(No Model.)

# P. STAUCH, Jr.

## SCREW PROPELLER.

No. 471,907. Patented Mar. 29, 1892.

Fig. 1.

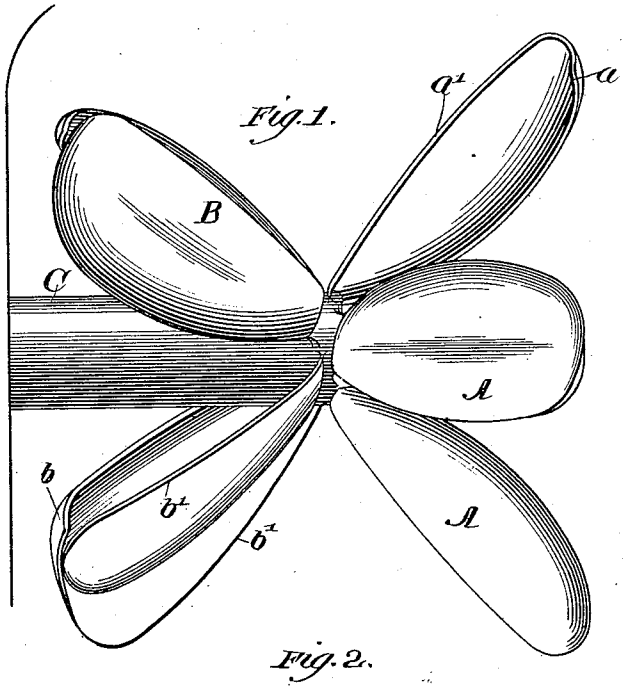
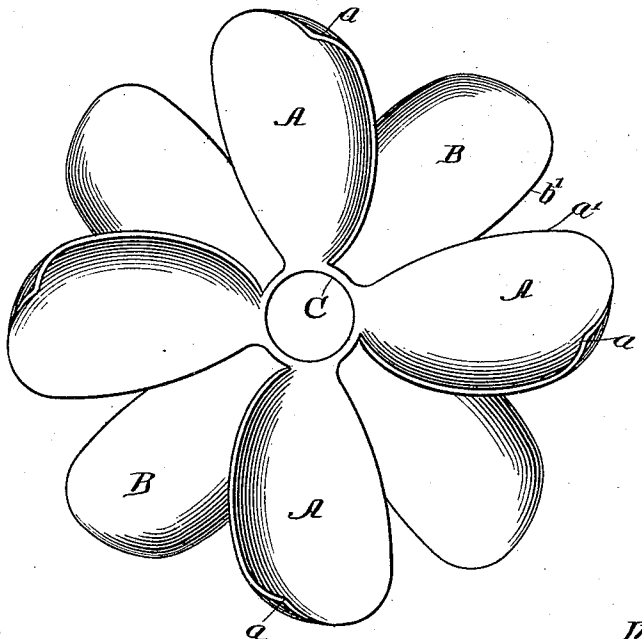
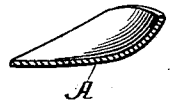



Fig. 2.




Witnesses:
John L. Weber
Frank G. Ward

Fig. 3.




Inventor:
Philip Stauch Jr.
By Gibson & Benjamin
His attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

PHILIP STAUCH, JR., OF CHICAGO, ILLINOIS.

## SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 471,907, dated March 29, 1892.

Application filed April 28, 1890. Serial No. 349,816. (No model.)

*To all whom it may concern:*

Be it known that I, PHILIP STAUCH, Jr., a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Screw-Propellers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains 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.

My invention relates to screw-propellers for steamboats, and has for its object the overcoming of the loss of energy due to the lateral displacement of water in propellers of this class.

In the accompanying drawings, Figure 1 shows a side view of my propeller; Fig. 2, an end view, and Fig. 3 a section of one of the blades.

Two sets of blades are used, the blades A for forward propulsion, B for backing the vessel.

The novelty of the device consists in the form of the blades. The cutting side *a'* of the blade A is flat and offers the minimum of resistance, its edge lying in the plane of its revolution. The opposite side *a* is concave like the bowl of a spoon, terminating in a curved tip. The curvature is sufficient to bring the edge and tip in the same direction as the shaft C, which carries the blades. The effect upon the water is to force it in a straight line back from the boat, so that the entire reaction is communicated to the vessel exactly in the direction of her forward movement. The blades are set upon the shaft at an angle of about forty-five degrees, their effectiveness being thus greatly increased. The form of blade described is inoperative when reversed, and a second series B is placed upon the shaft immediately forward of the blades A and in exactly the reverse position for the purpose of backing the vessel. As shown, the two series of blades are carried upon the same shaft, so that whichever the direction of revolution one series is effective and the other is not. A decided advantage may be secured in efficiency, though at an increased cost of construction, by attaching the blade B to a hollow shaft and the blades A upon an independent solid shaft working within it, so that the screws may be turned separately.

I claim—

A screw-propeller having two sets of blades inclined, respectively, backward and forward from the perpendicular, each blade having one of its edges directed in the plane of its rotary movement and its opposite edge directed in a plane parallel with the axis of the screw, the concave surface of the several blades being in the direction of their inclination, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP STAUCH, JR.

Witnesses:
F. M. HUNTER,
JNO. C. WEBER.