

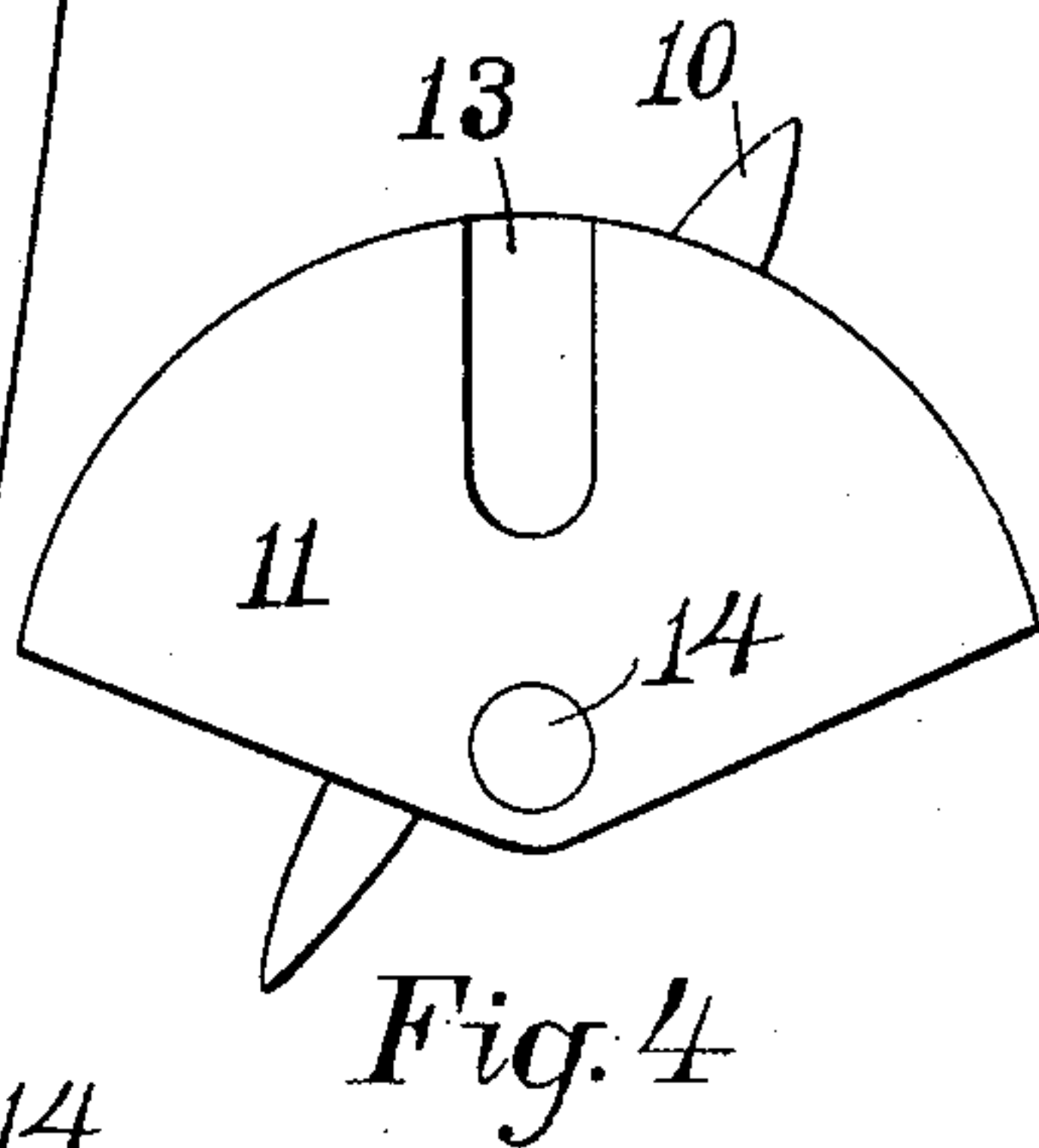
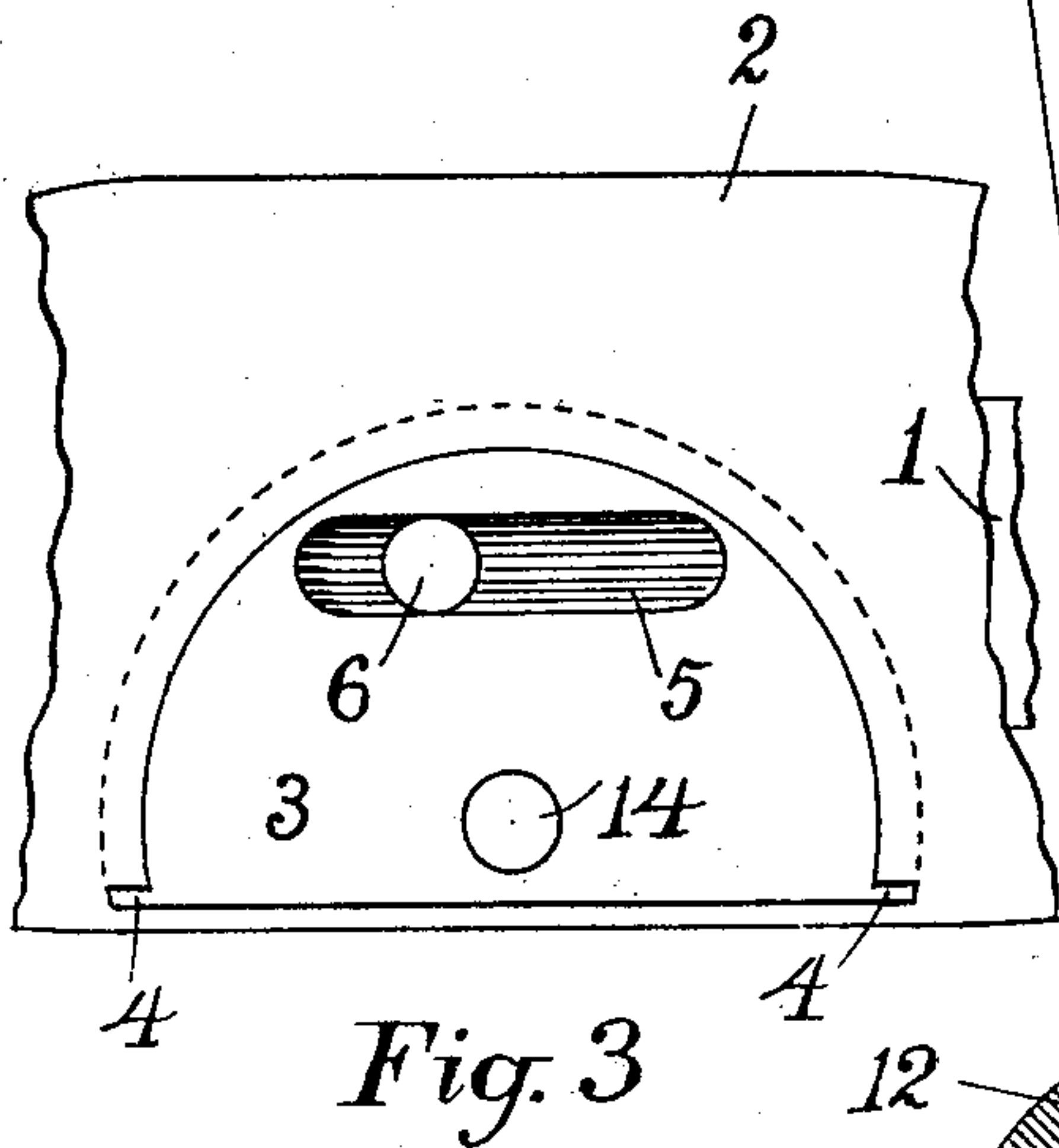
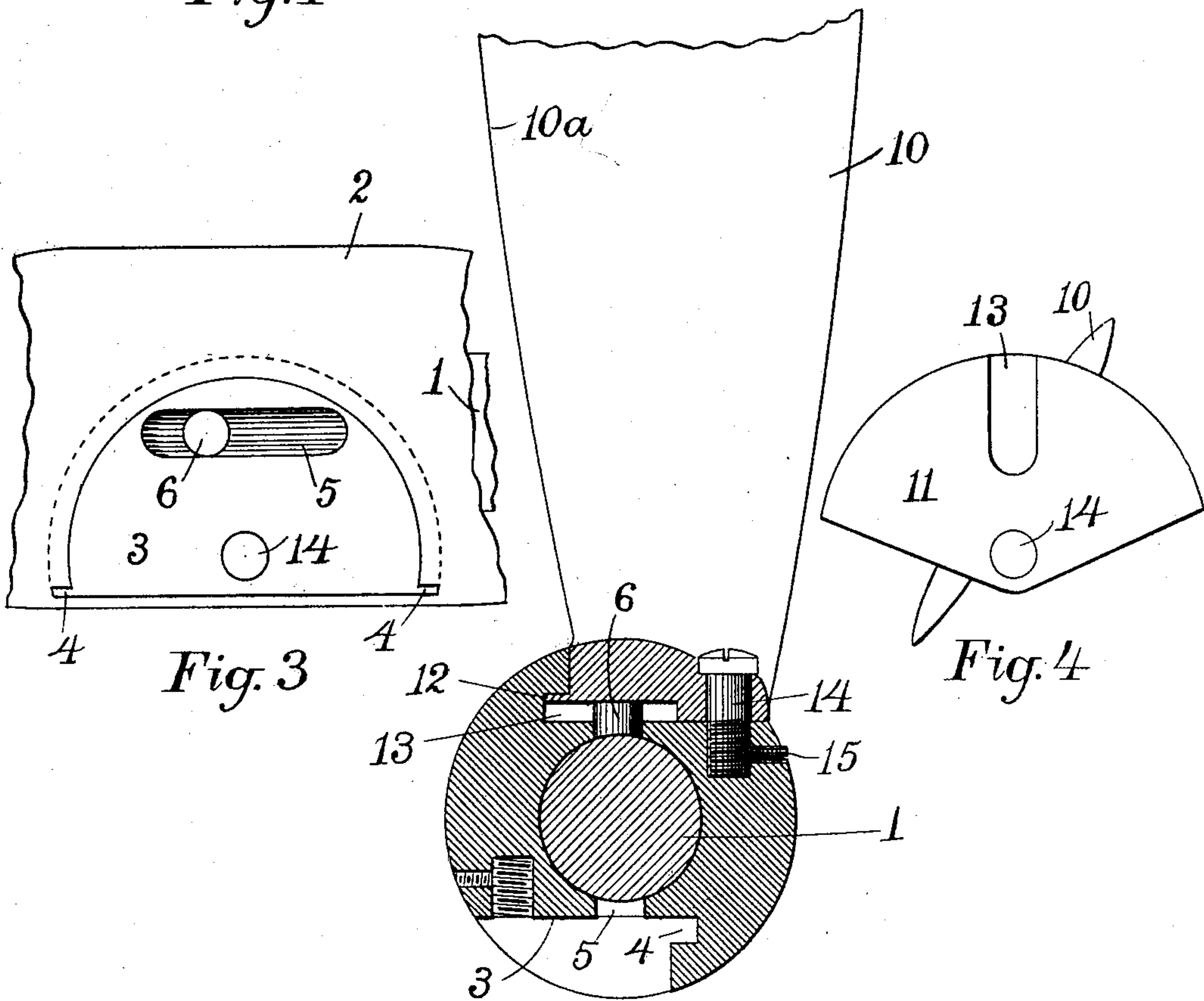
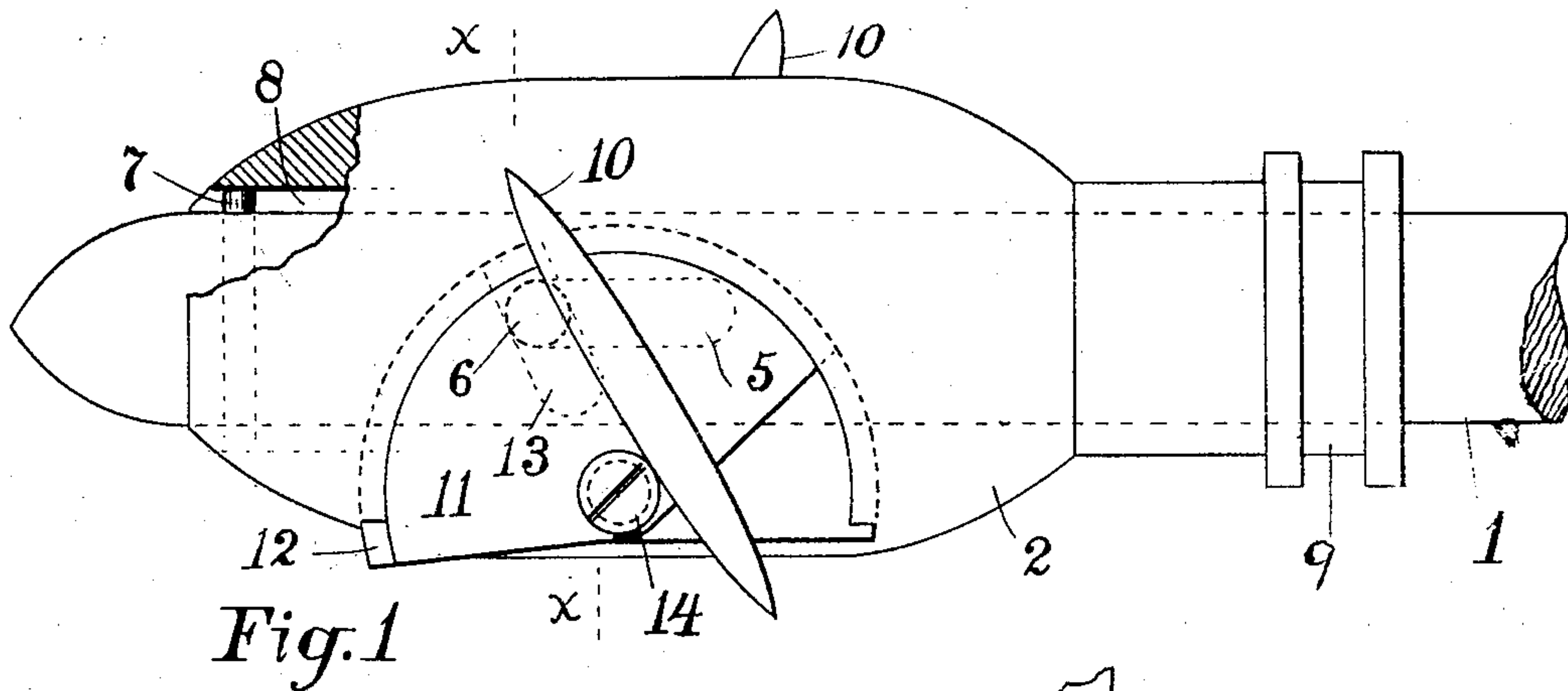
No. 765,073.

PATENTED JULY 12, 1904.

W. E. GEYER.
REVERSIBLE PROPELLER.

APPLICATION FILED SEPT. 14, 1903.

NO MODEL.



Witnesses;

Lowell M. Moxham

M. W. Upham.

Fig. 2

Inventor,

William E. Geyer;

By A. B. Upham,
His Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM E. GEYER, OF CAMBRIDGE, MASSACHUSETTS.

REVERSIBLE PROPELLER.

SPECIFICATION forming part of Letters Patent No. 765,073, dated July 12, 1904.

Application filed September 14, 1903. Serial No. 173,063. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. GEYER, a citizen of the United States, and a resident of Cambridge, in the county of Middlesex, State of Massachusetts, have invented certain new and useful Improvements in Reversible Propellers, of which the following is a full, clear, and exact description.

It is customary in many power launches or yachts, and particularly in those whose motive power is the internal-combustion or hydrocarbon engine, to reverse the angle of the propeller-blades instead of reversing the engine when it is desired to back the boat. This invention pertains to this type of propeller, and has for its object the effecting of certain improvements whereby the propeller-blades are more easily reversed and at the same time are more strongly held and less liable to get out of order, while should at any time an accident occur the parts are so arranged as to be capable of ready replacement.

Referring to the drawings forming part of this specification, Figure 1 is an end view of a propeller-blade, showing its connections with the propeller-shaft. Fig. 2 is a sectional view on the line X X in Fig. 1. Fig. 3 is a plan view of the propeller-hub, showing the blade removed. Fig. 4 is an under view of the base of a propeller-blade.

The propeller-shaft is designated by the reference-numeral 1 and has upon its outer or rear part a slidable sleeve or hub 2, which is made to rotate in unison with the shaft by a pin 7, projecting into grooves 8. Any usual clutch-shifting device engaging the groove 9 is employed for sliding the hub back and forth upon the shaft. In the periphery of this hub 2 is a plurality of flat seats 3, each having the overhung semicircular rabbet 4, designed to receive the correspondingly-formed base 11 of the propeller-blade 10. A pin or screw 14, passing through the base 11 into the hub 2 and permanently fixed therein by a small screw 15, is the pivot upon which the blade-base 11 turns.

In the hub-seat 3 is a longitudinal slot 5, as in Figs. 2 and 3, through which slot rises the pin 6, entering the groove 13 in the under

face of the blade-base, as shown in Fig. 4, said pin rigidly projecting from the shaft 1. By sliding the hub 2 upon the shaft 1 said pins 6 impart to the blade-bases 11, and so to the blades, a partial rotation sufficient to reverse the stroke of the propeller.

As shown more clearly in Fig. 1, the center line of the blade 10 being in advance of the pivot pin or screw 14 the pressure of the blade against the water will serve to hold the blade at each extreme of its reversal. Hence but slight locking devices are needed for the mechanism by which the hub is shifted upon the shaft. It is understood, of course, that the propeller is turning with the blade edge 10^a in advance, for in addition to the locking action thereby given to the blades the strain upon the blades is resisted by the base edges in the rabbets 4 instead of by the pins or screws 14, as would be the case were the propeller to revolve in the opposite direction. This renders the grip of the hub upon the blades an exceedingly strong one and insures that the blades will themselves break upon striking an obstruction rather than the hub itself. Consequently by removing the pins or screws 14 of the injured blades new ones can be substituted with practically no trouble. This method of securing the blades to the hub is hence a fine one, even where no reversal thereof is desired.

Although I have shown but two blades as adapted to the hub, yet more can be readily arranged therefor by any one skilled in the art.

What I claim as my invention, and for which I desire Letters Patent, is as follows, to wit:

1. The combination with a shaft, of a cylindrical hub slidable longitudinally thereon, and propeller-blades pivotally secured to said hub and adapted to be reversed by the movement of the latter; each propeller-blade having a flat substantially semicircular base with its under face transverse to the longitudinal line of the blade; and the hub having seats for said bases, each seat formed with a rabbeted semicircular wall fitted to the base of one of said propeller-blades and opening at its dia-

metrical side at the periphery of the hub; each base being pivoted at its center of curvature to the hub; substantially as described.

2. The combination with a shaft and the
5 sleeve or hub slidable thereon and having the seat formed with the overhung semicircular rabbet, of the propeller-blade having the base fitted to said seat and rabbet, the pivot pin or screw concentric with said rabbet, and the pin
10 rigidly projecting from the shaft; the under face of said base being formed with a radial groove receiving said pin, substantially as described.

3. The combination with a shaft, and hub thereon formed with the seat having the over- 15 hung rabbet, of the propeller-blade having the base fitted to said seat and rabbet, and a fastening device holding said base to said seat, substantially as described.

In testimony that I claim the foregoing in- 20 vention I have hereunto set my hand this 12th day of September, 1903.

WILLIAM E. GEYER.

Witnesses:

A. B. UPHAM,

HARRY L. PEABODY.