E. Lacroix, Jr.

Screw Propeller

No. 2,889. Patented Dec. 10, 1861.

33,893.

Fig. 1.

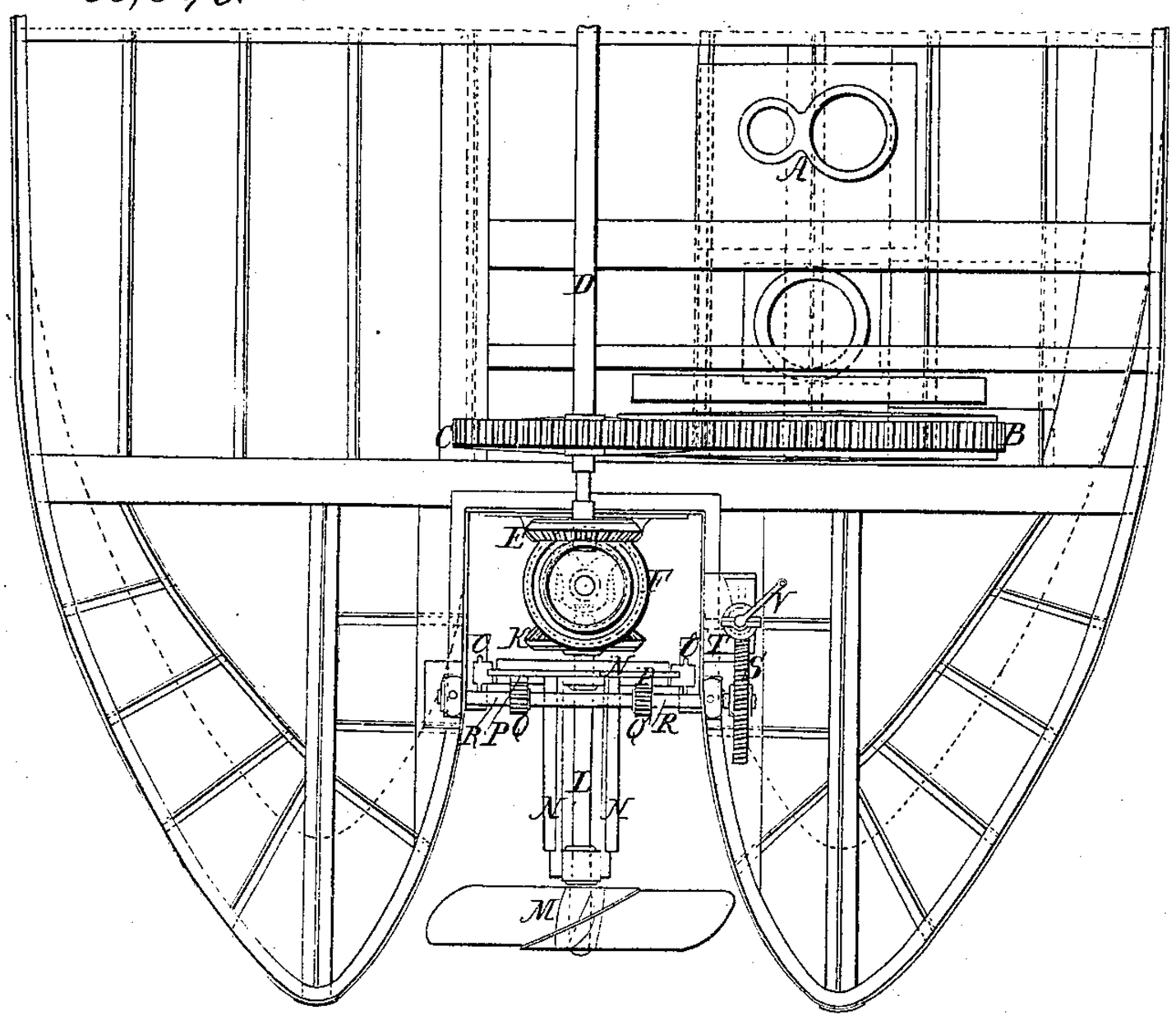


Fig. 3.

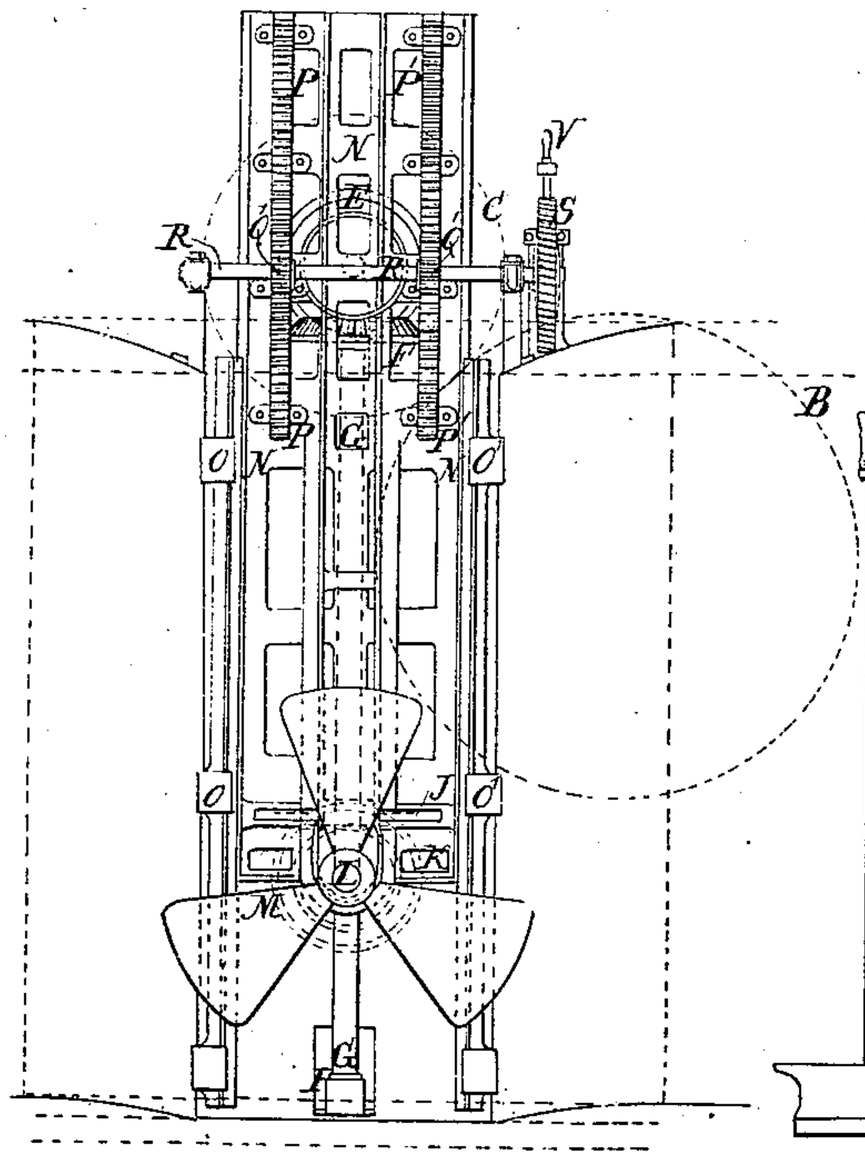
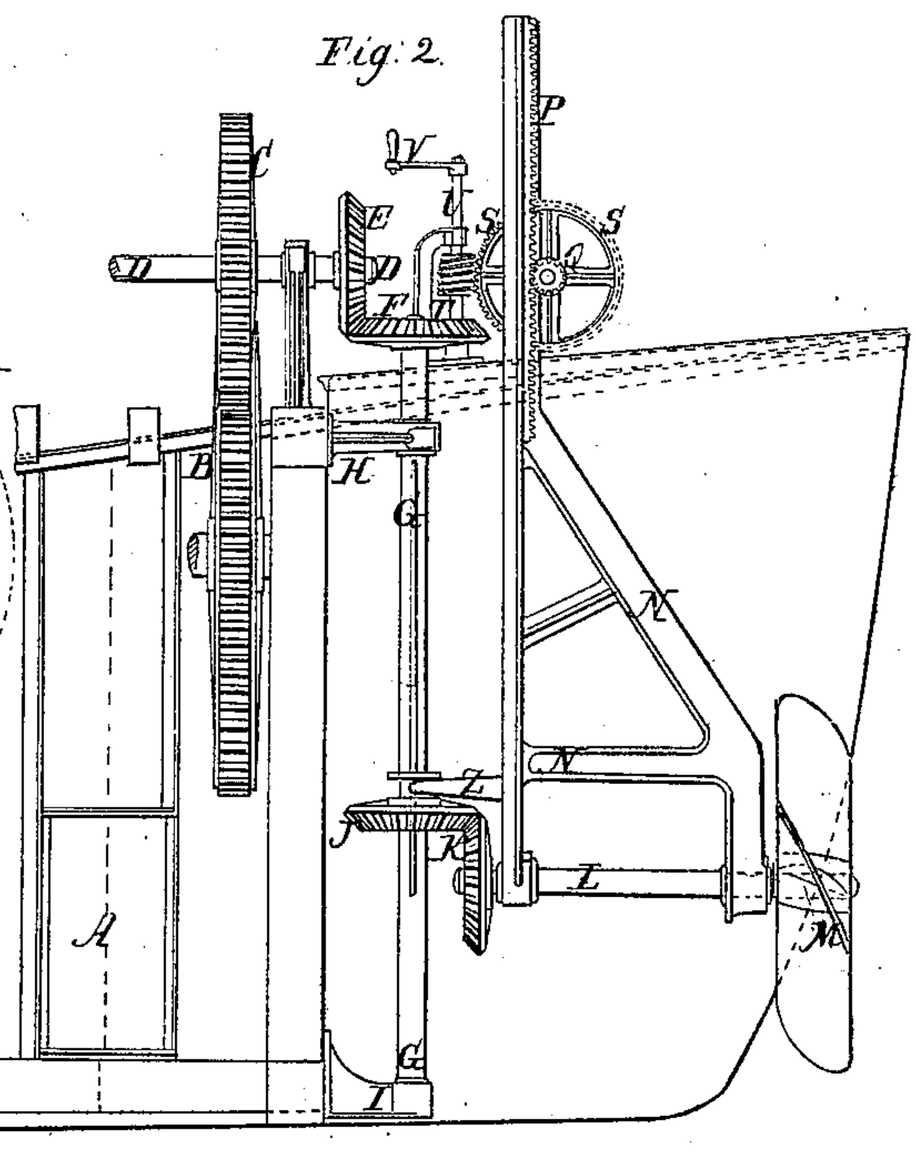


Fig. 2.



Witnesses;
Henry M. Spencer
T. Hillas

Inventor;
Eugene Lacroix Jr.

UNITED STATES PATENT OFFICE.

EUGÈNE LACROIX, JR., OF ROUEN, FRANCE.

IMPROVED MARINE PROPELLER.

Specification forming part of Letters Patent No. **33,893**, dated December 10, 1861.

To all whom it may concern:

Be it known that I, EUGÈNE LACROIX, Jr., of the Empire of France, have invented certain new and useful Improvements in Applying and Working Propellers in Boats and Vessels; and I do hereby describe and ascertain my said invention as follows.

This invention relates to a novel mode of fitting or applying propellers and in the mode of working or driving them so that the full or effective power of the propelling-engine may be transmitted or exerted whatever the variation may be in the immersion or load line of the boat or other vessel, and by which novel mode of applying the propelling apparatus the wash of the receding waves produced by the action of the propeller is rendered harmless to the banks of canals. Instead of fitting the propeller or propellers (whether screw, paddle, or other form) in the ordinary manner of applying and working them, I mount the propelling instrument or apparatus in a frame which is capable of being raised or lowered at pleasure by means of worm and wheels and rack gearing to an extent between the limits of the lightest and the heaviest load-lines or lines of immersion. The sliding frame just described is fitted in a suitable recess or trough-like chamber, the sides whereof confine the agitated water within, and is discharged at the end of the chamber or trough-like box, limited in width, and rendered harmless to the banks; and thus while the vessel only produces such waves in advance as are due to the speed at which the vessel is propelled the washing away of the banks produced by the agitation of the propeller is avoided. Motion is communicated from the driving-shaft of the engine to the propeller through or by means of wheel-gearing, a sliding wheel being fitted upon a vertical shaft provided with a feather to allow of the sliding propeller-frame and the driving-wheel traversing freely up and down, while the eye of the driving-wheel slides along the shaft, which is caused to rotate by the driving-wheel of the propelling-shaft or the intermediate shaft. One or more feathered shafts may be used for giving motion to the propeller, and they may be driven or rotated by miter, bevel, or spur gearing.

The plans hereunto annexed show the arrangement to which preference has been given by the inventor in order to render the position of propellers variable. The invention is shown as applied to the screw-propeller; but it may also be applied to other descriptions of propellers.

One of the distinguishing features of this invention also consists in the form given to the after part of the vessel. It will be observed in the drawings hereunto annexed that a recess or opening is formed at this part of the vessel, which is thus divided, as it were, into two hulls. This opening or recess presents the double advantage of enabling the machinery giving motion to the propeller to be inclosed and so placed as to be protected from all chance of accident, and also to confine the currents of water so that the canal-banks are preserved from destruction. Instead, however, of forming the opening at the after part of the vessel, as shown, there may be two partition or division pieces, either of wood or metal, fixed there—one on each side—between which the propeller would work.

In the accompanying drawings is shown, by way of illustration, an arrangement of machinery and apparatus adapted to rotating and working a screw-propeller according to this invention.

Figure 1 is a plan of the after part of the vessel fitted with a propeller and machinery; Fig. 2 a longitudinal section, and Fig. 3 an end view, of the same.

In the several views the same letters of reference are employed to represent corresponding parts.

A is the steam-engine; B, a spur-wheel fixed upon engine-shaft; C, a pinion worked by the wheel B; D, a shaft carrying the pinion C, and also having at its extremity a bevel-wheel E, fixed at the extremity of the shaft D; F, a bevel-wheel gearing into the wheel E and fixed at the top of the vertical shaft G, working in a bearing-bracket H and at the foot in a step I; J, a bevel-wheel made to slide up and down the shaft G upon a feather; K, a bevel-wheel taking into and driven by the wheel J and employed for working the propeller-shaft L, carrying at its extremity the screw-propeller M; N, the bracket-frame; O O′, cast-iron grooves fixed to each side of the open-

ing formed at the stern of the vessel, in which grooves the bracket-frame N slides; P P′, racks fixed on either side of the upper part of the bracket-frame; Q Q′, pinions gearing into such racks; R, a shaft carrying the pinions Q Q′; S, a worm-wheel at the extremity of shaft R; T, a worm gearing into the worm-wheel S; V, a vertical spindle carrying the worm, upon which is fitted a handle V.

When it is desired to vary the position of the propeller, so as to place it with regard to the draft of the vessel, the screw-worm T is put in motion by means of the handle V, and through the wheel S the motion is transmitted to the pinions Q Q′, gearing into the racks P P′, and thus the bracket-frame N is caused to work up or down in the grooves O O′. As it is indispensable that while the bracket-frame N is being caused to rise or fall the teeth of the wheels J and K remain always in gear, the eye of the wheel J is provided with a feather-way. The boss of the wheel J also has a groove turned in it for the purpose of receiving a forked or clutch bracket Z, projecting from the back of the bracket-frame N, so that when the bracket-frame N works up or down in the grooves O O′, through the action of the forked piece Z, the bracket-frame carries the propeller, and the miter-wheel J, which thus remains constantly in gear with the miter-wheel K, communicates the motion to the propeller-shaft.

To prevent damage to the teeth of the wheels from any floating obstacles, the wheels J and K should be inclosed in a suitable casing.

What I claim as my invention is—

The combination of a propeller mounted on a sliding frame, as herein set forth, so as to be raised and lowered within a recess in the stern of the vessel, so that said sliding frame shall receive its support from the sides of the recess to strengthen and brace the frame and protect the propeller, as and for the purposes described.

EUGÈNE LACROIX, JR.

Witnesses:

HENRY W. SPENCER,

GEO. HUTTON.