J. Ericsson Sheet 1, 2 Sheets.

Screw Propeller.

No. 3,869. Patented Dec. 31, 1844.

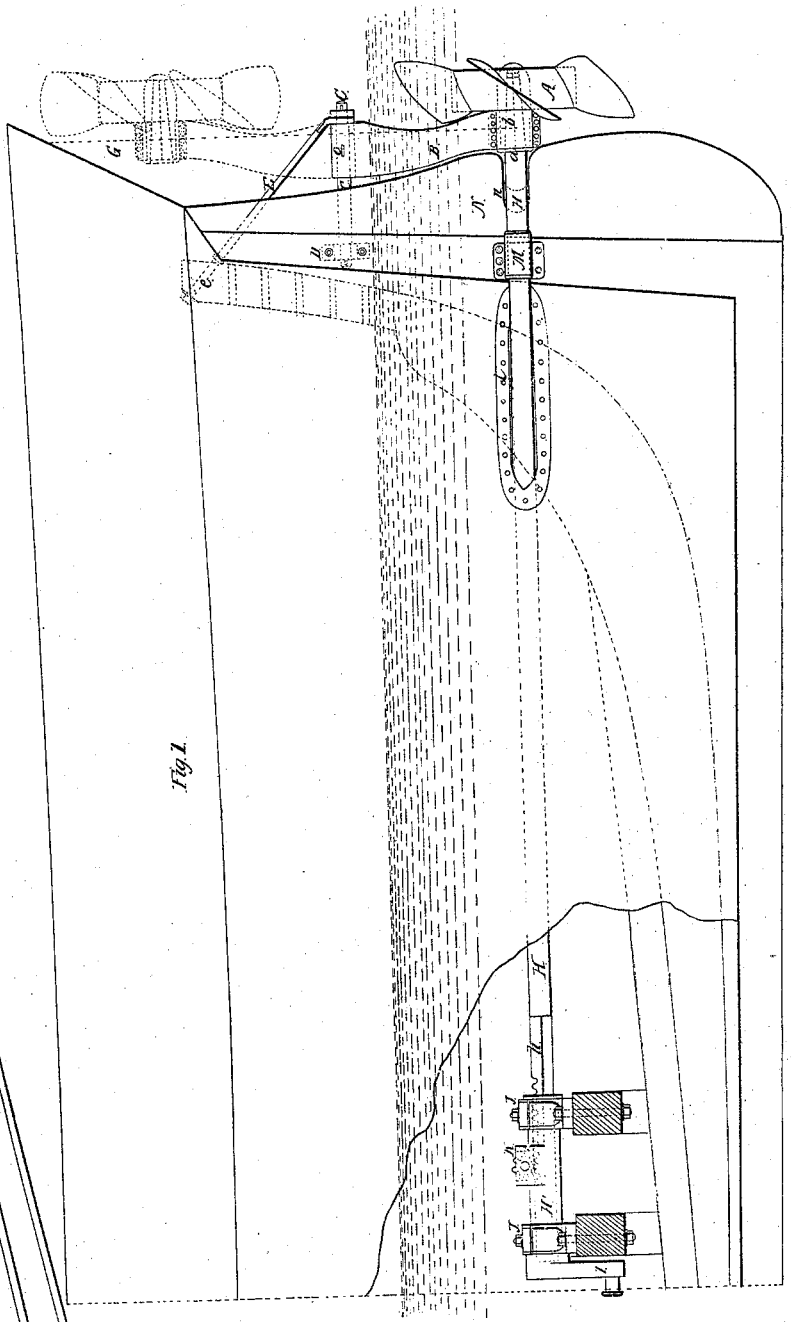

Fig. 1.

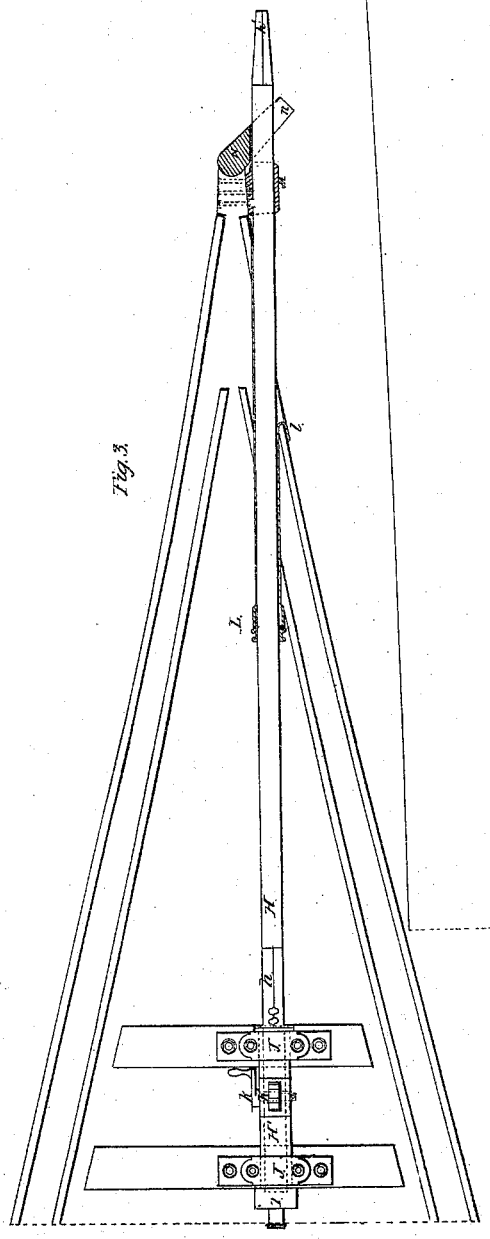

Fig. 3.

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J. Ericsson. Sheets, 2 Sheets.

Screw Propeller.

No. 3869. Patented Dec. 31, 1844.

Fig. 5.

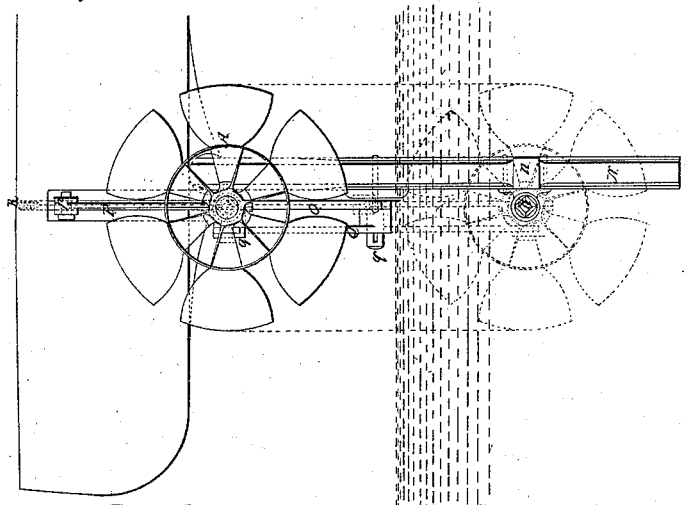


Fig. 4.

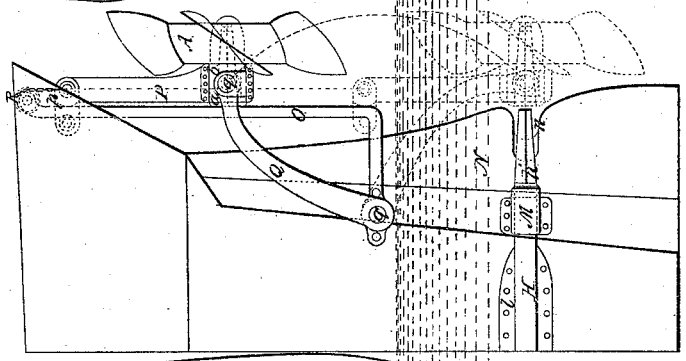
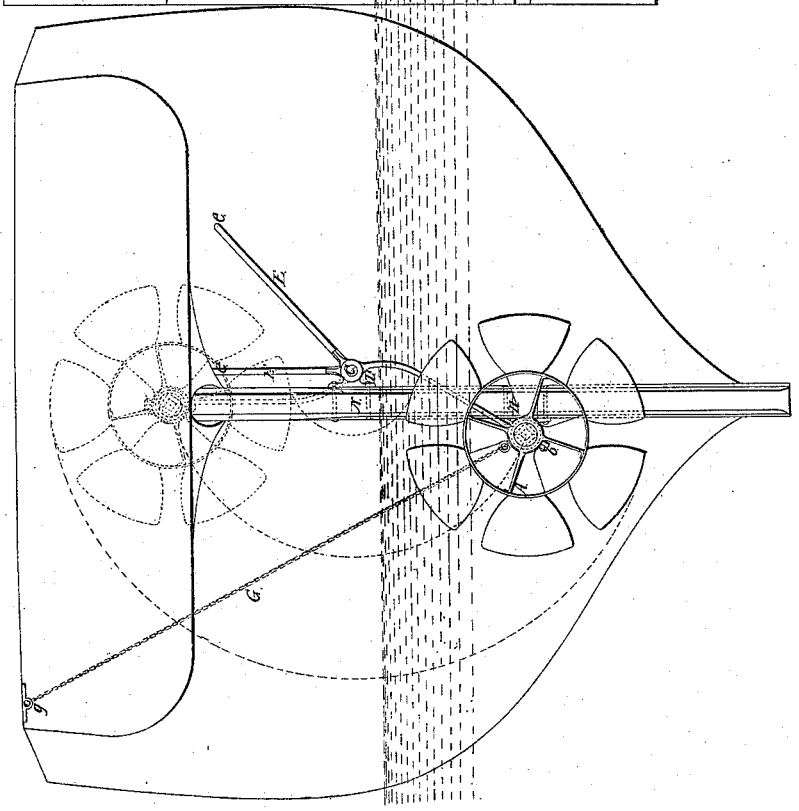


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN ERICSSON, OF NEW YORK, N. Y.

IMPROVEMENT IN PROPELLING SHIPS.

Specification forming part of Letters Patent No. **3,869**, dated December 31, 1844.

To all whom it may concern:

Be it known that I, JOHN ERICSSON, of the city of New York, in the State of New York, have invented a new and useful Improvement in Propelling Ships; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention consists of an arrangement for unshipping propellers or lifting them out of water for purposes of repair or in order to avoid the retardation they offer to the progress of vessels in sailing.

The propeller, the hub of which is elongated and formed into a journal, is supported abaft the vessel by a frame of wrought-iron or composition metal, the lower end of which is provided with a bearing made to receive the said journal. The frame is made either to slide up and down upon a suitable guide, the upper part of which guide is attached to the ship's counter and the lower part to the stern-post, or it is made to swing on an axis or spindle attached to the stern-post just above the water-line, and it is raised and lowered by a chain worked by a windlass, by blocks and falls, or by a rope or chain connected to the capstan. The propeller-shaft passes through the run by the side of the stern-post, a bearing being bolted to the stern-post to support the shaft. To prevent the shaft from interfering with the play of the rudder, a slot is cut in the latter for about half its width, beginning at its outer edge. This slot permits the rudder to turn as far as an angle of forty-five degrees to the center line of the vessel.

The propeller-shaft is composed of two parts, the one sliding within the other a distance equal to the length of the hub of the propeller, the outer part being the sliding one, and the motion requisite to withdraw it from the hub of the propeller being given to it by a rack and pinion. Both ends of this sliding part of the shaft are made either square or six-sided, the outer end being made taper, corresponding to a taper hole in the hub of the propeller, and the inner end being parallel and corresponding to a parallel hole in the other part of the shaft. The water is prevented from entering around the shaft where it goes through the run by a stuffing-box. The position of the propeller when attached to the shaft is close abaft the rudder, and its center line is ordinarily about one foot on the starboard or larboard side of the ship's middle line.

In the drawings hereto annexed, illustrating my invention, Figure 1 is a side elevation of the stern of a ship with part of the planking and timbers removed to show the inner portion of the propeller-shaft; Fig. 2, a stern view of the ship; Fig. 3, a sectional plan of the stern through the center of the propeller-shaft.

Similar parts are designated in all the figures by the same letters of reference.

A is the propeller; *a*, the hub elongated and formed into a journal; B, a frame, of wrought-iron or composition metal, supporting the propeller *b*, formed at the narrow end of the frame which embraces the journal upon the hub.

C C is an axis or spindle of wrought-iron, the inner end of which is carried by a bearing D, bolted to the side of the stern-post, and the outer end is supported by two braces E E, secured to the transom of the ship at *e e*. This axis passes through the wide end of the frame B, which is firmly secured to it by the key *c*.

G is a chain attached to the bearing *b* for raising and lowering the propeller. It passes through an eye *g*, attached to the upper part of the stern, and is connected to the capstan or a small windlass. This chain is provided with a stop so placed that when the propeller is full down the stop will bear against the side of the eye *g*.

H H′ is a propeller-shaft made in two parts, one sliding a short distance within the other. The inner end *h* of the sliding part H is formed into a parallel square corresponding to a hole in the other part H′ of the shaft which receives the square. The outer end *h′* of the sliding part is formed into a taper square corresponding to a taper hole in the hub of the propeller.

I is a crank firmly keyed to the propeller-shaft to communicate motion to it from a steam-engine, J J, pillow-blocks supporting the propeller-shaft.

K is a pinion inserted in a box formed on the hollow part of the propeller-shaft for moving back and forth the sliding part. One corner of the square *h* at the inner end of the sliding part is cut into a rack to suit the pinion.

k is a winch for turning the pinion; L, stuff-

ing-box secured to the planking of the ship at *l l* to prevent the water from entering around the shaft; M, bearing of composition metal firmly bolted to the side of the stern-post; N, rudder; *n*, slot cut into the rudder to admit of a free motion being given to it.

Fig. 4 is part of a side elevation of the stern of a ship, showing the mode of raising and lowering the propeller by means of a guide attached to the ship's counter; Fig. 5, a part of a stern view of the same arrangement. All parts in these figures corresponding to those in Figs. 1, 2, and 3 are marked by the same letters of reference.

O is a guide-rod made of wrought-iron, the upper end being secured to the ship's counter and the lower end bolted to the side of the stern-post.

P is a frame of wrought-iron, provided at the lower end with a bearing *b* for receiving the journal upon the elongated part of the hub of the propeller, as before described. The upper end is provided with a jaw *p*, corresponding to the guide-rod O.

Q is a radius-bar, attached to the frame P by a joint *q* and working on an axis *q'*, secured to the side of the stern-post; R, pulley over which the chain G, before described, passes.

Having thus fully described the construction and application of my invention and illustrated it by drawings, I will proceed to describe its operation. Whenever it becomes necessary to unship the propeller, either to repair it or to prevent the obstruction it offers to the progress of the ship while she is using her sails only, the propeller-shaft is drawn in by turning the winch of the pinion on the hollow part of the shaft, and the frame which supports the propeller is drawn up by turning the windlass or capstan to which the chain for raising and lowering the frame is attached until the propeller is brought to the proper height above the surface of the water, as indicated in red in Figs. 1 and 2 and in black in Figs. 4 and 5, where it is lashed to the counter. In lowering the propeller to reattach it to the shaft care must be taken to let it down to the full extent before the shaft is moved out.

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement of the propeller-shaft and rudder, in combination with the mode of attaching and detaching the propeller by means of a swinging or sliding frame, in the manner hereinbefore described.

J. ERICSSON.

Witnesses:
C. A. MAPES,
WM. K. HALL.