July 7, 1964 W. A. THOMPSON 3,139,732

BOAT STABILIZING AND LIFTING DEVICE

Filed May 5, 1961 2 Sheets-Sheet 1

FIG. 1

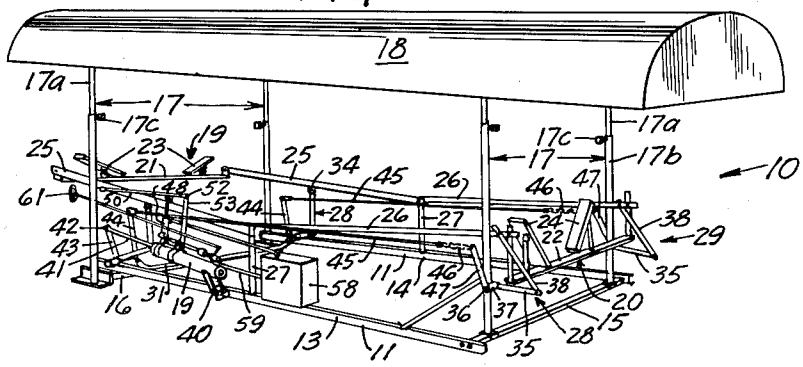


FIG. 3

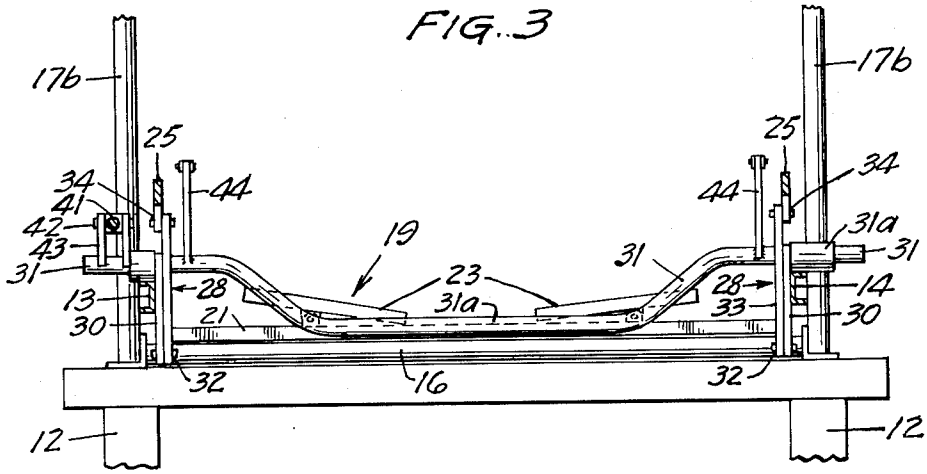
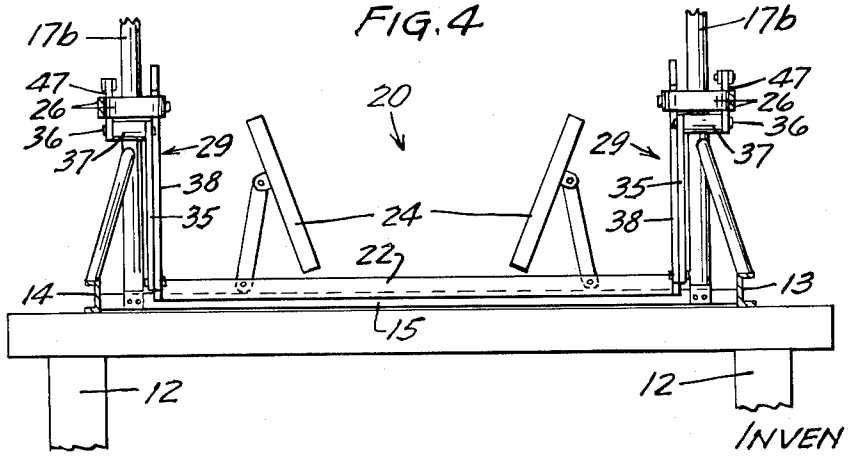


FIG. 4



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BOAT STABILIZING AND LIFTING DEVICE

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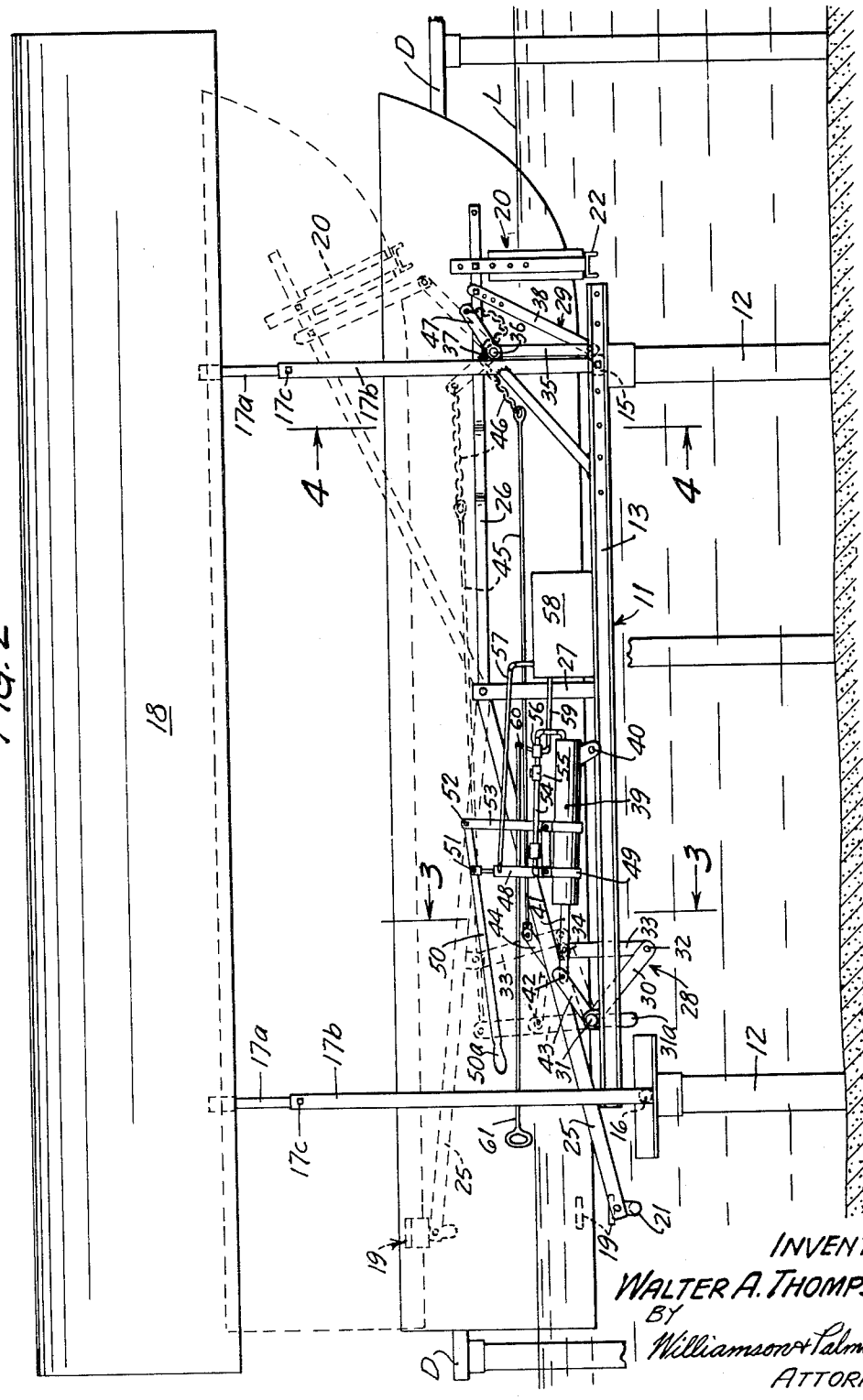


FIG. 2

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3,139,732
Patented July 7, 1964

3,139,732

BOAT STABILIZING AND LIFTING DEVICE

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Filed May 5, 1961, Ser. No. 126,362
2 Claims. (Cl. 61—65)

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 along side 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 individually lifting and supporting 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 debris.

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 telescoping canopy supports **17** are fixed to the frame structure and include telescopically related sections **17***a* and **17***b*. The sections **17***b* carry set screws **17***c* for maintaining the sections **17***a* and **17***b* 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 boat 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 **31***a* on the frame members **13** and **14** respectively. It will be noted that the shaft **31** has an offset central portion **31***a* 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 frame 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 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** upwardly accordingly. In the form shown such means includes a hydraulic cylinder **39** connected by pivot **40** to the frame member **13** and having its piston rod **41** connected by pivot **42** to an operating arm **43** which is affixed to the shaft **31**. Because the horizontal orientation of the cylinder and the normal forward and upward orientation of arm **43**, rapid swinging of the shaft **31** and link **30** is effected upon the initial movement of the piston rod.

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 lever **50** having a handle **50***a* is connected by pivot **51** to the operating stem of pump **48**, and is also connected by pivot **52** to a mounting link

53 which is pivotally connected to the bracket 49. It will be seen that the lever 50 and handle 50*a* is disposed slightly forwardly and adjacent the side of the rear cradle 19 so that the handle 50*a* 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 back to 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 operating the boat, who will normally be sitting near the rear of the boat, will cause the boat to stop so that he may reach out and grip the handle 50*a* of operating lever 50. A few up and down strokes on the lever causes the pump 48 to inject hydraulic fluid under pressure into the cylinder whereby by extension of the piston rod the rear linkage 28 is swung through a few degrees causing the rear cradle 19 to raise up and engage and slightly lift the rear portion of the boat. It will be noted that because of the initial orientation of link 30 in rear linkage 28, the initial upward movement of link 30 will cause a rapid lifting of the rear cradle 19.

The slight lift of the rear cradle 19 which is effected by a few operations of handle 50*a* will be sufficient to cause a slight lifting of the rear portion of the boat to thereby stabilize the boat and prevent it from tipping and rocking as the people get into or get out of the boat. It will, of course, be understood that the frame structure 11 is positioned immediately adjacent a dock D upon which persons may walk.

It should be understood that during the initial operation of rear linkage 28, the lever 44 is swung upwardly at least slightly, whereupon the chain 46 is tightened to prepare the front linkage 29 for operation. However, during the lifting of the rear portion of the boat sufficiently to stabilize it, the front portion of the boat will not be lifted by the front cradle 20. The front portion of the boat will remain floating upon the water.

The boat may be temporarily left in this condition with its rear portion partly elevated, and when the boat is to be taken out into the lake again, the push-pull rod 61 is operated to operate valve 56 whereupon the hydraulic fluid pressure in cylinder 39 is released and allowed to flow back to the reservoir tank 58. After the pressure is released the rear cradle will swing downwardly under its own weight and under the weight of the boat, causing the piston rod of cylinder 39 to move into the cylinder.

The valve 56 should be operated again so that the device is ready for subsequent boat-lifting procedure.

While the boat is at the dock and while it is in stabilized position with the rear cradle lifted sufficiently to support the rear portion of the boat, it may be desirable to prepare the boat for overnight storage rather than take the boat out into the lake again. When this situation prevails the lever 50 is operated several times again, causing additional projection of the piston rod from the cylinder 39, whereupon linkage 28 operates additionally to further lift the rear cradle 19 and to elevate the rear portion of the boat into the dotted line position shown in FIG. 3. Simultaneously as the rear portion of the boat is being lifted out of the water, the arm 47 at the front linkage 29 is swung by operation of the chain and the front linkage 29 is moved to elevate the front cradle 20. It should be noted that during the initial lifting of the rear cradle to merely stabilize the boat, a limited operation of the front linkage 29 causes substantially no lifting of the front cradle 20 because of the initial orientation of the links 35. However, after continued swinging of the arm 37, the front cradle 20 will be elevated so as to lift the entire front portion of the boat clear of the water.

Further advantage of the present invention will be seen in connection with the cooperation of the boat lift and the canopy 18. If a storm is expected, the canopy 18 will be lowered while the rear cradle 19 has been lifted only sufficiently to merely stabilize the boat. Subsequently when the entire boat is lifted clear of the water its gunwales will be disposed in a sheltered position with respect to the sides of the canopy, whereupon the entire open cockpit of the boat will be protected from rain.

After the boat has been raised completely clear of the water for overnight storage or for storage during a storm it can be lowered by merely operating valve 56 to release the fluid from the cylinder.

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 first pivot 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

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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