Jan. 10, 1933. W. C. WOOD 1,893,723

WINCH

Filed April 9, 1931

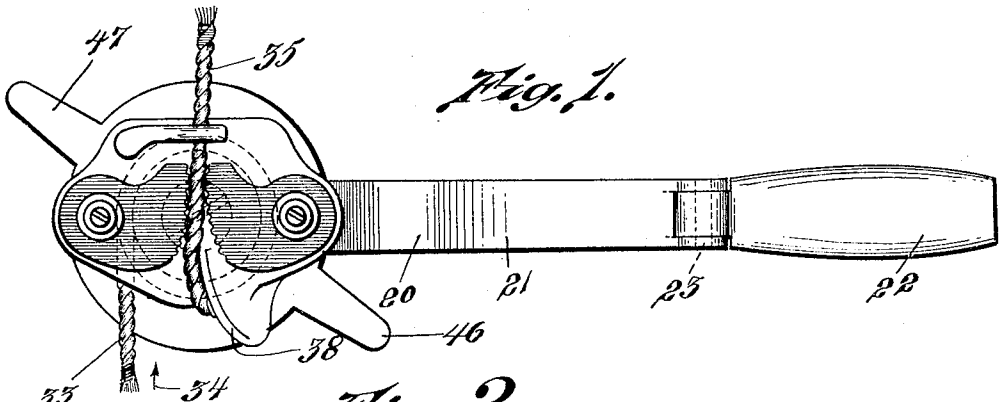


Fig. 1.

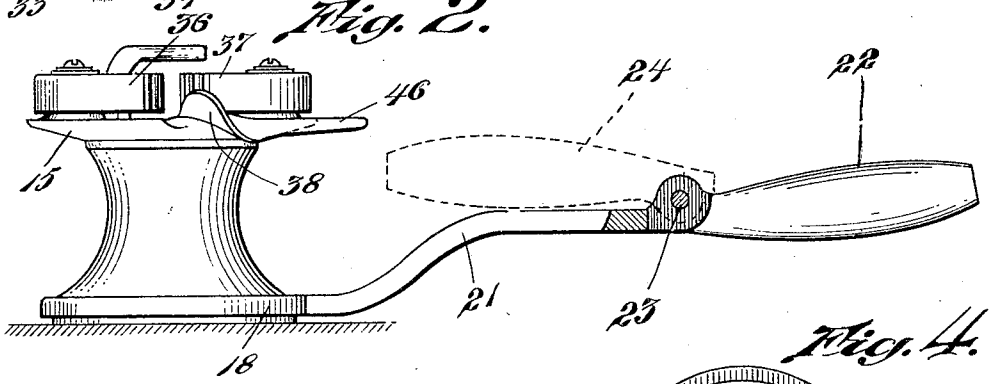


Fig. 2.

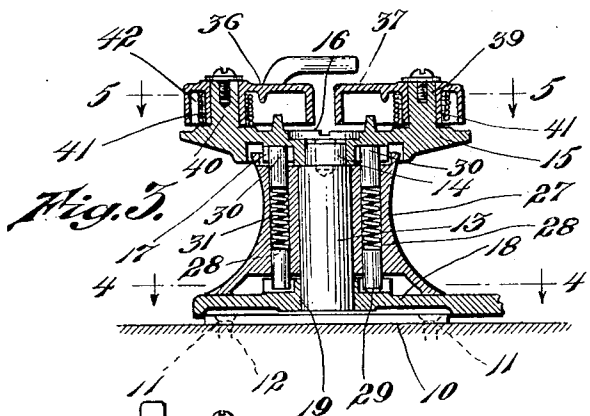


Fig. 3.

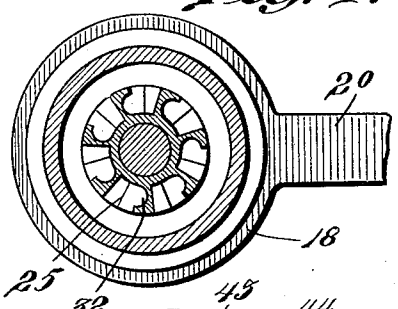


Fig. 4.

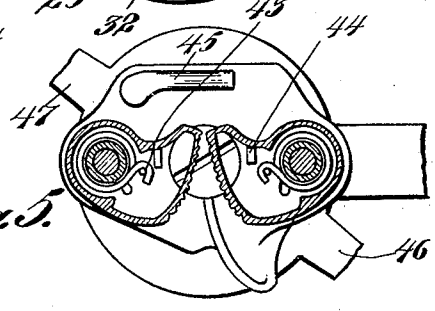


Fig. 5.

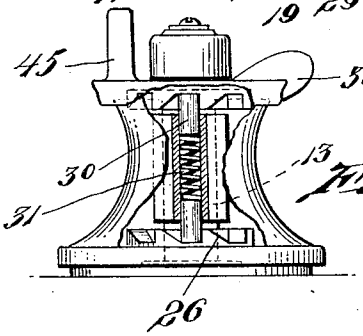


Fig. 6.

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UNITED STATES PATENT OFFICE

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WINCH

Application filed April 9, 1931. Serial No. 528,759.

This invention relates to a winch of the type for use on small boats, and has for its object to provide a combined winch and mechanical clamp associated therewith at one end thereof, whereby a rope after having been passed about the winch may be passed or drawn through the clamp to permit movement in one direction and prevent movement of the rope in the opposite direction.

Another object of the invention is the provision of a clamping means at one end of the winch and means for operating the winch located so as not to interfere with the use of the clamping means.

Another object of the invention is the provision of a guide for directing the rope from the rotary portion of the which through the clamping means and located for advantageous operation of the clamping means.

A further object of the invention is the provision of an operating lever positioned at the base of the winch allowing free access to the winch from the top and sides thereof.

A still further object of the invention is the provision of an operating handle operating in a plane at the bottom of the rotatable drum and offset from this plane at a point spaced from the axis thereof for convenience of operation, with a handle foldable that the same may occupy the minimum amount of space.

With these and other objects and advantageous features in view, the invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawing, and more particularly set forth in the appended claims.

In the drawing:

Fig. 1 is a top plan view of the winch with a rope mounted in working position with the handle extended;

Fig. 2 is a side elevation thereof showing the handle mounting in section;

Fig. 3 is a central section;

Fig. 4 is a sectional view on line 4—4 of Figure 3;

Fig. 5 is a sectional view on line 5—5 of Figure 3; and

Fig. 6 is an elevation with portions broken away showing the pawls in position at substantially right angles to their arrangement in Figure 3.

In the operation of winches, it is well known that a rope is usually wound several times about the drum of the winch and is held taut by the hand of the operator or some other person that the rope may be caused to snugly frictionally grip the winding drum so that operation thereof will cause a corresponding movement of the rope, this tension must be maintained for the proper operation of the winch.

Further, in the operation of small winches by manual means such as by handles and the like, it is customary to operate the winding drum by manipulation applied to the upper end of the winch, either directly from the top or from the side of the upper end, in either of which cases the operating mechanism prevents the use of gripping or clamping means mounted upon the upper end of the winch and also the operating handles interfere with the wrapping of a rope about the winding drum, and in order to overcome these disadvantages, I have provided a construction by which the winding drum may be manually rotated through the base of the winch leaving its upper end unobstructed and free to receive the rope about the drum, and also free to have clamping mechanism mounted on the upper end thereof which may mechanically grip the rope drawn therethrough to prevent retracting movement thereof and consequently keep the same tight upon the winding drum; and the following is a detailed description of the present embodiment of this invention, illustrating the preferred means by which these advantageous results may be accomplished.

With reference to the drawing, I have disclosed a winch intended to be mounted for rotation about a vertical axis, although this invention is equally well applicable to a winch mounted for rotation about a horizontal axis. I therefore wish it to be understood that the reference to base and head are merely convenient terms for designating the parts at either end of the winch.

The base 10 is provided with suitable

openings 11 for the reception of means 12 such as screws or the like for fastening the same to a convenient support such as the deck of a boat or the like, and mounted upon the base 10 there is a cylindrical shaft 13 having a square end portion 14 at the upper end thereof upon which there is fitted a head member 15 which is held in position by means of a bolt 16 having its head countersunk into the head 15, the shaft 13 being provided with a suitably screw threaded recess in its end to receive the threaded portion of the bolt 16. The under side of the head 15 is provided with a series of notches 17 with inclined surfaces on one side and an abutment on the other arranged circularly therein to provide ratchet teeth.

Upon the base is a generally circular plate 18 having an opening 19 to fit about the shaft 13 and is rotatable about this shaft as an axis. Extending from this plate is a handle 20 which is offset at a point spaced from the axis of the device as at 21 and then extends into a plane substantially half way between the base and head of the winch and at right angles to the axis of the drum.

The handle 20 is provided with a foldable portion 22 pivoted at 23 thereon to permit the same to be moved to the dotted line position illustrated at 24, in Figure 2, that the winch may be more compactly arranged when not in use. The plate 18 is provided with a series of notches 25 arranged circularly with beveled surfaces on one side 26 and abutments on the other to provide ratchet teeth, the notches being similar in all respects to the notches in the under side of the head 15.

Rotatably mounted upon the shaft 13 there is a drum 27 suitably curved as illustrated in the drawing to receive a rope or the like wound thereabout for sliding upwardly in the process of operation as is common in the use of winches of this type. This winch has bores 28 parallel to and on either side of the axis of the drum extending completely therethrough, and in these bores there are mounted pawls 29 and 30 extending from each end thereof and pressed outwardly by means of a spring 31.

These pawls engage the ratchet teeth or notches 17 or 25 previously described. Movement of the handle 21 and plate 18 about the axis 13 in one direction, causes one or the other of the pawls 29 to engage the abutting surface 32 of the notch and move the drum 27 relative to the base and head of the winch, whereas a movement in the opposite direction permits the pawls to slide up the inclined surface of the notch and the plate and handle to move in the opposite direction without movement of the drum, the same being held by the pawls 30 and ratchet notches or teeth 17 in the head.

As the winch is thus operated, a rope held tightly thereabout with sufficient turns to cause the desired friction will be moved correspondingly to the movement of the drum. The rope is indicated at 33 and a movement of the drum will cause the rope to pull in the direction of the arrow 34, and a portion of the rope as it is led to the winch will engage the winch nearest the base thereof, it being understood that several coils of the rope are wrapped about the drum, and the portion 35 of the rope will be led from the top coil about the drum and over the top or head of the winch and through the clamp means 36 and 37 to which it will be guided by the projecting portion 38 cast integral with the head 15 and shaped as illustrated in Figures 1, 2 and 5 to conform to the curvature best suited for guiding the rope to the clamping members. This portion 38 may be provided with anti-friction means, if desired.

Trunnions 39 and 40 are provided on the head member 15 integral therewith in the present illustration and spaced apart on either side of the center of the drum. Upon these trunnions there are pivotally mounted the hollow clamp members 36 and 37 and surrounding the bearing portion 41 of these clamp members, there is a spring 42 which causes the members to move toward each other into gripping engagement, the spring being hooked about the pin 43 for causing such movement.

These clamp members engage a stop 44 to limit the movement in one direction and so position them for receiving a rope end 35 or the like to be drawn therethrough as desired.

It will be understood that usually manual tension is applied to end 35 of the rope to draw it thru the clamping members, and that if this tension is released, the rope is still held against retracting movement, and thus the clamping means on the winch may be used temporarily as a means for securing a rope in the desired position, thus making the same far more convenient for operation than where necessary to fasten the rope about a cleat or the like for securing it in taut position.

In order that the rope may be prevented from sliding from between the clamps, I provide a hook member 45 to extend over the same as drawn from the clamp to prevent accidental lifting of the rope from between the clamps.

It is also understood that a stationary cleat may be used in connection with the movable clamp for securing the rope in position where desired and I have shown projections 46 and 47 extending from the head of the winch for this purpose.

While I have described certain construction forms which embody the principles of my invention, it is obvious that other desired changes in arrangement may be made

within the spirit and the scope of the invention as defined in the appended claims.

I claim:

1. A winch comprising relatively stationary and rotary members, means for relatively moving said members, and securing means mounted on one end of the relatively stationary member and through a portion of which the axis of rotation of said members passes.

2. A winch comprising relatively stationary and rotary members, means for relatively moving said members, and mechanically operated clamping means mounted on one end of the relatively stationary member.

3. A winch comprising relatively stationary and rotary members, means for relatively moving said members, clamping means mounted on one end of the relatively stationary member, and a guide on the stationary member for directing a rope or the like through said clamping means.

4. A winch comprising relatively stationary and rotary members, means for relatively moving said members, clamping means mounted on one end of the relatively stationary member, and an integral projecting portion on the stationary member for guiding a rope or the like through said clamping means.

5. A winch comprising a relatively stationary pair of vertically spaced members, a drum rotatably mounted on a vertical axis between said members, clamping means on the end of the upper one of said members for a rope or the like, and means adjacent the other member for moving said drum.

6. A winch comprising relatively stationary pairs of spaced horizontal members, a drum rotatably mounted between said members, on a vertical axis, and clamping means for a rope or the like mounted on the upper horizontal member, means adjacent the lower horizontal member for moving said drum.

7. A winch comprising relatively stationary base and head members, a drum rotatably mounted between said members, clamping means on said head member positioned to receive a rope or the like drawn across the axis of rotation of said drum at right angles thereto, and ratchet means including a handle located adjacent the base member for moving said drum.

8. A winch comprising relatively stationary base and head members, a drum rotatably mounted between said members, clamping means on said head member positioned to receive a rope or the like drawn across the axis of rotation of said drum at right angles thereto, ratchet means including a handle located adjacent the base member for moving said drum, and a guide on the stationary member for directing a rope or the like through said clamping means.

9. A winch comprising a relatively stationary pair of spaced members, a drum rotatably mounted between said members, clamping means on the end of one of said members for a rope or the like comprising a pair of pivotally mounted cam members, resilient means for moving said clamping members toward each other into gripping relation, and means for moving said drum.

10. A winch comprising a relatively stationary pair of spaced members, a drum rotatably mounted between said members, clamping means on the end of one of said members for a rope or the like comprising a pair of pivotally mounted hollow cam members, resilient means within said cam members for moving said cam members toward each other into gripping relation, and means for moving said drum.

11. A winch comprising a relatively stationary pair of spaced members, a drum rotatably mounted between said members, clamping means on the end of one of said members for a rope or the like comprising a pair of spaced trunnions on the head member, hollow cam members pivotally mounted on said trunnions, springs encircling said trunnions and engaging said cam members to move them toward each other into gripping relation, and ratchet means for moving said drum.

12. A winch comprising a stationary member having a base with a shaft extending therefrom, a rock lever mounted on said base about said shaft provided with ratchet notches, a head provided with ratchet notches and fixed to said shaft at a point spaced from said base, a drum rotatably mounted on said shaft between said rock lever and head, pawls extending from each end of said drum to engage said ratchet notches, springs forcing said pawls outwardly, whereby oscillation of said rock lever will rotate said drum about said shaft relative to said base and head.

13. A winch comprising a stationary member having a base with a shaft extending therefrom, a rock lever mounted on said base about said shaft provided with ratchet notches, a head provided with ratchet notches and fixed to said shaft at a point spaced from said base, a drum rotatably mounted on said shaft between said rock lever and head, pawls extending from each end of said drum to engage said ratchet notches, springs forcing said pawls outwardly, whereby oscillation of said rock lever will rotate said drum about said shaft relative to said base and head, and clamping means on said head member for a rope or the like.

14. A winch comprising a stationary member having a base with a shaft extending therefrom, a rock lever mounted on said base about said shaft provided with ratchet notches, a head provided with ratchet notches and fixed to said shaft at a point spaced from said base, a drum rotatably mounted on said shaft between said rock lever and head, pawls

extending from each end of said drum to engage said ratchet notches, springs forcing said pawls outwardly, whereby oscillation of said rock lever will rotate said drum about said shaft relative to said base and head, clamping means on said head member for a rope or the like comprising a pair of pivotally mounted hollow cam members, resilient means for moving said cam members toward each other into gripping relation, and means for moving said drum.

15. A winch comprising a stationary member having a base with a shaft extending therefrom, a rock lever mounted on said base about said shaft provided with ratchet notches, a head provided with ratchet notches and fixed to said shaft at a point spaced from said base, a drum rotatably mounted on said shaft between said rock lever and head, pawls extending from each end of said drum to engage said ratchet notches, springs forcing said pawls outwardly, a pair of trunnions provided on said head in spaced relation, cam gripping members on said trunnions, springs for moving said gripping member towards engagement with each other, and stops for limiting the movement of said members.

16. A winch comprising a base and a movable member rotatable thereabout, a stationary member, a drum rotatably mounted between said members, means for moving said first mentioned member including a handle extending therefrom foldable upon itself, and having an offset portion locating the end portion of said handle in a plane intermediate the ends of the winch.

In testimony whereof I affix my signature.

WALTER CROMWELL WOOD.