This invention relates to a boat lift and more particularly relates to a boat lift of the type used adjacent a lakeside dock.

In using small boats it is frequently desirable to come alongside a dock and pick up or discharge passengers. Many people intensely dislike the normal process of getting into a boat or getting out because the rocking boat seems unsafe and makes the footing unsure. This is particularly true in respect to persons who cannot swim and are unsure of themselves near water. Although boat lifts have been known in the past, none of those have had the capability of being used in lifting and stabilizing the broad rear end of a boat so as to stabilize the boat at water level to permit persons to readily and easily get into or out of the boat.

With these comments in mind it is to the elimination of these and other disadvantages, along with new and novel features to which the present invention is directed.

An object of my invention is to provide a new and improved boat lift of simple and inexpensive construction and operation.

Another object of my invention is the provision of a novel boat lift which will stabilize a boat sufficiently to permit persons to easily get in or get out while still allowing the boat to remain substantially at water level.

A further object of my invention is to provide an improved boat lift which may be readily and easily operated by a person in the boat so as to permit the boat to be lifted to one of a plurality of positions. Wherein at one position the boat remains at water level, but is well stabilized to permit persons to get in or out, and at another position the boat is elevated well above water level so as to be protected from waves and floating ice or other dangers.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings wherein like reference characters refer to the same or similar parts throughout the several views and in which:

FIG. 1 is a perspective view of the invention;

FIG. 2 is a side elevation view;

FIG. 3 is a sectional view taken at 3-3 in FIG. 2, and

FIG. 4 is a sectional view taken at 4-4 in FIG. 2.

One form of the present invention is shown in the drawings and is described herein.

The boat stabilizing and lifting device is indicated in general by numeral 10 and includes a frame structure 11 including supporting posts 12 which will be supported in the lake bottom. The frame structure also includes a pair of longitudinally extending frame members 13 and 14 which are affixed as by welding to a pair of front and rear cross frame members 15 and 16. A plurality of upright right-telescope canopy supports 17 are fixed to the frame structure and include telescopically related sections 17a and 17b. The sections 17a carry set screws 17c for maintaining the sections 17a and 17b in fixed relation with each other and for holding the canopy 18 in a preset position.

The device 10 includes a pair of boat-lifting cradles 19 and 20 respectively disposed adjacent opposite ends of the frame structure 11, each including a cross tie 21 and 22 which mount the hull-engaging elements 23 and 24. The elements 23 and 24 are swingably mounted to the cross ties 21 and 22 so that the position of the elements 23 and 24 may be adjusted according to the contour of the hull of the boat as it is lifted. The cradles 19 and 20 are respectively mounted upon elongate frame elements 25 and 26 which extend to a position midway the length of the frame structure 11 wherein upright standards 27 are affixed as by welding on the frame members 13 and 14 and swingably mount the frame elements 25 and 26 for vertical swinging. The cradles 19 and 20 are thereby mounted for vertical movement.

A rear linkage 28 is provided for raising and lowering the cradle 19 and a front linkage 29 is provided for raising and lowering the front cradle 20. The rear linkage includes a pair of links 30 respectively disposed beneath the cradle frame elements 25 for normally extending downwardly and forwardly from a shaft 31 which is rotatably mounted at its opposite ends in bearings 31a on the frame members 13 and 14 respectively. It will be noted that the shaft 31 has an offset central portion 31a so as to lower this portion of the shaft to prevent a boat floated onto the cradle from being obstructed. It will be understood that the water line will normally be approximately at level L, as indicated in FIG. 2. The lower ends of links 30 are attached by pivots 32 to upright links 33, the upper ends of which are connected by pivots 34 to the cradle frame elements 25. It will be seen that as links 30 are swung in a counter-clockwise direction, the cradle 19 will rapidly move upwardly at the initial movement of the linkage.

Normally the rear cradle elements 25 rest upon the shaft 31 adjacent its ends.

The front linkage 29 includes links 35, the upper ends of which are connected to shafts 36 which are mounted in suitably provided bearings 37 on the canopy supports 17. The links 35 are normally disposed in substantially vertical downwardly extending position from shafts 36 and are pivotally connected at their lower ends to links 38, the upper ends of which are pivotally connected to the front cradle frame elements 26. It will be seen that as swinging of the links 35 commences in a counter-clockwise direction, only a restricted upward movement of the cradle 20 will be effected initially, and then as the links 35 are additionally swung, the cradle 20 will move upwardly at a rapid rate.

Means are provided for operating the rear and front linkages 28 and 29 and for scheduling operation thereof in relation to each other so as to delay operation of the front linkage 29 until the rear linkage has commenced to operate and has moved the rear cradle 19 outwardly. By means of the means described in FIG. 2, the front linkage 29 is actuated by the rear linkage 28.

The opposite ends of shaft 31 also have forwardly and upwardly inclined operating links 44 affixed thereto, and the upper ends of these links are swingably attached to forwardly extending rods 45, the front ends of which are connected to normally slack chains 46. Chains 46 are connected at their forward ends to operating arms 47 which are affixed to the shafts 36. It will be seen that as the piston rod is moved outwardly, the rear cradle is lifted and subsequently the chain 46 is tightened so as to prepare the front linkage 29 for subsequent operation.

A hand pump 48 is mounted by brackets 49 on the casing of cylinder 39 and is disposed in an upright position. A pump-operating handle 50 having a handle 56a is connected by pivot 51 to the operating stem of pump 48, and is also connected by pivot 52 to a mounting link.
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53 which is pivotally connected to the bracket 49. It will be seen that the lever 50 and handle 50a is disposed slightly forwardly and adjacent the side of the rear cradle 19 so that the handle 50a may be conveniently reached by a person in the boat as it is floated into overlying relation with the cradles 19 and 20.

The lower end of pump 48 is connected by a pipe 54 to the pressure end of cylinder 39 and includes a pair of check valves 55 therein. A fluid pressure release valve 56 is also provided in pipe 54 and is connected to a fluid lead hose 57 for discharging the released hydraulic fluid into the reservoir tank 58 which is suitably mounted on frame member 14. The upper end of pump 48 is also connected by means of a supply hose 59 to the tank 58 for supplying hydraulic fluid to the pump.

The valve 56 is provided with a swingable operating member 60 to which is connected a push-pull rod 61 which lies adjacent the operating lever 50.

In the use and operation of the present invention the frame structure 11 is positioned with respect to the water level L so that the cradles, in their normal position are disposed below that water level so as to permit a boat to be floated in overlying relation with the cradles. The person effecting the boat to be floated into overlying relation with the cradles, means movably mounting the cradles on the supporting structure for upward and downward movement, stop means on the frame for normally supporting the cradles, a pair of front and rear linkages each including a first vertically swingable link, a pair of first pivots swingably mounting said first links on the frame, each of said linkages also including a second vertically swingable link having an upper end pivoted on the respective cradle and having a lower end disposed below said first pivot and swingably secured to the first link, said first link of the rear linkage extending diagonally downwardly to cause rapid upward movement of the rear cradle upon initial movement of the rear linkage and upward swinging of the first link thereof, the first link of the front linkage extending substantially vertically downwardly to cause restricted upward movement of the front cradle upon initial movement of the front linkage and then more pronounced upward movement of the front cradle upon further movement of said front linkage, and controllable means producing swinging of said first links forwardly and upwardly, whereby the rear cradle may be lifted to stabilize the boat and may be additionally lifted together with the front cradle to lift the boat out of the water.

2. A small boat stabilizing and lifting device, comprising a pair of front and rear boat-lifting cradles spaced from each other for respectively underlying the front and rear portions of a boat, a supporting structure constructed to permit a boat to be floated into overlying relation with the cradles, means movably mounting the cradles on the supporting structure for upward and downward movement, stop means on the frame for normally supporting the cradles, a pair of front and rear linkages each including a first vertically swingable link, a pair of first pivots swingably mounting said first links on the frame, each of said linkages also including a second vertically swingable link having an upper end pivoted on the respective cradle and having a lower end disposed below said first pivot and swingably secured to the first link, said first link of the front linkage extending diagonally downwardly to cause rapid upward movement of the front cradle upon initial movement of the rear linkage and upward swinging of the first link thereof, the first link of the front linkage extending substantially vertically downwardly to cause restricted upward movement of the front cradle upon initial movement of the front linkage and then more pronounced upward movement of the front cradle upon further movement of said front linkage, and controllable means producing swinging of said first links forwardly and upwardly, whereby the rear cradle may be lifted to stabilize the boat and may be additionally lifted together with the front cradle to lift the boat out of the water.

It will, of course, be understood that various changes may be made in the form, detail, arrangement and proportion of the parts without departing from the scope of my invention which consists of the matter described herein and set forth in the appended claims.

What I claim is:

1. A small boat-stabilizing and lifting device, comprising a pair of front and rear boat-lifting cradles spaced from each other for respectively underlying the front and rear portions of a boat, a supporting structure constructed to permit a boat to be floated into overlying relation with the cradles, means movably mounting the cradles on the supporting structure for upward and downward movement, stop means on the frame for normally supporting the cradles, a pair of front and rear linkages each including a first vertically swingable link, a pair of first pivots swingably mounting said first links on the frame, each of said linkages also including a second vertically swingable link having an upper end pivoted on the respective cradle and having a lower end disposed below said first pivot and swingably secured to the first link, said first link of the rear linkage extending diagonally downwardly to cause rapid upward movement of the rear cradle upon initial movement of the rear linkage and upward swinging of the first link thereof, the first link of the front linkage extending substantially vertically downwardly to cause restricted upward movement of the front cradle upon initial movement of the front linkage and then more pronounced upward movement of the front cradle upon further movement of said front linkage, and controllable means producing swinging of said first links forwardly and upwardly, whereby the rear cradle may be lifted to stabilize the boat and may be additionally lifted together with the front cradle to lift the boat out of the water.

2. A small boat stabilizing and lifting device, comprising a pair of front and rear boat-lifting cradles spaced from each other for respectively underlying the front and rear portions of a boat, a supporting structure constructed to permit a boat to be floated into overlying relation with the cradles, means movably mounting the cradles on the supporting structure for upward and downward movement, stop means on the frame for normally supporting the cradles, a pair of front and rear linkages each including a first vertically swingable link, a pair of first pivots swingably mounting said first link on the frame, each of said linkages also including a second vertically swingable link having an upper end pivoted on the respective cradle and having a lower end disposed below said first pivot and swingably secured to the first link, said first link of the rear linkage extending
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diagonally downwardly and forwardly to cause rapid upward movement of the rear cradle upon initial movement of the rear linkage, the first link of the front linkage extending substantially vertically downwardly to cause restricted upward movement of the front cradle upon initial movement of the front linkage and then more pronounced upward movement of the front cradle upon further movement of said front linkage, operating means for moving said rear linkage, a pair of third links each affixed to a respective first link and extending forwardly and upwardly therefrom and a normally slack chain having its opposite ends respectively connected with the upper ends of said third links, and operating means connected with the third link of said rear linkages and producing rearward swing thereof, whereby said operating means will cause the rear cradle to be lifted and then subsequently the front cradle to be lifted.

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