

J. C. CROSS.
Screw-Propellers.

No. 152,973.

Patented July 14, 1874.

Fig. 2.

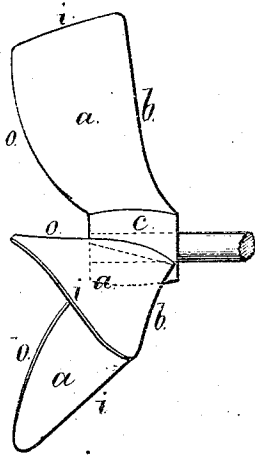


Fig. 1.

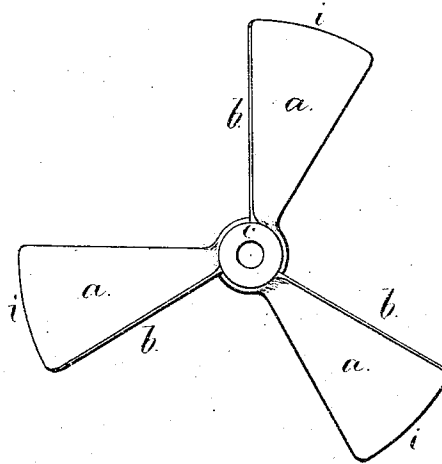
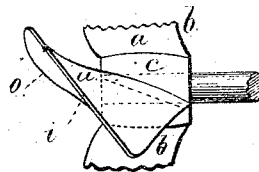
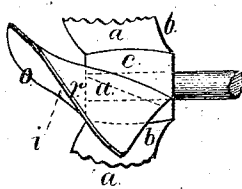


Fig. 3.



Witnesses

Chas. H. Smith
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Inventor

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for Lemuel W. Perrell

[Signature] atty

UNITED STATES PATENT OFFICE.

JOHN C. CROSS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN SCREW-PROPELLERS.

Specification forming part of Letters Patent No. **152,973**, dated July 14, 1874; application filed May 2, 1874.

To all whom it may concern:

Be it known that I, JOHN C. CROSS, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Propellers for Vessels; and the following is declared to be a correct description of the same.

Screw-propellers usually are made with the shanks of the blades in the same plane of revolution as the outer ends of the blades; hence the portion of the water that is contiguous to the shank or base of the blade is continuously operated upon, and its centrifugal velocity increased, until it is thrown off from the end of the blade; thereby the resistance of the water to the blade is lessened and the water greatly agitated.

The object of my invention is to lessen the centrifugal action of the blade in the water, to cause the different portions of the blade to come into contact with water that is allowed to remain as quiescent as possible, and thereby form a more firm resistance to the incline or screw of the propeller.

I make each propeller-blade *a* in the general form of a compound incline or twisted plate usually employed; but the front edge *b* is in a plane standing radially to the shaft, as seen in the elevation, Figure 1, and inclined backwardly as a parabolic curve, represented in the side view, Fig. 2.

The base or shank of each blade where it joins the hub *c* is not as wide as the outer edge or end *i* of the blade, and hence the back edge *o* of the blade will extend backwardly in a parabolic curved line, as seen in Fig. 2; but said back edge lies in a plane that is radial to the shaft of the propeller.

In consequence of the shape of the propeller-blades, as aforesaid, they act more efficiently

in propelling a vessel, because the centrifugal force is lessened without lessening the surface of the blade that acts upon the water; hence the water will remain more solid, and the propeller will move through the water with less agitation to the latter.

The compound curved plane of the propeller-blade may be such that when viewed at the end of the blade, as in Fig. 3, it may be a straight line, or nearly so; but I find it advantageous to curve the blade additionally, as illustrated in Fig. 4, the curve at *r* bringing the rear part of the propeller-blade to a less inclination to a radial plane, and hence the water will leave the blade more in a rearward direction, and not be thrown off centrifugally to as much extent as usual.

The side of the blade that is usually operative is made nearly straight, especially at the base near the hub, and the other side of the base of the blade is convexed to obtain the required strength. This propeller can be used in backing as well as the ordinary propeller, but the lines of the blades are made with special reference to the forward movement of the vessel.

I claim as my invention—

The screw-propeller made with blades that incline backwardly, and the front and back edges of each blade are in planes that are radial to the propeller-shaft, but such edges are curved rearward, as and for the purposes set forth.

Signed by me this 29th day of April, A. D. 1874.

JOHN C. CROSS.

Witnesses:

GEO. T. PINCKNEY,
CHAS. H. SMITH.