J. W. DILKS.

Means for Raising and Lowering Propellers.

No. 168,380. Patented Oct. 5, 1875.

Fig. 1.

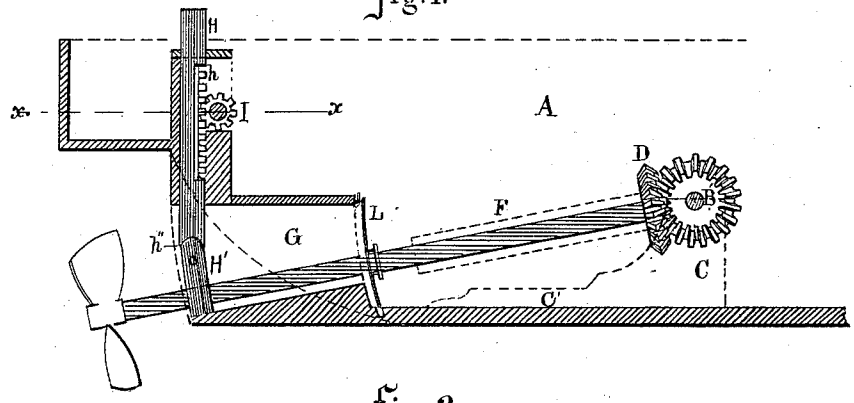


Fig. 2.

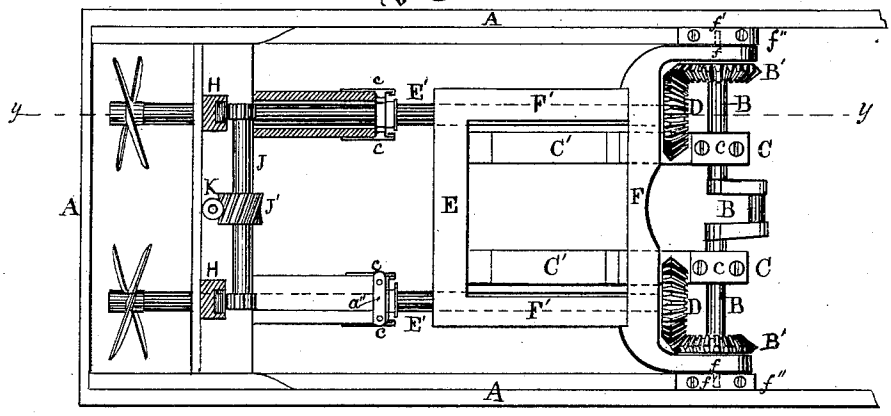


Fig. 3.

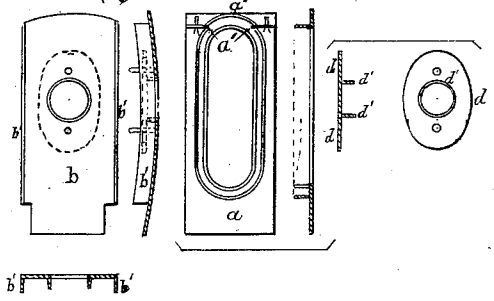
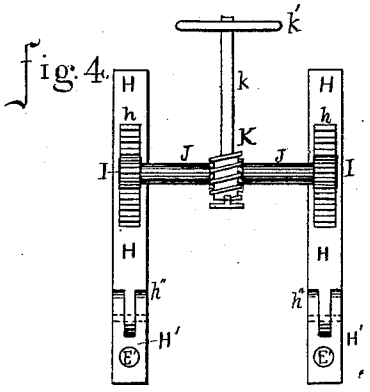


Fig. 4.



Attest

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UNITED STATES PATENT OFFICE.

JOSEPH W. DILKS, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN MEANS FOR RAISING AND LOWERING PROPELLERS.

Specification forming part of Letters Patent No. **168,380**, dated October 5, 1875; application filed July 23, 1875.

To all whom it may concern:

Be it known that I, JOSEPH W. DILKS, of Washington, in the county of Washington and District of Columbia, have invented certain new and useful Improvements in Propellers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a longitudinal section on line *y y* of Fig. 2. Fig. 2 is a horizontal view, partly in section, of the elevating apparatus, on line *x x* of Fig. 1; Fig. 3, details of the packing-box bearing of the shaft. Fig. 4 is a front elevation of the elevating apparatus.

This invention relates to the propulsion of canal and other vessels wherein two propellers are used, and wherein they are made adjustable vertically, for the purpose of obtaining the proper depth of water under all stages of draft, and also for the purpose of avoiding any obstructions in the bottom of the canal or river, or from any cause where the propeller may be injured by contact with obstacles outside of the vessel, as will be more fully set forth and described hereinafter.

In the drawing, A represents the frame of the vessel; B B, the main driving-shaft, which has at each end a bevel-gear wheel, B′ B′. This shaft is supported upon proper standards C C, fastened securely to the bottom of the vessel, as represented in dotted lines in Fig. 1. D D are bevel-gear wheels meshing into and driven by wheels B′ B′. These wheels D D are on the propeller-shafts E′ E′, which are supported inboard by a vertically-vibrating frame composed of yoke-piece F, side pieces F′ F′, and lower rail E. The yoke F has two curved ends, *f f*, having pivots *f′ f′*, which work upon journal-boxes *f″ f″*, supported on standards from the keelson on the bottom of the vessel, as close up to the gearing of the shaft as to admit the yoke end *f* between them. Outside of these supports, on each side, is the passway fore and abaft around the machinery. In the drawing no such passway is represented; but it is obvious that the length of shaft B B may be so regulated as to give this passway between *f″* and the sides of vessel A. These pivot-bearings *f f′* are in exact line of the axis of the shaft B B, so that the gears D D will revolve in gear with B′ B′, whatever elevation the propeller-shaft may have. The shafts E′ E′, having their bearings inboard in the frames E F F′, pass abaft through hollow boxes G G, and are supported at their outer ends in the lower part of elevating-bars H H. These bars have on their inner faces metallic rack-bars *h h*, which are operated by the pinions I I on a horizontal transverse shaft, J. On the middle of this shaft J is a spiral gear-wheel, J′, which is operated by a vertical endless screw, K, on a shaft, *k*, which rises above the deck, and has on the upper end a wheel, *k′*, for operating it. The lower ends of these bars H H are connected to hollow bearings H′ H′ by hinge-joints *h″ h″*, to accommodate them to the movements of the shafts. It is this part of the bars H which supports the propeller-shaft E′. The shafts E′ E′ pass through stuffing-boxes L L, which are arranged in connection with the propeller-shaft box G, so that while the water will be in the latter up to these stuffing-boxes L L, it will not pass into the vessel.

The propellers have their blades in reverse order, so that the water is thrown to the middle of the boat and counteracted in such a manner as to create less wave outwardly to affect the banks.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the vertical shaft *k*, endless screw-gear K J′, shaft J, pinions I I, and jointed rack-bars H H′, all substantially as described.

2. The combination of the frame E F F′, the two propeller-shafts E′ E′, with their bevel-gear wheels D D pivoted in a line of the axis of driving-shafts B, and the bevel-gears B′ B′ on the shaft B, substantially as and for the purpose described.

In testimony that I claim the foregoing as my own invention, I affix my signature in presence of two subscribing witnesses.

JOSEPH W. DILKS.

Witnesses:

C. M. CONNELL,

WM. E. DOYLE.