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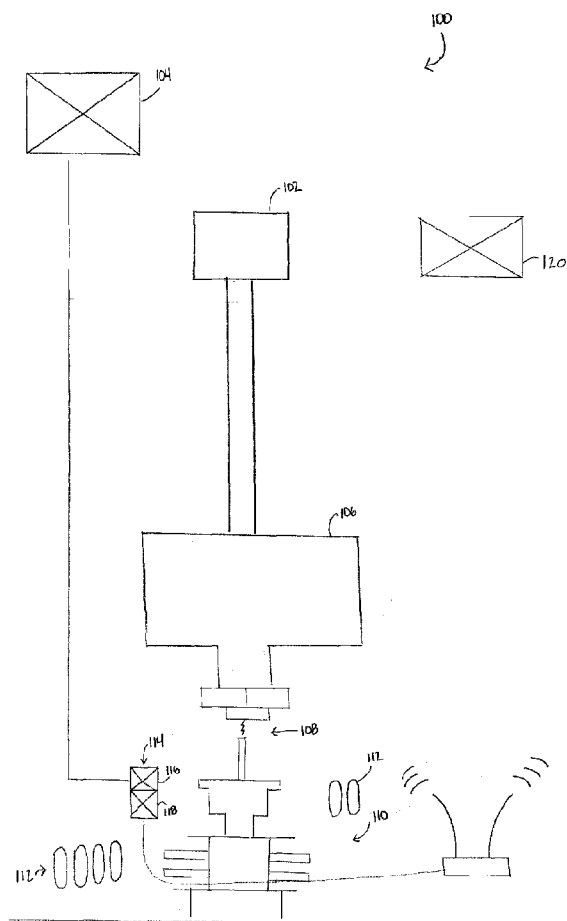


FIG. 1

(57) Abstract: Embodiments described herein comprise an apparatus and method for transporting a control package for a lower marine riser package (LMRP) to an offshore platform. The apparatus may include a lifting cage and a base. The lifting cage may be configured to lock to the base. The base may be configured to secure a control package in the interior of the container.

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CONTROL PACKAGE CONTAINER

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the priority benefit of US *provisional* patent application No. 61/109,484, titled “Lower Marine Riser Package Container,” filed October 29, 2008. This related application is hereby incorporated by reference in its entirety.

BACKGROUND

[0002] Embodiments of the inventive subject matter generally relate to the field of containers, and more particularly, to containers that are configured to transport a pressure controls package, or MUX control package for a lower marine riser package (LMRP).

[0003] The pressure control package is an oilfield tool which couples to a blow out preventer (BOP) and/or a drill string. The pressure control package is an electronic, and/or hydraulic controls package. The pressure control package typically controls pressure in a blowout preventer, and/or another portion of the wellbore. The pressure control package helps prevent a blow out during drilling operations and/or in the operation of the stack and associated equipment. The pressure control package is typically installed in a subsea environment near the BOP. All or portions of the pressure control package are replaced often during the life of the well. Thus, multiple pressure control packages are delivered to an offshore platform during the life of the well. Each of the pressure control packages is very expensive. Further, damage to the pressure control package may not be realized until the pressure control package is already installed on the BOP. If damage is discovered to the pressure control package after the pressure control package is installed on the drill string and/or the BOP, rig time and well production time is lost as a result.

SUMMARY

[0004] Embodiments described herein include a container. The container comprising a base configured to hold a control package. The base may have a frame for supporting

the weight of the control package and one or more receiving members configured to receive a portion of the control package. The base may further include one or more base fastening devices configured to secure at least a portion of the control package to the one or more receiving members. The container may further include a lifting cage configured to engage the base and substantially surround the control package when the control package is secured to the one or more receiving members. The container may further include a container lock for locking the lifting cage to the base.

[0005] Embodiments described herein may further include a method for transporting a subsea control package. The method may comprise placing a portion of the subsea control package on a base and securing the portion of the control package to the base. The method may further comprise lowering a lifting cage over the portion of the control package and the base and engaging the lifting cage to the base. The method may further include locking the base to the lifting cage to form a container housing the portion of the subsea control package and lifting the container onto a vessel. The method may further include sailing the vessel to the offshore platform and engaging one or more lifting lugs on the container with a hoisting member. The method may further include lifting the container onto the offshore platform.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The present embodiments may be better understood, and numerous objects, features, and advantages made apparent to those skilled in the art by referencing the accompanying drawings.

[0007] Figure 1 depicts a schematic drawing of an offshore oil well according to some embodiments.

[0008] Figure 2 depicts a schematic view of a control package, and/or pod according to some embodiments.

[0009] Figure 3 depicts a diagram illustrating a perspective view of a container according to some embodiments.

[0010] Figure 4 depicts a diagram illustrating a perspective view of a container showing a lifting cage disengaged from a base of the container according to some embodiments.

[0011] Figure 5A depicts a diagram illustrating a schematic view of a container showing a lifting cage disengaged from a base of the container according to some embodiments.

[0012] Figure 5B depicts an exploded perspective view of a base of a container according to some embodiments.

[0013] Figure 6A depicts a view of a base of a container according to some embodiments.

[0014] Figure 6B depicts a view of a container housing a control package according to some embodiments.

[0015] Figure 7A depicts a view of a base of a container according to some embodiments.

[0016] Figure 7B depicts a view of a container housing a control package according to some embodiments.

[0017] Figure 7C depicts a view of a base of a container housing a control package according to some embodiments.

[0018] Figure 8 depicts diagram illustrating a vessel offloading a container onto an offshore platform.

DESCRIPTION OF EMBODIMENT(S)

[0019] The description that follows includes exemplary apparatus, methods, techniques, and instruction sequences that embody techniques of the present inventive subject matter. However, it is understood that the described embodiments may be practiced without these specific details.

[0020] Figure 1 depicts a subsea wellbore system 100. The subsea wellbore system 100 may include surface equipment 102, one or more surface controls 104, a surface blowout preventer 106, an emergency disconnect device 108, a subsea shutoff device and/or lower marine riser package 110, one or more accumulators 112, and a subsea control package 114. The surface controls 104 may include any number of systems and devices for controlling the equipment in the subsea wellbore system 100 including, but not limited to, a portable MUX shack, a driller's and toolpusher's panel, a hydraulic power unit, a power unit and the like. The subsea control package 114, or MUX pod, may include any suitable type of control package for controlling the equipment of the subsea wellbore system 100 including but not limited to, standard modular pods, standard modular pods identical to hydraulic control systems, an electro-hydraulic control unit mounted on top of the pod containing electronic control equipment, an electric control unit, a modular MUX pod having an upper and lower pod, and the like. The one or more surface controls 104, and the subsea control package 114 may control any number of wellbore conditions and equipment actions during the drilling of the wellbore. For example, the controls 104 and/or 114 may control pressure in the wellbore, the amount of drilling fluid pumped into the wellbore, the production rate, the drilling speed, and the like. The subsea control package 114 consists of controls that are easily damaged during shipping. One or more containers 120 are used to transport the subsea control package 114 to and from the wellbore work area.

[0021] Figure 2 depicts a schematic drawing of the subsea control package 114 according to one embodiment. The subsea control package 114 may include an upper pod 200 and a lower pod 202. The upper and lower pods 200 and 202 may have any number of control systems within the pods. The upper and lower pods 200 and 202 may include an air/water tight exterior configured to prevent the control systems from exposure to the subsea environment. In the embodiment shown, the lower pod 202 may include one or more pod connector devices 204. The one or more pod connector devices 204 are configured to secure the pods 202 and 200 to the subsea equipment, for example the subsea shutoff device 110, the blow out preventer 106, and/or the lower marine riser package and the like. As shown, the one or more pod connector devices 204 are a plurality of cylindrical legs. Each of the cylindrical legs may be configured to secure to

an aperture in the subsea equipment, thereby securing the pod 202 to the subsea equipment. Although the one or more pod connector devices 204 are described as cylindrical legs, it should be appreciated that the pod connector devices 204 may be any suitable devices for securing the pods 202, and 200 to the subsea equipment including, but not limited to one or more pins, one or more cross-sectionally square legs, one or more cross-sectionally rectangular legs, one or more holes or apertures in the bottom of the pods for receiving a device, one or more hooks, and the like. In one embodiment, the lower pod 202 is configured to have four cylindrical legs for coupling to the subsea equipment, and the upper pod 200 is configured to couple to the lower pod 202.

[0022] One or more of the pod connector devices 204 may be configured to include a fastening device 206 for securing the pods 204 to the subsea equipment. As shown, the fastening device is an aperture 208 configured to secure to one or more subsea pins or rods (not shown) when engaged with the subsea equipment. The one or more subsea pins may ensure that the pods 200 and/or 202 do not disengage the subsea equipment inadvertently. Although the fastening device 206 is described as an aperture 208 and a pin it should be appreciated that the fastening device may be any suitable device for securing the pods 200 and/or 202 to the subsea equipment including but not limited to a clamp, a bolt and nut, a threaded connection, keys, carter key, a buckle, pins, and the like.

[0023] Figure 3 depicts a perspective view of the container 120 configured to store and transport the subsea control package 114, and/or the pods 200 and 202. The container 120 may include a lifting cage 300 and a base 302. The lifting cage 300 may be selectively coupled and uncoupled to the base 302. In the coupled position, the lifting cage 300 and the base 302 form the container 120 for storing and transporting the pods 200 and/or 202 as one unit. The pods 200 and/or 202 are secured to the base 302, as will be described in more detail below. The base 302 prevents the pods 200 and/or 202 from substantially moving within the container 120. With the pods 200 and/or 202 secured to the base 302 and the lifting cage 300 coupled to the base 302, the pods 200 and/or 202 are securely stored within the container 120. The container 120 substantially prevents damage to the pods 200 and/or 202 during shipping and storing by preventing direct impact to the pods 200 and/or 202 by other equipment. Thus, if the container 120 is

impacted by a piece of equipment, personnel, vehicles, tools and the like, the container 120 will substantially absorb the effects of the impact. Thus, the pods 200 and/or 202 may be substantially protected by the container 120 during transport. Further, the container 120 may protect the pods 200 and/or 202 from the environment.

[0024] The lifting cage 300 may comprise a top 304 and four sides 306. The top 304 may be fixedly coupled to the tops of each of the four sides 306. The top 304 and the four sides 306 form a box which is missing one side, for example the bottom. As shown, the top 304 has a rectangular shape when looking at the top in plan view. In this embodiment, two of the sides 306 have a longer length, in the direction of the top 304, than the other two sides 306. Although, the lifting container 300 is described as having a rectangular top 304 and four sides 306, it should be appreciated that the container may have any suitable shape and number of sides for containing the pods 200 and/or 202 including, but not limited to a circular top with one cylindrical side, a square top with four equal length sides, a triangular top with three sides, a pentagon top with five sides, a hexagonal top with six sides, any polygon top with an equal number of sides, a rectangular prism, and the like.

[0025] Although the lifting cage 300 is described as having the top 304 and the four sides 306 fixedly coupled to one another, it should be appreciated that the top 304 may be removably coupled to each of the four sides 306, in an alternative embodiment. In this embodiment, the four sides 306 may be uncoupled from the top 304 in order to store the empty container 120 in a more efficient manner when not in use. For example, a user may uncouple the top 304 from the sides 306 and store the base 302, the top 304 and the sides 306 in a parallel fashion thereby minimizing storage space when not in use.

[0026] The top 304 may comprise one or more top structural members 308 coupled to one another to form a perimeter of the top 304. For example, in the embodiment wherein the top is rectangular shaped there may be four structural members 308 forming a rectangular perimeter to the top 304. The interior of the top 304 may comprise a top inner member 310. Each of the sides 306 may comprise side structural members 312 and a side inner member 314. The side structural members 312 may be fixedly coupled to, or

removeably coupled to, each of the corners of the top 304. The structural members 308 and/or 312 may be coupled to one another by any suitable method including, but not limited to, welding, bolting, screwing, riveting, nailing, and the like. Further, the structural members 308 and 312 may be one continuous formed piece thereby removing the need to connect the structural members 308 and 312 to one another. The structural members, as shown, are structural box tubing; however, it should be appreciated that the structural members may be any suitable structural members, or combination of structural members, including, but not limited to pipe, tubing, conduit, I-beams, channels, angle iron, solid cylinders, solid members having any suitable cross sectional shape for example square, WT members, and the like.

[0027] The inner members 310 and/or 314 may be formed of any suitable material including, but not limited to, sheet metal, vinyl, plate metal, plastic, grating, stamped plate, plated metal, a series of bars, and the like. The inner members 310 and/or 314 may couple to the structural members 308 and 312 by any suitable method including, but not limited to, welding, clips, brackets, nails, rivets, screws, bolts, press fittings, and the like. Although, the top 304 and sides 306 are described as having structural members 308 and 312 and inner members 310 and 314, it should be appreciated that the top 304 and/or the sides 306 may each be a solid, or composite member. For example, any of the sides and/or top may comprise a plate, or a plurality of structural members having no, or any of the inner members described herein between the structural members, , keys, carter key, a buckle, pins and the like.

[0028] The lifting cage 300 may have one or more container locks for coupling the lifting cage 300 to the base 302 as will be discussed in more detail below.

[0029] The lifting cage 300 may include one or more lifting members 316. The lifting members 316 may be configured to allow the lifting cage 300 to be lifted by a hoisting mechanism. The hoisting mechanism may be any suitable hoisting mechanism including, but not limited to, a crane, a cherry picker, a drilling rig, and the like. As shown, the lifting members 316 are lifting lugs substantially located in the four corners of the top 304 of the lifting cage 300. The lifting lugs may have a loop, or hook, to which a

rigging from the hoisting mechanism may be secured. The lifting members 316 may be positioned on the lifting cage 300 in order to balance the lifting cage 300, and/or container 120 when lifting. Although the lifting members 316 are described as being lifting lugs it should be appreciated that the lifting members 316 may be any suitable device for allowing the hoisting mechanism to couple to the lifting cage 300 including, but not limited to, hooks, eye hooks, apertures in the lifting cage 300, magnetic surfaces for lifting with magnets, and the like. The hoisting mechanism may be used to lift the lifting cage 300 off of the base 302 when the lifting cage 300 is not coupled to the base 302. Further, the hoisting mechanism may be used to lift the container 120, either empty or with the pod 200 and/or 202.

[0030] The lifting cage 300 may further include one or more forklift eyes 318, shown only on the base 302. The lifting cage forklift eyes may be located in the top 304, and/or through a portion of the sides 306. The lifting cage forklift eyes may allow the user to lift the lifting cage 300 off of the base 302 without the need to use the hoisting mechanism.

[0031] Figure 4 depicts a perspective view of the container 120 with the lifting cage 300 uncoupled from the base 302. The base 302 may include one or more base structural members 400. As shown, the base includes base structural members 400 around the perimeter of the base 302, and base structural members 400 in between the perimeter 302. The base structural members 400 located within the interior of the perimeter are shown as one structural member running along the central longitudinal axis of the container 120 and at least two structural members running perpendicular to the longitudinal axis of the container 120. Although the base is shown with the base structural members 400 running around the perimeter of the base 302 and with three base structural members 400 in the interior of the perimeter of the base 302, it should be appreciated that the base structural members 400 may have any suitable configuration for supporting the lifting cage 300, and the subsea control package 114, and/or pods 200 and 202, including, but not limited to, a solid floor structural member, a series of structural members running along the longitudinal axis of the container 120, a series of structural members running perpendicular to the longitudinal axis of the container 120, a plurality of structural members running in both the longitudinal axis and the perpendicular axis of the container

120, a plurality of structural members running along the longitudinal axis of the container 120 and one structural member running perpendicular to the longitudinal axis, structural members forming a substantially evenly spaced checkered pattern in both the longitudinal axis of the container 120 and the perpendicular axis of the container 120, diagonal structural members, diagonal structural members running in two directions in a angled checkered pattern and the like. The base structural members 400 are shown as box tube structural members; however, it should be appreciated that the base structural members 400 may be any suitable structural members, including any of the structural members described herein. The base structural members 400 may have any suitable configuration so long as the base structural members 400 are capable of supporting the subsea control package, and/or the pods 200 and 202. Although, the base structural members are described as running along the longitudinal and perpendicular axis of the container 120, it should be appreciated that when the container 120 is square, or another shape, the longitudinal axis and the perpendicular axis may be an arbitrary axis in any direction substantially perpendicular to one another.

[0032] There may be a base interior member 402 between the base structural members 400 as shown in Figure 4. The base inner members 402 may be formed in a similar manner as the top inner members 310 and the side inner members 314. Further, the base inner members 402 may be coupled to the base structural members 400 in a similar manner as described for the inner members 310 and 314.

[0033] The base 302 may include one or more fork lift eyes 318 on the longitudinal axis side, and or the side perpendicular to the longitudinal axis of the container 120. The fork life eyes allow a user to engage the base 302, and/or the container 120 with the fork life, and/or pallet jack forks. Once the fork lift eyes are engaged with the forks, the user may lift and move the base 302 and/or container 120 to another location for transport and/or storage.

[0034] Figure 5A depicts a side view of the container 120 according to some embodiments described herein. As shown, the container 120 includes the lifting cage 300 and the base 302. The base 302 may include a pod support device 500 and a base lock

portion 502 of the container lock. The lifting cage 300 may include a lifting cage lock portion 504 and a storage device 506.

[0035] The pod support device 500 may be any suitable device for securing any portion of the subsea control package 114 and/or the pods 200 and 202 to the base 302. The pod support device 500 may be sized to couple to specifically sized subsea control packages 114 from different manufactures. The pod support device 500 may include any number of apertures, hooks, clamps, hold downs, ties, and/or pins configured to secure at least a portion of the control package to the base 302.

[0036] In one embodiment, the pod support device 500 is configured to secure the upper pod 200 or the lower pod 202 to the base 300. In this embodiment, the pod support device 500 may include one or more receiving members 508 and/or a pod clamp frame 510. The one or more receiving members 508 may be configured to receive, or engage, the pod connector devices 204 of the lower pod 202, and optionally the upper pod 200 if applicable. The one or more receiving members 508 may include a base fastening member 512 for engaging the pod fastening member 204 and securing the one or more receiving members 508 to the pod connector devices 204. The base fastening device 512 may include any suitable device for securing to the pod fastening device 204 including, but not limited to, an aperture 514 and a pin or rod 600, shown in Figure 6A, a bolt and nut, a clamp, a press fitting, a rivet, a bolt lock for engaging the aperture 208 of the fastening device 204, a key and lock system, a turn lock, and the like. Thus, pod connector devices 204 of the pod 202, or 200 may be secured to the one or more receiving members 508 of the pod support device 500. The pod 202 or 200 may then be secured, or fastened to the pod support device 500 using the pod fastening device 204 and the base fastening device 512. Once the pod 202 or 200 is secured to the pod support device 500, the lifting cage 300 may be secured to the base 302 for storing and/or transport.

[0037] If the pod 200 and/or 202 is secured to the one or more receiving members 508, the pod clamp frame 510 may be an unnecessary piece of equipment. In this instance, the pod clamp frame 510 may be stored in the storage device 506 as will be

described in more detail below, or stored somewhere other than the container 120. Further, the pod clamp frame 510 may be unnecessary in some cases, and not included in the container 120.

[0038] The pod clamp member 510 may be used to secure a portion of the subsea control package 114, or the pods 200, 202 to the base 302 in the instance where the pod 200 has no pod connector devices 204, or they do not match the one or more receiving members 508. In this instance, the pod may be placed on the structural members 400, or other flooring portion, of the base 302. The pod clamp member 510 may then be placed on top of the pod. To this end, the pod clamp member 510 may include one or more clamp member connector devices 516 configured to engage the one or more receiving members 508. The one or more clamp connector devices 516 may be configured in a similar manner as the pod connector device 204, thereby allowing the pod clamp member 510 to secure into the one or more receiving members 508 in a similar manner as the pod connector devices 204.

[0039] The pod clamp member 510 may be sized to match a specific sized pod. For example, the pod clamp member 510 may have a height configured to engage, or almost engage the pod when the pod is in the base 302. Further, the pod clamp member 510 may have a width and/or length configured to engage the sides of the pod once the pod is on the base. With the pod clamp member 510 engaging the top, sides, and or bottom of the pod, the pod is secured within the base 302. The lifting cage 300 may then be placed over the base 302 for shipping and/or transport.

[0040] Although the pod clamp member 510 is described as having a specific height, width and length, for a specific pod, it should be appreciated that the height, length and width may be adjustable in order to accommodate different sized pods, as will be discussed in more detail below.

[0041] The pod clamp member 510 and/or the base 302 may include one or more shock absorbing members for damping any impact on the container 120 to the pod. For example, the surfaces of the pod clamp portion 510 which engage the pod may include a rubber, or elastomeric material for dampening the impact. Although this is described as

an elastomeric material it should be appreciate that the dampening material may be any suitable material, and/or device for dampening impact to the pods including, but not limited to, a foam, a plastic, one or more shock absorbers between the base and/or the pod clamp and the members engaging the pod, and the like.

[0042] The container lock may include the base lock portion 502 and the lifting cage lock portion 504. The base lock portion 502 may include one or more guides 518 and one or more pins 520. The lifting cage lock portion 504 may include one or more guide receiving portions 522 and one or more pin receiving portions 524. The one or more guides 518 may be configured to engage the one or more guide receiving portions 522 and align the lifting cage 300 in the horizontal direction with the base 302 as the lifting cage 300 moves vertically toward the base 302. As the guides 518 and guide receiving portions 522 align the lifting cage 300, the pins 520 enter the pin receiving portions 524. Once the lifting cage 300 is resting on the base 302, the pins 520, and/or guide portions 518 may be secured to the lifting cage 300 using any suitable method including, but not limited to, locking, pinning, hooking, clamping, and the like. In one embodiment, the operator may secure a pin, not shown, through the outer surface of the lifting cage 300 and through an aperture at least one of the one or more pins 520 and/or guides 518. Although the guide receiving portions 522 are shown on the lifting cage 300 and the guides 518 and pins 520 are shown on the base 302, it should be appreciated that the guide receiving portions 522 may be located on the base 302 while the guides 518 and/or pins 520 may be located on the lifting cage 300.

[0043] The storage device 506 as shown schematically in Figure 5A allows the user to store items during shipping and transport. The storage device 506 may be a shelf, or box coupled to one of the top 304, the sides 306 and/or the base 302. The storage device 506 may allow the user to store the pod clamp member 510 when the pod clamp member is not in use. Further, the storage device 506 may have room for extra items that may accompany the pods during storing and/or transporting including, but not limited to tools, shipping invoices, paperwork, computers, security lock keypads, and the like. In one embodiment, the storage device 506 has one or more receiving members, not shown, configured in a similar manner to the receiving members 508. In this example, the user

may remove the pod clamp member 510 from the receiving members 508 and secure the pod clamp members 510 to the storage device receiving members in a similar manner as the base receiving members 508. The storage device 506 may ensure that the pod clamp member 510 is not lost, and remains with the container 120 when not in use.

[0044] The container 120 may be constructed of any suitable material and/or combination of materials. For example, the container 120 may be substantially constructed of carbon steel for durability and cost. The carbon steel may be coated with an epoxy coat in order to protect the carbon steel from rusting in the harsh sea environment. Further, the container 120 may be any suitable combination of materials including, but not limited to, stainless steel, chrome, plastic, wood, and/or the like.

[0045] In one embodiment, the container 120 is configured for storing and transporting the upper pod 200 and the lower pod 202 separately. Figures 5A, 5B, 6A, 6B, 7A and 7B will now be briefly discussed in conjunction with this specific embodiment. In this embodiment, the upper pod 200 is configured to couple to the lower pod 202 and the lower pod 202 is configured to couple to the subsea equipment with the lower pod connection device 204. The lower pod connection device 204 may be a plurality of cylindrical legs. Each of the cylindrical legs of the lower pod 202 may be configured to secure to one of the receiving members 508 of the base 302. The receiving members 508 in this example, are a plurality of cylindrical receiving members 508 having a central bore 526, as shown in Figure 5B. The central bore 526 may be configured to receive at least a portion of the cylindrical leg of the lower pod 202. In order to connect the lower pod to the base 302, the pod clamp frame 510 may be removed from the base 302.

[0046] The pod clamp frame 510 may be removed from the base 302 by removing the base fastening device 512 from the receiving member 508. In one example, the base fastening device is the rod 600 configured to secure to the aperture 514 of the receiving members 508. The rod 600 may be removed from the aperture 514 thereby allowing the pod clamp frame 510 to be lifted out of the receiving members 508 as shown in Figure 5B. The pod clamp frame 510 may then be secured, or stored, to the storage device 506,

or placed at another location, so long as the pod clamp frame 510 does not interfere with installation of the lower pod 202. With the pod clamp frame 510 removed from the base 302, the lower pod may be ready for securing to the base.

[0047] The lower pod 202 may be positioned over the base 302 in order to secure the lower pod 202 to the base, as shown in Figure 6A. The lower pod 202 may then be lowered, or moved, toward the base 302. As the lower pod 202 is moved toward the base 302, the legs, or lower pod connection devices 204, of the lower pod 202 may enter the bore 526 of the receiving members 508, as shown in Figure 6B. Although the legs are described as entering into the bore 526, it should be appreciated that the legs may include a bore, not shown, for receiving the receiving members 508 in another embodiment. With the legs received in the receiving members 508 the aperture 208 of the legs may align with the aperture 514 of the receiving members 508. The base fastening members 512 may then be used to secure the lower pod 202 to the base 302. In one example, the base fastening members 512 comprise the rod 600. The rod 600 may be slid through the apertures 208 and 508 in order to lock the lower pod 202 to the base 302. Once the rod 600 is in place one or more pins 602 may be secured to the rod, as shown in Figure 6B, in order to lock the rod 600 in place. The rod 600 as shown is configured to secure through two of the legs of the lower pod 202 and two of the receiving members 508, however, it should be appreciated that there may be a separate rod 600 for each of the legs and receiving members 508. With the rods 600 locked in place the lower pod 202 is now secured to the base 302, thereby preventing the lower pod 202 from moving substantially relative to the base 302. The lifting cage 300 may then be moved to a position over the base 302 and lowered onto the base 302. The lifting cage 300 may then lock to the base 302, as described above, in order to secure the lifting cage 300 to the base 302. The container 120 with the lower pod 202 secured inside is now free to be transported to another location.

[0048] When the user is ready to remove the lower pod 202, the lifting cage 300 may be unlocked from the base 302. The lifting cage 300 may then be lifted from the base 302 using the hoisting device or a fork lift. With the lifting cage 300 out of the way, the user may then remove unlock the base fastening device 512. In one embodiment, the

user may unlock the base fastening device 512 by removing the carver pins 602 from the rod 600 and pulling the rod 600 out of the apertures 512 and 204. The lower pod 202 may then be lifted out of the base 302 using any suitable means including, but not limited to, a fork lift, a cherry picker, a hoisting means, manual lifting and the like. The user may then place the remove the pod clamp frame 510 from the storage device 506 and couple the pod clamp frame 510 to the base 302. The lifting cage 300 may then be placed back on the base 302 in order to store the container 120 until it is needed again.

[0049] The container 120 may further be used to store and transport the upper pod 200. In one embodiment, the upper pod 200 is configured to secure to the power pod 202 when in use. Therefore, the upper pod 200 does not have the legs of the lower pod 202. In this embodiment, the upper pod 200 may have a substantially planar outer surface, for example, a cube shape, or rectangular prism shape. Although the upper pod 200 is described as having a cube or rectangular prism shape, it should be appreciated that the upper pod 200 may have any suitable shape for housing subsea controls including, but not limited to, an irregular shape, a combination of several shapes and the like. Due to the fact that the upper pod 200 does not have the legs, or pod connector devices 204, the upper pod 200 must be secured to the base 302 using the pod clamp frame 510.

[0050] The lifting cage 300 and the pod clamp frame 510 should be removed from the base 302 as described above and shown in Figure 7A. The upper pod 200 may then be placed on the base 302 between the receiving members 508. Although the upper pod 200 is described as being placed between the receiving members 508, it should be appreciated that the upper pod 200 may be located partially or wholly outside of the receiving members 508. The upper pod 200 may be moved into position on the base 302 using any suitable method for moving the upper pod 200 including, but not limited to, a forklift, the hoisting device, a manual lift, a pallet jack, a cherry picker, and the like. With the upper pod 200 resting on the base 302, the upper pod may be secured to the base 302.

[0051] In one embodiment, the upper pod 200 may be secured to the base 302 using the pod clamp frame 510 of the pod support device 500. The pod clamp frame 510 may

be lowered, or moved, toward the base 302 with the upper pod 200 in place. The clamp member connector devices 516 may engage the receiving members 508 as the pod clamp frame 510 continues to move toward the base 302. In one embodiment, the clamp connector devices 516 are a fixed length sized configured to be installed at the same length. In this embodiment, the pod clamp frame 510 may be sized to secure a particular model of upper pod 200 to the base 302. When the clamp member connector devices 516 are fully engaged to the receiving members 508, the rod 600 may be placed through the apertures 514 in order to secure the pod clamp frame 510 to the base 302. The pod clamp frame 510 may prevent the upper pod 200 from substantially moving relative to the base 302.

[0052] To substantially prevent the movement of the upper pod, an inner wall 548, as shown in Figure 5B, of the pod clamp frame 510 may engage, or partially engage the outer surface of the upper pod 200. Thus, the inner wall 548 may prevent the upper pod 200 from moving in a horizontal direction relative to the base 302. Further, one or more hold down members 550 may engage or substantially engage the top facing surface of the upper pod 200. The hold downs 550 may substantially prevent the upper pod from moving in the perpendicular direction relative to the base 302. Any of the members engaging the upper pod 200 include the shock absorbing members and/or an intermediate dampening member between the upper pod and the members. The shock absorbing members may be any suitable dampening member including any of those described herein.

[0053] In an alternative embodiment, the clamp connector devices 516 may have a variable length, or variable height settings. In this embodiment, the height of the pod clamp frame 510 may be adjusted to match the size of different model pods. To this end, the clamp connector devices 516 may have several apertures in which the rod 600 may be secured to. The apertures may be located longitudinally along the length of the clamp connector devices 516. Thus, by moving the rod 600 into a different aperture the height of the pod clamp frame will be changed. Although described as varying the height of the pod clamp frame by using a series of apertures on the clamp connector devices 516, it should be appreciated that any suitable method may be used for varying the height of the

pod clamp frame 510 including, but not limited to, a series of apertures on the receiving members 508, a series of apertures on both the receiving members 508 and the clamp connector devices 516, a telescoping clamp connector device using a hydraulic or mechanical lift, and the like.

[0054] In yet another embodiment, the hold down members 550 may be configured to engage the sides rather than the upper facing surface of the upper pod 200, as shown in Figure 7C. In this embodiment, a portion of the inner wall 548 and the sides of the hold down members 550 may be used to prevent the upper pod 200 from moving in the direction parallel to the base 302, or horizontal direction. An upper clamp frame 700 may be used to hold down the upper pod 200. To this end the upper clamp frame 700 may be sized to have a height to match a particular model of pod. Further, when the upper clamp frame 700 is not being used to guide and/or hold down the upper pod 200 it may be used as a gripping point for manipulating and/or lifting the pod clamp frame 510.

[0055] In yet another alternative embodiment, the upper pod 200 may not rest directly on the base 302 but may be secured to a separate device. For example, the upper pod 200 may be secured to the base between the pod clamp frame 510 and the upper clamp frame 700. In this embodiment, the pod clamp frame 510 and the upper clamp frame 700 may have any suitable shape for securing the pod between the frames 510 and 700.

[0056] In yet another embodiment, as shown in Figure 7D, the upper pod 200 may include a lip portion 702. The lip portion 702 may extend beyond the main portion of the upper pod. In this embodiment, when the upper pod 200 is resting on the base 302, the lip portion 702 may engage, or be proximate a top side 704 of the pod clamp frame 510. The upper clamp frame 700 may then be secured over the lip portion 702. The upper clamp frame 700 may secure the lip portion 702 and thereby the upper pod 200 in the base 302. It should be appreciated that any of the components engaging the upper pod 200 may include a shock absorbing member and/or dampening member.

[0057] In yet another alternative embodiment, the pod clamp frame 510, and/or the upper clamp frame 700 may be integral with the lifting cage 300. In this embodiment,

the pod(s) would be secured to the base 302 when the lifting cage 300 is engaged to the base 302.

[0058] Figure 8 depicts a schematic view of an offshore rig 800 having a drilling rig 802, a drill string 804 and the subsea control package 114, and/or pods 202 and 204. During operation of the drilling rig 802, the pods 114, 200 and/or 202 may need to be replaced. One or more new pods may be delivered to the offshore platform 800 using a vessel 806. The pod(s) 114, 200 and/or 202 are typically loaded onto the base 302 in a warehouse, or factory. The lifting cage 300 may then be lowered over the base 302 and locked to the base 302. The container 120 may then be transported to the vessel 806. The vessel 806 may sail, or travel, to the offshore platform 800. Each of the containers 120 may then be offloaded from the vessel 806 to the offshore platform 800 using the hoisting device 808, or crane. The hoisting device may be attached to the offshore platform 800 or the vessel 806. The lifting cage 300 may then be unlocked from the base 302 and the pod(s) 114, 200, and/or 202 may be removed from the container 120. The container 120 may prevent the pods from being damaged during the transportation process.

[0059] The container 120 may have a minimum design temperature of 4 degrees F (-20 degrees C). The empty weight of the container 100 may be 2500 lbs in some embodiments. The total shipping weight with the pods and the container 120 may be 15,000lbs in some embodiments. The container 100 may be certified under DnV rules for offshore containers. The container 100 may have an offshore coating system (3 coat, 2-part epoxy, zinc primer).

[0060] While the embodiments are described with reference to various implementations and exploitations, it will be understood that these embodiments are illustrative and that the scope of the inventive subject matter is not limited to them. Many variations, modifications, additions and improvements are possible.

[0061] Plural instances may be provided for components, operations or structures described herein as a single instance. In general, structures and functionality presented as separate components in the exemplary configurations may be implemented as a combined

structure or component. Similarly, structures and functionality presented as a single component may be implemented as separate components. These and other variations, modifications, additions, and improvements may fall within the scope of the inventive subject matter.

WHAT IS CLAIMED IS:

1. A container comprising:
 - a base configured to hold a control package, the base comprising:
 - a frame for supporting the weight of the control package;
 - one or more receiving members configured to receive a portion of the control package; and
 - one or more base fastening devices configured to secure at least a portion of the control package to the one or more receiving members;
 - a lifting cage configured to engage the base and substantially surround the control package when the control package is secured to the one or more receiving members; and
 - a container lock for locking the lifting cage to the base.
2. The container of claim 1, wherein the control package is a subsea control package.
3. The container of claim 2, wherein the subsea control package further comprises an upper pod and a lower pod.
4. The container of claim 3, wherein the lower pod is configured to secured to a piece of subsea equipment.
5. The container of claim 4, wherein the upper pod is configured to secure to the lower pod when the lower pod is secured to the piece of subsea equipment.
6. The container of claim 5, further comprising a pod clamp member configured to secure the upper pod to the base.
7. The container of claim 3, further comprising one or more legs of the lower pod configured to secure to the one or more receiving members of the base.

8. The container of claim 7, further comprising a pod clamp member configured to secure the upper pod to the base, the pod clamp member comprising one or more clamp member connector devices for securing the pod clamp member to the one or more receiving members of the base.
9. The container of claim 8, further comprising an upper clamp frame that is removably coupled to the pod clamp member.
10. The container of claim 9, wherein the upper clamp frame is configured to engage a portion of the upper pod thereby securing the upper pod to the base.
11. The container of claim 8, further comprising a storage device configured to store the upper clamp frame while the lower pod is secured to the one or more receiving members.
12. The container of claim 1, wherein the container lock further comprises a base lock portion and a lifting cage lock portion.
13. The container of claim 12, wherein the base lock portion further comprises one or more pins having an aperture through at least a portion of the pin.
14. The container of claim 13, wherein the base lock portion further comprises a cavity configured to receive the pin and one or more apertures through the cavity.
15. The container of claim 14, wherein the container lock further comprises a second pin configured to be received in the aperture of the pin and the aperture of the cavity thereby preventing relative movement between the lifting cage and the base.
16. The container of claim 1, further comprising one or more lifting lugs configured to allow a crane to lift the container.

17. The container of claim 1, wherein the base further comprises one or more fork lift eyes configured to allow a forklift to lift the container.
18. The container of claim 1, wherein the lifting cage further comprises one or more fork lift eyes configured to allow a forklift to lift the lifting cage.
19. The container of claim 1, wherein the lifting cage and base are formed of structural members.
20. The container of claim 19, wherein the structural members further comprise a tubular member.
21. The container of claim 19, wherein there is one or more inner members between the structural members of the lifting cage.
22. The container of claim 21, wherein the inner members further comprise sheet metal.
23. The container of claim 1, wherein the base further comprises a four sided structural frame formed of four base structural members.
24. A method for transporting a subsea control package, comprising:
 - placing a portion of the subsea control package on a base;
 - securing the portion of the control package to the base;
 - lowering a lifting cage over the portion of the control package and the base;
 - engaging the lifting cage to the base;
 - locking the base to the lifting cage to form a container housing the portion of the subsea control package;
 - lifting the container onto a vessel;
 - sailing the vessel to the offshore platform;
 - engaging one or more lifting lugs on the container with a hoisting member; and

lifting the container onto the offshore platform.

25. The method of claim 24, wherein securing the portion of the control package to the base further comprises engaging one or more legs of a lower pod of the subsea control package to one or more receiving members on the base.

26. The method of claim 25, further comprising locking the lower pod to the receiving members by moving a rod through an aperture in the receiving members.

27. The method of claim 25, wherein securing the portion of the control package to the base further comprises:

removing the lower pod from the receiving members;

placing a portion of a pod clamp member in the receiving members;

placing an upper pod on the base wherein a lip of the upper pod is located above a top of the pod clamp member; and

securing a top portion of the lip with an upper clamp frame by coupling the upper clamp frame to the pod clamp member.

28. An container for transporting a control package, comprising:

a base;

a lifting cage configured to couple to the base thereby forming the container for storing at least a portion of the control package, wherein the control package comprises an upper pod and a lower pod; and

a pod support means for securing the upper pod and lower pod to the base.

29. The container of claim 28, further comprising a storage device configured to store a portion of the pod support means when the portion is not in use.

30. The container of claim 28, further comprising a container lock configured to lock the lifting cage to the base for transport and storage.

31. The container of claim 28, further comprising one or more fork lift eyes located on the lifting cage for raising and lowering the lifting cage.

32. A container for transporting an upper pod and a lower pod of a subsea control package, comprising:

- a base, the base comprising:

- a structural frame;

- one or more receiving members;

- one or more base lock portions;

- a lifting cage, the lifting cage comprising:

- a structural frame;

- one or more lifting cage lock portions;

- one or more lifting lugs for lifting the lifting cage off of the base;

- a pod support device configured to secure the upper pod and the lower pod to the base, the pod support device comprising:

- a pod fastening device configured to fasten one or more legs of the lower pod to the one or more receiving members; and

- a pod clamp member a portion of which is configured to secure into the one or more receiving members when the lower pod legs are not secured to the receiving members and wherein the pod clamp member is configured to engage at least a portion of the upper pod thereby securing the upper pod to the base.

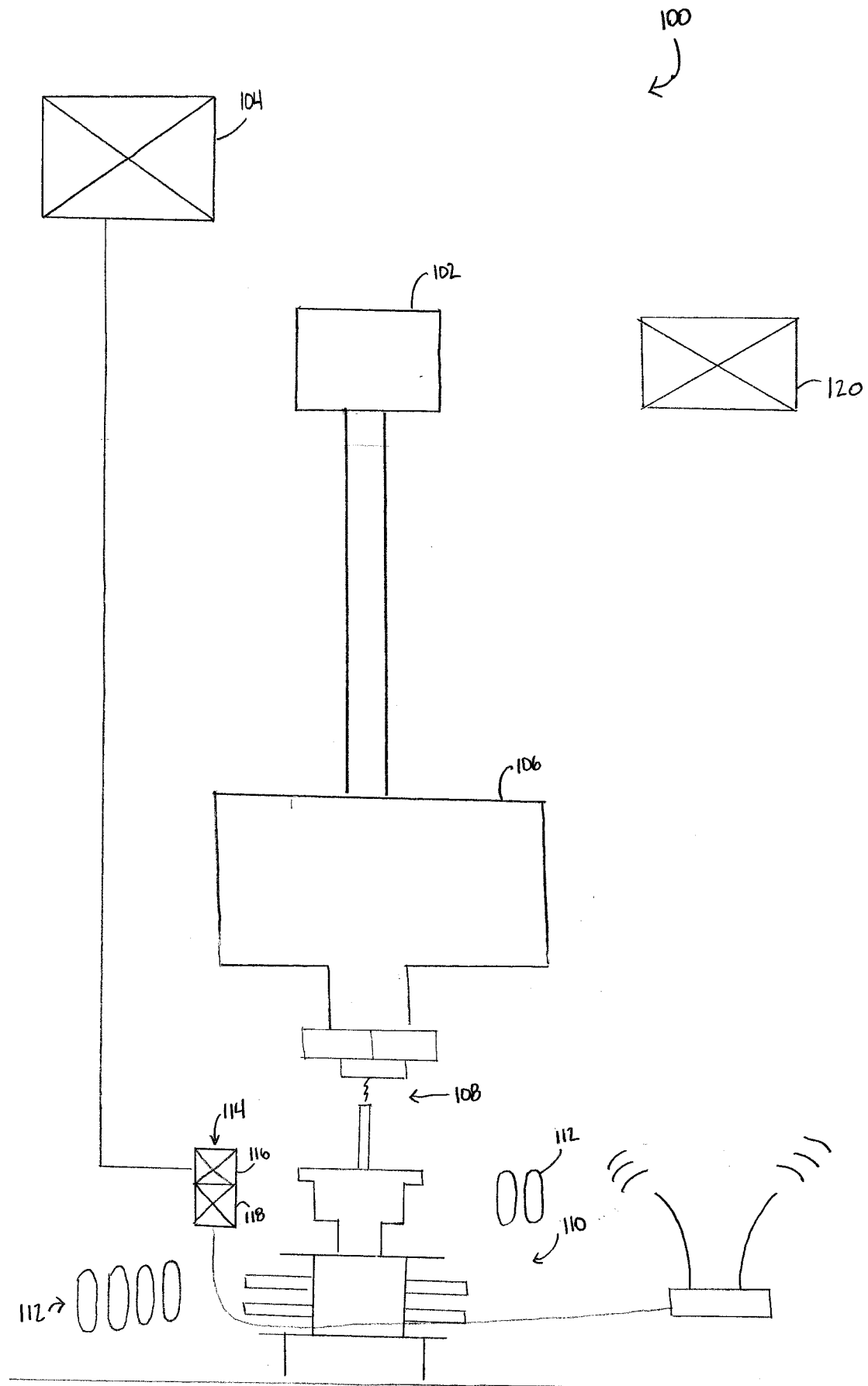


FIG. 1

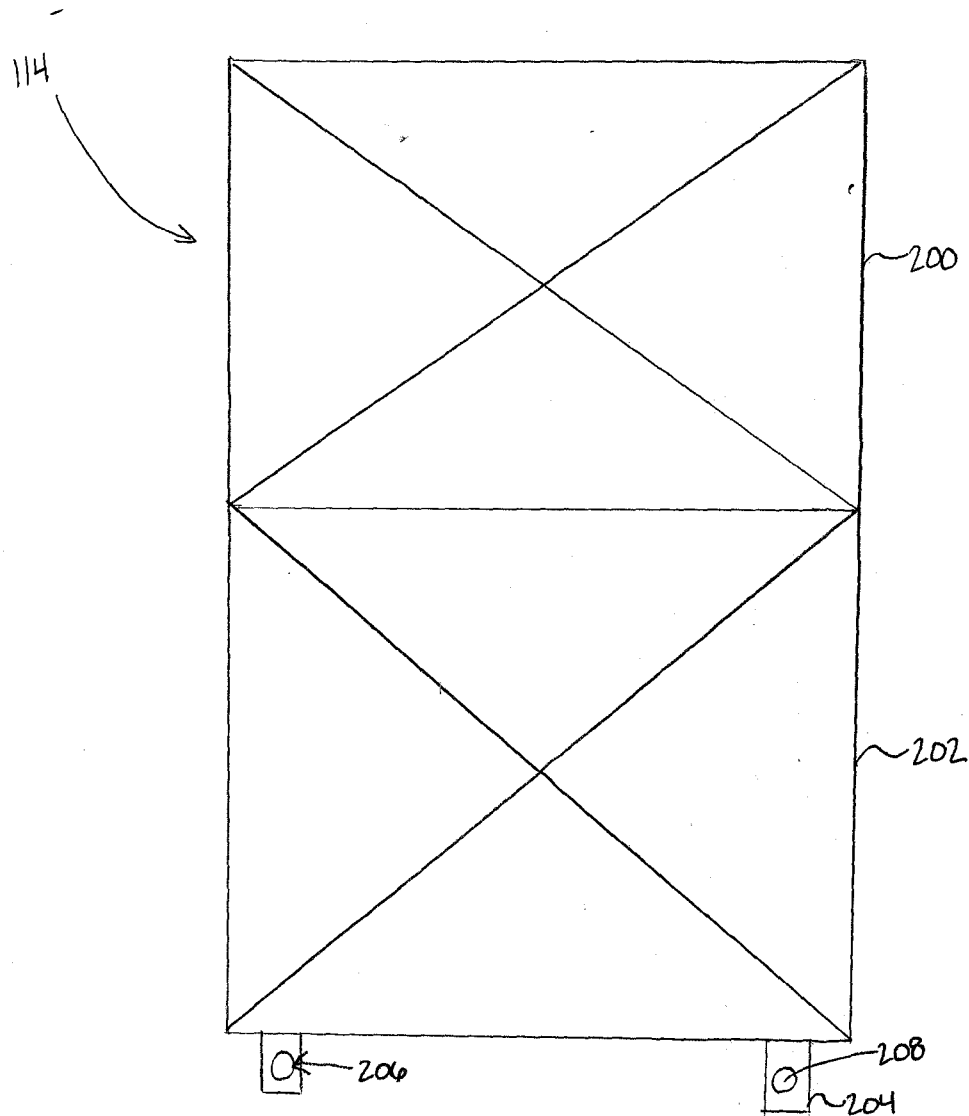
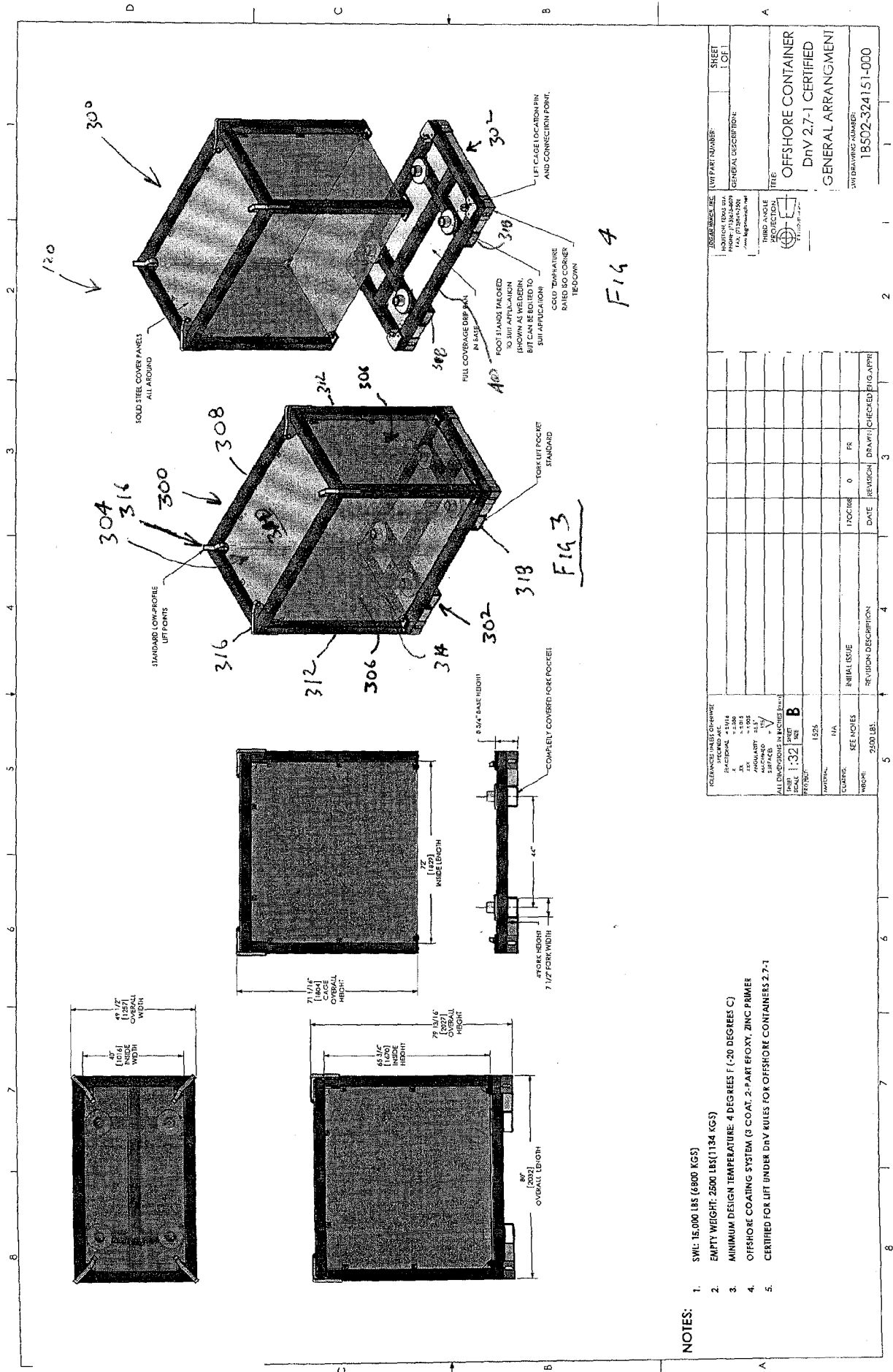


FIG. 2



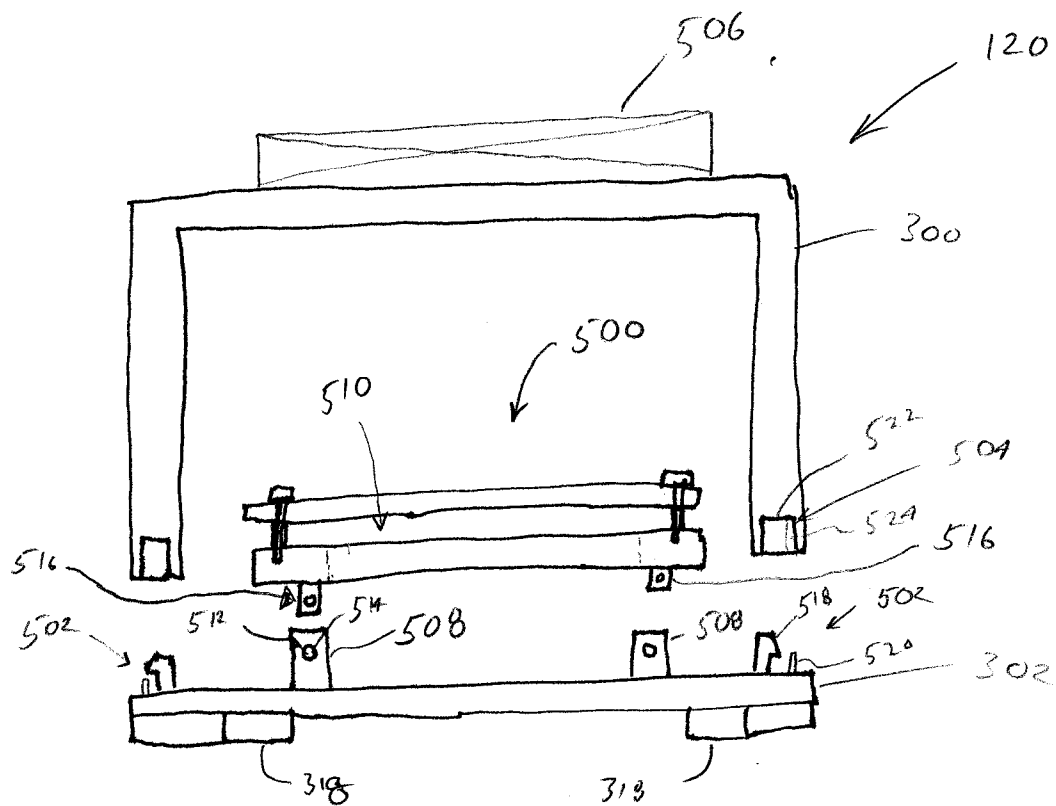


FIG 5A

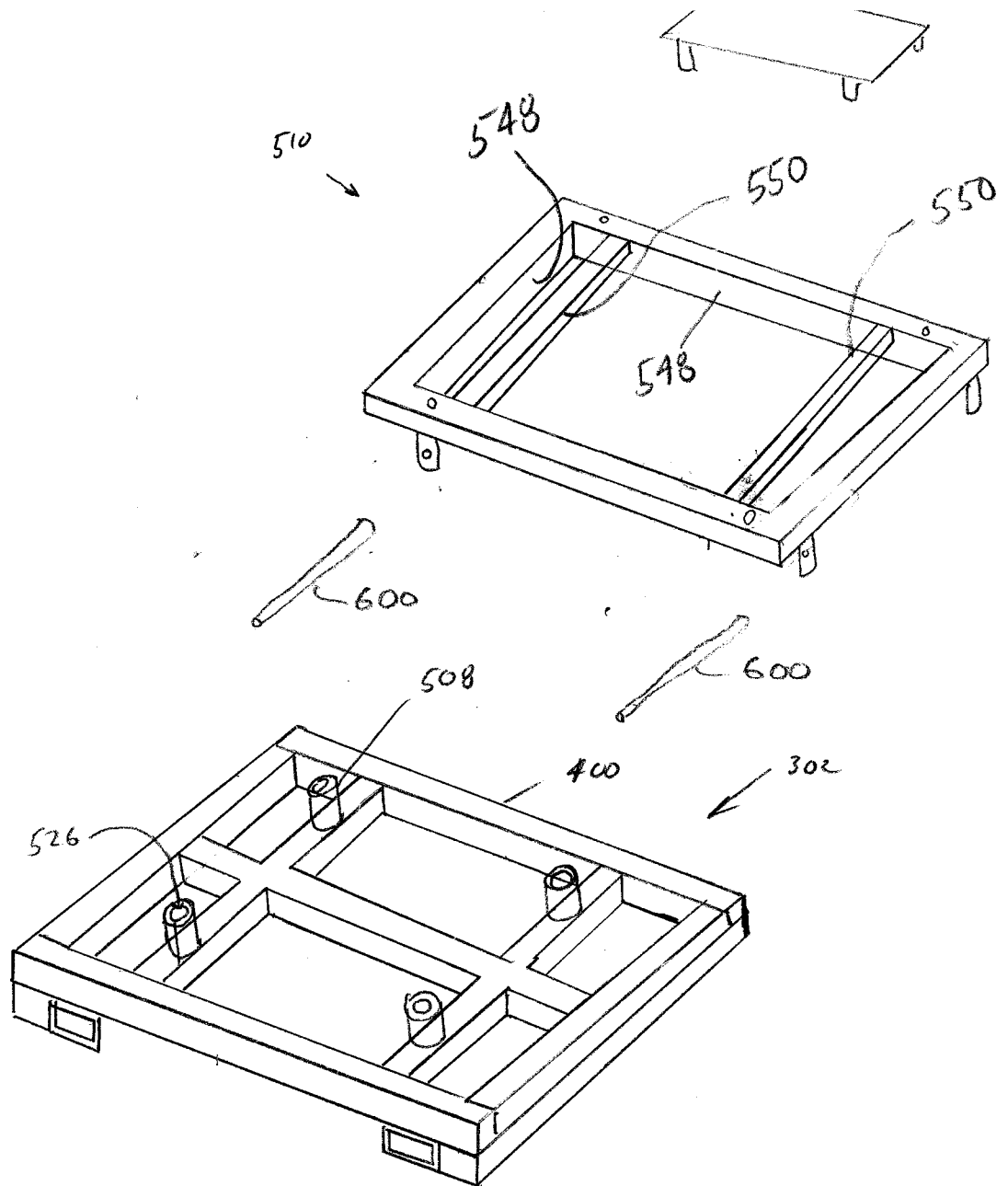
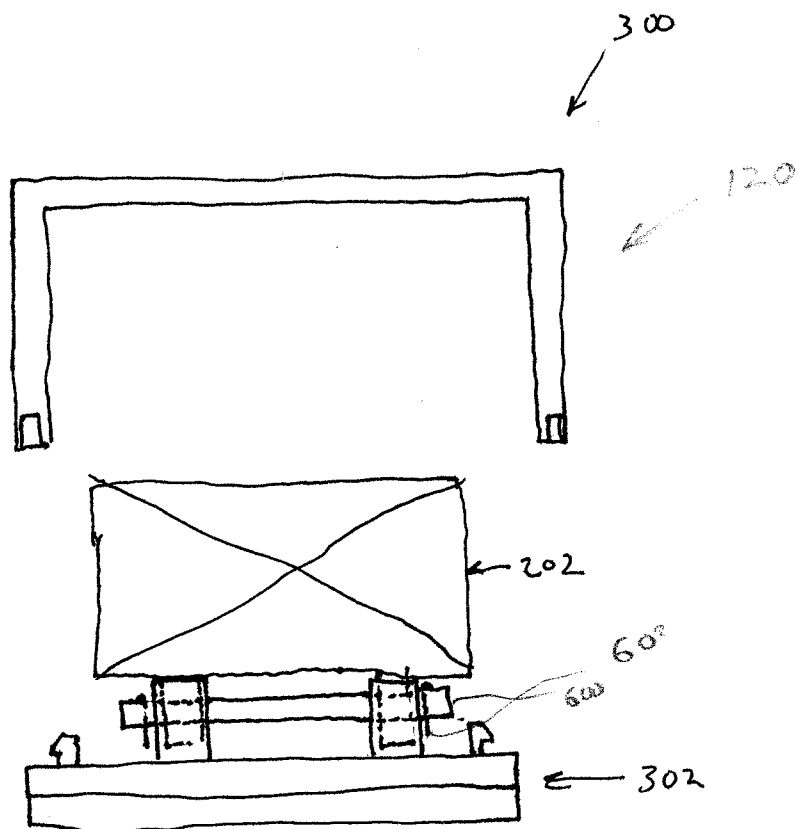
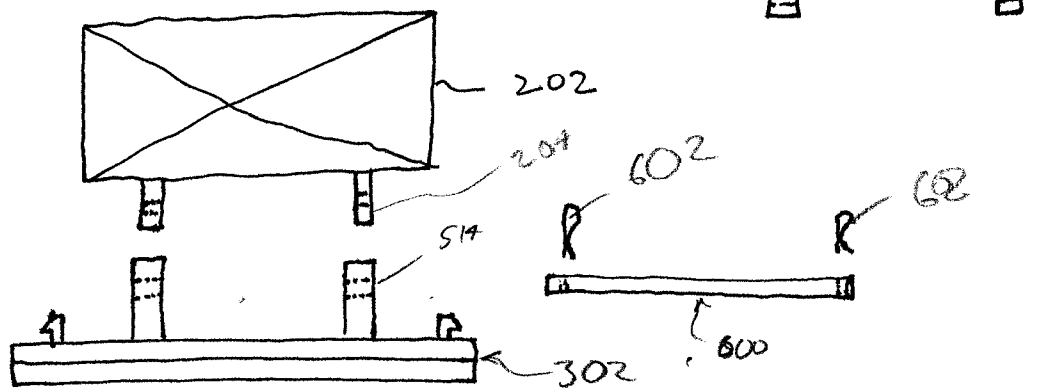


FIG 5B



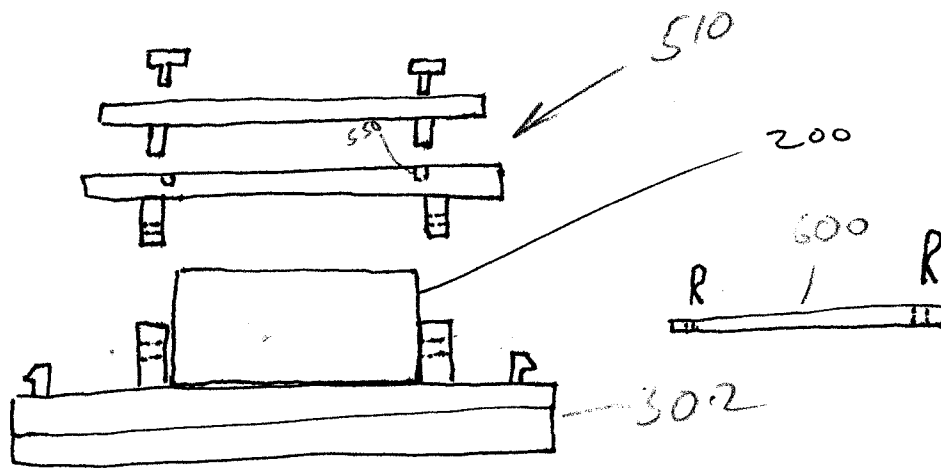


FIG 7A

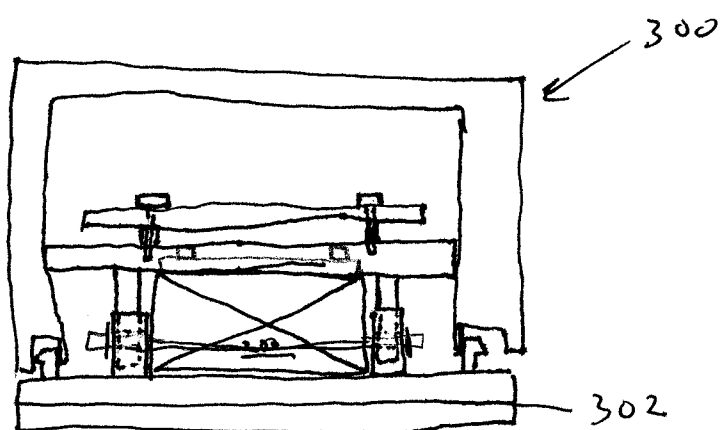


FIG 7B

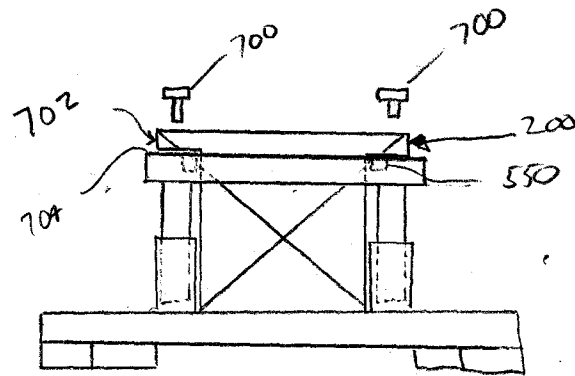


FIG 7D

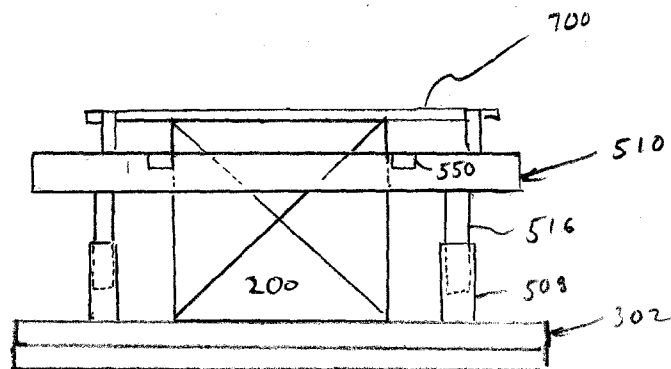


FIG 7C

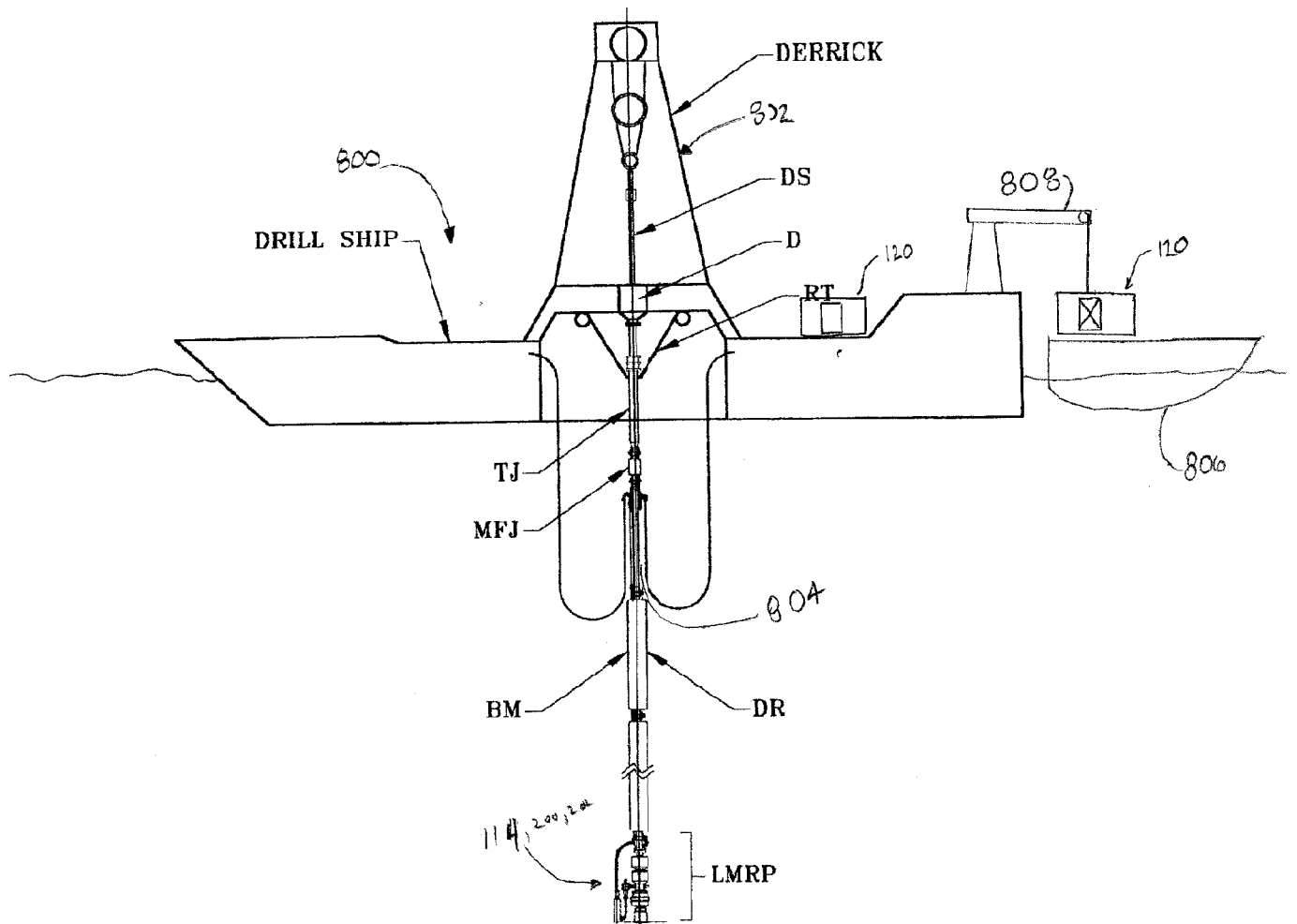


FIG. 8