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Vernède et al.

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[54] **MARINE CARGO VESSEL**

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[52] **U.S. Cl.** **114/43.5,** 114/61

[51] **Int. Cl.** **B63b 35/00,** B63b 1/12

[58] **Field of Search** ..... 114/43.5, .5 R, 61, 72

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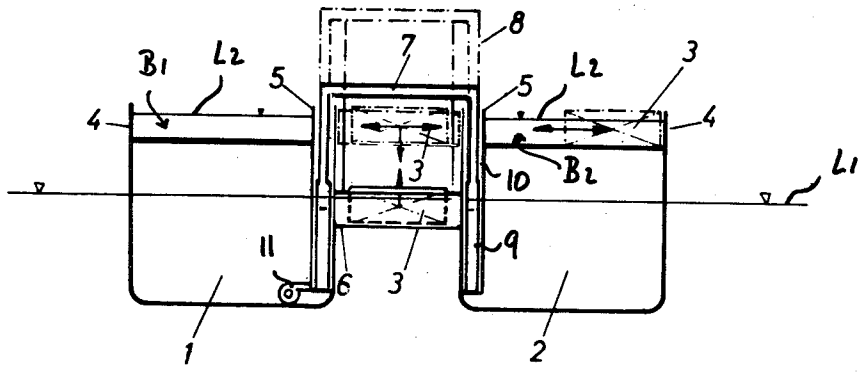
[57] **ABSTRACT**

A marine cargo vessel has two parallel hulls which are connected by a bridging structure. At least some of the interior decks in the hulls can be flooded and sluice gates in the hulls connect the interior decks with the exterior of the hulls at a level above the water line. An outwardly open receptacle capable of containing water and containing at least one floatable container at a time, can be moved vertically from the water line to the level of the sluice gates through which it can be placed in communication with the interior of the floodable decks. Thus, containers can be floated into and out of the decks for loading and unloading.

13 Claims, 13 Drawing Figures



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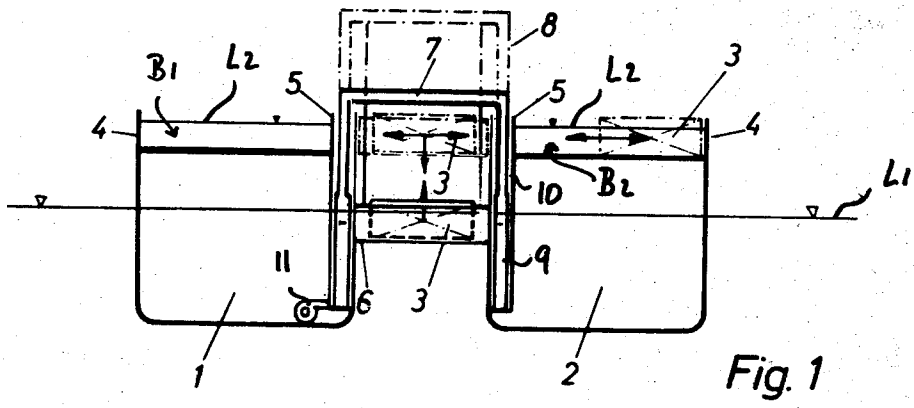

Fig. 1

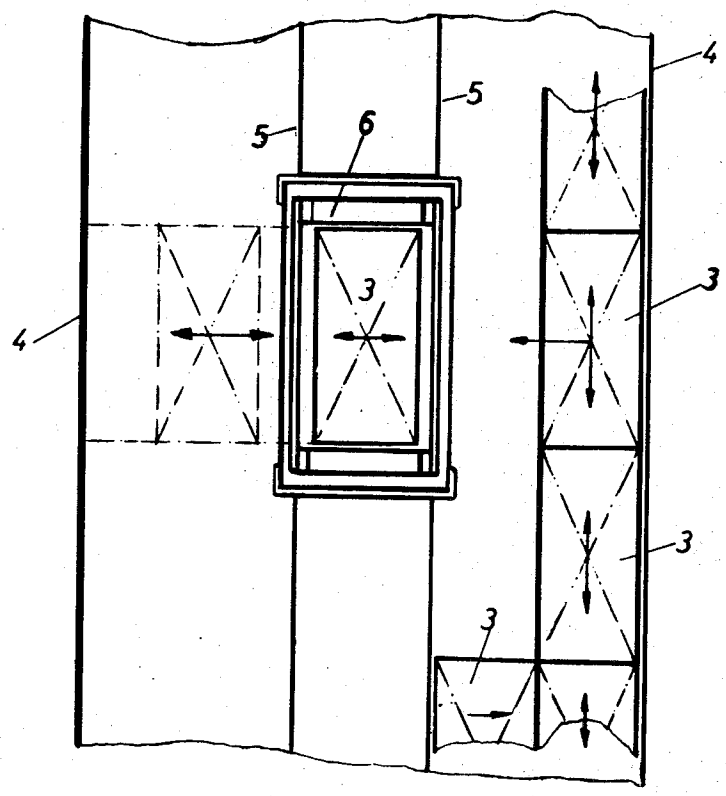

Fig. 2

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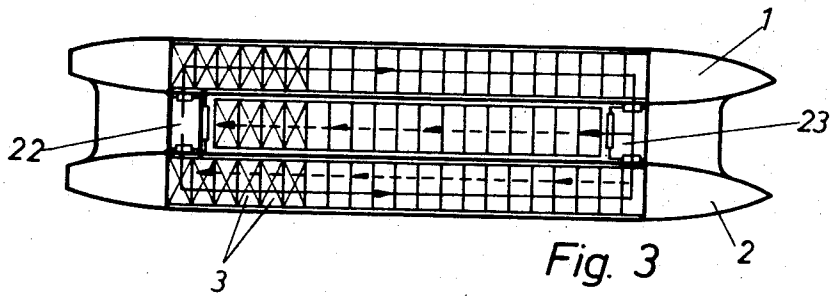

Fig. 3

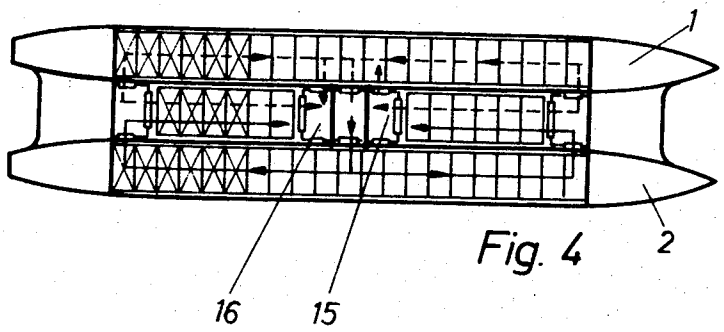

Fig. 4

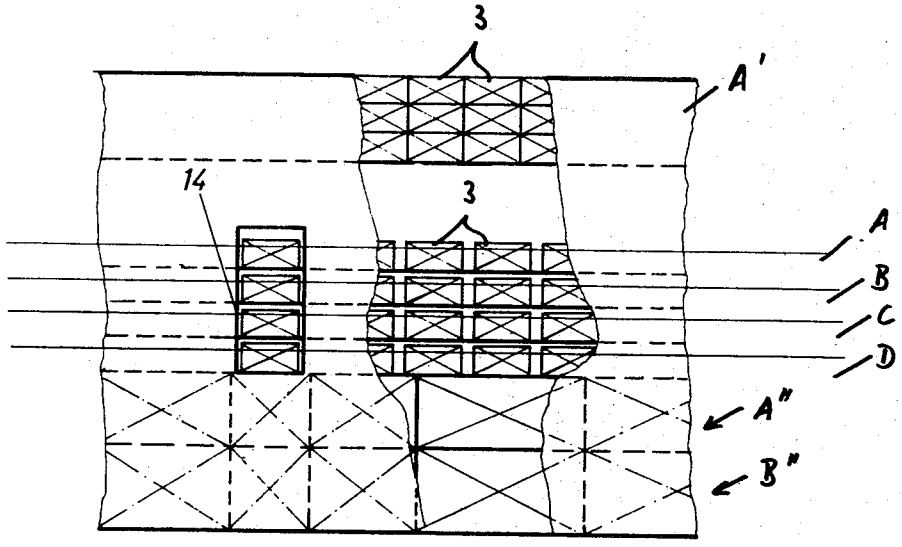

Fig. 5

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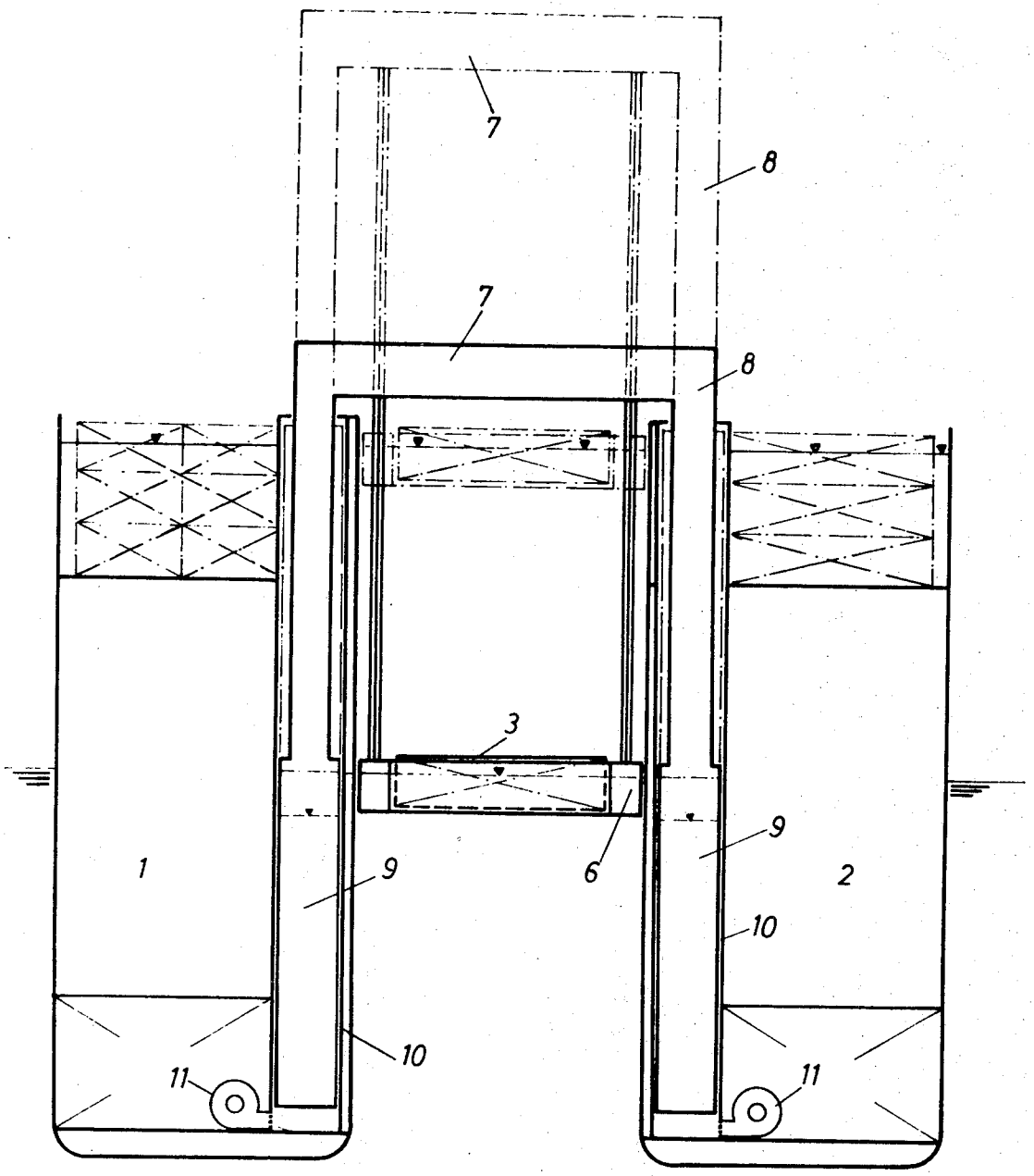

Fig. 6

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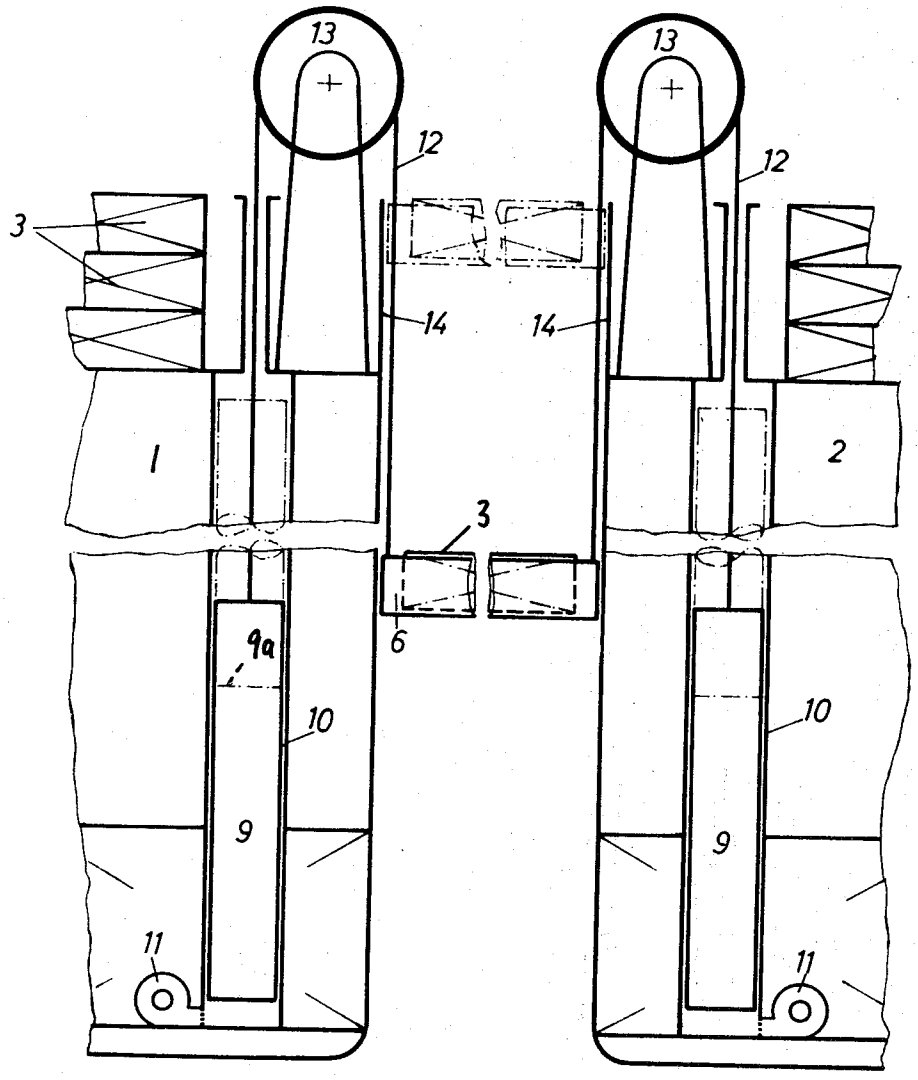

Fig. 7

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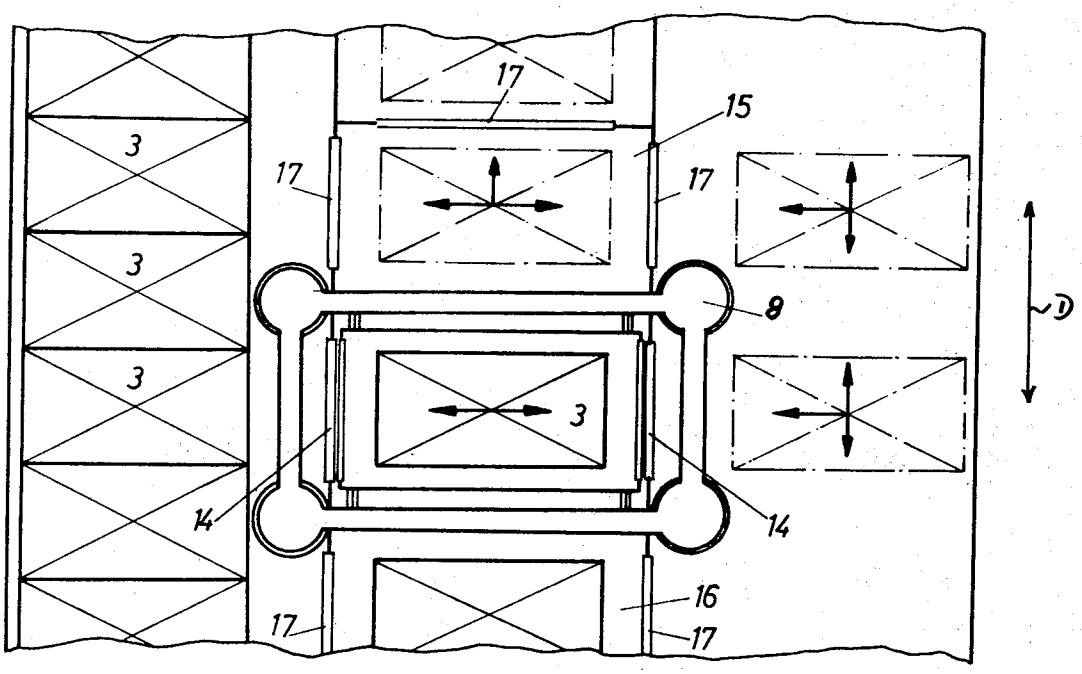

Fig. 8

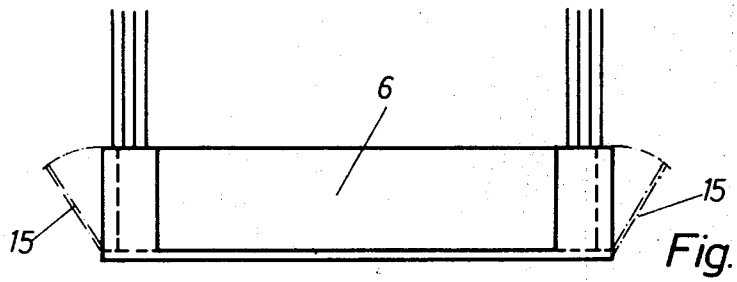

Fig. 9

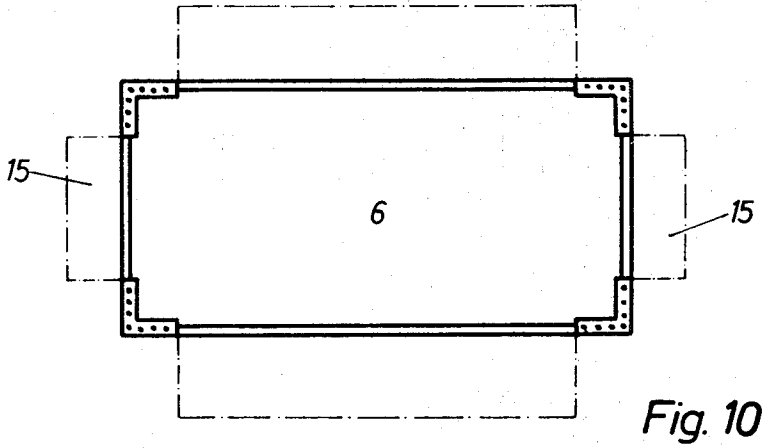

Fig. 10

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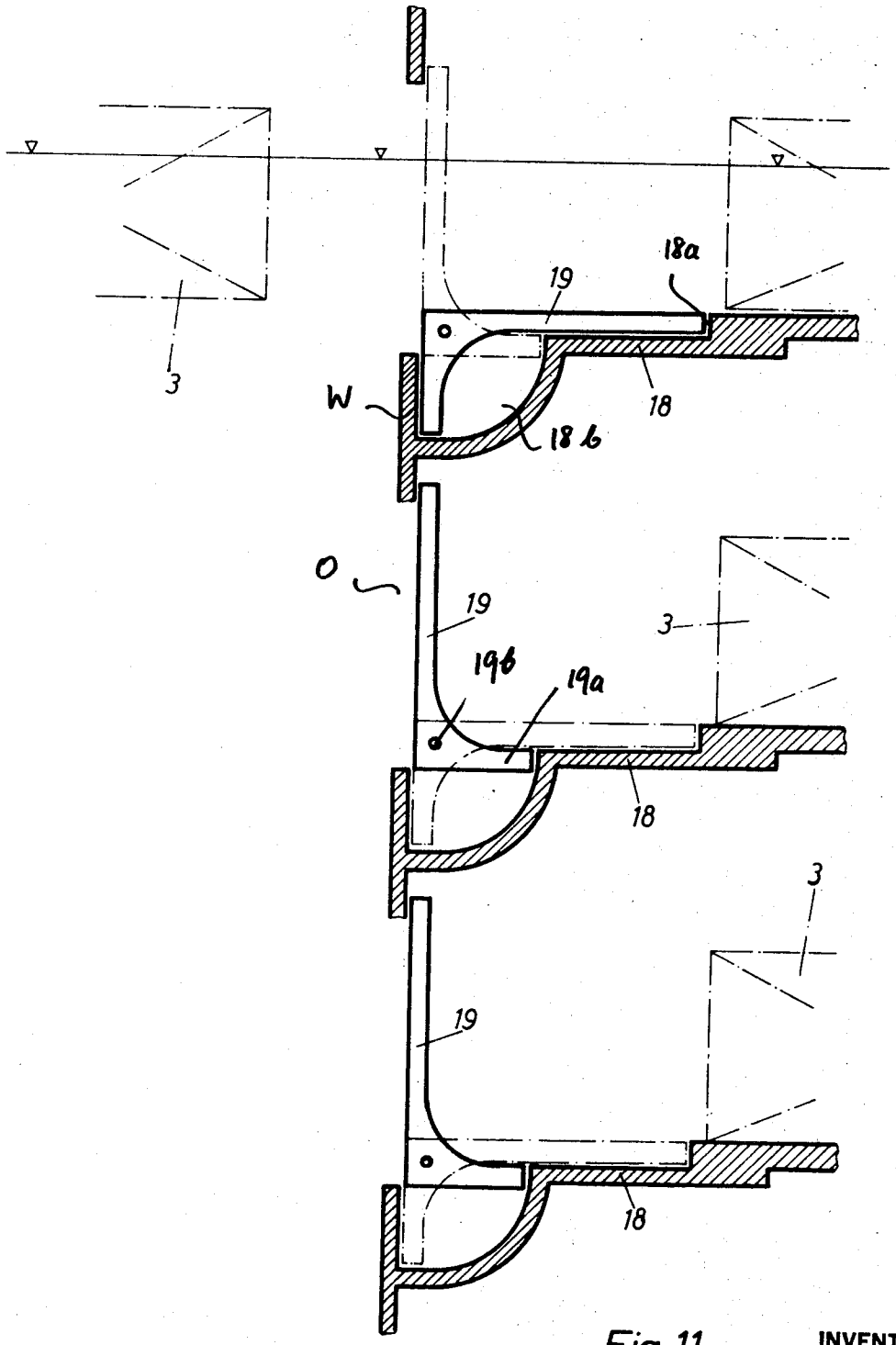

Fig. 11

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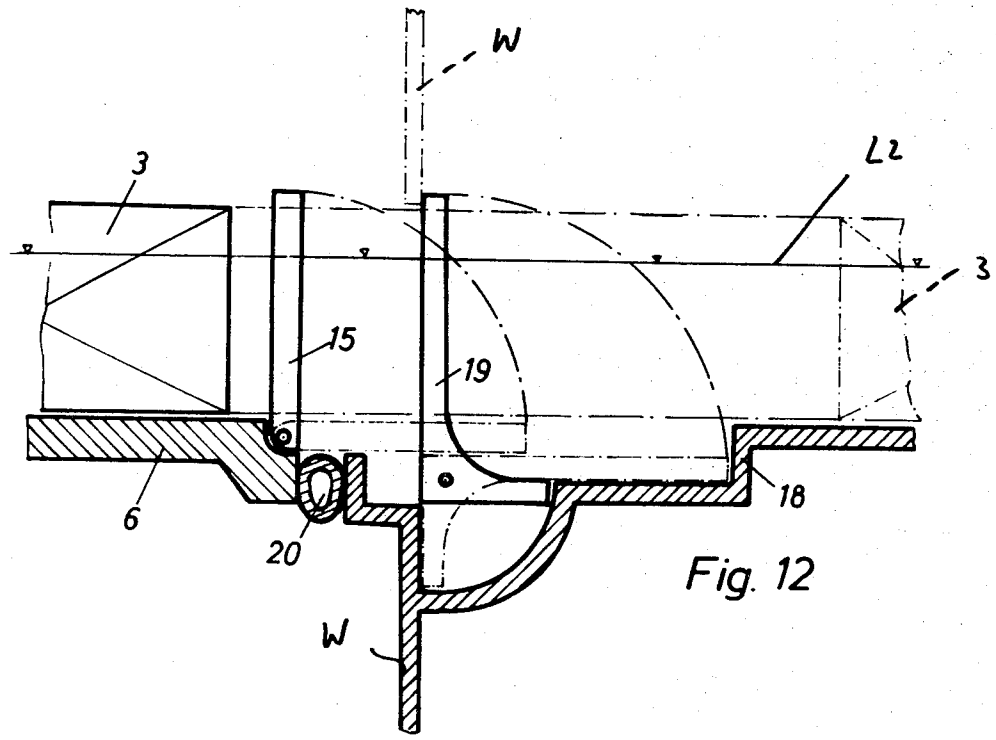

Fig. 12

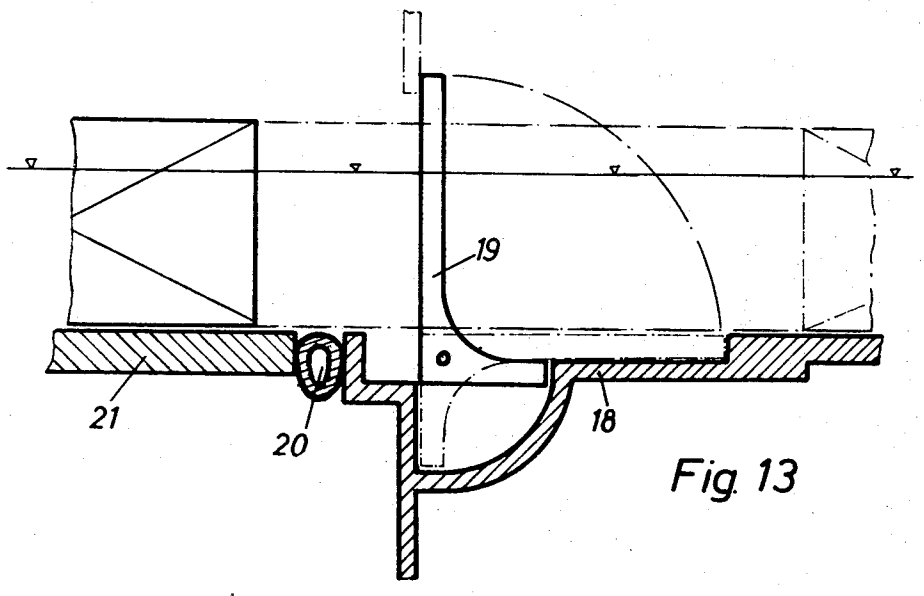

Fig. 13

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BACKGROUND OF THE INVENTION

The present invention relates generally to a marine cargo vessel and more particularly to a marine cargo vessel for transporting floatable containers.

In recent years, one of the innovations in the waterborne transportation of cargo has been the creation of the so-called LASH-type ships. LASH is an acronym standing for "Lighter Aboard Ship" and indicates a type of cargo vessel which is capable of transporting floatable containers, such as lighters, barges and the like. With this type of vessel a pier is no longer necessary for loading and unloading. Instead, the containers are floated —either propelled by their own power source or pulled by a suitable tug or the like— from land to the cargo vessel where they are loaded aboard. The vessel may be anchored far out in a harbor or, just to mention another possible example, it may be anchored off the coast in the region where an inland waterway merges into the ocean so that barges or similar floatable containers can be brought down the waterway from inland and loaded aboard the vessel. Of course, the discharge or unloading is carried out in reverse sequence and, again, requires no pier for the unloading.

Despite the self-evident advantages brought about by the development of LASH-type vessels, there are certain disadvantages inherent in the ones known heretofore which create problems. In particular, loading and unloading of vessels with the barges or lighters poses difficulties which in large measure result from the fact that barges —as all conceivable types of floatable containers which can be utilized under these circumstances will hereafter be called for the sake of convenience— which are large enough to make their use economical, are necessarily very heavy. It is known to provide one LASH-type vessel with a portal crane which can move along the upper deck of the vessel and which is capable of lifting sufficiently heavy loads —for instance on the order of 500 tons— and which plucks the barges out of the water or deposits them in the water, in the region of the stern of the vessel. This construction has certain disadvantages, namely high installation costs, undesired shifts in the trim of the vessel every time a barge is either loaded or unloaded, relatively long loading and unloading times, and the impossibility to stow the barges independently and in several vertically superimposed decks.

An attempt has already been made to overcome these problems by providing, in another prior-art construction, a LASH-type vessel which is provided in the region of its stern with gates through which the barges can float into and out of the vessel hull. Within the hull the barges are engaged by a lifting system utilizing synchronously driven winches, and are raised or lowered depending on whether they are to be loaded or unloaded. During loading, and upon reaching the level of the deck on which the respective barge is to be stowed, the barge is deposited on a hydraulically operated carriage which moves along deck rails, and is then dragged into the interior of the ship where it is deposited at a desired place with the carriage then returning to receive the next barge. In this construction the problems inherent in the provision of the portal crane are avoided. On the other hand, the time required for loading and unloading is even longer than in the preceding art and the constant changes in the trim of the vessel —which are already objectionable in the preceding art— are not avoided in this last-mentioned prior-art construction either.

It has also been suggested to float the barges from the surrounding body of water directly into the hull of the vessel to the position at which they are to be stowed for transportation, and subsequently during unloading to reverse this process. However, this would require flooding all the decks of the vessel and, given the existing state of the art, this is not possible without a total loss of the stability of the vessel. Thus, these suggestions which would avoid the use of elevator or lifting arrangements for bridging the distance between the level of the surrounding body of water and the level of the decks where the barges are to be stowed, thus far have remained purely theoretical and have not found any practical application. This of course means that the art as yet does not have a proposal for effectively overcoming the difficulties which have been outlined above with respect to the exising prior-art constructions which are presently in actual use.

SUMMARY OF THE INVENTION

It is, accordingly, an object of the present invention to overcome the aforementioned difficulties of the prior art.

More particularly it is an object of the present invention to provide an improved marine cargo vessel for the transportation of floatable containers, which is not possessed of these disadvantages.

A concomitant object of the present invention is to provide such an improved marine cargo vessel in which the floatable containers can be floated into and out of floodable deck portions without endangering the stability of the vessel in the water and without endangering thus the safety of the vessel. This of course includes that the initial stability of the vessel should not be allowed to deteriorate or to be negated.

In pursuance of the above objects, and of others which will become apparent hereafter, one feature of the invention resides in a marine cargo vessel which, briefly stated, comprises hull means having an inside and an outside. Deck means is provided at the inside of the hull means and is at least in part constructed as floodable basin means. Sluice means communicates with the outside and with the basin means in order to enable the conveyance of floatable containers into and out of the hull means by floatation.

By resorting to the present invention it is possible to float the barges into and out of the decks of the vessel without requiring a communicating connection between the flooded deck or deck portions and the body of water in which the vessel floats. The provision of sluices permits the floating of the barges into and out of the decks at any given level differential between the level of the body of water in which the vessel floats and the level of water on or in the flooded decks. Thus, sufficient righting moment is and remains present to maintain the positive initial stability of the vessel.

Insofar as the invention is realized in a single-hull vessel, it is advantageous to provide the sluice arrangement as close as possible to the region of the trimming center in order avoid the necessity for providing additional buoyancy tanks. This problem can be solved, for instance, by providing a hollow shaft located approxi-

mately midships and having in its circumferential wall closable gates located at the level of the cargo deck or decks, as well as a lateral gate which communicates with the exterior of the hull and through which barges can be floated into and out of the shaft.

However, we currently prefer to construct our novel cargo vessel as a multi-hull vessel because of the greater advantages afforded with respect to the stability and the trim of the vessel, as well as with respect to a stable and advantageous overall construction. If the vessel is constructed as a multi-hull vessel, then the sluice arrangement should be located between the hulls of the vessel. Particularly well suited is a vessel of the catamaran type having two transversely spaced hulls which are connected by a catamaran bridge. In such a construction the level equalization between the water level of the flooded decks or deck portions and the level of water surrounding the hulls can be afforded by a sluice chamber with sufficient height for the water, for instance a sluice shaft. In the case of a trimaran —that is a triple-hulled vessel as opposed to the catamaran-type vessel which has two hulls— the sluice shaft could for instance be located in the middle hull.

However, our investigations have shown that the arrangement of a sluice shaft in a catamaran-type vessel between the two hulls creates hydrodynamic problems which, according to a further embodiment of the invention, can be avoided by having one or several sluices (arranged in the region of the catamaran bridge) cooperate with a vertically displaceable conveying arrangement for the barges. This conveying arrangement may itself constitute a part of the sluice chamber in order to make the construction as inexpensive as possible by reducing the technical difficulties involved in its construction. The raising and lowering of the barges can be effected on a platform which can itself constitute the bottom wall of the sluice chamber. However, this arrangement requires that the sluice chamber must first be filled with water before a barge can be floated into and out of the same, and this water must be pumped which of course requires an additional technical expenditure.

Therefore we currently prefer an embodiment in which the lifting device is configurated as an upwardly open receptacle which is guided for vertical movement between the laterally adjacent hulls, and the side walls of which have a height which is greater than the maximum level of submersion of the barges themselves. The receptacle has movable side wall portions and can be moved into registry with gates communicating with the floodable decks or deck portions, sealing means being provided for establishing a sealing connection between the exterior of the hulls around the gates and the receptacle, so that the latter constitutes the actual sluice chamber. After the gates and the movable side wall portion of the receptacle are opened so that the latter communicates with the interior of the respective deck, a barge can be floated into or out of the receptacle for further transportation. Of course it is clear that such a receptacle can at least in theory be so constructed that it can hold more than a single barge at a time.

By resorting to the present invention unnecessary losses of time during loading and unloading are avoided. This is particularly true if the receptacle can hold more than one barge at a time. With this construction the trim of the vessel is not adversely affected and, generally speaking, no undesirable losses of water from the interior of the flooded decks or deck portions will take place. After the vessel is loaded, or at least the decks which are intended to be loaded, only a small residual quantity of water will remain in the floodable deck or decks between the barges stowed therein, and this residual quantity of water must be either permitted to escape or must be pumped out. Because it has only a small free surface this residual quantity of water is without particular importance for the stability of the vessel so that the floodable decks can be dried or flooded either after or immediately before the goal of the trip has been reached, but still during the travelling of the vessel, in order to further reduce the time required for cargo-handling purposes.

We find it advantageous for the length of the receptacle to correspond approximately to the width of the catamaran bridge structure, so that at its opposite end faces —which are respectively juxtaposed with the two hulls— sealing means may be provided at the receptacle which can be connected with the frames of two transversely registering gates in the two hulls in order to permit simultaneous or selected access from the receptacle to either or both of the hulls. It is advantageous if, at least in its uppermost position, the receptacle engages with a suitable recess or other means provided for this purpose in the catamaran bridge structure, so that it can be made fast with the same and the bridge will thus provide a planar surface.

Raising and lowering of the conveying arrangement —whether it be a receptacle or other means for the purpose— may be carried out by connecting it with floats which can be raised and lowered in upright tanks provided in the hulls of the vessel. Both the floats and the upright tanks are evenly distributed in both hulls and so constructed that the floats will have a vertical travel path in the tanks which approximately corresponds to the maximum lifting height required for the lift arrangement. The accommodation of such floats and tanks in the hulls of a catamaran-type vessel presents no problem and the lifting forces in such an arrangement are provided by the buoyance effect. The transmission of the buoyancy of the floats to the platform, receptacle or the like can be effected by connecting the floats with a portal construction provided at its upper end with traverse members to which the receptacle or the like is connected, as by being suspended therefrom. On the other hand, suitable supports which project upwardly above the tanks and are provided in the region of their upper ends with reversing wheels or pulleys, about which cables, chains or the like are trained which are connected at one end with the receptacle or the like and at the other end with one of the floats, provide a reverse effect than what has been just set forth above. It is also possible to provide the floats as hollow containers which can be filled with water and, when so filled, have a sufficient weight to lift the receptacle or similar means to the necessary level. In this case the floats will again be positioned in tanks and of course changes in the level of the receptacle can be effected by varying the amount of water which is admitted into the hollow floats and/or tanks. However, electrical or other lift means can also be employed and are fully within the concept of the present invention.

Naturally, it is not necessary to provide only a single sluice arrangement. If that is the case, then a desire to avoid the provision of additional trim tanks would sug-

gest that such a single arrangement be located as close as possible to the trim center of the vessel.

A more speedy and economical loading and unloading of the vessel can, however, be achieved by providing several individual sluice arrangements with their associated lifting devices. In such a construction at least two such arrangements may be provided at opposite ends of the catamaran bridge and each be associated with its own lifting device. In fact, an additional sluice arrangement and lifting device may be located intermediate the two ends approximately at the middle of the catamaran bridge. Such a construction makes it particularly easy to accommodate the loading to specific requirements, by utilizing any or all of the various sluice arrangements.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a highly diagrammatic cross section through a catamaran-type of cargo vessel embodying the invention;

FIG. **2** is a fragmentary top-plan view of FIG. **1**;

FIG. **3** is a top-plan view of a further cargo vessel embodying the invention;

FIG. **4** is a view similar to FIG. **3** illustrating yet an additional embodiment;

FIG. **5** is a fragmentary side-elevational view in diagrammatic illustration, with the side wall partially broken away, of an additional embodiment of the invention;

FIG. **6** is a view similar to FIG. **1** but on an enlarged scale illustrating details of a lifting arrangement;

FIG. **7** is a view similar to FIG. **6** but illustrating a different embodiment;

FIG. **8** is a fragmentary top-plan view of FIG. **7**;

FIG. **9** is a side-elevational diagrammatic detail view of a receptacle according to the present invention;

FIG. **10** is a top-plan view of FIG. **9**;

FIG. **11** is a fragmentary diagrammatic detail view on an enlarged scale, illustrating in partially sectioned elevation a further embodiment of the invention;

FIG. **12** is a view analagous to FIG. **11** illustrating an additional embodiment of the invention; and

FIG. **13** is a view similar to FIG. **12** but illustrating yet another embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Before discussing the drawing in detail it is emphasized that all illustrations are highly diagrammatic because it is believed that this is all that is necessary for proper understanding of the invention. In different views different widely diverging scales have been employed to indicate that the size arrangements both of the novel cargo vessel itself and of the barges or other containers which it can transport, may vary greatly without departing from the context of the present invention.

Keeping this in mind, and discussing now firstly the embodiment illustrated in FIGS. **1** and **2**, it will be seen that in this embodiment we have illustrated a marine cargo vessel of the catamaran type, that is a vessel having two transversely spaced hulls **1** and **2**. They are connected by a catamaran bridge and together with the same provide a loading deck which extends over the entire width of the vessel.

Barges **3**, also shown only diagrammatically, are to be stowed on this deck either individually or in stacked relationship. The deck is surrounded by the bulwark **4** which defines with the deck a basin means which may be subdivided by longitudinally extending bulkheads **5** or the like into individual basins B_1 and B_2. Of course, other ways of subdividing can also be chosen and what has been illustrated is for exemplary purposes only. In any case, the basins B_1 and B_2 may be either flooded individually, or jointly.

FIGS. **1** and **2** illustrate in diagrammatic form a sluice arrangement and a lifting arrangement for transporting the barges **3** from the level L_1 of the water line in which the vessel floats, to the level of the basins B_1, B_2. In the illustrated embodiment there is provided an upwardly open receptacle **6** of generally rectangular outline which is arranged in the region of the catamaran bridge between the hulls **1** and **2** and whose length corresponds substantially to the width of the catamaran bridge. The receptacle **6** is suspended as by means of cables, chains or the like from the upper traverse portions **7** of a portal construction **8.**

FIGS. **6** and **8** indicate details of the portal construction on a larger scale and in more detail. It will be seen that the portal construction is mounted on a plurality of floats **9** which are accommodated in upright flotation tanks **10** which are mounted in the two hulls **1** and **2** evenly distributed with respect to the latter. The floats **9** can freely rise and descend in the flotation tanks **10** and it will be appreciated that the dimensioning of the floats **9** and of the tanks **10** will depend upon the requisite height to which the receptacle **6** must be raised. Pumps **11** serve for introducing or removing water from the interior of the tank **10.**

In the embodiment illustrated in FIG. **7** the reverse operation from that shown in FIGS. **6** and **8** is obtained. Specifically, in FIG. **7** the receptacle **6** is connected with the floats **9** by means of a plurality of ropes, cables or the like **12** which are secured at one end to the receptacle **6** and, after passing around reversing wheels or pulleys **13** provided at the upper ends of uprights as illustrated —are connected with their other ends to the floats **9.** In this case the floats **9** are constructed as hollow containers which can be filled with water, as is diagrammatically indicated at **9***a*. They are again movable vertically in the upright guides or tanks **10** and, when they are filled to requisite extent with water, they will descend to the lower level illustrated and thereby raise the receptacle **6** with its barge **3** therein to the necessary level. Conversely, when water is withdrawn —again by the illustrated pumps **11**— from the interior of the floats **9,** the latter will rise and the receptacle **6** will descend. As also shown in FIG. **7,** liquid can also be introduced and withdrawn from the tanks **10** themselves to thereby aid in the rising or descending of the floats **9,** and in fact this can be the only measure with the introduction of liquid into the floats **9** being omitted if desired.

As the drawing shows, for instance FIG. **7,** the receptacle **6** in combination with the diagrammatically illustrated gates **14** provided on the inner sides of the hulls

1 and 2, constitutes the sluice, with the receptacle 6 constituting the actual sluice chamber and the gate 14 constituting the sluice gate. It will be appreciated that the gates 14 may be of various different types, for instance they may be of the sliding type, they may be of the pivotal or tilting type or the like, and they are preferably operated electrically or mechanically. Also, several side wall portions of the receptacle 6 are movable so that they can be moved out of the way during loading and unloading of barges into and out of the receptacle 6. It is quite clear, of course, that before the gates 14 can be opened, a seal must be provided between the respective hulls 1 and 2 and the receptacle 6, so that none of the water accommodated in the flooded deck or decks of the vessel be permitted to escape.

In the embodiment of FIG. 8, already briefly mentioned above, the sluice is teamed with two initial chambers 15 and 16 which are located before and behind the sluice as seen with direction to the longitudinal extension D of the vessel. Gates 17 permit entry of barges into the chambers 15 and 16, and this arrangement particularly facilitates the loading and unloading and reduces the time required for this purpose. In such an embodiment all four side walls of the receptacle 6 must be made movable as shown in FIGS. 9 and 10.

In FIGS. 11, 12 and 13 we have shown some exemplary embodiments illustrating how the sealing between the hulls and the receptacle 6 can be accomplished. In FIG. 11, for instance, we have illustrated in a fragmentary detail view an embodiment of a vessel having several superimposed decks 18 on each of which barges 3 are to be stowed. The inner vertical wall W of the hull is here provided with openings O and with gates 19 for closing these openings. The gates each have an end portion 19*a* and at the juncture between their two arms or angled portions they are mounted for turning movement about a horizontal tilting axis 19*b*. When they are in their open position (see the uppermost gate 19 in FIG. 11) the gates are received in part in a recess 18*a* of the respective deck 18, whereas the angled portion 19*a* is received in a recess 18*b* of the deck 18. The portions 19*a* may also serve as a counterbalance to the remaining portion of the respective gate 19 and are provided with sealing means (not shown).

Suitable drives (not illustrated because they may be conventional) are provided and advantageously act upon the portions 19*a* to effect displacement of the gates 19 between the full-line closed position shown at the center of FIG. 11 and the full-line open position shown at the top of FIG. 11, with the respectively opposite position always being shown in broken lines.

In the embodiment of FIG. 12 we have illustrated a somewhat more complicated arrangement which, however, is reminiscent of the one shown in FIG. 11. FIG. 12 differs from FIG. 11 mainly in that the outer wall W of the hull is somewhat differently configurated in the region of the deck 18, and that a hose-type sealing element 20 is provided which seals the juncture between the wall W and the receptacle 6 one side wall of which is here illustrated and identified with reference numeral 15, and which side wall 15 can be clearly seen to be foldable down in order to permit free communication between the interior of the receptacle 6 and the deck 18. The hose element 20 may have high inherent elasticity and may, according to a further embodiment of the invention, be inflatable to provide a seal, or a better seal than otherwise possible.

In FIG. 3 we have illustrated an embodiment which is quite reminiscent of that shown in FIG. 12, except that here the receptacle 6 is replaced by a simple platform 21 with all other components being the same as before. The level L_2 illustrated in FIG. 12 —and of course valid also for FIGS. 11 and 13— identifies the level of liquid on or in the flooded decks 18.

Returning now to FIG. 3 it will be seen that in that Figure we have illustrated diagrammatically and in top-plan view one embodiment of the cargo vessel according to the present invention. In FIG. 3 we have shown the deck of a catmaran-type cargo vessel on which barges 3 can be stowed in three parallel rows with the direction of movement of the barges for loading and unloading purposes being indicated by the arrows. At the opposite ends of the catamaran bridge which connects the hulls 1 and 2 together, there are provided sluices and lifting devices in the regions identified with reference numerals 22 and 23, and these may be of the type described above with respect to FIGS. 1 and 2 and 6–13.

In FIG. 4 we have illustrated a further embodiment, again on hand of catamaran-type vessel, in which the sluice and the lifting arrangement are provided midships, that is in the region of the trim center of the vessel, and cooperate with the chambers 15 and 16 as illustrated and discussed with respect to FIG. 8 before.

In the side-elevational diagrammatic detail view of FIG. 5 we have attempted to illustrate the possibility that barges 3 may be arranged individually on several superimposed decks A'' and B''. Such an arrangement is reminiscent of the one discussed in detail with respect to FIG. 11.

In FIG. 5 we have further illustrated the possibility of stowing individual barges 3 on different superimposed decks A, B, C and D, but arranging the barges on each deck in such a manner that vertically superimposed barges form a stack. Finally, FIG. 5 also shows how the barges can be arranged in laterally adjacent stacks on one or more decks, one being shown and identified with reference numeral A'.

Naturally, the present invention is fully applicable not only to the primarily illustrated dual-hull catamarantype cargo vessels, but also to single-hull cargo vessels and to multiple-hull cargo vessels having more than two hulls.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above.

While the invention has been illustrated and described as embodied in a marine cargo vessel, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims:

1. A marine cargo vessel, comprising hull means including at least two transversely spaced connected hulls and having an inside, an outside and a waterline; deck means at the inside of said hull means and being at least in part constructed as floodable basin means; sluice means, including at least one sluice located between said hulls at a level above said waterline and communicating with said outside and with at least said basin means for enabling movement of floatable containers into and out of said hull means by flotation; and conveying means, including an upwardly open receptacle adapted to be filled with water and vertically displaceable between said hulls, for conveying said containers between said waterline and said level as well as vice versa.

2. A cargo vessel as defined in claim 1, said hull means comprising at least two transversely spaced hulls, and connecting means connecting said hulls with one another; and wherein said sluice means are located between and communicate with both of said hulls.

3. A cargo vessel as defined in claim 2, said connecting means constituting a bridging structure and connecting said hulls in catamaran fashion.

4. A cargo vessel as defined in claim 1, wherein said conveying means cooperates with and constitutes a part of said sluice when located at said level.

5. A cargo vessel as defined in claim 1, said sluice comprising at least one gate provided at said level in one of said hulls and facing the other of said hulls, and said receptacle being movable to and from a position in which it is in registry with said gate; and further comprising sealing means cooperating with said receptacle and said one hull for preventing the escape of liquid from said receptacle and said basin means to the outside of said vessel when said gate is open and said receptacle communicates with said basin means.

6. A cargo vessel as defined in claim 5; further comprising an additional gate provided in said other hull and located opposite said one gate so as to be in registry with said receptacle when the latter is in registry with said one gate; and wherein said sealing means also cooperates with said other hull for preventing the escape of liquid when said other gate is open.

7. A cargo vessel as defined in claim 5, said receptacle being adapted to accommodate liquid to a predetermined highest level, and comprising a plurality of sidewalls at least one of which is at least in part movable for establishing communication with said basin means through said one gate, said sidewalls having a height greater than said highest level.

8. A cargo vessel as defined in claim 5, further comprising a bridging structure having a predetermined width transversely of the elongation of said hulls, and said receptacle having transversely of the elongation of said hulls a length which corresponds at least substantially to said predetermined width and having opposite ends one of which registers with said one gate when said receptacle is in said position; and wherein said sealing means are provided on at least said one end and operative for sealingly engaging said one hull circumferentially of said one gate therein.

9. A cargo vessel as defined in claim 5, further comprising a bridging structure connecting said hulls, said bridging structure and said receptacle being provided with cooperating engaging portions which engage one another and rigidly connect said receptacle with said bridging structure when the former is in said position thereof.

10. A cargo vessel as defined in claim 1, further comprising a bridging structure extending longitudinally of said hulls and having one and an other endportion, said sluice and conveying means being located in the region of said one endportion; and further comprising an additional sluice and conveying means located in the region of said other endportion.

11. A marine cargo vessel, comprising hull means including at least two transversely spaced connected hulls and having an inside, an outside and a waterline; deck means at the inside of said hull means and being at least in part constructed as floodable basin means; sluice means, including at least one sluice located between said hulls at a level above said waterline and communicating with said outside and with at least said basin means for enabling movement of floatable containers into and out of said hull means by flotation; and conveying means for conveying said containers between said waterline and said level as well as vice versa, said conveying means comprising a support for containers to be conveyed, floodable tanks mounted in said hulls, floats received in said tanks and adapted to rise and descend therein in dependence upon the level of liquid in said tanks and connecting elements connecting said support with said floats so that said support rises and descends in correspondence with the level of liquid in said tanks.

12. A cargo vessel as defined in claim 11, said connecting elements being portal bridges having upright portions connected with floats in tanks provided in the respective hulls, and provided with upper ends, and transverse portions connecting said upper ends of said upright portions and having said support suspended therefrom.

13. A marine cargo vessel, comprising hull means including at least two transversely spaced connected hulls and having an inside, an outside and a waterline; deck means at the inside of said hull means and being at least in part constructed as floodable basin means; sluice means, including at least one sluice located between said hulls at a level above said waterline and communicating with said outside and with at least said basin means for enabling movement of floatable containers into and out of said hull means by flotation; and conveying means for conveying said containers between said waterline and said level as well as vice versa, said conveying means comprising a support for containers to be conveyed, upright tanks mounted in said hulls, hollow floodable elements received in the respective tanks for vertical displacement therein, upright structures extending upwardly of said tanks and carrying reversing pulleys, and elongated flexible connecting elements trained about the respective reversing pulleys and each having one endportion connected to said support and another endportion connected to one of said hollow floodable elements.

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