

No. 606,986.

Patented July 5, 1898.

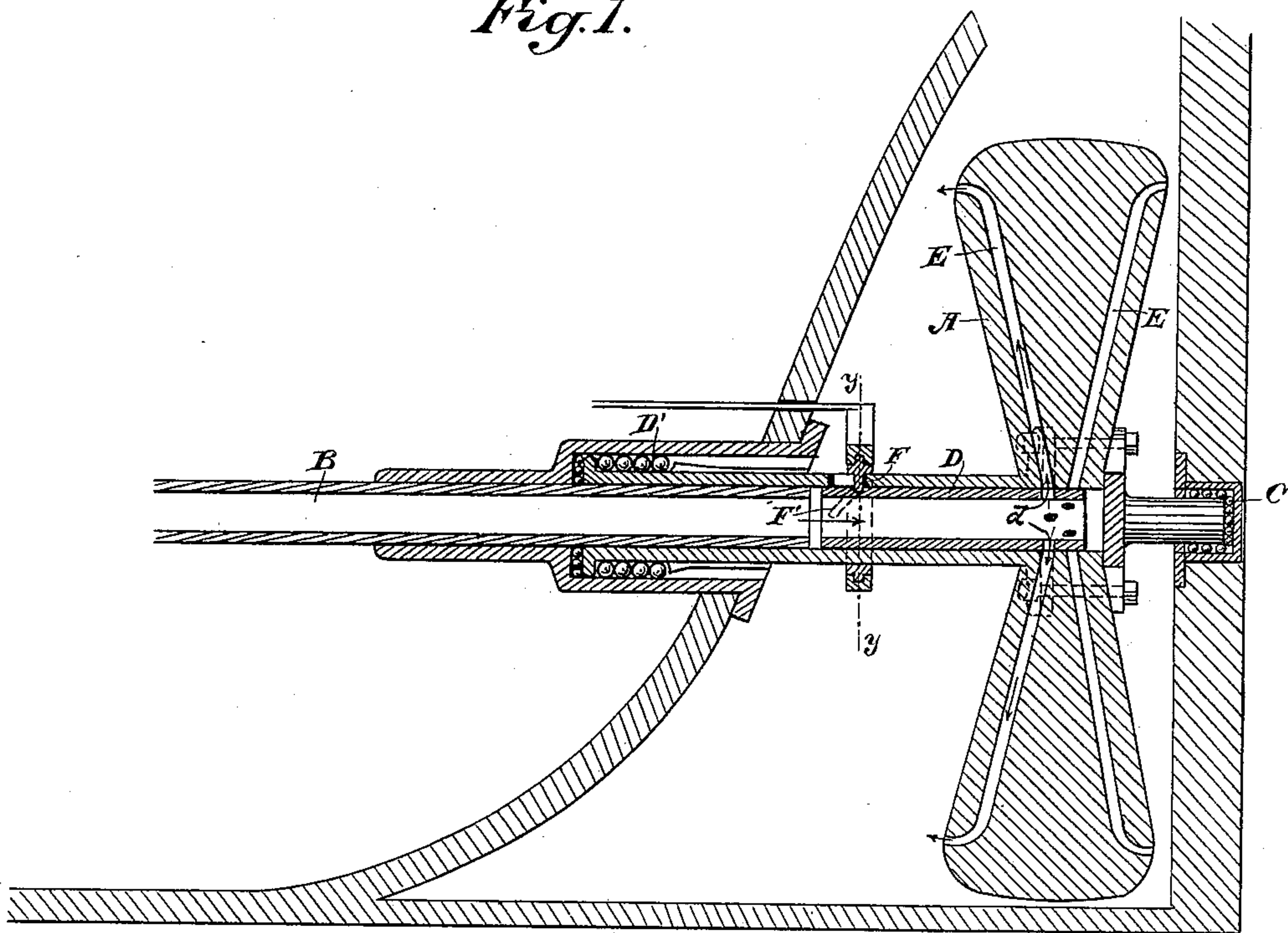
S. W. CARTER & W. C. BUHLES.

PROPELLER.

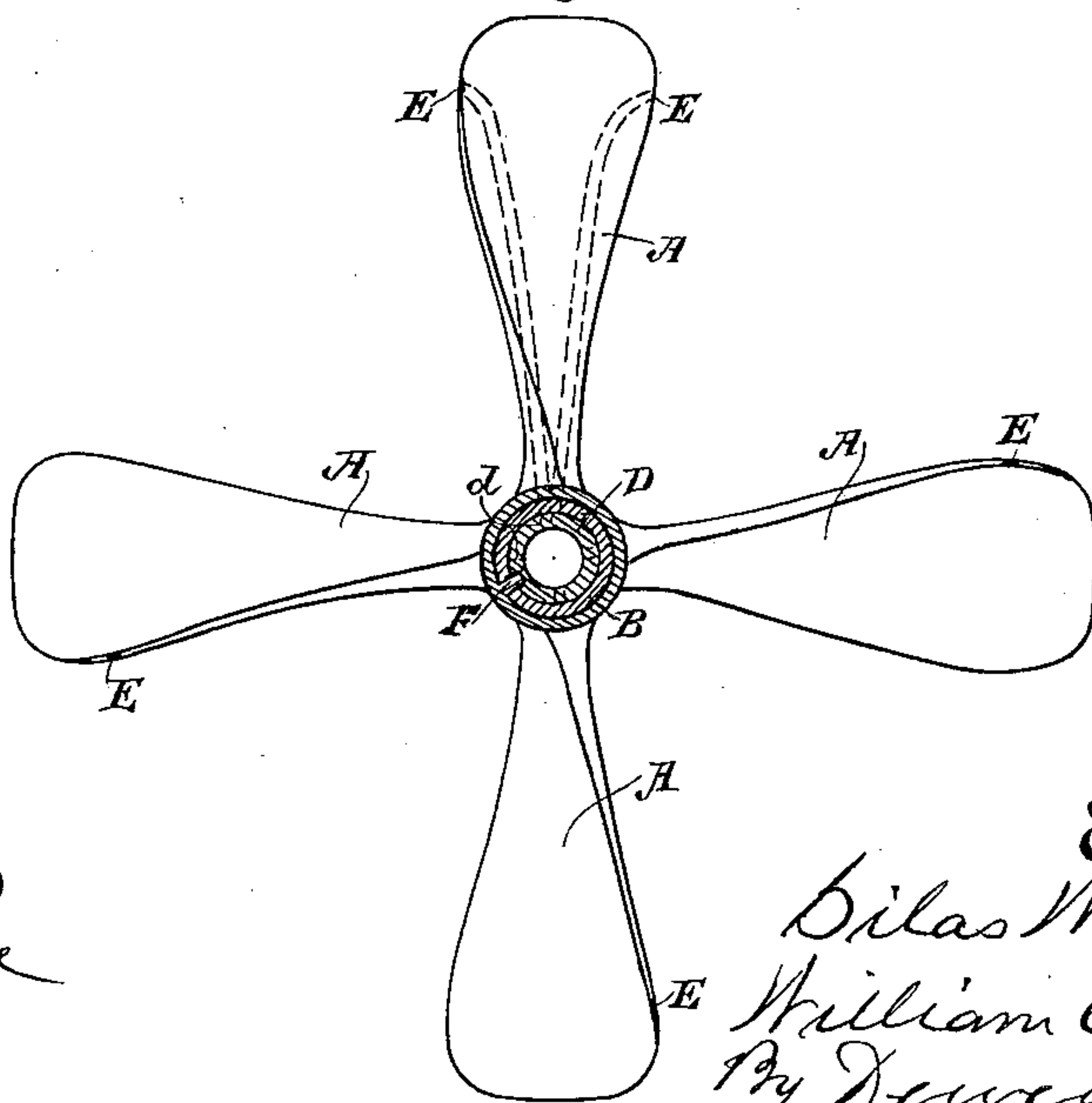
(Application filed July 22, 1897.)

(No Model.)

*Fig. 1.*



*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

SILAS W. CARTER AND WILLIAM C. BUHLES, OF SAN FRANCISCO,  
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## PROPELLER.

SPECIFICATION forming part of Letters Patent No. 606,986, dated July 5, 1898.

Application filed July 22, 1897. Serial No. 645,566. (No model.)

*To all whom it may concern:*

Be it known that we, SILAS WHITFIELD CARTER and WILLIAM C. BUHLES, citizens of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Propellers; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to a novel device for the propulsion of vessels; and it consists in details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a longitudinal section of our propeller. Fig. 2 is a cross-section on line *y* of Fig 1.

The object of our invention is to employ the propulsive force of water ejected from the edges of the propeller-blades under a high pressure, whereby the propeller is rotated by the action of the water upon the surrounding medium.

A is a propeller having any suitable or desired number of blades, and the propeller is suitably fixed upon a shaft B, which passes through the rear portion of the vessel, with a suitable stuffing-box to prevent leakage. This shaft may have any suitable form of bearings. We have here shown ball-bearings at C, so arranged as to receive the thrust of the propeller, and similar bearings also surround the exterior sleeve D', which surrounds the hollow shaft and extends into the propeller-hub, as shown.

The blades of the propeller have channels E made in them, one set of channels connecting with open slits upon the rear edges of the propeller-blades and the other set of channels with similar open slits upon the reverse edges of the blades.

When water is admitted into the shaft under high pressure from the pump or other forcing device and diverted into the set of channels which discharge at the rear edges, the propeller will be caused to revolve by the reaction of the projected water against that

in which it is immersed, so that the propeller will be revolved with sufficient force and will by its action serve to propel the vessel forwardly. When these openings are closed, the water is directed through the other set of openings, the action will be reversed, and the vessel will be backed.

The interior sleeve D is provided with any suitable connection by which it may be moved or turned, and it has openings *d* made through it, which by partial rotation of the sleeve may be made to communicate with either of the sets of discharge-openings in the propeller-blades. This sleeve is movable by means of a pin F entering a beveled or inclined slot F' in the sleeve, so that when the pin is moved in one direction it rotates the sleeve to form communication through the holes in it with one set of the openings in the propeller-blade. When moved in the opposite direction, it closes these openings and connects with the other set.

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

In a propeller for vessels, the combination of a hollow shaft, a propeller mounted thereon and having passages through its blades, a sleeve surrounding the shaft and an exterior ball-bearing for the inner end of the same, a ball-bearing to receive the end thrust of the propeller, a hollow sleeve interior to the outer sleeve and provided with openings to be alined with the passages in the blades, said interior sleeve having an inclined slot, a pin to engage said slot and means for moving the pin whereby the openings in the sleeve are brought into communication with the passages in the blades.

In witness whereof we have hereunto set our hands.

SILAS W. CARTER.  
WILLIAM C. BUHLES.

Witnesses:

S. H. NOURSE,  
JESSIE C. BRODIE.