

No. 867,595.

PATENTED OCT. 8, 1907.

O. PETERSON.
PROPELLER.

APPLICATION FILED MAY 11, 1906.

FIG. 1.

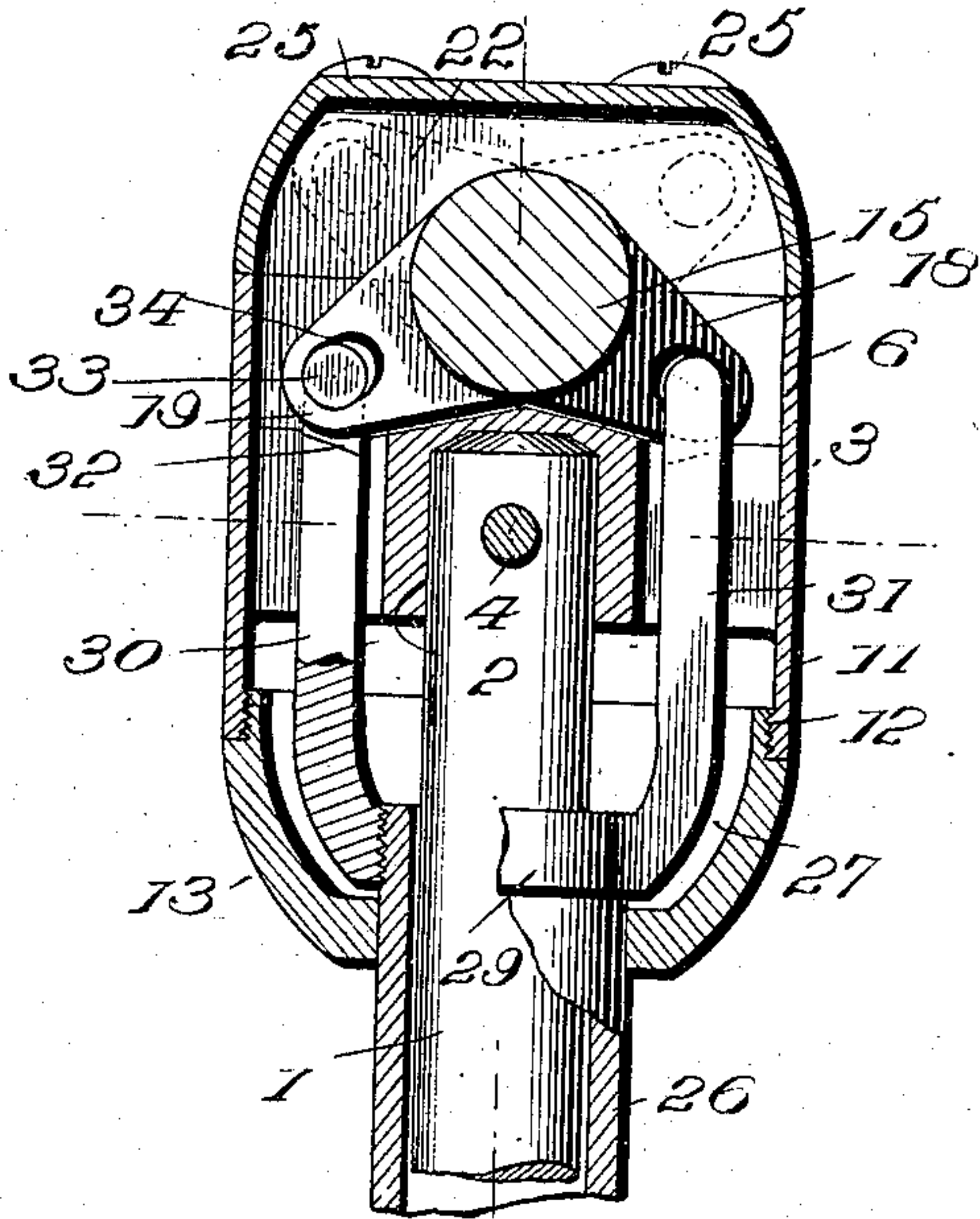


FIG. 2.

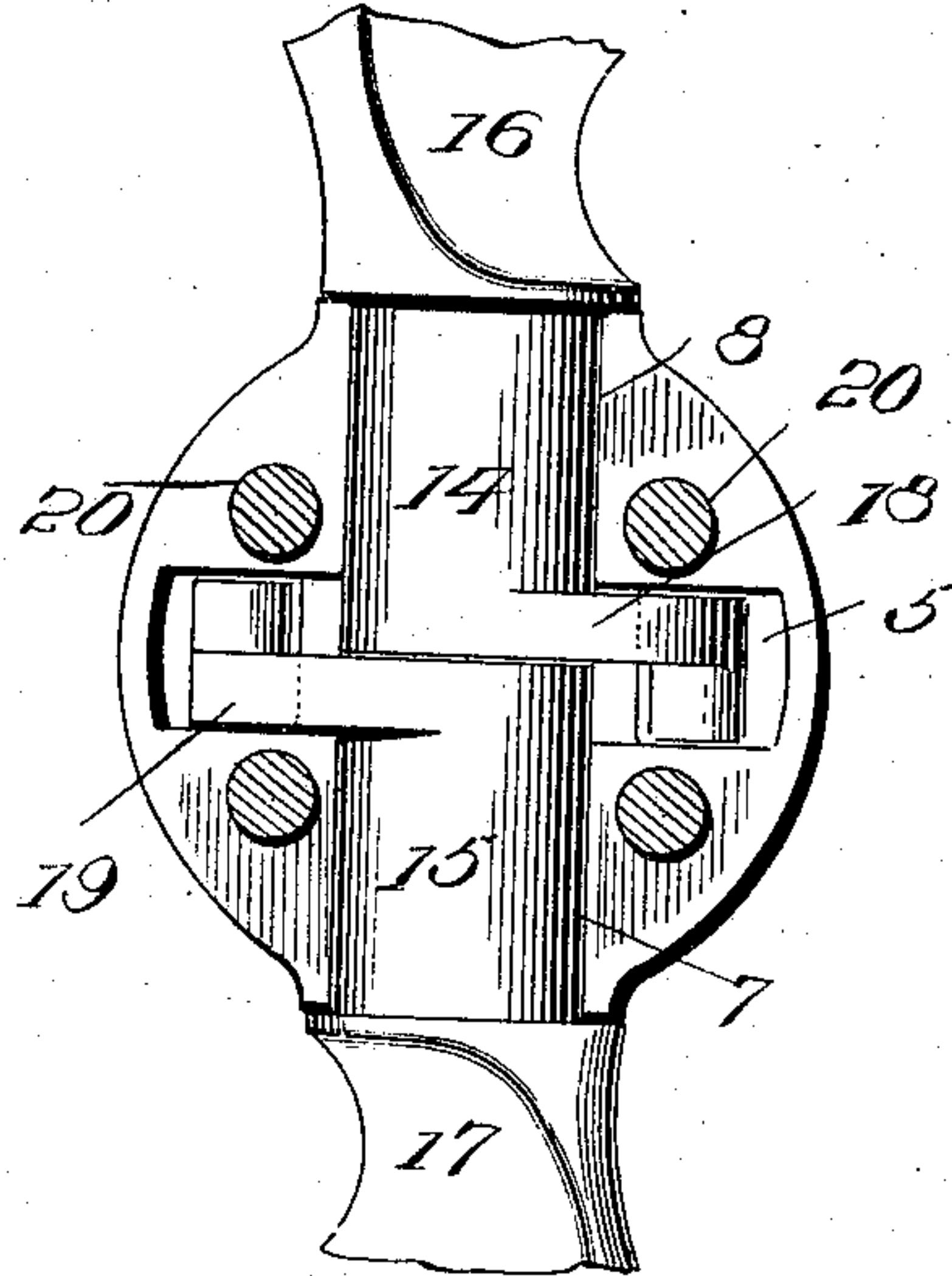


FIG. 3.

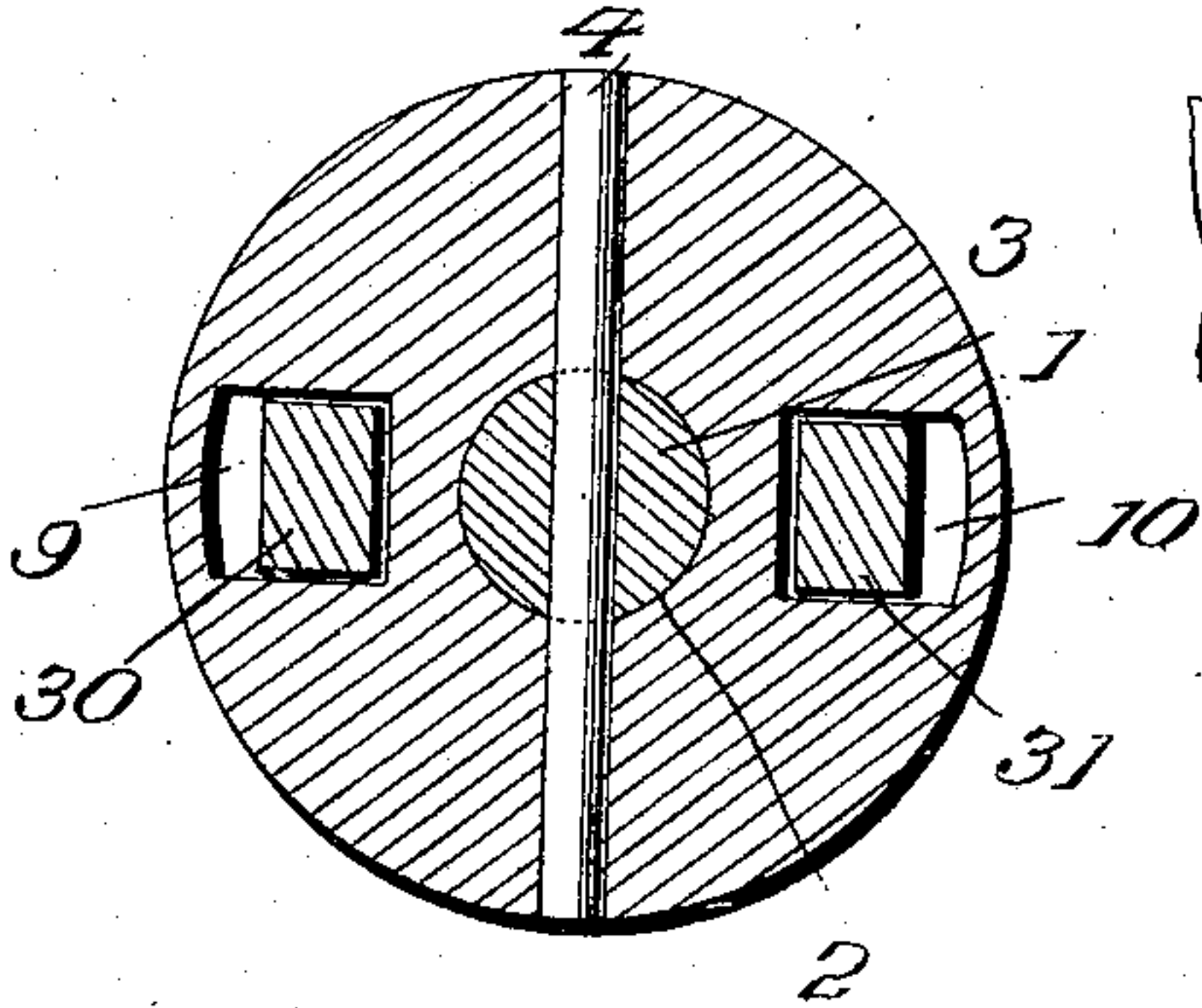
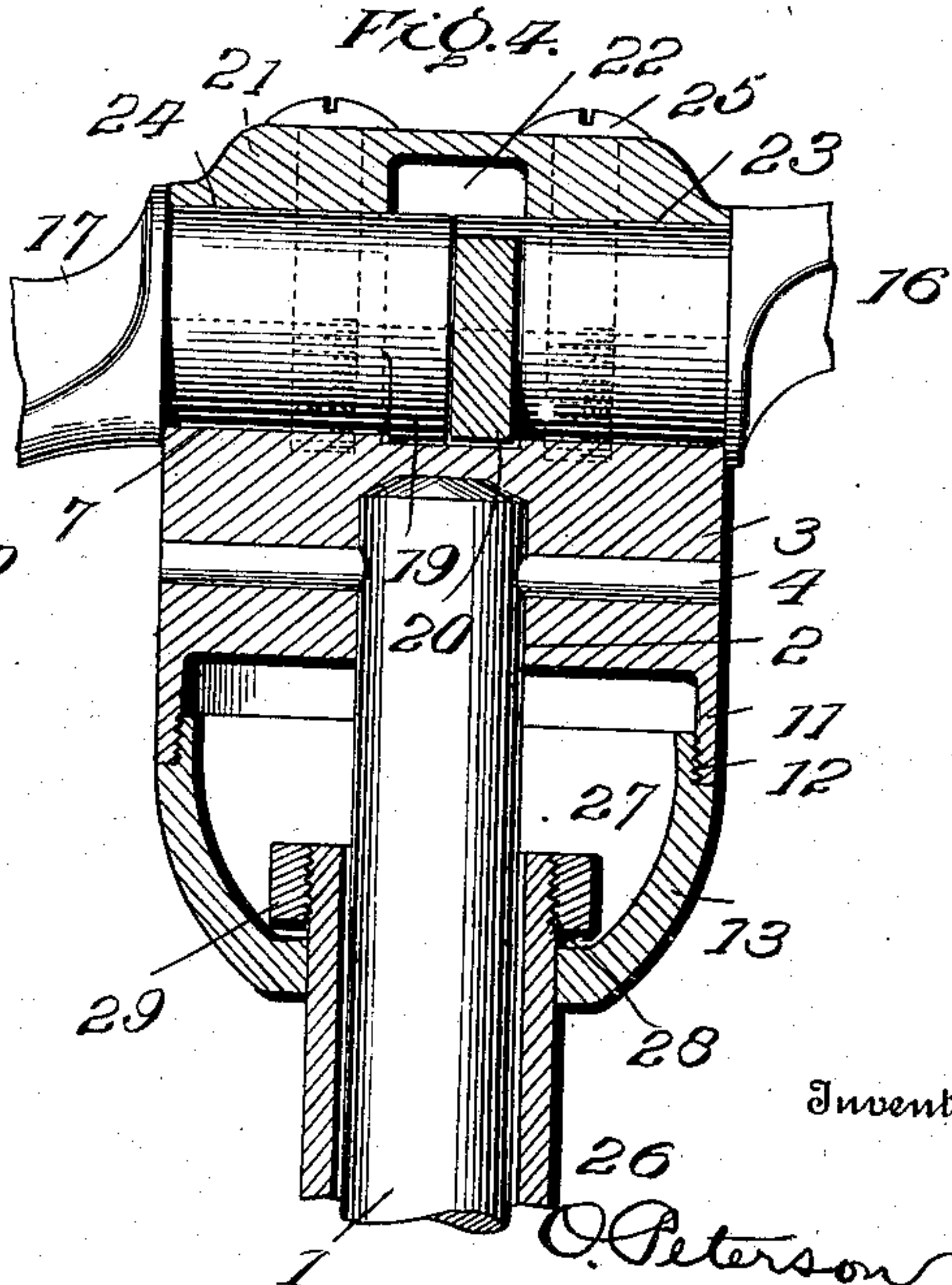


FIG. 4.



Witnesses

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PROPELLER.

No. 867,595.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, OLE PETERSON, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Propellers, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in propellers, and pertains particularly to reversible propellers.

10 The object of my invention is to provide a propeller wheel which is provided with pivoted blades which are adapted to be oscillated for changing the angle of the blades, whereby the direction of travel of the vessel may be changed without reversing the direction of the
15 driving mechanism.

Another object of my invention is to provide a propeller of this character made of a small number of parts and so arranged that they may be readily assembled and taken apart when occasion demands, and thus producing a more simple, cheap and effective propeller.

A still further object of my invention is to have all the working parts within a housing, and thus lessening the chances of injury to the same.

25 In the accompanying drawings, Figure 1, is a longitudinal sectional view of my improved propeller, and the shaft connection. Fig. 2, is an end view of the hub with the cap removed, and showing the oscillating means. Fig. 3, is a transverse sectional view taken on the line $x-x$ of Fig. 1. Fig. 4, is a longitudinal sectional view of my improved propeller taken at right
30 angles to Fig. 1.

Referring now to the drawings, 1 represents the propeller shaft which has its outer end entering a socket in the hub 3, and said shaft is keyed in said socket by a
35 key 4. The socket, as shown, is of a cylindrical solid form, and has its outer end provided with a transverse recess 5 which extends nearly across the entire hub, but leaves the thin walls 6, as will be hereinafter more fully described. The said hub, at its outer end, is
40 also provided with the transverse semi-circular recesses 7 and 8 which extend outwardly at right angles to the recess 5, and extend entirely through the hub. These recesses form bearings for the shanks of the blades.

45 The outer end of the recess 5 is provided with inwardly-extending openings 9 and 10 which extend inwardly through the hub 3. The inner end of the hub is provided with an annular flange 11 which is internally screw-threaded at 12 and into which the
50 cap 13 is screwed, as will be hereinafter more fully described. Resting in the openings or recesses 7 and 8 are the shanks 14 and 15 of the propeller blades 16 and 17. The said shanks are provided with crank arms 18 and 19 which are formed integral with the shanks
55 of the blade, and as fully shown in Figs. 1 and 3, extend in opposite directions. The outer ends of said

crank arms extend adjacent the walls 6 of the hub, but are sufficiently distanced therefrom to allow the arms to swing up and down to cause the oscillation of the shanks, and thus allowing the inclination of the propeller blades 16 and 17 to be changed. The recesses 7 and 8, as before described, are semi-circular and of a depth just equal to half of the diameter of the shanks 14 and 15.

The outer end of the hub is provided with four openings 20, and resting against said outer end of the hub is a solid cap 21. The said cap is of a size to snugly fit the end of the hub, and thus forms practically a continuation thereof, and at the same time forms an even unbroken surface. The said cap is provided
65 with a transverse recess 22 which corresponds with the recess 5 in the hub, and thus allows the free swinging of the crank arms 18 and 19, as shown in dotted lines in Fig. 1. The said cap is also provided with transverse recesses 23 and 24 which extend at right angles
70 to the recess 22, and said recesses are arranged opposite the recesses 7 and 8, and are also semicircular and form the other half of the bearing for the shanks of the propeller blades. The screw-bolts 25 pass through the cap and enter the openings 20 in the hub and firmly
80 secure the cap on the outer end of the hub. This arrangement, as will be clearly seen, forms a smooth continuation of the hub, and protects all of the working parts of the propeller.

Surrounding the shaft 1 is a sleeve or tube 26 which
85 extends within the space 27 formed by the cap 13, and is freely movable upon the shaft independent of the shaft and cap, the cap serving as a protector for the inner working mechanism. The inner end of the sleeve or tube 26 is provided with a screw-threaded
90 portion 28 upon which is screwed a ring 29. The said ring is provided with two outwardly and upwardly extending arms 30 and 31 which pass upwardly through the openings 9 and 10 and have their upper ends cut away as indicated at 32. The said cut-away portions
95 as shown in Fig. 1, are arranged on opposite sides of the arms to bring the upper ends on the proper side of the crank arms. The extreme upper reduced ends of the arms are provided with inwardly extending studs 33 which pass through the elongated openings 34 in
100 the outer end of the crank arms 18 and 19.

From the foregoing description, it will be seen that the shaft is stationary; that is, it has no longitudinal movement, but is free to rotate the same as the usual propeller. The blades are set at the angle shown in
105 the figure, and when it is desired to change the inclination of the blades for changing the direction of the vessel, the sleeve or tube 26 is moved outwardly as indicated in dotted lines, Fig. 4, forcing the arms 30 and 31 outwardly within the hub, and by the connection
110 of said arms with the crank arms of the propeller blades, the blades are oscillated and the angle of the blades is

changed. All working parts are inclosed and thus protected, and the parts being very simple and few, makes a much cheaper and more durable propeller of this character.

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

1. A propeller of the character described, comprising a shaft, a hub rigidly secured to the shaft, propeller blades pivotally mounted in said hub, a sleeve sliding on the shaft and extending within the hub and having outwardly-extending arms passing through the hub and oscillating said blades, and a cap carried by the inner end of the hub and flush with side walls thereof, and covering the oscillating arms at all times.
- 15 2. A propeller of the character described, comprising a shaft, a hub rigidly secured to said shaft, propeller blades pivotally mounted in said hub, crank-arms carried by the propeller blades and extending radially outwardly within the hub, a sleeve surrounding the shaft, arms secured to the sleeve and passing through openings in the hub and connected to said crank arms, and caps carried by the ends of said hub for inclosing all working parts.
- 20 3. A propeller of the character described, comprising a shaft, a solid hub rigidly secured to said shaft, propeller blades mounted in recesses in its outer end, a solid cap secured to the hub and having recesses corresponding with the recesses in the hub and forming therewith the bearings for the blades, blades having their shanks pivotally mounted in the openings formed by the recess, crank arms carried by the shanks and extending outwardly within recesses in the hub, a sleeve slidably mounted upon the shaft, arms carried by the sleeve and extending outwardly through openings in the hub, means for securing the said arms and crank arms together with a limited movement,
- 25 35 and a cap secured to the inner end of the hub and covering the arms carried by the sleeve.
4. A propeller of the character described, comprising a shaft, a hub rigidly secured to said shaft, propeller blades pivotally mounted in said hub, crank arms carried by the propeller blades and extending within the hub, a sleeve surrounding the shaft, arms carried by the sleeve and secured to the crank arms, an inwardly extending inter-
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nally screw-threaded flange carried by the hub, and a cap screwed within the flange and flush with the hub, and covering the operating arms.

5. A propeller of the character described, comprising a shaft, a hub formed of a solid block of metal and rigidly keyed to the shaft, propeller blades pivotally mounted in the outer end of said hub, said blocks having radially extending recesses, communicating at their outer ends with longitudinal openings extending through the hub, crank arms carried by the propeller blades and extending outwardly within said recesses, the outer end of said crank arm having elongated openings therein, a sleeve slidably mounted upon the shaft, arms rigidly secured to the sleeve and extending through the openings in the hub, and laterally-extending pins carried by the outer ends of said arms and entering the elongated openings in the crank arms.

6. A propeller of the character described, comprising a shaft, a hub formed of a solid block of metal and rigidly secured at its inner end to the shaft, the outer end of said block having concaved grooves oppositely arranged, and recesses radially arranged at right angles to the grooves, said hub having longitudinal openings communicating with the outer end of said recesses, propeller blades having shanks mounted in the grooves, crank arms carried by the shanks and extending within the recess, and the outer ends of the arms having elongated slots therein, a cap having grooves corresponding with the grooves in the hub, means for securing the cap on the hub, said hub having recesses corresponding with those in the hub to allow the crank arms to swing upwardly, a sleeve slidably mounted upon the shaft, arms secured to the sleeve and extending through the openings in the hub, laterally-extending pins carried by the outer ends of the arms and entering the openings in the crank arms, an internally screw-threaded flanged portion formed integral with the hub, and a cap screwed within the flange flush with the hub and covering the operating arms.

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

OLE PETERSON.

Witnesses:

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