

June 6, 1961

C. D. HERRESHOFF
CONNECTING MEANS FOR LAUNCHING AND RECOVERY OF
WATER-BORNE CRAFT FROM AND TO SHIPS

2,986,750

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2 Sheets-Sheet 1

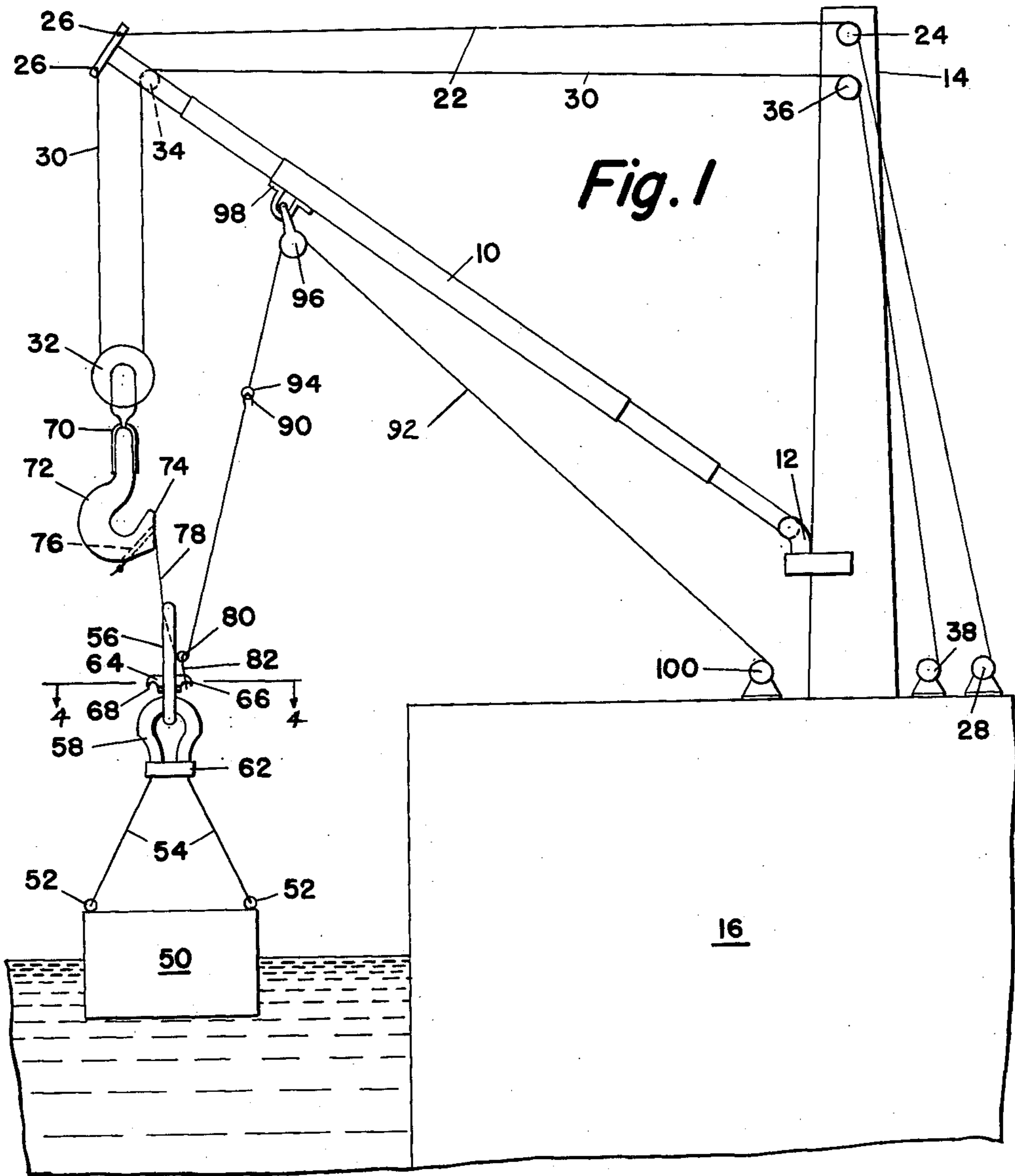


Fig. 1

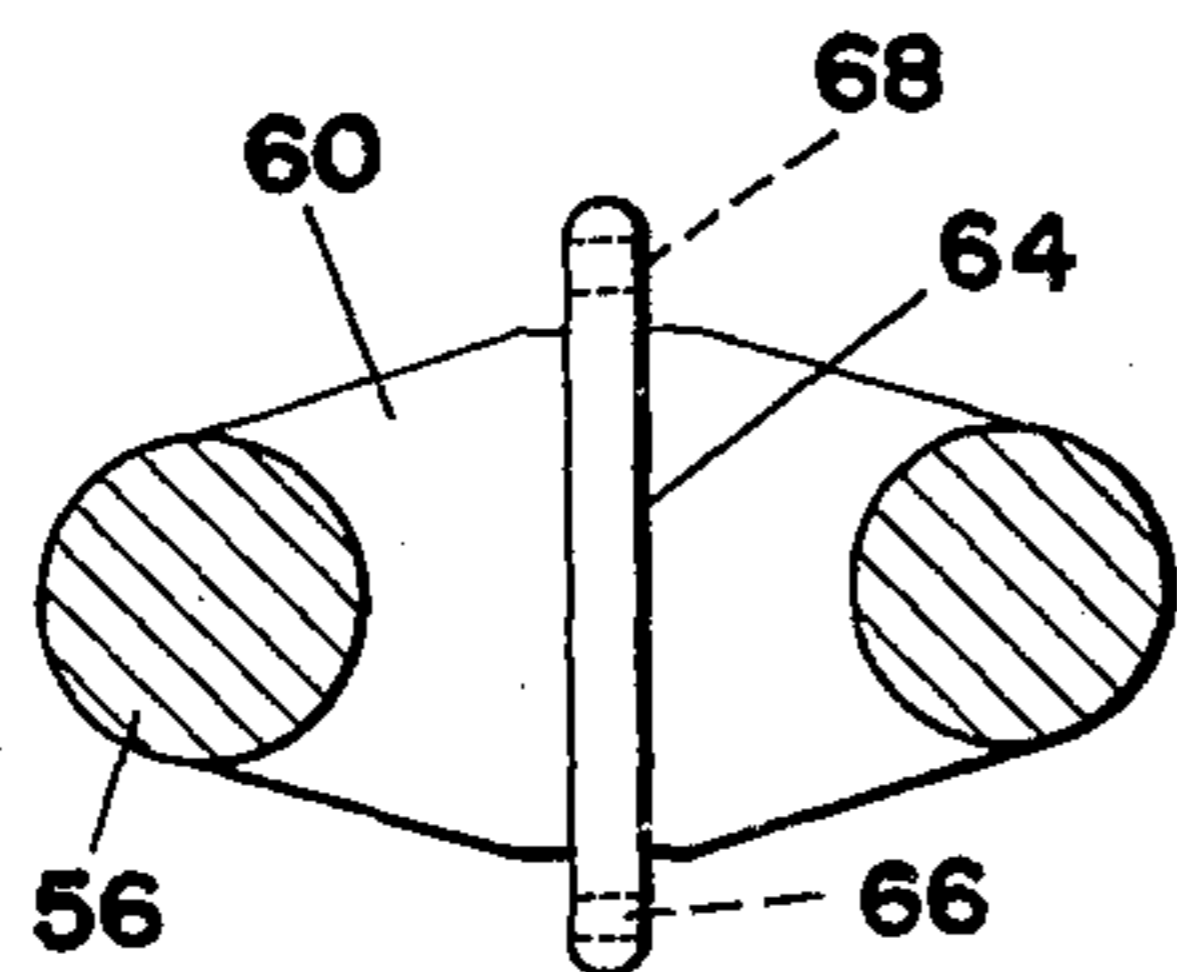


Fig. 4

INVENTOR.
CLARENCE D. HERRESHOFF
BY

J. F. Sheehan
ATTORNEY

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Fig. 2

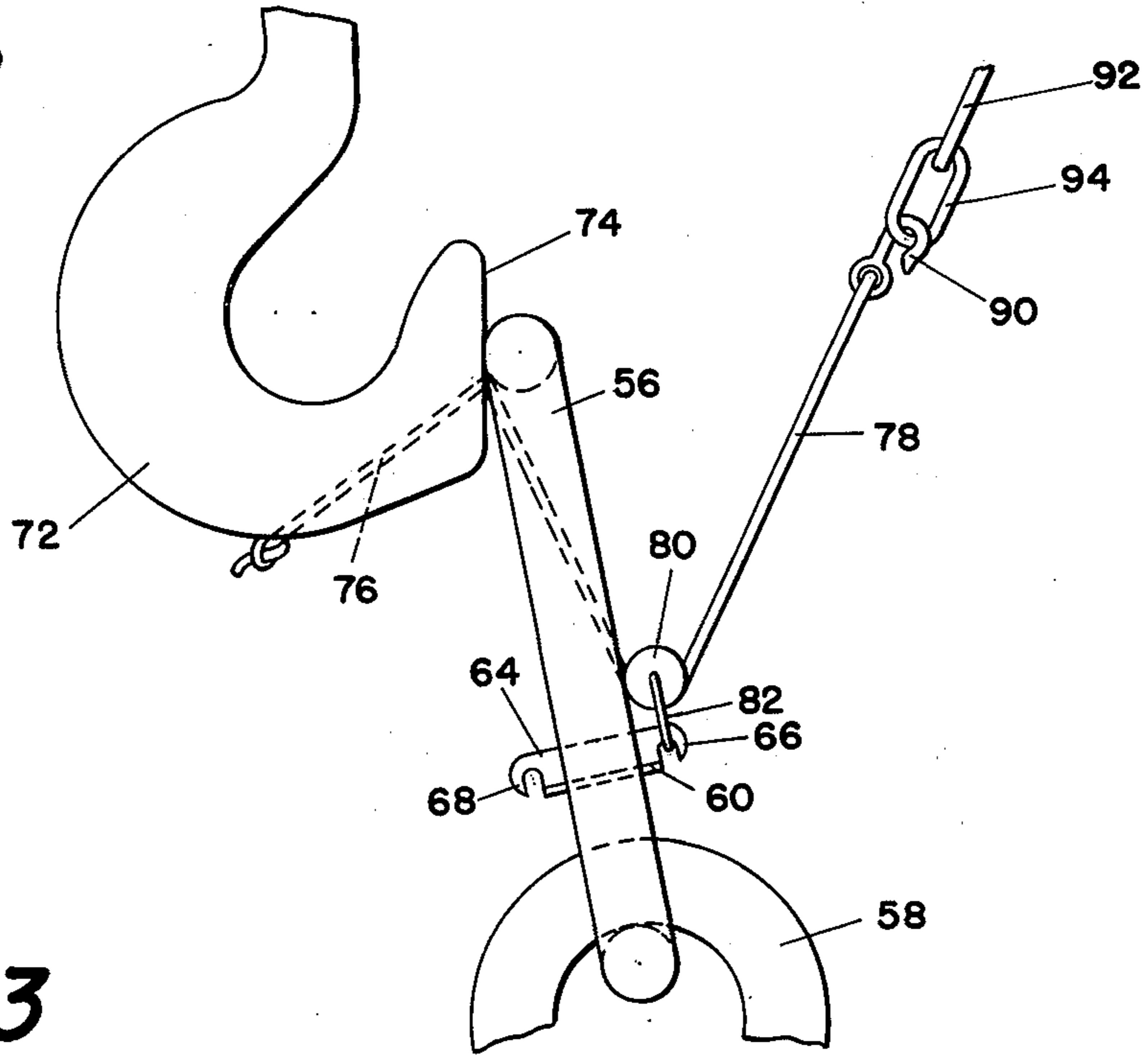
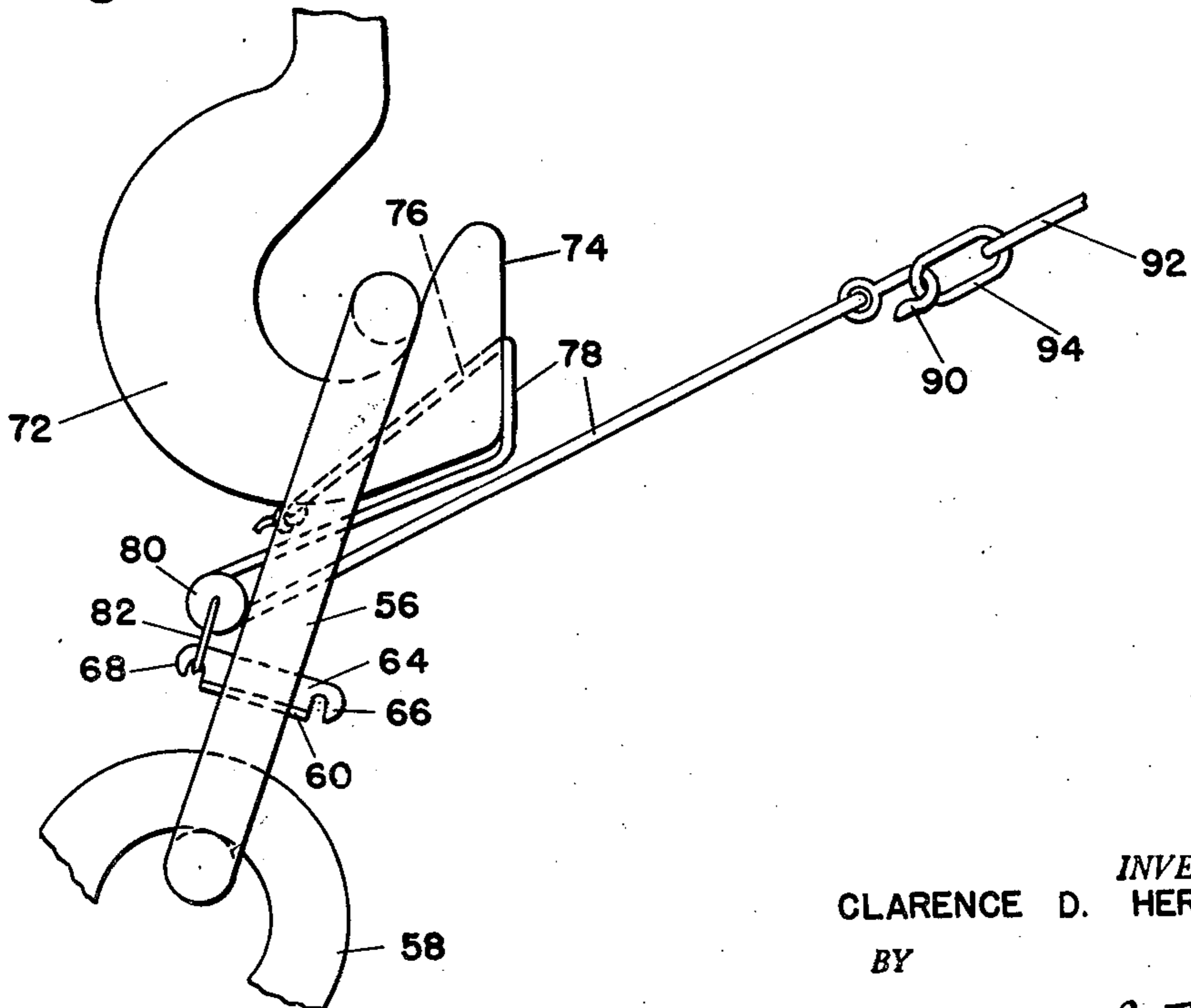


Fig. 3



INVENTOR.
CLARENCE D. HERRESHOFF
BY

J. F. Stehman
ATTORNEY

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**CONNECTING MEANS FOR LAUNCHING AND
RECOVERY OF WATER-BORNE CRAFT FROM
AND TO SHIPS**

Clarence D. Herreshoff, 3726 Connecticut Ave.,
Washington 8, D.C.

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The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

This invention relates to the launching and recovery of water-borne craft from and to ships and more particularly to automatic engaging and disengaging means therefor.

The particular problem of the launching and recovery of water-borne craft from and to ships in rough water is one of considerable difficulty when current methods are employed. For example, a considerable amount of manual operation is necessary in engaging and disengaging the ship lifting hook to or from the lifting link connected to the boat to be launched or recovered, thus resulting in unnecessary delays and imposing a severe hazard on the men assigned to the task. Similar difficulty is encountered in attaching and detaching the crane hook when heavy material is being transferred between a boat in a seaway and a fixed structure such as a Texas Tower.

When a boat is to be recovered on rough water or high seas, tremendous stresses may be encountered by the ship lifting mechanism and by the boat resulting in structural damage to the latter. This fault is due primarily to the inability of personnel in attaching the lifting hook to the boat hoisting sling on the crest of a wave by conventional means. If the attachment is made while the boat is below a wave crest, the boat will be lifted on the next crest and thereby overriding the slow-moving ship hoisting mechanism and causing a slackening of the boat hoisting sling. Passage of the wave crest then causes the boat to fall abruptly with possible damage to the boat and hoisting sling.

Accordingly, it is a broad object of this invention to provide improved apparatus which will enable boats to be recovered or launched with greater facility and safety than has heretofore been possible.

Another object of the invention is to provide novel and automatic connecting means between the ship lifting hook and the lifting link whereby automatic engagement and disengagement thereof will be effected.

A still further object of the invention is to provide automatic connecting means between the ship lifting hook and lifting link whereby the launching or recovery of the boat from or to the ship may be accomplished with a minimum of manual labor and a maximum element of safety.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings in which like reference numerals designate like parts throughout the figures thereof and wherein:

FIG. 1 is a view in elevation of a vessel having hoisting apparatus modified by improvements of the present invention and a lifting link with cooperating structure; and

FIGS. 2 and 3 are enlarged detailed views of a portion of the improved connecting means of FIG. 1; and

FIG. 4 is a section taken along line 4—4 of FIG. 1.

Referring to FIG. 1, the boom 10 is mounted for up and down and for limited lateral swinging movement by

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means of a gooseneck connection 12 mounted to the up-standing mast or King post 14, it being understood that a plurality of such posts or masts may be constructed for suitably supporting the boom. A dock, or ship structure, for example, shown generally at 16 supports the post 14 by conventional methods. A winch house, not shown, located adjacent the mast 14 provides a protective housing for the various winches employed in the invention.

At its upper or outer end the boom 10 is supported by a topping-lift 22, of conventional cable or rope, which is passed over a guide sheave 24, swingably mounted adjacent the upper portion of mast 14. The topping-lift 22 is anchored at its outer end in one of the spaced eyelets 26—26 of a headband mounted on the outermost portion of boom 10, while its other or running end is carried downwardly to a brake winch 28, or a screw or ratchet type winch may be used equally well, so that the topping-lift cable length can be adjusted to dispose the boom at a desired angle. The brake winch 28 is operated by a motor (not shown) contained within the winch house.

Through the other eyelet 26 is becketed one end of a load line, hoist cable or boat fall 30. The running portion of this fall 30 is led downwardly through a sheave 32 and then upwardly to another sheave 34 mounted inwardly of the headband on boom 10 and is led through guide sheave 36 disposed below sheave 24 on the mast 14 and then downwardly to a hoisting winch 38 also located in the winch house.

A landing craft or boat 50, for example, has the conventional hook-shaped supporting members 52—52, for receiving releasable hooks, not shown, but depending from each strand of the double hoisting sling 54, as shown, for example, in Patent No. 389,410, issued September 11, 1888, to C. F. Rodin. This patent discloses releasable hooks C depending from a block and tackle assembly and received by cooperating hooks attached to a life boat. The other or upper ends are articulated to a closed lifting link 56 through suitable permanent connections made to an equalizing thimble 58 slidably depending therefrom. It should be understood, of course, that the hoisting sling may be slidably directly connected to the closed lifting link 56 by any suitable means.

Referring now to each of the figures, the closed lifting link 56 comprises a metal rod bent into a flat-oval configuration, altho other suitable shapes may be used equally well, and is provided at its lower portion with a support plate 60 rigidly mounted therein and partaking of any convenient shape, and to which is welded a transverse arm 64 having opposed link hooks 66 and 68, both of which have their openings facing seaward, their operation to be described hereinafter.

The sheave 32 of the load line 30 has a strap 70 integrally fastened therewith from which a crane or lifting hook 72 fixedly depends. Lifting hook 72 has a generally straight or vertical bill 74 and a passageway 76 is provided between the lower portion of the hook 72 and intermediate the ends of the vertical bill 74 permitting the attachment of one end of a hook messenger line 78 therethrough which is then reeved through a movable block 80 having a shackle 82, the other end of the hook messenger line terminating in a hook or quick coupling device 90. The shackle 82 of the movable block 80 is connected either to link hook 66 or link hook 68 depending upon whether the launching or recovery of boat 50 is desired, the quick coupling device 90 being received by a winch messenger line 92 through a large eye 94 attached thereto. The messenger lines 78 and 92 provide a guiding line between the suspended hook 72 and the tensioning winch 100. Winch messenger line 92 is reeved through a sheave 96, supported from boom 10 by means of a bracket 98 affixed thereon. The winch messenger line has its running end disposed in position to be

taken in or payed out by a reversible tensioning winch 100 located in the winch house and controlled by a motor, not shown. Tensioning winch 100 is designed and adjusted for a pull slightly in excess of that needed to raise the weight of the double hoisting sling assembly. When this pull is exceeded, the winch messenger line 92 pays out automatically. With the winch control set for "tensioning," the pull or tension on line 92 remains virtually constant irrespective of the line remaining stationary, hauling in or paying out. Further, winch 100 is capable of hauling in or paying out a slack line at controlled speeds.

In operation, let it be assumed that the boat 50 is to be hoisted from the sea for nesting within its chocks on ship 16, for example. Outboard movement of the boom is effected by means of any suitable power device, its elevation being adjustable by paying out or retrieving the topping-lift in proper relation with respect to the boat to be recovered, the lifting hook 72 facing inboard throughout. After both messenger lines have been lowered to the boat 50, the hook messenger line 78, including the hook 90, is passed through the opening of the closed lifting link 56 in a direction towards the ship 16, as shown in FIG. 2, the shackle 82 being connected with link hook 66. The messenger lines are then coupled together through hook 90 and eye 94, the latter being of sufficient dimensions to prevent its passage at any time through block 80. The block 80 and shackle 82 are sufficiently small to facilitate their rapid passage through the opening of the closed lifting link. The winch operator on ship 16 now hauls in, or retrieves, through tensioning winch 100, until the double hoisting sling cables 54 are sufficiently taut but yet permitting boat 50 to rise and fall in accordance with the wave formations. The same winch operator, through hoisting winch 38, then lowers lifting hook 72 slowly. As lifting hook 72 is lowered, the double hoisting sling 54 remains in its taut condition by means of the tensioning action of the automatic tensioning winch 100. Since the link hooks are fixedly mounted adjacent the lower portion of the closed lifting link 56, any upward pressure on link hook 66 will tend to dispose the lifting link to the left, as shown in FIG. 2, and to slidably contact the generally vertical bill 74 of hook 72. As the boat 50 is raised by the crest of a wave, the closed lifting link slips over the bill of the lowered lifting hook automatically engaging it. The winch operator immediately reverses the hoisting winch and recovery of the boat is accomplished. It should be understood, of course, that the hoisting is begun immediately after engagement of the lifting link with the lifting hook, thus preventing the boat from becoming water-borne on the crest of the next wave.

The launching of the boat 50 is accomplished in a manner generally similar to its recovery. Before the boat 50 is raised from her chocks, the messenger lines are coupled as described heretofore but the shackle 82 of the movable block 80 is now connected to link hook 68, as shown in FIG. 3. As the lifting hook is lowered, the messenger lines are taut, the winch messenger line

paying out taut and being insufficiently tensioned to cause any hoisting of the boat. After the boat becomes sufficiently water-borne upon lowering of the crane hook, the crest of the next succeeding wave will cause the boat to be raised, and, since the lifting link is tilted to the right, to automatically disengage itself from the hook bill and permitting the boat to rise and recede with the wave formation.

Although in the specification and the accompanying drawings there is shown and described one embodiment of the invention, it is to be understood that the single embodiment is not to be exhaustive nor limiting of the invention but is given for purposes of illustration in order that others skilled in the art may fully understand the invention and the principles thereof and manner of applying the same in practical use in accordance with the varying conditions of those uses.

What is claimed is:

1. In apparatus for launching sea craft on the sea surface and recovering it therefrom and comprising a lifting hook of a sling attached to the sea craft and a suspended hook arranged to be lowered toward and raised from said lifting hook, the improvement which comprises a transverse arm fixed to and extending through the lifting hook, said arm providing a pair of downwardly extending hook portions, one of said hook portions being positioned on one side of the lifting hook and the other hook portion being positioned on the other side of the lifting hook, a guiding line having one end connected to the bill portion of the suspended hook and its other end portion connected to tensioning means, an upper fixed pulley and a lower movable pulley interposed in said line between its ends, said movable pulley having a shackle attached thereto for reception in one of the hook portions of the transverse arm when the craft is to be launched on the sea surface and for reception in the other of the hook portions of the transverse arm when the craft is to be recovered from the sea surface.

2. The improvement in claim 1 further characterized by the bill portion of the suspended hook having a vertical outer face providing a means for guiding the lifting hook into engagement with the suspended hook as tension on the guiding line is increased.

3. The improvement in claim 1 further characterized by said guiding line being formed of two sections, each section terminating between said fixed and movable pulleys and providing therebetween a quick coupling connection.

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