

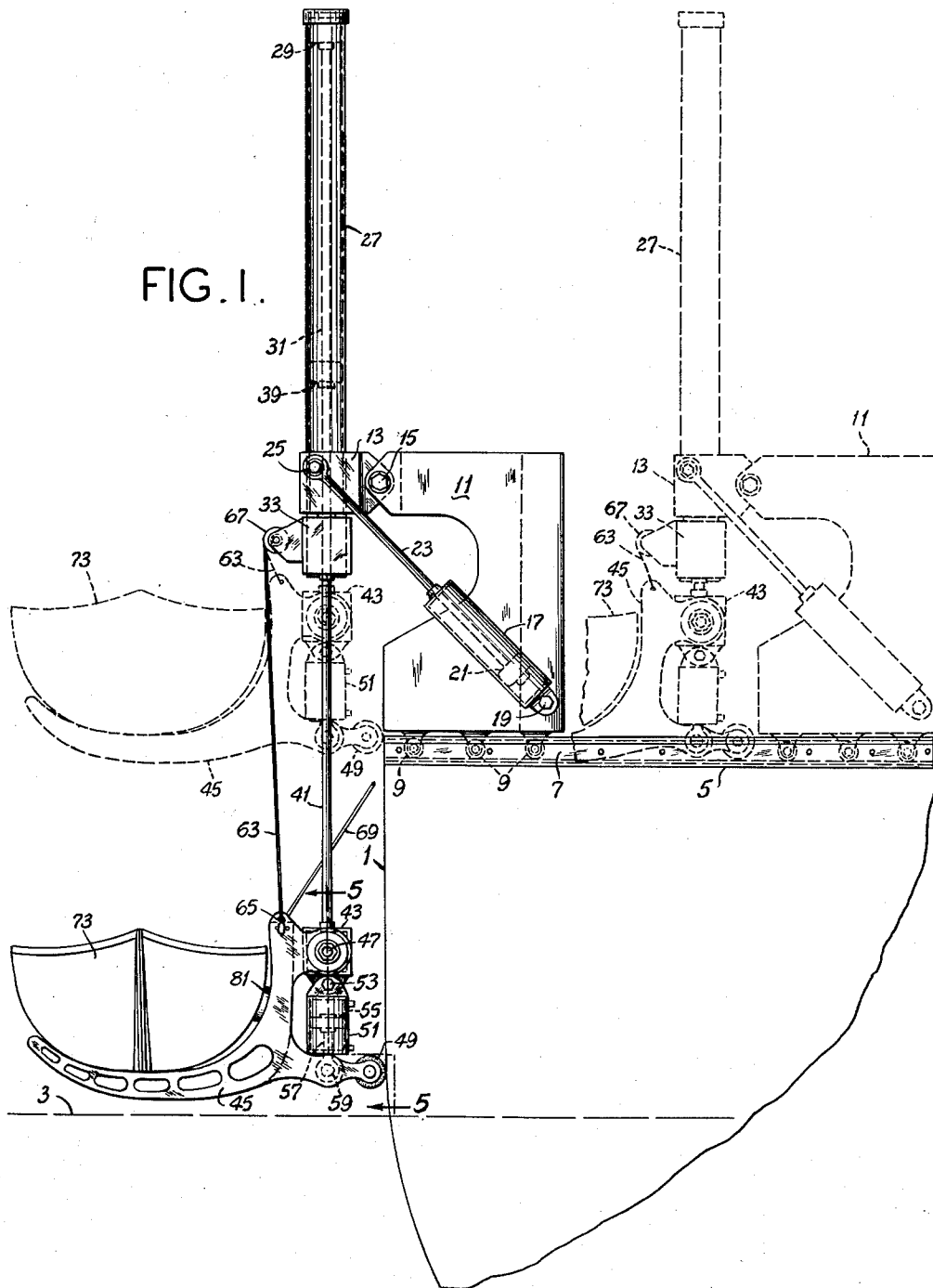
Sept. 4, 1956

D. T. ADAMS
MARINE HOIST

2,761,571

Filed May 19, 1955

4 Sheets-Sheet 1



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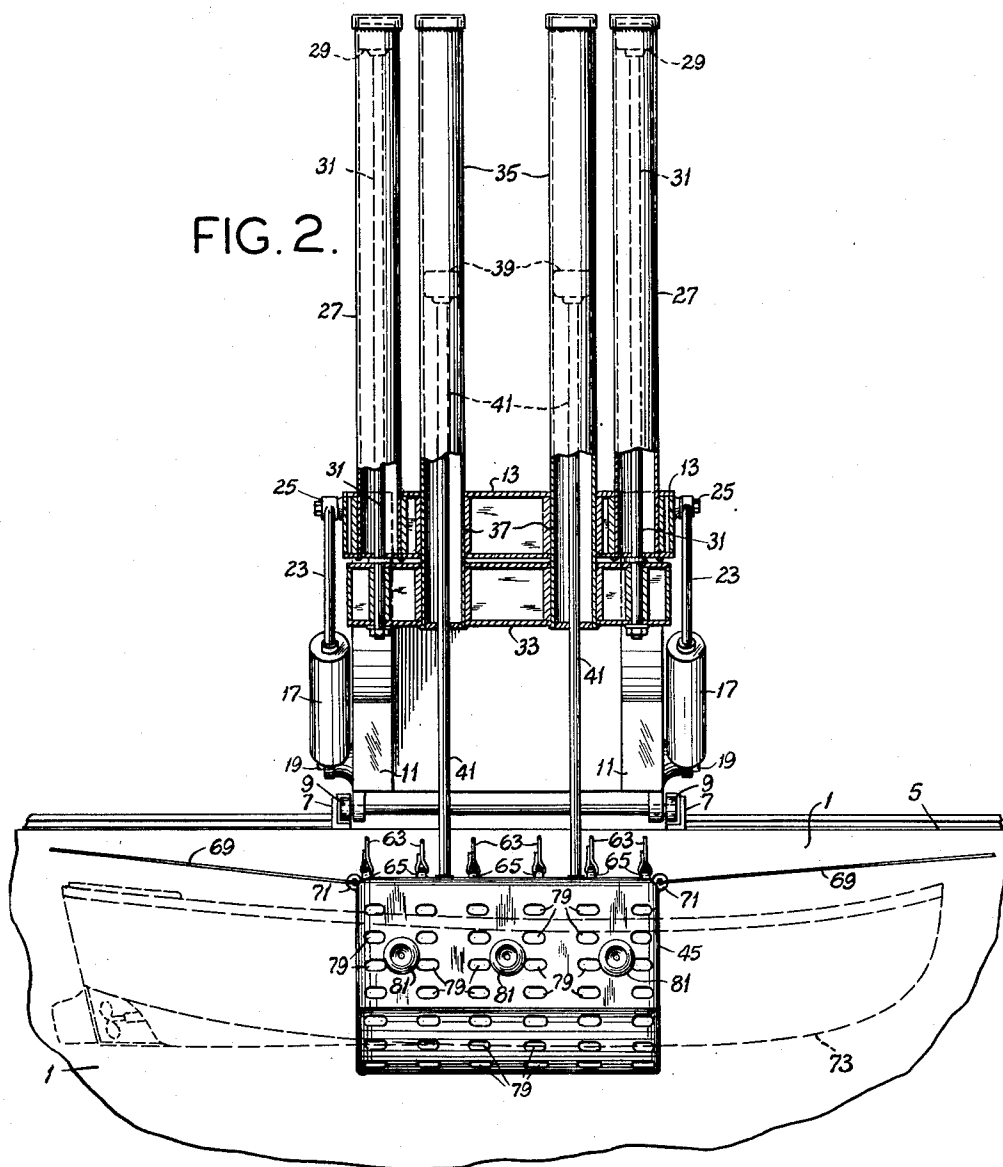
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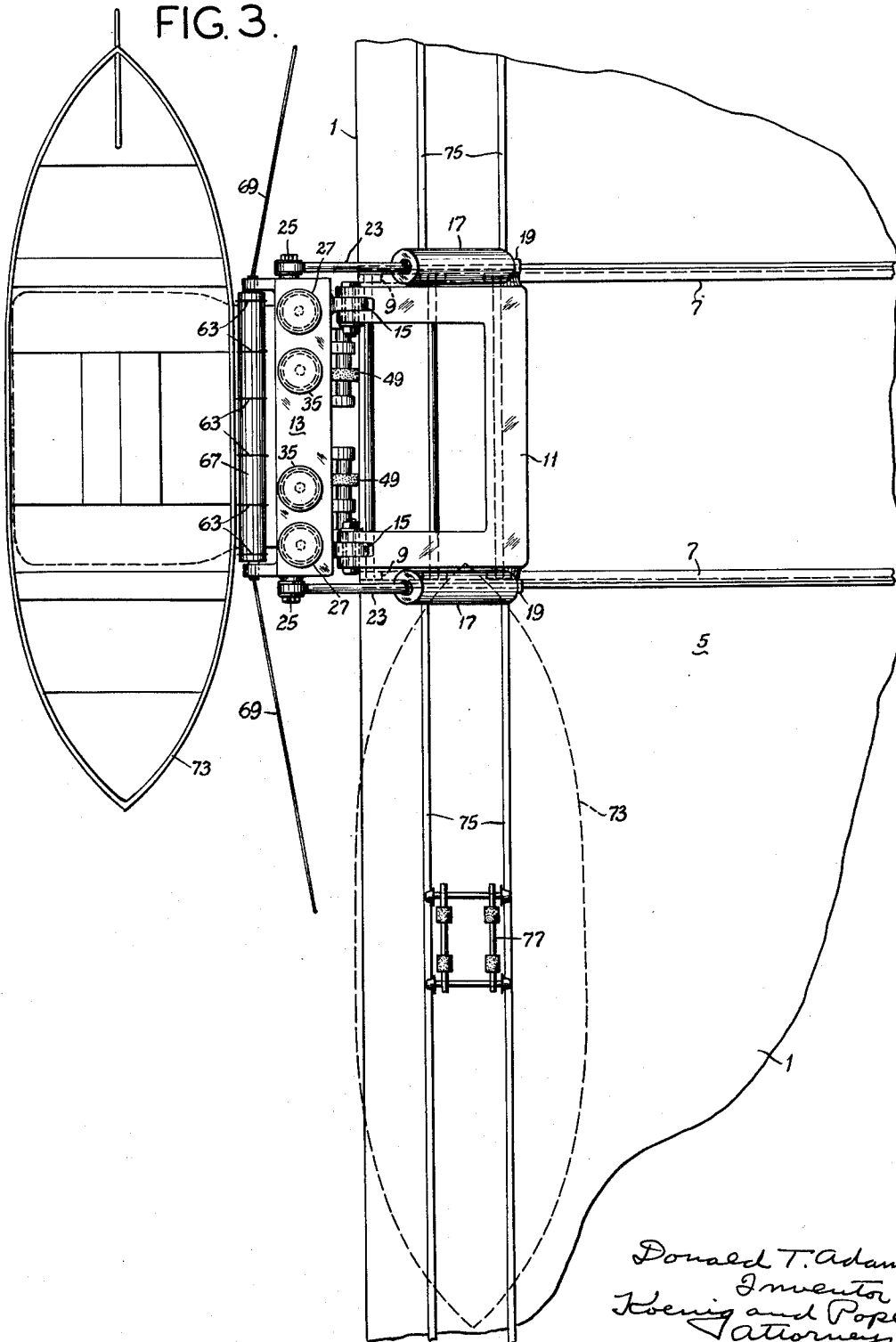
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FIG. 3.



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FIG. 5.

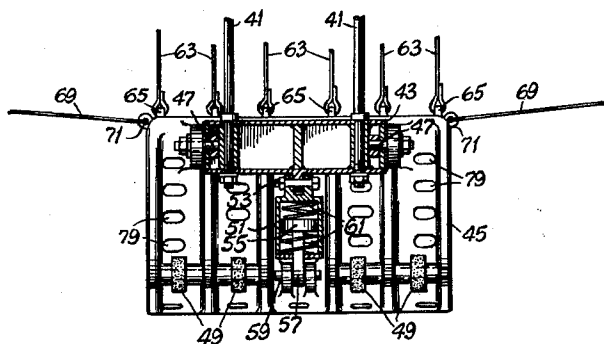


FIG. 6.

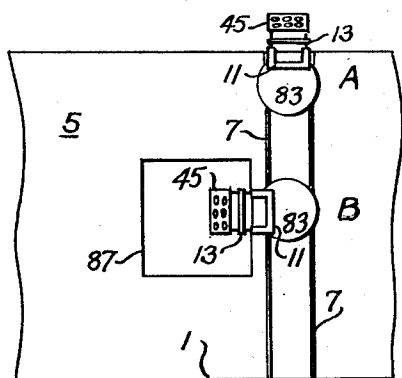
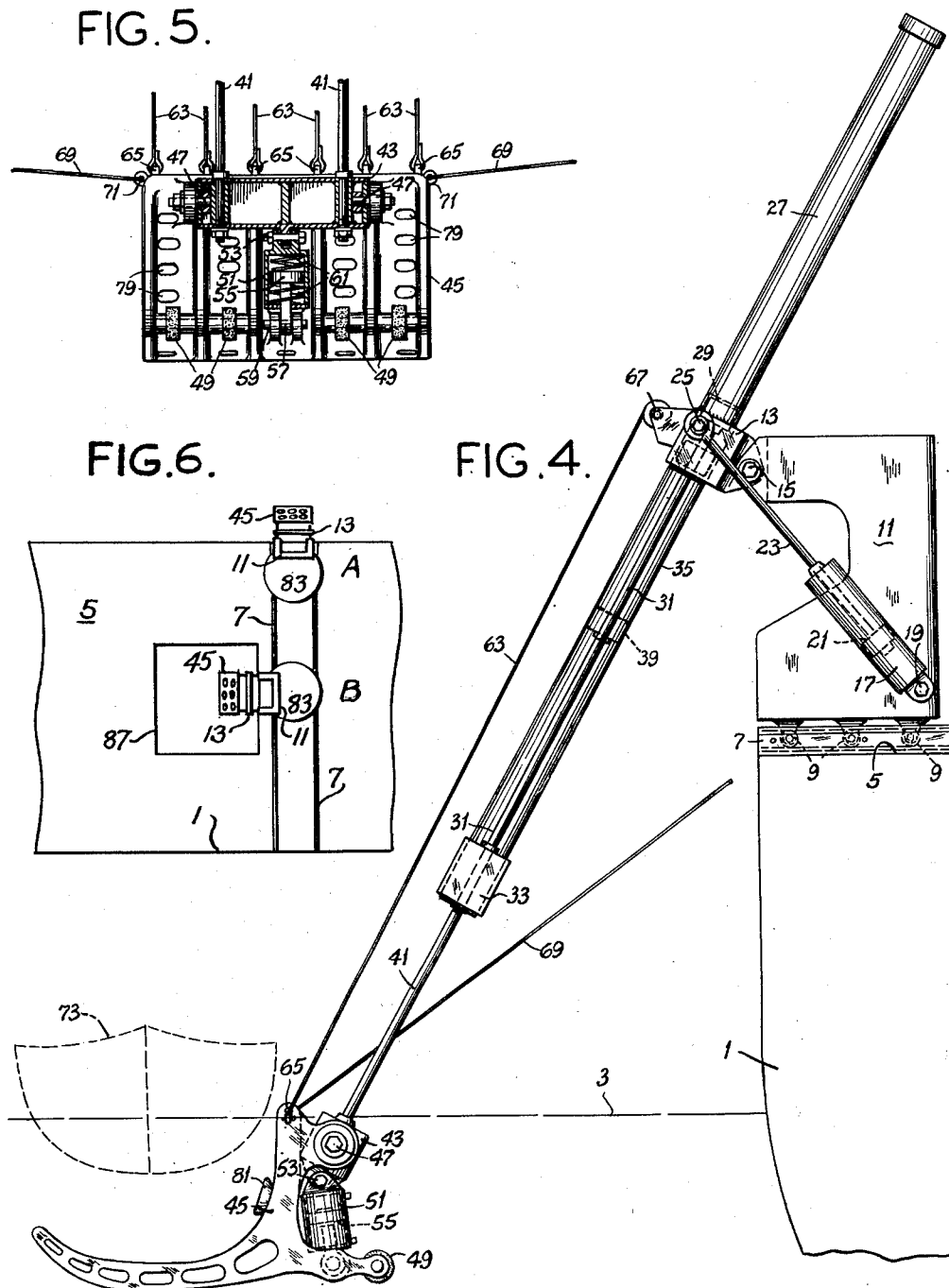


FIG. 4.



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MARINE HOIST

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10 Claims. (Cl. 214—15)

This invention relates to marine hoists in general, and more specifically to such hoists for shipside and dock-side use.

Among the several objects of the invention may be noted the provision of a marine hoist for lowering and hoisting stores, personnel and the like; the provision of a marine hoist of the class described providing means for the launching and recovery of small craft and rescue of personnel in a seaway; and the provision of a hoist of this class which may be used as a substitute for an accommodation ladder. Other objects and features will be in part apparent and in part pointed out herein-after.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of which will be indicated in the following claims.

In the accompanying drawings, in which one of various possible embodiments of the invention is illustrated,

Fig. 1 is an elevation of the invention as applied to a ship, the solid lines showing a hoisting position, and the dotted lines showing retracted positions;

Fig. 2 is a left-side view of Fig. 1, showing another third hoisting position of parts, and being partially broken away;

Fig. 3 is a plan view of the solid-line portions of Fig. 1;

Fig. 4 is a view similar to the solid-line elevation of Fig. 1, but showing another position of parts for rescue work;

Fig. 5 is a detail cross section taken on line 5—5 of Fig. 1; and,

Fig. 6 is a diagrammatic plan view of an alternate application of the invention.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

In the following description, the hoist will be described as used on the deck of a ship, but it will be understood that it also may be used on a dock, floating or stationary.

Referring to the drawings, there is shown at numeral 1 a ship in water having a mean surface level 3. The deck of the ship is shown at 5. Located transversely on the deck 5 are guide rails 7 for guiding supporting rollers 9 of a carriage 11. Means are provided for moving the carriage along the rails 7 and locking it in any desired position. These means are not shown, since any well known ones for the purpose may be employed. Thus the carriage 11 may be moved from an inboard position, such as shown in dotted lines in Fig. 1, to an out-board position, such as shown in solid lines.

On the carriage 11 is a first beam 13 pivoted, as shown at 15, for rocking movement accomplished by means of two hydraulic tandem-operating rams, each consisting of a cylinder 17 pivoted to the carriage 11 at 19.

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In each cylinder 17 is a piston 21 carried on a piston rod 23 which is pivoted to the beam 13 at 25.

Attached to and extending upward from the beam 13 is a pair of hydraulic cylinders 27, carrying pistons 29 on piston rods 31. At their lower ends the piston rods 31 are attached to and carry a second beam 33, which has fastened thereto a pair of cylinders 35. The cylinders 35 have sliding passages through the first beam 13, as indicated at 37. The cylinders 35 carry pistons 39 on piston rods 41, which extend out below the second beam 33.

At their lower ends the piston rods 41 are attached to a third parallel beam 43. A platform 45 is pivoted to the beam 43 at 47 and carries resilient rollers 49 for traversing the ship's side when required. The platform may be rocked, relative to the beam 43, by means of a hydraulic ram consisting of a cylinder 51, pivoted to the beam at 53 and carrying a piston 55 having a piston rod 57 which in turn is pivoted to the carriage at 59. Centering springs 61 are employed in the cylinder 51 at each side of the piston 55.

Fender lines 63 are attached to the platform 45 at 65 and extend to and are wrapped around a roller 67 supplying tension by suitable means. Under certain circumstances the torque supplied by roller 67 for tensioning the lines 63 may exert constant tension, and under others increased tension as the platform 45 is lifted. Steadying stay lines 69, attached at 71 to the platform 45, extend to suitable constant tension means located at appropriate points on the ship deck. Hydraulic power and control means are employed for supplying hydraulic fluid to the cylinders 17, 27, 35 and 51. The tension, power and control means referred to in this paragraph are not shown or described, because various types of such means are well known in the art and do not constitute parts of the invention per se.

From the above, it will be clear that the beam 33 is capable of being lowered and raised with respect to beam 13 by operation of the pistons 29 in the cylinders 27. Such lowering and raising of the beam 33 carries with it the cylinders 35, which slide up and down in, and are guided by, the beam 13 in any angled position of the latter. Thus in Fig. 4 the beam 33 has been extended from beam 13 for retrieving objects from the water at a distance from the ship. In addition, the beam 43 is capable of being raised and lowered with respect to beam 33 by action of the pistons 39 in cylinders 35. This is possible in any raised or lowered position of the cylinders 35. Thus, for example, as shown in Fig. 1, the beam 33 is in elevated position and the beam 43 is extended straight downward, providing for moving the platform 45 straight up and down adjacent to the ship 1. It will be apparent that such movement could also be provided by allowing the beam 43 to maintain its position just beneath beam 33 and operating the latter by actuating its pistons 29. Thus stores, personnel, small craft and the like may be vertically raised and lowered, or the platform 45 substituted for an accommodation ladder, or as a platform for an accommodation ladder.

In the case in which rescue work or recovery of small craft such as shown at 73 is to be accomplished by the operations illustrated in Fig. 4, the upper beam 13 is rocked and the lower beam 33 extended downward, the cylinders 35 sliding in the upper beam 13. As required under the circumstances, the lower beam 43 may be extended further downward, so as to place the platform 45 beneath the mean water level 3 at a substantial distance from the ship. Then the platform is adjusted to an appropriate position and raised so that the craft 73 rests upon it, whereupon it is brought inward to the ship's side and then raised as suggested in Fig. 1.

After the platform is raised to the dotted-line position

of Fig. 1, the carriage 11 may be retracted to the right on the ship deck, as shown in dotted lines at the right in Fig. 1. If it supports stores, personnel or the like, they may be unloaded. In the case of a boat such as 73, it may be desirable to employ fore-and-aft tracks, such as shown at 75, on which is a dolly 77 for facilitating unloading after suitable retraction of the carriage 11.

It will be understood that suitable means are provided on the platform 45 for safety and the prevention of damage to craft such as 73 as by covering the platform with a rough surface (for example expanded metal) covered by rubber. Openings such as shown at 79 should also be included, to facilitate rapid drainage of water, as the platform 45 is lifted. If desired, releasable suction cups such as shown at 81 may be employed to aid in holding the craft 73 on the platform 45.

As the drawings indicate, the platform 45 may be lowered considerably beneath the level 3 and practically to the keel level of the ship. Control of the platform 45 is facilitated in an open sea by the fact that the operator of the hydraulic controls may compensate for any rocking of the ship, so that the platform 45 may be kept in a more or less steady position, despite such rocking.

It will be understood that, although one pair of cylinders 27 and one pair of cylinders 35 are used, as shown, greater numbers may be employed.

In Fig. 6 is diagrammatically shown how any cargo or the like handled by the platform 45 may also be placed in the hold of the ship through its cargo hatch 87. This is accomplished by mounting the carriage 11 upon a suitably counterweighted rotary platform 83, supported by and movable upon the rollers 9 which traverse the rails 7. Letter A indicates a ship-side position of such a rotary carriage adapting the apparatus for the operations already described. Letter B indicates a position next to the hatch, the platform 83 being rotated, so that the platform 45 can be lowered and raised through the hatch. Thus it will be seen that the device is adaptable not only to loading and unloading with respect to the sea, but also with respect to cargo compartments. Fig. 6 also illustrates the fact that several of the devices may be worked on the same rails to and from opposite sides of a ship.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A marine hoist comprising a carriage adapted to be moved to and from a deck side, an upper first member pivoted to the carriage for rocking movement, a first cylinder extending upward from said first member, a first piston in said first cylinder, a second member beneath the first member, means connecting the second member with said piston, a second cylinder extending upward from the second member, a second piston in the second cylinder, a third member beneath the second member, means connecting the third member with said second piston, and a platform attached to said third member.

2. A marine hoist made according to claim 1, wherein said second cylinder has a sliding passage through the first member.

3. A marine hoist comprising a carriage adapted to be moved to and from a deck side, an upper first member

pivoted to the carriage for rocking movement, a first cylinder extending upward from said first member, a first piston in said first cylinder, a second member beneath the first member, means connecting the second member with said piston, a second cylinder extending upward from the second member, a second piston in the second cylinder, a third member beneath the second member, means connecting the third member with said second piston, a platform pivoted to said third member, and means for rocking the platform on said third member.

4. A marine hoist made according to claim 3, wherein said second cylinder has a sliding passage through the first member.

5. A marine hoist comprising a carriage adapted to be moved to and from a deck side, a first upper beam pivoted to the carriage, means for rocking the first beam, a first pair of cylinders extending upward from said beam, a first pair of pistons in said first pair of cylinders, a second beam beneath the first beam, means connecting the second beam with said pistons, a second pair of cylinders extending upward from the second beam and having a sliding passage through the first beam, a second pair of pistons in the second pair of cylinders, a third beam beneath the second beam, means connecting the third beam with said second pair of pistons, and a platform attached to said third beam.

6. A marine hoist comprising a carriage adapted to be moved to and from a deck side, a first upper beam pivoted to the carriage, means for rocking the first beam, a first pair of cylinders extending upward from said beam, a first pair of pistons in said first pair of cylinders, a second beam beneath the first beam, means connecting the second beam with said pistons, a second pair of cylinders extending upward from the second beam and having a sliding passage through the first beam, a second pair of pistons in the second pair of cylinders, a third beam beneath the second beam, means connecting the third beam with said second pair of pistons, a platform pivoted to said third beam, and means for rocking the platform on said third beam.

7. A marine hoist made according to claim 5, including resilient rolling means on the platform adapted to engage a portion extending downward from the side of said deck.

8. A marine hoist made according to claim 5, including a roller on the second beam and fender lines extending from the platform to the roller.

9. A marine hoist made according to claim 7, including a roller on the second beam and fender lines extending from the platform to the roller.

10. A marine hoist comprising a carriage adapted to be moved to and from a deck side and rotatable on a vertical axis, a first upper beam pivoted to the carriage, means for rocking the first beam about a horizontal axis, a first pair of cylinders extending upward from said beam, a first pair of pistons in said first pair of cylinders, a second beam beneath the first beam, means connecting the second beam with said pistons, a second pair of cylinders extending upward from the second beam and having a sliding passage through the first beam, a second pair of pistons in the second pair of cylinders, a third beam beneath the second beam, means connecting the third beam with said second pair of pistons, and a platform attached to said third beam.

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