G. VINCENT.

Propeller for Vessels.

No. 219,837. Patented Sept. 23, 1879.

FIG. 1.

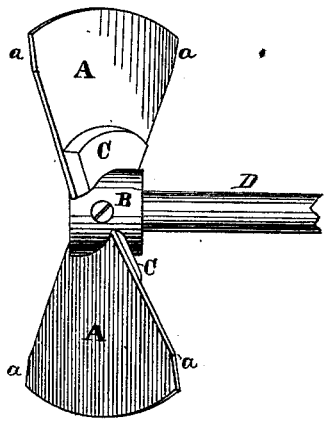


FIG. 2.

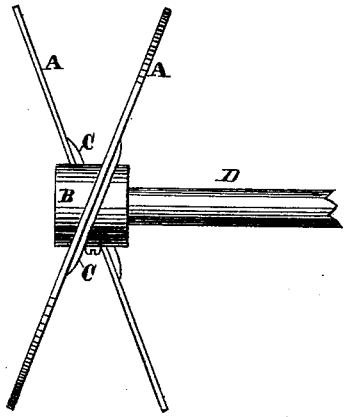


FIG. 3.

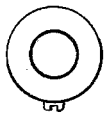
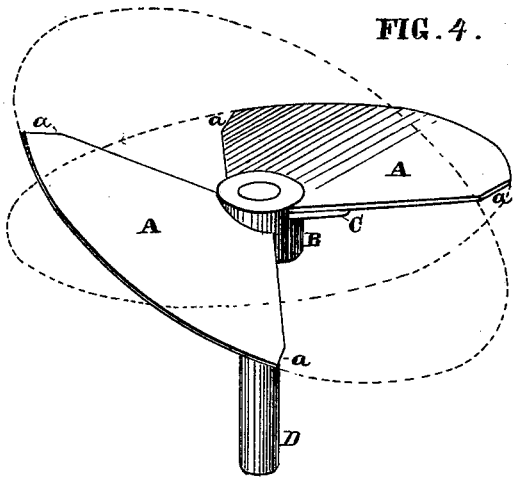


FIG. 4.



Witnesses.

Geo. H. Strong

Frank A. Brooks

Inventor

George Vincent

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE VINCENT, OF STOCKTON, CALIFORNIA.

IMPROVEMENT IN PROPELLERS FOR VESSELS.

Specification forming part of Letters Patent No. **219,837**, dated September 23, 1879; application filed February 19, 1879.

To all whom it may concern:

Be it known that I, GEORGE VINCENT, of Stockton, county of San Joaquin, and State of California, have invented an Improved Propeller; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in the construction of propellers for vessels; and it consists in a novel formation of the blades, which are made of plates having a plain flat surface, standing at an angle with each other, and also with the line of the axle, as will be more fully described by reference to the accompanying drawings, in which—

Figure 1 is a side view, showing the propeller and axle in one position. Fig. 2 is a side view of the propeller when turned one-fourth of a revolution from Fig. 1. Fig. 3 is an end view of the shaft. Fig. 4 is a perspective view.

The usual method of forming propellers is to make them with two, three, or four blades, having the curve and pitch of a screw; but my invention consists in employing blades A, which are in the form of flat plates, having no curve at all. These plates are fitted to the hub B so as to stand in a plane which crosses the axis at an oblique angle. This angle may be varied to suit the work for which the propeller is designed.

The hub B may be cast with short flanges or lugs C, to which the propeller vanes or blades A can be bolted or otherwise secured; or the whole hub and blades may be cast in one, if desired.

In the construction of my propeller I prefer to employ two blades, secured to the hub opposite to each other. These blades are made preferably in the shape of a sector of a circle, having the outer portion of the radii intersected by lines from each end of the arc, which meet the radii at obtuse angles, as shown at *a*. These two sectors should have an area of nearly or about one-half of an ellipse of the same radius. My propeller-blades would then, in conjunction with the shaft, each be represented by a sector cut out of the side of an elliptical disk, having a shaft or axis passing angularly through its center, and as they are placed opposite each other upon the shaft the two planes, if continued, would cut each other in a line which would pass through the center of each blade, with the shaft passing through this meeting-line at right angles to it, as shown in Fig. 4.

It will be seen that my propeller-blades differ from a screw in being sections of planes which stand at an angle with the shaft, so that if these blades were continued completely around the shaft they would return into themselves, while the screw-blade is formed upon a curve which will continue it indefinitely in a line with the shaft if it is carried around it.

As before stated, the two blades should be of an area about equal to the space between them. The outer corners are cut so as to form an obtuse angle with the radial sides of the vanes, and this causes the water from each blade, as they rotate, to just clear that from the other and prevent the back-action which would thus be caused.

The action of these blades is as follows: When the shaft is rotated the entering edge of the blade presses against the body of water directly behind it with a force due to its angle with the shaft. It will be manifest from the position of the planes upon the shaft that as the latter is turned and each portion of the plane successively passes the imaginary point described, the relative angular motion will be increased to the opposite corner of the blade, and the pressure upon the water will be an increasing one.

The propelling force will be superior to that of a regular screw for this reason: The blades being perfectly plane instead of being curved in section, I avoid certain unfavorable conditions due to this curvilinear form, so that while the best effects of the screw are produced when the blades are made quite narrow, I have found that my propeller will produce its maximum effect when the blades are in the form of sections which occupy nearly or about one-half of the circle which they appear to produce when viewed in a line with the shaft, the outer ends of their inclosing radial lines

being cut by the lines forming the obtuse angle, as before described.

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

The propeller consisting of the shaft D, hub B, and the vanes A, formed of segments of intersecting planes, the sides of which are formed in radial lines to the point *a*, and continued from that point at an obtuse angle to the periphery, substantially as herein described.

In witness whereof I have hereunto set my hand.

GEORGE VINCENT.

Witnesses:
GEO. H. STRONG,
FRANK A. BROOKS.