

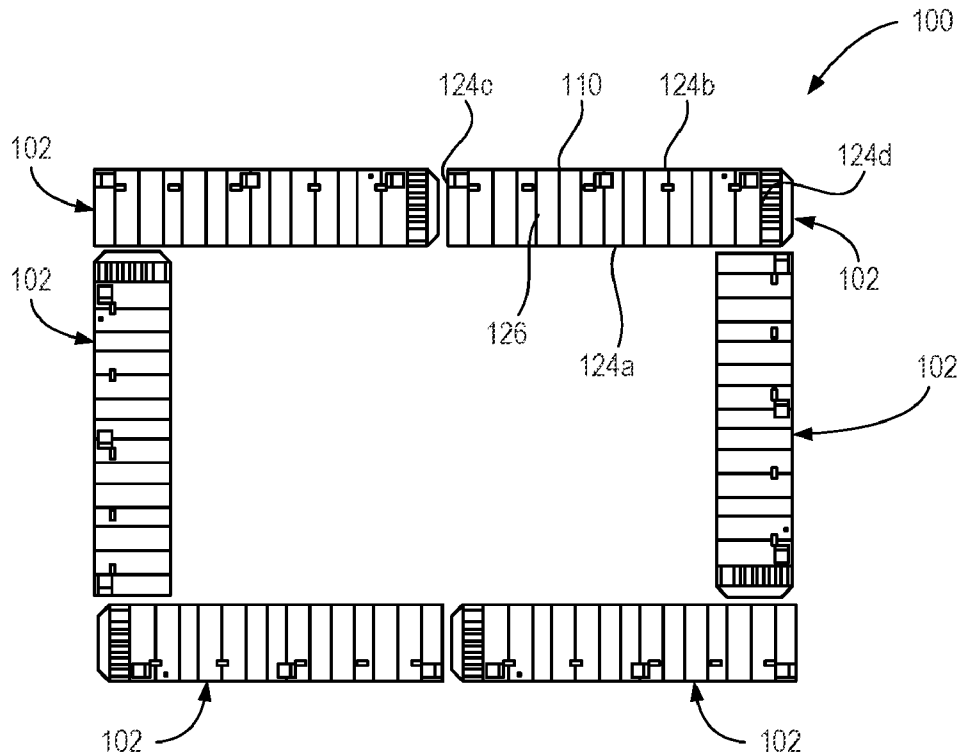


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Saba et al.(10) **Pub. No.: US 2016/0244251 A1**(43) **Pub. Date: Aug. 25, 2016**(54) **MOBILE STORAGE CONTAINER SYSTEMS****Publication Classification**(71) Applicant: **ODIN INTERNATIONAL, LLC**,
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B65D 90/04 (2006.01)(72) Inventors: **Donald Joseph Saba**, Sandy, UT (US);
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CPC **B65D 88/027** (2013.01); **B65D 90/046**
(2013.01)(73) Assignee: **ODIN INTERNATIONAL, LLC**(57) **ABSTRACT**(21) Appl. No.: **15/048,402**(22) Filed: **Feb. 19, 2016****Related U.S. Application Data**

(60) Provisional application No. 62/118,260, filed on Feb. 19, 2015.

Apparatuses and methods of storing materials, such as liquids, are provided. Mobile storage container systems are disclosed that include or can be erected using multiple transportable storage tanks arranged to form a perimeter and lined with a liner. The transportable storage tanks can include lateral extension panels and/or height extension panels to increase a perimeter and/or a depth of the storage container formed by the multiple transportable storage tanks.



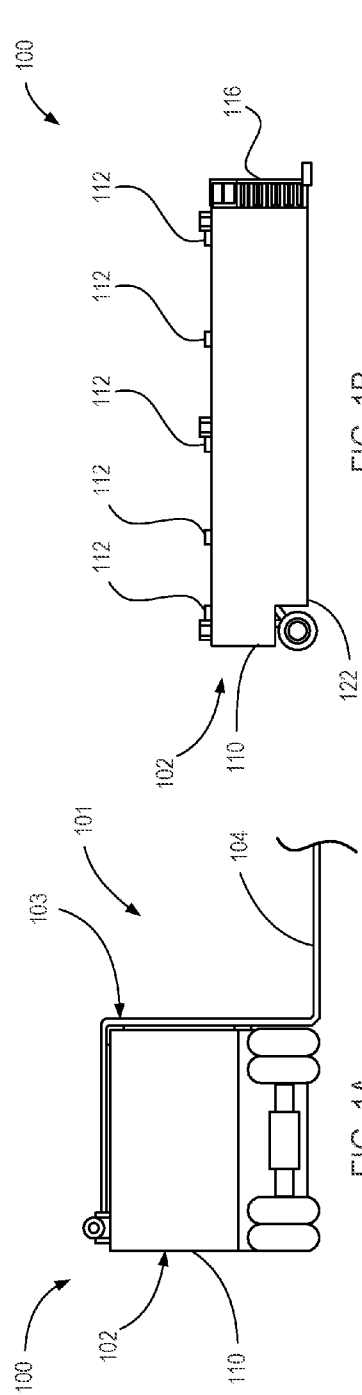


FIG. 1A

FIG. 1B

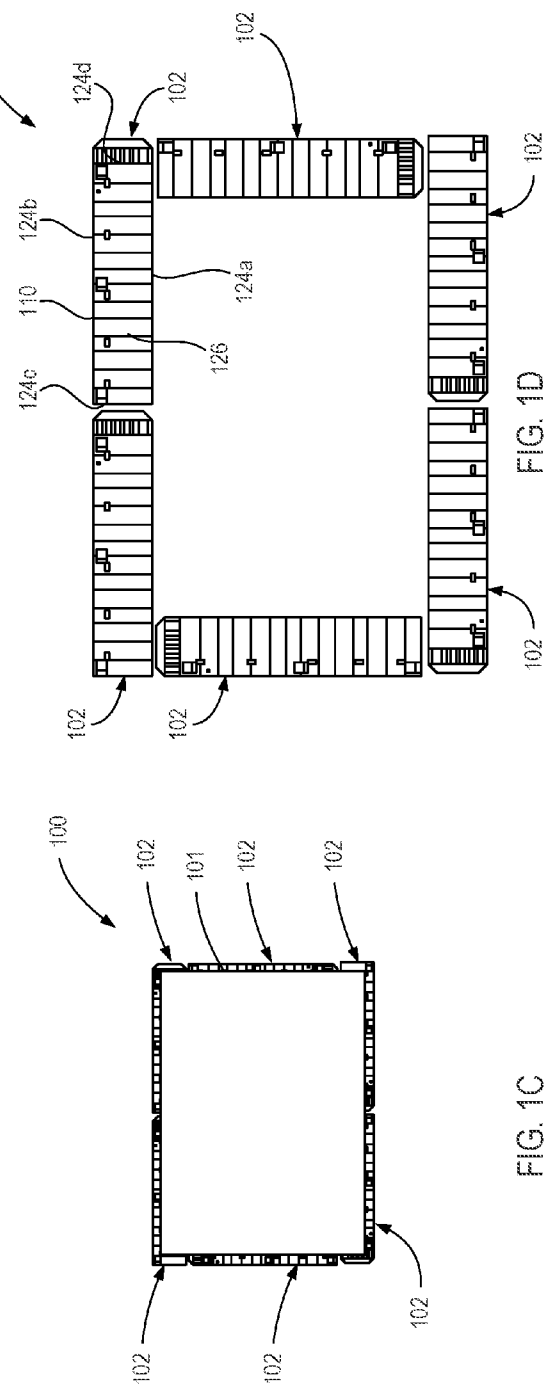
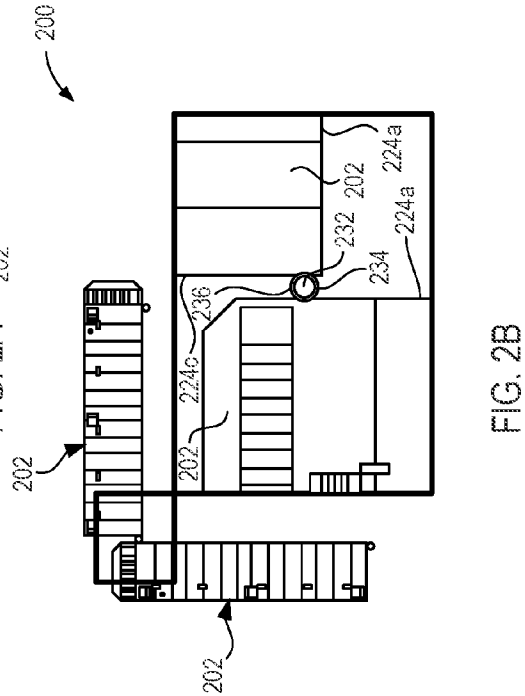
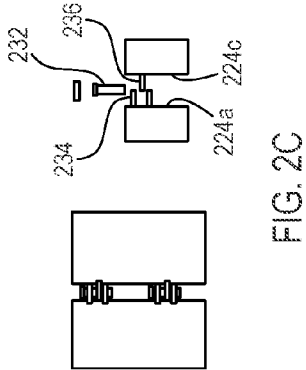
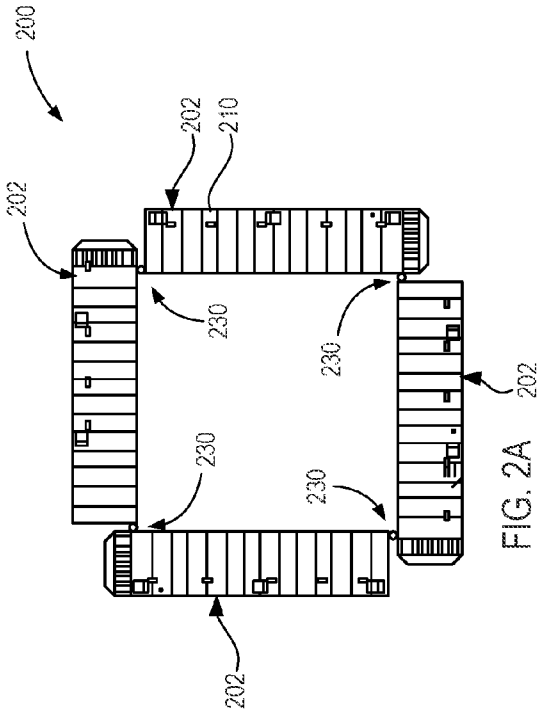
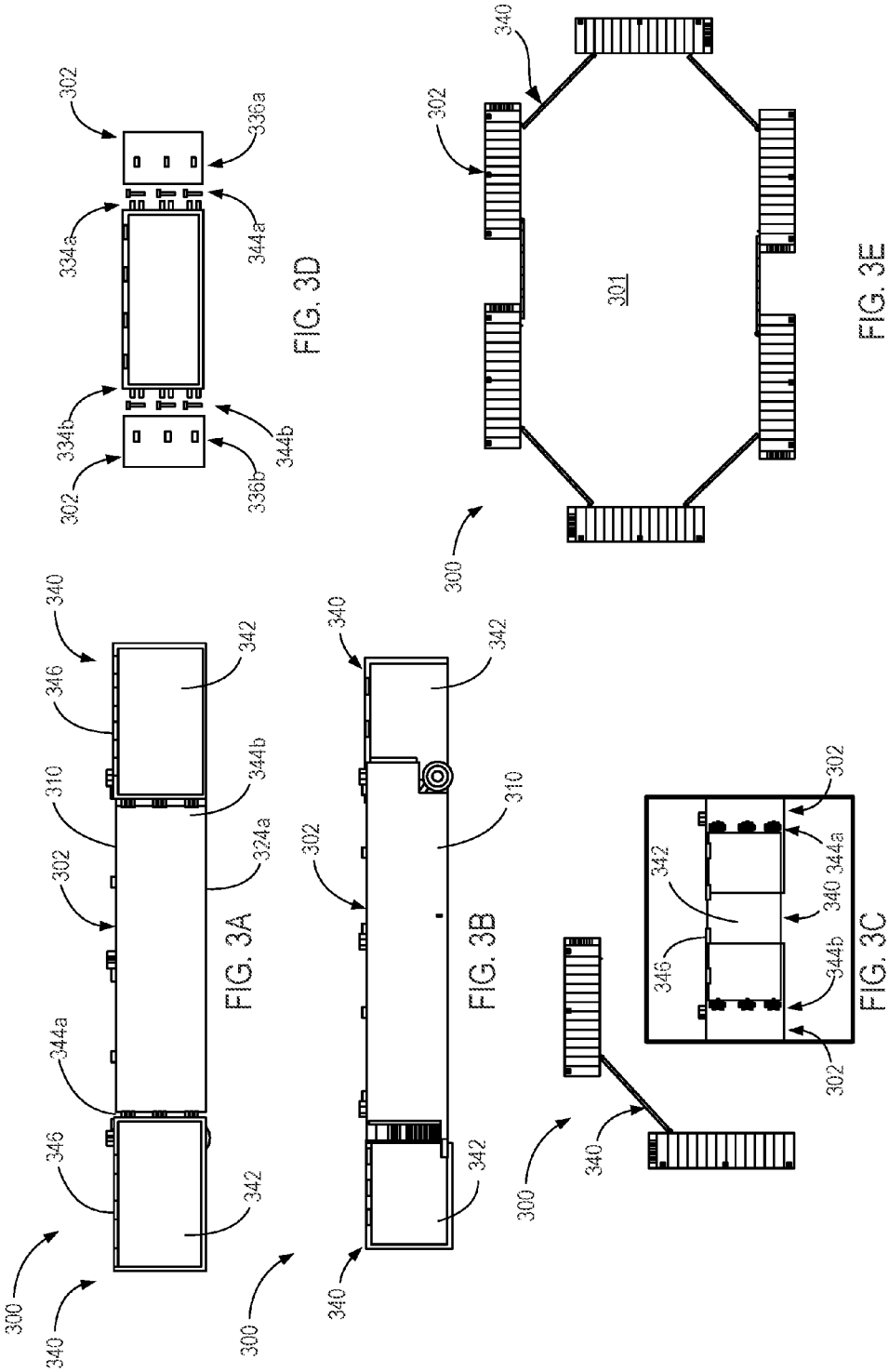
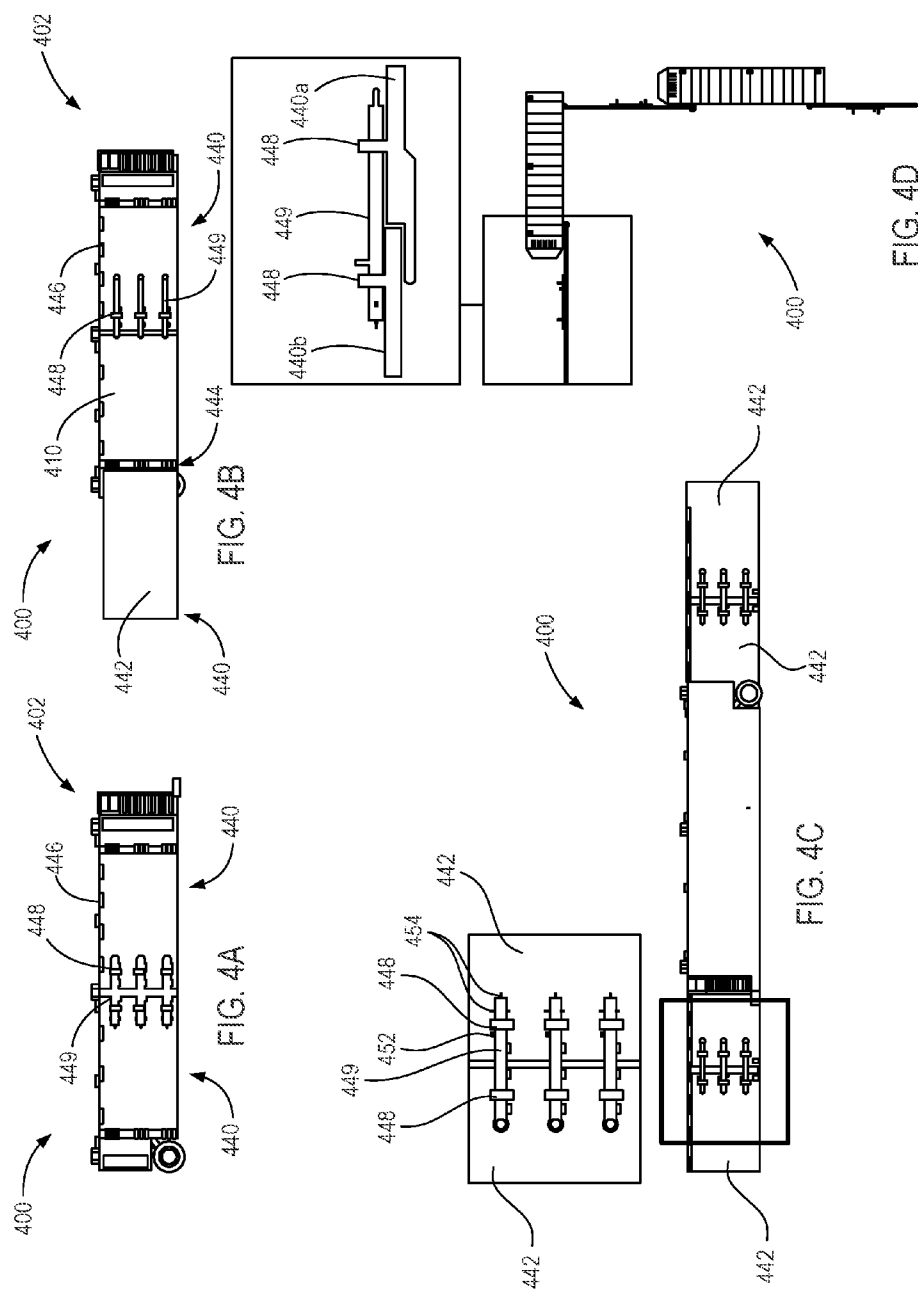


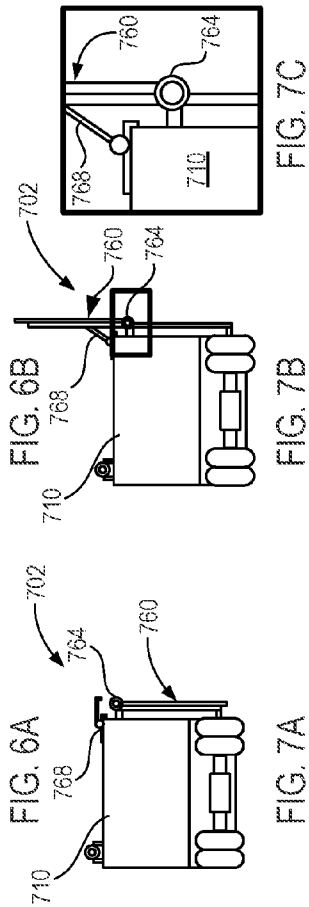
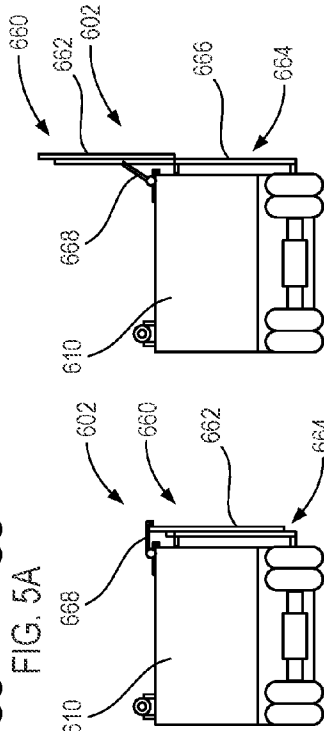
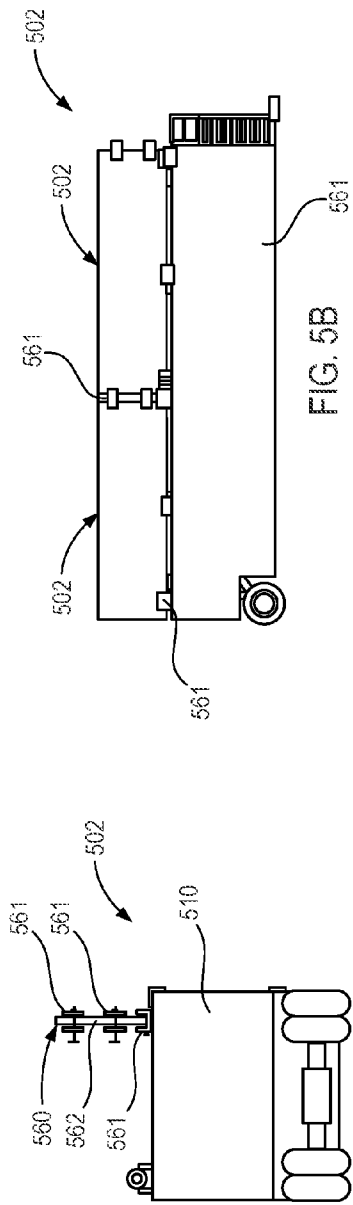
FIG. 1C

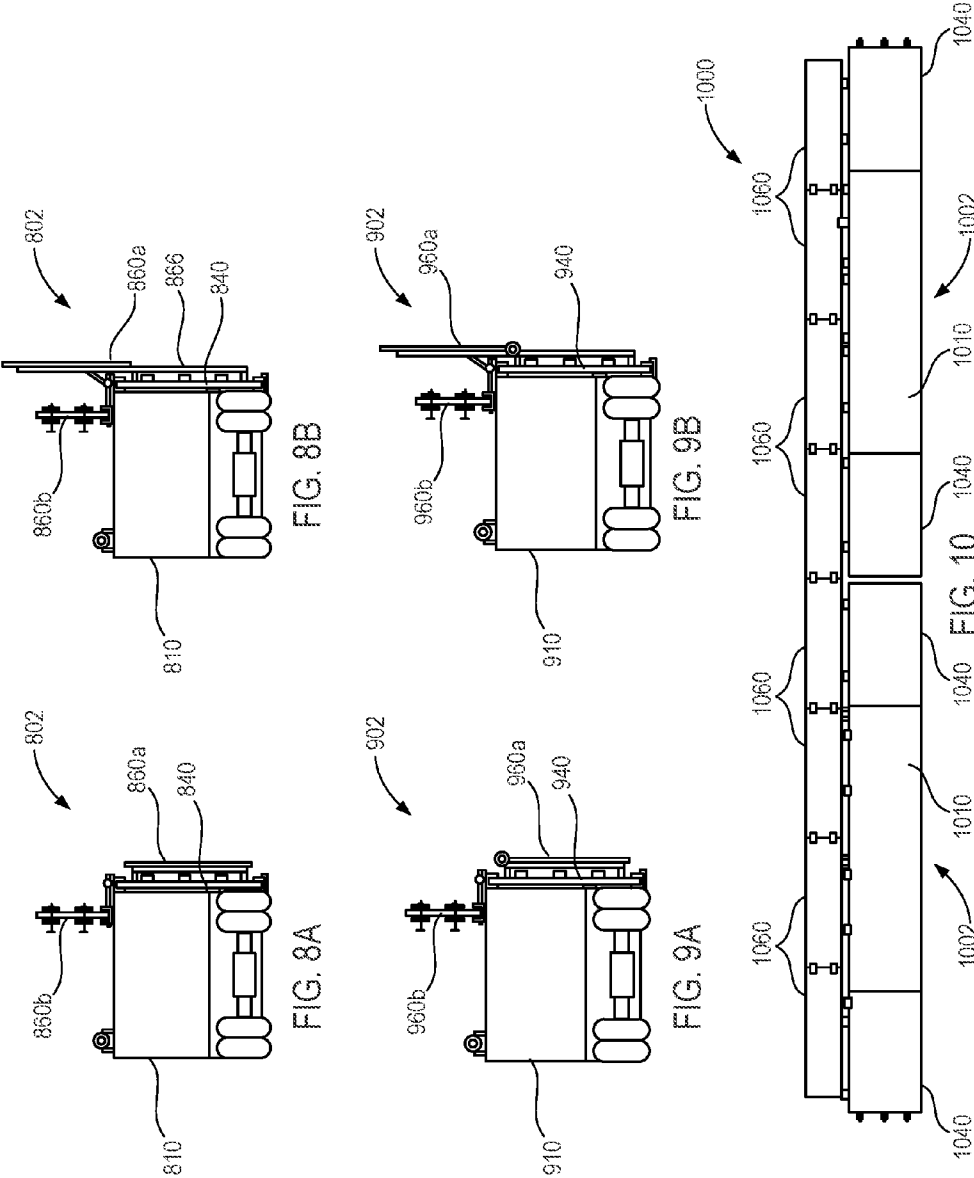
FIG. 1D

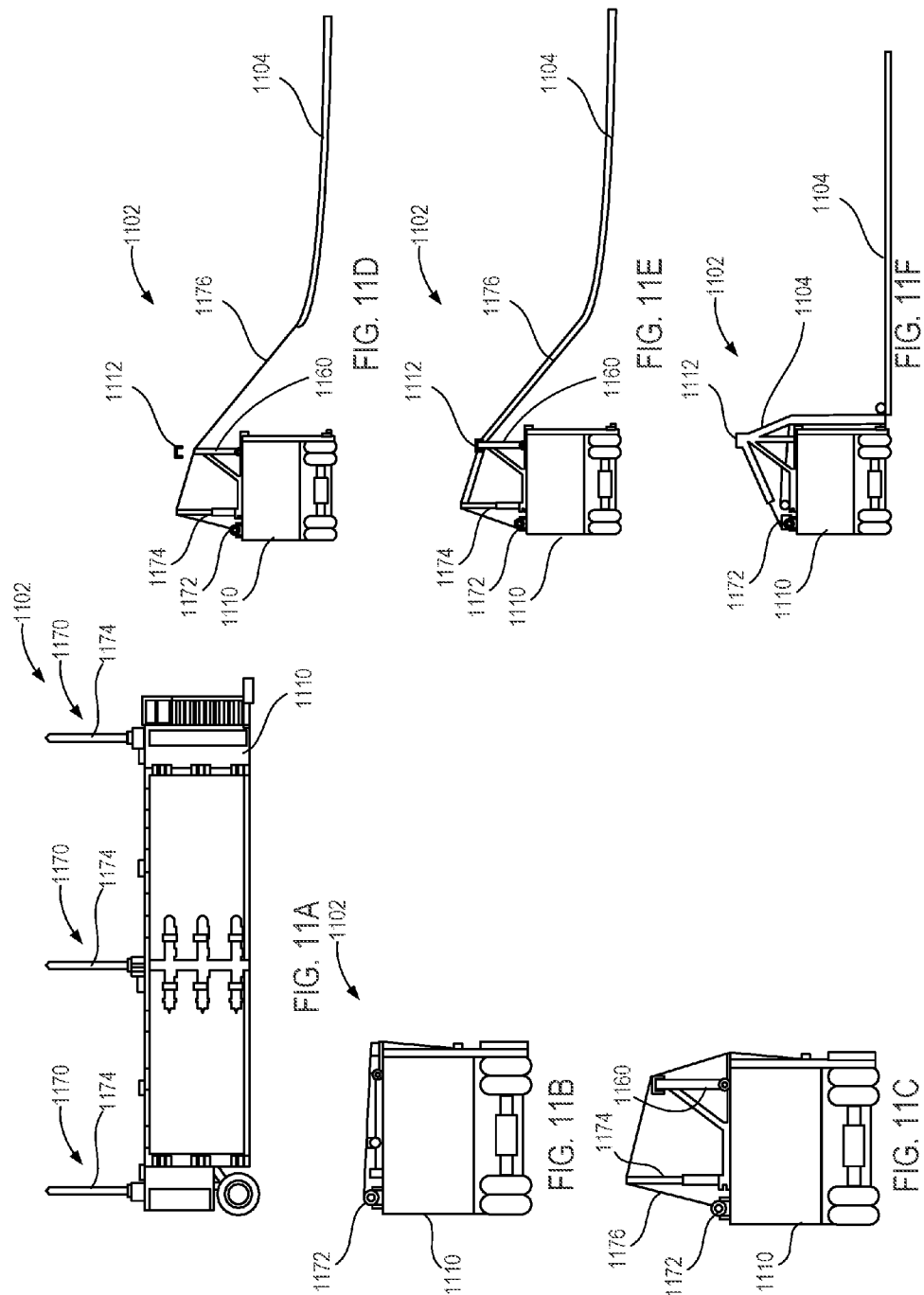












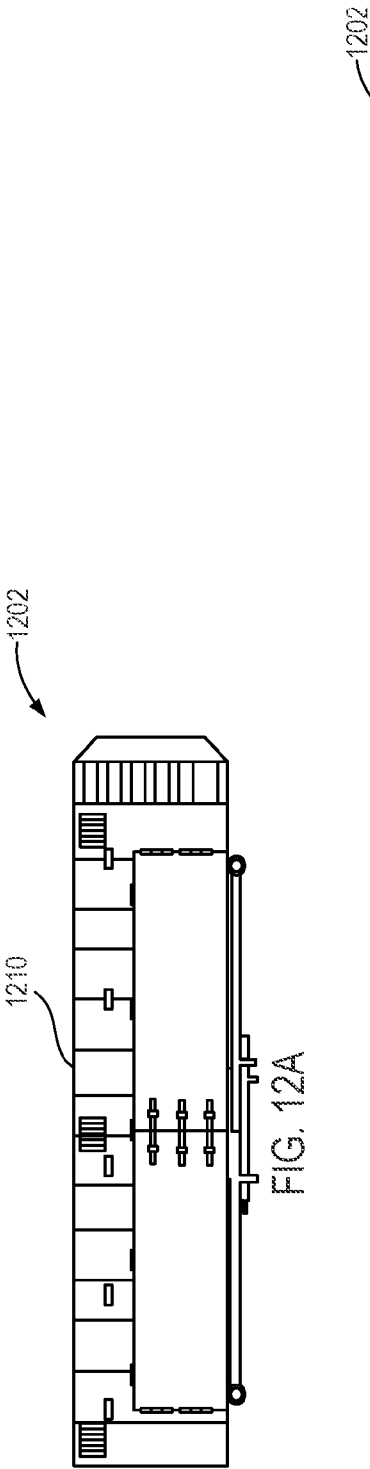


FIG. 12A

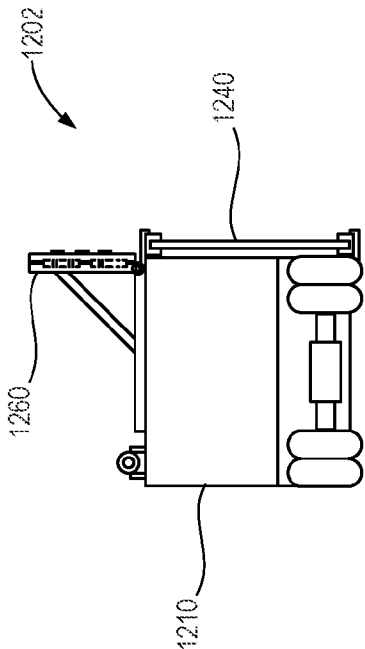


FIG. 12B

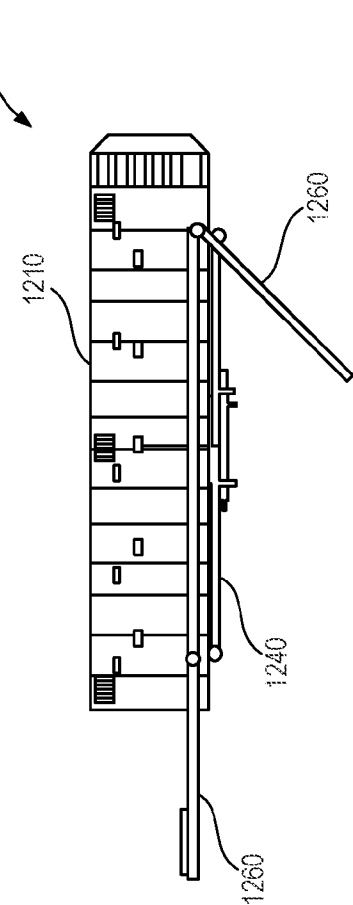


FIG. 12C

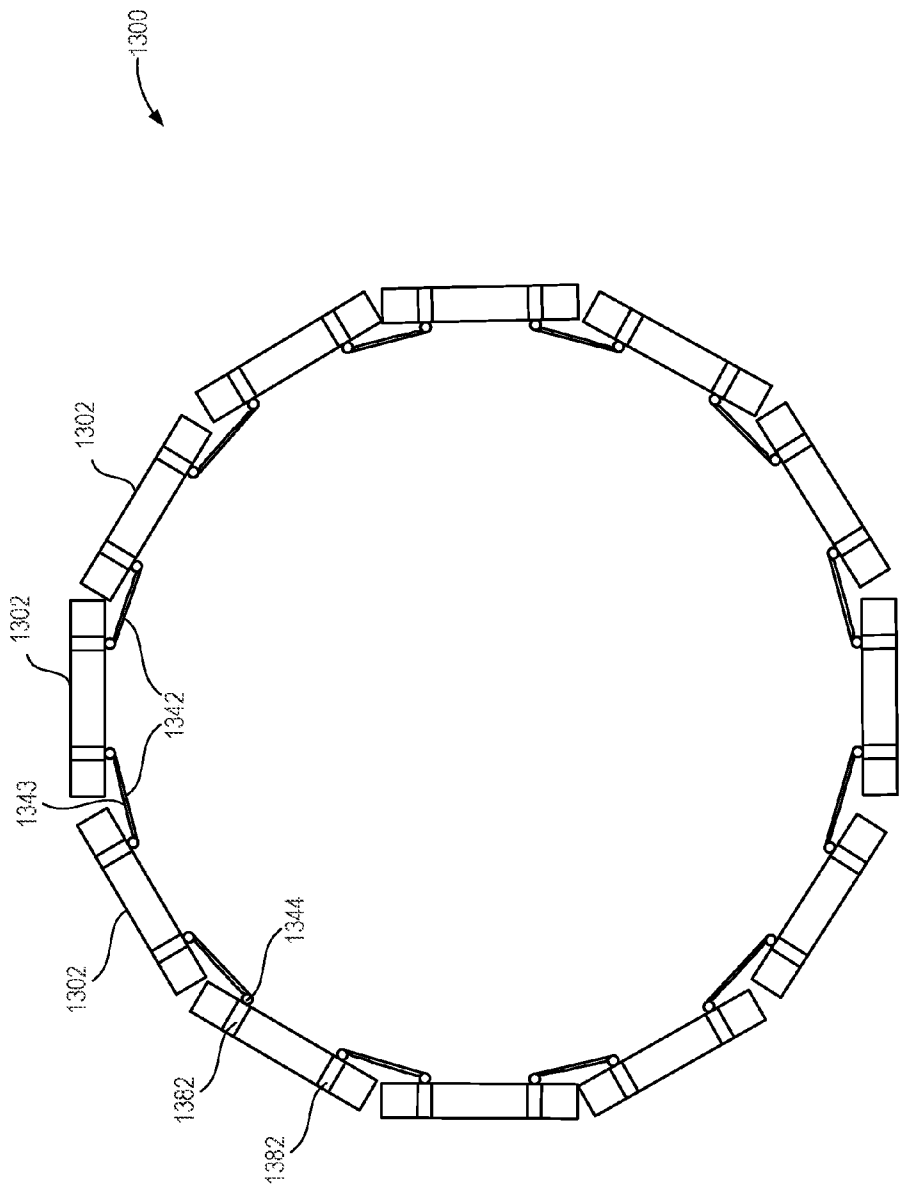


FIG. 13

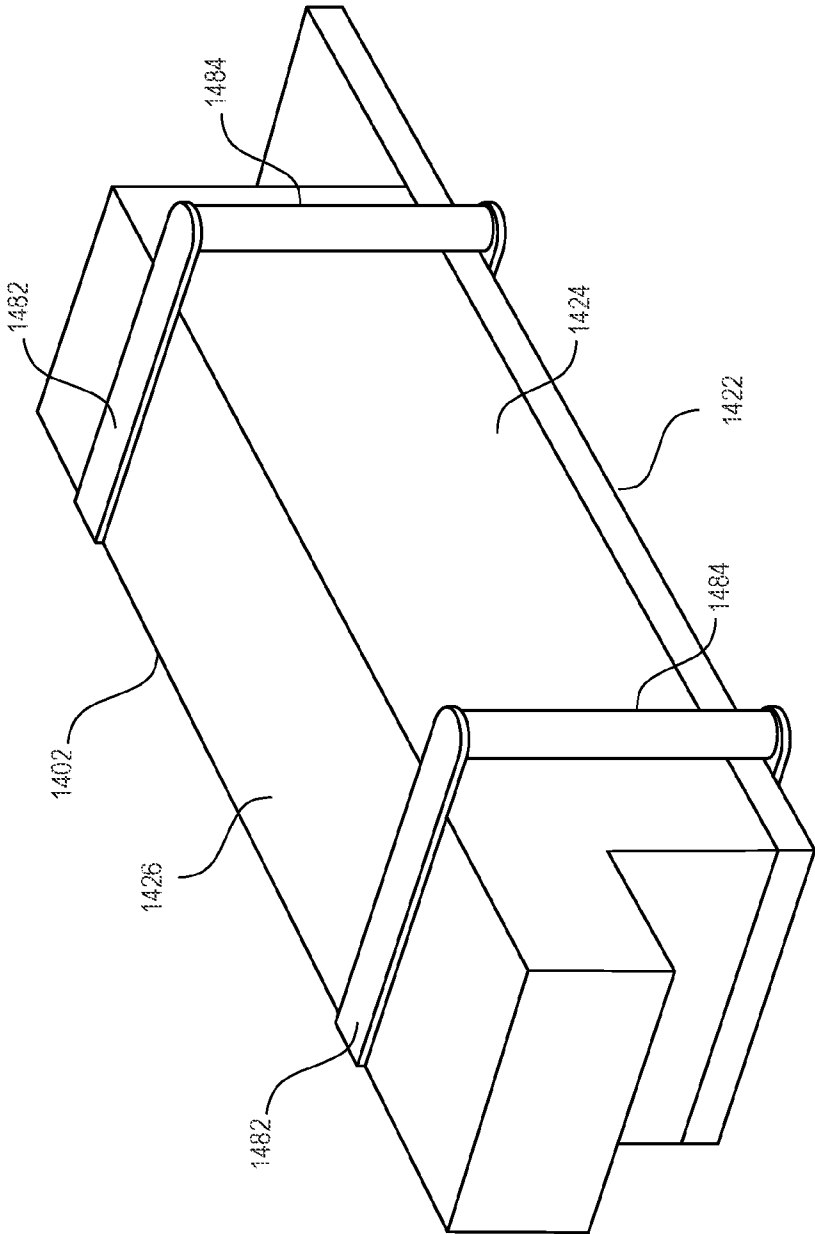


FIG. 14A

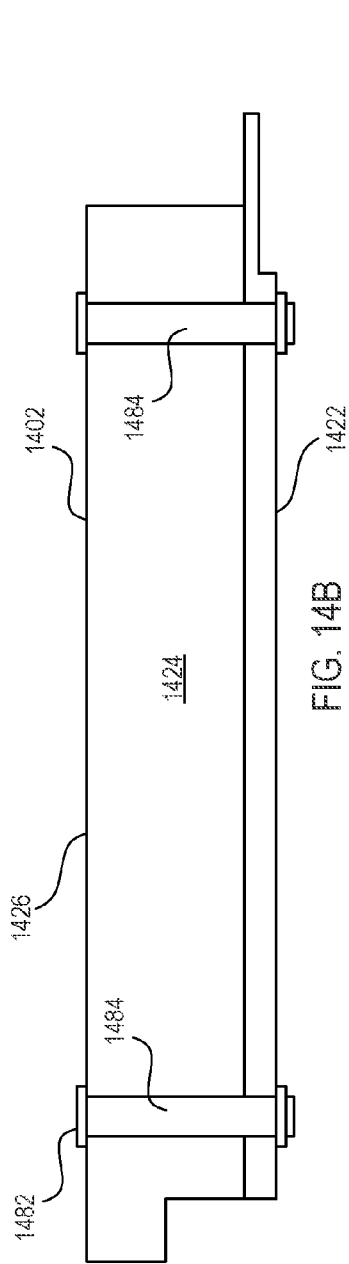


FIG. 14B

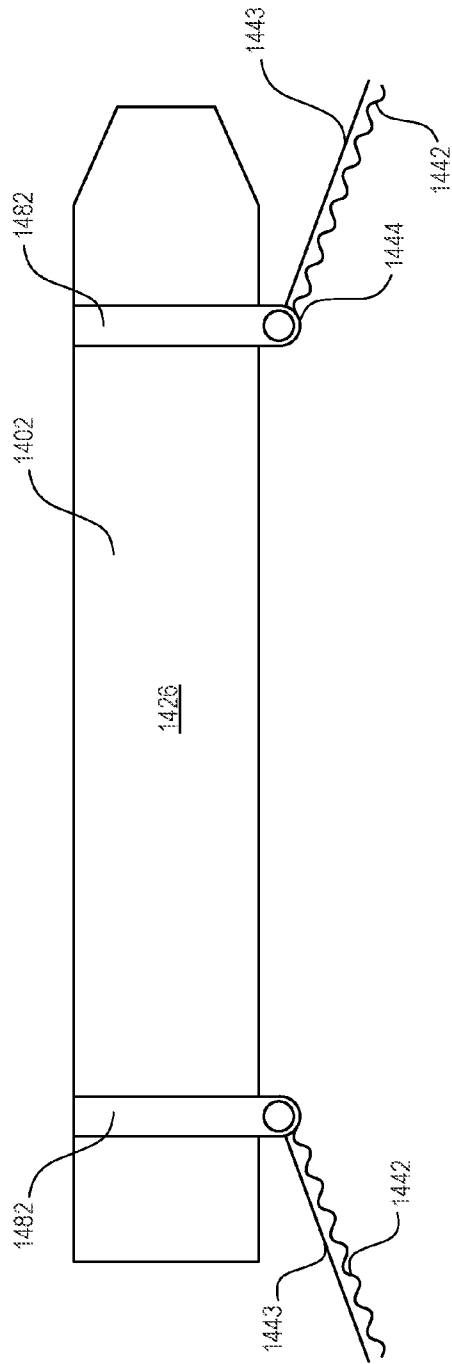


FIG. 14C

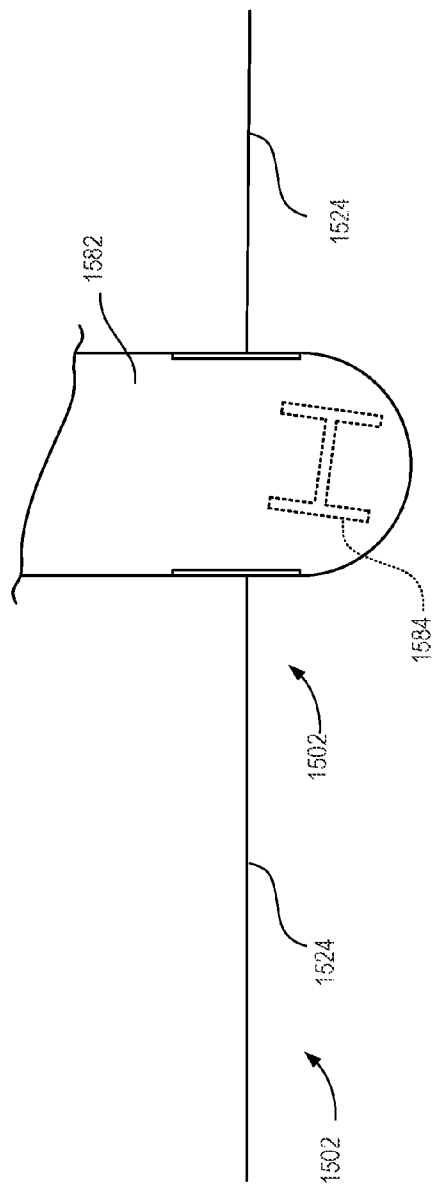


FIG. 15A

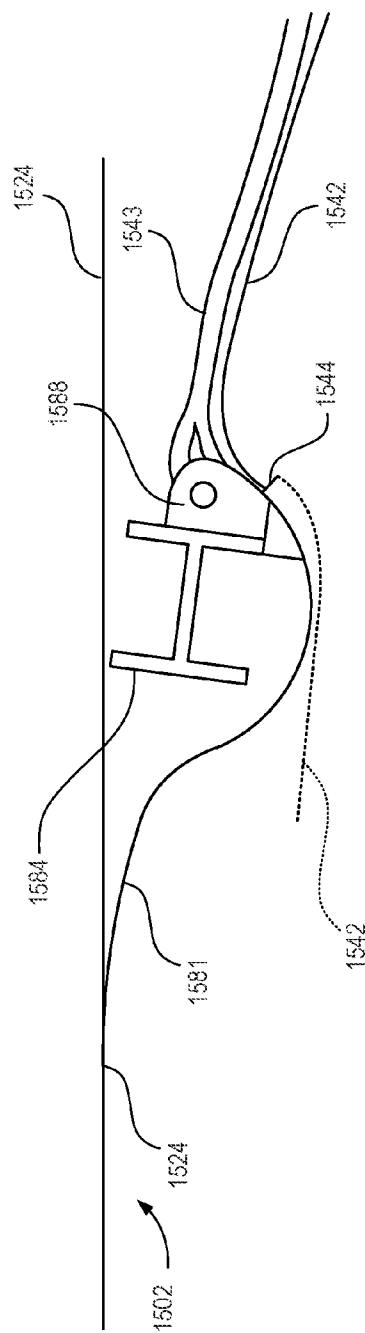


FIG. 15B

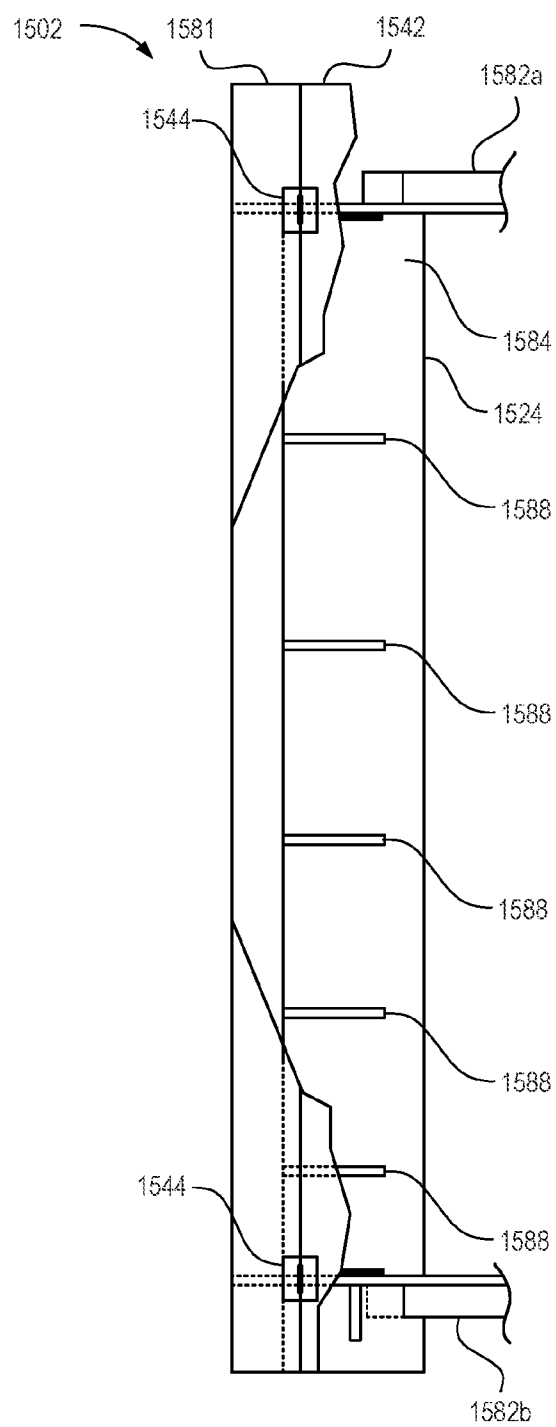


FIG. 15C

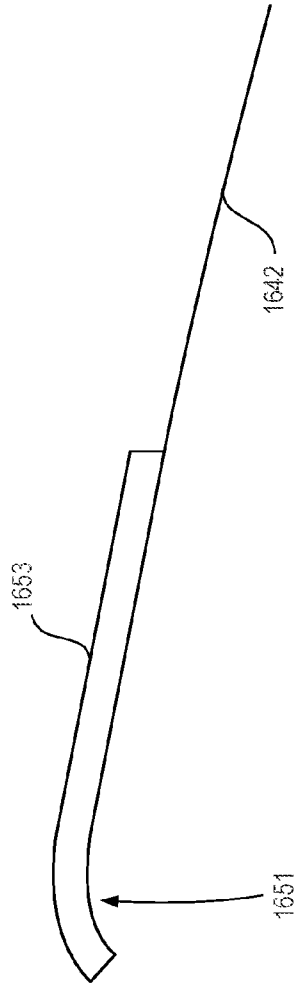


FIG. 16A

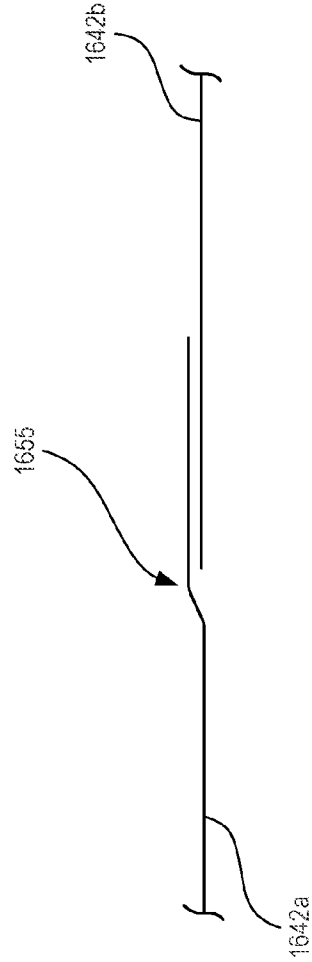


FIG. 16B

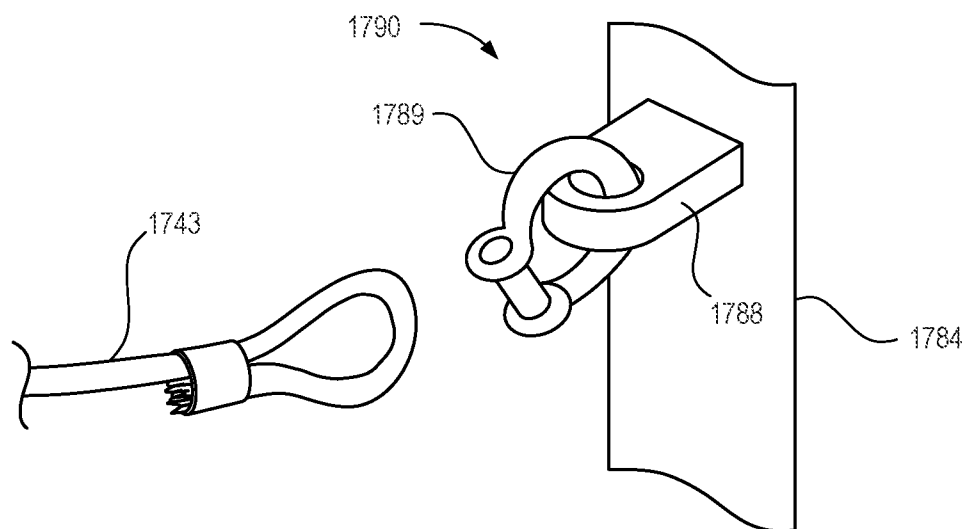


FIG. 17

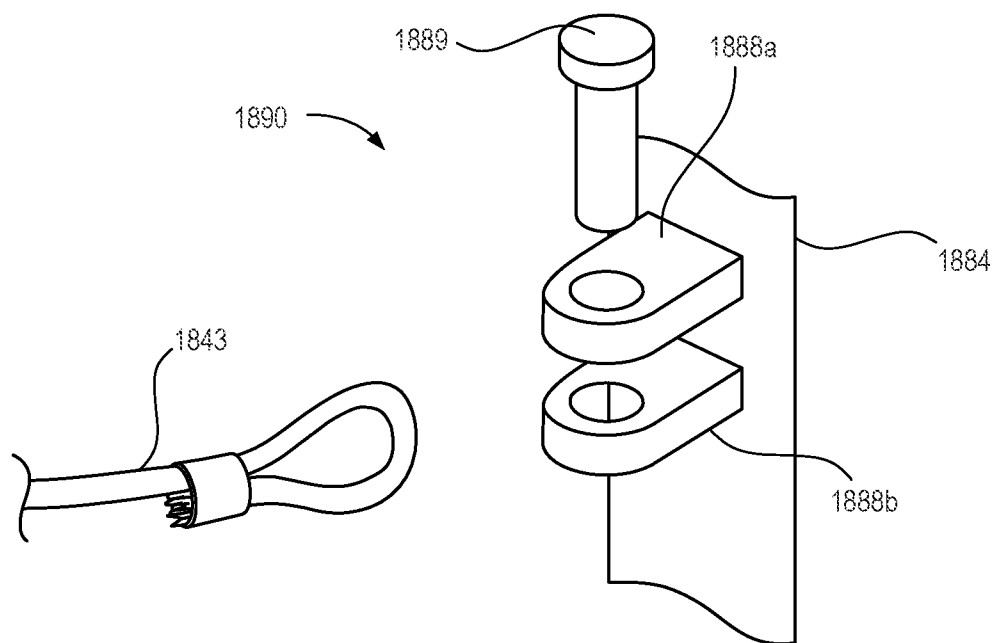


FIG. 18

MOBILE STORAGE CONTAINER SYSTEMS

RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application No. 62/118,260, titled MOBILE STORAGE CONTAINER SYSTEMS, filed Feb. 19, 2015, which is hereby incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present disclosure relates generally to storage for materials such as liquids, and more specifically to mobile systems for storing materials.

BACKGROUND

[0003] Water is a major constituent for life on earth and an essential resource for many functions and processes. Many industrial processes require water.

[0004] In 2010, the U.S. Environmental Protection Agency estimated that 70 to 140 billion gallons of water are used to fracture 35,000 wells in the United States each year. This is approximately the annual water consumption of 40 to 80 cities each with a population of 50,000. Fracture treatments in coalbed methane wells use from 50,000 to 350,000 gallons of water per well, while deeper horizontal shale wells can use anywhere from 2 to 10 million gallons of water to fracture a single well. For remote drilling sites, obtaining and storing water for use in fracture treatments can be challenging.

[0005] Currently, water at drill sites is stored in traditional water storage tanks, commonly referred to as “frac tanks” (approximately 80 to 100 tanks per site), or in one or two large mobile ponds. The mobile ponds began to be used because, in some drilling locations, it is less expensive to set up a large mobile pond than to transport by truck the number of traditional frac tanks to store the same amount of water. However, most drilling sites still use traditional frac tanks because, depending on the location of the drill site, setup and break-down costs of a pond can be more expensive than trucking in 80 to 100 traditional frac tanks. Heavy equipment and machinery as well as a lot of manpower are needed to set up and break down the presently available ponds.

SUMMARY

[0006] The present disclosure provides embodiments of mobile storage containers that can be erected using fewer resources while storing similar or greater water than presently available containers.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The embodiments disclosed herein will become more fully apparent from the following description and appended claims, taken in conjunction with the accompanying drawings. These drawings depict only typical embodiments, which will be described with additional specificity and detail through use of the accompanying drawings in which:

[0008] FIG. 1A is a side sectional view of the mobile storage container system, according to one embodiment.

[0009] FIG. 1B is a back view of the mobile storage container system.

[0010] FIG. 1C is a top view of the mobile storage container system with a liner.

[0011] FIG. 1D is a top view of the mobile storage container system without the liner.

[0012] FIG. 2A is a top view of a mobile storage container system, according to another embodiment of the present disclosure.

[0013] FIG. 2B is an enlarged view of a portion of the mobile storage container system of FIG. 2A.

[0014] FIG. 2C is an exploded view of the mobile storage container system of FIG. 2A.

[0015] FIG. 3A is a front side view of a mobile storage container system, according to another embodiment of the present disclosure.

[0016] FIG. 3B is a back side view of the mobile storage container system of FIG. 3A.

[0017] FIG. 3C is an enlarged front side view of a lateral extension panel of the mobile storage container system of FIG. 3A.

[0018] FIG. 3D is an exploded view of a lateral extension panel of the mobile storage container system of FIG. 3A.

[0019] FIG. 3E is a top view of the mobile storage container system of FIG. 3A.

[0020] FIG. 4A is a front view of a transportable storage tank of a mobile storage container system, according to another embodiment of the present disclosure, in a stowed configuration.

[0021] FIG. 4B is a front view of the transportable storage tank of FIG. 4A with a lateral extension panel in an operational configuration.

[0022] FIG. 4C is a back view of the transportable storage tank of FIG. 4A coupled to other transportable storage tanks.

[0023] FIG. 4D is a top view of the transportable storage tank of FIG. 4A.

[0024] FIG. 5A is a side view of a transportable storage tank of a mobile liquid storage container system, according to another embodiment of the present disclosure.

[0025] FIG. 5B is a front view of the transportable storage tank of FIG. 5A.

[0026] FIG. 6A is a side view of a transportable storage tank of a mobile storage container system, according to an embodiment of the present disclosure, in a stowed configuration.

[0027] FIG. 6B is a side view of the transportable storage tank of FIG. 6A in an operational configuration.

[0028] FIG. 7A is a side view of a transportable storage tank of a mobile storage container system, according to another embodiment of the present disclosure, in a stowed configuration.

[0029] FIG. 7B is a side view of the transportable storage tank of FIG. 7A in an operational configuration.

[0030] FIG. 7C is an enlarged view of the transportable storage tank of FIG. 7B.

[0031] FIG. 8A is a side view of a transportable storage tank of a mobile storage container system, according to another embodiment of the present disclosure, in a stowed configuration.

[0032] FIG. 8B is a side view of the transportable storage tank of FIG. 8A in an operational configuration.

[0033] FIG. 9A is a side view of a transportable storage tank of a mobile storage container system, according to another embodiment of the present disclosure, in a stowed configuration.

[0034] FIG. 9B is a side view of the transportable storage tank of FIG. 9A in an operational configuration.

[0035] FIG. 10 is an interior view of a mobile storage container system, according to another embodiment, in an operational configuration.

[0036] FIGS. 11A-11F are front and side views of a transportable storage tank of a mobile liquid storage container system, according to one embodiment of the present disclosure.

[0037] FIGS. 12A-12C are views of a transportable storage tank of a mobile storage container system, according to another embodiment of the present disclosure.

[0038] FIG. 13 is a plan view of a mobile storage container system, according to another embodiment, without a liner.

[0039] FIG. 14A is an isometric view of a transportable storage tank of a mobile storage container system, according to another embodiment.

[0040] FIG. 14B is a side elevation view of the transportable storage tank of FIG. 14A.

[0041] FIG. 14C is a top view of the transportable storage tank of FIG. 14A.

[0042] FIG. 15A is an enlarged top view of a transportable storage tank of a mobile storage container system, according to one embodiment.

[0043] FIG. 15B is an enlarged top cross-sectional view of the transportable storage tank of FIG. 15A showing a spreader beam.

[0044] FIG. 15C is an enlarged partial-sectional side view of the transportable storage tank of FIG. 15A showing a spreader beam.

[0045] FIG. 16A is a top view of a portion of a lateral extension panel of a transportable storage tank of a mobile storage container system, according to one embodiment.

[0046] FIG. 16B is another top view of lateral extension panels of transportable storage tanks.

[0047] FIG. 17 is an enlarged perspective view of a cable coupling mechanism of a transportable storage tank of a mobile storage container system, according to one embodiment.

[0048] FIG. 18 is an enlarged perspective view of a cable coupling mechanism of a transportable storage tank of a mobile storage container system, according to another embodiment.

DETAILED DESCRIPTION

[0049] Hydraulic fracturing (also hydrofracturing, hydrofracking, fracking, or fraccing) is an oil or gas well-stimulation technique in which rock is fractured by a pressurized liquid. Billion gallons of water are used each year in “fracking” processes. Obtaining and storing water for use in fracture treatments can be challenging. Generally water is transported into a drilling area and stored in portable tanks or ponds onsite.

[0050] The present disclosure provides embodiments of mobile storage containers that can be transported utilizing similar transportation resources as current pond technology and that can be erected utilizing fewer resources, limited manpower, and little or no heavy equipment and machinery.

[0051] It will be readily understood with the aid of the present disclosure that the components of the embodiments, as generally described and illustrated in the figures herein, could be arranged and designed in a variety of configurations. Thus, the following more detailed description of various embodiments, as represented in the figures, is not intended to limit the scope of the disclosure, but is merely representative of various embodiments. While the various aspects of the embodiments are presented in drawings, the drawings are not necessarily drawn to scale unless specifically indicated.

[0052] The phrases “connected to,” “coupled to,” and “in communication with” refer to any form of interaction between two or more entities, including mechanical, electrical, magnetic, electromagnetic, fluid, and thermal interaction. Two components may be coupled to each other even though they are not in direct contact with each other. For example, two components may be coupled to each other through an intermediate component.

[0053] Furthermore, the described features, operations, or characteristics may be combined in any suitable manner in one or more embodiments. It will also be readily understood that the order of the steps or actions of the methods described in connection with the embodiments disclosed may be changed as would be apparent to those skilled in the art. Thus, any order in the drawings or Detailed Description is for illustrative purposes only and is not meant to imply a required order, unless specified to require an order.

[0054] FIGS. 1A-1D are views of a mobile storage container system 100, according to one embodiment. FIG. 1A is a side sectional view of the mobile storage container system 100. FIG. 1B is a back view of the mobile storage container system 100. FIG. 1C is a top view of the mobile storage container system 100 with a liner 104. FIG. 1D is a top view of the mobile storage container system 100 without the liner 104. Referring to FIGS. 1A-1D collectively, the mobile storage container system 100 includes a plurality of transportable storage tanks 102 and a liner 104. The mobile storage container system 100 is configured to be transportable to a desired location to erect or otherwise assemble an open storage container 101 having an interior for storing material such as water or other liquid.

[0055] The plurality of transportable storage tanks 102 is configured to be parked or otherwise arranged to form a perimeter 103 of the open storage container 101. In the illustrated embodiment of FIGS. 1A-1D, the perimeter 103 of the open storage container 101 may be at an interior (e.g., toward the interior of the perimeter 103) surface of the plurality of transportable storage tanks 102. However, in other embodiments, the perimeter may be displaced from the interior surface of the plurality of transportable storage tanks 102.

[0056] A transportable storage tank 102 may include a tank body 110, one or more liner coupling devices 112, a spout, and a ladder 116. The tank body 110 of a transportable storage tank 102 may include a base panel 122, one or more side panels 124a, 124b, 124c, 124d (generally and collectively 124) coupled to the base panel 122 and forming a liquid impermeable tank wall, and a top panel 126 coupled to the one or more side panels 124. The panels 122, 124, 126 define a hollow interior (not pictured) or chamber. The panels 122, 124, 126 of the tank body 110 may be configured to be liquid impermeable to store water or other liquids. The tank body 110 may be a rectangular box shape. In other embodiments, a tank body may be another suitable shape. The tank body 110 may also include a plurality of liner spacers or guides that may prevent or limit the liner 104 from coming in contact with any sharp edges of the tank body 110. The liner spacers may prevent or limit a liner from catching or snagging on the tank body 110. The line spacers may also prevent the tank body 110 from rupturing or otherwise damaging the liner 104. The tank body 110 may be formed of a material that is sufficiently rigid to maintain its shape and configuration while stationary, during transportation, and when the interior of the tank body 110 is empty, partially filled, or completely filled. The tank body 110 may also be formed of a material that is sufficiently

rigid and of sufficient strength to withstand the stress or forces that may be present during use of a ladder **116** or stairs disposed in or on the tank body **110** of the transportable storage tank **102**. For example, the tank body **110** may be formed of steel. In other embodiments, the tank body **110** may be formed of another metal, a metal alloy, or a rigid polymer.

[0057] The one or more liner coupling devices **112** may be disposed in a top outer surface of the tank body **110** (e.g., a top panel **126** of the tank body **110**). The liner coupling device **112** may facilitate deployment of the liner **104** to line an interior of the perimeter formed by the plurality of transportable storage tanks **102** to form the storage container **101**. The liner coupling device **112** couples the liner **104** to the transportable storage tank **102** by engaging the liner **104**. For example, the liner coupling device **112** may include a clasp that pinches, clamps, or otherwise applies a force to both a top surface and a bottom surface of the liner **104**, at an edge of the liner **104**, to fasten the liner **104** to the transportable storage tank **102**. In another embodiment, the liner coupling device **112** may include rare earth magnets configured by their size, position, or polarity to couple with or fasten to corresponding rare earth magnets that may be present in a liner **104**. In still other embodiments, the liner coupling device **112** may include a hook to engage an eyelet or a loop in or on the liner **104**.

[0058] The plurality of transportable storage tanks **102** may each be configured to be positioned adjacent to another storage tank **102** to define a perimeter **103** of the open storage container **101**. Stated differently, the plurality of transportable storage tanks **102** may define an open space that is disposed in the interior of a perimeter **103** formed by the plurality of transportable storage tanks **102**. Adjacent transportable storage tanks **102** may be positioned adjacent each other without the tank bodies of either transportable storage tank **102** being coupled, connected, or in fluid communication. For example, the configuration of the plurality of transportable storage tanks **102** may be similar to the configuration of transportable storage tanks **102** shown in FIGS. **1C** and **1D**. As can be appreciated, the plurality of transportable storage tanks **102** may include a greater or smaller number of transportable storage tanks than the number of transportable storage tanks **102** shown in FIGS. **1C** and **1D**. As can also be appreciated, the shape and size of the perimeter and/or space formed by the configuration of the plurality of transportable storage tanks **102** may be one of a variety of different possible shapes or sizes, based on how each of the transportable storage tanks **102** is disposed or positioned relative to the others. Other shapes and sizes of perimeters/spaces are shown in other figures.

[0059] The liner **104** may be disposed within the interior of the open space to further define the storage container **101** and facilitate storage of material within the open space. The liner **104** may include a membrane formed of a liquid impermeable material so as to enable storage of water and other liquids. The liner **104** couples to one or more of the transportable storage tanks **102** of the plurality of transportable storage tanks **102**. The liner **104** may be of a size and shape to facilitate a configuration in which the liner **104** may be disposed adjacent to the ground as well as adjacent to any transportable storage tanks **102** with which the liner **104** may be coupled. Coupling the liner **104** to a liner coupling device **112** may fasten the liner **104** to the plurality of transportable storage tanks **102** and may prevent the liner from falling, sliding, or otherwise moving in an undesired way during use of the mobile storage

container system **100**. The liner **104** can form a liquid impermeable wall defining an interior of the open storage container **101**. Within the interior of the open storage container, water or other liquids may be stored without significant leakage or loss of liquid.

[0060] FIGS. **2A** and **2B** are, respectively, a top view and a close-up view of a mobile storage container system **200**, according to another embodiment of the present disclosure. FIG. **2C** is an exploded view of FIG. **2B**. The mobile storage container system **200** of FIGS. **2A-2C** may resemble the mobile storage container system **100** described above with reference to FIGS. **1A-1D**. Accordingly, like features may be designated with like reference numerals, with the leading digits incremented to “2.” Relevant disclosure set forth above regarding similarly identified features thus may not be repeated hereafter. Moreover, specific features of the mobile storage container system **200** may not be shown or identified by a reference numeral in the drawings or specifically discussed in the written description that follows. However, such features may clearly be the same, or substantially the same, as features depicted in other embodiments and/or described with respect to such embodiments. Accordingly, the relevant descriptions of such features apply equally to the features of the mobile storage container system **200**. Any suitable combination of the features and variations of the same described with respect to the mobile storage container system **100** can be employed with the mobile storage container system **200**, and vice versa. This pattern of disclosure applies equally to further embodiments depicted in subsequent figures and described hereafter.

[0061] The mobile storage container system **200** of FIGS. **2A-2C** may include components present in the mobile storage container system **100** of FIGS. **1A-1D** and may include additional components that are not present in the embodiment of FIGS. **1A-1D**, such as a tank body coupling mechanism **230**. The mobile storage container system **200** is shown in FIGS. **2A-2C** without a liner for sake of clarity, but nevertheless can include a liner.

[0062] The tank body coupling mechanism **230** may include a coupling pin **232**, a first set of eyes **234**, and a second set of eyes **236**. The first set of eyes **234** may be disposed on a front side panel **224a** of a tank body **210** of a transportable storage tank **202**. The second set of eyes **236** may be disposed in a lateral side panel **224c** of the tank body **210** of the transportable storage tank **202**. The first set of eyes **234** disposed in the front side panel **224a** of a storage tank **202** may be offset by some vertical distance from the second set of eyes **236** disposed in the lateral side panel **224c** of a storage tank **202**, which allows the first set of eyes **234** of a transportable storage tank **202** to couple with the second set of eyes of a first adjacent transportable storage tank **202** and allows the second set of eyes **236** to couple with the first set of eyes **234** of a second adjacent transportable storage tank **202**. The first set of eyes **234** and the second set of eyes **236** of an adjacent tank couple to align vertically. A coupling pin **232** through the aligned first and second sets of eyes **234**, **236** may engage the aligned first and second sets of eyes **234**, **236** and facilitate coupling together adjacent transportable storage tanks **202**.

[0063] FIGS. **3A-3E** are various views of a mobile storage container system **300**, according to another embodiment of the present disclosure. FIG. **3A** is a front side view of the mobile storage container system **300**. FIG. **3B** is a back side view of the mobile storage container system **300**. FIG. **3C** is an enlarged front side view of a lateral extension panel **340** of

the mobile storage container system 300. FIG. 3D is an exploded view of a lateral extension panel 340 of the mobile storage container system 300. FIG. 3E is a top view of the mobile storage container system 300. The mobile storage container system 300 of FIGS. 3A-3E may include similar components that are present in the mobile storage container systems 100, 200 of FIGS. 1A-1D and 2A-2C described above, and may include additional components. The mobile storage container system 300, and more particularly the transportable storage tanks 302, includes lateral extension panels 340 configured to extend laterally from the transportable storage tanks 302 to increase the perimeter of the storage container 301 defined by the transportable storage tanks 302. A lateral extension panel 340 may include a panel body 342, first and second panel coupling mechanisms 344a, 344b (generally and collectively 344), and a liner coupling mechanism 346.

[0064] The panel body 342 of a lateral extension panel 340 may be of a size or shape that may facilitate coupling to a pair of adjacent transportable storage tanks 302 defining a perimeter of a storage container 301. The panel body 342 defines a portion of the perimeter, allowing the adjacent transportable storage tanks 302 to be separated by a certain distance. The panel body 342 may be of a sufficiently rigid material to withstand forces of a material stored within the storage container 301 and to facilitate fixedly coupling adjacent transportable storage tanks 302 to limit or even prevent undesired decoupling of the tanks when an outward pressure is applied to the lateral extension panel 340. The panel body 342 may be rectangular in shape with a length to allow a stowed configuration of the panel. In the stowed configuration, the panel body 342 may be disposed adjacent to and/or coupled to the tank body 310 of a single storage tank 302.

[0065] The panel coupling mechanism 344 allows the lateral extension panel 340 to transition from the stowed configuration to an operational configuration, extending laterally from the transportable storage tank 302 to increase the perimeter of the storage container 301. In the mobile storage container system 300 of FIGS. 3A-3E, the panel coupling mechanism 344 hingedly couples the panel body 342 to a front side panel 324a of the tank body 310. The first panel coupling mechanism 344a may include a first set of eyes 334a disposed at a first end of the panel body 342 and configured to cooperate with a first cooperating set of eyes 336a disposed in the front side panel 324 of the tank body 310. The first set of eyes 334a align with the first cooperating set of eyes 336a and are joined by a first set of pins 332a to provide rotatable coupling of the first set of eyes 334a and the first cooperating set of eyes 336a. The second panel coupling mechanism 344b may include a second set of eyes 334b disposed at a second end of the panel body 342 and configured to cooperate with a second cooperating set of eyes 336b disposed in the front side panel 324 of the tank body 310. The second set of eyes 334b align with the second cooperating set of eyes 336b and are joined by a second set of pins 332b to provide rotatable coupling of the second set of eyes 334b and the second cooperating set of eyes 336b.

[0066] In the stowed configuration, the first and second sets of eyes 334a, 334b may couple to the first and second cooperating sets of eyes 336a, 336b of a single transportable storage tank 302, thus securing the lateral extension panel 340 to the transportable storage tank 302. To transition the lateral extension panel 340 to an operational configuration, the second coupling mechanism 344b may be released (e.g., the

second set of pins 332b may be removed from the aligned second set of eyes 334b and second cooperating set of eyes 336b) to allow the second end of the lateral extension panel 340 to release from the transportable storage tank 302. The lateral extension panel 340 can then rotate about the first coupling mechanism 344a to the operational configuration, in which the lateral extension member extending laterally from the transportable storage tank 302. The second set of eyes 334b can then couple to the second cooperating set of eyes 336b of an adjacent transportable storage tank 302. In this manner, the lateral extension panel 340 may function as a tank body coupling mechanism that secures adjacent transportable storage tanks 302 to form the perimeter of the storage container 301. In other words, the lateral extension panel 340 may be simultaneously coupled to the tank body 310 of two adjacent transportable storage tanks 302.

[0067] A number of transportable storage tanks 302 may be coupled in this same manner to form the perimeter of open storage container 301. If a plurality of transportable storage tanks 302 are fixedly coupled by lateral extension panels 340, the perimeter of the open liquid storage may be significantly larger as compared to the perimeter of an open liquid storage container having the same number of transportable storage tanks without lateral extension panels 340.

[0068] The liner coupling devices 346 may be disposed in a top and/or outer surface of the lateral extension panel 340 (e.g., exterior to the perimeter of the storage container 301 when the lateral extension panel 340 is in the operational configuration). The liner coupling device 346 may facilitate deployment of a liner (e.g., liner 104 of FIG. 1A) to line an interior of the perimeter formed by the plurality of transportable storage tanks 302, including the lateral extension panels 340, to form the storage container 301. The liner coupling device 346 couples the liner to the lateral extension panel 340 by engaging the liner 104. For example, the liner coupling device 346 may include a clasp that pinches, clamps, or otherwise applies a force to both a top surface and a bottom surface of the liner 104, at an edge of the liner, to fasten the liner to the lateral extension panel 340. In another embodiment, the liner coupling device 346 may include rare earth magnets configured by their size, position, or polarity to couple with or fasten to corresponding rare earth magnets that may be present in a liner. In still other embodiments, the liner coupling device 346 may include a hook to engage a loop in or on the liner 104.

[0069] In another embodiment, the lateral extension panel 340 may be slidably coupled to the tank body 310 of the transportable storage tank 302, rather than hingedly coupled. The lateral extension panel 340 may slide along a rail or track to transition from the stowed configuration to the operational configuration. An example of sliding lateral extension panels can be seen in FIGS. 8A-8B and 9A-9B and are described below with reference to the same.

[0070] FIGS. 4A-4B are front views of a transportable storage tank 402 of a mobile storage container system 400, according to another embodiment of the present disclosure. FIG. 4C is a back view of the transportable storage tank 402 coupled to other transportable storage tanks 402. FIG. 4D is a top view of the transportable storage tank 402. The transportable storage tank 402 of FIGS. 4A-4D may include components that are present in the foregoing described embodiments and may include additional components that are not present in the foregoing described embodiments. The transportable storage tanks 402 may include one or more lateral

extension panels 440 that include a panel body 442, a panel hinge 444, one or more panel coupling pin loops 448, and a liner coupling mechanism 446.

[0071] A panel body 442 is configured to pivot about the panel hinge 444 from a stowed configuration, as shown in FIG. 4A, to an operational configuration, as shown in FIG. 4B. Each panel body 442 includes one or more panel coupling pin loops 448 that receive panel coupling pins 449 to facilitate coupling the panel body 442 to another panel body 442. The panel body 442 is also configured to couple to another panel body 442 with an overlap, as shown in FIG. 4D. For example, a female lateral extension panel 440a may include a notch to receive a male lateral extension panel 440b (generally and collectively designated 440).

[0072] The panel pin loops 448 may be disposed in the outer front surface of the panel body 442 in the stowed configuration, which becomes a surface on an exterior of the storage container in the operational configuration. The panel coupling pin loops 448 in the stowed configuration may align with panel coupling pin loops 448 of another panel body 442 of the same transportable storage tank 402, to receive panel coupling pins 449 to secure the lateral extension panels 440 in the stowed configuration. The panel coupling pin loops 448 and the panel coupling pins 449 may be configured by their size, shape, orientation, or horizontal alignment to facilitate coupling the lateral extension panel 440 with another lateral extension panel 440. The panel coupling pin loops 448 and the panel coupling pins 449 may also be configured by their size, shape, orientation, or horizontal alignment to facilitate coupling the lateral extension panel 440 with another lateral extension panel 440 of an adjacent transportable storage tank 402. An alignment of panel coupling pin loops 448 may facilitate coupling two extension panels 440 by engaging the aligned panel coupling pin loops 448 with a panel coupling pin 449, as shown in FIG. 4C. Coupling the lateral extension panels 440 with the panel coupling pins 448 and panel coupling pin loops 449 may create the perimeter of the open liquid storage container and may configure the perimeter of the container to withstand outward pressures applied to the lateral extension panels and tank bodies by the liquid contained in the open liquid storage container.

[0073] The panel coupling pins 449 may be configured to engage the coupling pin loops 448 of a lateral extension panel 440 and thereby couple the lateral extension panel 440 with another lateral extension panel 440 or a tank body 410 of a transportable storage tank 402. The pins may include a locking mechanism to prevent undesired disengagement or decoupling of a coupling pin loop and corresponding coupling pin. The locking mechanism may include a fixed extension member 452 and locking screws 454. The extension member 452 extends orthogonally from the panel coupling pin 449 and may prevent excessive horizontal movement of the coupling panel pin 449 through the panel coupling pin loop 448. The extension member 452 may come into contact with the panel coupling pin loop 448 and prevent continued horizontal motion in a direction toward the panel coupling pin loop 448. The locking screws 454 may engage the panel coupling pin 449 on an opposite side of the coupling pin loop 448 from the extension member 452. The locking screws 454 may prevent any undesired backward horizontal motion of the panel coupling pin 449, as the locking screws 454 may come into contact with a panel coupling pin loop 448 and may prevent further horizontal movement of the panel coupling pin 449. The locking screws 454 and fixed extension member

452 may prevent undesired disengagement of the panel coupling pins 449 from the panel coupling pin loops 448 during operation of the mobile storage container system 400.

[0074] FIGS. 5A and 5B are a side view and front view, respectively, of a transportable storage tank 502 of a mobile liquid storage container system, according to another embodiment of the present disclosure. The transportable storage tank 502 of FIGS. 5A and 5B may include components that are present in the foregoing embodiments and may include additional components that are not present in the foregoing embodiments. The transportable storage tank 502 may include one or more height extension panels 560. The height extension panels 560 of FIGS. 5A and 5B may be removable or disconnectable, such that they can completely separate from the transportable storage tank 502 to transition from a stowed configuration to an operational configuration. The height extension panels 560 are each configured to transition from the stowed configuration to the operational configuration extending upward to increase a height dimension of the perimeter of the container and thereby increase a depth of a storage container defined by the transportable storage tanks 502. The height extension panels 560 may include a panel body 562, a plurality of panel clamps 561, and a liner coupling mechanism (not shown).

[0075] The panel body 562 of a height extension panel 560 may be of a size or shape that may facilitate coupling to a top surface (e.g., an outer surface of a top panel) of a transportable storage tank 502 to extend a height of a perimeter of an open storage container formed by a plurality of the transportable storage tanks 502.

[0076] The plurality of panel clamps 561 may be positioned along edges of the panel body 562 to couple the height extension panel 560 with the transportable storage tank 502 or with adjacent height extension panels 560. The panel clamps 561 may include two bodies, a threaded clamp screw, and a corresponding nut configured to receive the threaded clamp screw. The clamp bodies may be disposed horizontally opposite one another at the joint of two height extension panels 560 or of a height extension panel 560 and tank body 510 of the transportable storage tank 502. Further, the clamp bodies may be configured with a threaded hole to receive a clamp screw. The clamp screw may engage the first clamp body and extend through the first clamp body to engage the second clamp body and the corresponding nut. The nut may then be tightened on the clamp screw to create a force applied at the joint of the two bodies and may facilitate coupling the removable panels or the removable panel with the transportable storage tank 502.

[0077] FIGS. 6A and 6B are side views of a transportable storage tank 602 of a mobile storage container system, according to an embodiment of the present disclosure, in a stowed configuration and an operational configuration, respectively. The transportable storage tank 602 of FIGS. 6A and 6B may include components that are present in the foregoing embodiments and may include additional components not present in the foregoing embodiments. For example, the transportable storage tank 602 may include one or more height extension panels 660. The height extension panels 660 may be slidable from the stowed configuration of FIG. 6A to the operational configuration of FIG. 6B. The sliding height extension panel 660 may include a panel body 662, a slide coupling mechanism 664, and a liner coupling mechanism (not shown).

[0078] The slide coupling mechanism 664 slidably couples the sliding height extension panel 660 to the tank body 610 of

the transportable storage tank **602** and may facilitate transitioning the sliding height extension panel **660** between the stowed configuration and the operational configuration. The slide coupling mechanism **664** may include a rail **666** or track and a lockable support bar **668**. The panel body **662** of the sliding height extension panel **660** may include extended members that may be disposed in the panel body **662** and may be configured to couple with the rail of the slide coupling mechanism **664**. The extended members of the panel body **662** may be configured to facilitate an upward or downward motion of the panel body **662** along the track **666** of the slide coupling mechanism **664**. The lockable support bar **668** may be rotatably coupled to the top surface of a tank body **610** by a hinge disposed in the tank body **610** of the transportable storage tank **602**. The lockable support bar **668** may rotate in a counter clockwise motion (when viewed from the rear of the tank) and backwards or away from the sliding height extension panel **660** to facilitate a transition of the sliding height extension panel **660** from the storage configuration to the operational configuration. The sliding height extension panel **660** may be transitioned from the storage configuration to the operational configuration by application of an upward force to the sliding height extension panel **660**. The lockable support bar **668** may be disposed to lock a sliding height extension panel **660** into the operational configuration. The lockable support bar **668** may facilitate an operational configuration of the sliding height extension panel by coupling to the panel body **662** of the sliding height extension panel **660** and preventing a downward movement of the panel body. A downward force applied to the sliding height extension panel **660** may be met with an opposing force originating in the engaged lockable support bar **668** and the track system of the slide coupling mechanism **664**.

[0079] FIGS. 7A-7B are a side view of a transportable storage tank **702** of a mobile storage container system, according to an embodiment of the present disclosure, in a stowed configuration and an operational configuration, respectively. FIG. 7C is an enlarged view of a height extension panel coupling mechanism **764**. The transportable storage tank **702** of FIGS. 7A-7C may include components present in the foregoing embodiments and may include additional components not present in the foregoing embodiments. For example, the transportable storage tank **702** may include one or more pivoting height extension panels **760**. A pivoting height extension panel **760** may include a panel hinge **764** and a lockable support bar **768**.

[0080] The panel hinge **764** may rotatably couple the pivoting height extension panel **760** with the tank body **710** of the transportable storage tank **702**. The panel hinge **764** may be disposed at a panel pivot point or axis of rotation, and may facilitate the rotation of the pivoting height extension panel **760** from the stowed configuration of FIG. 7A to the operable configuration of FIG. 7B. In the stowed configuration, the pivoting height extension panel **760** may be disposed adjacent to the front surface of the tank body **710**. To transition the pivoting height extension panel **760** to the operational configuration, the pivoting height extension panel **760** may rotate about the panel hinge **764** (e.g., panel pivot point) roughly 180 degrees. The panel hinge **764** may include eyes disposed in the pivoting panel and in the front surface of the tank body. The eyes may be configured to couple with a pin that may engage the two sets of eyes and may be configured to facilitate rotation of the pivoting panel about the pivot point defined by the panel hinge **764**.

[0081] The lockable support bar **768** may be rotatably coupled to the top surface of the tank body **710** of a transportable storage tank **702** by a hinge disposed in the tank body. The hinge of the lockable support bar **768** may allow it to rotate away from the pivoting height extension panel **760**. The rotation of the lockable support bar **768** relative to the front surface of the tank body **710** may facilitate a transition of the pivoting panel from the stowed configuration to the operational configuration. The lockable support bar **768** may then be configured to lock the pivoting height extension panel **760** into the operational configuration by coupling to the pivoting height extension panel **760**. The lockable support bar **768** may couple with the panel body **762** of the pivoting height extension panel **760** by an upward facing hook disposed in the end of the support bar engaging a corresponding downward facing hook that may be disposed in the panel body. The coupling of the lockable support bar hook and the corresponding panel body hook may prevent a downward movement or rotation of the pivoting extension panel, and may also couple the lockable support bar with the pivoting height extension panel. This configuration of the lockable support bar and the panel body may cause that a downward force on the pivoting panel may cause an inward force on the lockable support bar. Further, a force directed orthogonal to the front surface of the tank body may be applied to the pivoting panel and the coupled hooks of the support bar and panel body may preserve the operational configuration of the pivoting panel.

[0082] FIGS. 8A and 8B are side views of a transportable storage tank **802** of a mobile storage container system, according to another embodiment of the present disclosure. The transportable storage tank **802** may include any of the components present in the foregoing embodiments and may also include additional components that are not present in the foregoing embodiments. For example, the transportable storage tank **802** may include one or more lateral extension panels **840** and one or more sliding height extension panels **860a** and removable height extension panels **860b** (generally and collectively **860**).

[0083] In the embodiment of FIGS. 8A and 8B, the depth and perimeter of an open storage container defined by a plurality of transportable storage tanks **802** may be increased by increasing the height and perimeter of the transportable storage tanks **802**. Lateral extension panels **840**, sliding height extension panels **860a**, and removable height extension panels **860b** may all increase the height and perimeter of a storage container defined by the transportable storage tanks **802**.

[0084] While in a stowed configuration, the lateral extension panels **840** may be disposed adjacent to the front surface of the tank body **810**. The lateral extension panels **840** may be slidably coupled to the front surface of the tank body **810**, and may transition to the operational configuration by sliding outward from the front surface of the tank body **810** and may increase the perimeter of the open storage container. In other embodiments, the lateral extension panels **840** may be rotatably coupled to the tank body **810** and may transition to the operational configuration by rotating outward from the front surface of the tank body **810** and may increase the perimeter of the open liquid storage container.

[0085] The sliding height extension panels **860a** may be coupled to a rail **866** disposed on the tank body **810** of the transportable storage tank **802**. In the stowed configuration, the sliding height extension panels **860a** may be disposed adjacent to the lateral extension panels **840** and the front

surface of the transportable storage tank **802**. In the operational configuration, a lower surface of the slidable height extension panels **860a** may be disposed adjacent to the top surface of the tank body **810** and may extend the height of the storage container above the transportable storage tank **802**.

[0086] The removable height extension panels **860b** may be coupled to the top surface of the lateral extension panels **840** by a plurality of coupling clamps such as the clamps previously described above with reference to FIGS. **5A** and **5B**. When coupled with the lateral extension panels **840**, the removable height extension panels **860b** may increase the height of the lateral extension panels to equal the height of the sliding height extension panels **860a** in the operational configuration. A plurality of transportable storage tanks **802** may be coupled and configured with the lateral extension panels **840**, sliding height extension panels **860a**, and removable height extension panels **860b** in the operational configuration. A liner (not shown) can be coupled to the height extension panels **860** and draped through an interior of the perimeter defined by the plurality of transportable storage tanks **802** to define a storage container with greater depth and perimeter than a storage container with the same number of tanks and without lateral extension panels **840** and height extension panels **860**. Liquids such as water may be stored within the interior of the open storage container formed by the plurality of transportable storage tanks **802** and the liner.

[0087] FIGS. **9A** and **9B** are side views of a transportable storage tank **902** of a mobile storage container system, according to another embodiment of the present disclosure. The transportable storage tank **902** may include any of the components present in the foregoing embodiments and may also include additional components that are not present in the foregoing embodiments. For example, the transportable storage tank **902** may include one or more lateral extension panels **940** and one or more pivoting height extension panels **960a** and removable height extension panels **960b** (generally and collectively **960**).

[0088] In the embodiment of FIGS. **9A** and **9B**, the depth and perimeter of an open storage container defined by a plurality of transportable storage tanks **902** may be increased by increasing the height and perimeter of the transportable storage tanks **902**. Lateral extension panels **940**, sliding height extension panels **960a**, and removable height extension panels **960b** may all increase the height and perimeter of a storage container defined by a plurality of transportable storage tanks **902**.

[0089] While in a stowed configuration, the lateral extension panels **940** may be disposed adjacent to the front surface of the tank body **910**. The lateral extension panels **940** may be slidably coupled to the front surface of the tank body **910**, and may transition to the operational configuration by sliding outward from the front surface of the tank body **910** and may increase the perimeter of the open storage container. In other embodiments, the lateral extension panels **940** may be rotatably coupled to the tank body **910** and may transition to the operational configuration by rotating outward from the front surface of the tank body **910** and may increase the perimeter of the open liquid storage container.

[0090] The pivoting height extension panels **960a** may be rotatably coupled to a hinge disposed in an extended portion of the tank body **910**. In the stowed configuration, the pivoting height extension panels **960a** may be disposed adjacent to the lateral extension panels **940** and the front surface of the transportable storage tank **902**. In the operational configuration, a

lower lateral surface of the pivoting height extension panels **960a** may be disposed adjacent to the top surface of the tank body **910** and may extend the height of the storage container above the transportable storage tank **902** in the center portion of the tank body **910**.

[0091] The removable height extension panels **960b** may be coupled to the top surface of the lateral extension panels **940** by a plurality of coupling clamps such as the clamps previously described in FIGS. **5A** and **5B**. When coupled to the lateral extension panels **940**, the removable height extension panels **960b** may increase the height of the lateral extension panels to be equal to the height of the pivoting height extension panels **960a** in an operational configuration. A plurality of transportable storage tanks **902** may be coupled and configured with the lateral extension panels **940**, rotating height extension panels **960a**, and removable height extension panels **960b** in the operational configuration. A liner (not shown) can be coupled to the height extension panels **960** and draped through an interior of the perimeter defined by the plurality of transportable storage tanks **902** to define a storage container with greater depth and perimeter than a storage container with the same number of tanks and without lateral extension panels **940** and height extension panels **960**. Liquids such as water may be stored within the interior of the open storage container formed by the plurality of transportable storage tanks **902** and the liner.

[0092] FIG. **10** is an interior view of a mobile storage container system **1000**, according to another embodiment. The mobile storage container system **1000** includes a plurality of transportable storage tanks **1002** in an operational configuration. The transportable storage tank **1002** of FIG. **10** may include any of the components present in the foregoing embodiments and may also include additional components that are not present in any of the foregoing embodiments. The transportable storage tanks **1002** include a plurality of lateral extension panels **1040** and a plurality of removable height extension panels **1060**.

[0093] Similar to the embodiments of FIGS. **8A-8B** and **9A-9B**, the height and perimeter of a storage container defined by the transportable storage tanks **1002** in an operational configuration are increased by the lateral extension panels **1040** and the removable height extension panels **1060**. The embodiment of FIG. **10** is a variation of the embodiments of FIGS. **8A-8B** and **9A-9B** with a second set of removable height extension panels **1060** in place of the sliding extension panels **860a** of FIGS. **8A-8B** or the pivoting height extension panels **960a** of FIG. **9A-9B**. The removable height extension panels **1060** may be coupled to the tank body **1010** of the transportable storage tanks **1002** and/or the lateral extension panels **1040** by panel clamps as previously described.

[0094] FIGS. **11A-11F** are front and side views of a transportable storage tank **1102** of a mobile liquid storage container system, according to one embodiment of the present disclosure. The embodiment of the transportable storage tank of FIGS. **11A-11F** may include any of the components present in the foregoing embodiments and may include additional components that are not present in any of the foregoing embodiments. For example, the transportable storage tank **1102** includes a liner deployment system **1170**. The liner deployment system **1170** may include a motor **1172**, and an extendable pulley arm **1174**, and a hoist cable **1176**. FIGS. **11B-11F** illustrate various points of progression in deploying a liner **1104** using the liner deployment system **1170**. The liner **1104** is raised by the liner deployment system **1170** over

a height extension panel **1160** and secured to the height extension panel **1160** by a liner coupling device **1112**.

[0095] FIGS. **12A-12C** are views of a transportable storage tank **1202** of a mobile storage container system, according to another embodiment of the present disclosure. The transportable storage tank **1202** may include any of the components present in the foregoing embodiments and may also include additional components that are not present in the foregoing embodiments.

[0096] The transportable storage tank **1202** includes one or more lateral extension panels **1240** and one or more pivoting height extension panels **1260**.

[0097] The lateral extension panels **1240** of the transportable storage tank **1202** pivot to open from a stowed configuration against a front side panel of the tank to an operational configuration in which the lateral extension panels **1240** extend laterally outward to increase a perimeter of an open storage container defined by a plurality of the transportable storage tanks **1202**. In other embodiments, the lateral extension panels **1240** may slide or may be removably coupled to the transportable storage tank **1202**.

[0098] A pivoting height extension panel **1260** rotates about hinges upward from a top surface of the transportable storage tank **1202**. The pivoting height extension panel **1260** in a stowed configuration may lay flat against a top panel of the tank body of the transportable storage tank **1202**. The pivoting height extension panel **1260** rotates about the hinges to an upright orientation, as shown in FIG. **12B**. The pivoting height extension panel **1260** may further include lateral height extension panels **1260b** that rotate outward from the height extension panel **1260** to increase a height of the storage container defined by the transportable storage tanks **1240** at portions where the perimeter is extended by the lateral extension panels **1240**, as shown in FIG. **12C**.

[0099] FIG. **13** is a plan view of a mobile storage container system **1300**, according to another embodiment, without a liner. The mobile storage container system **1300** includes a plurality of transportable storage tanks **1302** arranged in a circular perimeter to receive a liner (not shown for simplicity). The mobile storage container system **1300** is configured to be transportable to a desired location to erect or otherwise assemble an open storage container having an interior for storing a material, such as water or other liquid. The plurality of transportable storage tanks **1302** is configured to be parked or otherwise arranged to form a perimeter of an open storage container.

[0100] The transportable storage tanks **1302** each include one or more arm plates **1382** to secure a spreader beam. The arm plates **1382** and/or spreader beams may provide additional structural support to a wall of the storage tank **1302** and structural support for one or more hinges or other coupling mechanisms for extension panels and/or coupling mechanisms.

[0101] Each transportable storage tank **1302** can be coupled to adjacent transportable storage tanks **1302** within the perimeter. Adjacent transportable storage tanks **1302** can be coupled together with a coupling mechanism. In the mobile storage container system **1300** of FIG. **13**, the coupling mechanism is a set of one or more cables **1343** secured at one end to a first transportable storage tank **1302** and secured at the other end to an adjacent second transportable storage tank **1302**. As can be appreciated, in other embodiments the coupling mechanism may comprise one or more of braces, shafts, locking mechanisms, pins, shackles, or any

other suitable coupling mechanism. In FIG. **13**, the cables **1343** are secured to a spreader beam on each adjacent transportable storage tank **1302**.

[0102] Each transportable storage tank **1302** of the embodiment of FIG. **13** also includes one or more lateral extension panels **1342** to extend laterally outward. The lateral extension panels **1342** may transition from a stowed configuration to an operational configuration extending laterally outward from transportable storage tank **1302**. The lateral extension panels **1342** define a portion of the perimeter, allowing the adjacent transportable storage tanks **1302** to be separated by a certain distance. The lateral extension panels **1342** may be of a sufficiently rigid material to withstand forces of a material stored within the storage container and to facilitate fixedly coupling adjacent transportable storage tanks **1302** to limit or even prevent undesired decoupling of the tanks when an outward pressure is applied to the lateral extension panels **1342**. In a stowed configuration, the lateral extension panels **1342** may be disposed adjacent to and/or coupled to the tank body **310** of a single storage tank **1302**. The lateral extension panel **1342** may transition from the stowed configuration to the operational configuration, extending laterally from the transportable storage tank **1302** to increase the perimeter of the storage container **301**. In FIG. **13**, the lateral extension panels **1342** hingedly couple to a front side panel (or more interior side panel) of the transportable storage tank **1302**.

[0103] To transition the lateral extension panel **1342** to the operational configuration, a coupling mechanism may be released (e.g., a set of pins may be removed from an aligned set of eyes to allow an end of the lateral extension panel **1342** to release from the transportable storage tank **1302**. The lateral extension panel **1342** can then rotate about one or more hinges **1344** to the operational configuration, in which the lateral extension member **1342** extends laterally from the transportable storage tank **1302**. In FIG. **13**, the lateral extension panels **1342** open and are supported by the sets of one or more cables **1342**. The lateral extension panels **1342** swing about the hinges **1344** to the operational configuration and are supported against further outward swinging and outward forces such as may be produced by liquid within the storage container.

[0104] In other embodiments, a free end (opposite the hinges **1344**) of the lateral extension panels **1342** can then couple to the second cooperating coupling mechanism of an adjacent transportable storage tank **1302**. In this manner, the lateral extension panels **1342** may function as a coupling mechanism that secures adjacent transportable storage tanks **1302** to form the perimeter of the storage container. In other words, the lateral extension panels **1342** in an operational configuration may be simultaneously coupled to the tank body of two adjacent transportable storage tanks **1302**. In still other embodiments, the free ends of adjacent lateral extension panels **1342** may couple together.

[0105] FIG. **14A** is an isometric view of a transportable storage tank **1402** of a mobile storage container system, according to another embodiment. FIG. **14B** is a side elevation view of the transportable storage tank **1402** of FIG. **14A**. FIG. **14C** is a top view of the transportable storage tank **1402** of FIG. **14A**. Referring generally and collectively to FIGS. **14A-14C**, the transportable storage tank **1402** includes one or more arm plates **1482** secured to a top surface or top panel **1426** and/or a base panel **1422**. The arm plates **1482** may stabilize and/or further secure a spreader beam **1484** at or to a side panel **1424** of the transportable storage tank **1402**. The

arm plates **1482** and/or spreader beams **1484** may provide additional structural support to a wall of the storage tank **1402** and structural support for one or more hinges or other coupling mechanisms for extension panels and/or coupling mechanisms

[0106] As shown in FIG. **14C**, one or more lateral extension panels **1442** may couple to the transportable storage tank **1402** at hinges **1444** coupled to the spreader beam **1484**. One or more cables **1443** may also couple to the transportable storage tank **1402** and support the one or more lateral extension panels **1442**.

[0107] FIG. **15A** is an enlarged top view of a transportable storage tank **1502** of a mobile storage container system, according to one embodiment. Specifically, FIG. **15A** is an enlarged view of a top arm plate **1582** providing securement and structural support for a spreader beam **1584** that is secured to a side panel **1524** of the transportable storage tank **1502**. The spreader beam **1584** that is illustrated is an I-beam. As can be appreciated, other forms and/or structures of spreader beams may be possible and/or suitable to provide desired structure.

[0108] FIG. **15B** is an enlarged top cross-sectional view of the transportable storage tank **1502** of FIG. **15A**. The spreader beam **1584** supports one or more lugs **1588**, which in turn support one or more hinges **1544** about which a lateral extension panel **1542** pivots. The lateral extension panel **1542** is shown in an open configuration and also in phantom lines in a stowed configuration. The one or more lugs **1588** enable connection or securement of one or more cables **1543** to the transportable storage tank, as shown in greater detail in FIGS. **17** and **18** and described below with reference to the same. The lateral extension panel **1542** in the open configuration can abut and be supported by the one or more cables **1543** against outward forces generated by material (e.g., liquid) within the container. A cover plate **1581** may envelop or otherwise cover the spreader beam **1584** to protect a liner from snags or sharp edges of the spreader beam **1584**.

[0109] FIG. **15C** is an enlarged partial-sectional side view of the transportable storage tank **1502** of FIG. **15A** showing a spreader beam **1584**. A top arm plate **1582a** and a bottom arm plate **1582b** secure and/or stabilize the spreader beam **1584** into position at or against the side panel **1524** of the transportable storage tank **1502**. A plurality of lugs **1588** are secured to (e.g., welded) and supported by the spreader beam **1584**. The lugs **1588** enable securement of cables (not shown in FIG. **15C**, but see the cable **1543** in FIG. **15B**), which can couple the transportable storage tank **1502** to an adjacent transportable storage tank. The lateral extension panel **1542** rotates or pivots about one or more hinges **1544** secured to the lugs **1588** and/or the spreader beam **1584**. The cover plate **1581** can shield a liner (not shown) from the spreader beam **1584**.

[0110] FIG. **16A** is a top view of a first end of a lateral extension panel **1642** of a transportable storage tank of a mobile storage container system, according to one embodiment. The lateral extension panel **1642** may include a reinforced portion **1653** or stiffening plate to enhance structural integrity while maintaining relatively light weight. A curved portion **1651** at the first end of the lateral extension panel **1642** may also improve structural integrity and rigidity as well as facilitate coupling the lateral extension panel **1642** to hinges and transitioning the lateral extension panel **1642** between a stowed configuration and an operational configuration.

[0111] FIG. **16B** is another top view of free ends of lateral extension panels **1642a**, **1642b** of transportable storage tanks. The free ends (each opposite a hinged end) of the lateral extension panels **1642a**, **1642b** may overlap to ensure integrity of a perimeter of a storage container formed by the transportable storage tanks. A chamfer **1655** in a first lateral extension panel **1642a** may facilitate a consistent surface at the overlap of the lateral extension panels **1642a**, **1642b**.

[0112] FIG. **17** is an enlarged perspective view of a cable coupling mechanism **1790** of a transportable storage tank of a mobile storage container system, according to one embodiment. The cable coupling mechanism **1790** includes a lug **1788** with an eyelet and a shackle **1789** to engage a looped cable **1743**. The lug **1788** can be secured to a spreader beam **1784** to enable securement of the cable **1743** to the spreader beam **1784** and thereby to the transportable storage tank. The cable coupling mechanism **1790** enables securing adjacent transportable storage tanks of the mobile container system to form a perimeter of a storage container.

[0113] FIG. **18** is an enlarged perspective view of a cable coupling mechanism **1890** of a transportable storage tank of a mobile storage container system, according to another embodiment. The cable coupling mechanism **1890** includes a dual lug **1888a**, **1888b** spaced to receive a loop of a cable **1843**. A pair of eyelets through the respective lugs **1888a**, **1888b** receive a pin **1889**. The pin **1889** passes through a top lug **1888a** and passes through to engage a loop of the cable **1843** and continue to pass through the bottom lug **1888b**. The dual lug **1888a**, **1888b** can be secured to a spreader beam **1884** to enable securement of the cable **1843** to the spreader beam **1884** and thereby to the transportable storage tank.

[0114] As can be appreciated, other cable coupling mechanisms may be used, including hooks, carabineers, and the like.

EXAMPLE EMBODIMENTS

[0115] Some examples of embodiments of mobile storage container systems are provided below.

Example 1

[0116] A method of erecting a mobile storage container, the method comprising: arranging a plurality of transportable storage tanks to define a perimeter of a mobile storage container; extending a liner through an interior of the perimeter; and coupling the liner to the plurality of transportable storage tanks to form the mobile storage container.

Example 2

[0117] The method of Example 1, further comprising: coupling together adjacent transportable storage tanks of the plurality of transportable storage tanks with a coupling mechanism.

Example 3

[0118] The method of Example 2, wherein the coupling mechanism comprises one or more cables.

Example 4

[0119] The method of Example 2, wherein the coupling mechanism comprises a plurality of sets of one or more

cables, and wherein coupling comprises securing adjacent transportable storage tanks with a set of one or more cables of the plurality of sets.

Example 5

[0120] The method of Example 4, wherein securing adjacent transportable storage tanks comprises securing a first end of a set of one or more cables to a transportable storage tank of the plurality of transportable storage tanks and securing a second end of the set of one or more cables to an adjacent transportable storage tank of the plurality of transportable storage tanks.

Example 6

[0121] The method of Example 2, wherein the coupling mechanism comprises a pin configured to engage a first eye on a given transportable storage tank of the plurality of transportable storage tanks and a second eye on an adjacent transportable storage tank.

Example 7

[0122] The method of Example 1, further comprising: transitioning one or more lateral extension panels of each transportable storage tank of the plurality of transportable storage tanks from a stowed configuration to an operational configuration.

Example 8

[0123] The method of Example 7, wherein coupling the liner to the plurality of transportable storage tanks includes coupling the liner to the plurality of lateral extension panels.

Example 9

[0124] The method of Example 7, further comprising: coupling together adjacent transportable storage tanks of the plurality of transportable storage tanks by coupling a lateral extension panel of a given transportable storage tank to an adjacent transportable storage tank.

Example 10

[0125] The method of Example 7, further comprising: coupling together the plurality of transportable storage tanks by coupling a lateral extension panel of given transportable storage tank to a lateral extension panel of an adjacent transportable storage tank.

Example 11

[0126] The method of Example 1, further comprising: filling the transportable storage tanks.

Example 12

[0127] A method of storing a liquid material, the method comprising: positioning a plurality of transportable storage tanks to define a perimeter of a mobile storage container; coupling a liner to the plurality of transportable storage tanks to form the mobile storage container, with the liner extending between the plurality of storage tanks through an interior of the perimeter; and filling the mobile storage container with a liquid material.

Example 13

[0128] The method of Example 12, further comprising: filling the transportable storage tanks with the liquid material.

Example 14

[0129] The method of Example 12, further comprising: coupling together the plurality of transportable storage tanks using a coupling mechanism separate and distinct from the liner.

Example 15

[0130] The method of Example 14, wherein the coupling mechanism comprises one or more cables secured to and extending between adjacent transportable storage tanks of the plurality of transportable storage tanks.

Example 16

[0131] The method of Example 14, wherein coupling comprises utilizing the coupling mechanism to secure each transportable storage tank of the plurality of transportable storage tanks to an adjacent transportable storage tank of the plurality of transportable storage tanks.

Example 17

[0132] The method of Example 12, further comprising: transitioning one or more lateral extension panels of each transportable storage tank of the plurality of transportable storage tanks from a stowed configuration to an operational configuration extending laterally outward from the transportable storage tank.

Example 18

[0133] The method of Example 17, wherein coupling the liner to the plurality of transportable storage tanks includes coupling the liner to the plurality of lateral extension panels.

Example 19

[0134] The method of Example 17, further comprising: coupling together the plurality of transportable storage tanks by coupling a lateral extension panel of a transportable storage tank to an adjacent transportable storage tank.

[0135] Example 20

[0136] The method of Example 17, further comprising: coupling together the plurality of transportable storage tanks by coupling a lateral extension panel of given transportable storage tank to a lateral extension panel of an adjacent transportable storage tank.

Example 21

[0137] A mobile storage container system comprising: a plurality of transportable storage tanks to be arranged to form a perimeter of a storage container; and a liner to be coupled to the plurality of transportable storage tanks arranged to form the perimeter, the liner extending through an interior of the perimeter between the plurality of transportable storage tanks to form the container.

Example 22

[0138] The mobile storage container system of Example 21, wherein each transportable storage tank of the plurality of

transportable storage tanks comprises a coupling mechanism to secure the transportable storage tank to an adjacent transportable storage tank of the plurality of transportable storage tanks.

Example 23

[0139] The mobile storage container system of Example 22, wherein the coupling mechanism comprises a pin configured to engage a first eye on the transportable storage tank and a second eye on the adjacent transportable storage tank.

Example 24

[0140] The mobile storage container system of Example 22, wherein the coupling mechanism comprises a set of one or more cables to be secured at a first end to the transportable storage tank and at a second end to the adjacent transportable storage tank.

Example 25

[0141] The mobile storage container system of Example 21, further comprising plurality of coupling mechanisms to secure adjacent transportable storage tanks of the plurality of transportable storage tanks.

Example 26

[0142] The mobile storage container system of Example 21, further comprising: a plurality of height extension panels, each configured to transition from a stowed configuration to an operational configuration extending upward to increase a height dimension of the perimeter of the container, wherein the liner couples to the plurality of transportable storage tanks by coupling to the plurality of height extension panels.

Example 27

[0143] The mobile storage container system of Example 26, wherein each of the plurality of height extension panels is removable from the stowed configuration and transitions to the operational configuration by connecting to a top surface of a transportable storage tank of the plurality of transportable storage tanks to extend upward from the top surface to increase the height dimension of the perimeter of the container.

Example 28

[0144] The mobile storage container system of Example 26, wherein each of the plurality of height extension panels is slidable relative to a transportable storage tank of the plurality of transportable storage tanks and is configured to transition from the stowed configuration to the operational configuration by sliding upward from the stowed configuration and locking into place in the operational configuration to increase the height dimension of the perimeter of the container.

Example 29

[0145] The mobile storage container system of Example 26, wherein each of the plurality of height extension panels pivots about hinges relative to a transportable storage tank of the plurality of transportable storage tanks and is configured to transition from the stowed configuration to the operational configuration by pivoting upward from the stowed configuration

to the operational configuration to increase the height dimension of the perimeter of the container.

Example 30

[0146] The mobile storage container system of Example 21, further comprising: a plurality of lateral extension panels each configured to transition from a stowed configuration to an operational configuration extending laterally from the transportable storage tank to increase the perimeter of the container, wherein each lateral extension panel of the plurality of lateral extension panels is configured in the operational configuration, to be coupled at a first end to an end of a transportable storage tank of the plurality of transportable storage tanks to increase the perimeter of the container.

Example 31

[0147] The mobile storage container system of Example 30, wherein the liner further couples to the plurality of transportable storage tanks by coupling to the plurality of lateral extension panels.

Example 32

[0148] The mobile storage container system of Example 30, wherein each of the plurality of lateral extension panels is configured at a second end to engage, in the operational configuration, one of: an end of an adjacent transportable storage tank of the plurality of transportable storage tanks and a second end of an extension panel of an adjacent transportable storage tank of the plurality of transportable storage tanks.

Example 33

[0149] The mobile storage container system of Example 30, wherein each of the plurality of lateral extension panels is removable from the stowed configuration and is configured at the first end to reconnect at the first end to the end of the transportable storage tank.

Example 34

[0150] The mobile storage container system of Example 30, wherein each of the plurality of lateral extension panels is slidably coupled to the transportable storage tank and is configured to slide from the stowed configuration to the operational configuration with a first end connected to the end of the transportable storage tank.

Example 35

[0151] The mobile storage container system of Example 30, wherein each of the plurality of lateral extension panels pivots about hinges relative to the transportable storage tank and is configured to transition from the stowed configuration to the operational configuration by pivoting laterally outward from the stowed configuration about hinges disposed at the first end and coupled at the end of the transportable storage tank.

Example 36

[0152] The mobile storage container system of Example 30, further comprising: a plurality of height extension panels, each configured to transition from a stowed configuration to an operational configuration extending upward to increase a

height dimension of the perimeter of the container, wherein the liner couples to the plurality of transportable storage tanks by coupling to the plurality of height extension panels.

Example 37

[0153] The mobile storage container system of Example 36, wherein each of the plurality of height extension panels is removable from the stowed configuration and transitions to the operational configuration by connecting to a top surface of a transportable storage tank of the plurality of transportable storage tanks to extend upward from the top surface to increase the height dimension of the perimeter of the container.

Example 38

[0154] The mobile storage container system of Example 36, wherein each of the plurality of height extension panels is slidable relative to a transportable storage tank of the plurality of transportable storage tanks and is configured to transition from the stowed configuration to the operational configuration by sliding upward from the stowed configuration and locking into place in the operational configuration to increase the height dimension of the perimeter of the container.

Example 39

[0155] The mobile storage container system of Example 36, wherein each of the plurality of height extension panels pivots about hinges relative to a transportable storage tank of the plurality of transportable storage tanks and is configured to transition from the stowed configuration to the operational configuration by pivoting upward from the stowed configuration to the operational configuration to increase the height dimension of the perimeter of the container.

Example 40

[0156] The mobile storage container system of Example 21, wherein each transportable storage tank of the plurality of transportable storage tanks is configured to store liquid.

Example 41

[0157] A transportable storage tank comprising: a base panel; one or more side panels coupled to the base panel; a top panel coupled to the one or more side panels; a liner coupling mechanism to couple a liner to the transportable storage tank, the liner to be attached to a plurality of transportable storage tanks, including the transportable storage tank, arranged to form a perimeter, the liner to extend through an interior of the perimeter to form a mobile storage container.

Example 42

[0158] The transportable storage tank of Example 41, further comprising: a coupling mechanism to couple a side panel of the one or more side panels of the transportable storage tank to a second transportable storage tank to form the perimeter.

Example 43

[0159] The transportable storage tank of Example 42, wherein the coupling mechanism comprises a pin configured to engage a first eye on the transportable storage tank and a second eye on the adjacent transportable storage tank.

Example 44

[0160] The transportable storage tank of Example 42, wherein the coupling mechanism comprises a set of one or more cables to be secured at a first end to the transportable storage tank and at a second end to the adjacent transportable storage tank.

Example 45

[0161] The transportable storage tank of Example 41, further comprising a pair of coupling mechanisms to secure the transportable storage tank to a pair of adjacent transportable storage tanks.

Example 46

[0162] The transportable storage tank of Example 41, further comprising: a height extension panel configured to transition from a stowed configuration to an operational configuration extending upward to increase a height dimension of the perimeter mobile storage container, wherein the liner coupling mechanism is disposed on the height extension panel.

Example 47

[0163] The transportable storage tank of Example 46, wherein the height extension panel is removable from the stowed configuration and transitions to the operational configuration by connecting to a top surface of the transportable storage tank to extend upward from the top panel to increase a height dimension of the perimeter.

Example 48

[0164] The transportable storage tank of Example 46, wherein the height extension panel is slidable relative to the transportable storage tank and is configured to transition from the stowed configuration to the operational configuration by sliding upward from the stowed configuration and locking into place in the operational configuration to increase a height dimension of the perimeter.

Example 49

[0165] The transportable storage tank of Example 46, wherein the height extension panel pivots about hinges relative to the transportable storage tank and is configured to transition from the stowed configuration to the operational configuration by pivoting upward from the stowed configuration to the operational configuration to increase the height dimension of the perimeter.

Example 50

[0166] The transportable storage tank of Example 41, further comprising: a lateral extension panel configured to transition from a stowed configuration to an operational configuration extending laterally from the transportable storage tank to increase the perimeter of the container, wherein the lateral extension panel is configured in the operational configuration, to be coupled at a first end to an end of the transportable storage tank to increase the perimeter of the mobile storage container.

Example 51

[0167] The transportable storage tank of Example 50, further comprising a second liner coupling mechanism disposed on the lateral extension panel to couple the liner to the lateral extension panel.

Example 52

[0168] The transportable storage tank of Example 50, wherein each of the extension panel is configured at a second end to engage, in the operational configuration, one of: an end of an adjacent transportable storage tank and a second end of an extension panel of an adjacent transportable storage tank.

Example 53

[0169] The transportable storage tank of Example 50, wherein the lateral extension panel is removable from the stowed configuration and is configured at the first end to reconnect at the first end to the end of the transportable storage tank.

Example 54

[0170] The transportable storage tank of Example 50, wherein the lateral extension panel is slidably coupled to the transportable storage tank and is configured to slide from the stowed configuration to the operational configuration with a first end connected to the end of the transportable storage tank.

Example 55

[0171] The transportable storage tank of Example 50, wherein the lateral extension panel pivots about hinges relative to the transportable storage tank and is configured to transition from the stowed configuration to the operational configuration by pivoting laterally outward from the stowed configuration about hinges disposed at the first end and coupled at the end of the transportable storage tank.

Example 56

[0172] The transportable storage tank of Example 50, further comprising: a height extension panel configured to transition from a stowed configuration to an operational configuration extending upward to increase a height dimension of the perimeter of the container, wherein the liner couples to the plurality of transportable storage tank by coupling to the height extension panel.

Example 57

[0173] The transportable storage tank of Example 56, wherein the height extension panel is removable from the stowed configuration and transitions to the operational configuration by connecting to a top surface of a transportable storage tank to extend upward from the top surface to increase the height dimension of the perimeter of the container.

Example 58

[0174] The mobile storage container system of Example 56, wherein each of the plurality of height extension panels is slidable relative to the transportable storage tank and is configured to transition from the stowed configuration to the operational configuration by sliding upward from the stowed

configuration and locking into place in the operational configuration to increase the height dimension of the perimeter of the container.

Example 59

[0175] The transportable storage tank of Example 56, wherein the height extension panel pivots about hinges relative to the transportable storage tank of the plurality of transportable storage tanks and is configured to transition from the stowed configuration to the operational configuration by pivoting upward from the stowed configuration to the operational configuration to increase the height dimension of the perimeter of the container.

[0176] The examples and embodiments disclosed herein are to be construed as merely illustrative and exemplary, and not a limitation of the scope of the present disclosure in any way. It will be understood to those having skill in the art that changes may be made to the details of the above-described embodiments without departing from the underlying principles of the disclosure herein. For example, any suitable combination of various embodiments, or the features thereof, is contemplated.

[0177] The above description provides numerous specific details for a thorough understanding of the embodiments described herein. However, those of skill in the art will recognize that one or more of the specific details may be omitted, or other methods, components, or materials may be used. In some cases, operations are not shown or described in detail.

[0178] The described features, operations, or characteristics may be combined in any suitable manner in one or more embodiments. It will also be readily understood that the order of the steps or actions of the methods described in connection with the embodiments disclosed may be changed as would be apparent to those skilled in the art. Thus, any order in the drawings or Detailed Description is for illustrative purposes only and is not meant to imply a required order, unless specified to require an order.

[0179] Similarly, it should be appreciated that in the above description of embodiments, various features are sometimes grouped together in a single embodiment, figure, or description thereof for the purpose of streamlining the disclosure. This method of disclosure, however, is not to be interpreted as reflecting an intention that any claim require more features than those expressly recited in that claim. Rather, as the following claims reflect, inventive aspects lie in a combination of fewer than all features of any single foregoing disclosed embodiment. Thus, the claims following this Detailed Description are hereby expressly incorporated into this Detailed Description, with each claim standing on its own as a separate embodiment. This disclosure includes all permutations of the independent claims with their dependent claims.

[0180] Reference throughout this specification to “an embodiment” or “the embodiment” means that a particular feature, structure, or characteristic described in connection with that embodiment is included in at least one embodiment. Thus, the quoted phrases, or variations thereof, as recited throughout this specification are not necessarily all referring to the same embodiment.

[0181] Recitation in the claims of the term “first” with respect to a feature or element does not necessarily imply the existence of a second or additional such feature or element. Elements recited in means-plus-function format are intended to be construed in accordance with 35 U.S.C. §112(f).

[0182] It will be obvious to those having skill in the art that many changes may be made to the details of the above-described embodiments without departing from the underlying principles of the invention. The scope of the present invention should, therefore, be determined only by the claims.

1. A method of erecting a mobile storage container, the method comprising:

arranging a plurality of transportable storage tanks to define a perimeter of a mobile storage container;
extending a liner through an interior of the perimeter; and
coupling the liner to the plurality of transportable storage tanks to form the mobile storage container.

2. The method of claim 1, further comprising:

coupling together adjacent transportable storage tanks of the plurality of transportable storage tanks with a coupling mechanism.

3. The method of claim 2, wherein the coupling mechanism comprises one or more cables.

4. The method of claim 2, wherein the coupling mechanism comprises a plurality of sets of one or more cables, and wherein coupling comprises securing adjacent transportable storage tanks with a set of one or more cables of the plurality of sets.

5. The method of claim 4, wherein securing adjacent transportable storage tanks comprises securing a first end of a set of one or more cables to a transportable storage tank of the plurality of transportable storage tanks and securing a second end of the set of one or more cables to an adjacent transportable storage tank of the plurality of transportable storage tanks.

6. The method of claim 2, wherein the coupling mechanism comprises a pin configured to engage a first eye on a given transportable storage tank of the plurality of transportable storage tanks and a second eye on an adjacent transportable storage tank of the plurality of transportable storage tanks.

7. The method of claim 1, further comprising:

transitioning one or more lateral extension panels of each transportable storage tank of the plurality of transportable storage tanks from a stowed configuration to an operational configuration.

8. The method of claim 7, wherein coupling the liner to the plurality of transportable storage tanks includes coupling the liner to the plurality of lateral extension panels.

9. The method of claim 7, further comprising:

coupling together adjacent transportable storage tanks of the plurality of transportable storage tanks by coupling a lateral extension panel of a given transportable storage tank to an adjacent transportable storage tank.

10. The method of claim 7, further comprising:

coupling together the plurality of transportable storage tanks by coupling a lateral extension panel of given transportable storage tank to a lateral extension panel of an adjacent transportable storage tank.

11. The method of claim 1, further comprising:

filling the transportable storage tanks.

12. A method of storing a liquid material, the method comprising:

positioning a plurality of transportable storage tanks to define a perimeter of a mobile storage container;
coupling a liner to the plurality of transportable storage tanks to form the mobile storage container, with the liner extending between the plurality of storage tanks through an interior of the perimeter; and

filling the mobile storage container with a liquid material.

13. The method of claim 12, further comprising:

filling the transportable storage tanks with the liquid material.

14. The method of claim 12, further comprising:

coupling together the plurality of transportable storage tanks using a coupling mechanism separate and distinct from the liner.

15. The method of claim 14, wherein the coupling mechanism comprises one or more cables.

16. The method of claim 14, wherein coupling comprises utilizing the coupling mechanism to secure each transportable storage tank of the plurality of transportable storage tanks to an adjacent transportable storage tank of the plurality of transportable storage tanks.

17. The method of claim 12, further comprising:

transitioning one or more lateral extension panels of each transportable storage tank of the plurality of transportable storage tanks from a stowed configuration to an operational configuration extending laterally outward from the transportable storage tank.

18. The method of claim 17, wherein coupling the liner to the plurality of transportable storage tanks includes coupling the liner to the plurality of lateral extension panels.

19. The method of claim 17, further comprising:

coupling together the plurality of transportable storage tanks by coupling a lateral extension panel of a transportable storage tank to an adjacent transportable storage tank.

20. The method of claim 17, further comprising:

coupling together the plurality of transportable storage tanks by coupling a lateral extension panel of given transportable storage tank to a lateral extension panel of an adjacent transportable storage tank.

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