J. D. Ford,

Screw Propeller.

No. 107,471. Patented, Sept. 20, 1870.

Fig. 1.

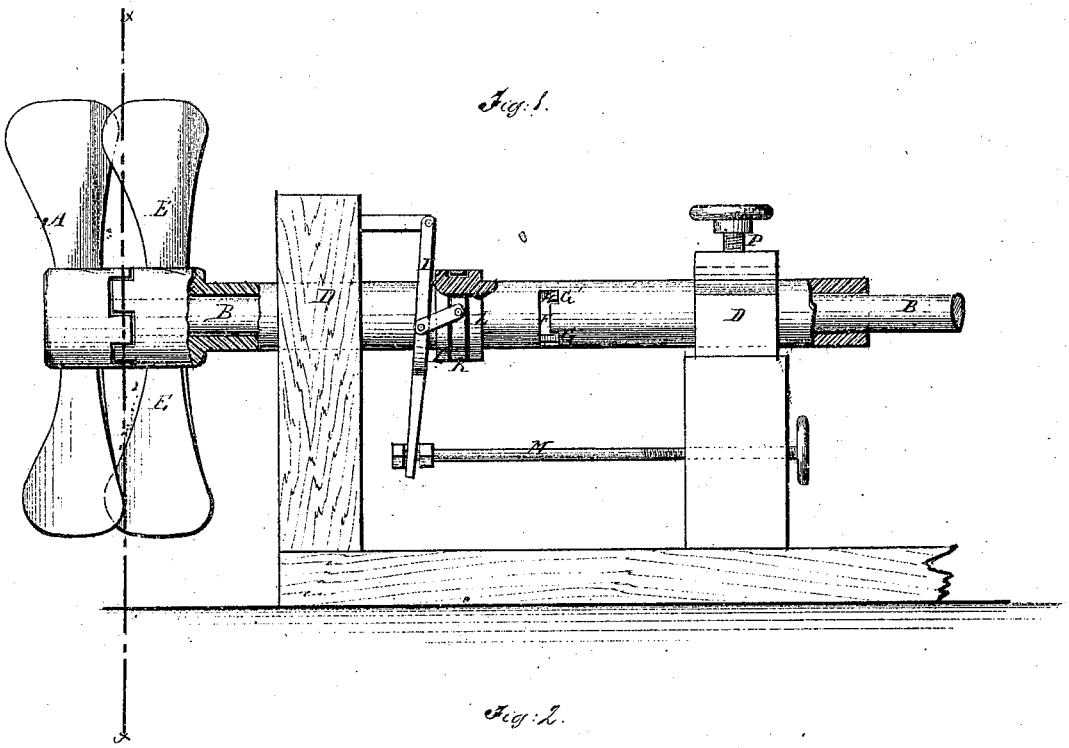
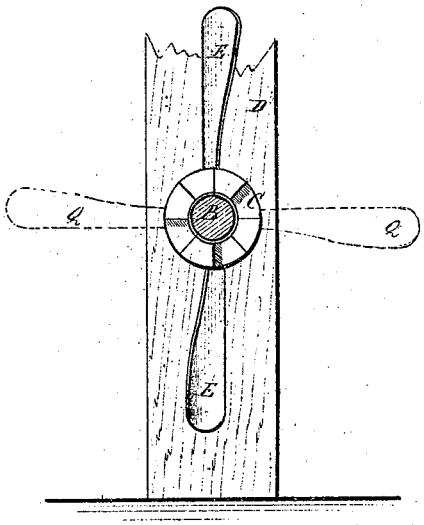


Fig. 2.



Witnesses:

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JOHN D. FORD, OF BALTIMORE, MARYLAND.

Letters Patent No. 107,471, *dated September* 20, 1870.

IMPROVEMENT IN PROPELLERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN D. FORD, of Baltimore, county of Baltimore and State of Maryland, have invented a new and useful Improvement in Screw-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 make and use the same, reference being had to the accompanying drawing forming a part of this specification.

This invention relates to improvements in screw-propellers, and consists in an arrangement for changing and securing the blades of a propeller by apparatus worked in the vessel, so that they may be adjusted to and secured in the position for working, or the two sets of blades may be brought into the same axial plane for moving through the water when not revolving, so as to encounter less resistance from the water than when in the working position.

Figure 1 is a side elevation of a screw-propeller and its supports, arranged according to my improvements, and

Figure 2 is a sectional elevation of the same on the line *x x*.

Similar letters of reference indicate corresponding parts.

A represents one pair of blades attached to the shaft B, which works in a long sleeve, C, supported in bearings D, and carrying the other pair of propellers, E.

Both the shaft and the sleeve have hubs where the blades are attached, which are arranged on the ends, which come in contact, to clutch together where the sleeve, which is capable of end movement, is shoved outward.

This sleeve is provided with a slot, F, extending circumferentially about a quarter of the circumference, and having a lateral notch at each end marked G and G'.

H is a stop projecting from the shaft, through this slot, to arrest the shaft when turning at the right point for bringing the clutches together.

A lever, I, connected to the sleeve by a ring, K, working between the collars L, and a shifting-screw, M, are used for shifting the sleeve forward and backward, to clutch or unclutch the hubs, the said lever being provided with a fulcrum at N, and the screw-rod being provided with a nut in the framing or support of the sleeve.

For shifting the blades from one position to the other, the sleeve is first moved forward to disengage the clutches of the hubs, and to bring the slot F in such relation to the pin G' as to allow the sleeve to turn on the shaft, or to allow the shaft to turn in the sleeve; the shaft is then turned to right or left, as the case may be, and the sleeve is moved back again.

To prevent the sleeve from turning with the shaft, a screw, P, is arranged in the bearing to screw down upon the sleeve, to hold it. When the two hubs are clutched together, motion is communicated to the sleeves by the shaft through the clutches.

In the drawing the blades of the propeller are arranged in the same plane as when they are not to be revolved. The dotted lines Q, fig. 2, show the other position. The clutches are held together by the ring K, lever I, and rod M.

Having thus described my invention,

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

The combination of the sleeve C, provided with the slot F and notches G G' of the shaft B, the stud H, the shifting-lever I, ring K, and the rod M, all substantially as specified.

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