

March 29, 1966

M. B. ANDERSON  
REMOTE CONTROLLED AUTOMATIC POWER OPERATED  
WINCH AND BOOM FOR BOATS

3,242,894

Filed Feb. 7, 1964

3 Sheets-Sheet 1

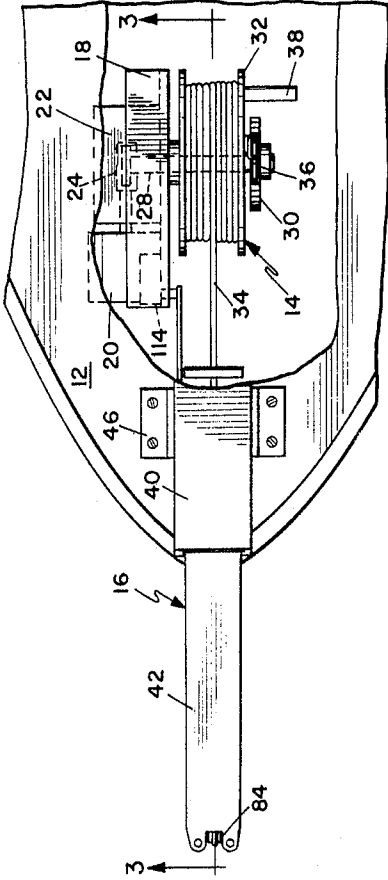


Fig. 1

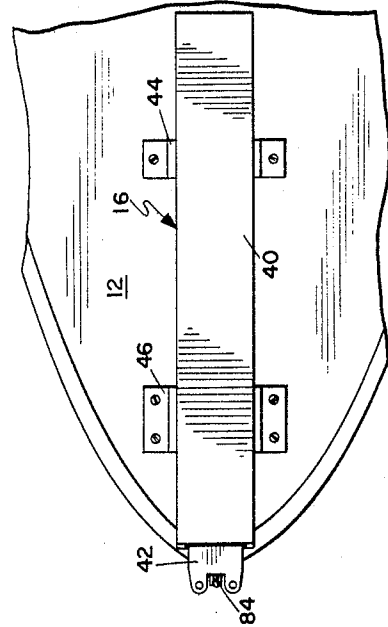


Fig. 2

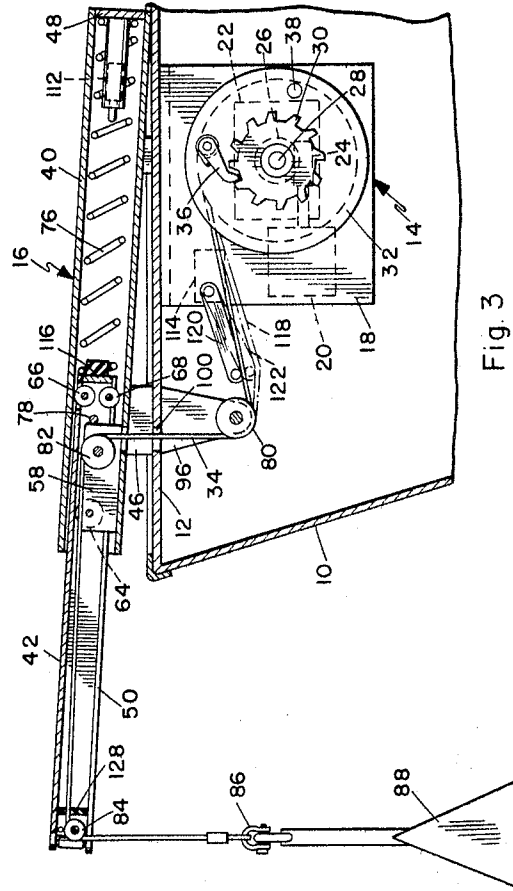


Fig. 3

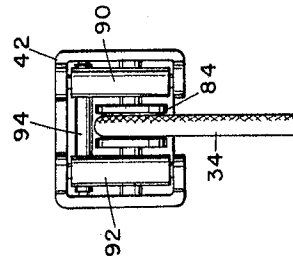


Fig. 4

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3 Sheets-Sheet 2

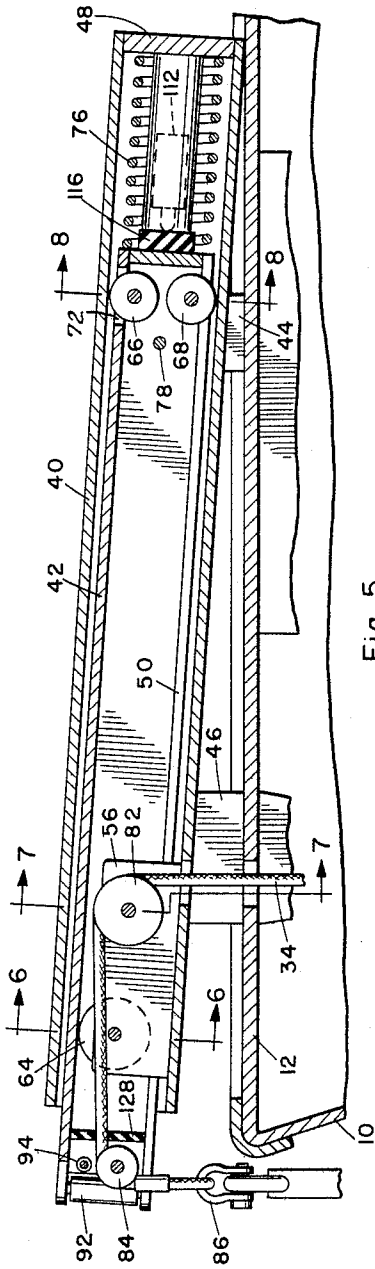


Fig. 5

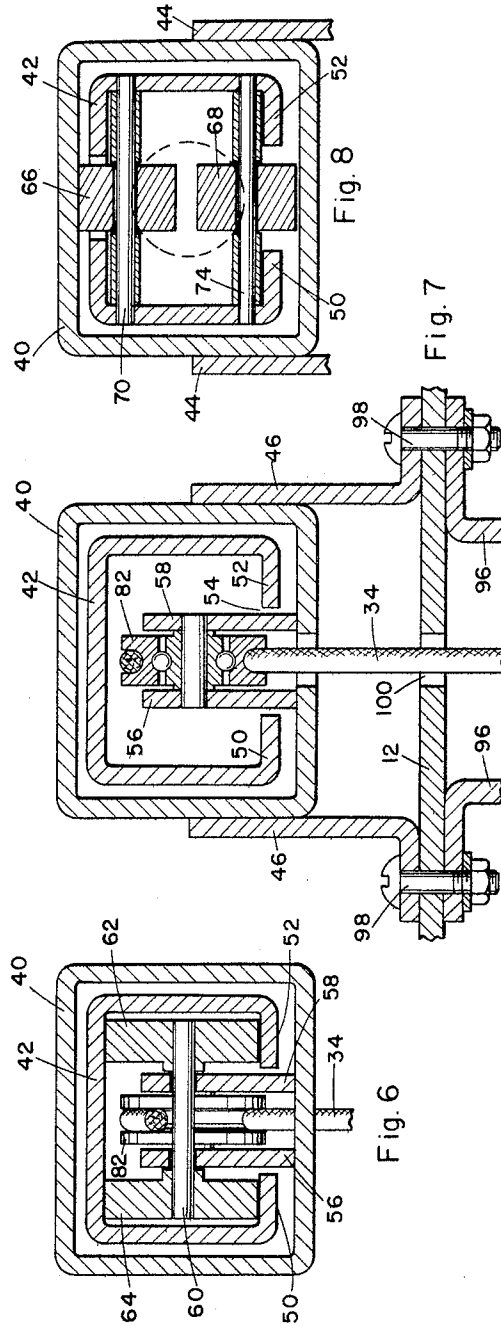


Fig. 6

Fig. 7

Fig. 8

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3 Sheets-Sheet 3

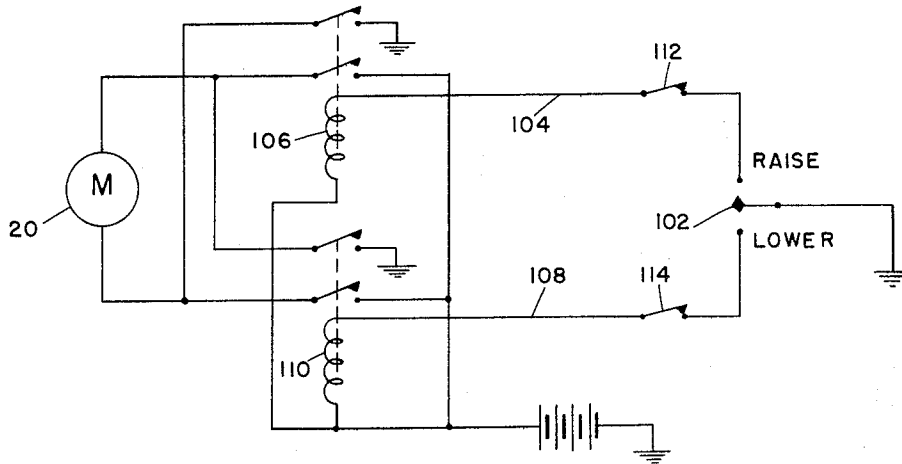


Fig. 9

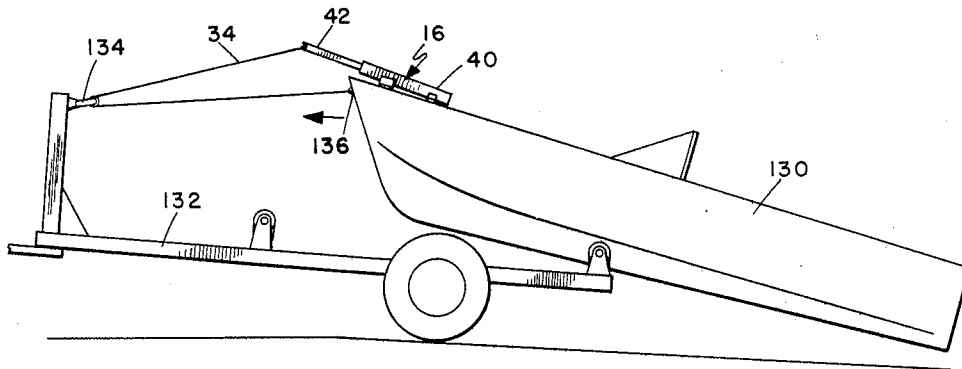


Fig. 10

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3,242,894  
**REMOTE CONTROLLED AUTOMATIC POWER  
OPERATED WINCH AND BOOM FOR BOATS**

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6 Claims. (Cl. 114—210)

The present invention relates generally to a remotely controlled automatic power operated winch and boom structure for use on boats and the like and more particularly to such a structure which is readily adapted for hauling small boats, of the so-called "outboard" type, out of the water for the purpose of berthing on a trailer.

The primary object of this invention is to provide an improved combined power operated winch and boom structure which can be readily mounted on the deck of a boat.

It is a further object of this invention to provide an improved power operated winch and boom structure which will require a minimum sized opening in the deck of the boat.

It is a still further object of this invention to provide an improved power operated winch and boom structure, particularly adapted for raising an anchor, in which the power source is automatically cut off in the event the anchor becomes snagged.

A still further and important object of this invention is to provide an improved power operated winch and boom structure for boats in which the power is automatically cut off upon increase or decrease in tension in the cable.

A still further and ancillary object of this invention is to provide an improved power operated winch and boom structure for boats that is deck mounted adjacent the bow, the cable of which can be readily attached to a trailer for the purpose of hauling the boat out of the water.

Finally, it is an object to provide a winch and boom structure of the aforementioned character which is simple and convenient to use and which will give generally efficient and durable service.

With these and other objects definitely in view, this invention consists in the novel construction, combination and arrangement of elements and portions, as will be hereinafter fully described in the specification; particularly pointed out in the claims, and illustrated in the drawings which form a material part of this disclosure, and in which:

FIGURE 1 is a top plan view of the boom in retracted position on the bow of a boat;

FIGURE 2 is a top plan view of the boom extended, a portion being cut away to show the actuating mechanism;

FIGURE 3 is a sectional view taken on line 3—3 of FIGURE 2;

FIGURE 4 is an enlarged end elevation view of the telescopic portion of the boom, as taken from the left end of FIGURE 3;

FIGURE 5 is an enlarged longitudinal sectional view of the boom in retracted position;

FIGURE 6 is an enlarged sectional view taken on line 6—6 of FIGURE 5;

FIGURE 7 is an enlarged sectional view on line 7—7 of FIGURE 5;

FIGURE 8 is an enlarged sectional view taken on line 8—8 of FIGURE 5;

FIGURE 9 is a wiring diagram of the actuating system; and

FIGURE 10 is a diagrammatic illustration of the apparatus in use to haul a boat onto a trailer.

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Referring generally to the drawings, and particularly FIGURES 1 to 3 a portion of the bow section of a boat is shown which includes a hull 10 and deck 12. The winch and power means for operating it, shown generally by the reference numeral 14, is mounted on the underside of deck 12 in a position to be protected from the weather, while the boom structure, indicated generally by the reference numeral 16 is mounted above deck 12, as clearly shown in FIGURE 3.

The winch structure 14 consists of a support member 18 of any suitable shape secured to the underside of deck 12. Mounted on one side of the support member 18 is a power means 20 which may be an electric motor or internal combustion engine. Connected to the output shaft of power means 20 is a conventional reducing drive mechanism 22, here shown in the form of a worm drive 24 which is connected by a worm gear 26 to driven shaft 28.

Driven shaft 28 extends through, and is suitably journaled for rotation, in supporting plate 18. A ratchet wheel 30 of conventional construction is secured to the outer end of driven shaft 28 for a purpose that will be hereinafter described. Reel 32 is rotatably mounted on driven shaft 28 and has wound thereon anchor cable 34 one end of which is secured to the reel. The outer face of reel 32 is provided with a spring pressed dog 36 which engages ratchet wheel 30 and prevents rotation of the reel 32 in one direction on shaft 28. Outer face of reel 32 is also provided with a handle 38 for selective manual operation of the reel as desired.

The boom structure 16 consists essentially of two telescoping members, a fixed tubular housing support member 40 and a member 42 reciprocally mounted within support member 40. Support member 40 is generally rectangular in cross section and is mounted on the deck 12 of the boat by spaced pairs of brackets 44 and 46. The general inclination of the support member is horizontal but it may, if desired, be inclined slightly upwardly as shown in FIGURE 5. Member 40 is closed on the inboard end by a plug 48, suitable drainage means (not shown) being provided, if desired, in the plug or the end of the support member.

Member 42 is of generally the same cross sectional shape as member 40. The bottom wall however is formed of inwardly extending flanges 50 and 52 leaving a slot 54 therebetween which extends the full length thereof, the purpose of which will be hereinafter described. To facilitate slidable movement of member 42 within support 40 suitable antifriction means are provided therebetween. To this end a pair of brackets 56 and 58 are mounted on the bottom wall of support 40 adjacent the forward end thereof. Extending through these brackets and journaled therein is an axle member 60 to the ends of which is secured supporting rollers 62 and 64. These rollers bear against the inner surface of the top wall of member 42 and support this member during reciprocation in member 40. The rear end of member 42 is provided with a pair of spaced rollers 66 and 68 to guide and locate the rear end thereof during reciprocation. Roller 66 is rotatably mounted on spindle 70 secured in the sidewalls of member 42 and projects through an opening 72 in member 42 to engage the inner surface of the top wall of support 40. Roller 68 is similarly rotatably mounted on a spindle 74 and projects through slot 54 for engagement with the bottom wall of member 40. Member 42 is normally urged outwardly in the support tube 40 by means of compression spring 76. Forward movement of member 42 is limited by engagement of stop pin 78 with bracket members 56 and 58.

As shown in FIGURE 3, cable 34 from reel 32 passes over guide pulleys 80 and 82, through boom member

42, and over a guide pulley 84 mounted in the outer end of boom member 42. The exposed end of cable 34 is provided with a shackle 86 for detachable connection to a standard anchor 88. To prevent cable 34 from jumping off pulley 84 spaced vertically mounted guide rollers 90 and 92 may be provided in the outer end of boom member 42 together with a hold down pin 94. Guide pulley 80 is supported below deck 12 by spaced bracket members 96, common securing means 98 being provided to secure the brackets 46 and 96 to the deck. This assures accurate alignment of the groove in pulley 80 with the axis of support member 40. A hole 100 in deck 12 provides for passage of the cable through the deck. Since guide pulleys 80 and 82 are fixed with respect to the deck the axis of the length of cable between these pulleys remains fixed, therefore hole 100 can be made quite small reducing the possibility of leakage therethrough. If desired, a rubber wiper may be placed over hole 100.

FIGURE 9 is a diagrammatic showing of the basic wiring for reversible motor 20 which may be driven by a conventional battery (not shown). Master switch 102 controls both the anchor raising circuit 104 including relay 106 and the anchor lowering circuit 108 including the relay 110. Interposed in the anchor raising circuit is a normally closed overload relief switch, 112, which is controlled by action of the slidable boom member 42. The anchor lowering circuit 108 has a normally closed switch 114 that is adapted to open as slack is produced in the cable when the anchor reaches the bottom.

#### Operation

The operation of my improved winch and boom structure will now be described. With particular reference to FIGURE 5 cable 34 is shown completely retracted and wound on reel 32. Boom member 42 is in the retracted position enclosed within the support 40, the cushion member 116 on the inner end of boom 42 contacting the switch 112 to break the anchor raising circuit. To lower the anchor master switch 102 is manually operated to close the anchor lowering circuit. This activates motor 20 to rotate in a direction to unwind cable 34 from reel 32. Since the reel 32 is driven at a relatively slow speed due to the reducing drive 22, the motor will act as a brake during the time the anchor is being lowered. When the anchor reaches the bottom the cable will slack off as indicated by dotted lines 118 in FIGURE 3. Idler 120, which follows cable 34, will move to position 122 thereby opening switch 114 breaking the circuit to motor 20.

When it is desired to raise the anchor the master switch 102 is moved to the anchor raising position thus activating the anchor raising circuit to motor 20 to reel cable 34 in. Should the anchor become entangled with weeds or snagged on rocks on the ocean bottom, which frequently happens, increased tension in the cable will cause the slidable boom member 42 to move rearwardly overcoming the compression of spring 76 until the cushion member 124 on the end of boom member 42 reaches and trips switch 112 to break the anchor raising circuit. Thus the bow end of the boat cannot be swamped due to the anchor becoming entangled.

The usual steps to un snag the anchor may then be taken and upon successful completion thereof the boom member 42 will return to its extended position through action of spring 76 and the anchor raising process resumed. When shackle 86 reaches outer end of boom member 42 tension in the cable will again increase and boom member 42 will again be forced rearwardly to actuate switch 112 breaking the anchor raising circuit to motor 20.

If desired a wiper 128, preferably formed of flexible material such as rubber, is carried at the forward end of boom member 42 for wiping the water from cable 34, thus preventing water from dripping into the boat.

This wiper may be in the form of a disk slit radially outwardly from the center with the slits stopping short of the periphery of the disc.

In FIGURE 10 I have shown how my deck mounted winch can be used for hauling a small boat 130, out of the water and onto a trailer 132. Cable 34 is looped over a trailer mounted pulley 134 and the anchor raising circuit activated to retract cable 34 on reel 32. When boat 130 has reached its limit of travel on trailer 132 increased tension in cable 34 will cause boom member 42 to slide rearwardly to actuate switch 112 thereby breaking the circuit to motor 20.

It is understood that minor variation from the form of the invention disclosed herein may be made without departure from the spirit and scope of the invention, and that the specification and drawings are to be considered as merely illustrative rather than limiting.

I claim:

1. A deck mounted winch for boats for raising or lowering the anchor and berthing the boat on a trailer, comprising, in combination with the hull and deck of said boat:

a motor;

a reel operatively connected to said motor;

a cable having one end connected to the reel and the other end detachably connectable to an anchor;

a support mounted on said deck;

a boom member slidably mounted on said support for movement in a substantially horizontal plane;

means on the boom member for guiding the cable;

spring means yieldingly urging said boom member outwardly of the boat; said anchor engaging the outboard end of the boom when the cable is retracted;

and power switching means for said motor operated by the boom.

2. The combination as claimed in claim 1 further including a second switching means for said motor, responsive to a predetermined slack on said cable to render the motor inoperative to unreel the cable.

3. An anchor raising and lowering mechanism comprising:

an anchor;

a cable connected to the anchor;

a shaft;

a motor for rotating the shaft;

a reel freely rotatable on the shaft, the other end of the cable being attached to the reel;

a handle on the reel;

a ratchet wheel fixed to the shaft;

a dog pivotally attached to the reel and engaging a tooth of the ratchet whereby when said dog is disengaged from said ratchet said reel may be rotated by hand.

4. The combination of claim 3 further including a movable boom member adjacent said reel and means on the boom member for guiding the cable.

5. A deck mounted winch for boats for raising or lowering the anchor and berthing the boat on a trailer comprising, in combination with the hull and deck of said boat;

a motor mounted on the underside of said deck adjacent the bow of the boat;

a reel operatively connected to said motor;

a guide pulley mounted on the underside of said deck adjacent said reel;

a substantially horizontal tubular support mounted on the top side of said deck;

a second guide pulley mounted in said support adjacent the forward end thereof;

a hole in said deck in alignment with said pulleys;

a boom slidably mounted in said support and extending outwardly of the forward end thereof;

resilient means urging said boom outwardly;

a cable extending over said guide pulleys and having

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one end connected with said reel; and the other end detachably connected to an anchor; means on the boom for guiding said cable; and switching means for the motor engageable by the inner end of said boom.

6. An anchor raising mechanism comprising in combination:

- an anchor;
- a cable connected to the anchor;
- a reel for the cable;
- a motor for actuating the reel;
- switching means for rendering the motor inoperative to unreel the cable;
- means including a slidable boom responsive to a pre-

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determined tension, above normal, on the cable, for actuating said switch to render the reel inoperative to retract the cable; and spring means normally yieldingly moving said boom toward said anchor.

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