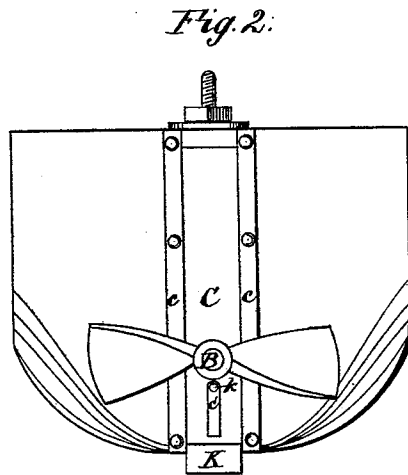
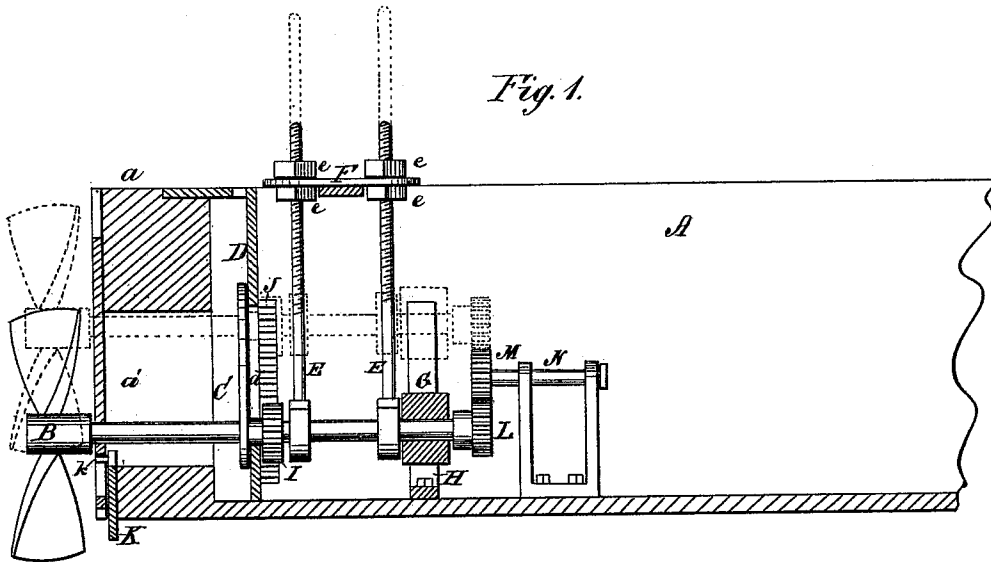


B. MITCHELL.

MECHANISM FOR RAISING AND LOWERING PROPELLERS.

No. 180,778.

Patented Aug. 8, 1876.



WITNESSES:

W. W. Hollingsworth
John Kemron

INVENTOR:

B. Mitchell

BY

Russell & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

BENJAMIN MITCHELL, OF HANCOCK, MARYLAND.

IMPROVEMENT IN MECHANISMS FOR RAISING AND LOWERING PROPELLERS.

Specification forming part of Letters Patent No. **180,778**, dated August 8, 1876; application filed January 21, 1876.

To all whom it may concern:

Be it known that I, BENJAMIN MITCHELL, of Hancock, in the county of Washington and State of Maryland, have invented a new and useful Improvement in Raising and Lowering Propellers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a longitudinal vertical section; Fig. 2, a vertical cross-section.

The invention relates to means for raising and lowering the propeller of a canal-boat, so as to adapt it to work properly in the water whether the boat is loaded or otherwise, and so as always to preserve the propeller-shaft in a horizontal position.

The invention consists in a propeller-shaft supported in slide-plates and raised by adjustable hangers; in an auxiliary plate at the outer bearing that moves with the bearing-plate, so as always to cover the slot in the latter and prevent ingress of water; in a plate that simultaneously slides and revolves, to close the slot in the fixed plate in which the inner bearing moves; and in adapting the pinion to be operated by the same drive-wheel, in whatever position it may be placed, by means of a pinion that slides above or below the propeller-shaft pinion, according to whether the boat is empty or loaded.

A represents a canal-boat, in the stern *a* of which is employed a rotary propeller, B. The latter has a bearing in the plates C C', which slide vertically, the former in the ways *c c*, and the latter on a fixed plate, D. The shaft also passes through the hangers E E, (whose shanks are threaded,) and by means of the nuts *e e* is raised or lowered with respect to the cross-bar F; also, through the flanged or side-grooved guide G that slides up and down on the standards H H.

In order to secure the slot *a'*, arranged in the stern, and through which the propeller-shaft works, from admitting water to the boat, I make the slide-plate C with a slot, *c'*, and provide an auxiliary plate, K, having the stud *k* that protrudes through the slot *c'*.

The plates C K both slide in the ways *c c*, the former carrying the latter up by the stud *k* when the boat is loaded and the propeller raised; but when moving down to accommo-

date the propeller to an unloaded boat the plate C is arrested by the stud as soon as the plate K has reached the bottom of ways and the top of slot bears upon the stud.

The bearing-plate C' is provided with a pinion, I, and merely separated therefrom by a neck, which slides in the slot *d* of plate D. The latter has a fixed rack, J, in which meshes the pinion I, so that the plate C' may turn as well as slide, thus always covering the slot *d* and preventing the ingress of water therethrough.

In order to drive the shaft conveniently at different elevations I use the pinion L that moves with it and the pinion M on a slide-shaft, N.

When the propeller is elevated to actuate a loaded boat, the pinion M is slid under the pinion L, so as to connect it with the driving spur-wheel O, and when it is desired to drive an empty boat the pinion M is placed in position over the pinion L, connecting in the same manner as before with the spur-wheel. Again, by sliding back the pinion M out of the way, the pinion L may be brought itself into connection with the spur-wheel, so as to drive the propeller-shaft.

In this way the propeller is very quickly thrown into position for performing its duty with equal efficiency, no matter whether the boat is empty or loaded, and this may be done very conveniently with few hands and without much expenditure of manual labor.

Having thus described my invention, what I claim as new is—

1. The combination, with propeller-shaft, of plates C C', hangers E E, and guide G, arranged as and for the purpose described.

2. The auxiliary plate K, having stud *k*, in combination with a slotted slide-plate, C', as and for the purpose set forth.

3. The slide-plate C', provided with pinion I, combined with the slotted fixed plate D *d*, having the rigidly-attached rack J, as and for the purpose specified.

4. The combination, with drive-wheel O, and vertically-adjustable propeller-shaft, having pinion L, of the slide-shaft N, having pinion M, as and for the purpose described.

BENJAMIN MITCHELL.

Witnesses:

T. E. RENEHART,
W. D. MITCHELL.