mintz's Figure 2 illustrates brace and truss support assembly 10 with cross-braces 7, end supports 6, and saddle supports 5. *See* Pet. 47 (citing in part Ex. 1004, 4:56–61).

In combining Sheesley with Mintz, Petitioner reasons that a person of ordinary skill in the art “would understand that Sheesley's container could receive further structural support when combined with the braces and trusses disclosed in Mintz” and that the combination would have predictably yielded an “improved structural support for the container holding the proppant.” *Id.* at 50 (citing Ex. 1002 ¶ 110).

Petitioner has shown that claim 1 is unpatentable over Sheesley alone *and* the combination of Sheesley and Mintz.

F. Ground 3: Claims 3–5 and 11 as obvious over Sheesley and Uhryn

Petitioner asserts that claims 3–5 and 11 are unpatentable as being obvious over Sheesley and Uhryn. Pet. 51–63. Below, we address Petitioner's and Patent Owner's contentions for each of these claims.

1. Dependent Claim 3

Claim 3 depends from claim 1 and recites

3. The method of claim 1, wherein the support platform is a tiltable support platform, the method further comprising:

tilting the support platform and one or more of the plurality of proppant filled containers located on the platform to discharge proppant from an opening adjacent an end of the one or more of the plurality of proppant filled containers.

Ex. 1001, 10:38–44.

Petitioner relies on Uhryn’s teaching of tilter 56 being used to tilt a container filled with proppant to empty the container through a rear gate. Pet. 51–52 (citing Ex. 1005 ¶ 20, Fig. 3). Petitioner asserts one of skill in the art would have wanted to use Uhryn’s tiltable platform with Sheesley’s methods and containers for transporting proppant because of the similarities between the references, and because Uhryn’s tiltable platform provides many advantages, including that “[u]nloading by container tilting has been found to be advantageous over pneumatic unloading in that container tilting is quicker and less hazardous to worker health in that less fine dust is produced,” and that “[c]ontainer tilter 56 also allows substantially all, if not all, of the proppant contained within intermodal transport container 30 to be unloaded.” *Id.* at. 63 (quoting Ex. 1005 ¶ 20 (alterations by Petitioner)). Petitioner also contends one of ordinary skill in the art would have recognized that the use of a tiltable platform allows the container to be configured to hold more proppant than Sheesley’s container will hold because Sheesley’s internal hopper mechanism is not needed, and would have had a reasonable expectation of success in combining the teachings of Sheesley and Uhryn in this predictable manner. *See id.*

Petitioner has shown that claim 3 is unpatentable as obvious over Sheesley and Uhryn.

2. *Dependent Claim 4*

Claim 4 recites:

4. The method of claim 1, further comprising:

conveying the proppant from the one or more proppant transporting rail vehicles to the plurality of empty proppant containers on a first conveyor; and

conveying the proppant from one or more of the plurality of proppant [filled] containers to one or more proppant transporting road vehicles on a second conveyor.⁵

Ex. 1001, 10:45–51.

Petitioner relies on Sheesley for teaching that proppant can be conveyed on a conveyor from a rail vehicle to empty proppant containers. Pet. 53–54 (citing Ex. 1003 ¶¶ 20, 78, 84, Figs. 2, 5, claim 21). Petitioner contends that Sheesley alone renders obvious using a second conveyor to convey proppant from the filled containers to one or more road vehicles for transport because Sheesley teaches unloading the containers with a conveyor to send proppant to the blender, and one of ordinary skill in the art would have understood that proppant could just as easily be unloaded from the filled containers by using the second conveyor to convey the proppant from the lower hatch to road transport vehicles. *Id.* at 55–56 (citing Ex. 1003 ¶¶ 83, 84, 89, Figs. 5, 7; Ex. 1002 ¶¶ 121–22).

Petitioner also argues that, to the extent this limitation is not rendered obvious by Sheesley alone, Uhryn teaches unloading proppant from a container to a road transport vehicle using a conveyor. *Id.* at 56 (citing

⁵ For purposes of this Decision, we interpret claim 4 as if it includes the bracketed alteration.

Ex. 1005 ¶ 20; Ex. 1002 ¶ 123). Petitioner relies on the same reasoning for combining the teachings of Sheesley and Uhryn as discussed above for claim 3. *Id.* at 61–63.

Patent Owner disputes Petitioner’s assertion that Sheesley alone discloses this limitation. *See* PO Resp. 32–35 (citations omitted). In particular, Patent Owner asserts that, while Petitioner argues that a person of ordinary skill in the art “could have” unloaded Sheesley’s filled containers by using the second conveyor to convey the proppant from the lower hatch to road transport vehicles, Petitioner does not explain “why” a person of ordinary skill in the art would seek to do so. *Id.* at 34 (citing *Resmed Ltd. v. Fisher & Paykel Healthcare Ltd.*, IPR2016-01734, Paper 11 at 26 (PTAB Mar. 13, 2017) (expert testimony that outlined whether straps “could” connect two structures “does not explain sufficiently why a person of ordinary skill in the art would have been motivated to”)).

We agree with Patent Owner. The relevant portion of Sheesley discloses:

The sand 306 may either be transferred from the modified cargo container 302 into the modified cargo container 304 located immediately there below or *delivered to a conveyor* (not shown) located below the lower modified cargo container 304 by opening its lower sliding door 316 to open lower hatch 318. The sand flowing from the lower hatch 318 may be dumped on a belt (not shown), which will feed the sand to the *blenders* (not shown).

Ex. 1003 ¶ 84 (*italicized emphasis added, bold emphases omitted*).

Although paragraph 84 discloses that sand from this second conveyor unloads the sand *to a blender*, it does not disclose a second conveyor that unloads sand to a road vehicle, as required by claim 4. Petitioner attempts to

address this shortcoming in one of two ways, neither of which we find persuasive.

First, Petitioner asserts that Sheesley discloses that the “containers may be emptied into bulk proppant containers, such as the Sand King.” Pet. 56 (citing Ex. 1002 ¶ 121; Ex. 1003 ¶¶ 83, 89). Yet, we find nothing in Mr. Schaaf’s testimony (*e.g.*, Ex. 1002 ¶ 121) or in the cited portions of Sheesley (Ex. 1003 ¶¶ 83, 89) that support a finding that the second conveyor that unloads sand to a blender may alternatively unload the sand to an intermediary transporting road vehicle. Indeed, Sheesley instead discloses, “Each time the sand has to be handled through a conveyor, it is an additional expense” (Ex. 1003 ¶ 49), and we are not persuaded that Sheesley teaches that its second conveyor disclosed in its paragraph 84 is also used to unload proppant into a road transporting vehicle.

Second, Petitioner reasons that the second conveyor limitations is also “rendered obvious by Sheesley in view of Uhryn.” Pet. 56. We agree with Patent Owner’s argument that Petitioner does not explain why a person of ordinary skill in the art would want to use Uhryn’s *conveyor* as recited in claim 4. PO Resp. 37–39. For example, Petitioner asserts that it was desirable to modify Sheesley’s methods and containers for transporting proppant to use Uhryn’s *tiltable platform* because of the similarities between the references, and because Uhryn’s tiltable platform provides many advantages, including that “[u]nloading by container tilting has been found to be advantageous over pneumatic unloading in that container tilting is quicker and less hazardous to worker health in that less fine dust is produced,” and that “[c]ontainer tilter 56 also allows substantially all, if not

all, of the proppant contained within intermodal transport container 30 to be unloaded.” Pet. 63 (quoting Ex. 1005 ¶ 20 (alterations by Petitioner)).

Petitioner also contends one of ordinary skill in the art would have recognized that the use of a tiltable platform allows the container to be configured to hold more proppant than Sheesley’s container will hold because Sheesley’s internal hopper mechanism is not needed. *See id.* However, even if there may be benefits to Uhryn’s tiltable unloading over pneumatic unloading, such as it is quicker and less hazardous, Petitioner fails to articulate a reason for modifying Sheesley’s second conveyor such that it conveys proppant from a container to a road vehicle—rather than straight to the blender—as required by claim 4. Petitioner’s conclusory statements about Uhryn’s system does not persuasively provide an adequate rationale for modifying Sheesley’s second conveyor.

For the foregoing reasons, Petitioner failed to show that Sheesley alone or the combination of Sheesley and Uhryn disclose “conveying the proppant from one or more of the plurality of proppant [filled] containers to one or more proppant transporting road vehicles on a second conveyor,” as required by dependent claim 4. As such, Petitioner has not shown that dependent claim 4 is unpatentable over Sheesley and Uhryn.

3. *Dependent Claim 5*

Claim 5 depends from claim 4 and recites “channeling the proppant from the plurality of proppant [filled] containers to the second conveyor through a hopper.”⁶ Ex. 1001, 10:52–55.

Petitioner contends Uhryn teaches transferring proppant from containers to road vehicles via “proppant transfer device 58,” which may comprise a hopper and a conveyor. Pet. 57–58 (citing Ex. 1005 ¶ 20, Fig. 3; Ex. 1002 ¶¶ 126–27). Petitioner relies on the same reasoning for combining the teachings of Sheesley and Uhryn as discussed above for claim 3. *Id.*

For the reasons discussed above in connection with 4, Petitioner has not shown that claim 4, and thus claim 5 which depends from claim 4, is unpatentable as obvious over Sheesley and Uhryn.

4. *Dependent Claim 11*

Claim 11 depends from claim 1 and recites the additional steps of:

loading each of the plurality of proppant [filled] containers onto a [tiltable] platform; providing a conveyor between the tiltable platform and one or more proppant transporting road vehicles; and tilting the platform to discharge the proppant from the container into the conveyor.⁷

Ex. 1001, 12:15–21.

Petitioner relies on Uhryn’s disclosure of unloading filled proppant containers onto conveyors using a tiltable platform, as discussed above for

⁶ For purposes of this Decision, we interpret claim 5 as if it includes the bracketed alteration.

⁷ For purposes of this Decision, we interpret claim 11 as if it includes the bracketed alteration.

claim 3 (*see* Part III.F.1 *supra*). Pet. 59–60. Petitioner relies on the same reasoning for combining the teachings of Sheesley and Uhryn as discussed above for claim 3. *Id.* at 61–63.

Petitioner has shown that claim 11 is unpatentable as obvious over Sheesley and Uhryn.

IV. CONCLUSION

Weighing the evidence of the disclosure of the references, the competing testimony, and the reasoning to combine the references, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–3 and 6–11 of the '772 patent are unpatentable. Petitioner has not shown that claims 4 and 5 are unpatentable.⁸

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 2, 6–10	103(a)	Sheesley	1, 2, 6–10	
1	103(a)	Sheesley, Mintz	1	
3–5, 11	103(a)	Sheesley, Uhryn	3, 11	4, 5
Overall Outcome			1–3, 6–11	4, 5

⁸ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

V. ORDER

Accordingly, it is:

ORDERED that claims 1–3 and 6–11 of the '772 patent have been shown to be unpatentable; and

FURTHER ORDERED that the parties to the proceeding seeking judicial review of this Final Written Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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