

H. F. Roberts.
Crank Paddle

N^o 85,403.

Patented Dec. 29. 1868.

Fig. 1.

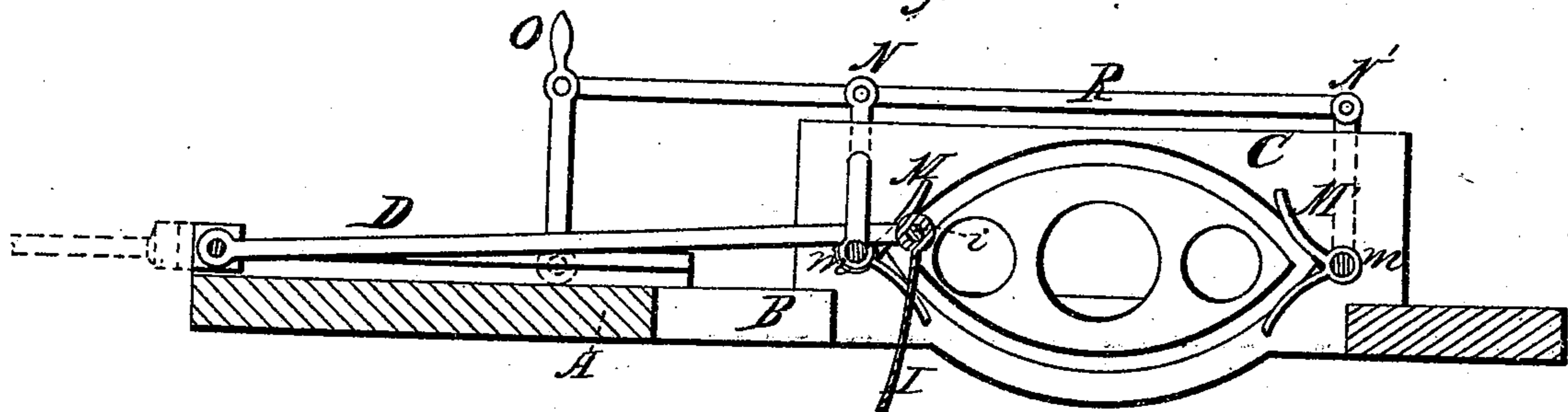
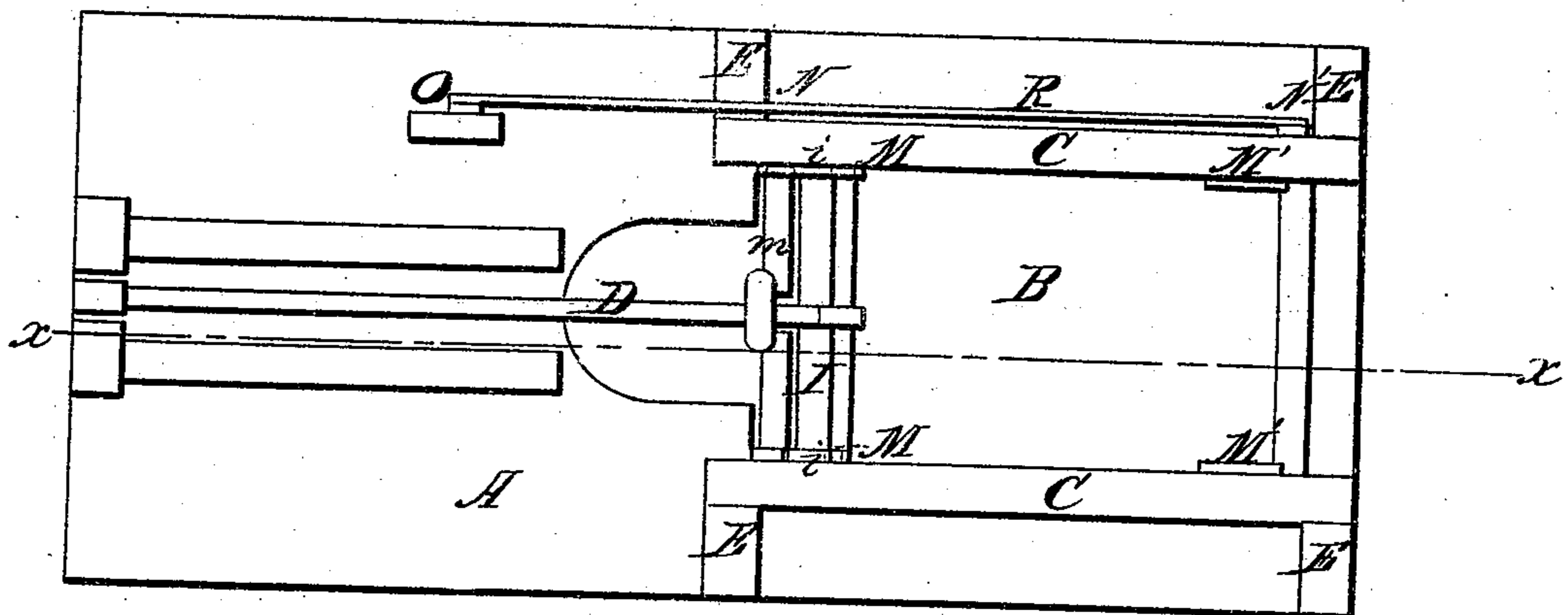


Fig: 2.



Witnesses:

Chas. A. Pettit
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HENRY F. ROBERTS, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 85,403, dated December 29, 1868.

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, HENRY F. ROBERTS, of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented a new and improved Propeller, and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a longitudinal vertical section through line *x x* of fig. 2.

Figure 2 is a plan.

The object of this invention is to provide a substantial and easily-operating apparatus for propelling vessels, so constructed that its action can be readily reversed, without reversing the action of the engine or motive-power.

In the drawings, A indicates the bed-piece or supporting-frame, near the extremity of which is a large vertical opening, B, in which the blade of the propeller is operated by the pitman D.

On each side of this opening, strong vertical side-pieces C C are attached to the bed-piece, in a position parallel to each other, and supported by braces E E.

On the inner walls of these side-pieces, guide-grooves *c c* are cut, into which projecting arms *i i*, from the ends of the propeller-blade I, extend, running in the grooves as the propeller moves back and forth, and guiding and controlling the motion of the blade.

The track thus formed for the arms *i i* is in shape elliptical, or similar to the periphery of a double-convex lens.

In following the upper groove, the blade is lifted out of water, and, in moving along the lower groove, it is plunged into the water, and imparts motion, either forward or backward, to the vessel.

In order to reverse the motion of the propeller, I employ a simple device, consisting of two V-shaped levers M M', pivoted at *m m*, so that the arms of the lever embrace the ends of the curved tracks, and, by depress-

ing or elevating the arms, they can be made to intercept the propeller at its "dead-points," and cause it to take either the upper or lower curve.

The levers are fixed to their pivot-shafts *m m*, and to the latter are attached vertical arms N N', which are connected by a rod, R.

The rod, in its turn, is operated by a hand-lever, O, in such a manner as to actuate both V-shaped levers at once.

When the propeller is running in either direction, the lever O is placed in a vertical position, bringing the levers M M' into the position shown in fig. 1, and the blade then follows the guide-grooves accurately, without coming in contact at all with the V-shaped levers.

If it is now desired to reverse the motion of the propeller without reversing the engine, it is only necessary to throw the hand-lever O either to the right or left, so as to bring one of the arms of each V-shaped lever across the guide-groove, thus intercepting the blade of the propeller at or near the dead-point, and forcing it to take a reverse action from that point.

It is obvious that this device can be employed either upon side-wheel or stern-wheel boats.

Having thus described my invention,

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

1. The combination of the blade I, having the arms *i i*, with the grooved track *c c* and pitman D, substantially as described.

2. The combination, with said blade and track, of the V-shaped reversing-levers M M', and the arms N N', and connecting-rod R, substantially as described.

To the above specification of my improvement, I have signed my hand, this 28th day of May, 1868.

H. F. ROBERTS.

Witnesses:

CHAS. A. PETTIT,
SOLON C. KEMON.