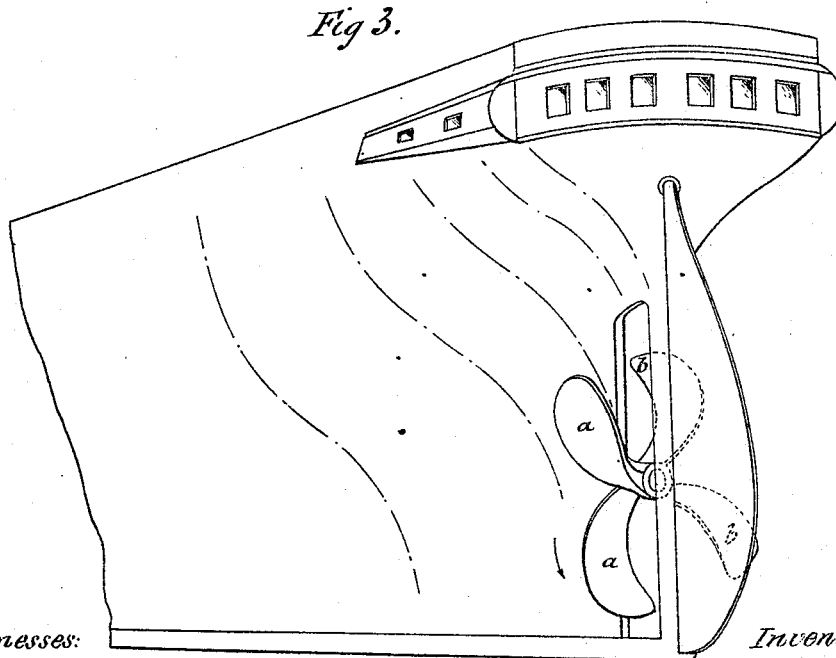
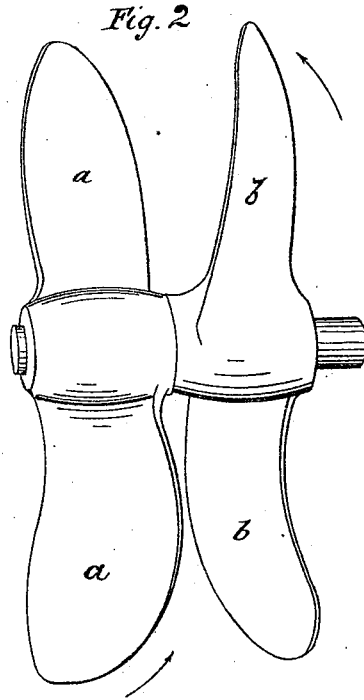
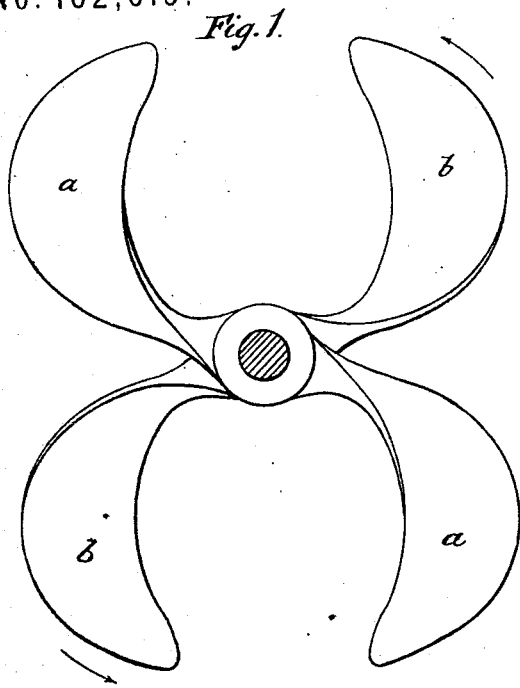


J. C. BROWNE.
Screw-Propeller.

No. 162,619.

Patented April 27, 1875.



Witnesses:

Chas. M. Higgins.
Arthur b. Fraser.

Inventor:

John Collis Browne
Per Burke & Fraser
attys

UNITED STATES PATENT OFFICE.

JOHN COLLIS BROWNE, OF LONDON, ENGLAND.

IMPROVEMENT IN SCREW-PROPELLERS.

Specification forming part of Letters Patent No. **162,619**, dated April 27, 1875; application filed July 16, 1874.

To all whom it may concern:

Be it known that I, JOHN COLLIS BROWNE, of London, England, have invented certain new and useful Improvements in Propelling-Screws, of which the following is a specification:

My invention consists in the arrangement of two independent screws, or sets of blades, having their like faces reversed with respect to each other, as hereinafter described.

Figure 1 of the accompanying drawings is a front elevation of my improved propelling-screw. Fig. 2 is a side elevation of the same; and Fig. 3 is a perspective view, showing the screw applied to a vessel.

As shown in the accompanying drawing, *a* and *b* are the blades of the screw, which are, as represented, formed with a transverse curvature, so as to present on one side a concave surface and on the other a convex one. The blades taper from their centers to their extreme ends, which are pointed, and are curved slightly inward or toward the axis.

It will be observed that the blades are formed in pairs, and that each pair projects from a separate hub. The pairs are alike in form, but are relatively reversed in position on the shaft, or turned toward each other, so as to present like faces in opposite directions, or unlike faces in the same direction, as shown in Fig. 1, where it will be seen that the convex faces *a a* and concave faces *b b* point in the same direction, the concave faces of each pair of blades pointing toward or opposite each other.

It will be seen, on referring to Fig. 2, that one pair or series of blades is set fully before the other, so that each pair revolves in separate parallel planes.

My improved arrangement and construction of blades result in an increase of speed, a saving of power, and an avoidance of the tendency of the common propeller to force the vessel to one side. It also avoids the vibrations produced by the common propeller, and secures equal efficiency in whichever direction the screw is rotated, thus enabling the vessel's motion to be quickly checked and reversed, when desired.

I do not desire to limit myself to the use of my improved propelling-screw for the propulsion of vessels only, as, by suitably arranging the same in connection with tubes or pipes, it may be used for the purpose of moving or lifting water or other liquids, or for forcing or exhausting air or other gases. I also propose to employ it in the propulsion of balloons and other aerial machines, by mounting it on a shaft capable of universal motion, so that the propeller may be used to assist the balloon in its upward or downward movements, as well as moving it horizontally, by changing the direction of its axis.

I do not claim relatively reversing the blades so that the acting faces are alternately convex and concave, as that is not original with me; but

What I claim as my invention is—

The combination of the two sets of blades or independent screws *a* and *b*, having the like faces of the blades arranged in reverse order, substantially as shown and described.

JOHN COLLIS BROWNE.

Witnesses:

H. GARDNER,
E. M. DANIEL,

166 Fleet street, London.