M. CHASE.

Screw-Propeller.

No. 205,053. Patented June 18, 1878.

FIG. 1.

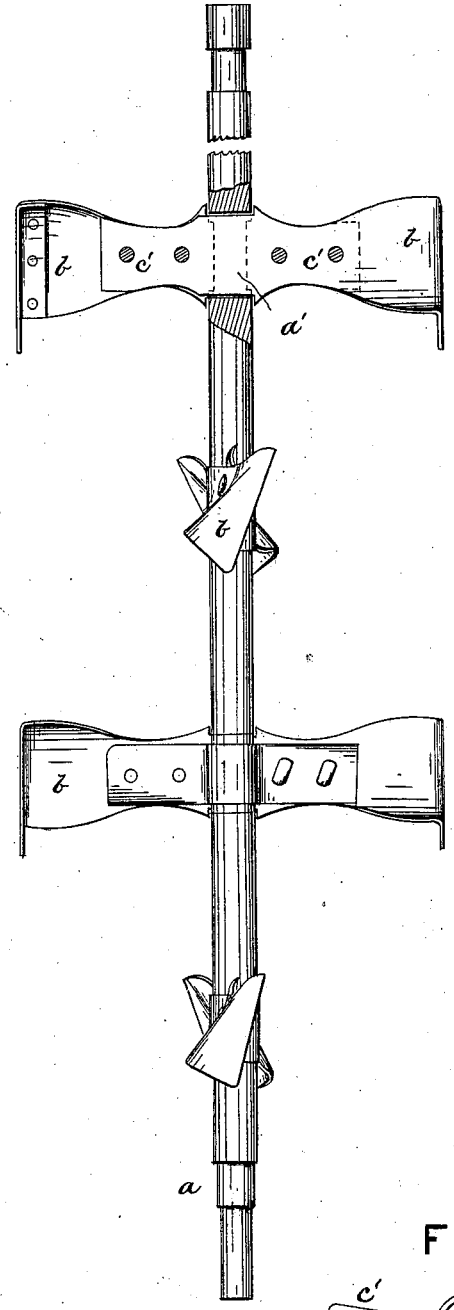

FIG. 2.

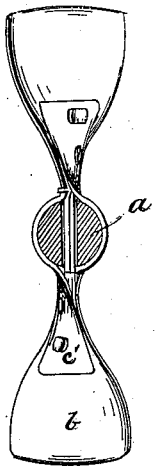

FIG. 3.

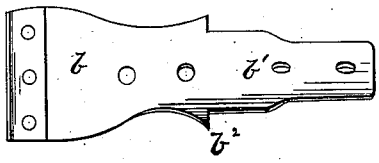

FIG. 4.

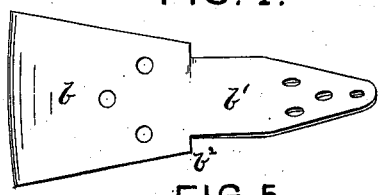

FIG. 5.

FIG. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

MILTON CHASE, OF HAVERHILL, MASSACHUSETTS.

IMPROVEMENT IN SCREW-PROPELLERS.

Specification forming part of Letters Patent No. **205,053**, dated June 18, 1878; application filed March 5, 1878.

To all whom it may concern:

Be it known that I, MILTON CHASE, of Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Screw Propeller-Wheels; and I do hereby declare that the following is a full, clear, and exact description of my invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to furnish an improved screw propeller-wheel; and it consists in a pair or number of pairs of blades the shanks of which pass through a slotted shaft, and are secured together therein by clamping-pieces, all of which will be fully hereinafter set forth.

In the drawings, Figure 1 is a side elevation. Fig. 2 is a view of the blades; and Figs. 3, 4, 5, and 6 are details of my invention.

a is the shaft. It is provided with a slot or series of slots, *a'*, through which are passed the shanks of the blades, as hereinafter described. Its ends are constructed so as to afford means of attachment for the remaining portions of the machinery.

b are the propeller-blades, the outer ends of which may be of any desired form. They are provided with holes, through which pass the bolts which secure the clamping-pieces, and are constructed with the shank b^1, which passes through the slot *a'*, and coincides with and overlaps the shank of the blade on the opposite side of the shaft. The shoulders b^2 fit snugly against the shaft, and act as a brace to strengthen the union between it and the blade.

c are the clamping-pieces. They are placed on each side of, and fit snugly over, the shaft, having the arms *c c'* extending along the blades, as shown. They are provided with holes, through which pass bolts, securing the opposite clamp-piece and the blades firmly to the shaft.

In a propeller-wheel where I employ more than one pair of blades, as shown in Fig. 1, I arrange them in angles to each other, so that when the water is propelled from the first blade it will strike the second, and its momentum be increased, and increasing the power of the wheel in proportion to the number of blades employed.

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

In a propeller-wheel, the combination, with the shaft having a slot or series of slots, *a'*, of the blades with shanks which pass through said slot, overlapping each other, and secured together by the clamping-pieces *c*, as described and set forth.

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

MILTON CHASE.

Witnesses:

WILLIAM E. BLUNT,

CALVIN BUTRICK.