

R. F. Loyer.
Screw Propeller.

N^o 4,285.

Patented Nov. 26, 1845.

Fig. 2.

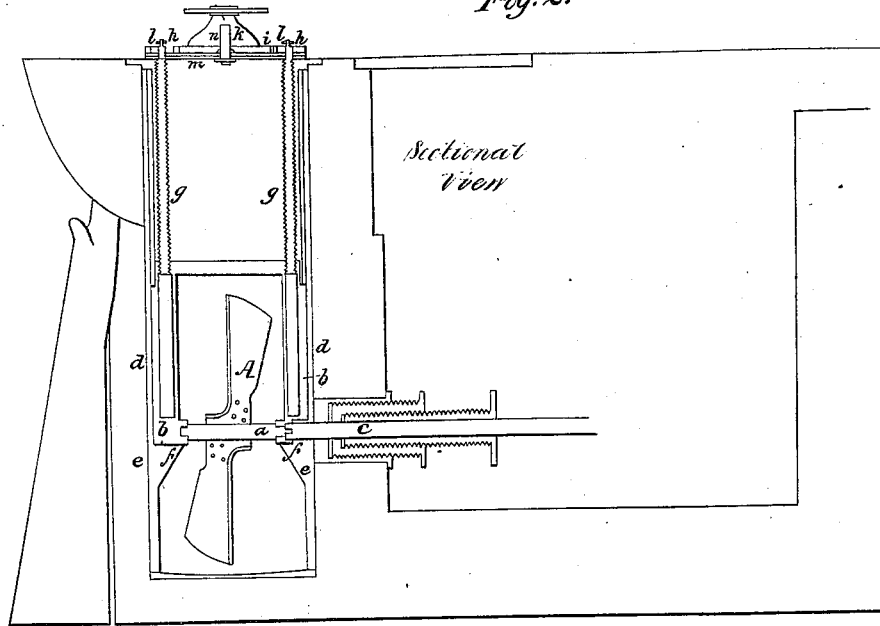
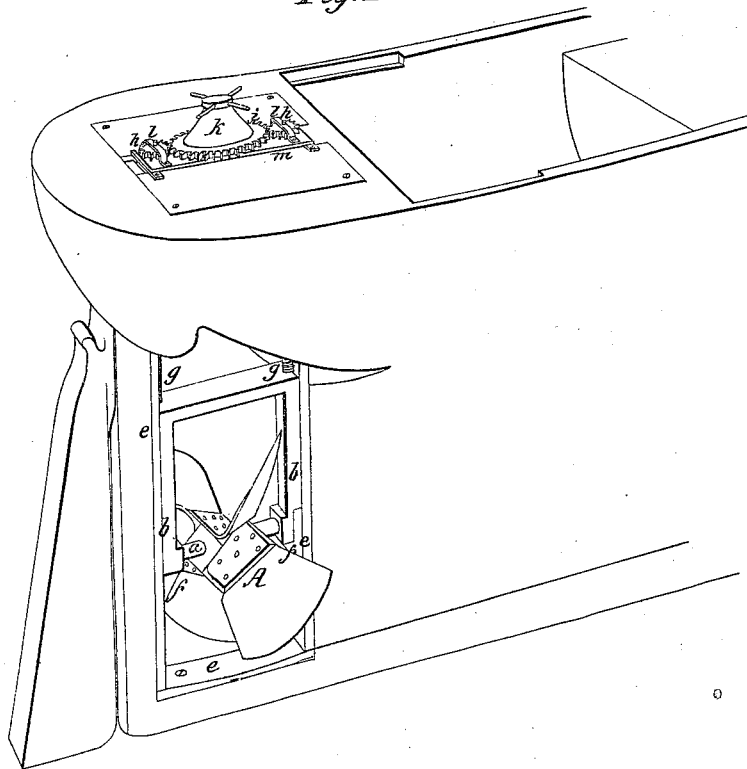


Fig. 1.



UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN THE MODE OF ELEVATING AND DEPRESSING PROPELLERS OF STEAM-VESSLS.

Specification forming part of Letters Patent No. 4,285, dated November 26, 1845.

To all whom it may concern:

Be it known that I, R. F. LOPER, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful improvement in the mode of drawing up and letting down the spiral or screw propellers of steamships, or that class of propellers generally known under the appellations of the "Loper," the "Ericsson," the "Archimedes," and all others having oblique or curved paddles attached to a shaft the axis of which is in the line of the ship's keel, or nearly so; and I do hereby declare that the following is a full, clear, and exact description of the principle or character thereof which distinguishes it from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of the propeller and apparatus for raising and depressing the same as applied to a ship; and Fig. 2, a longitudinal vertical section of the same.

The same letters indicate like parts in all the figures.

The importance of steam as an auxiliary propelling force to wind has for several years been urged upon the attention of the public in this country and Europe with so much zeal and ability and was so obvious that at last the whole maritime and engineering world admit that the success of the application of steam to transatlantic navigation and the military marines depends upon the success of some plan for the application of steam as an auxiliary force. To attain this end it is conceded by all that the propeller must be so arranged as to admit of being drawn up from the water, that no obstruction may be presented to the sailing of the vessel during the prevalence of fair winds; but this has heretofore presented many (and in the minds of some insurmountable) difficulties on account of the exposed condition of the propeller to the action of the waves, which are always prevalent at the time the propeller is to be drawn up or let down, particularly as the propeller must be coupled with and uncoupled from the shaft during the action of the waves. Many attempts have been made to attain this

desirable end by hanging the propeller in a frame adapted to slide in the sides of the opening cut out of the dead-wood or run of the vessel in which the propeller works, said frame to be suspended by chains to the drum of a windlass on the deck of a vessel. This, however, is only effective in drawing up the propeller, but it fails in letting it down, for the frame will almost invariably "jam" (as it is technically termed) when slashed by the waves in descending, as it is impossible to make the slides sufficiently true and tight to prevent that amount of play necessary to avoid jamming, for the metal frame is not only liable to rust under the action of the salt-water, but to be bent by the swell of the wood of the vessel, which will impede the descent of the frame, and therefore it is necessary that full play be given to the sliding frame in the slides, and this indispensable play brings about the difficulty of jamming and renders it almost impossible to insert the shaft in the hub of the propeller. All these evils I have encountered in my experience, and I at first attempted to surmount them by attaching two screws to the top of the propeller-frame and passing them up through screw-nuts on the deck; but this I was forced to abandon in consequence of the projection of these screws to a considerable height above the deck at the very time that a free deck is required for the management of the sails of the vessel—viz., during the prevalence of winds, at which time the propeller must be drawn up. All these difficulties have led me to the invention of the improvement which I desire to secure by Letters Patent, and which consists in attaching two screws to cog-wheels on the deck of the vessel, which mesh into a large cog-wheel on the drum of a capstan, the threads of the screws taking into nuts formed in the sliding frame of the propeller, the sides of which frame are bored out cylindrically to a certain depth to admit the screws to pass therein and to protect them from the action of salt-water deposits and rust which would otherwise prevent their working.

In the accompanying drawings, A represents a propeller, for which I have obtained Letters Patent, on a shaft *a*, having its bearings in the lower ends of the side pieces *b b*

of a sliding frame. The end of this shaft is square to admit of the locking and unlocking of the sliding main shaft *c*.

The frame on which the propeller is hung has tongues *dd* on its sides to slide in grooves made in a metallic frame *e*, inserted in a hole in the run or dead-wood of the vessel, and when let down rests on shoulders *ff*, projecting from the sides of the frame *e*.

The sides *bb* of the propeller-frame are bored out and tapped for the reception of two vertical screws *g g*, each having a cog-wheel *h h* attached to the upper end to take into the teeth of a cog-wheel *i* on the lower end of a capstan *k*, by which the two screws are turned simultaneously and in the same direction to force down or draw up the propeller, the screw-shaft, having journals near their upper ends working in boxes *ll* in the plate *m*, which holds the spindle *n* of the capstan *k*. By means of this arrangement it will be obvious that the turning of the screws by means of the capstan will cause the propeller-frame to

slide up and down by a positive motion without the possibility of the frame jamming in the slides, and will carry it down steadily and present the hole in the shaft in such manner as to admit of coupling it and the crank-shaft together without any danger of accidents, while at the same time the sides of the propeller-frame effectually shield the screws from such action of the salt-water as would render them useless.

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

Combining the elevating-screws with the frame of the propeller by means of openings therein to receive the same, so constructed as entirely to exclude the surrounding water from that part of the screws which is within the frame, the whole being constructed and arranged substantially as herein set forth.

R. F. LOPER.

Witnesses:

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B. T. MCMURTRIE.