Pressure differential manlid and methods of discharging a shipping container using a pressure differential

A mock manlid system (112) includes a lid defining a first side and an opposing second side and an aperture through which a valve assembly (130) is coupled. The lid seats about a manhole (178) of a shipping container with a conventional manlid (184) retracted. The valve assembly connects to a spillbox (114) located in the manhole for discharging the shipping container under pressure.
Description

Field of the Invention

[0001] This invention relates to a discharge system for a shipping container and methods of discharging the shipping container.

Background of the Invention

[0002] Shipping containers can be used to carry a variety of liquids ranging from toxic chemicals to consumables such as wine and other beverages. When a shipping container is used to carry a chemical, for instance, from a loading point to a destination point, the shipping container must be cleaned thoroughly of chemical residue in order to reload the shipping container with another chemical. Often, the destination point may not have a cleaning station, so the shipping container must be shipped empty to a distant cleaning station to clean the chemical residue. This is inefficient and costly due to an empty transport or required repositioning of the shipping container. Even if the cleaning station is at the destination point, conventional cleaning of the cargo container is relatively expensive and inconvenient. Moreover, whether the shipping container is cleaned at the destination point or shipped to the distant cleaning station, the shipping container is unusable until cleaned and may be out of service for an undesirable period of time.

[0003] One approach to avoid conventional cleaning of the shipping container is to use a removable plastic carrier that lines an interior surface of the shipping container to carry the liquid chemical or the consumable liquid to the destination point. At the destination point, the liquid is discharged from the plastic carrier which is removed from the shipping container and replaced with another plastic carrier. These removable plastic carriers suffer from various drawbacks. For instance, the removable plastic carrier uses a plastic discharge sleeve attached near a bottom portion of the plastic carrier. At the installation point, a valve assembly on a lower exterior part of the shipping container is at least partially disassembled or removed entirely to open an aperture in the shipping container in order to extract the discharge sleeve through aperture. Once the discharge sleeve has been extracted, the valve assembly is reassembled or reattached, which usually requires replacing numerous seals that are broken during the extraction process. This sleeve extraction process requires intensive labor and skill, takes an inordinate amount of time and can be costly due to seal replacements or other damage to the valve assembly, and the valve must be replaced or special valves and fittings adapted for use with the liner must be installed.

[0004] In other instances, customers hook up a discharge hose to the valve on the lower exterior part of the shipping container and pressurize the shipping container via a pressure valve, usually located on top of the shipping container, to discharge chemical, industrial, food and other liquid products in a pressure differential (PD) discharge approach. No pump is needed but a pressure source is required to provide pressure, i.e., the liquid is pushed out instead of pulled out.

[0005] Using the PD discharge approach, the typical shipping container is pressurized to about four (4) bar of atmospheric pressure; i.e., about 60 pounds per square inch (lbf/in²) (one bar being about 14.5 lbf/in²). The four bar pressure pushes the liquid cargo out through the bottom valve and into a customer’s silo.

[0006] Podd teaches a “Spillbox System for a Shipping Container”, U.S. Serial No. 11/231,399, filed September 21, 2005, in which a drop in, pull out spillbox system is used with the conventional shipping container. Podd requires no preparation or modification of the shipping container. This spillbox system includes an elastomeric liner having a thickness of about 20 MIL to about 40 MIL with a reinforcement section having a thickness of about 40 MIL to about 80 MIL. However, customers may have to use a pump or pull a vacuum at a discharge valve in the spillbox in order to unload cargo from the liner as taught by Podd.

[0007] A system is needed in the shipping industry that can be readily adapted to the spillbox system for use with the liner to permit rapid discharge of liquid cargo without having to provide a pump or adapt an existing pressure source to accommodate the system. Alternatively, or in addition to the needed spillbox discharge system, a method is needed that can utilized a pressure differential to discharge the liner.

Brief Summary of the Disclosure

[0008] The present invention is directed in general to a mock manlid system for use with a cargo carrier and a spillbox that requires no preparation or modification of the cargo carrier, the spillbox or a pressure source. The mock manlid system permits rapid discharge of various liquids through a manhole of the cargo carrier. Since the liquid cargo does not flow through a pump, no bruising or destabilization of the liquid cargo occurs, which is a common problem with wine and latex. Additionally, the components of the mock manlid system are simple to manufacture, install and use. Other advantages of various embodiments of the invention will be apparent from the following description and the attached drawings, or can be learned through practice of the invention.

[0009] In one aspect of the invention, a mock manlid system for use with a spillbox includes a hatch defining a first side, an opposing second side and an aperture therethrough; a valve assembly coupled through the aperture, the hatch being configured to seat about a manhole of a shipping container, the valve assembly being configured for connection to a spillbox disposed in a manhole for discharging cargo from the shipping container under pressure. In this aspect, the hatch defines a circumferential lip having an annular groove defined...
Also, the shipping container is positively pressurized; against the manhole to pressurize the shipping container. The pressure for discharging the shipping container is a suitable positive pressure; e.g., from about fifty pounds per square inch to about sixty-five pounds per square inch.

Further, the valve assembly in this aspect of the invention defines a discharge end disposed on the first side of the hatch and a coupling end disposed on the second side of the hatch, and further comprising a coupling hose defining a first end and a second end, the coupling end attached to the first end of the coupling hose, the second end attached to a valve of the spillbox. The mock manlid system can further include a discharge hose attached to the discharge end of the valve assembly and a pressure hose attached to a pressure valve of the shipping container to pressurize the shipping container, the pressure forcing the cargo from the shipping container through the spillbox valve and the valve assembly into the discharge hose.

In another aspect of the invention, a mock manl id system includes a portable hatch defining a first side, an opposing second side and an aperture therethrough; a valve assembly coupled through the aperture, the portable hatch being configured to seat about a manhole of a shipping container; a coupling hose connected to the valve assembly; and a spillbox having a valve, the spillbox disposed in the manhole and the valve connected to the coupling hose, wherein the shipping container under pressure discharges cargo from the shipping container through the spillbox valve and the valve assembly.

In this aspect of the invention, the hatch defines a circumferential lip having an annular groove defined therein, the annular groove being configured to seat against a circumferential lip depending from a perimeter of the manhole. Also, the pressure for discharging the shipping container is a suitable positive pressure within the operating limits of the container; e.g., from about fifty pounds per square inch to about sixty-five pounds per square inch. Further, the spillbox defines a vent hole therethrough to prevent liquid ingress into the shipping container.

In a further aspect of the invention, a method for pressurized discharge of cargo from a shipping container includes attaching a valve assembly of a mock manlid to a valve of a spillbox, the spillbox disposed in a manhole of a shipping container; placing the mock manlid over the manhole; attaching a discharge hose to the valve assembly; pressurizing the shipping container; discharging a load of cargo from the shipping container through the spillbox valve and the discharge hose. In this aspect, the mock manlid includes an annular seal disposed about the hatch, the seal being configured to seal the hatch against the manhole to pressurize the shipping container. Also, the shipping container is positively pressurized; e.g., from about fifty pounds per square inch to about sixty-five pounds per square inch to discharge the load of cargo.

Further in this aspect of the invention, the method includes attaching a pressure hose to a pressure valve of the shipping container to pressurize the shipping container.

The method can also include moving a manlid of the shipping container in a direction away from the manhole before placing the mock manlid over the manhole. Also in this aspect, the method can include connecting a plurality of latches disposed about the manhole to a plurality of lugs disposed about the mock manlid.

The method can further include attaching a coupling hose to the valve assembly and to the valve.

The method can also include opening the valve assembly and the valve to discharge the load of cargo.

The method can further include depressurizing the shipping container.

The method can also include removing the mock manlid from the shipping container.

The method in this aspect of the invention can further include removing the spillbox from the shipping container.

In yet another aspect of the invention, a mock manlid system includes a hatch defining a first side, an opposing second side and an aperture therethrough; an outlet valve coupled through the aperture, the hatch being configured to seat about a manhole of a shipping container, the outlet valve being configured for connection to a liner disposed in the shipping container for discharging cargo from the shipping container under pressure.

In this aspect of the invention, the mock manlid system can further include an air inlet valve attached to the hatch, the air inlet valve being configured to inject air into the shipping container to impart a pressure differential between the shipping container and the liner.

The mock manlid system in this aspect can further include a pressure gauge in communication with the air inlet valve for sensing the pressure differential.

The mock manlid system in this aspect can also include a pressure relief valve attached to the hatch, the pressure relief valve being configured to relieve a pressure differential.

In a further aspect of the invention, a method for pressurized discharge of cargo from a shipping container includes attaching an outlet valve through a blind flange of a shipping container; attaching a first end of a discharge hose to the outlet valve; attaching a second end of the discharge hose to a liner disposed in the shipping container; pressurizing the shipping container; and discharging a load of cargo from the shipping container through the outlet valve.

Other features and aspects of the present invention are discussed in greater detail below.
Detailed Description of the Invention

[0030] A full and enabling disclosure of the present invention, including the best mode thereof to one skilled in the art, is set forth more particularly in the remainder of the specification, including reference to the accompanying figures, in which:

FIGURE 1 is a perspective view of a spillbox system shown in an intended use environment in accordance with an aspect of the invention;

FIGURE 2 is an elevational view in partial cross-section of a manhole lid and a spillbox taken along line 2-2 as in FIGURE 1;

FIGURE 3 is an elevational view in partial cross-section of the manhole lid as in FIGURE 2 retracted from a manhole with a mock manlid attached over the manhole;

FIGURE 3A is a partial detailed view of an aspect of the invention as in FIGURE 3;

FIGURE 4 is an elevational view in partial cross-section of a mock manlid attached over a manhole in accordance with a further aspect of the invention;

FIGURE 5 is a partially cut-away perspective view of a mock manlid attached over a manhole in accordance with yet another aspect of the invention; and

FIGURE 6 is a partially cut-away perspective view of a product outlet valve showing a step in a method according to a further aspect of the invention.

Detailed Description of the Invention

[0031] Detailed reference will now be made to the drawings in which examples embodying the present invention are shown. The detailed description uses numerical and letter designations to refer to features of the drawings. Like or similar designations of the drawings and description have been used to refer to like or similar parts of the invention.

[0032] The drawings and detailed description provide a full and written description of the invention, and of the manner and process of making and using it, so as to enable one skilled in the pertinent art to make and use it, as well as the best mode of carrying out the invention. However, the examples set forth in the drawings and detailed description are provided by way of explanation only and are not meant as limitations of the invention. The present invention thus includes any modifications and variations of the following examples as come within the scope of the appended claims and their equivalents.

[0033] The figures, which are about to be described in detail below, generally show a mock manlid for use with a shipping or cargo container. The mock manlid can be attached directly to a flexible liner in the shipping container or to a spillbox attached to the flexible liner for discharging a liquid cargo from the flexible liner. As described below, the liquid cargo can be discharged through a valve assembly of the mock manlid when the shipping container is pressurized. Once the cargo is discharged, the mock manlid as well as the spillbox and the flexible liner can be removed, and the shipping container can be used for other cargo or another liner can be installed with the spillbox for shipping a second liquid cargo. The mock manlid permits pressurized discharge of the shipping container through the manhole without having to use a separate pump and without having to discharge the cargo through another valve in the shipping container.

[0034] With reference now to FIGURES 1 and 2, a first embodiment according to one aspect of the invention includes a cargo loading and discharge system designated in general by the numeral 10. As shown, the system 10 broadly includes a liner 11 and a spillbox 14 installed in a shipping container 16 for loading and unloading cargo C from the liner 11. The skilled artisan will appreciate that the cargo C can be industrial fluids such as motor oil; liquids such as chemicals or beverages; or consumable food products. Thus, further description of the types of cargo C that can be loaded and unloaded by the system is not necessary to understand and practice this aspect of the invention.

[0035] As particularly shown in FIGURE 1, the shipping container 16 is a cylindrically shaped intermodal container, which includes a walkway W for accessing the spillbox 14. One skilled in the art will instantly recognize that the shipping container 16, and thus the liner 11, can be box-shaped, rectangle-shaped, or shaped otherwise to meet a variety of other shipping container requirements. Accordingly, the system 10 can be used with any container for ships, trucks, trains or the like. Those skilled in the art will further appreciate that the sizes, shapes and material make-up of other components of the system 10 can be modified to suit a variety of applications and therefore, the invention is not limited to the examples shown in the figures.

[0036] Referring now to both FIGURES 1 and 2, the spillbox 14 is installed at a manhole or access hole 78 surrounded by a spill wall S on an upper surface of the shipping container 16. As shown, the spillbox 14 includes a valve 52 seated in a recess 58 with a collar or skirt 50 formed about the recess 58. By way of example but not
of limitation, a spillbox suitable for use as the spillbox 14 is disclosed in U.S. Patent Application Serial Number 11/231,399, filed September 21, 2005 by Podd, which is incorporated herein by reference thereto for all intents and purposes.

[0037] As shown in FIGURES 1 and 2, the collar 50 defines a perimeter, which is sized to fit around the manhole 78. With the collar 50 seated around the manhole 78 and the valve 52 attached to a support wall 60 in the recess 58, the valve 52 is recessed at an appropriate angle and depth to secure a manhole lid or hatch 84 of the shipping container 16 about the spillbox 14. More particularly, the support wall 60 is angled to minimize its intrusion into the container 16 to minimize contact with the liner 12 when the liner 12 is filled with the cargo C. As shown, an elastomeric ring 55 can be positioned around the collar 50 between its perimeter and the manhole 78. The ring 55 can be an inflatable o-ring, which, when inflated, secures the spillbox 14 relative to the manhole 78 to prevent movement or shifting of the spillbox 14 during transit. The ring 55 can also help seal the interior of the shipping container 16 from contaminating spills, storm water and the like.

[0038] FIGURES 1 and 2 further show a hinge assembly 85 and a handle 88, which are used to close the hatch 84 over the spillbox 14 and the valve 52. As shown, a plurality of latches 82 is installed around the manhole 78 and secured to a plurality of corresponding lugs 86 on the hatch 84. One or more loops 83 can also be attached around the manhole 78, and one or more complementary loops 87 can be attached to the hatch 84. Thus, one or more plastic tie-downs or cable ties 94 can be used to further secure the spillbox 14 to the loops 83 or to the latches 82 via a plurality of holes "H" formed in the spillbox 14 such as in the collar 50. For clarity, only one hole H is shown by way of example in FIGURE 1.

[0039] The valve 52 shown in FIGURES 1 and 2 also includes a cap 62, an orifice end 64, an orifice or opening 66 and a tube end 72. As shown, a valve cam lever 68 is operably connected to a valve 70 for opening and closing the valve 52 in a known manner. Once again, by way of example but not of limitation, an exemplary valve that can be used as valve 52 is disclosed in U.S. Patent Application Serial Number 11/231,399 to Podd.

[0040] Turning now to FIGURE 3, the mock manlid 112 briefly introduced above is designated by the number 112 as part of an alternative cargo loading and discharge system. The mock manlid 112 may be referred to herein in the alternative as a secondary or false manlid or hatch.

[0041] Many components shown in FIGURE 3 are analogous to like or similar components described above with respect to the foregoing embodiment. Accordingly, reference is made to like or similarly designated components described above to provide an enabling disclosure when not specifically discussed below.

[0042] As shown in FIGURE 3, the mock manlid 112 includes an exterior or outer side 118 and an opposing interior or inner side 120 through which an aperture 122 is formed for installation of a valve assembly or valve 130. As shown, the valve 130 has a discharge end 132, a valve cam lever 136 and a coupling end 140. An orifice 134 is formed through the valve 130 similar to the orifice 66 of the spillbox valve 52 described above. The valve cam lever 136 operates a ball valve 138, which is similar to the valve 70 of the spillbox valve 52.

[0043] FIGURE 3 further shows a coupling 142 attached to the inner side 120 of the mock manlid 112. As shown, a coupling or connector hose 144 has a first end 146 connected to the coupling 142, and a second end 148 connected to a spillbox valve orifice end 164. Those skilled in the art will appreciate that the first end 146 and the second end 148 can be attached respectively to the coupling 142 and the spillbox valve orifice end 164 in various ways such as by press-fit or screw-in arrangements, or by clamps or other mechanical devices, or by a combination of such attachments; therefore, further description of these and alternative attachments is not necessary for the skilled artisan to understand and practice this aspect of the invention. The skilled artisan will further appreciate that the hose 144 will be made to withstand a maximum required pressure to prevent collapsing, which could cut off cargo flow; e.g., the hoses 144 and 174 in this example will withstand about 6 bar pressure but can be made to withstand even greater pressures as required.

[0044] FIGURE 3 also shows the manlid 184 retracted or rotated away from a manhole 178 in order to seat the mock manlid 112 on a complementary lip 180 formed around the manhole 178. More particularly, the mock manlid 112 includes a circumferential lip 124 defined about its outer perimeter. The circumferential lip 124 can have an annular groove 125 as shown for seating with the complementary lip 180. A seal 128, which can be rubber or other sealing material, can be attached in the annular groove 125. When the latches 182 are secured to a plurality of lugs 126 depending from the mock manlid 112, the seal 128 can be at least somewhat compressed between the circumferential lip 124, the complementary lip 180 and the spillbox 150 to form a pressure seal. As shown, the lugs 126 of the mock manlid 112 are similar to the lugs 186 of the conventional manlid 184 and are used in the same fashion so no additional training or expertise is required of a user. Although the conventional manlid 184 is shown retracted in FIGURE 3, the skilled artisan will recognize that the manlid 184 can be removed and replaced with mock manlid 112 as required.

[0045] By way of example operation and with reference to FIGURES 3 and 3A, the mock manlid 112 is attached to the manhole 178 by the lugs 126 and the latches 182; thus, the shipping container 116 can be pressurized through a pressure valve such as the ball valve 92 shown in FIGURE 1 in order to unload the cargo C in the liner 111. Specifically, the user can attach a discharge hose H1 to the valve 130 of the mock manlid 112, which is connected to the valve 152 of the spillbox 114 as shown in FIGURE 3. The valve 152 is also attached to the liner
employing the mock manlid 312, the conventional valves 392',396' are not required and importantly, the conventional valves 392',396' do not have to be relied upon to be in working order.

FIGURE 5 also shows that the pressure inlet valve 392 includes a pressure gauge 393 for monitoring and respecting a maximum operating pressure of the container 316, which is set typically for about 6 bar of maximum pressure. Accordingly, the gauge 393 can be used to prevent an overpressure. If necessary, the valve 396 can be set to blow off at the maximum operating pressure of the container 316 so that an inner liner such as those described above will not rupture due to excess pressure as a liquid cargo is being pushed out of the liner in a manner as described above.

The invention may be better understood with reference to FIGURES 3 and 3A and an exemplary method of use. As discussed above, the liner 111 and the spillbox 114 can be installed in the shipping container 116 in a manner similar to U.S. Application Serial Number 11/231,399 to Podd. The cargo C can then be loaded into the shipping container 116 to a positive pressure within an operating range of 10 to 65 psi, more particularly up to about 60 psi or 4 bar. According to the nature of the embodiment, the value assembly 130 of the mock manlid 112 and the valve 152 of the spillbox 114 are opened, the pressure within the shipping container 116 will compress the liner 111 and force the cargo C upwards through the valve assembly 130 and the discharge hose H1.

Turning now to FIGURE 4, a further embodiment of the invention is shown in which a mock manlid 210 is directly connected to a liner 211 via a hose 254 to load and unload cargo from the liner 211 without a mock manlid or spillbox. More specifically, in this embodiment of the invention, the product outlet valve 430 is fitted through a blind flange 498' of a container 416 directly to a liner 411. This arrangement will thus use a pressure differential method similar to the embodiments described above without a mock manlid or spillbox.

As shown in FIGURE 3, with the manlid 184 of the shipping container 116 is unlatched and retracted or removed.

As shown in FIGURE 5, with the manlid 184 retracted, the mock manlid 112 is installed around the manhole 178. As shown, the connector hose 144 is connected to the valve 130 of the mock manlid 112 and to the valve 152 of the spillbox 114. Those skilled in the art will appreciate that the hose 144 can be pre-connected to the valve assembly 130 of the mock manlid 112, or the hose 144, the mock manlid 112, and the spillbox 114 can be in a disassembled state until required.

As further shown in FIGURE 3, the mock manlid 112 is seated over the manhole 178 with the seal 128 sealing between the circumferential lip 124 of the mock manlid 112 and the complementary lip 180 of the manhole 178 with the spillbox 150 disposed therebetween. The latches 182 are secured to the lugs 126 of the mock manlid 112. The discharge hose H1 is attached to the valve assembly 130, and a pressure hose H2 (as in FIGURE 1) at a customer’s facility can be attached to the pressure valve 92, also as shown in FIGURE 1.

Also in FIGURE 3, the pressure source (not shown) can be activated to pressurize the shipping container 116 through the pressure hose H2 and the pressure valve 92. As the shipping container 116 is pressurized, the liner 111 within the shipping container 116 is pressurized and therefore, squeezed or compressed due to the pressure differential, the liner 111 is compressed or squeezed due to the pressure within the shipping container 116.
to a pressure differential between external atmosphere (about 1 bar) and inside the shipping container 116 (about 4 bar). More specifically, the pressure differential is between the liner 112 and the interior of the container 116.

[0056] When the valve assembly 130 is opened via the valve cam lever 136 as shown in FIGURE 3, the much greater internal pressure within the shipping container 116 relative to the external pressure forces the liquid cargo C out of the liner 111 in the shipping container 116, through the mock manlid 112, into the discharge hose H1 and into the customer’s silo (not shown) to which the discharge hose H1 is also connected.

[0057] As the cargo C discharges from the liner 111 in the shipping container 116, the pressure will substantially collapse the liner 111. Thus, once the cargo C is emptied, the pressure source can be secured and the shipping container 116 can be depressurized in a known controlled manner. Subsequently, the latches 182 can be released from the lugs 126 of the mock manlid 112, and the connector hose 144 can be detached from the valve 152 of the spillbox 114. If desired, the connector hose 144 can also be detached from the mock manlid 10 for cleaning and storage at the customer site for subsequent use.

[0058] Of course, the mock manlid 112 and the connector hose 144 can also remain with the shipping container 116.

[0059] Also after discharge of the cargo C and depressurization of the shipping container 116, the spillbox 114 can be removed from the shipping container 116, and the liner 111 can also be removed in order to use shipping container 116 for another load of cargo to be shipped elsewhere, or a new liner can be installed in the shipping container 116 and the spillbox 114 used with the new liner for subsequent cargo shipment.

[0060] In other methods according to the invention as shown in FIGURES 4-6, a discharge hose and valve (230, 330, 430) is connected directly or indirectly to a liner (211, 311, 411). Air is injected between an interior of a container (216, 316, 416) and the liner (211, 311, 411). Accordingly, the pressure differential between the interior of the container (216, 316, 416) and the liner (211, 311, 411) is used to discharge the cargo from the liner through the valve (230, 330, 430).

[0061] While preferred embodiments of the invention have been shown and described, those skilled in the art will recognize that other changes and modifications may be made to the foregoing examples without departing from the scope and spirit of the invention. For instance, various durable, recyclable materials can be used for the liner as described herein. Also, the geometries of the valves, the types of valves as described herein, and male-female connections can be modified, reversed and the like to meet particular customer requirements. It is intended to claim all such changes and modifications as fall within the scope of the appended claims and their equivalents.

Claims

1. A mock manlid system for use with a spillbox, the mock manlid comprising:

   a hatch defining a first side, an opposing second side and an aperture therethrough;
   a valve assembly coupled through the aperture, the hatch being configured to seat about a manhole of a shipping container, the valve assembly being configured for connection to a spillbox disposed in the manhole for discharging cargo from the shipping container under pressure.

2. The mock manlid system as in Claim 1, wherein the hatch defines a circumferential lip having an annular groove defined therein, the annular groove being configured to seal around the manhole.

3. The mock manlid system as in Claim 1, further comprising an annular seal disposed about the hatch, the seal being configured to seal the hatch against the manhole to pressurize the shipping container.

4. The mock manlid system as in Claim 1, wherein the pressure for discharging the shipping container is from about five pounds per square inch to about sixty-five pounds per square inch.

5. The mock manlid system as in Claim 1, wherein the valve assembly defines a discharge end disposed between the liner and the hatch, the valve assembly connected to the hatch being configured to seat around the manhole.

6. The mock manlid system as in Claim 5, further comprising a discharge hose attached to the discharge end of the valve assembly and a pressure hose attached to a pressure valve of the shipping container to pressurize the shipping container, the pressure forcing the cargo from the shipping container through the spillbox valve and the valve assembly into the discharge hose.

7. A mock manlid system, comprising:

   a portable hatch defining a first side, an opposing second side and an aperture therethrough;
   a valve assembly coupled through the aperture, the portable hatch being configured to seat about a manhole of a shipping container;
   a coupling hose connected to the valve assembly; and
   a spillbox having a valve, the spillbox disposed in the manhole and the valve connected to the
coupling hose, wherein the shipping container under pressure discharges cargo from the shipping container through the spillbox valve and the valve assembly.

8. The mock manlid system as in Claim 7, wherein the hatch defines a circumferential lip having an annular groove defined therein, the annular groove being configured to seat against a circumferential lip depending from a perimeter of the manhole.

9. The mock manlid system as in Claim 7, wherein the pressure for discharging the shipping container is from about fifty pounds per square inch to about sixty-five pounds per square inch.

10. The mock manlid system as in Claim 7, wherein the spillbox defines a vent hole therethrough to prevent liquid ingress into the shipping container.

11. A method for pressurized discharge of cargo from a shipping container, the method comprising:

attaching a valve assembly of a mock manlid to a valve of a spillbox, the spillbox disposed in a manhole of a shipping container;
placing the mock manlid over the manhole;
attaching a discharge hose to the valve assembly;
pressurizing the shipping container;
discharging a load of cargo from the shipping container through the spillbox valve and the discharge hose.

12. The method as in Claim 11, wherein the mock manlid includes an annular seal disposed about the hatch, the seal being configured to seal the hatch against the manhole to pressurize the shipping container.

13. The method as in Claim 11, wherein the shipping container is pressurized from about fifty pounds per square inch to about sixty-five pounds per square inch to discharge the load of cargo.

14. The method as in Claim 11, further comprising attaching a pressure hose to a pressure valve of the shipping container to pressurize the shipping container.

15. The method as in Claim 11, further comprising moving a manlid of the shipping container in a direction away from the manhole before placing the mock manlid over the manhole.

16. The method as in Claim 11, further comprising connecting a plurality of latches disposed about the manhole to a plurality of lugs disposed about the mock manlid.

17. The method as in Claim 11, further comprising attaching a coupling hose to the valve assembly and to the valve.

18. The method as in Claim 11, further comprising opening the valve assembly and the valve to discharge the load of cargo.

19. The method as in Claim 11, further comprising depressurizing the shipping container.

20. The method as in Claim 11, further comprising removing the mock manlid from the shipping container.

21. The method as in Claim 11, further comprising removing the spillbox from the shipping container.

22. A mock manlid system, comprising:

a hatch defining a first side, an opposing second side and an aperture therethrough; an outlet valve coupled through the aperture, the hatch being configured to seat about a manhole of a shipping container, the outlet valve being configured for connection to a liner disposed in the shipping container for discharging cargo from the shipping container under pressure.

23. The mock manlid system as in Claim 22, further comprising an air inlet valve attached to the hatch, the air inlet valve being configured to inject air into the shipping container to impart a pressure differential between the shipping container and the liner.

24. The mock manlid system as in Claim 23, further comprising a pressure gauge in communication with the air inlet valve for sensing the pressure differential.

25. The mock manlid system as in Claim 22, further comprising a pressure relief valve attached to the hatch, the pressure relief valve being configured to relieve a pressure differential.

26. A method for pressurized discharge of cargo from a shipping container, the method comprising:

attaching an outlet valve through a blind flange of a shipping container;
attaching a first end of a discharge hose to the outlet valve;
attaching a second end of the discharge hose to a liner disposed in the shipping container;
pressurizing the shipping container; and discharging a load of cargo from the shipping container through the outlet valve.
REFERENCES CITED IN THE DESCRIPTION

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