Nov. 15, 1927. **1,649,574**

W. J. CONWAY

LIFTING MECHANISM

Filed Feb. 18, 1926 2 Sheets-Sheet 1

Fig. 1.

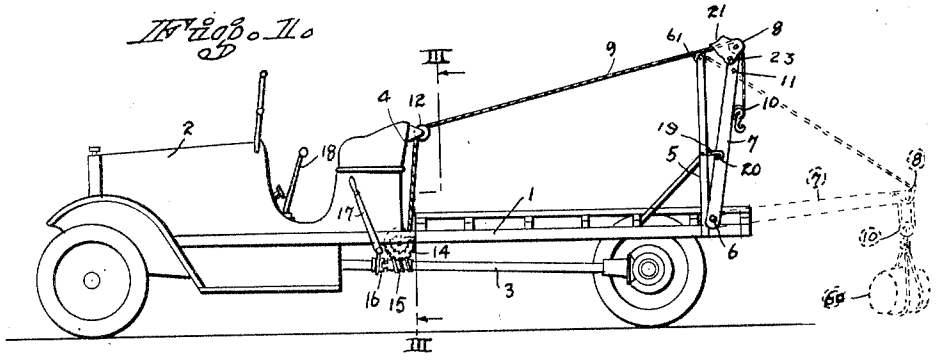


Fig. 2.

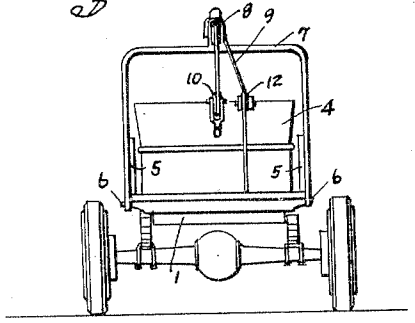


Fig. 3.

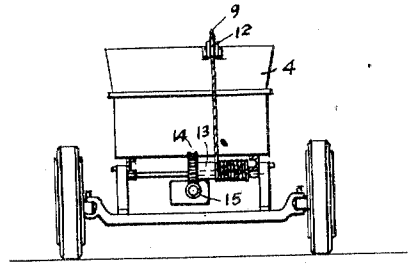


Fig. 5.

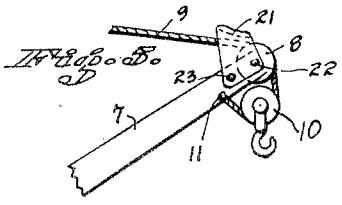


Fig. 6.

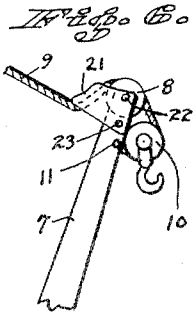


Fig. 4.

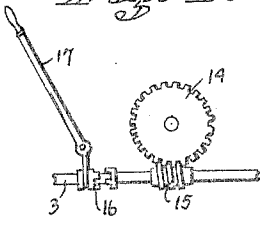


Fig. 7.

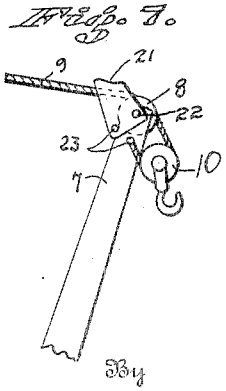


Fig. 8.

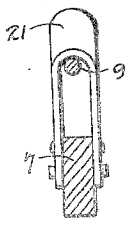
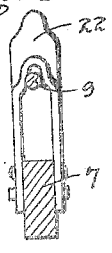


Fig. 9.



Inventor

William J Conway

By George J Conway

Attorney

Nov. 15, 1927. **1,649,574**

W. J. CONWAY

LIFTING MECHANISM

Filed Feb. 18, 1926 2 Sheets-Sheet 2

Fig. 10.

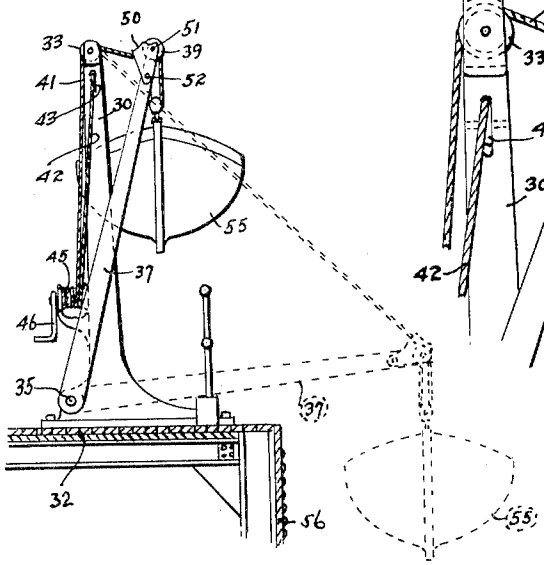


Fig. 11.

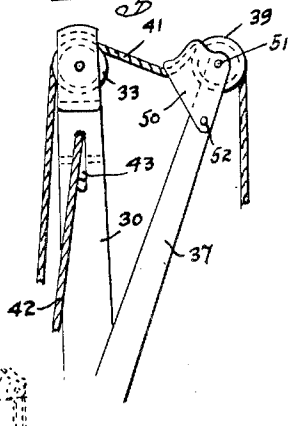


Fig. 12.

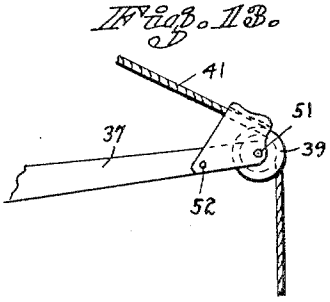
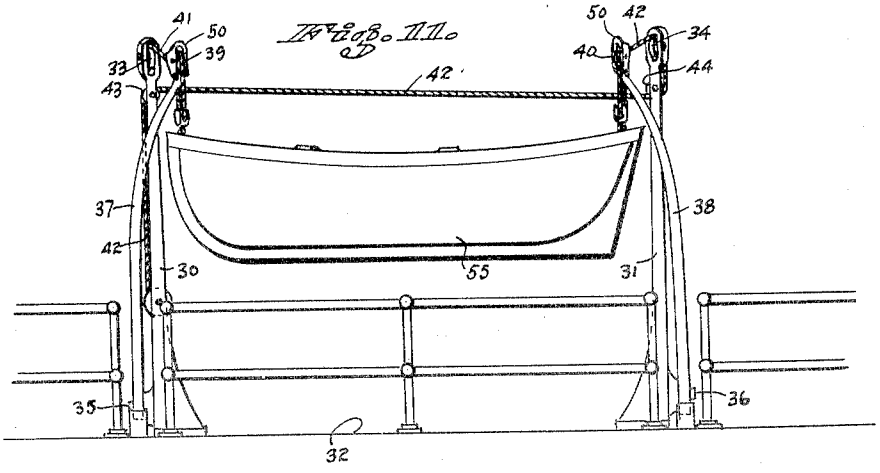


Fig. 13.



Inventor

William J. Conway

By George J. Henry

Attorney

Patented Nov. 15, 1927. 1,649,574

UNITED STATES PATENT OFFICE.

WILLIAM J. CONWAY, OF SAN FRANCISCO, CALIFORNIA.

LIFTING MECHANISM.

Application filed February 18, 1926. Serial No. 89,050.

My present invention is a further improvement on that class of lifting device one form of which is set forth in my Patent No. 1,393,345, issued October 11, 1921.

My present invention has for its objects, a simple lifting mechanism particularly adapted to the loading of trucks, the shifting from one position to another, of heavy packages and the displacing and storing in suspended position of heavy weights and is also particularly adapted in one of its specific forms to the carrying and operating of life boats and analogous ship davit or derrick uses.

Other objects will appear from the drawings and specifications which follow:

These objects I accomplish by providing a boom having a controlling line reeved through its swinging end and thence through a block with one end of the line fixed to the boom, while the weight to be handled by my lifting mechanism is suspended from the block. The weight is lifted by pulling on the said line until the block and therefore the weight is raised to its highest position, at which time the further pulling of the line raises the boom into upright or stored position. In this position, the boom may be latched and a loosening of the line then permits the weight to descend vertically under the new or upright position of the boom. In this way a weight may be lifted from the street and placed on the body of the truck, or a life boat, launch or the like may be taken from the water and placed on the deck of a ship.

A reverse operation enables the weight to be lifted from the bed of the truck and placed on the street, or from the deck of a ship and placed in the water, it being advisable however, to retain the boom slightly leaning from the vertical in its extreme up position to facilitate its swinging outward first, before the weight is lowered with respect to the boom end.

On the paying out of the line while the boom is in a nearly vertical position, the first tendency would be for the weight to descend with the line running through the blocks but where the boom initially leans sufficiently or where a friction shoe or stop or locking member as set forth below, is employed to retard or prevent the line running through the blocks, the first movement will be an outward swinging of the boom.

I therefore prefer to provide a locking member for the line, which preferably comes into play only when the boom has swung from its final down position and is traversing an arc of movement and is approaching its upright limit.

By referring to the accompanying drawings my invention will be made clear.

Fig. 1 is a side view of a conventional auto truck to which my invention has been applied.

Fig. 2 is a rear view of the apparatus of Fig. 1.

Fig. 3 is a section of Fig. 1 on the line III—III thereof, and viewed in the direction of the arrows for the purpose of illustrating the winding mechanism.

Fig. 4 is a detail showing of one form of clutch and power winding device for the mechanism of Fig. 1, and is an enlarged detail of a fragmentary portion thereof.

Fig. 5 is a fragmentary detail of one end of the boom in descended position, showing particularly the manner in which the friction shoe clears the line.

Fig. 6 is a similar to Fig. 5 except that the boom is in the up position with the shoe frictionally engaging the line.

Fig. 7 is similar to Fig. 6 except that the shoe has been released to allow the line to run freely through the blocks, while in the up position.

Figs. 8 and 9 are details of different forms of friction shoe.

Fig. 10 is an end view of my invention applied to the supporting, carrying and operating of life boats.

Fig. 11 is a side view of the parts shown in Fig. 10.

Fig. 12 is a detail of the end of the boom and standard when in the upright position, showing the operation of the friction shoe and Fig. 13 is an end view of the boom of Fig. 12, in the descended position, showing the manner in which the friction shoe is automatically released from contact with the line when the boom descends.

Throughout the figures similar numerals refer to identical parts.

Numeral 1 indicates the body of a conventional auto truck, having a motor 2, transmission shaft 3, an upright structure at the seat 4 and a standard 5 rising from the body 1.

Pivoted at 6 is the boom 7 having at the other end the pulley wheel 8 through which is reeved the line 9, and block and hook 10,

the other end of the line 9 being fixed at 11 to the boom 7. The line passes over an idler 61 on standard 5.

At 12 is a second idler and at 13 a drum on which the line 9 is adapted to be wound.

The drum 13 may be operated by hand or by power from the engine 2, and for that purpose the worm gear 14 and worm 15 are provided with a clutch 16 and operating lever 17 whereby the drum may be engaged to rotate from the shaft 3.

It is understood that the shaft 3 is adapted to be driven from the engine 2, through suitable reverse and different forward speed ratios as by the manipulation of the lever 18 as conventionally supplied in auto truck mechanism.

At 19 is a hook adapted to engage an eye 20 on the boom 7 to retain the same in the substantially upright position shown in Fig. 1 when the derrick mechanism is not being employed.

The boom as here shown is preferably of the U shape best indicated in Fig. 2.

At 21 is a friction member which I prefer to make of shoe form secured to the boom 7 in such a relation to the wheel 8 that the shoe is free from the line 9 when the boom is in a substantially downward position and frictionally engages against the line 9 as the boom is raised.

This action is best shown in Figs. 5 and 6, wherein the shoe 21 is supported from the pivot 22 and fixed to the arm 7 with the bolt 23. This latter bolt I prefer to make removable so that the shoe 21 may be moved from the position shown in Fig. 6 to the position shown in Fig. 7 as by swinging about its second holding member 22. When so moved to the position shown in Fig. 7 the shoe 21 is retained clear of the line 9, whereas when the bolt 23 is inserted and the boom raised from the position of Fig. 5 to the position of Fig. 6 the shoe frictionally engages the line 9, as shown in Fig. 6.

A detailed front view of the shoe 21 is shown in Fig. 8, and an alternate form of this shoe is shown at Fig. 9, wherein it is indicated that the line 9 wedges in the V shaped slot 22, thus more firmly holding the line 9 where such additional gripping is deemed advisable.

Referring particularly to Figs. 10 to 13, showing my invention adapted to use with life boats, a pair of upright davit supports are indicated at 30, 31, secured to the deck 32 and having pulley members 33, 34 at their tops and pivots 35, 36 at the bottoms on which pivots are mounted respectively the booms 37, 38 fitted with top pulleys 39, 40 respectively, through which are reeved the lines 41, 42 respectively.

Secondary pulleys 43, and 44 on the standards 30, 31 are employed for carrying the line 42 thereover and down to the drum 45 which drum is adapted to be operated by the crank 46, the two lines 41, 42 being thus brought on to the single drum 45.

It will now be seen that the rotation of the crank 46 will wind or unwind the lines 41, 42 of the respective booms 37, 38, raising and lowering the boat 55 also and swinging the boat into stored position or over and clear of the side of the deck 32.

The shoe 50 is provided as above described on each of the booms and is preferably pivoted at 51 and locked by the removable bolt 52.

The operation is as follows:

Referring to Fig. 1, assuming that it is desired to lift a weight from the street on to the truck body 1, the boom is allowed to descend by unlocking the hook 19 and rotating the shaft 3 with the clutch engaged to rotate the drum 13 whereby the line 9 allows the boom 7 to descend from the full line to the dotted line position.

The boom will swing out into the dotted position due to the friction engagement between the shoe 21 and the line 9 instead of the block 10 descending. As the boom descends the shoe 21 is released, but not until such time as the arm 7 has attained an angular position which will insure its further downward movement until it has arrived at the final position indicated in the dotted lines.

The weight here shown as the barrel 60 is now raised by winding the line 9 on the drum 13 by reversing the engine 2 through the action of the lever 18. When the barrel is raised as high as it will go, block 10 engages against the pulley 8 or the end of the boom 7 and the boom will then swing upward from its dotted into its full lined position carrying the barrel with it.

When the full line position is reached the hook 19 is engaged with the eye 20 and the barrel may then be lowered on to the truck 21 by paying out the line 9 whose slight friction on the smooth surface of the shoe 21 will not injure the line and will permit the barrel to descend while the boom is retained in its full line position by the hook 19.

The barrel will now rest on the truck body 1 and may be moved into any position desired or the barrel may be raised from the truck body 1 by reversing the above operation.

By releasing the bolt 23 and swinging the shoe into the full line position of Fig. 7 if it be desired to remove the shoe friction. While the barrel is now raised with the boom 7 in the full line position of Fig. 1, the boom may be pushed out towards its dotted position as the line 9 is slowly unwound.

By swinging the barrel clear of the truck body and after the boom has departed materially from the vertical, a further unwinding of the line 9 will permit its descent

until it engages on the stop 16 when further unwinding will result in the descending of the block 10 and therefore delivering the barrel 51 on the street.

Referring particularly to Figs. 10 and 13, an unwinding of the drum 45 will result in the booms 37, 38 first moving together and outward from the full line position of Fig. 10 to the dotted position whereby the boat 55 will swing clear of the ship 56 and when the booms have reached their limiting down position a further unwinding of the drum 45 and the two lines 41, 42 will result in the boat descending to the water alongside the ship.

During the downward movement of the booms from the full line to the dotted position the shoe 50 has disengaged from frictional contact with the line 41 being free therefrom when the boom 37 has reached the lower position of Fig. 13.

By the action of this shoe, it will now be seen that the line 41 does not run through the pulley wheel 39 except when the shoe is out of engagement, that is when the boom is in the lower position of Fig. 13, or dotted position of Fig. 10 and when the boat is raised to the dotted position 55, a further winding of the drum 45 will result in the raising of the boom from the dotted to the full line position and the restoration of the life boat in the davits as shown in full lines and with the shoe in frictional engagement with the lines.

I claim:

1. Lifting mechanism of the character described comprising a boom pivoted to a support at one end and having a pulley at the other end, a line passing through said pulley and fixed to the said support adjacent said pulley, a block on said line between the pulley and said end, fixed means for winding said line through said pulley to raise or lower the boom and also the block, and a shoe member frictionally restraining the line from running through said pulley.

2. Lifting mechanism of the character described comprising a boom pivoted to a support at one end and having a pulley at the other end, a line passing through said pulley and fixed to the said support adjacent said pulley, a block on said line between the pulley and said end, fixed means for winding said line through said pulley to raise or lower the boom and also the block, and a shoe member frictionally restraining the line from running through said pulley, a standard having an idler over which said line is reeved adjacent to said pulley when said pulley is in its upper position.

WILLIAM J. CONWAY.