March 14, 1933. W. I. BOWDEN 1,900,905

BOAT HOIST

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Fig. 1.

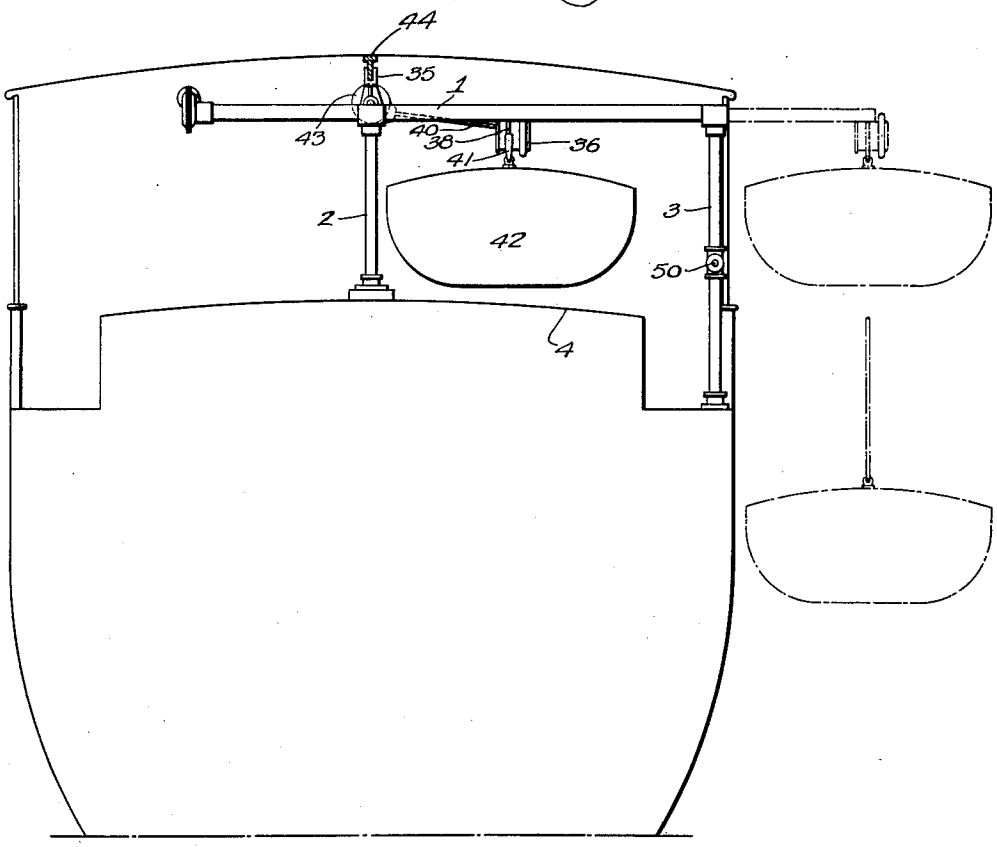
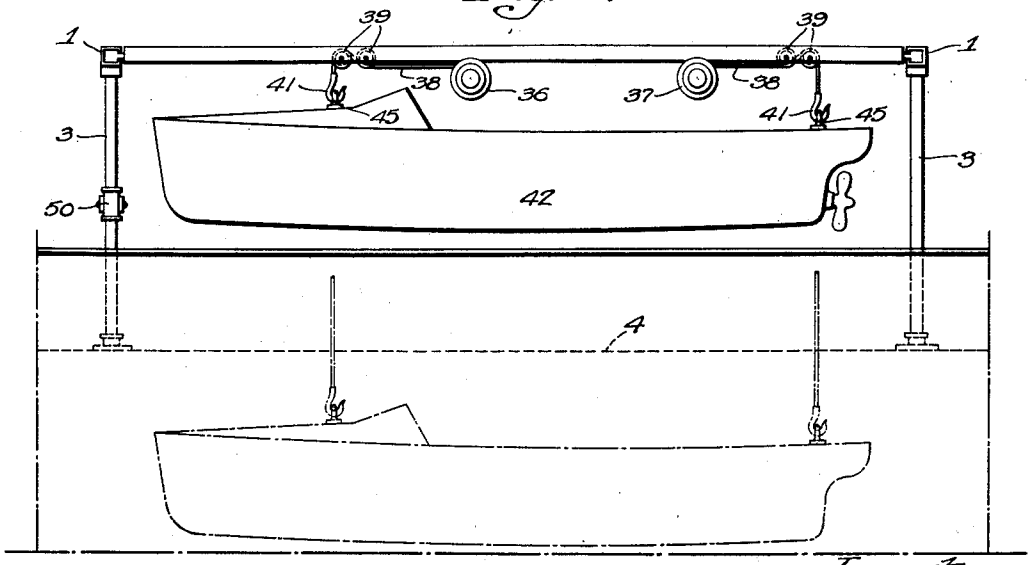


Fig. 2.



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BOAT HOIST

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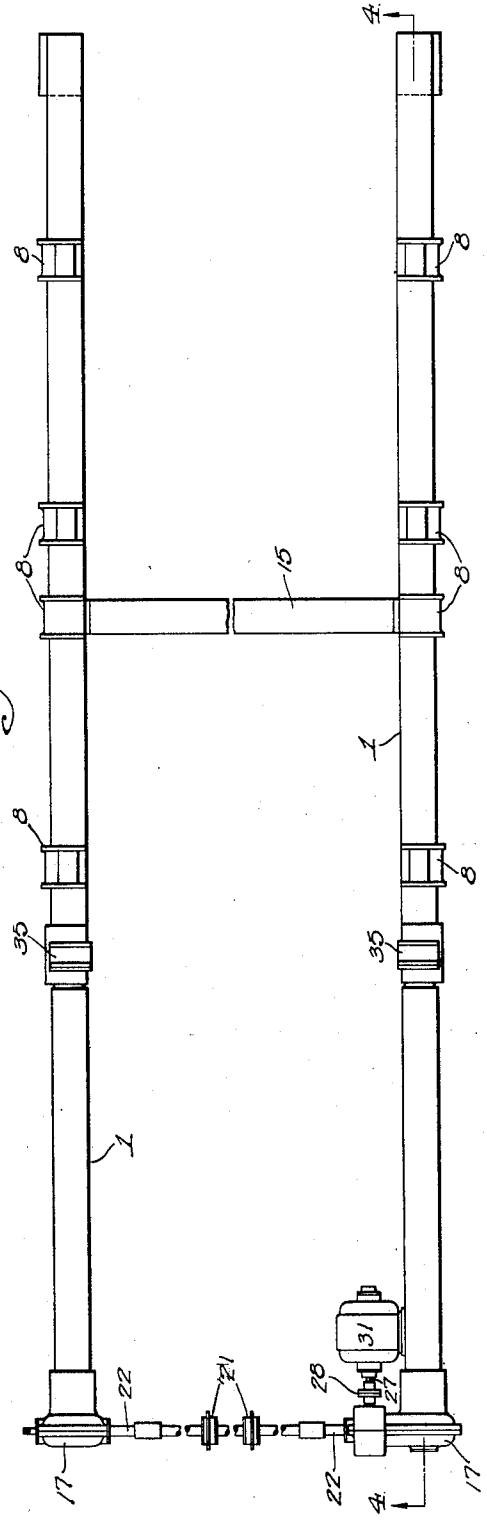

Fig. 3.

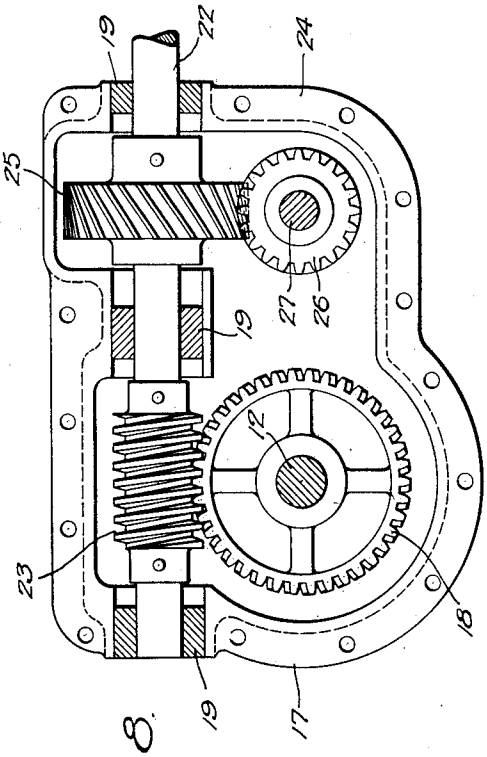

Fig. 8.

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BOAT HOIST

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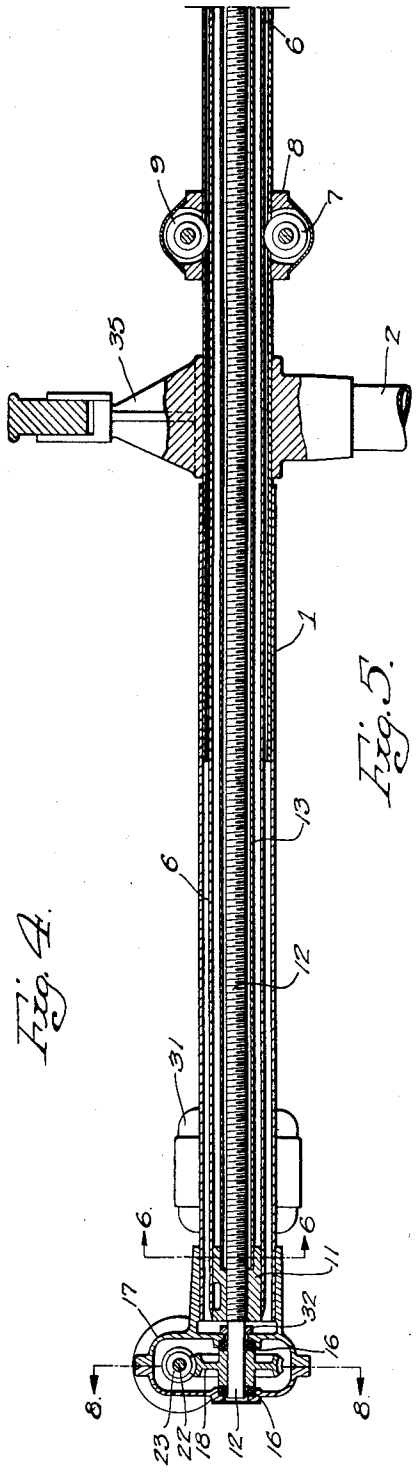

Fig. 4.

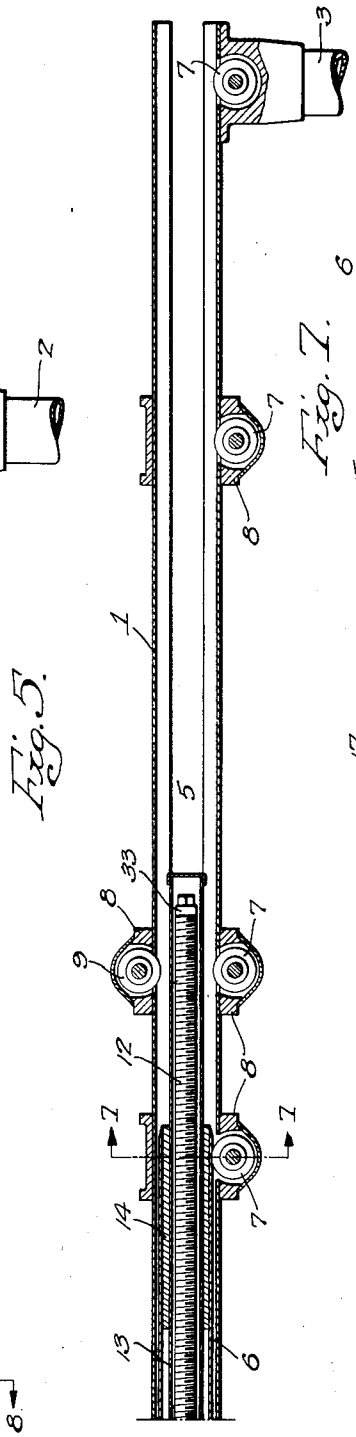

Fig. 5.

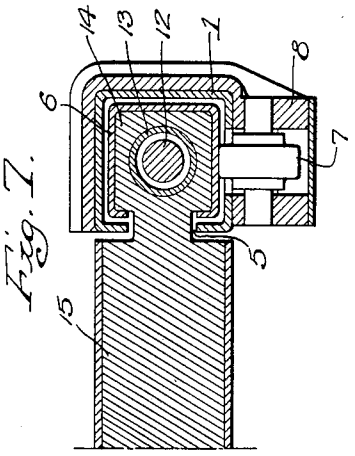

Fig. 7.

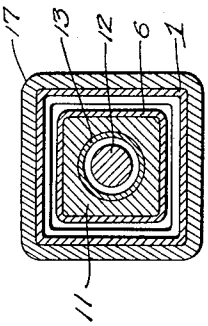

Fig. 6.

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Patented Mar. 14, 1933 1,900,905

UNITED STATES PATENT OFFICE

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BOAT HOIST

Application filed September 22, 1930. Serial No. 483,666.

The invention relates to improvements in boat hoists, and more particularly in that type of hoist adapted for use on marine vessels for the purpose of launching a tender or life-boat from an inboard position in which the tender or life-boat is normally stowed.

The principal object of the invention is to provide a hoist of the stated character that structurally and operatively shall constitute a substantial improvement over the hoists of the prior practice.

Another object of the invention is to provide a hoist of the stated type that shall lend itself readily to power operation.

To this latter end, a further object of the invention is to provide a boat hoist of the stated type in which transfer of the said boat from an inboard to an outboard position, or vice versa, is accomplished by a rectilinear movement of the boat carriage, and shall be entirely free of radial movement in the major boat-supporting members.

Still another object of the invention is to provide a power driven hoist of the stated character adapted for remote control.

A still further object of the invention is to provide a power hoist of the stated character which by reason of compactness of form and simplicity of operation shall be well adapted for use on small vessels and yachts.

The invention further resides in certain novel structural features and details hereinafter set forth and illustrated in the attached drawings, in which

Figure 1 is a side elevational view of a hoist made in accordance with my invention;

Fig. 2 is a front elevational view of the hoist;

Fig. 3 is a diagrammatic plan view of the hoist;

Figs. 4 and 5 are fragmentary sectional views on the line 4—4, Fig. 3; and

Figs. 6, 7 and 8 are sectional views on the lines 6—6, 7—7 and 8—8, respectively, Figs. 4 and 5.

With reference to the drawings my hoist in the illustrated embodiment comprises a supporting framework consisting of a pair of spaced parallel side rails 1—1, each of which in the present instance is supported by two uprights 2 and 3 respectively extending upwardly from the deck 4 of the vessel. In the present instance also the inner uprights 2 are located approximately on the longitudinal center line of the vessel; while the uprights 4 are adjacent one side. The side rails 1 are rectangular in cross section, and each has in its inner face a slot which may extend the full length of the rail. Within each of the rails, see Figs. 4 and 5, is slidably mounted a rectangular casing 6, this casing more or less closely fitting the walls of the rail and traveling upon a series of rollers 7 suitably journalled in bearing brackets 8 secured to the rails and projecting into the interior of the latter through openings in the bottom wall thereof. A pair of rollers 9 are also provided in the upper part of two of the brackets 8, as shown, and project through openings in the top of the rail to engage the upper wall of the casing 6.

At its inner end the casing 6 carries a nut 11, which nut has threaded engagement with a shaft 12 extending longitudinally through the rails and through the casing 6. For rotatively supporting these shafts, each of the casings 6 is provided with an inner cylindrical wall 13, one end of which is secured in the nut 11; while the other end projects through and beyond a rectangular member 14 which constitutes a terminus for the outer wall of the said casing. As stated, the cylindrical inner wall 13 of the casing projects in the present instance beyond the member 14 and is closed at its outer extremity. The members 14 constitute supports for the ends of a cross beam 15 which projects through the slots 5 in the beams 1 and extends transversely between the latter.

The inner ends of the threaded shafts 12, see Fig. 8, are journalled in bearings 16 in housings 17 secured to the inner ends of the rails 1, and the journalled extremity of each of the shafts 12 carries a worm gear 18 secured to the shaft intermediate the bearings 16. Journalled in bearings 19 in the housings 17, and intermediate said housings in bearings 21—21, is a transverse shaft 22, this shaft carrying at each end a worm 23 which meshes with the corresponding worm

wheel 18 in the housings 17. In an extension 24 of one of the housings 17 the shaft 22 carries a spiral gear 25 which meshes with a spiral pinion 26 on a shaft 27. The latter shaft projects into and is journalled within the said housing extension and is connected at its outer end by a coupling 28 to the armature of an electric motor 31, the motor being mounted in the present instance upon the adjacent rail 1.

Attention is directed to a washer 32 carried by the shaft 12 within the housing 17, this washer abutting a wall of the housing and constituting an abutment stop for the nut 11 when the latter is at the extreme inner end of its travel. A similar washer 33 is provided at the outer end of the threaded shaft 12 to constitute a stop for the nut 11 at the outer end of its travel.

The cross bar 15 carries in the present instance a pair of electrically operated hoists 36 and 37, from each of which a cable 38 extends under and over guide sheaves 39. The depending outer ends of these cables carry hooks 41 which constitute a means for attaching the cables to a boat 42, which boat normally is supported in a cradle, not shown, upon the boat deck 4 intermediate the side rails 1 and the uprights 2 and 3, as illustrated in full lines in Figs. 1 and 2. Electric cables 40 from the hoists 36 and 37 extend rearwardly to reels 43 which may be suitably supported from a beam 44, for example, extending between the uprights 2, these reels being of the automatic takeup type, whereby as the cross bar 15 moves inwardly of the boat, in a manner hereinafter set forth, the reels operate to take up the slack developing in the said cables. From the reels 43 connections are made between the electric cables and a suitable source of power, not shown, and with suitable manually operated control switches 50 conveniently located in the present instance upon one of the uprights 3.

In the relative positions of the parts of the apparatus, shown in Fig. 3, the cross beam 15 lies immediately over the boat 42 in its cradle upon the boat deck, the hoist cables 38 being connected to the boat through the hooks 41 and suitable eyelets 45 on the boat. Assuming now that the boat is to be launched, an operator through the medium of the switches 50 located on one of the uprights 3 actuates the hoists 36 and 37 to elevate the boat into a position clearing the top of its cradle. Operation of the hoists is now discontinued, and by means of other switches also conveniently located, for example, on said upright 3, the motor 31 is energized, thereby effecting through the shaft 22, worm wheel 18 and worm 23 actuation of the screw shafts 12. Rotation of these shafts causes the nuts 11, and the casings 6 in which the said nuts are secured, to travel outwardly on the shafts 12, thereby carrying the boat suspended from the cross beam 15 to an outboard position overhanging the water, as illustrated in broken lines in Fig. 1. The motor 31 is now de-energized and the hoists 36 and 37 again actuated to lower the boat into the water. Thereafter the hooks 41 may be disconnected to release the boat from the hoist mechanism, and the launching is completed. By reverse sequence of operations, the boat may be elevated from the water and replaced upon its cradle.

It will be noted that the apparatus is entirely free from swiveling parts of the type employed in the usual davit, and that the boat carriage has true rectilinear movement between the cradle and outboard positions. Automatic limit stops may be employed, if desired, whereby following energization of the various motors, the motor circuits are automatically broken following a predetermined movement of the actuated parts. The apparatus thus lends itself readily to remote control whereby the hoist, or a number of them, may be operated from a central point of vantage, say from the bridge of the vessel. There may be considerable detail modification without departure from the invention.

I claim:

1. In a boat hoist, the combination with an elongated hollow casing, of a threaded shaft journaled at one end of said casing and extending longitudinally therethrough, an inner hollow casing slidably supported in the first-named casing and surrounding said shaft, said inner casing comprising a nut having threaded engagement with said shaft, boat hoisting and supporting apparatus carried by said inner casing, and means for rotating said shaft.

2. In a boat hoist, the combination with a pair of elongated hollow casings, of an inner hollow casing slidably supported in each of said casings, a threaded shaft journaled at one end of each of said outer casings respectively and extending longitudinally therethrough and through the respective inner casings, a nut carried by each of said inner casings and having threaded engagement with the respective shafts, a longitudinal slot in each of said outer casings, a cross bar connecting said inner casings and projecting through said slots, boat hoisting means carried by said cross bar, and mechanism for simultaneously rotating the said shafts.

3. In a boat hoist, the combination with a boat carriage, of means for guiding said carriage in a rectilinear path between inboard and outboard positions, and electrically-operated mechanism on the carriage constituting means for supporting and for raising and lowering a boat suspended from the carriage, an inboard source of potential, an electric cable connecting said source with the said electrically-operated mechanism, and a

reel in a fixed inboard position for automatically paying out and taking up the cable with the movement of the said carriage.

4. In a boat hoist, the combination with a boat carriage, of means for guiding said carriage in a rectilinear path between a normal inboard and an outboard position, a pair of electric motors mounted on said carriage, hoist mechanism operatively connected with each motor, and means for synchronously operating said motors from an inboard position.

5. In a boat hoist, the combination with a boat-supporting structure, of a hollow rail mounted in an elevated position above said structure, a beam slidably supported in the rail, power-hoist mechanism carried by the beam, means for longitudinally shifting the beam in the rail including a screw extending longitudinally of said rail and having threaded engagement with the beam, and a casing for the screw movable with the beam.

6. In a boat hoist, the combination with an elongated casing, of a beam longitudinally movable into and out of said casing, mechanism in said casing for extending and retracting the beam, a motor mounted on said casing and operatively connected with said mechanism, and power-hoist mechanism carried on the beam externally of the casing.

7. In a boat hoist, the combination with a boat-supporting structure, of boat-carrying means mounted in an elevated position above said structure and comprising essentially an elongated casing, and a beam supported in said casing for longitudinal extension and retraction from one end of the latter, mechanism in said casing for extending and retracting the beam, a motor carried by the casing and operatively connected with said mechanism, and hoisting mechanism carried on the projecting end of said beam.

8. In a boat hoist, the combination with a pair of spaced parallel elongated casings, of a rail mounted in each of said casings and adapted for longitudinal extension and retraction from the end of the latter, mechanism in said casings for extending and retracting said rails, transmission means extending between said casings and connecting said mechanisms, a motor carried by one of said casings and operatively connected to said mechanisms, a cross bar connecting said beams, and power-driven boat-hoisting and supporting means carried by said cross bar.

9. In a boat hoist, the combination with a boat carriage, of means for guiding said carriage between a normal inboard position and an outboard position overlying the water, electrically-actuated boat hoist mechanism mounted on the carriage, cables connecting said mechanism with an inboard source of potential, and means for paying out and taking up slack in said cables as the carriage moves between said inboard and outboard positions.

10. In a boat hoist, the combination with a boat carriage, of means for guiding said carriage in a rectilinear path between a normal inboard position and an outboard position overlying the water, electrically-actuated boat-hoist mechanism mounted on the carriage, an inboard source of potential, and means for continuously maintaining electrical connection between the said hoist mechanism and the source of potential.

11. In a boat hoist, a boat supporting structure, spaced standards mounted on said supporting structure, a pair of parallel rails supported in said standards, a beam slidably supported in said rails, mechanism for moving said beam longitudinally in said rails, and hoist mechanism carried by said beam, said parts being so constructed and arranged that the entire device including the standards and the mechanism supported thereby extends above said supporting structure a distance greater than the depth of the boat to be handled.

12. In a hoist for life boats and the like, a boat supporting structure, standards mounted on said supporting structure, a pair of hollow rails mounted on said standards, a beam slidably mounted on said rails, extensible means provided within said rails and attached to said beam, power means supported on said rails for actuating said extensible means to extend and retract the beam, and power hoist mechanism carried by said beam.

13. In a hoist for life boats and the like, a boat supporting structure, standards mounted on said supporting structure, spaced parallel rails supported on said standards, a beam slidably supported in said rails, means provided within said rails for moving said beam longitudinally, and hoist mechanism carried by said beam, said parts being so constructed and arranged that the life boats to be handled are moved longitudinally in the space between the rails and the supporting structure and the entire device including the standards and the mechanisms supported thereon extends above said supporting structure a distance greater than depth of the boats handled.

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