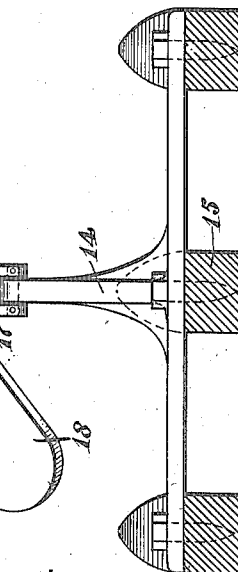
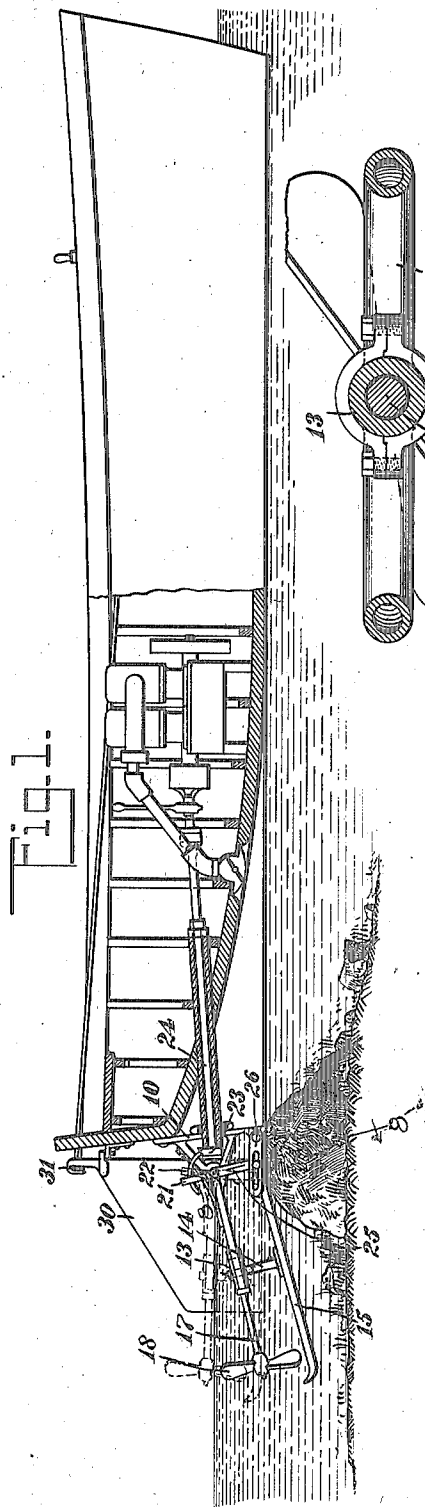
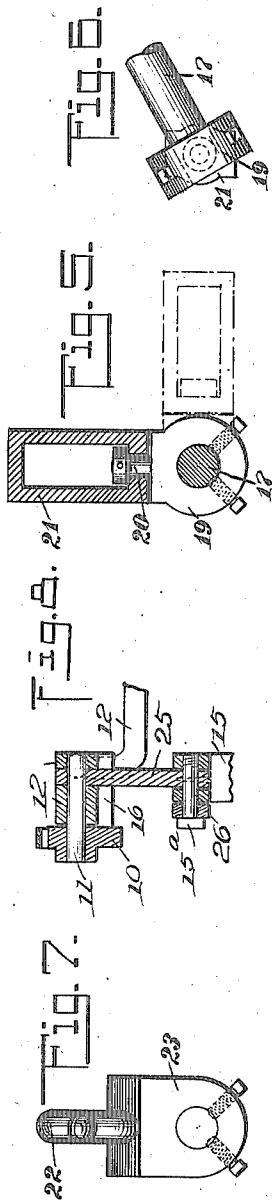


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J. L. HAWTHORNE.
PROPELLER GUARD.
APPLICATION FILED MAY 22, 1909.

Patented Mar. 8, 1910.

2 SHEETS—SHEET 1.



WITNESSES
L. Almqvist
W. H. H. H.

INVENTOR
John L. Hawthorne
BY *M. M. M.*
ATTORNEYS

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2 SHEETS—SHEET 2.

Fig. 2.

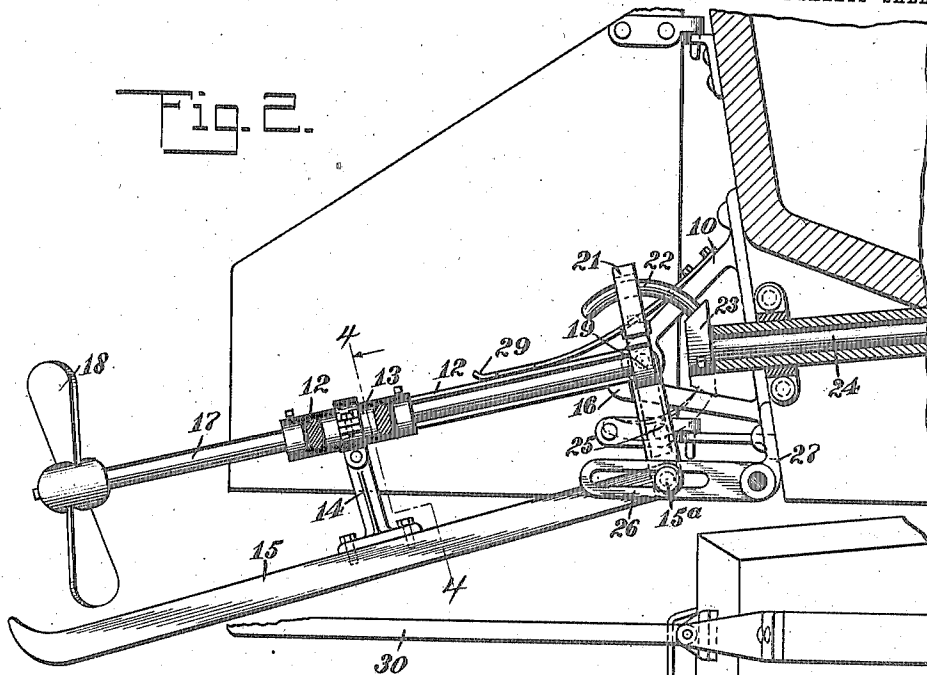
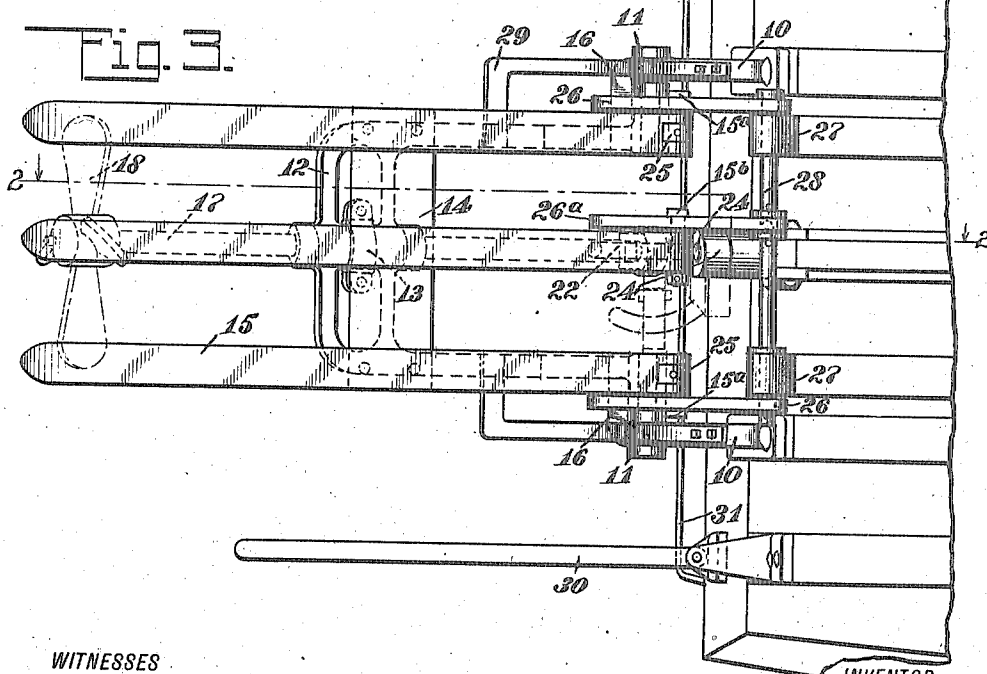


Fig. 3.



WITNESSES

L. Almquist
W. J. Jones

INVENTOR

John L. Hawthorne

BY *Munroe*

ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN LEWIS HAWTHORNE, OF PATERSON, NEW JERSEY.

PROPELLER-GUARD.

951,608.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed May 22, 1909. Serial No. 497,706.

To all whom it may concern:

Be it known that I, JOHN L. HAWTHORNE, a citizen of the United States, and a resident of Paterson, in the county of Passaic and State of New Jersey, have invented a new and Improved Propeller-Guard, of which the following is a full, clear, and exact description.

The pleasure of running motor boats in some waters is marred by the danger of submerged rocks, which are elevated sufficiently to be struck by the propeller and thus break or bend it, as well as the propeller shaft. To overcome this I have designed a propeller guard which in general consists of a frame extending beneath the propeller shaft and propeller, both the shaft and guard being supported to swing upwardly when the guard strikes an obstruction, thus allowing the propeller to ride safely over.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a motor boat partly in central vertical section, showing my improved propeller guard applied thereto and in a position to swing upwardly with the propeller in passing over a rock; Fig. 2 is a similar view of the guard and propeller on an enlarged scale; Fig. 3 is an inverted plan of the guard and propeller; Fig. 4 is a cross-section of the same on the line 4-4 of Fig. 2, looking in the direction of the arrow; Fig. 5 is a sectional view of the swiveled loop and its connection with the propeller shaft; Fig. 6 is an inverted plan of the construction shown in Fig. 5; Fig. 7 is an outer end view of the curved arm which is carried by the driving shaft and engages in the swiveled loop; and Fig. 8 is a fragmentary sectional view on the line 8-8 of Fig. 1.

At the stern of the boat at each side of the keel brackets 10, are bolted or otherwise secured. In these brackets are journaled stub shafts or trunnions 11 attached to an approximately U-shaped frame 12, the frame extending rearwardly a substantial distance, where it is rigid with a centrally-located bearing 13, which bearing is additionally and pivotally supported on a post 14 rigidly secured to a propeller guard 15. The brackets 10 in addition to serving as sup-

ports for pivoting the frame 12, each has an inwardly-projecting finger 16 which extends under the adjacent arm of the frame and limits its downward pivotal movement. Journaled in the bearing 13 is the propeller shaft 17 having the propeller 18 secured at its outer end, and at its inner end having an attached collar 19, as shown in detail in Figs. 5 and 6, the collar being provided with a stud 20 on which is swiveled a loop 21. An outwardly-curved arm 22 projects into the loop and is rigid with a collar 23, which in turn is attached to the outer end of the driving shaft 24 at the outside of the stern stuffing-box.

The guard 15, as shown in Figs. 3 and 4, is made up of a number of longitudinal bars, three being shown, which extend the full length of the propeller shaft and are turned upward slightly at their outer ends at the rear of the propeller. These bars are all rigidly secured together intermediate their length, as shown in Fig. 3, by the base-plate of the post 14, and at the inner end of the guard the outer bars are bifurcated to receive the lower ends of links 25 which are pivoted thereto, the upper ends of the links being pivoted to the inner ends of the arms of the frame 12 on the shafts 11, as shown in Fig. 8. The pivot-pins 15^a which connect the bars of the guard frame to the links, also pass through longitudinally slotted links 26 which are pivotally supported at their inner ends on brackets 27 by a cross-bolt 28, the bolt passing through a centrally-arranged link 26^a in all respects the same as the links 26 and likewise pivoted to the inner end of the central guide-bar of the propeller guard by a pin or bolt 15^b.

Ordinarily, the weight of the parts is sufficient to hold the propeller and guard to the lower limit of its movement, as shown in Fig. 2. In order, however, to insure a positive return of the propeller to this position after passing over an obstruction, and to minimize the vibration in so far as possible, I attach to the upper edges of the brackets 10, the inner end portions of a U-shaped spring 29, the cross-bar of the spring resting on the tops of the arms of the frame 12. By reason of the swiveled action of the loop 21 and the free movement of the curved arm 22 therethrough, the driving of the propeller shaft from the driving shaft is rendered possible when the propeller shaft is in any position of its swinging movement. When the

boat passes over a rock or other obstruction in the path of the propeller, the obstruction, if submerged sufficiently to clear the keel, in which event the boat proper passes over
 5 without striking, the guard strikes the rock and is raised, carrying with it the propeller shaft and propeller, all of which are quickly returned by the weight of the parts and the spring after the rock has been cleared.
 10 When the guard 15 swings upwardly, the connected ends of the guard-bars and links 25 move outwardly on the slotted links 26, while the latter swing on their own pivots to render this movement of the guard possible.
 15 In order that the steering of the boat may not be impaired by reason of the guard, I provide two rudders 30, which are swingingly mounted on the boat at opposite sides of the guard and operatively connected by
 20 a strap 31, as shown in Fig. 3, in order that they may be swung in unison.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

25 1. In combination with a boat, a driving shaft, a frame pivotally supported at its inner end at the stern of the boat, and having a bearing on the outer portion thereof, a propeller shaft journaled in the bearing,
 30 means operatively connecting the driving shaft to the propeller shaft, links pivotally supported at their inner ends at the stern of the boat, and a propeller guard pivotally and slidably supported on the links and
 35 operatively connected to said bearing.

2. In combination with a boat, a driving shaft, a frame pivotally supported at its inner end on the boat adjacent to the outer end of the driving shaft, links pivoted to the boat below the frame, a bearing carried by the frame, and a guard operatively connected to the links and to the bearing.
 40

3. In combination with a boat, a driving shaft, a guard pivotally supported at its inner end to the boat, a bearing connected to and arranged above the guard, a propeller shaft journaled in the bearing, an arm fixed to and extending outwardly from the driving shaft, and a swiveled loop fixed to the inner end of the propeller shaft and engaging said arm.
 45

4. In combination with a boat, a driving shaft, a frame pivotally supported at its inner end adjacent to the outer end of the driving shaft and having a bearing on the outer portion thereof, a propeller shaft journaled in the bearing, means operatively
 55

connecting the propeller shaft and the driving shaft, links pivotally supported at their inner ends below the frame, links arranged between the frame and the first mentioned links, and a propeller guard supported at its inner end on the two sets of links and operatively connected to said bearing.
 60

5. In combination with a boat, a driving shaft, brackets secured to the boat adjacent to the outer end of the driving shaft, a frame pivotally supported at its inner end on the brackets, a bearing, a propeller shaft journaled in the bearing and operatively connected to the driving shaft, a guard pivotally supported at its inner end below the propeller shaft and operatively connected to the bearing, stops projecting from the brackets underneath the frame to limit the downward movement of the propeller shaft and guard, and a spring bearing on the frame and forcing it to the stops.
 65 70 75

6. In combination with a boat, a driving shaft, brackets secured to the boat adjacent to the outer end of the driving shaft, a frame pivotally supported at its inner end on the brackets and having a bearing, a propeller shaft journaled in the bearing and operatively connected to the driving shaft, links suspended on the frame adjacent to the brackets, links pivotally supported at their inner ends, a guard pivotally connected to the first mentioned links and slidably and pivotally connected to the last mentioned links, and means operatively connecting the guard to the bearing.
 80 85 90

7. In combination with a boat, a driving shaft, brackets secured to the boat adjacent to the outer end of the driving shaft, a frame pivotally supported at its inner end on the brackets and having a bearing, a propeller shaft journaled in the bearing and operatively connected to the driving shaft, links suspended on the frame adjacent to the brackets, slotted links pivoted at their inner ends to the boat, a guard having a member pivotally connected to the bearing, and pivot pins connecting the inner end of the guard to the first mentioned links and slidable in the slots of the last mentioned links.
 95 100 105

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN LEWIS HAWTHORNE.

Witnesses:

JOHN RICKER,
 CHARLES SIEFERT.