

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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**ARROWS UP, LLC**  
Petitioner

v.

**OREN TECHNOLOGIES, LLC**  
Patent Owners

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Case No. IPR2018-01230  
U.S. Patent No. 9,248,772

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**PETITION FOR *INTER PARTES* REVIEW OF  
U. S. PATENT NO. 9,248,772 UNDER  
35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 *ET SEQ.***

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## LIST OF EXHIBITS

<b>Exhibit No.</b>	<b>Description</b>
Ex. 1001	U.S. 9,248,772 (“‘772 patent”)
Ex. 1002	Declaration of Robert Schaaf (“Shaaf Decl.”)
Ex. 1003	U.S. Published Appl. No. 2013/0206415 (“Sheesley”)
Ex. 1004	U.S. 8,915,691 (“Mintz”)
Ex. 1005	U.S. Published Application No. 2013/0022441 (“Uhryn”)
Ex. 1006	U.S. Application No. 13/332,937 (“‘937 Application”)
Ex. 1007	Redline of U.S. Application No. 13/332,937 and U.S. 9,248,772
Ex. 1008	U.S. Provisional Application No. 61/429,046 (“Mintz Provisional”)
Ex. 1009	U.S. Provisional Application No. 61/509,943 (“Uhryn Provisional”)
Ex. 1010	Portions of the prosecution history for U.S. Application No. 14/314,468 (“‘468 File History”)
Ex. 1011	Portions of the prosecution history for U.S. Application No. 14/841,942 (“‘066 File History”)
Ex. 1012	ISO 1496-1: Series 1 Freight Containers—Specification and Testing—Part 1, General Cargo Containers (August 1990) (“ISO 1496 Standard”)
Ex. 1013	Intermodal Transportation: Moving Freight in a Global Economy (published 2011) (“Intermodal Transportation”)

## **I. STATEMENT OF THE PRECISE RELIEF REQUESTED AND THE REASONS THEREFOR (37 C.F.R. § 42.22(A))**

Arrows Up, LLC (“Petitioner”), in accordance with 35 U.S.C. § 311 and 37 C.F.R. § 42.100, respectfully petitions for *Inter Partes* Review, and seeks cancellation of claims 1-11 (the “Challenged Claims”) of United States Patent No. 9,248,772 to John Oren, entitled “Method of delivering, transporting, and storing proppant for delivery and use at a well site” (hereinafter, the “’772 patent”), as unpatentable for obviousness. Upon information and belief, the ‘772 patent is assigned to Oren Technologies LLC. This Petition establishes that Petitioner has a reasonable likelihood of prevailing with respect to at least one of the Challenged Claims. A copy of the ‘772 patent is provided as Ex. 1001.

## **II. OVERVIEW AND STATE OF THE ART**

The past decade has seen a significant expansion in oil production, attributable to advances in hydraulic fracturing techniques. These advances require copious amounts of proppant (such as sand) to keep the fractures from closing. Ex. 1003 (Sheesley) ¶[0007]; Ex. 1004 (Mintz) 1:30-37; Ex. 1005 (Uhryn) ¶[0002]. Thus, significant amounts of proppant must be transported to the well site.

Seeking to capitalize on this expansion, the Patentee has acquired more than 60 patents, most of which concern, quite literally, moving and transporting proppant in containers. But moving and transporting goods in containers is not new. Ex. 1013 (Intermodal Transportation) at 5 (“The most dramatic innovation in

world trade in the twentieth century was the onset of containerization in the latter half of the 1950s and 1960s.”). And, outside of the containers adapted to move proppant, none of the claims address any nuance specific to the logistics of transporting proppant. Instead, the ‘772 patent simply claims the standard logistical steps involved in moving material from one location to another using containers. The ‘772 patent’s complete lack of innovation is evident in the claims, which straightforwardly recite the routine logistical steps involved in moving a container to its destination. A wide variety of materials can be – and are – transported according to the claimed steps. Moreover, as detailed below, the Patentee was hardly the first to think of transporting and storing proppant using containers. Ex. 1003 (Sheesley) ¶[0012]; Ex. 1004 (Mintz) 1:11-16; Ex. 1005 (Uhryn) ¶[0004]- ¶[0005].

Without solving any problem associated with transporting proppant, the ‘772 patent brazenly claims every step in this process, with claims that are essentially filling, moving, and stacking boxes full of sand. As will be demonstrated, however, the claimed steps were both obvious and routinely practiced in the fracking industry and elsewhere. Thus, the claims of the ‘772 patent are invalid, for at least the reasons that follow.

### **III. IDENTIFICATION OF CLAIMS BEING CHALLENGED (§ 42.104(B))**

Claims 1-11 are challenged as unpatentable under 35 U.S.C. § 103:

<b>Ground</b>	<b>Reference(s)</b>	<b>Basis</b>	<b>Claims Challenged</b>
1	U.S. Published Appl. No. 2013/0206415 (“Sheesley”)	§103	1-2, 6-10
2	Sheesley in combination with U.S. 8,915,691 (“Mintz”)	§103	1
3	Sheesley in combination with U.S. Published Appl. No. 2013/0022441 (“Uhryn”)	§103	3-5, 11

The grounds raised are meaningfully distinct from each other and are not redundant. Ex. 1002 (Schaaf Decl.) ¶62. Both Mintz and Uhryn are provided to fill in any gaps in the claims that are not disclosed within Sheesley. Moreover, while Sheesley, Mintz, and Uhryn discuss similar concepts, they describe them differently, and Patentee may try to distinguish the presence of claim limitations in the prior art based on these differences in wording. Accordingly, all grounds should be included for trial.

#### **IV. THE ‘772 PATENT**

##### **A. Priority Date**

The ‘772 patent, entitled “Method of delivering, transporting, and storing proppant for delivery and use at a well site” is directed to exactly that. Ex. 1001 (‘772 patent). The ‘772 patent claims priority to PCT Application No. PCT/US13/32819, U.S. patent application 13/427,140, and U.S. patent application 13/332,937.

The earliest priority application the ‘772 patent claims priority to is U.S. patent application 13/332,937 (the “‘937 Application”), filed on Dec. 21, 2011. But none of the Challenged Claims are entitled to the ‘937 Application’s filing date because the ‘937 Application does not disclose at least claim limitations [1a(i)], [1b], and [1c] (as labeled below). None of these limitations appear in the ‘937 Application, which is significantly different from the specification of the ‘772 patent. *See* Ex. 1006 (‘937 Application); Ex. 1007 (redline). The ‘937 Application describes only a vessel for proppant storage and provides no details on the logistics of “delivering, transporting, and storing proppant for delivery and use at a well site,” as is claimed in the ‘772 patent. Specifically, the ‘937 Application lacks disclosure of at least: “vertically stacking a plurality of empty proppant containers in close proximity to a rail spur,” “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,” and “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.”

To the extent that Patentee argues that disclosure of only a vessel for proppant storage provides written description for these claim limitations, numerous references would anticipate the claims of the ‘772 patent, as they disclose a vessel for proppant storage.



Accordingly, the earliest priority date the Challenged Claims are even arguably entitled to is March 22, 2012, the filing date of U.S. patent application 13/427,140. Ex. 1002 (Schaaf Decl.) ¶32.

## **B. The Purported Invention**

As the “Description of Related Art” section of the ‘772 patent explains, proppant is a particulate material, such as sand or ceramic, used in hydraulic fracturing, and “a large amount of such proppant is required” during hydraulic fracturing, though it purportedly “has been found to be rather difficult to effectively transport the proppant to the desired location,” and “to effectively store the proppant at the fracturing sites.” Ex. 1001 (‘772 patent) 1:59-2:7.

According to the ‘772 patent, in the prior art “proppant is hauled to the desired locations on the back of trucks and is dumped onsite” where it “is often exposed to adverse weather conditions” and “requires a large capital investment in storage facilities,” as expensive “silos have been built in order to store proppant for use in the fracturing operation.” Ex. 1001 (‘772 patent) 1:59-2:17. “Whenever such silos are used, there is a possibility of contamination of the proppant that is contained within the silo.” Ex. 1001 (‘772 patent) 2:12-17. As such, the ‘772 patent seeks to provide a system for the storage and transport of proppant that is “mobile, scalable and flexible” and “to provide a system for the storage and

transport of proppant that can be located in proximity to the rail spur.” Ex. 1001 (‘772 patent) 4:14-19.

The ‘772 patent purports to solve these problems associated with proppant transport and storage through the use of a container to transport and store the proppant. Specifically, the container contains an outlet on the top “so as to allow the proppant to be introduced into the interior volume of the container,” as well as a second outlet having a “flow gate” “so as to allow the proppant to flow outwardly of the interior volume of the container.” Ex. 1001 (‘772 patent) 4:62-67. This container can be used to transport proppant from a rail site to another location. Ex. 1001 (‘772 patent) 5:27-34. These containers are also stackable and “can be stacked until such time as proppant is required or until such time as equipment is available for the unloading of such containers.” Ex. 1001 (‘772 patent) 8:63-65. Because of the use of containers, rather than silo facilities, the “number of containers is scalable for inventory requirements.” Ex. 1001 (‘772 patent) 9:38-40.

## **V. PERSON OF ORDINARY SKILL IN THE ART**

A person of ordinary skill in the art (“POSITA”) is a hypothetical person who is presumed to be aware of all pertinent art, thinks along the lines of the conventional wisdom in the art, and is a person of ordinary creativity. As of March 22, 2012, a POSITA in the technical field of the ‘772 patent would have been someone with either (i) a bachelor’s degree in an engineering or logistics discipline

plus 1-2 years of experience in hydraulic fracturing and logistical support of fracking operations, or (ii) 4-5 years of experience in hydraulic fracturing and logistical support for fracking operations. Ex. 1002 (Schaaf Decl.) ¶37. Further, a POSITA would look to bulk material technologies and techniques to inform their thinking about supporting fracking operations and logistics, as proppant sand is a kind of bulk material. Ex. 1002 (Schaaf Decl.) ¶37.

## **VI. CLAIM CONSTRUCTION**

During *inter partes* review, claim terms are ordinarily construed using the “broadest reasonable construction.” 37 C.F.R. § 42.100(b); *see also Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131 (2016).

As to all claim terms, Petitioner has applied the broadest reasonable interpretation in light of the specification. Petitioner reserves the right to seek different claim constructions in different forums or proceedings, including any proceeding where the broadest reasonable construction standard is not applied.

## **VII. BRIEF DESCRIPTION OF THE PRIOR ART**

### **A. U.S. Published Appl. No. 2013/0206415 (Sheesley)**

#### **1. Priority Date**

U.S. Published Appl. No. 2013/0206415 (Sheesley) was filed on February 10, 2012 and published on August 15, 2013. This predates March 22, 2012, the earliest priority date to which the Challenged Claims are even arguably entitled.

Sheesley is therefore prior art to the ‘772 patent under pre-AIA 35 U.S.C. § 102(e). Sheesley was before the Patent Office during prosecution of the ‘772 patent. Although Sheesley was discussed by the Examiner during prosecution of related patents, Sheesley was never cited during any office action with respect to these claims.

## **2. Overview of Sheesley**

Sheesley “relates to the transportation of a granular substance such as sand and, more particularly, to the modification of cargo containers for the purpose of transporting sand therein to frac sites.” Ex. 1003 (Sheesley) ¶[0002]. Like the ‘772 patent, Sheesley recognizes that the transfer and storage of proppant sand in hydraulic fracturing “can cost five or six million dollars,” and that “[m]ost of the cost of the sand is for handling.” Ex. 1003 (Sheesley) ¶[0009]. As Sheesley explains, “the good quality fracing sand comes from such places as the State of Wisconsin, China, or Russia” and “is handled at multiple locations in multiple ways with very inefficient supply chain logistics for the handling of the fracing sand.” Ex. 1003 (Sheesley) ¶[0010].

Sheesley posits that “[i]f the sand can be handled fewer times, the cost can be greatly reduced” and that “[i]t is important that as soon as the sand is delivered to the frac site, that it can be immediately unloaded to eliminate the demurrage.” Ex. 1003 (Sheesley) ¶[0009], ¶[0011]. Sheesley proposes to solve these problems

by “modify[ing] standard cargo containers for the delivery of granular material for fracing.” Ex. 1003 (Sheesley) ¶[0012]. This modified container can be used “to carry a fracing proppant such as sand from a quarry or source to the frac site.” Ex. 1003 (Sheesley), Abstract. “By use of the modified cargo containers as described [in Sheesley], the number of times the fracing proppant, such as sand, is handled is greatly reduced. The reduction in the number of times the fracing proppant is handled greatly reduces the cost of completion of a single hydrocarbon well.” Ex. 1003 (Sheesley) ¶[0091]. Further, these modified containers are stackable and “may be stacked in any conventional means, either while in transit or at the frac site,” which “eliminates the demurrage of waiting to unload sand into bulk sand containers at the frac site.” Ex. 1003 (Sheesley) ¶[0018]. This logistical scenario is illustrated in Figure 2 of Sheesley, below.

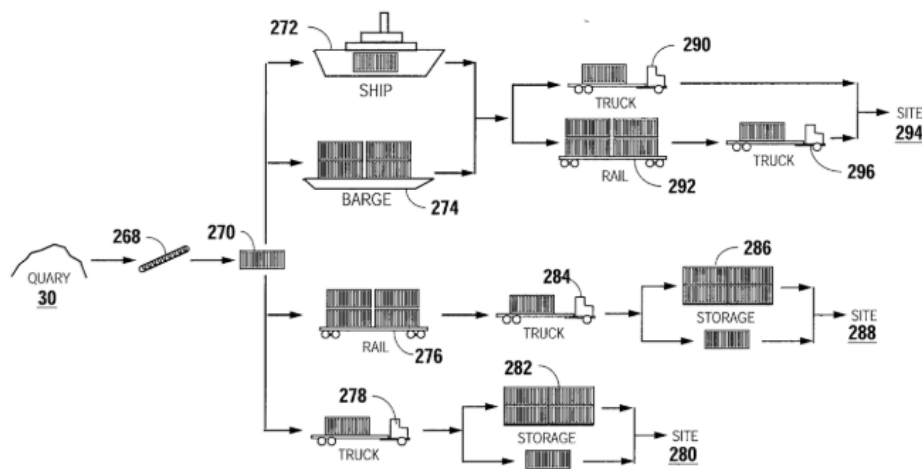
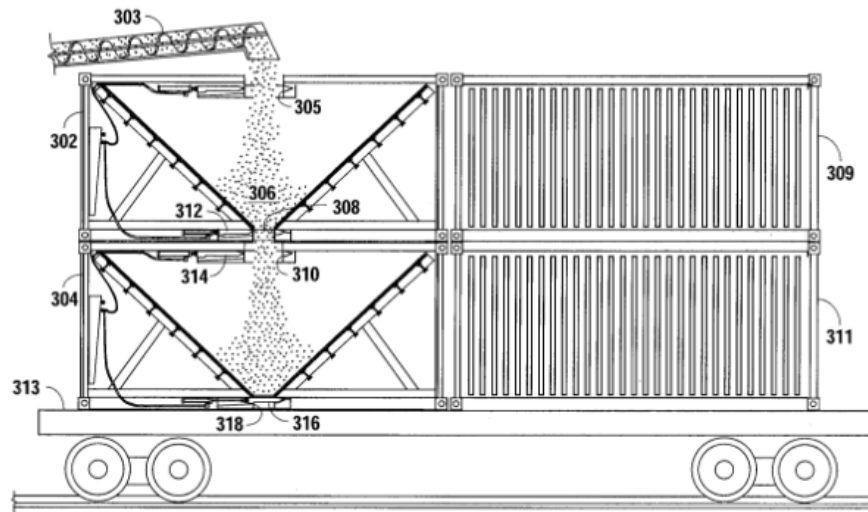


Fig. 2

Sheesley discloses a standard container that has been modified to have an “upper hatch” “located in [a] hole in the top and used to load sand in the cargo container” and a “lower hatch” “in the opening in the bottom [that] may be opened to remove the sand therefrom.” Ex. 1003 (Sheesley) ¶[0016]; ¶[0050]. Sheesley’s modified container is illustrated in Figure 3, below.



*Fig. 5*

## **B. U.S. 8,915,691 (Mintz)**

### **1. Priority Date**

U.S. 8,915,691 (Mintz) was filed on January 1, 2012 and granted on December 4, 2014. Mintz is therefore prior art to the ‘772 patent under pre-AIA 35 U.S.C. § 102(e), as of January 1, 2012. This predates March 22, 2012, the earliest effective priority date that the Challenged Claims are even arguably entitled to.

Further, Mintz claims priority to U.S. Provisional Application No. 61/429,046, filed on Dec. 31, 2010. Mintz is entitled to this benefit because at least claim 1 is supported by the disclosure of the provisional application, as detailed below. *See* Ex. 1008 (Mintz Provisional); Ex. 1002 (Schaaf Decl.) ¶45. Mintz is therefore prior art to the ‘772 patent under pre-AIA 35 U.S.C. § 102(e), as of Dec. 31, 2010.

Mintz Claim 1	Mintz Provisional
<p><b>[1pre]</b> 1. In a standard 20-foot ISO intermodal shipping container having a plurality of walls including a first pair of parallel longitudinal walls and a second pair of parallel transverse walls, with said second pair of parallel transverse walls perpendicular to said first pair of parallel longitudinal walls, with one wall of said pair of transverse walls having a door disposed thereupon, and also having a floor and a roof perpendicular to said plurality of walls, a frac sand transporting apparatus comprising:</p>	<p><i>See</i> Mintz Prov. at 12 (“a specially configured apparatus adapted for preferably being slidably inserted into and removed from an ISO intermodal container and the like”); (“there is depicted a preferred embodiment 1 of an apparatus for transporting frac sand in an intermodal container 2”); Figs. 1-6.</p> <div data-bbox="954 1304 1256 1514" data-label="Image"> </div> <p style="text-align: center;"><i>FIG. 1</i></p>
<p><b>[1a]</b> a first plurality of input ports disposed atop said roof with each of said input ports coupled with a first output</p>	<p><i>See</i> Mintz Prov. at 8 (“plurality of intake and discharge ports to be routinely coupled with a preexisting conventional hopper assembly located in situ at the</p>

Mintz Claim 1	Mintz Provisional
<p>pipe located in situ at a frac sand processing facility;</p>	<p>well site at which fracturing operations will be conducted”); at 9 (“there is seen a pair of tubular input ports 3 disposed atop roof 8”); at 10, claim 1 (“a plurality of inlet ports disposed atop said roof, said inlet ports receiving said frac sand and said proppant from said quarry or other frac sand supply source into a hopper”); Fig. 2; Figs. 7-8.</p>
<p><b>[1b]</b> a brace and truss framework enclosed within said standard 20-foot ISO intermodal rectangular shipping container and affixed to said plurality of walls, said floor and said roof, for reinforcing the strength of said plurality of walls, said floor and said roof by said brace and truss framework;</p>	<p><i>See</i> Mintz Prov. at 8 (“While the base of apparatus 1 structurally devolves to a framework anchored by the fixed interconnection of pair of basal cross-braces 7 and pair of end supports 6 reinforced medially by plurality of saddle supports 5, the upper portion thereof is secured by roof 8. It will also be seen that the structure of frac sand transport apparatus 1 is further secured by medial cross-brace 17 which is affixed to the plurality of saddle supports 5.”); at 10, claim 1 (“an external framework comprising each of pair of longitudinal basal cross-braces fixedly interconnected at each end thereof with</p>



Mintz Claim 1	Mintz Provisional
	<p>one of pair of end supports and intermediately thereof with plurality of saddle supports;”); at 10, claim 1 (“said external framework anchored by the fixed interconnection of pair of basal cross-braces and pair of end supports that are reinforced medially by a plurality of saddle supports, the upper portion thereof being secured by a roof;”); Figs. 1 &amp; 2.</p>
<p>[1c] a hopper assembly disposed within and affixed to said brace and truss framework forming a sealable enclosure for receiving frac sand and/or proppant material from said first plurality of input ports, with said frac sand and/or proppant material collected and stored in a central chamber member disposed therewithin;</p>	<p>See Mintz Prov. at 9 (“Accordingly, the lids would preferably be situated just beneath the container roof and, once opened by hand, frac sand would be delivered into the hopper portion of apparatus 1. To assure that contained frac sand remains devoid of water incursion, it is contemplated that the apparatus lid could be enclosed within a hingedly-opened cut-out.”); Figs. 1-3.</p>
<p>[1d] said central chamber member disposed parallel to and longitudinally of said floor throughout the length of said ISO intermodal rectangular shipping container, and having a pair of arms</p>	<p>See Mintz Prov. at 8 (“While the base of apparatus 1 structurally devolves to a framework anchored by the fixed interconnection of pair of basal cross-brace 7 and pair of end supports 6</p>

Mintz Claim 1	Mintz Provisional
<p>forming a funnel member at a vertex thereof, with each arm of said pair of arms angled at about 31° relative to a horizontal base plate disposed therebetween and affixed at each end thereof to said brace and truss framework, to urge said sand and/or proppant material into said central chamber member, and also having a pneumatic controller fluidly interconnected with a valve apparatus and an external compressed air source;</p>	<p>reinforced medially by plurality of saddle supports 5, the upper portion thereof is secured by roof 8. It will also be seen that the structure of frac sand transport apparatus 1 is further secured by medial cross-brace 17 which is affixed to the plurality of saddle supports 5.”); at 9 (“Accordingly, the lids would preferably be situated just beneath the container roof and, once opened by hand, frac sand would be delivered into the hopper portion of apparatus 1.”); at 10 (“Besides the hereinbefore described steel frac sand transport and delivery module, another embodiment of the modular apparatus contemplated by the present invention corresponds to a bladder apparatus using high-density elastomeric and like material similar to that used in military fuel storage applications. For such an embodiment, the central bladder would hold the frac sand material and a plurality of side-bladders would inflate to control the rate</p>

Mintz Claim 1	Mintz Provisional
	and extent of frac sand and proppant discharge.”); Figs. 1-3.
<p>[1e] a second plurality of output discharge ports disposed upon an external transverse surface of said hopper assembly, with each said output port thereof coupled to a second discharge pipe located in situ at a well site for transfer of said sand and/or proppant;</p>	<p>See Mintz Prov. at 8 (“Referring collectively to FIGS. 1-8, there is depicted . . . plurality of outlet ports”); at 9; Fig. 2; Figs. 7-8.</p>
<p>[1f] said valve apparatus disposed within said hopper assembly parallel to and longitudinally of said floor throughout the length of said ISO intermodal rectangular shipping container, for pneumatically controlling flow of said frac sand and/or proppant material from said central chamber member to said second plurality of output discharge ports and, in turn, into said second discharge pipe; and</p>	<p>See Mintz Prov. at Abstract, 14 (“a plurality of outlet ports for receiving the frac sand and proppant within the hopper and delivering the frac sand and proppant proximal to the well site”); at 8 (“As will become evident to those skilled in the art, embodiments of this frac sand transport apparatus are configured to enable its plurality of intake and discharge ports to be routinely coupled with a preexisting conventional hopper assembly located in situ at the well site at which fracturing operations will be conducted.”); at 9 (“Also seen is discharge port 4 with a mechanical valve</p>

Mintz Claim 1	Mintz Provisional
	<p>or the like typically having a 4" outlet and a 24" x 24" sliding grate valve.”); at 10 (“Besides the hereinbefore described steel frac sand transport and delivery module, another embodiment of the modular apparatus contemplated by the present invention corresponds to a bladder apparatus using high-density elastomeric and like material similar to that used in military fuel storage applications. For such an embodiment, the central bladder would hold the frac sand material and a plurality of side-bladders would inflate to control the rate and extent of frac sand and proppant discharge.”) Figs. 1-3.</p>
<p>[1g] said bladder-tube member cyclically inflated and deflated by a programmed circuit board contained within said pneumatic controller in order to control corresponding cyclical continuous input and discharge of said frac sand and/or proppant material.</p>	<p>See Mintz Prov. at 10 (“Besides the hereinbefore described steel frac sand transport and delivery module, another embodiment of the modular apparatus contemplated by the present invention corresponds to a bladder apparatus using high-density elastomeric and like material similar to that used in military fuel storage applications. For such an</p>

Mintz Claim 1	Mintz Provisional
	embodiment, the central bladder would hold the frac sand material and a plurality of side-bladders would inflate to control the rate and extent of frac sand and proppant discharge.”).

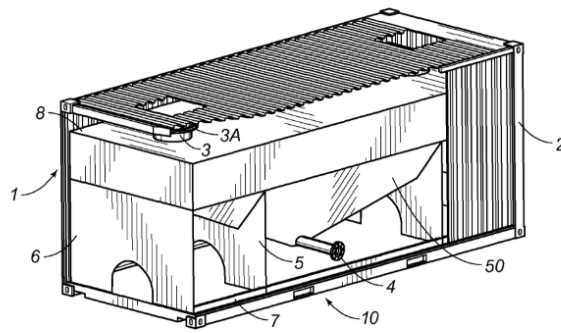
Although Mintz was listed on an Information Disclosure Statement submitted to the Patent Office during prosecution of the ‘772 patent, Mintz was never cited during any office action. Instead, Mintz was presented as one document among an extensive list of patents, patent applications, and other materials. Further, there is no indication that the Patent Office considered the particular disclosures and arguments discussed below. Accordingly, Mintz is proper grounds for this Petition.

## 2. Overview of Mintz

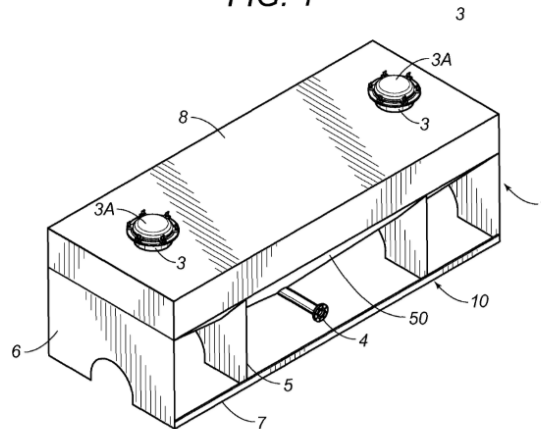
Mintz “pertains to apparatus allowing adaptation of an ISO intermodal container for transporting frac sand from its supplier to a well site.” Ex. 1004 (Mintz) 1:11-16. Like the ‘772 patent, Mintz explains that prior “apparatus[es] and methodolog[ies] for transporting frac fluid containing sand and proppant suffer from several long-standing disadvantages,” including that “frac sand and proppant have typically not been well sealed from environmental incursions during transfer[,] [undermining] the integrity of this material.” Ex. 1004 (Mintz) 1:38-45.

Mintz also explains that, because “it has been difficult . . . for special-purpose railcars and pneumatic trucks to be brought sufficiently close to well sites, it has become a prevalent occurrence for several material transfers to be prerequisite for ultimate delivery” of proppant to the well site. Ex. 1004 (Mintz) 1:48-53. Mintz further notes that “pneumatic trucks are frequently unavailable and unloading of frac sand from trucks or railcars is likewise frequently delayed, wherein railcars remain idle, with railroads charging significant demurrage fees.” Ex. 1004 (Mintz) 1:54-58.

To address these deficiencies, Mintz proposes a “novel application of standard ISO shipping containers to accommodate an internal structure adapted to support and strengthen the walls and floor of such ISO shipping containers,” as well as “a valve apparatus configured to efficiently and securely achieve prerequisite sand and proppant material transfer from such adapted containers to fracking operations.” Ex. 1004 (Mintz) 1:65-2:3. Specifically, Mintz discloses incorporating into a standard ISO shipping container a “[h]orizontal and angular peripheral bracing framework” to strengthen the walls of the container, and to support “a funnel-hopper member of a hopper discharge assembly.” Ex. 1004 (Mintz) 2:55-60. The modified ISO container disclosed in Mintz is illustrated in Figures 1 and 2, below.



**FIG. 1**



**FIG. 2**

## **C. U.S. Published Appl. No. 2013/0022441 (Uhryn)**

### **1. Priority Date**

U.S. Published Appl. No. 2013/0022441 (Uhryn) was filed on May 18, 2012 and granted on January 24, 2013. Uhryn claims priority to U.S. Provisional application No. 61/509,943, filed on July 20, 2011. Uhryn is entitled to this benefit because at least claim 1 is supported by the disclosure of the provisional

application, as detailed below. *See* Ex. 1009 (Uhryn Provisional);<sup>1</sup> Ex. 1002 (Schaaf Decl.) ¶49. Uhryn is therefore prior art to the ‘772 patent under pre-AIA 35 U.S.C. § 102(e), as of July 20, 2011.

Uhryn Claim 1	Uhryn Provisional
<b>[1pre]</b> 1. A method of bulk transport of proppant comprising:	Uhryn Prov. ¶[0004] (“A method of bulk transport of proppant is disclosed comprising”).
<b>[1a]</b> transporting proppant in an intermodal transport container to a well site, the intermodal transport container having four vertical walls, a roof, and a base, defining an enclosed interior, the proppant being loosely disposed within the enclosed interior; and	Uhryn Prov. ¶[0004] (“transporting proppant in an intermodal transport container to a well site, the intermodal transport container having four vertical walls, a roof, and a base, defining an enclosed interior,”); ¶[0017] (“The intermodal transport container 30 has four vertical walls 32, a roof 34, and a base 36. Walls 32, roof 34, and base 36 collectively define an enclosed interior 38. Proppant 28 is loosely disposed within the enclosed interior 38 . . .”).
<b>[1b]</b> unloading at least a portion of the proppant through one or more gates in	Uhryn Prov. ¶[0004] (“unloading at least a portion of the proppant through

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<sup>1</sup> The Uhryn provisional application is identical to the published application, thus citations to Ex. 1005 (Uhryn) throughout this Petition are also citations to Ex. 1009 (Uhryn Provisional).



Uhryn Claim 1	Uhryn Provisional
the intermodal transport container at the well site.	one or more gates in the intermodal transport container at the well site”); ¶[0020] (“at least a portion of the proppant is unloaded through one or more gates, such as rear gates 40”).

Although Uhryn was listed on an Information Disclosure Statement submitted to the Patent Office during prosecution of the ‘772 patent, Uhryn was never cited during any office action. Instead, Uhryn was presented as one document among an extensive list of patents, patent applications, and other materials. Further, there is no indication that the Patent Office considered the particular disclosures and arguments discussed below with respect to these claims. Accordingly, Uhryn is proper grounds for this Petition.

## 2. Overview of Uhryn

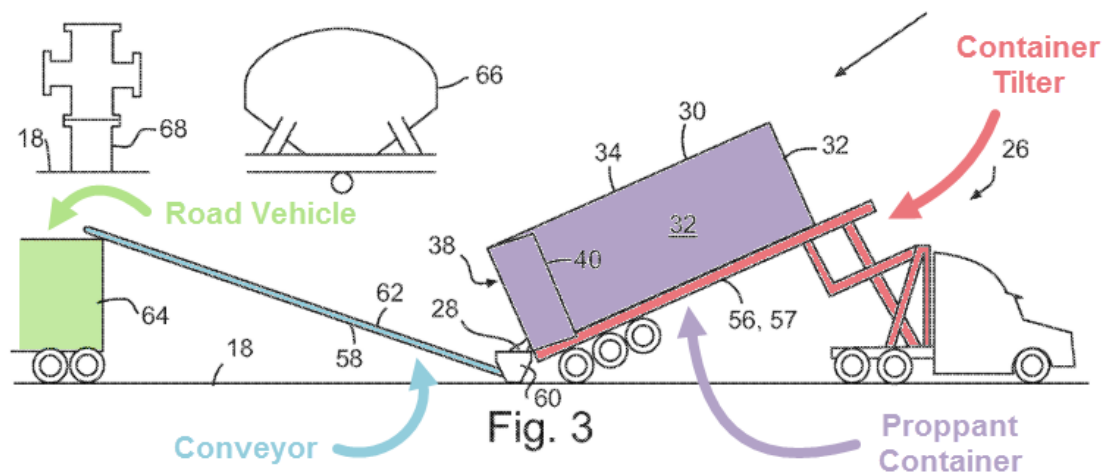
Uhryn provides for a method and apparatus for “bulk transport of proppant,” through the use of an “intermodal transport container,” including “unloading at least a portion of the proppant through one or more gates in the intermodal transport container at the well site.” Ex. 1005 (Uhryn) ¶[0004]-¶[0005]. Like the ‘772 patent, Uhryn recognizes that conventional methods of transporting proppant “requires a large capital expenditure to acquire and operate the transloading facilities, the warehouse space at the port 14 and each transloading facility, and to

acquire and operate the bulk rail cars, the pneumatic proppant trucks, and various other components required to make the system run smoothly,” and “if facility 17 is not ready to receive the proppant on arrival of the rail cars, even a one to two day sitting period for the rail cars may carry substantial expenses that are passed on to the end user directly or indirectly.” Ex. 1005 (Uhryn) ¶[0016].

To address these problems, Uhryn proposes the use of an intermodal transport container to transport and store proppant. As Uhryn explains, the use of such a container has numerous advantages, including reducing costs through the removal of one or more transloading steps, “is more secure than transport in bags [ ], as intermodal transport containers 30 are more damage-resistant and weatherproof,” is “cheaper, easier, and faster” for switching transport modes, permits “storing the proppant in the intermodal transport container,” and “is also advantageous due to the commonality and low cost of intermodal transport containers.” Ex. 1005 (Uhryn) ¶[0021]-¶[0023].

In order to unload proppant at the well site, Uhryn discloses a method of unloading filled proppant containers onto conveyors using a tiltable platform. Uhryn states that “[u]nloading may be carried out using a container tilter 56, such as a hydraulic fifth wheel tilter as shown . . . . Tilter 56 may be mounted on a wheeled trailer 57 as shown . . . .” Ex. 1005 (Uhryn) ¶ [0020]. Uhryn Figure 3

illustrates a method of using a container tilter to unload proppant.



## VIII. PRECISE REASONS FOR THE RELIEF REQUESTED

### A. Ground 1: Claims 1-2, 6-10 Are Rendered Obvious by Sheesley

#### 1. Independent Claim 1 is Rendered Obvious by Sheesley

[1pre] 1. A method of transporting proppant, the method comprising:

To the extent that the preamble is limiting, Sheesley describes a method of transporting proppant with containers constructed to store fracking proppant. Specifically, Sheesley relates to “the modification of cargo containers for the purpose of transporting sand therein to frac sites.” Ex. 1003 (Sheesley) ¶[0002]; Abstract. Sheesley further discloses that the “[m]odified cargo containers 270 can be loaded on a ship 272, barge 274, rail 276 or a flatbed truck trailer 278,” and “[o]bviously, multiple modified cargo containers 270 may be loaded on each of these alternative modes of transportation.” Ex. 1003 (Sheesley) ¶[0078]

Sheesley therefore discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶¶63-64.

**[1a(i)] 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,**

Sheesley discloses that the modified containers may be stacked while empty. *See* Ex. 1003 (Sheesley) ¶[0021] (“FIG. 3 is a pictorial illustration of the stackability of modified cargo containers, with or without sand therein.”); ¶[0018] (“Also, the modified frac containers may be stacked in any conventional means, either while in transit or at the frac site.”); Fig. 3. As shown in Figure 3, such containers are stacked so that one empty container overlies another empty container, necessarily reducing the footprint of the area taken up by the containers. Ex. 1002 (Schaaf Decl.) ¶65.

Sheesley further discloses that the modified containers can be filled with proppant at a rail site. As disclosed in Sheesley, the modified container can be used to obtain proppant at any of the locations in the supply chain. Specifically, Sheesley explains that “sand from the sand quarry 30 *or source* can now be loaded by a conveyer 268 to a modified cargo container.” Ex. 1003 (Sheesley) ¶[0078] (emphasis added); Abstract (“A cargo container is modified to carry a fracing

proppant such as sand from a quarry or source to the frac site.”). The source where proppant is obtained “may be any point along a supply chain of said proppant.”

Ex. 1003 (Sheesley) at claim 21; claim 15. As Sheesley explains, the supply chain includes a rail site. *See* Ex. 1003 (Sheesley) ¶[0017] (“The modified cargo 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”); ¶[0019]; ¶[0042]; ¶[0049]; ¶[0077]; ¶[0078]; Fig. 1. Thus, Sheesley discloses containers that may be filled with proppant at a rail site. Ex. 1002 (Schaaf Decl.) ¶66.

Moreover, Sheesley discloses that the modified containers may be filled while in a stacked configuration, where container 302 “receives sand 306 from auger 303 through upper hatch 305,” and “may feed sand 306 or any other granular proppant therein through lower hatch 308 in modified cargo container 302 and upper hatch 310 into modified cargo container 304 located immediately there below.” Ex. 1003 (Sheesley) ¶[0023]; ¶[0084]; Fig. 5. As shown in FIG. 5 (reproduced below), the container 302 underlies the source of proppant, auger 303.

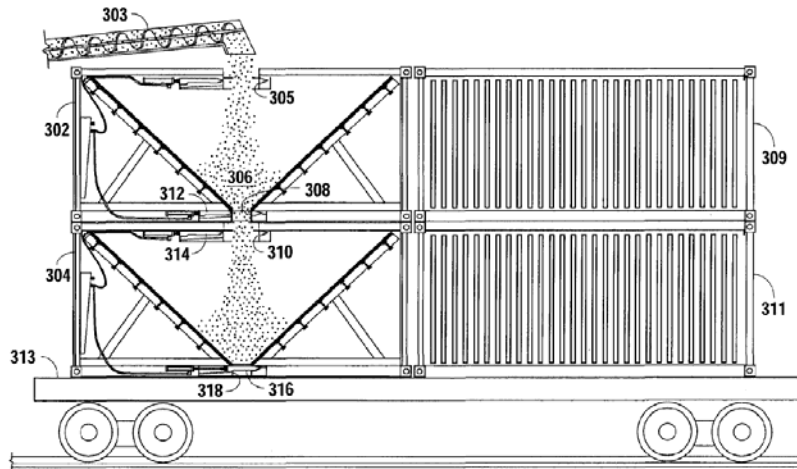


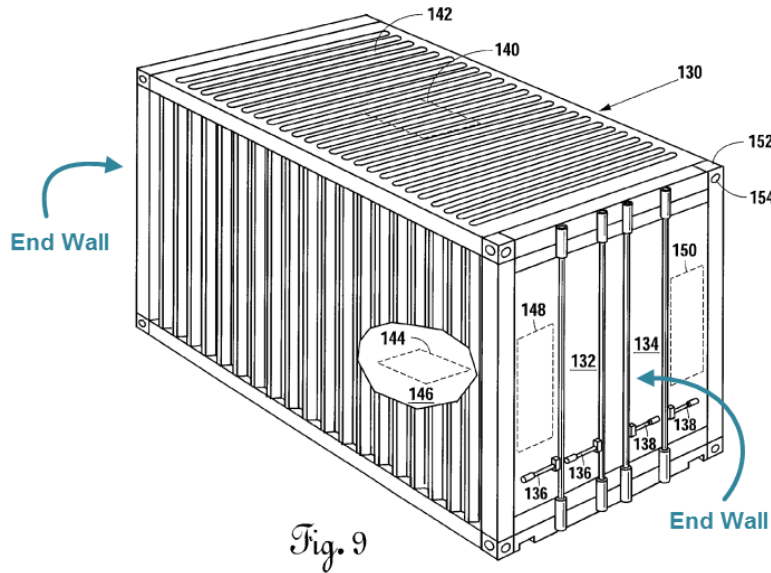
Fig. 5

A POSITA at the time would understand 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, and that such containers would necessarily be in “close proximity” to the rail spur. Ex. 1002 (Schaaf Decl.) ¶68.

Sheesley therefore discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶69.

**[1a(ii)] each of the plurality of empty containers including at least a first end surface and at least a second different end surface and**

Sheesley discloses the use of an ISO container modified to store and transport proppant. Ex. 1003 (Sheesley) Abstract; ¶[0004]; ¶[0012]. The modified ISO container disclosed in Sheesley contains a first end surface and a second different end surface, as shown in annotated Fig. 9 below. Ex. 1003 (Sheesley) ¶[0050]; Fig. 9.



Sheesley therefore discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶¶70-71.

**[1a(iii)] 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;**

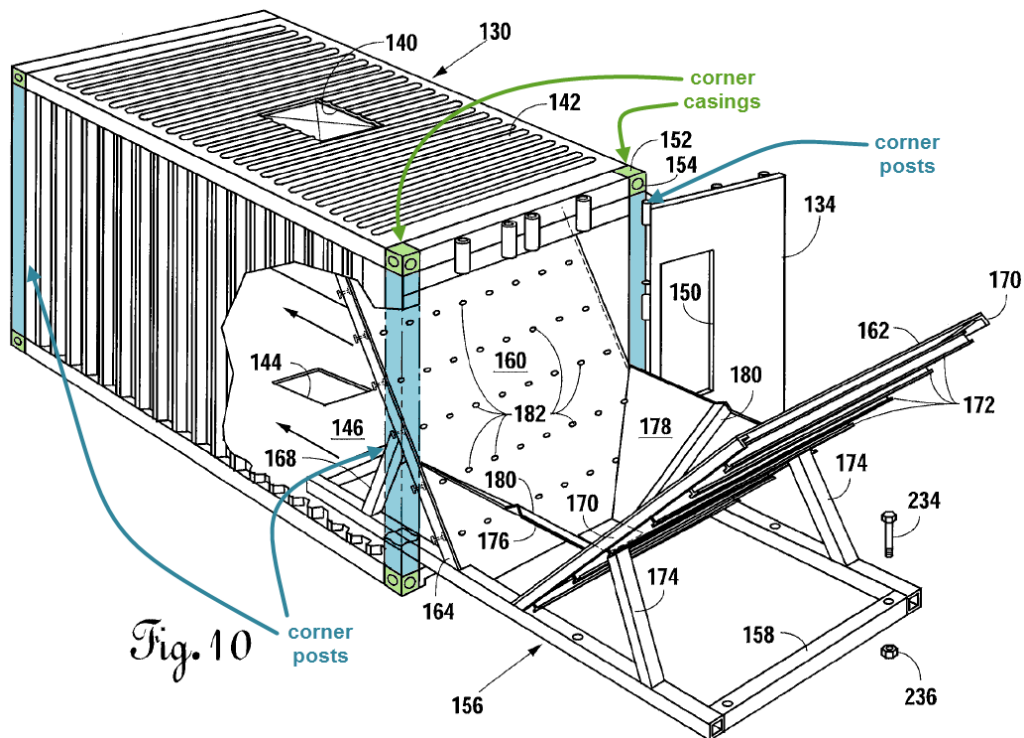
Sheesley discloses that the modified container contains one or more structural support members at the corners and edges positioned to support each of the end walls of the pair of end walls—specifically, corner castings, and corner posts. *See* Ex. 1003 (Sheesley) at Fig. 9; Fig. 10. Indeed, during prosecution of a sister application (U.S. Appl. No. 14/314,468),<sup>2</sup> the Patentee admitted that

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<sup>2</sup> The patent resulting from U.S. Appl. No. 14/314,468 and the ‘772 patent both claim priority to U.S. Appl. No. 14/310,648.







Furthermore, Sheesley discloses modifying a standard ISO cargo container. Ex. 1003 (Sheesley) ¶¶[0004]; ¶¶[0016]; ¶¶[0050]. The International Organization for Standardization (“ISO”) is a global federation of national standards-setting bodies that promulgates international technical, industrial, and commercial standards. Ex. 1002 (Schaaf Decl.) ¶73. In particular, the ISO’s implementation of a uniform standard for shipping containers was crucial to the rise of intermodal transportation in the second half of the 20th Century. Ex. 1013 (Intermodal Transportation) at 8-10. ISO standards are widely adopted and practiced in the hydraulic fracturing industry. Ex. 1002 (Schaaf Decl.) ¶73. ISO standards provide for a variety of mandatory and optional requirements of cargo shipping containers. All ISO

containers must meet certain strength requirements. Ex. 1012 (ISO 1496 Standard)<sup>3</sup> 5.1; 5.2; 5.3.1 (“All containers shall be capable of being supported by their bottom corner fittings only.”); 6.3; 6.4. Thus, a POSITA would understand that the modified ISO container disclosed in Sheesley must also provide this structural support. Ex. 1002 (Schaaf Decl.) ¶73.

Moreover, to the extent that the Patentee 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. Ex. 1003 (Sheesley) ¶[0018]; ¶[0021]; ¶[0080]; ¶[0084].

Sheesley therefore discloses and renders obvious this limitation. Ex. 1002 (Schaaf Decl.) ¶75.

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<sup>3</sup> ISO 1496 Standard was issued in August of 1990, and was therefore known to those of skill in the art prior to the priority date of the ‘772 patent. Ex. 1002 (Schaaf Decl.) ¶73, n.6.

**[1b] 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;**

As discussed above regarding limitation [1a(i)], Sheesley discloses filling the modified containers at a rail site, thus resulting in containers filled with proppant. Ex. 1003 (Sheesley) ¶[0017]; ¶[0019]; ¶[0042]; ¶[0049]; ¶[0077]; ¶[0078]; Fig. 1; Abstract; claim 15; claim 21. Sheesley therefore discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶76-77.

**[1c] 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.**

Sheesley discloses that a trailer may be used to transport the modified cargo containers. Ex. 1003 (Sheesley) ¶[0025] (“FIG. 7 is an elevated side view of the trailer being used with modified cargo containers thereon which can be filled with frac sand.”); ¶[0078]; ¶[0079] (“If the modified cargo containers 270 are loaded on flatbed truck trailer 278 or container chassis, the modified cargo containers 270 can be taken directly to the fracing site 280 or placed in storage 282 at the fracing site 280.”); ¶[0088]; Fig. 2; Fig. 7. As shown in Figure 2, the “flatbed truck trailer” contains a flatbed, which is a support platform associated with a road vehicle. Ex. 1002 (Schaaf Decl.) ¶78.

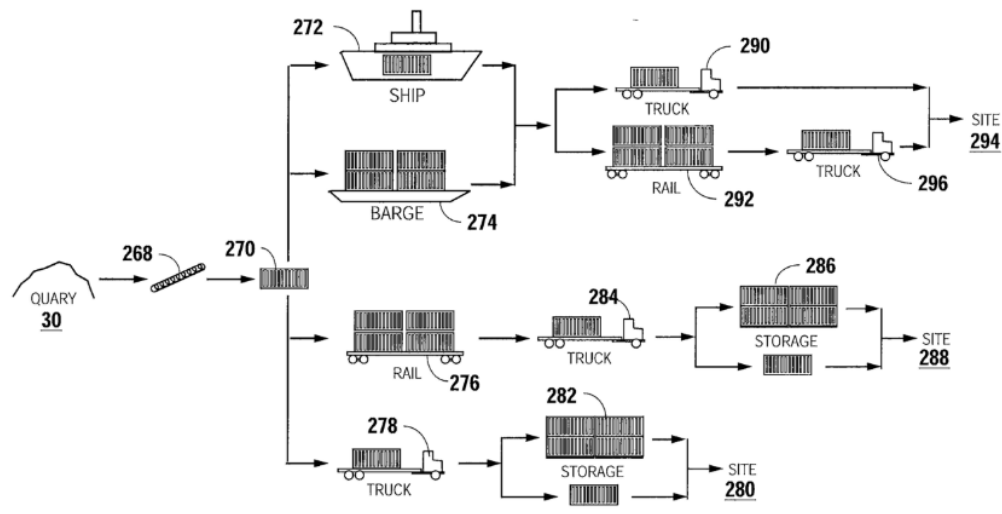


Fig. 2

Sheesley further discloses that a loader/unloader such as the “Rough Terrain Cargo Handler” can be used to move the filled modified containers. Ex. 1003 (Sheesley) ¶[0083] (“The Rough Terrain Cargo Handler 298 can pick up one of the modified cargo containers 270 full of sand and unload the modified cargo container 270 to a bulk sand container 300 at the frac site (see FIG. 4).”).

Regardless of this disclosure, it would be well within the knowledge of a POSITA that a loader/unloader would be used to load/unload the containers to/from a trailer. Ex. 1002 (Schaaf Decl.) ¶79. As such, Sheesley discloses and renders obvious this limitation. Ex. 1002 (Schaaf Decl.) ¶79.

**2. Dependent Claim 2 Is Rendered Obvious by Sheesley**

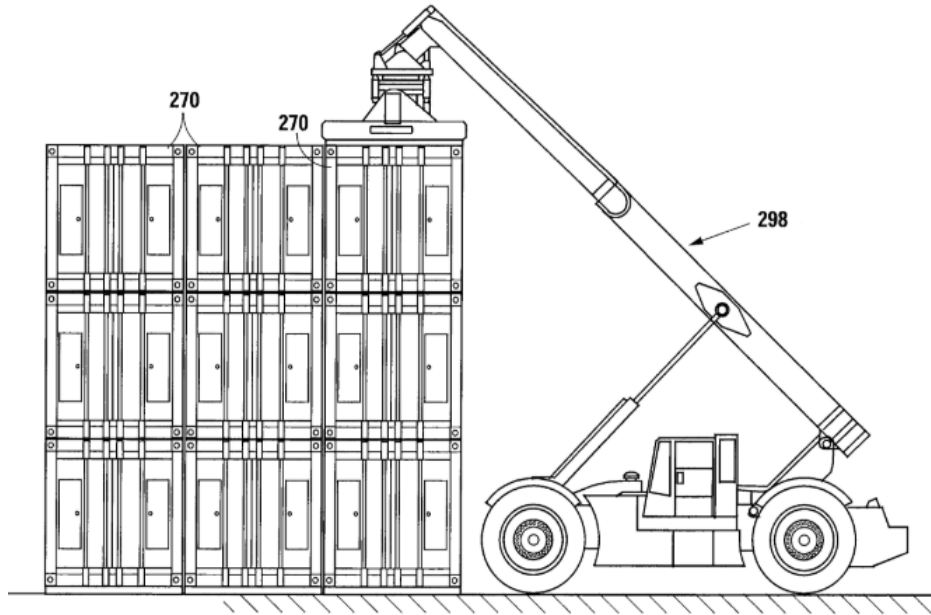
**The method of claim 1, wherein the plurality of proppant filled containers comprises a first plurality of proppant filled containers, and the method further comprising:**

**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.**

Claim 2 depends from claim 1 and further requires filling and stacking a second plurality of containers in close proximity to the rail spur. As discussed above regarding claim 1, Sheesley discloses filling and stacking a first plurality of containers in close proximity to the rail spur with a loader. A POSITA would understand that multiple containers could be filled with proppant and stacked at the rail spur, particularly in light of Sheesley's disclosures of multiple filled and stacked containers, as shown in Figure 3 below. Ex. 1003 (Sheesley) Fig. 3;

¶[0021] (“FIG. 3 is a pictorial illustration of the stackability of modified cargo containers, with or without sand therein.”).



*Fig. 3*

As such, Sheesley discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶80-81.

### 3. Dependent Claim 6 Is Rendered Obvious by Sheesley

**The method of claim 1, further comprising:**

**moving the plurality of empty proppant containers from the storage location,<sup>4</sup> 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.**

As discussed above regarding limitations [1a(i)] and [1c], Sheesley discloses stacking empty containers in close proximity to a rail spur, filling those containers with proppant, and loading those containers onto one or more support platforms located on the one or more proppant transporting road vehicles. *See* Ex. 1003 (Sheesley) ¶¶[0017]; ¶¶[0019]; ¶¶[0042]; ¶¶[0049]; ¶¶[0077]; ¶¶[0078]; Abstract; claim 15; claim 21; Fig. 1.

Sheesley further discloses that the modified cargo containers filled with proppant can be placed in storage. Ex. 1003 (Sheesley) ¶¶[0079]–¶¶[0081]. A POSITA would understand that the containers could likewise be placed in storage if they were empty. Ex. 1002 (Schaaf Decl.) ¶83. Indeed, a POSITA would understand that the containers must go *somewhere* after they are emptied of

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<sup>4</sup> Petitioner reserves the right to argue that the term “the storage location” is indefinite.

proppant at the well site—such a place would necessarily be considered a storage location for the containers. Ex. 1002 (Schaaf Decl.) ¶83. Moreover, a POSITA at the time would understand that in order to fill the modified containers at the rail site, there must be empty containers at the rail site. Ex. 1002 (Schaaf Decl.) ¶83. A POSITA would know to reuse the containers, and that these empty containers would be taken from wherever they are, which as discussed is necessarily a storage location, and brought to the rail site to be filled with proppant. Ex. 1002 (Schaaf Decl.) ¶83. To do otherwise would end in the nonsensical result of continuously buying new containers to fill with proppant. Ex. 1002 (Schaaf Decl.) ¶83.

Thus, Sheesley renders this limitation obvious. Ex. 1002 (Schaaf Decl.) ¶84.

**4. Dependent Claim 7 Is Rendered Obvious by Sheesley**

**[7a] The method of 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,**

As discussed above regarding limitation [1c], Sheesley discloses the use of a flatbed truck trailer to deliver sand from the source to the well site. *See also* Ex.



1003 (Sheesley) ¶[0078]. It would be obvious to a POSITA to stage more than one transporting road vehicles at the proppant's source, as to facilitate fast and efficient loading of the containers onto the road vehicles to transport the amount of proppant required to the frac site. Ex. 1002 (Schaaf Decl.) ¶85. Furthermore, it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 549 F.2d 833, 838-39 (7th Cir. 1977).

Claim 7 further requires “staging the plurality of proppant transporting road vehicles so that each respective trailer of the plurality of proppant transporting road vehicles receives one or more of the plurality of proppant filled containers.” A POSITA would understand that the transporting road vehicles could necessarily be staged such that the vehicle's trailers could be loaded with proppant filled containers. Ex. 1002 (Schaaf Decl.) ¶86. Indeed, Sheesley discloses loading the proppant onto a road vehicle (Ex. 1003 (Sheesley) ¶[0078] (“Modified cargo containers 270 can be loaded on a ship 272, barge 274, rail 276 or a flatbed truck trailer 278”)), that “[o]bviously, multiple modified cargo containers 270 may be loaded on each of these alternative modes of transportation.” Ex. 1003 (Sheesley) ¶[0078]. The same rationale applies that, if necessary, multiple road vehicles could be positioned to receive as many proppant-filled containers as necessary. Ex. 1002 (Schaaf Decl.) ¶86. Indeed, Figure 2 shows that truck 278 carries a single

container, while there are multiple containers placed in storage, thus requiring multiple road vehicles. Ex. 1003 (Sheesley) ¶[0079] (“If the modified cargo containers 270 are loaded on flatbed truck trailer 278 or container chassis, the modified cargo containers 270 can be taken directly to the fracing site 280 or placed in storage 282 at the fracing site 280.”); Fig. 2 (below).

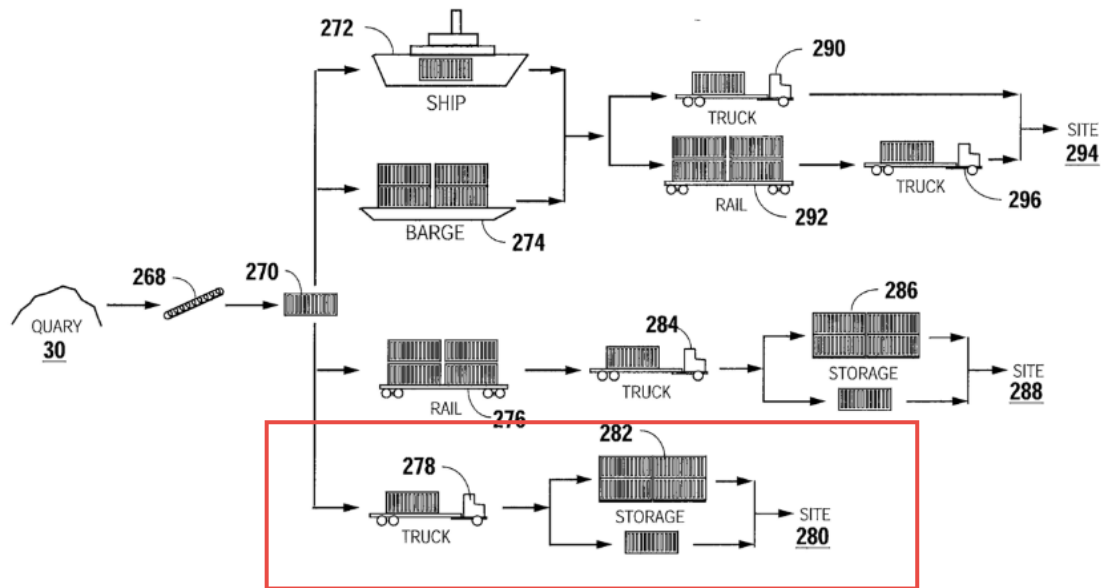


Fig. 2

As such, Sheesley discloses or renders obvious this limitation. Ex. 1002 (Schaaf Decl.) ¶87.

**[7b] 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.**

As discussed above, Sheesley discloses transporting containers away from the loading site, (which, as explained above, can include a rail site), towards the fracking site. *See also*, Ex. 1003 (Sheesley) ¶[0017] (“The modified cargo 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.”); Ex. 1003 (Sheesley) ¶[0079] (“If the modified cargo containers 270 are loaded on flatbed truck trailer 278 or container chassis, the modified cargo containers 270 can be taken directly to the fracking site 280 or placed in storage 282 at the fracking site 280.”).

Sheesley further explains that its method increases efficiency. Ex. 1003 (Sheesley) ¶[0082] (“By just comparing Figs. 1 and 2, it can be easily seen that the sand is being handled fewer times by the use of the modified cargo container 270. This results in considerably less expense, which reduces the price of fracking sand or other proppants to the well operator. The reduction in price can be in the millions of dollars per well.”); ¶[0091] (“By use of the modified cargo containers as described herein above, the number of times the fracking proppant, such as sand,

is handled is greatly reduced. The reduction in the number of times the fracing proppant is handled greatly reduces the cost of completion of a single hydrocarbon well.”); ¶[0011] (“It is important that as soon as the sand is delivered to the frac site, that it can be immediately unloaded to eliminate the demurrage.”); ¶[0018] (“Also, the modified frac containers may be stacked in any conventional means, either while in transit or at the frac site. This eliminates the demurrage of waiting to unload sand into bulk sand containers at the frac site.”).

As such, Sheesley discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶¶88-90.

**5. Dependent Claim 8 Is Rendered Obvious by Sheesley**

**[8a] 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**

Sheesley discloses that the proppant from the source (which, as explained above, can include a rail vehicle) may be unloaded from the rail vehicle into the empty modified cargo container using a conveyor. *See* Ex. 1003 (Sheesley) ¶[0078] (“Turning to FIG. 2, sand from the sand quarry 30 *or source* can now be loaded by a conveyer 268 to a modified cargo container”) (emphasis added);

¶[0084] (“For example, in Fig. 5, modified cargo container 302 receives sand 306 from auger<sup>5</sup> 303 through upper hatch 305.”); Fig. 2; Fig. 5.

As such, Sheesley discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶91-92.

**[8b] conveying the proppant on the conveyor from the proppant transporting rail vehicle to an inlet in each of the plurality of empty proppant containers.**

Sheesley describes a modified container with an opening at the top to fill the container. Ex. 1003 (Sheesley) at Abstract; ¶[0016]; ¶[0014] (“It is still another object of the present invention to modify a cargo container so that sand can be inserted from the top and removed from the bottom of a totally self-contained unit.”); ¶[0084] (“For example, in FIG. 5, modified cargo container 302 receives sand 306 from auger 303 through upper hatch 305.”); claim 1 (“said hopper module in said cargo container is loaded through said top opening”); claim 15 (“loading said proppant into modified cargo containers through top notches therein”). Figure 10 of Sheesley illustrates these limitations.

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<sup>5</sup> A POSITA would understand that an auger moves sand through conveyance. Ex. 1002 (Schaaf Decl.) ¶91, n.8.

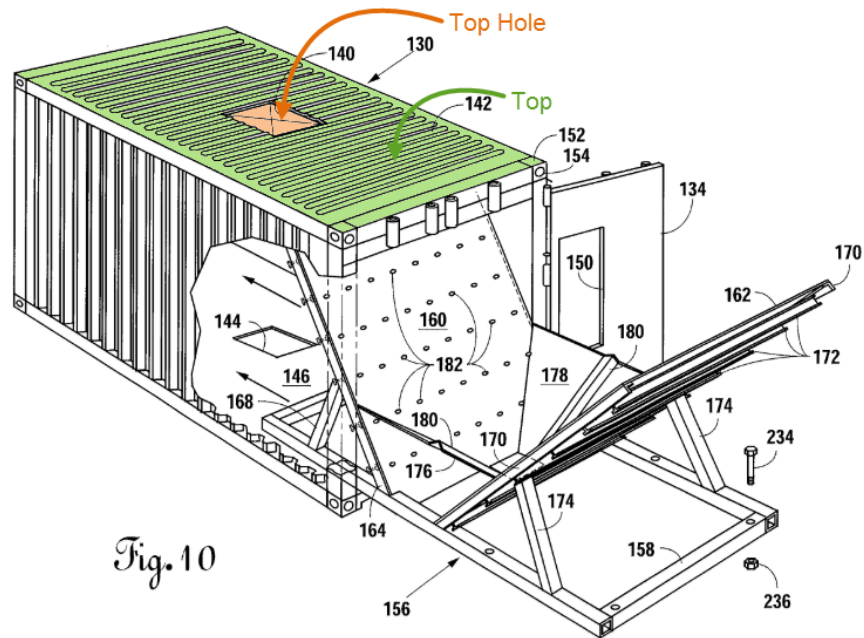


Fig. 10

As discussed above regarding limitation [8a], and as shown in Figures 2 and 5 (Figure 5 reproduced below), a conveyor may be used to transport proppant into the top opening of the container of Sheesley.

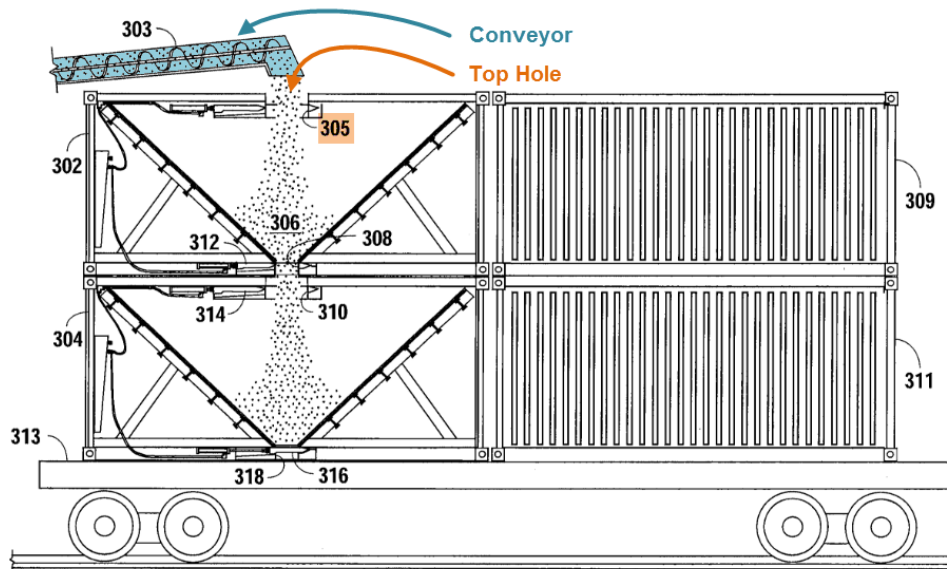


Fig. 5

Sheesley therefore discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶¶93-95.

**6. Dependent Claim 9 Is Rendered Obvious by Sheesley**

**[9a] 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 proppant.**

As disclosed above regarding claim 1, Sheesley discloses that the modified containers can be filled with proppant at a rail site. *See* Ex. 1003 (Sheesley) ¶¶[0017]; ¶¶[0019]; ¶¶[0042]; ¶¶[0049]; ¶¶[0077]; ¶¶[0078]; Abstract; claim 15; claim 21; Fig. 1. Sheesley also discloses that multiple containers may be loaded with proppant at the same time. *See* Ex. 1003 (Sheesley) ¶¶[0078] (“Obviously, multiple modified cargo containers 270 may be loaded on each of these alternative modes of transportation.”); ¶¶[0084]; ¶¶[0085]; Fig. 5; Fig. 7; Fig. 8. A POSITA at the time would understand that in order to fill the modified containers at the rail site, there must be empty containers at the rail site. Ex. 1002 (Schaaf Decl.) ¶¶96. Therefore, Sheesley discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶¶96.

**7. Dependent Claim 10 Is Rendered Obvious by Sheesley**

**[10a] 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;**

As disclosed above with respect to limitation [8a], Sheesley discloses that the proppant from the source (which, as explained above, can include a rail vehicle) may be unloaded from the rail vehicle into the empty modified cargo container using a conveyor. *See* Ex. 1003 (Sheesley) ¶[0078] (“Turning to FIG. 2, sand from the sand quarry 30 or source can now be loaded by a conveyor 268 to a modified cargo container”); ¶[0084]; Fig. 2; Fig. 5. Therefore, Sheesley discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶¶98-99.



**[10b] 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;**

Sheesley does not expressly teach this sequential filling of proppant containers; however, it would have been obvious to a POSITA to implement this common filling practice into the teachings of Sheesley. Ex. 1002 (Schaaf Decl.) ¶100. As noted by the Examiner during prosecution of related patent U.S. Application No. 14/841,942, “positioning containers sequentially to receive a load such that once a container is filled to a desired level, it is removed in favor of another empty container is a well-known method or feature for loading containers.” Ex. 1011 (‘066 File History) 26 (noting that “trucks with containers line up sequential [sic] at quarry to receive gravel for use. As a container is filled the container is moved away and replaced by another empty container.”). The Patentee did not dispute the Examiner’s position.

Therefore, this limitation is rendered obvious by Sheesley. Ex. 1002 (Schaaf Decl.) ¶101.

**[10c] after removal of proppant from the conveyor, transporting each of the plurality of proppant tilled containers away from the proppant transporting rail vehicle.**

As discussed above regarding limitation [7b], Sheesley discloses transporting containers away from the loading site, (which, as explained above, can include a rail site), towards the fracking site. *See also*, Ex. 1003 (Sheesley) ¶[0017] (“The modified cargo 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.”); Ex. 1003 (Sheesley) ¶[0079] (“If the modified cargo containers 270 are loaded on flatbed truck trailer 278 or container chassis, the modified cargo containers 270 can be taken directly to the fracking site 280 or placed in storage 282 at the fracking site 280.”).

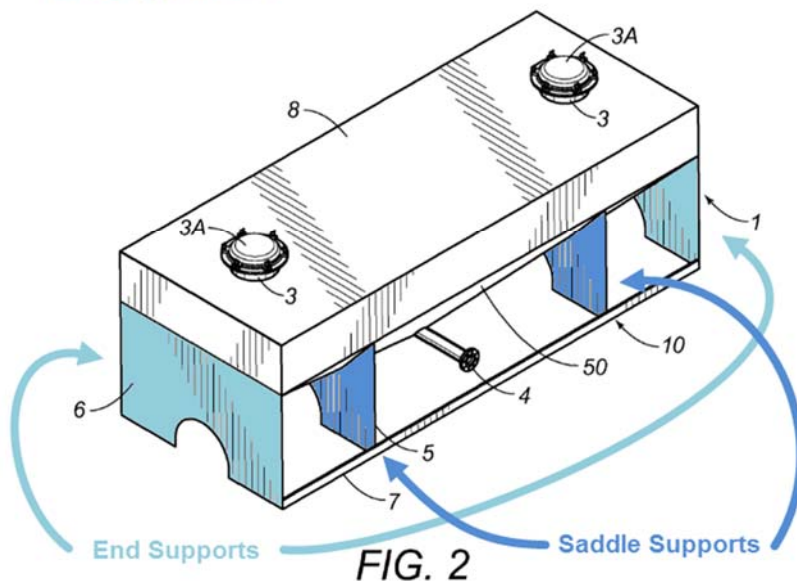
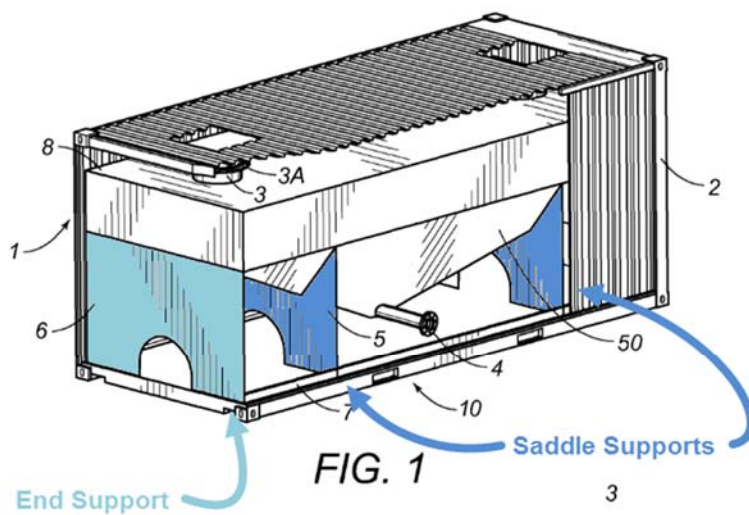
Therefore, Sheesley discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶¶102-103.

**B. Ground 2: Claim 1 Is Rendered Obvious by Sheesley, in Combination with Mintz**

To the extent that it is found that Sheesley does not disclose “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,” Mintz discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶104.

Mintz, like Sheesley, discloses the use of a modified ISO container having an internal hopper to store and transport proppant. Mintz explains that “standard ISO shipping containers” 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.” Ex. 1004 (Mintz) 1:63-2:3; 2:28-31 (“the storage capacity of the enclosing walls and the like are reinforced with braces and trusses as taught hereunder to accommodate the quantity of sand and proppant as will be described hereinafter”); 2:16-20. Specifically, Mintz discloses “brace and truss support assembly 10[,] ... [which] comprises each of pair of longitudinal basal cross-braces 7 fixedly interconnected at each end thereof with one of pair of end supports 6 and intermediately thereof with plurality of saddle supports 5.” Ex. 1004 (Mintz) 4:56-61; 8:50-58. As shown below, these end supports and saddle supports are structural uprights positioned to extend from the bottom to the top of each of the plurality of containers. Ex. 1002 (Schaaf Decl.) ¶105.



A POSITA would have been motivated to combine the teaching and disclosures of Sheesley’s and Mintz’s containers and method of transporting storing proppant with a reasonable expectation of success for a number of reasons. Ex. 1002 (Schaaf Decl.) ¶106.

Mintz, like Sheesley, provides an apparatus, namely a container, “for transporting frac sand and/or proppant for use in standard ISO intermodal

containers and for delivering frac sand and/or proppant to well sites.” *See* Ex. 1004 (Mintz) Abstract; Ex. 1003 (Sheesley) ¶[0002] (“This invention relates to the transportation of a granular substance such as sand and, more particularly, to the modification of cargo containers for the purpose of transporting sand therein to frac sites.”); Ex. 1003 (Sheesley) ¶[0004] (“Cargo containers (also called intermodal containers, freight containers, ISO containers ...)”). Ex. 1002 (Schaaf Decl.) ¶107.

Both Sheesley’s and Mintz’s containers are configured to provide the necessary structural support to carry proppant. *See* Ex. 1004 (Mintz) 1:59-2:5; Ex. 1003 (Sheesley) ¶[0013]. Furthermore, each reference recognizes a prevalent problem in the prior art, namely the need to handle and transport the proppant multiple times before the proppant reaches its final destination at the frac site and the significant expense related thereto. *See* Ex. 1004 (Mintz) 1:48-58; Ex. 1003 (Sheesley) ¶[0009]-¶[0011]. Ex. 1002 (Schaaf Decl.) ¶108.

Sheesley and Mintz each describe a method of loading the proppant at the proppant’s source and transporting the proppant in containers by truck to the frac site in order to save money. *See* Ex. 1004 (Mintz) Fig. 9 (claiming “No Demurrage,” “Huge Savings” “Huge savings on trucking” and “Eliminat[ing] crew/rig downtime”); Ex. 1003 (Sheesley) ¶[0091] (“By use of the modified cargo containers as described herein above, the number of times the fracturing proppant,

such as sand, is handled is greatly reduced. The reduction in the number of times the fracing proppant is handled greatly reduces the cost of completion of a single hydrocarbon well.”). Ex. 1002 (Schaaf Decl.) ¶109.

A POSITA therefore would have been motivated to combine the teachings of Sheesley and Mintz, and would have a reasonable expectation of success in doing so. Ex. 1002 (Schaaf Decl.) ¶110. As discussed above regarding claim limitations 1(a)(ii), 1(a)(v) and 3(b), Sheesley discloses structurally strengthening a container to carry proppant. *See* Ex. 1003 (Sheesley) ¶[0018]; ¶[0021]; ¶[0050]; Fig. 3; Fig. 9; Fig. 10. Mintz also discloses adding structural support to a container, specifically in the form of braces and trusses. *See* Ex. 1004 (Mintz) 2:16-2; *see also* Ex. 1004 (Mintz) 5:1-6; 8:64-9:1; Fig. 9; Fig. 12. A POSITA would understand that Sheesley’s container could receive further structural support when combined with the braces and trusses disclosed in Mintz. Ex. 1002 (Schaaf Decl.) ¶110. Combining the teachings of Sheesley with Mintz would have been obvious based upon the similarity of the apparatuses and their use for transporting proppant. Ex. 1002 (Schaaf Decl.) ¶110. Implementing Mintz’s support structures into Sheesley’s container would have yielded the predictable result of improved structural support for the container holding the proppant. Ex. 1002 (Schaaf Decl.) ¶110.

For these reasons, Sheesley, in combination with Mintz, renders this limitation obvious. Ex. 1002 (Schaaf Decl.) ¶111.

**C. Ground 3: Claims 3-5, 11 Are Rendered Obvious by Sheesley, in Combination with Uhryn**

**1. Dependent Claim 3 Is Rendered Obvious by Sheesley, in Combination with Uhryn**

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

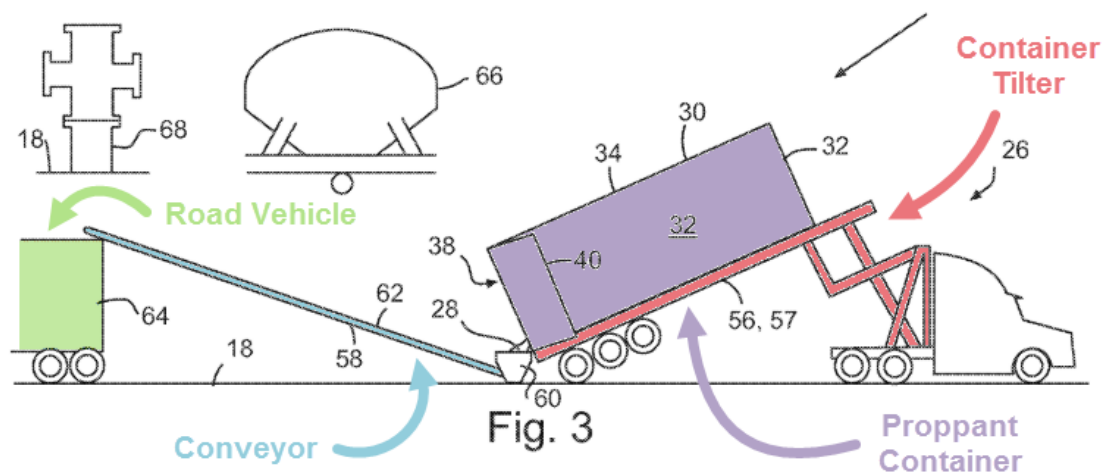
**tilting the support platform and one or more of the plurality of proppant filled containers located on the platform to discharge proppant from an opening adjacent an end of the one or more of the plurality of proppant filled containers.**

As discussed above regarding limitation [1c], Sheesley discloses placing proppant filled containers onto the support platform of a truck. To the extent that Sheesley does not disclose the use of a tiltable support platform, Uhryn provides such a disclosure.

Uhryn discloses a method of unloading filled proppant containers onto conveyors using a tiltable platform. Uhryn states that “[u]nloading may be carried out using a container tilter 56, such as a hydraulic fifth wheel tilter as shown . . . . Tilter 56 may be mounted on a wheeled trailer 57 as shown . . . .” Ex. 1005 (Uhryn) ¶[0020]. Uhryn specifies that the unloading process may be accomplished in four stages of tilting, with the proppant filled container held at zero degrees,

then 10 degrees, then 20 degrees, and finally at 30 degrees, to allow proppant to flow until all proppant is unloaded. Ex. 1005 (Uhryn) ¶[0020]. The proppant flows out of the container through “rear gates 40,” each of which is on an end wall. Ex. 1005 (Uhryn) ¶[0020] (“Proppant may be unloaded from intermodal transport container 30 into a proppant transfer device 58 positioned to receive, for example by gravity as shown, proppant unloaded from the one or more rear gates 40 of the intermodal transport container 30.”). Further, Uhryn discloses using a conveyor to transfer the proppant from the proppant container to a road vehicle, such as a mountain mover. Ex. 1005 (Uhryn) ¶[0020].

Uhryn Figure 3 illustrates a method whereby a container tilter is used to unload proppant from an end wall of a proppant container onto a conveyor, thus transferring it to a road vehicle.



Uhryn therefore teaches this limitation. Ex. 1002 (Schaaf Decl.) ¶115.



As such, Sheesley, in combination with Uhryn, renders this limitation obvious. Ex. 1002 (Schaaf Decl.) ¶¶113-116.

**2. Dependent Claim 4 Is Rendered Obvious by Sheesley, in Combination with Uhryn**

**[4a] 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**

As discussed above, Sheesley discloses that the proppant can be loaded from a “source,” which can be “any point along a supply chain of said proppant.” Ex. 1003 (Sheesley) Claim 21 (“The method for delivering proppant to the site of a well being fraced as recited in claim 19 wherein *said source may be any point along a supply chain of said proppant.*”) (emphasis added); ¶[0078] (“Turning to Fig. 2, sand from the sand quarry 30 *or source* can now be loaded by a conveyer 268 to a modified cargo container which hereinafter will be referred to by reference numeral 270.”) (emphasis added); ¶[0020] (“Fig. 2 illustrates the present invention being used to deliver sand from the quarry *or source* to the frac site.”); Claim 15 (“A method for delivering a proppant such as sand to a site of a well being fraced, the method including the following steps: ... obtaining a proppant *at its source*; . . .”) (emphasis added).



As such, Sheesley discloses this limitation. Ex. 1002 (Schaaf Decl.) ¶¶117-120.

**[4b] conveying the proppant from one or more of the plurality of proppant tilled<sup>6</sup> containers to one or more proppant transporting road vehicles on a second conveyor.**

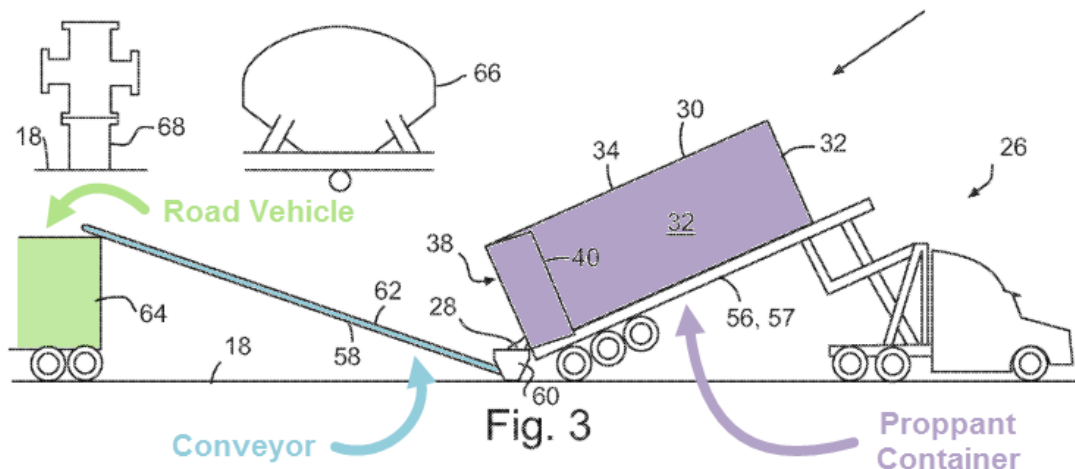
Sheesley discloses that proppant may be unloaded from the filled containers by opening the lower hatch, unloading proppant onto a second conveyor which conveys proppant into the blender. Ex. 1003 (Sheesley) ¶[0084] (“For example, in FIG. 5 . . . [t]he sand 306 may either be transferred from the modified 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).”) (emphasis added); ¶[0089] (“In FIG. 7, only the outside view of the belt system 330 is shown. However, fracing sand will be delivered through the dispensing end 332 of the belt system 330 to deliver the fracing sand to the blender.”); Fig. 5; Fig. 7. A POSITA would understand that proppant could just as easily be unloaded from the filled containers

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<sup>6</sup> The numerous references to “tilled” containers in claims 4, 5, 10, and 11 appears to be a typographical error meant to refer to “filled” containers.

by opening the lower hatch, unloading proppant onto a second conveyor which conveys proppant into proppant transporting road vehicles, particularly where Sheesley discloses the use of a conveyor to unload containers, and that containers may be emptied into bulk proppant containers such as the Sand King. Ex. 1002 (Schaaf Decl.) ¶121; Ex. 1003 (Sheesley) ¶[0083]; ¶[0089]. Thus, Sheesley renders this limitation obvious. Ex. 1002 (Schaaf Decl.) ¶122.

To the extent that this limitation is not rendered obvious by Sheesley alone, it is rendered obvious by Sheesley in view of Uhryn. Ex. 1002 (Schaaf Decl.) ¶123. Uhryn discloses unloading proppant “from intermodal transport container 30 into a proppant transfer device 58 positioned to receive . . . proppant unloaded from the one or more rear gates 40 of the intermodal transport container.” Ex. 1005 (Uhryn) ¶[0020]. Uhryn further states that “[p]roppant transfer device 58 may comprise one or more of a hopper 60 and a *conveyor* 62.” Ex. 1005 (Uhryn) ¶[0020]. Uhryn also explains that “[a] mountain mover 64, also called a sand king, may be connected to receive proppant from the proppant transfer device 58 . . . .” Ex. 1005 (Uhryn) ¶[0020]. A POSITA would understand that the “mountain mover” referenced in Uhryn is a road vehicle capable of transporting proppant. Ex. 1002 (Schaaf Decl.) ¶123. Uhryn Figure 3 illustrates a method of transferring proppant from a proppant filled container into a road vehicle via a conveyor:



Uhryn therefore teaches conveying proppant from containers to road vehicles. Ex. 1002 (Schaaf Decl.) ¶123.

As such, Sheesley, in combination with Uhryn, renders this limitation obvious. Ex. 1002 (Schaaf Decl.) ¶124

### 3. Dependent Claim 5 Is Rendered Obvious by Sheesley, in Combination with Uhryn

**The method of claim 4, further comprising:**

**channeling the proppant from the plurality of proppant tilled containers to the second conveyor through a hopper.**

Claim 5 depends from claim 4 and further requires the use of a hopper. To the extent that Sheesley does not disclose channeling proppant through a hopper to a second conveyor, Uhryn provides such a disclosure. Ex. 1002 (Schaaf Decl.) ¶125.



#### **4. Dependent Claim 11 Is Rendered Obvious by Sheesley, in Combination with Uhryn**

**[11] The method of claim 10, further comprising:**

**loading each of the plurality of proppant tilled containers onto a tillable<sup>7</sup> 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.**

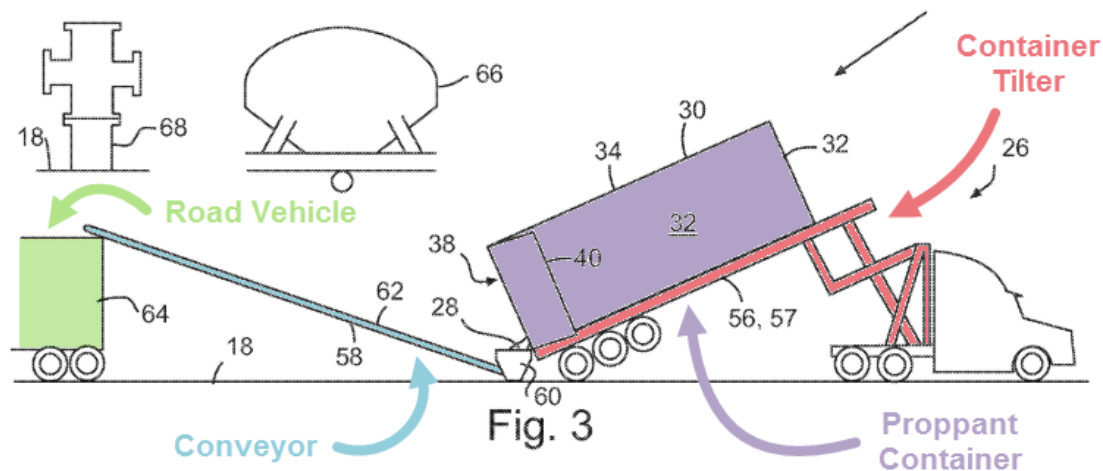
As discussed above regarding limitation [1c], Sheesley discloses placing proppant filled containers onto the support platform of a truck. As discussed above regarding claim 3, to the extent that Sheesley does not disclose the use of a tiltable support platform, Uhryn provides such a disclosure.

Uhryn discloses a method of unloading filled proppant containers onto conveyors using a tiltable platform. Uhryn states that “[u]nloading may be carried out using a container tilter 56, such as a hydraulic fifth wheel tilter as shown . . . . Tilter 56 may be mounted on a wheeled trailer 57 as shown . . . .” Ex. 1005 (Uhryn) ¶[0020]. Uhryn specifies that the unloading process may be accomplished

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<sup>7</sup> This appears to be a typographical error meant to refer to a “tiltable” platform.

in four stages of tilting, with the proppant filled container held at zero degrees, then 10 degrees, then 20 degrees, and finally at 30 degrees. Ex. 1005 (Uhryn) ¶[0020]. Further, as discussed above regarding limitation [4b], Uhryn discloses using a conveyor to transfer the proppant from the proppant container to a road vehicle, such as a mountain mover. Uhryn Figure 3 illustrates a method whereby a container tilter is used to unload proppant from a proppant container onto a conveyor, thus transferring it to a road vehicle.



Uhryn therefore teaches proppant filled containers onto tiltable platforms, tilting the platforms to discharge proppant onto a conveyor, and conveying the discharged proppant to proppant transporting road vehicles. Ex. 1002 (Schaaf Decl.) ¶129.

As such, Sheesley, in combination with Uhryn, renders this limitation obvious. Ex. 1002 (Schaaf Decl.) ¶130.



## **5. Rationale to Combine Sheesley and Uhryn**

A POSITA would have been motivated to combine the teaching and disclosures of Sheesley's and Uhryn's containers and method of transporting storing proppant with a reasonable expectation of success for a number of reasons. Ex. 1002 (Schaaf Decl.) ¶131.

Uhryn, like Sheesley, provides an apparatus, namely a container, to enable a “method of bulk transport of proppant is disclosed comprising: transporting proppant in an intermodal transport container to a well site.” *See* Ex. 1005 (Uhryn) ¶[0004]; Ex. 1003 (Sheesley) ¶[0002] (“This invention relates to the transportation of a granular substance such as sand and, more particularly, to the modification of cargo containers for the purpose of transporting sand therein to frac sites.”); Ex. 1003 (Sheesley) ¶[0004] (“Cargo containers (also called intermodal containers, freight containers, ISO containers ...)”); Ex. 1002 (Schaaf Decl.) ¶132.

Both Sheesley's and Uhryn's containers are configured to provide the necessary structural support to carry proppant. *See* Ex. 1005 (Uhryn) ¶[0018]; Ex. 1003 (Sheesley) ¶[0013]. Furthermore, each reference recognized a prevalent problem in the prior art, namely the need to handle and transport the proppant multiple times before the proppant reaches its final destination at the frac site and the significant expense related thereto. *See* Ex. 1005 (Uhryn) ¶[0017]; Ex. 1003 (Sheesley) ¶[0009]–¶[0011]; Ex. 1002 (Schaaf Decl.) ¶133.

Sheesley and Uhryn each describe a method of loading the proppant at the proppant's source and transporting the proppant in containers by truck to the frac site in order to save money. *See* Ex. 1005 (Uhryn) ¶[0021] (“In addition, the expense of delay along the supply chain in the conventional method in the form of rail charges, storage fees at transloading sites, and other expenses related to the extra infrastructure required is avoided,”); ¶[0022]; Ex. 1003 (Sheesley) ¶[0091] (“By use of the modified cargo containers as described herein above, the number of times the fracturing proppant, such as sand, is handled is greatly reduced. The reduction in the number of times the fracturing proppant is handled greatly reduces the cost of completion of a single hydrocarbon well.”); Ex. 1002 (Schaaf Decl.) ¶134.

A POSITA therefore would have been motivated to combine the teachings of Sheesley and Uhryn with a reasonable expectation of success. Ex. 1002 (Schaaf Decl.) ¶135. As discussed above, Sheesley discloses loading a container filled with proppant on a support platform of a truck, transporting the proppant to a well site, and unloading the containers at the well site. Uhryn likewise discloses loading a container filled with proppant on a support platform of a truck, transporting the proppant to a well site, and unloading the containers at the well site. Ex. 1005 (Uhryn) ¶[0019]- ¶[0020]. Uhryn, however, provides the additional disclosure that the support platform may be tiltable, such that it can be tilted to

empty the container. Ex. 1005 (Uhryn) ¶[0020]. Uhryn explains that the tiltable support 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.” Ex. 1005 (Uhryn) ¶[0020]. Moreover, a POSITA would recognize that the container disclosed in Uhryn does not require the modified internal hopper structure of the container disclosed in Sheesley in order to unload proppant from the container, thereby permitting transfer of greater quantities of proppant in a single container. Ex. 1002 (Schaaf Decl.) ¶135. Thus, a POSITA would understand that Sheesley’s container could hold more proppant while still providing a convenient way to unload the container by applying unloading teachings disclosed in Uhryn. Ex. 1002 (Schaaf Decl.) ¶135. Combining the teachings of Sheesley with Uhryn would have been obvious based upon the similarity of the apparatuses and their use for transporting proppant. Ex. 1002 (Schaaf Decl.) ¶135. Implementing Uhryn’s unloading methods into Sheesley’s container would have yielded the predictable result of increasing the amount of proppant while still permitting ease of unloading said proppant. Ex. 1002 (Schaaf Decl.) ¶¶135-136.

## **IX. OBJECTIVE INDICIA DO NOT SUPPORT PATENTABILITY**

The Challenged Claims are all invalid as obvious, and no objective indicia (also known as secondary considerations) support a contrary conclusion. Ex. 1002 (Schaaf Decl.) ¶137. To Petitioner’s knowledge, the Applicant did not proffer any evidence of objective indicia of non-obviousness during prosecution. Petitioner is unaware of any secondary considerations of non-obviousness that are relevant to the challenged claims.

## **X. CONCLUSION**

Substantial, new and noncumulative technical teachings have been presented for each of claims 1-11 of the ‘772 patent, which are obvious for the reasons set forth above. There is a reasonable likelihood that Petitioner will prevail as to each of the claims. *Inter Partes* Review of claims 1-11 is accordingly requested.

## **XI. REQUIREMENTS FOR AN *INTER PARTES* REVIEW PETITION**

### **A. Grounds for Standing (37 C.F.R. § 42.104(a))**

Petitioner certifies that the ‘772 patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting an *inter partes* review challenging claims 1-11 of the ‘772 patent on the grounds identified herein.

### **B. Notice of Lead and Backup Counsel and Service Information (37 C.F.R. § 42.8(b)(3) & (b)(4))**

Lead Counsel: Allison Lucier (Reg. No. 70,205)

Backup Counsel: Robert Hill (*pro hac vice* forthcoming)

Steven Jedlinski (Reg. No. 66,922)

Service information:

Email: allison.lucier@hklaw.com;  
robert.hill@hklaw.com; steven.jedlinski@hklaw.com;  
Arrows-Up-IPR-Distribution@hklaw.com

Mail: Allison Lucier, Holland & Knight, 10 St. James  
Ave., Boston, MA 02116

**C. Notice of Real-Parties-in-Interest (37 C.F.R. § 42.8(b)(1))**

Arrows Up, LLC

Broe Management Company LLC d/b/a The Broe Group

OmniTRAX, Inc.

OmniTRAX Sand Holdings LLC

Omni AU, LLC

OES Holdings, LLC

OmniTRAX Holdings Combined, Inc.

**D. Notice of Related Matters (37 C.F.R. § 42.8(b)(2))**

The proceedings listed below involve patents that claim priority to the same  
applications as the ‘772 patent:

<i>Proppant Express Investments, LLC v. Oren Technologies, LLC</i>	Case No. IPR2017-01917
<i>Proppant Express Investments, LLC v. Oren Technologies, LLC</i>	Case No. IPR2017-01918

<i>Proppant Express Investments, LLC v. Oren Technologies, LLC</i>	Case No. IPR2017-02103
<i>Proppant Express Investments, LLC v. Oren Technologies, LLC</i>	Case No. IPR2018-00914
<i>SandBox Logistics LLC v. Proppant Express Investments LLC</i>	Case No. 4:17-cv-00589 (S.D. Tex.)
<i>SandBox Logistics LLC v. Grit Energy Solutions, LLC</i>	Case No. 3:16-cv-00012 (S.D. Tex.)

**E. Fee for *Inter Partes* Review**

The Director is authorized to charge the fee specified by 37 CFR § 42.15(a) to Deposit Account No. 50-2324.

**F. Proof of Service**

Proof of service of this petition is attached hereto.

Dated: June 11, 2018

Respectfully submitted,

Holland & Knight LLP

/s/ Allison Lucier

Allison Lucier

Reg. No. 70,205

Counsel for Arrows Up, LLC

## **CERTIFICATE OF SERVICE**

The undersigned certifies that a complete copy of this Petition for *Inter Partes* Review of U.S. Patent No. 9,248,772, including any exhibits and other documents filed together with this Petition were served upon the attorney of record for U.S. Patent No. 9,248,772 shown in PAIR at the following address:

Hogan Lovells US LLP  
609 Main Street  
Suite 4200  
Houston, TX 77002

via FEDERAL EXPRESS overnight delivery on June 11, 2018.

A courtesy copy was also served on: gcutri@kirkland.com.

HOLLAND & KNIGHT LLP

By /s/ Allison Lucier

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Facsimile: (617) 523-6850

Counsel for Arrows Up, LLC

**CERTIFICATE OF COMPLIANCE WITH 37 C.F.R. § 42.24**

I hereby certify that this Petition complies with the word count limitation of 37 C.F.R. § 42.24(a)(1)(i) because the Petition contains 11,714 words, excluding the cover page and the parts of the Petition exempted by 37 C.F.R. § 42.24(a)(1).

Date: June 11, 2018

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