Sept. 1, 1953 H. E. WEINSTEIN 2,650,378

DAVIT

Filed Feb. 24, 1950 8 Sheets-Sheet 1

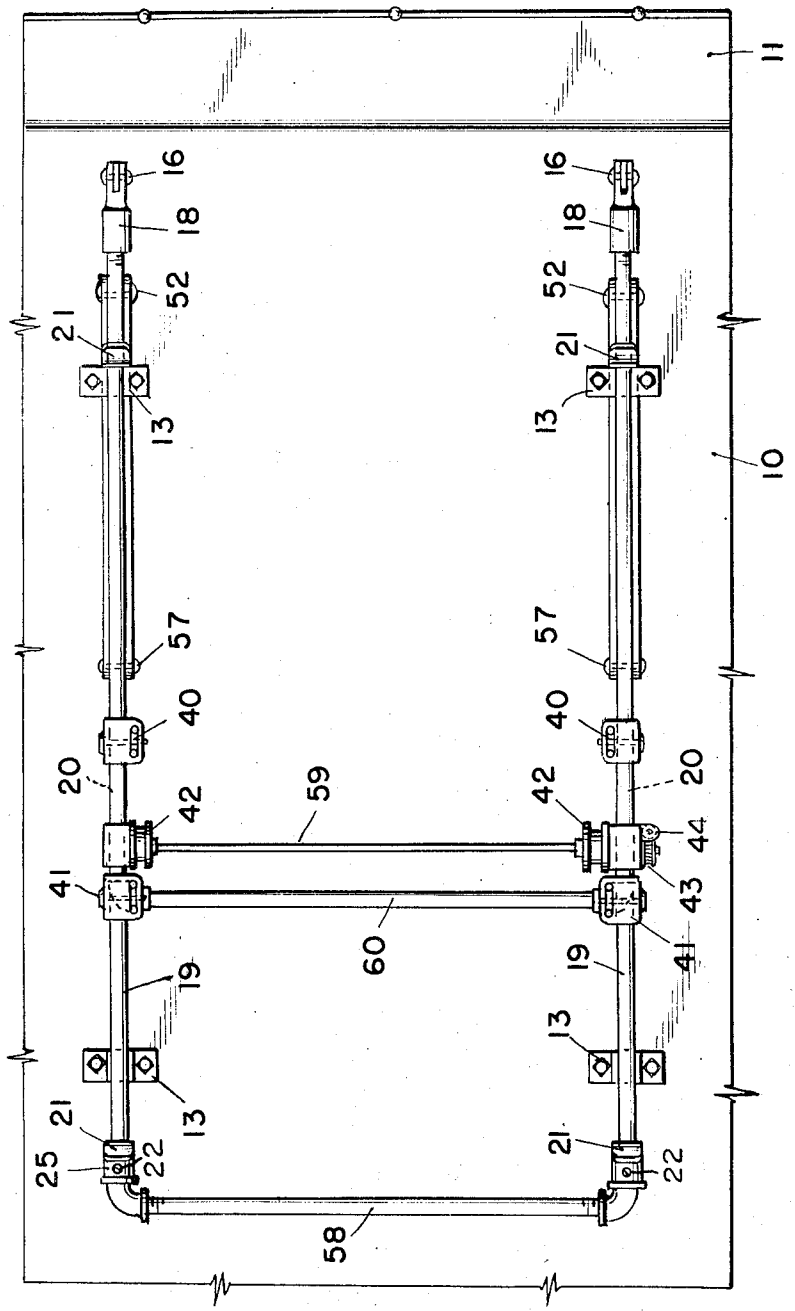



FIG. 1

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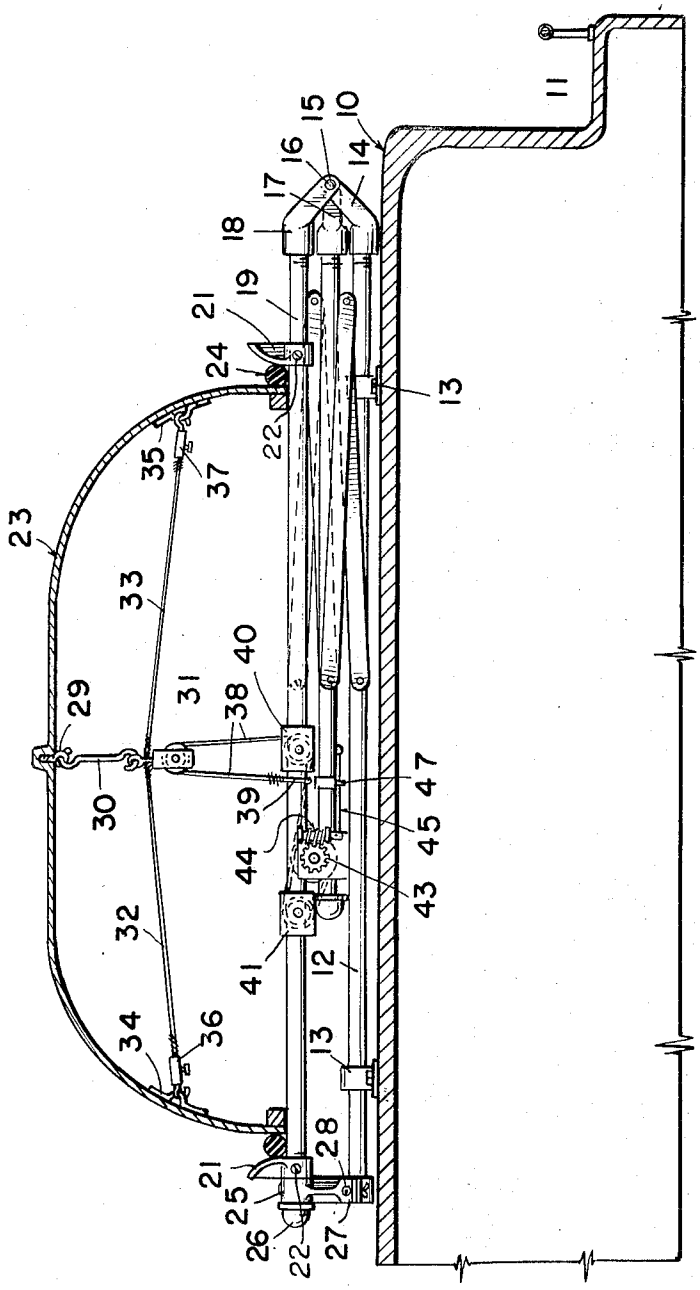
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Sept. 1, 1953 H. E. WEINSTEIN 2,650,378

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Filed Feb. 24, 1950 8 Sheets-Sheet 2

FIG. 2




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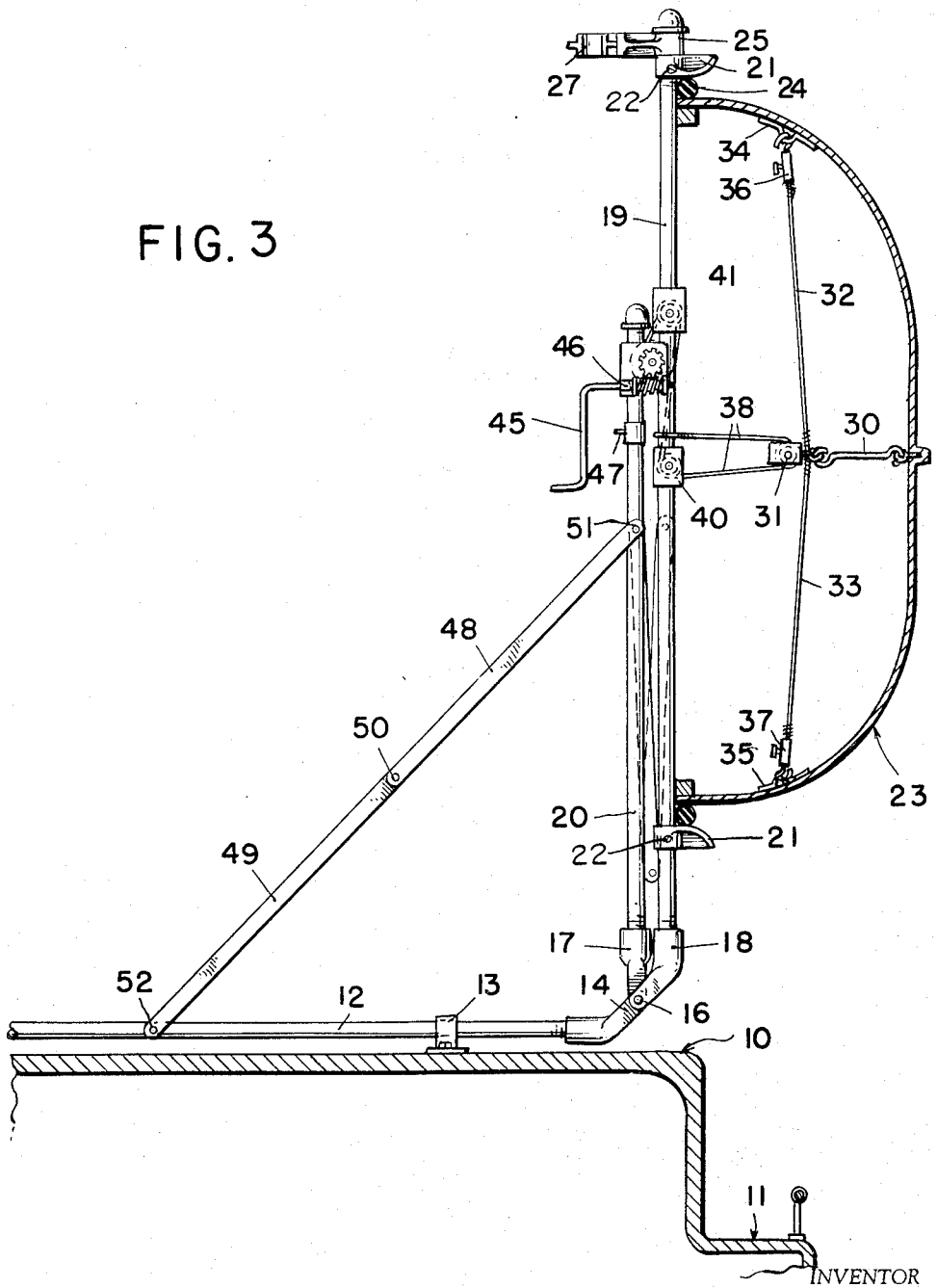
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Sept. 1, 1953 H. E. WEINSTEIN 2,650,378

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Filed Feb. 24, 1950 8 Sheets-Sheet 3

FIG. 3




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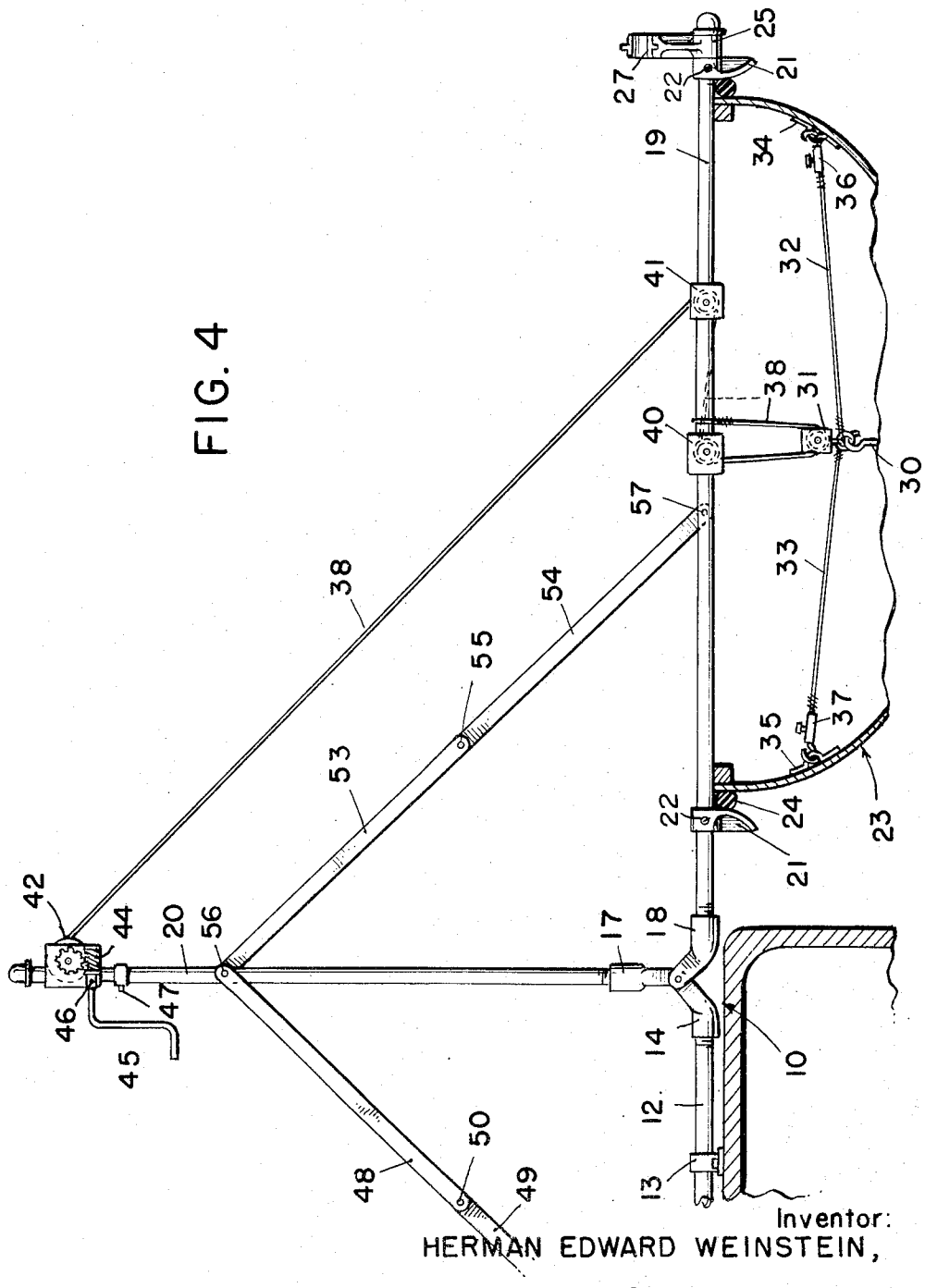
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Sept. 1, 1953 H. E. WEINSTEIN 2,650,378

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Filed Feb. 24, 1950 8 Sheets-Sheet 4

FIG. 4




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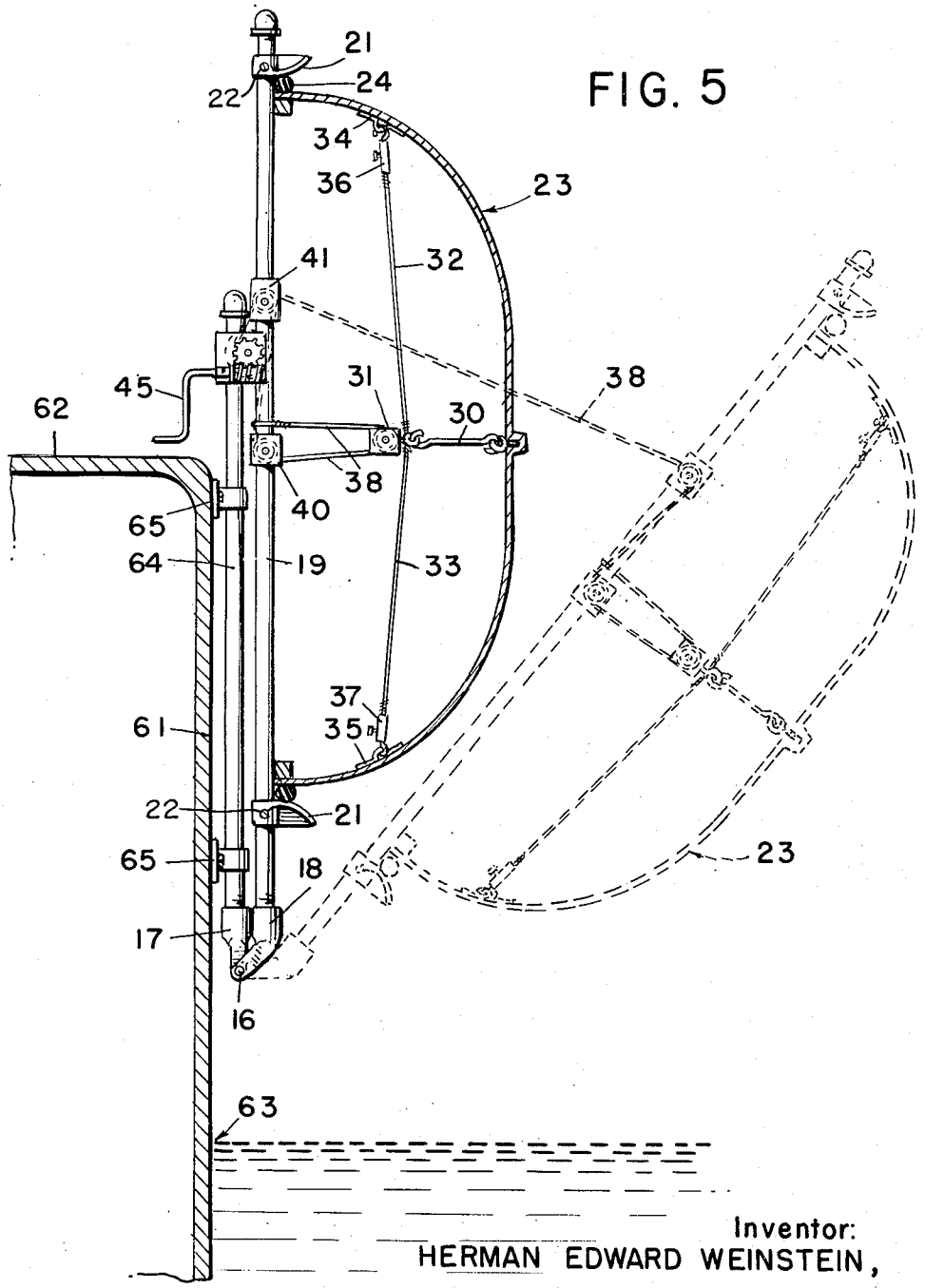
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Sept. 1, 1953 H. E. WEINSTEIN 2,650,378

DAVIT

Filed Feb. 24, 1950 8 Sheets-Sheet 5

FIG. 5




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Sept. 1, 1953 H. E. WEINSTEIN 2,650,378

DAVIT

Filed Feb. 24, 1950 8 Sheets-Sheet 6

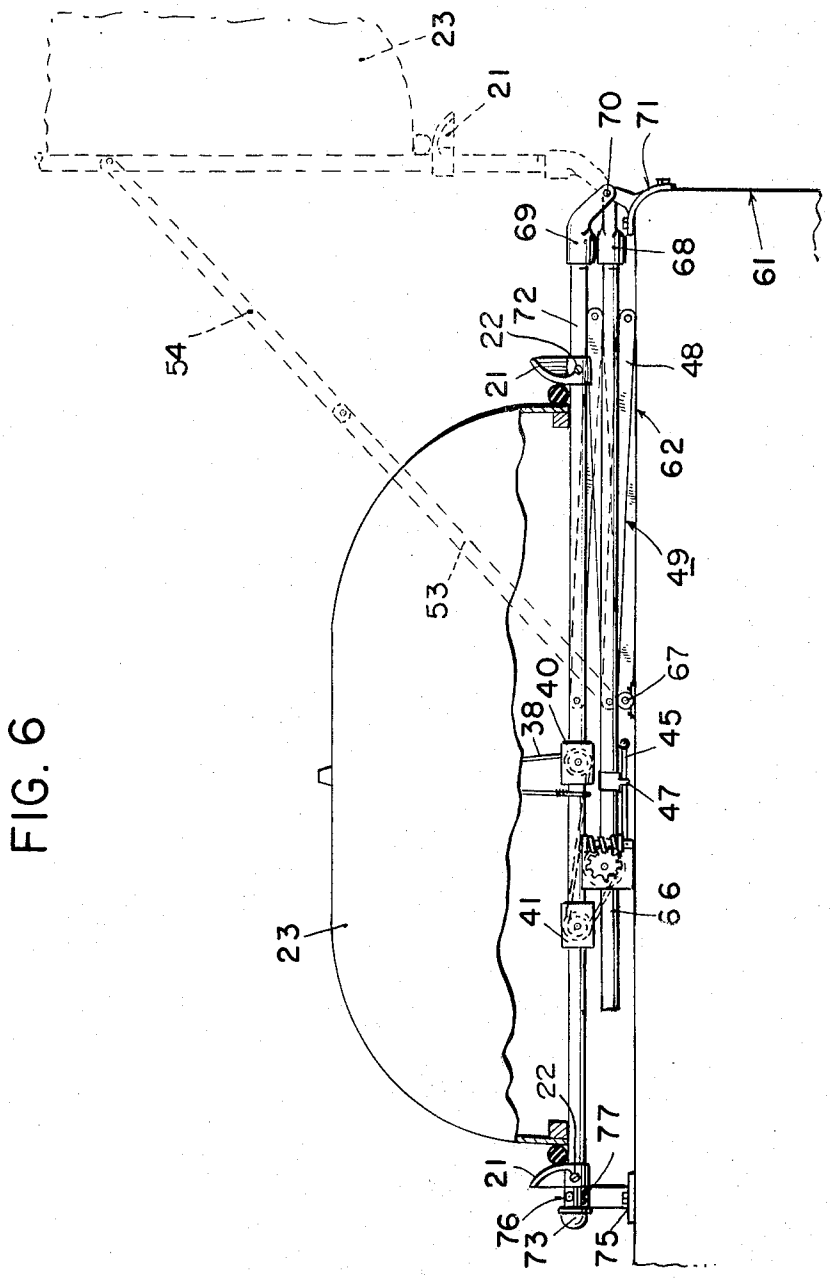



FIG. 6

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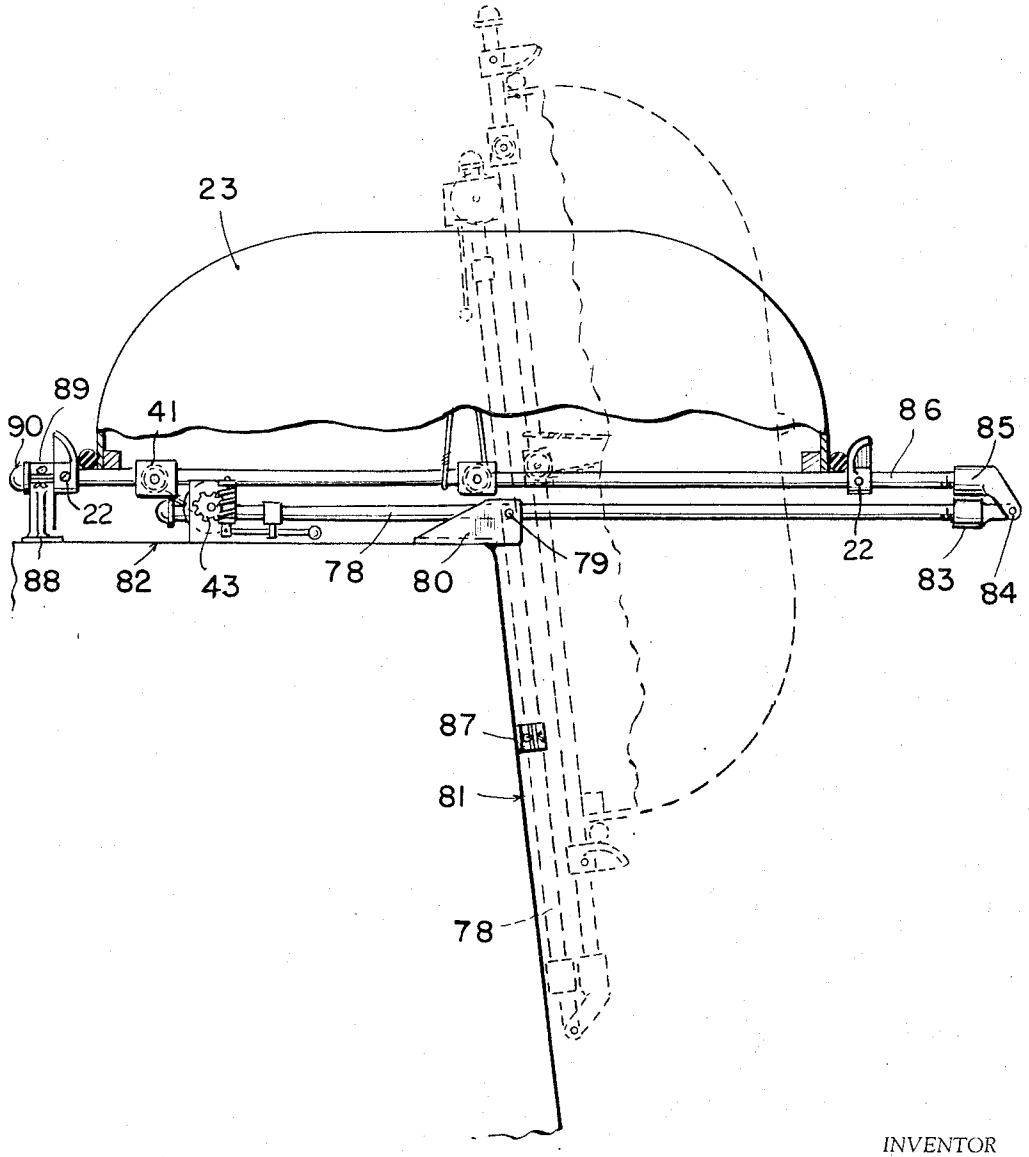
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Sept. 1, 1953 H. E. WEINSTEIN 2,650,378

DAVIT

Filed Feb. 24, 1950 8 Sheets-Sheet 7

FIG. 7




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Sept. 1, 1953 H. E. WEINSTEIN 2,650,378

DAVIT

Filed Feb. 24, 1950 8 Sheets-Sheet 8

FIG. 8

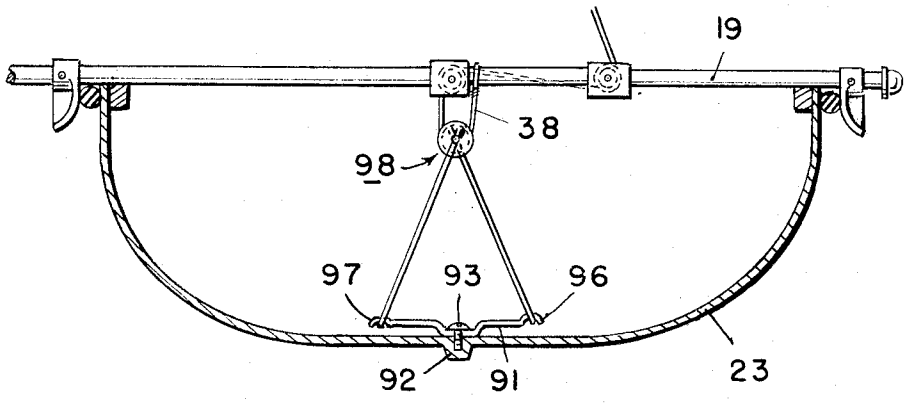



FIG. 9

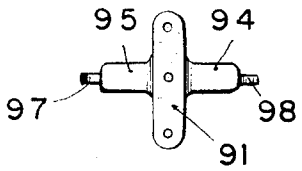
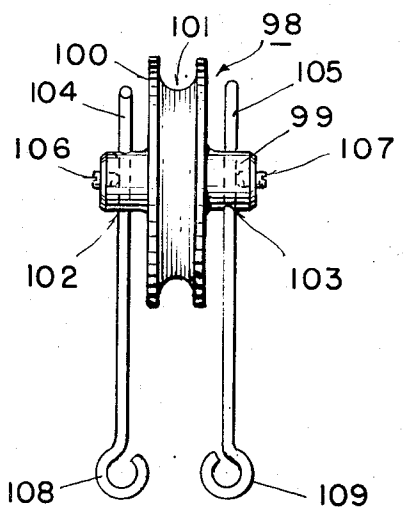



FIG. 10




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Patented Sept. 1, 1953

2,650,378

# UNITED STATES PATENT OFFICE

2,650,378

## DAVIT

Herman Edward Weinstein, Schenectady, N. Y.

Application February 24, 1950, Serial No. 145,949

8 Claims. (Cl. 9—39)

1

This invention relates to boats in general and more particularly to davits for landing and launching boats from larger vessels. This invention is directed primarily to davits of the type for raising, launching or storing dingies or equivalent small boats, particularly on small craft.

Heretofore many types of davits or dingy hoists have been utilized, but in these previously used constructions complicated bulky and inefficient structures were utilized.

An object accordingly of the present invention is to provide improved apparatus for raising, launching or storing a dingy or other small boat, particularly on small water craft.

A further object of the invention is to provide such means which are simple, light-weight, inexpensive to manufacture and maintain and easy to operate for the purpose for which the invention has been made.

A further object of the invention is to provide a davit which can be applied or affixed in an easy manner to boats and which are adapted for storing a dingy upside down on the deck or cabin roof of the craft carrying the dingy.

A further feature of the invention is to provide a davit whereby a dingy is lifted directly from the water vertically and then by a rolling motion turned upside down either on the deck or on the cabin roof.

A further object of the present invention is to provide a means for automatically locking the dingy on the deck of the craft when in an inverted position.

A still further object is to provide an apparatus of this character which is safe in operation in that it is always self-locking whereby accidents in lowering or raising the dingy are obviated.

Still another object of the present invention is to provide an apparatus which is self-contained and having all necessary parts thereof a permanent part of the davit or hoist.

Other and further objects of the present invention will be apparent from the following detailed description of preferred embodiments of the invention when taken together with the accompanying drawings, in which

Figure 1 is a partial plan view of the apparatus utilized with the dingy and connecting cables omitted;

Figure 2 is an elevational view of the apparatus with dingy attached secured to the top of a boat cabin shown in section;

Figure 3 is a view similar to Figure 2 but showing the dingy in a vertical position after partial raising thereof;

2

Figure 4 is an elevational view of the dingy in position to be lowered into the water;

Figure 5 is an elevational view of a modification of the invention wherein the davit is vertically attached to the cabin of the boat;

Figure 6 is an elevational view of a further modification of the invention;

Figure 7 is an elevational view of an additional modification of the invention wherein the davit is attached to the sides or stern of the boat and wherein the hoist may be secured in a vertical position or pivoted onto the stern deck;

Figure 8 is a partial elevational view of a modified securing means between the davit and the dingy;

Figure 9 is a plan view of securing means for attachment to the dingy in the embodiment of Figure 8; and

Figure 10 is an elevational view of a pulley and fastening means for the embodiment of Figure 8.

In the drawings, the numeral 10 designates in general the top of a deck house or cabin and 11 a side deck on the craft which is somewhat lower than the top of the deck house 10 and has a width which is common to many small craft of usual design. It is necessary in all dingy hoists or davits that the boat, when being either raised from the water for securing to the craft or when being lowered from the craft into the water, clear this side deck 11. In the embodiment of the invention as shown in Figures 1 to 4 inclusive a tubular member 12 of any suitable dimensions to fit the craft to which the hoist is to be attached is provided, and the tubular member is affixed in this embodiment to the top of the deck house 10 by means of U-shaped brackets 13. As will be noted, two tubular members 12 are provided which are spaced from one another and parallel. An offset fitting 14 is screwed onto each tubular member 12 at that end adjacent to the side from which the dingy is to be lowered. This offset fitting 14 has an opening 15 in the free end thereof. Hinged to the offset fitting 14 by means of a pin 16 are a straight fitting 17 and a second offset fitting 18 similar to the fitting 14. Each of these fittings, namely, 14, 17 and 18, are internally screw-threaded at their ends opposite to that joined together by the pin 16. A tubular member 19 similar to the member 12 and having a screw-threaded end, is inserted in the offset fitting 18 by screw-threaded engagement therewith and a threaded tubular member 20 of shorter width than the members 12 and 19 having a screw-threaded end is fitted into the

straight fitting 17 in screw-threaded engagement therewith.

On the members 19 there are provided two adjustable guides 21 which are slidable thereon and which may be secured in any desired manner such as by screws 22 and the like. These adjustable guides 21 may be formed as castings of any desired material and are for the purpose of guiding the dingy into proper relationship with the hoist and at the same time serve as chocks for the dingy.

The dingy is generally shown at 23 in Figures 2, 3 and 4 and this dingy, as is usual in boats of this character, is provided with a bumper 24 of rope, hemp, cork or the like for the purpose of preventing injury not only to the dingy but also to a craft in which it might come in contact. As can readily be seen from the figures, the adjustable guides 21 have inwardly directed curved faces which taper outwardly to the free ends of the guides. This construction is for the purpose of guiding the dingy into proper position on the tubular member 19 when it is raised from the water into the position shown in Figure 4 from which position it will then be turned onto the top of the deck house 10. By coaction between the bumper 24 and the guides 21, the placement of the dingy on the hoist is cushioned and can be readily and easily effected without difficulty.

Fastened to the upper tubular member 19 adjacent its free end, there is a clamping member 25 held thereon by a cap 26 or the like and which has a two-part hinged cap 27 for the purpose of securing it to the lower tubular member 12. The two parts of the hinged cap 27 can be locked about the member 12 by means of a cotter pin 28 or by any similar means which would serve the purpose of securing the parts together and at the same time have them readily separable for purposes hereinafter to be brought forth. The foregoing discussion has been directly mainly to the structural members which form the framework of the hoist.

In order to secure the dingy 23 to the hoist for raising or lowering the dingy, there is provided an eye 29 secured in the keel of the dingy internally of the dingy. An eye 29 is, of course, provided at two spaced positions in the dingy in order to cooperate with the spaced parallel tubular members 19 as will be readily apparent from the drawings. In the foregoing discussion, of course, the tubular members 19 and 20 have been singly referred to, but it is to be understood that they are provided in pairs as also the tubular members 12, as shown in Figure 1. A long hook 30 is fastened to each eye 29. To each of the long hooks 30 there is attached a pulley 31. Due to the position of the eyes 29 the pulleys 31 will be located about midway between the keel and gunwale of the dingy. Fastened to the pulley 31 and extending to each side thereof are light balance lines 32, 33 and these balance lines are attachable to eyes 34, 35 in the sides of the dingy by means of snap hooks 36, 37. These lines 32, 33 serve the purpose of maintaining the dingy on an even keel while suspended in the air for obvious reasons.

A wire cable 38 is attached to tubular member 19 at 39. This cable 38 passes around the pulley 31 as shown in Figure 2. A pulley 40 is secured to each of the tubular members 19 about midway between the guide members 21 and another pulley 41 spaced from the pulley 40 is also attached to each tubular member 19. A drum 42 is attached to each of the tubular members 20 in proximity



to the ends thereof. The cable 38, after passing through the pulley 31 is trained around the pulleys 40 and 41 and is then wound about the drums 42.

A self-locking worm gear 43 is provided adjacent one of the drums 42 and attached to the tubular member 20, as is shown in Figure 4. A worm 44 is fixed in position to coact with the worm gear 43 and this worm has a handle 45 hingedly attached thereto at 46. By means of the handle 45 the worm 44 can be turned and, due to coaction with the worm gear 43, will rotate the drums 42 whereby the cables 38 can be either reeled in or let out for the purpose of moving the tubular members 19 and 20 and consequently the dingy which is to be secured thereto. Due to the fact that the handle 45 is hinged at 46 it can be stowed when the dingy is lowered onto the deck house top 10 by fitting it into a clip 47 secured to the tubular member 20. In this position, as shown in Figure 2, the handle 45 will not interfere with the deck house roof. When, however, this handle is in a position as shown in Figure 3 it will transmit the necessary torque for actuating the cable winding mechanism.

The dingy is shown in stored position in Figure 2 in the first embodiment of the invention. In order to move the dingy from this stored position and lower it into the water, the pins 28 are first removed from the hinged cap 27 so that the two portions thereof may be separated and released from the tubular member 12. The dingy 23 and the tubular members 19 and 20 are then raised manually to the position shown in Figure 3 of the drawings. This is a relatively easy movement due to the fact that dingies in common use very seldom exceed 100 pounds in weight and almost as soon as the dingy is lifted from the horizontal position of Figure 2, gravity acts to reduce the lifting load until near the vertical position, as shown in Figure 3, when the load must actually be restrained.

The restraining of the load is effected by bars 48 and 49 which are hinged together at 50. The bar 48 is pivotally secured to the tubular member 20 at 51 and the bar 49 is pivotally secured to the tubular member 12 at 52. Due to this arrangement and construction, when the dingy is raised together with the members 19 and 20 into the position shown in Figure 3, further movement will be prevented due to the members 48 and 49 and also due to the fact that the cable 38 has been wound into the shortest length on the drums 42.

From a position as shown in Figure 3, all further movement is effected by means of the handle 45. Turning this handle 45 causes the cables 38 to unwind from the drums 42 through the action of the worm 44 and the worm gear 43. As the cable 38 is unwound from the drum the tubular member 19, due to the offset construction of the member 18, is caused to drop to a horizontal position as shown in Figure 4. In this position and in all movement from the position in Figure 2 to the position in Figure 4 the dingy is maintained in contact with the adjustable guides 21 and the tubular member 19 due to the arrangement of the pulleys, as will be readily apparent. In the horizontal position as shown in Figure 4, bars 53 and 54 hinged together at 55 and having their free ends secured to the members 20 and 19 in a pivotal manner as at 56 and 57, respectively, prevent the arms or tubular members 19 from lowering any farther or below a horizontal position.

A further unwinding of the cables 38 then causes the dingy to lower away from the tubular members 19 until it is water-borne. When the dingy is water-borne it is then only necessary to detach the hooks 30, 36 and 37 in order to completely detach the dingy from the hoist.

To raise the dingy from the water it is only necessary to reverse the foregoing set forth process. It is pointed out that while the dingy in stored position, as shown in Figure 2, may rest substantially in the center of the carrying craft, when it is dropped into the water it readily clears deck 11 which is a very desirable feature. In addition, on small pleasure craft this is a very important consideration as it is desirable and almost necessary that all weight be maintained centrally of the craft.

Referring to Figure 1 of the drawings, it can be seen that the spaced parallel tubular members 19 are secured together at their free ends adjacent the members 25 by a cross bar 58 to provide adequate bracing for this structure. Also in this view the connection between the drums 42 is shown as a bar 59 which serves to transmit the torque applied by the handle 45 through the worm 44, worm gear 43 to each of the drums for actuating each of the two cables 38. There is also shown in this view a cross bar 60 connecting the ends of the tubular members 20 as shown by elbow members in dotted lines.

As set forth previously, the dingy 23 is maintained in contact with the adjustable guides 21 and the tubular member 19 from the inverted position shown in Figure 2 to the upright horizontal position shown in Figure 4. It is to be noted that a pulley 31 is used in the construction rather than running the cable 38 direct from the keel of the dingy to the drums 42 over appropriate pulleys. The reason for use of the pulley 31 is to halve the strain on the cables 38 while only permitting raising or lowering the dingy from its chocked position to the water when the dingy is free of the chocks or adjustable guide members 21. While the tubular member 19 is in a horizontal position it will not move prematurely due to the arrangement of the pulleys until the dingy is in contact therewith. When the dingy is locked against the tubular member 19 by action of the cable 38 and the adjustable guides 21 then further stress or force on the cable 38 causes both the dingy 23 and the tubular member 19 to raise. It has been found that if the cable 38 ran directly from the keel and over the guide pulley, that the tubular member 19 would be raised before the dingy was locked against this member.

It will also be apparent from the foregoing discussion that the dingy 23 will always be guided into the adjustable guide members and wedged therein to a certain degree by the action of the lifting cables 38. It has been found that this takes place regardless of the motion of the carrying craft.

A modification of the dingy hoist is disclosed in Figure 5 wherein the structure of the hoist is vertically mounted against a side of the carrying craft or, if desired, a stem or transom of the larger boat as shown at 61, 62. The water line in contact with the stem or transom is designated in broken lines at 63. In this embodiment of the invention the members 12, 14, 48 and 49, as shown in the first embodiment, are eliminated. What constituted the shorter intermediate tubular member 20 in the first embodiment and designated 64 in Figure 5, is attached directly to the transom or stem of the larger boat by U-shaped



brackets 65. The remaining structure in this modification is substantially the same as that disclosed in Figures 1 to 4 inclusive and consequently identical numerical designations have been used. As can readily be seen in Figure 5, the dingy 23 can be held in the position shown against the transom 61, and to raise or lower the dingy it is only necessary to turn the handle 45 which operates in this embodiment in precisely the same manner as in the previous embodiments. The step, however, of raising the dingy and portions of the structure from the position shown in Figure 2 to that shown in Figure 3 is eliminated since the dingy and the tubular members are already in a vertical position. The cable 38 will securely hold the dingy in locked position as shown in full lines in Figure 5 since the cable 38 is locked at all times on the drums 42 as previously set forth in this specification. The partially lowered dingy in this embodiment of the invention is shown in dotted lines in Figure 5.

A further modification possible in the present invention is disclosed in Figure 6. In Figure 6 the shorter intermediate tubular member, as represented by the numeral 20 in Figures 1 to 3 inclusive, is designated by numeral 66. The straight threaded fitting 68 fastened to the end of tubular member 66 and the offset fitting 69 are hingedly connected at 70 to a pivot 71 secured to the craft at or near the junction of the substantially vertical side and the horizontal deck. Secured to the deck is a pivot 67 to which is pivotally fastened arm 49. Arm 49 is journalled to 48 as in Figure 3. In this modification the tubular member 12, clamp 13 and fitting 14 have been eliminated. Pivot 71 has been substituted for 14 and pivot 67 is used to fasten the arms 49. This simplification acts to reduce the number of parts and also the installed height of the hoist by the one tubular member. It will be clear that the launching or raising of the dingy with this modification will be identical to the method covered in Figures 2, 3, and 4, and the dingy 23, together with the tubular member 72, is turned into the position shown in full lines by pulling inward and downward on the cross connecting bar 73 between the tubular members 72. When the apparatus is in the horizontal position shown in full lines in the figure, it can be secured to the deck by means of a bracket 75 having hinged portions at its free end and as generally designated at 76. A pin 77 or the like can be utilized to secure the two hinged parts together, thereby clamping the tubular member 72 therebetween. The hinging or pivoting position shown at 70 would be substantially at the center of gravity of the dingy and therefore the turning effort required from the vertical to the horizontal position would be comparatively simple.

In Figure 7 there is shown a type of davit which is adaptable for securing a dingy to the stern of a carrying boat and this modification allows securing the dingy either in the substantially vertical position as shown in dotted lines, or since the davit is pivoted it may be tipped inboard in an inverted position as shown in full lines. The shorter intermediate tubular member 78 is hingedly supported at 79 by means of the bracket 80. This bracket 80 is attached to the stern deck approximately at the junction of the transom so that the pivot point 79 allows the davit to be arranged either parallel to the transom 81 or to the stern deck 82 as will be apparent from the drawing. A straight threaded fitting 83 is fastened to an end of the tubular member 78 and pivotally

connected thereto at 84 is the offset fitting 85. A tubular member 86 is secured to the offset member 85 in a manner similar to that shown in Figure 6. A bracket 87 can be secured to the transom 81 to coact with the shorter tubular member 78 when it is desired to hold the davit and dingy in a substantially vertical position on the transom. A bracket 88 having hinged portions at its free end generally designated 89 can be fastened to the stern deck for coaction with the tubular member 86 if it is desired to tip the davit and dingy inboard into an inverted position and fasten it to the stern deck. A pin 90 or the like can be utilized to secure the two hinged parts together thereby clamping the tubular member 86 therebetween. The bracket 87 can be similar in construction to the bracket 88 or can be merely a U-shaped bracket against which the tubular member 78 can rest. The remainder of the construction shown in Figure 7 is substantially the same as that disclosed in Figure 6 but in this modification the members 48 and 49 are eliminated and in this respect is quite similar to the embodiment of Figure 5. In addition, the position of the pulley 41 has been moved closer to the end of the tubular member 86 and the self-locking worm gear 43 has been moved close to the end of the shorter tubular member 78. These changes, of course, were necessary in view of the pivotal mounting of the entire davit on the bracket 80. The operation of this embodiment of the invention is quite similar to that of Figure 5 and the main difference is due to the pivotal mounting as hereinbefore set forth. The dingy and davit if stored in the inverted position shown in full lines is first raised to the substantially vertical position shown in dotted lines and from that point by actuation of the crank the dingy may be lowered into the horizontal position and then into the water.

A highly desirable method of attaching the dingy to the davit is shown in Figure 8. A plate 91 is attached directly to the keel 92 of the dingy by means of screws and the like 93. The plate 91 as shown in Figure 9 has two arms 94, 95 extending outwardly at right angles to the keel and having on the ends thereof hooks 96, 97 respectively. The cables 38 are similar in this embodiment to that shown in the other figures but the pulley used in the other figures is replaced by a pulley generally designated 98 and as shown in Figure 10. This pulley has a heavy shaft 99 and side plates 100 between which the pulley wheel 101 is free to rotate. In the shaft 99 there is a hole on each side of the pulley wheel as at 102, 103. In these holes hooks 104, 105 are adjustably retained by means of said screws 106, 107 so that the hooks can be vertically adjusted for various sizes of dingies. At the lower ends of the hooks are loops 108, 109 which coact with the hooks 96, 97 on the plate 91. The hooks 104, 105 are, of course, arranged at an angle to one another on the shaft as shown in Figure 8 so as to extend to the hooks 96, 97. The hooks are vertically adjustable not only to accommodate various sizes of dingies, but also since it is important that the pulley 98 be above the center of gravity of the dingy and yet hit the tube 19 when the dingy is hoisted into contact with the davit. This type of connection between the dingy and the davit is much faster in operation than that disclosed in the other embodiments of the invention and also is more certain and sure in operation. The action of the davit provided with this type of connection is similar to that of the other embodiments.

It will be readily apparent that while the foregoing detailed description of preferred embodiments of the invention have dealt only with relatively small and light-weight dingies in common use for pleasure craft, the ideas and structure are by no means limited to small dingies but can easily be applied to longer boats such as life boats on large ships. The only change in the requirements necessitated would be larger members as regards the various tubular members and fittings utilized, comparable to the size and weight of the larger boats.

It will also be apparent that the described apparatus can be made to handle various sizes of dingies and means can be provided for adjustment to take care of several sizes in any one model. Since the adjustable guide members can be moved along the tubular member 19, for example, wider dingies can be used and, of course, the spacing of the tubular members can be changed to accommodate longer dingies.

Due to the construction of this apparatus, the only attachments to the dingy which are necessary are two lifting rings or eyes secured in the keel of the dingy and four small eyes for the balancing lines along the sides. The remainder of the apparatus would be standard.

While the foregoing description in detail of the various forms of the invention describes preferred embodiments thereof, it is to be understood that various modifications can be made therein by those skilled in the art without departing from the spirit and scope of this invention.

I claim:

1. Apparatus for launching and landing a small boat comprising in combination a plurality of tubular members pivotally secured to one another at the same point and secured to a carrying craft, a boat having securing means connected in the keel thereof, adjustable guide and chocking members on one said tubular member, self-locking worm and gear means on one said tubular member, a first vertical lift pulley connected to said securing means in said boat, a second vertical lift pulley on said tubular member having said guide members thereon substantially vertically above said first vertical lift pulley, a pivot pulley on said same tubular member spaced from said second vertical lift pulley, a wind-up drum operatively connected to said worm and gear, a cable connected to said drum passing through said pivot pulley, said second vertical lift pulley and said first vertical lift pulley and then secured to said tubular member having said guide members thereon, said boat being adapted to be raised by said cable into contact with said tubular member having said adjustable guide and chock means thereon without pivoting movement of said tubular member due to the pulley arrangement, said tubular member in contact with said boat being adapted to pivot away from another said tubular member into a horizontal position upon unwinding said cable and upon subsequent unwinding of said cable said boat being lowered from said horizontal tubular member.

2. Apparatus for launching and landing a small boat comprising three tubular members, one said tubular member being secured in a horizontal position to a carrying craft, a second of said tubular members being pivotally connected to said first member, a third tubular member

being pivotally secured to said first and second tubular members, the pivotal point for all said tubular members being the same, a boat having securing means in the keel thereof, said third tubular member having adjustable guide and chocking means thereon for coacting with the gunwales of said boat, a pulley secured to said securing means in said boat, a second pulley secured to said third tubular member approximately centrally of said guide means, a third pulley secured to said third tubular member and spaced from said second pulley, a self-locking worm and gear drive secured to said second tubular member, a drum operatively connected to said worm gear drive, a cable connected to said third tubular member adjacent said second pulley passing through said pulley secured to said securing means and said boat, said second pulley, said third pulley and being windable on said drum, a bracket secured to said third tubular member and having fastening means thereon for coaction with said tubular member secured to said craft for locking all three members together, said second and third tubular members carrying said boat being pivotable away from said first tubular member to a vertical position, said third tubular member and said boat being pivotable away from said second tubular member to a horizontal position upon unwinding said cable, said boat being lowered from said third tubular member in horizontal position upon further unwinding of said cable.

3. In an apparatus as claimed in claim 2 and including bar members pivotally connected and secured at their outer ends to said first and second tubular members for preventing movement of said second tubular member beyond a vertical position, bar members pivotally connected and secured at their ends to said second tubular member and said third tubular member for preventing movement of said third tubular member below a horizontal position.

4. In an apparatus as claimed in claim 3, said boat having hooks secured on either side thereof internally of said boat, light balancing lines fastened to said securing means and extending therefrom, said lines having securing means on the ends thereof for separable coaction with said hooks and adapted to maintain said boat in a level position when being lowered from said third tubular member in horizontal position upon unwinding of said cable.

5. Apparatus for launching and landing a small boat comprising tubular members pivotally secured at the same point to one another and secured to a carrying craft, adjustable guide members on one said tubular member, a hook secured to the keel of the boat, a first vertical lift pulley secured to said hook, a second vertical lift pulley secured to said tubular member having said guides thereon, a pivot pulley secured to the same said tubular member and spaced from said second vertical lift pulley, a self-locking worm gear secured to a second of said tubular members, a drum connected with said worm gear, a cable secured to said tubular member intermediate of said second and pivot pulleys and extending through said first vertical lift pulley, said second vertical lift pulley, said pivot pulley, and secured to said drum, the sides of said boat being in contact with said adjustable guides and the carrying tubular member when said cable is wound on said drum, said tubular member in contact with the boat pivotally separating from said second tubular member in vertical position when said cable is unwound from said drum until reaching a horizontal position, said pulleys so stressing said cable as to solely lock said boat in contact with said contacted tubular member until said horizontal position is reached, the boat then separating from said tubular member in contact therewith upon further unwinding of said cable from said drum and the boat being lowered vertically therefrom to contact with the water.

6. In apparatus as claimed in claim 5, said second tubular member being vertically attached to a transom on a carrying craft.

7. An apparatus as claimed in claim 5, said tubular members being pivotally secured to a carrying craft at the intersection of the vertical and horizontal surfaces at the stern of the craft, supporting brackets on the deck of said carrying craft, said second tubular member being adapted to contact with said supporting brackets, said tubular members being adapted to rest in juxtaposed position on the deck of said craft, and separate securing means on the deck of said carrying craft for coaction with said tubular member in contact with the boat.

8. An apparatus as claimed in claim 1, said tubular member having said sleeve locking worm and gear means thereon being pivotally mounted in proximity to vertical and horizontal surfaces of a carrying craft, said tubular members and said boat being pivotable onto the horizontal surface of the carrying craft and securing means thereon for coaction with said tubular member having said guide and chocking members thereon for fastening said dingy in inverted position.

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