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[54] **DEVICE FOR TRANSLOADING FLOATING CONTAINERS**

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[52] **U.S. Cl.**.....**214/15 R,** 114/43.5

[51] **Int. Cl.**.....**B63b 27/16**

[58] **Field of Search**.....214/12, 13, 14, 15 R, 38 CA; 114/43.5

[56] **References Cited**

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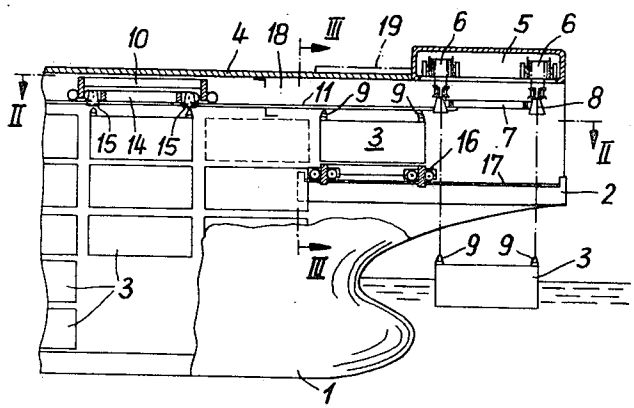
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[57] **ABSTRACT**

The specification discloses a transloading arrangement for a ship in which a first hoist is supported in the ship to travel along the hold thereof and at one end of the ship is located over a moveable platform. The platform is moveable in the ship from beneath the first hoist to beneath a second hoist. The second hoist adapted to move containers from above the platform in the vertical direction to and from the water. The deck of the ship is above the first hoist and platform and has a hatch through which a hoist independent of the first and second hoists can gain access to the platform.

6 Claims, 4 Drawing Figures



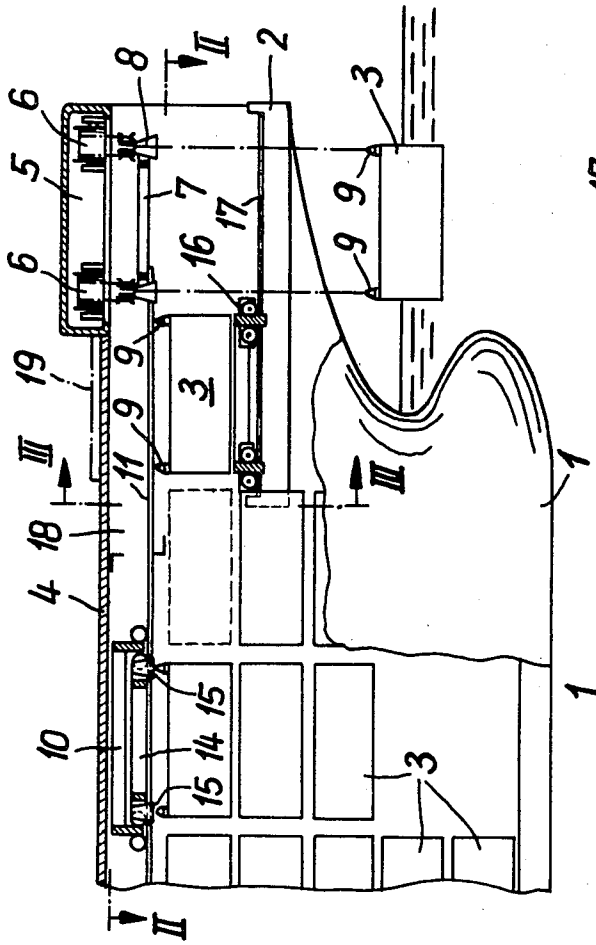


FIG. 1

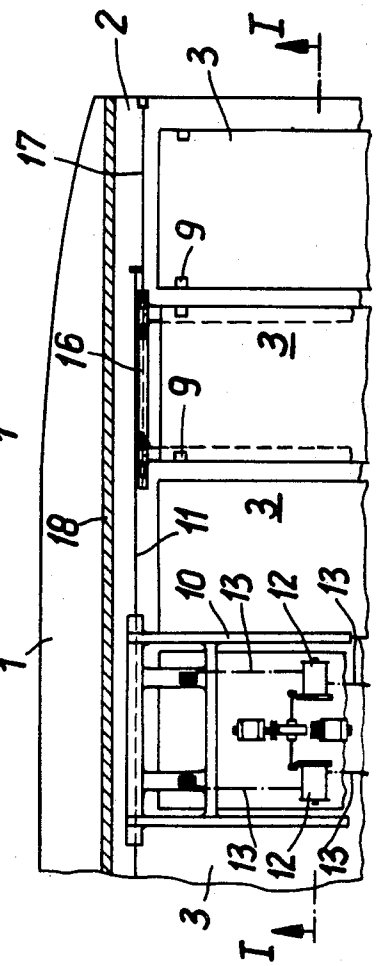
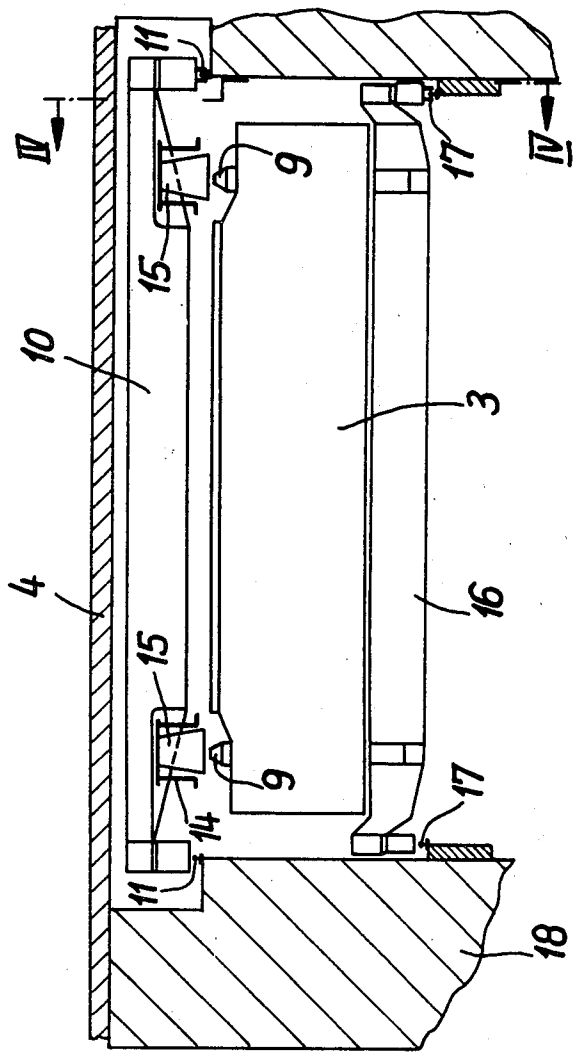


FIG. 2

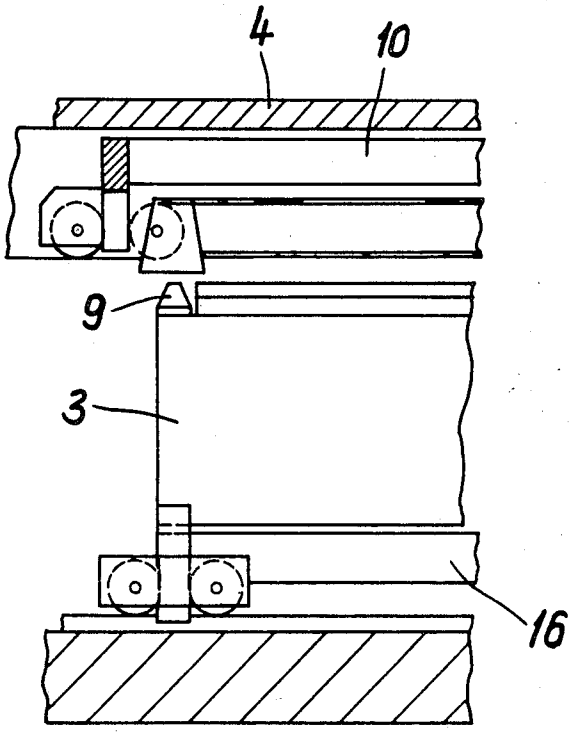
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FIG. 3



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FIG. 4



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DEVICE FOR TRANSLOADING FLOATING CONTAINERS

The present invention relates to a device for transloading floating containers, with a hoisting equipment located on a ship, by means of which a container can from one end of the ship be lifted out of the water or can be lowered into the water.

According to heretofore known suggestion, the hoisting equipment comprises a gantry crane which is movable on rails over hatches of the entire cargo or loading compartment of the ship. The rails extend at one end of the ship to beams which protrude from the ship in a fork-like manner and between which a container can by means of the gantry crane be lifted out of the water or can be lowered into the water.

It has also been suggested so to design the device that the hoisting equipment which serves for lifting a container out of the water or lowering a container into the water always remains at respective end of the ship, preferably the bow, and that a traveling crane is employed for distributing the containers lifted out of the water by the hoisting equipment over the cargo compartment, which travelling crane is movable closely below the deck of the ship in the longitudinal direction of the ship and by means of which it is also possible in an inverse manner to move the containers stored in the ship toward the bow of the ship where the hoisting equipment will take over the container and lower the same into the water. However, difficulties have been encountered in this connection with regard to the transfer of the containers from the hoisting equipment to the travelling crane and vice versa due to the limited space available for this purpose.

It is, therefore, an object of the present invention to provide a device of the general character mentioned above by means of which the transfer of the containers, which at one end of the ship have by means of the hoisting equipment been lifted out of the water, to the loading compartment and vice versa will be effected while favorably exploiting the available space and without in any way affecting or substantially reducing the cargo or loading space.

It is also an object of the present invention to effect the afore mentioned transfer in a minimum of time.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawings, in which:

FIG. 1 illustrates the front portion of the ship in side view and partially along a vertical section taken along the line 1—1 of FIG. 2.

FIG. 2 represents a section taken along the line —II of FIG. 1.

FIG. 3 is a section taken along the line III—III of FIG. 1 but on a larger scale than that of FIGS. 1 and 2, the travelling crane being shown above the travelling platform.

FIG. 4 represents a section taken along the line IV—IV of FIG. 3.

The device for transloading containers according to the present invention is characterized primarily in that a traveling platform is in the longitudinal direction of the ship displaceable between a first position, in which the hoisting equipment is able to deposit a container lifted out of the water onto the travelling platform and

is also able to lift a container off the platform, and a second position in which a travelling crane serving for distributing the containers in the hull of the ship is able to lift a container off the travelling platform or to deposit a container onto the platform.

An arrangement according to the present invention brings about the advantage that the transloading of the containers can be effected in a particularly economic manner.

Referring now to the drawings in detail, the bow of the ship 1 has two beak-shaped protrusions 2 which are spaced from each other by a distance which is greater than the length of a floating container 3. The floating containers may be formed by so-called barges which have a length of, for instance, 20 meters and a width of about 10 meters and are able to carry a useful load of approximately 400 tons. These floating containers are also floatable when fully loaded and are moved in the water by means of tug boats.

The two protrusions 2 are at the level of the ship deck 4 bridged by the frame 5 of a non-displaceable hoist. This hoist has four winches 6 to the bottom sheaves or blocks of which is fastened a supporting frame 7 with receiving members 8 arranged at the corners. These receiving members 8 have openings which widen in downward direction and into which may enter in a fitting manner pins 9 which are provided at the corners of each floating container 3 and which extend upwardly while having a truncated pyramidal configuration. These pins 9 enter into the openings when the supporting frame 7 is deposited onto the container. The supporting frame 7 is then connected to the container by means of a coupling device not illustrated in the drawing. It is also possible to provide the coupling device in an inverse manner, which means to provide the pointed coupling pins on the supporting frame 7 or 14 and to provide the corresponding openings on the container.

Closely below the ship deck 4 there is provided a travelling crane 10 which is movable on rails 11 extending on both sides of the loading compartment over the entire length thereof and up to the space below the hoist equipment 5, 6. The travelling crane 10 has its central portion provided with two winches 12 (FIG. 2) which are driven together. From the winch drums 12, four cables 13 lead to block and tackle means having suspended thereon a supporting frame 14 by means of receiving members 15 at the corners of the frame 14. These members 15, similar to the receiving members 8 of the supporting frame 7, serve for establishing coupling connection with the floating container 3.

The platform 16 is movable on two rails 17 which are located on the insides of the protrusions 12 and on the insides of the lateral walls 18 of the ship within the region of the bow while being spaced from each other by a distance which is greater than the length of the floating container 3.

FIGS. 1 and 2 show the platform 16 with a container 3 thereon in a position in which it frees the space below the hoist 5, 6. The travelling crane 10 is on rails 11 moved forwardly to such an extent that its supporting frame 14 will during the lowering operation be deposited on the container 3 while the pins 9 engage the receiving members 15 and are locked thereto. Thereupon the travelling crane 10 lifts the container 3

off the platform 16 and moves it toward the rear in order to deposit the container at a suitable place in the cargo compartment of the ship. FIG. 1 indicates how in this manner a great number of floating containers 3 in an arrangement transverse to the ship can be piled up in the cargo compartment.

In the meantime, the container 3 which, according to FIG. 1, was still floating in the water has been lifted between the protrusions 2 after the supporting frame 7 had been lowered onto and coupled to the container. The platform 16 is on rails 17 moved forwardly below the lifted container 3 into a position in which the container 3 can properly be deposited upon the platform 16. When this has occurred and the supporting frame 7 has been disconnected from and lifted off the container 3, the platform 16 is moved into the position shown in FIGS. 1 and 2 from which position the container 3 is by means of the travelling crane 10 lifted in the described manner and moved to a place in the cargo compartment where it is piled up.

When it is desired to unload the containers 3, one of the containers at a time is by means of the travelling crane 10 deposited onto the travelling platform 16 in the position shown in FIG. 1. The platform with the container 3 is then moved forwardly below the hoist 5, 6. and the container 3 is lifted off the platform 16 whereupon the latter is returned to its FIG. 1 position. Thereupon the container 3 is by means of hoist 5, 6 lowered into the water.

When lifting the container out of the water and when lowering the container into the water, a device adapted to follow the motion of the sea may be employed so as to enable a safe handling of the containers also in rough seas.

Inasmuch as the hoist 5, 6 and the travelling crane 10 are adapted in view of the platform 16 to work independently of each other, considerable operating time will be saved so that a rather short time only is necessary for the loading and unloading of each floating container.

The driving movements of the platform 16 on rails 17 are expediently effected by cable lines the endless cables of which engage the platform 16 on both sides and are driven, on the other hand, by units in the ship body. In this way a fast starting movement and braking of the platform will be possible also at slight trim of the ship.

The deck 4 is expediently closely behind the structure 5 of the hoist provided with a hatch the cover of which is indicated in FIG. 1 by dot-dash lines 19. When this hatch is open, it is under certain circumstances possible by means of a quay crane —if it is not desired to withdraw the container from the water —to deposit the container or containers onto the platform 16 moved toward the rear. From the platform 16, the containers may then by means of the travelling crane 10 be distributed in the hull of the ship. Inversely, it is also possible to unload the containers from the ship by means of a quay crane through the hatch.

It is, of course, to be understood that the present invention is, by no means, limited to the particular showing in the drawing but also comprises any modifications within the scope of the appended claims.

What is claimed is:

1. In an arrangement for transloading containers to and from the hold of a ship; first hoist means in the ship moveable in the fore and aft direction of the ship along the top of the hold, said first hoist means including means engageable with a container and operable for lifting and lowering the container and for supporting the container during movement thereof along the hold by said first hoist means, a platform at one end of the ship adapted to support a container and moveable in the fore and aft direction of the ship and at a lower level than said first hoist means, one portion of the path of movement of said platform overlapping that of said first hoist means to permit the transfer of containers between said first hoist means and said platform, and second hoist means on said one end of the ship and located over a second portion of the path of movement of said platform for the transfer of containers between said second hoist means and said platform, said second hoist means including means engageable with a container and operable for raising and lowering a container, at least said second portion of the path of movement of said platform comprising laterally spaced rails projecting from said one end of the ship and providing an open space through which said second hoist means is adapted to move containers supported thereby vertically.

2. An arrangement according to claim 1 which includes drive means for driving said platform along the said path of travel thereof.

3. An arrangement according to claim 2 in which said drive means include cable means connected to said platform.

4. An arrangement according to claim 1 in which said ship includes a deck above said first hoist means and said platform, said deck including a hatch over said first portion of the path of movement of said platform to provide access to said platform by a hoist independent of said first and second hoist means.

5. An arrangement according to claim 1 in which the said means engageable with a container comprise a frame engageable with spaced points of a container and connected with the respective hoist means for movement in the vertical direction in parallelism with itself.

6. An arrangement according to claim 1 in which said first hoist means has a terminal position near said one end of the ship and adjacent said second hoist means, and horizontal rails in the ship supporting said platform and defining the path of movement thereof, said rails extending from beneath the said terminal position of said first hoist means to beneath said second hoist means.

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