

No. 864,875.

PATENTED SEPT. 3, 1907.

G. F. VILLINGER.

REVERSIBLE PROPELLER FOR SHIPS AND BOATS.

APPLICATION FILED DEC. 17, 1906.

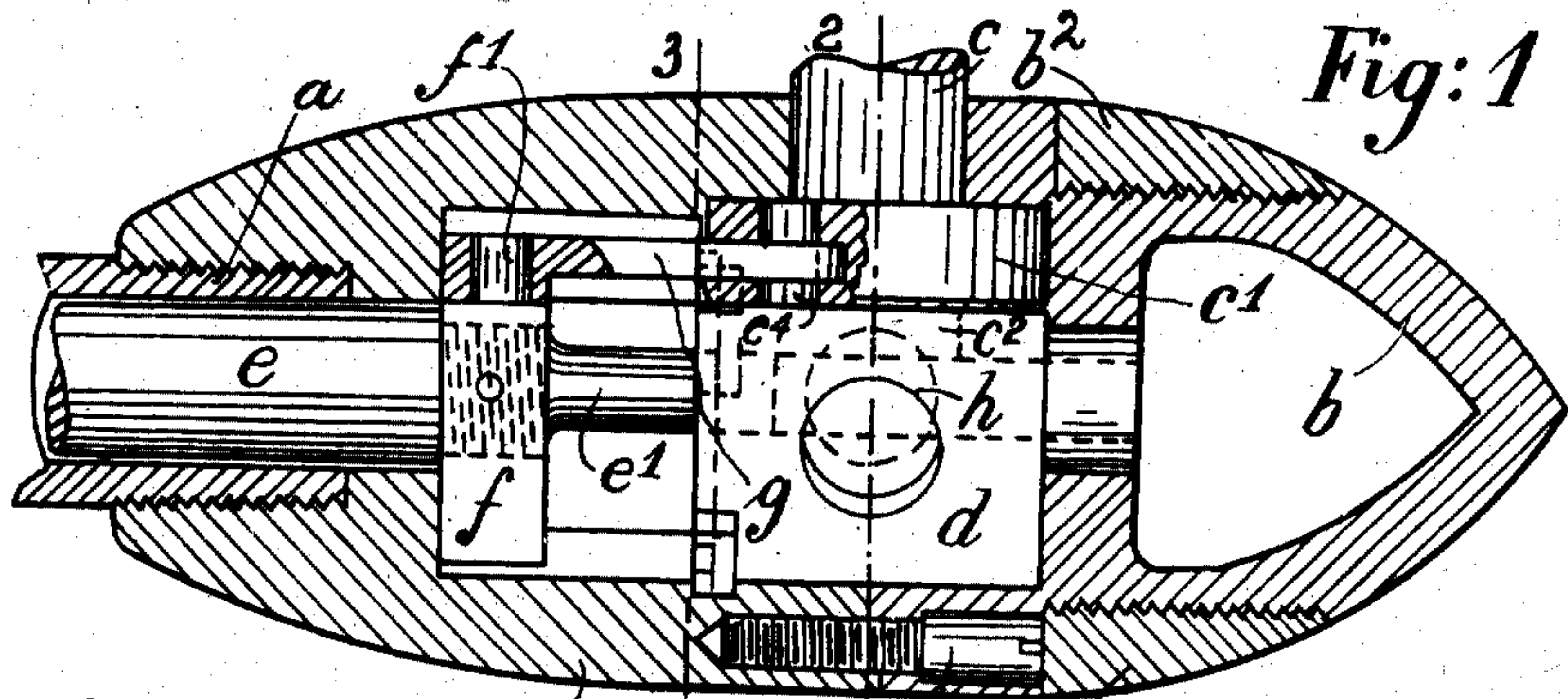


Fig: 1

Fig: 2

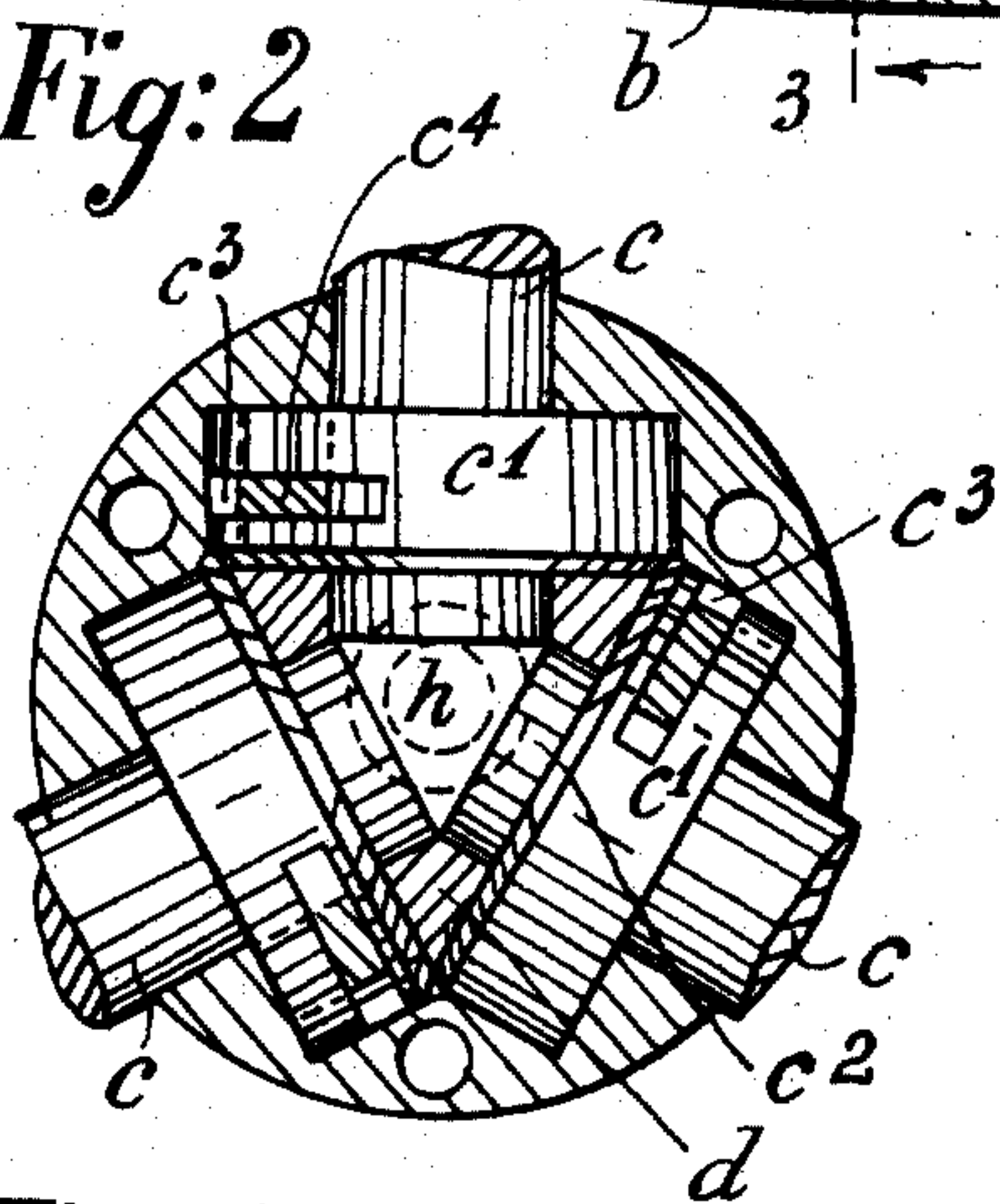


Fig: 3

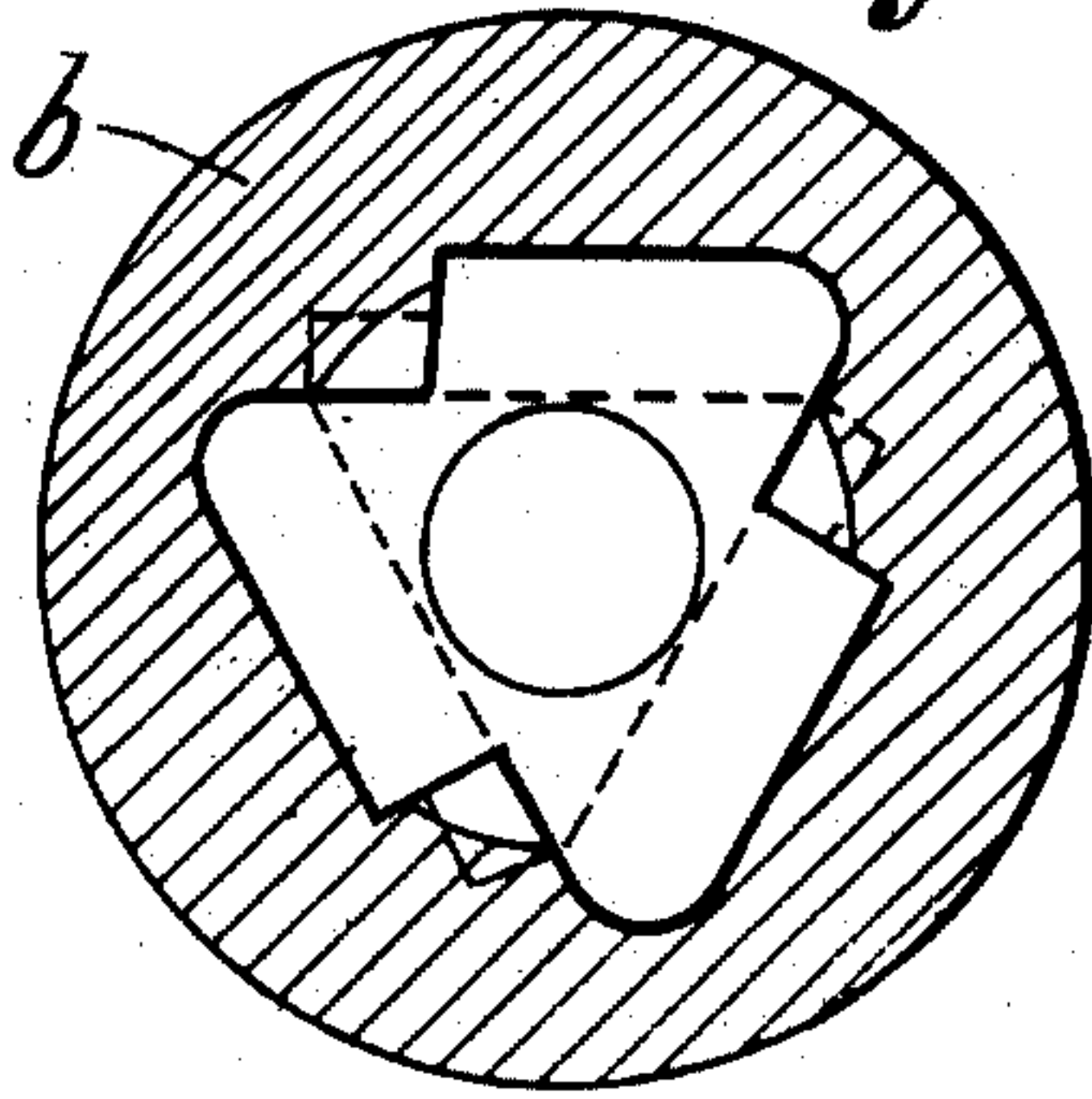


Fig: 4

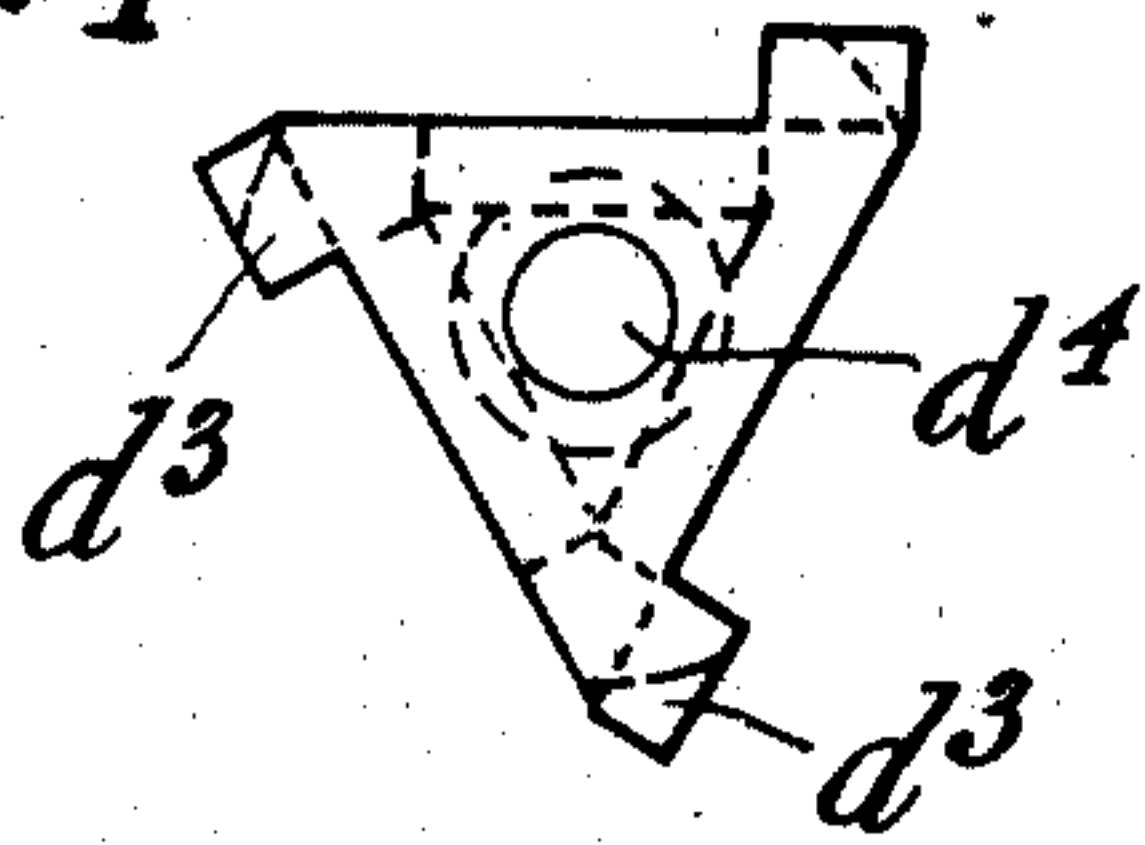


Fig: 5

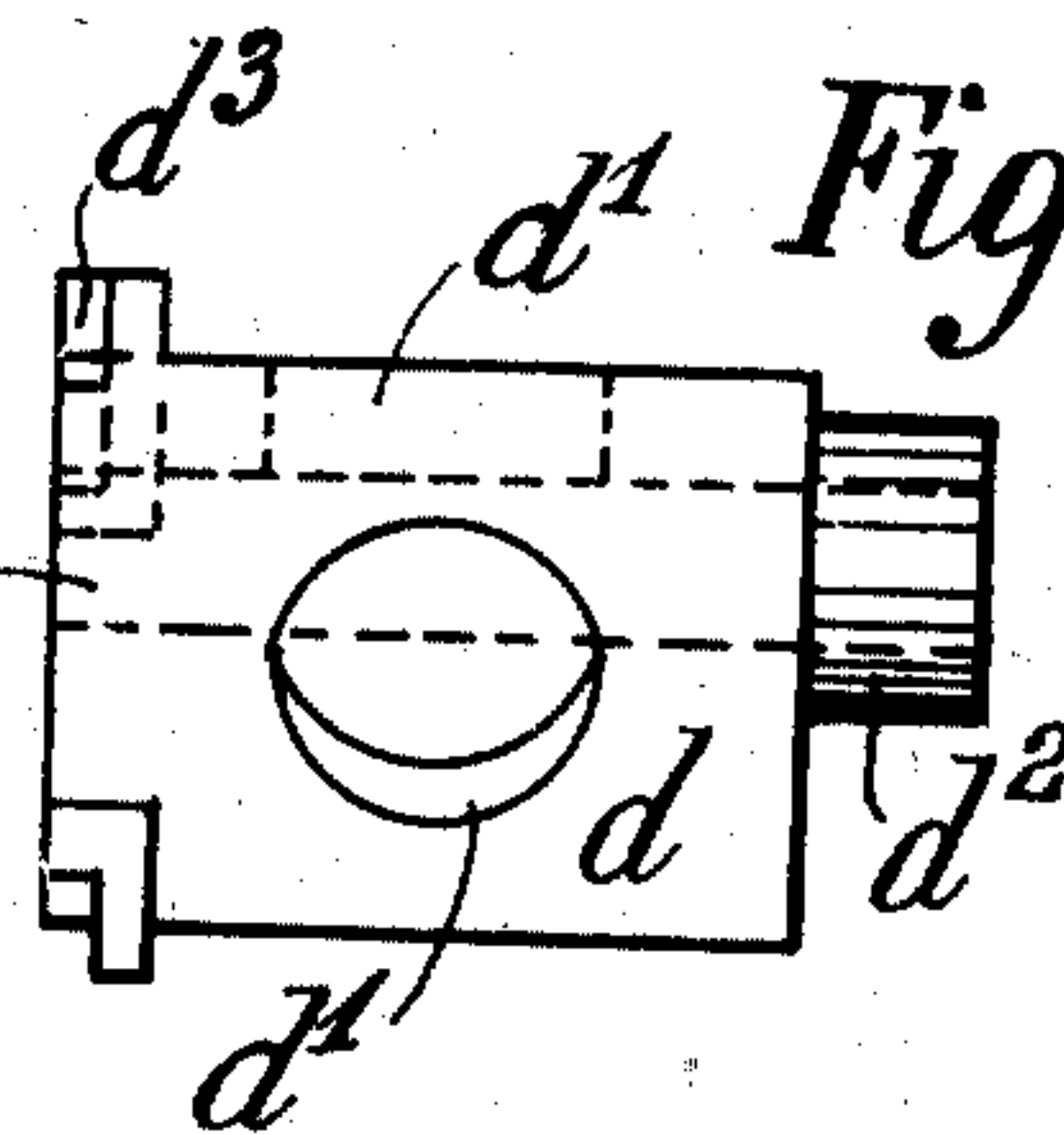


Fig: 6

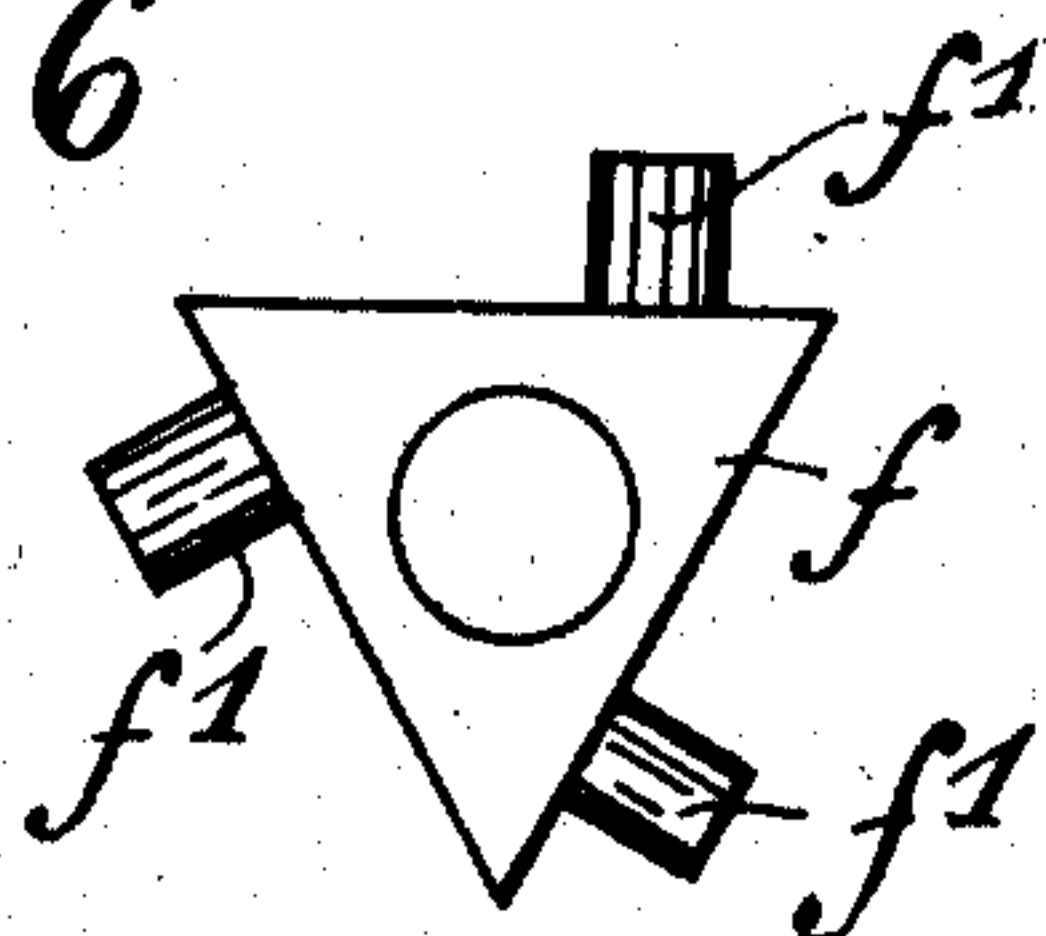
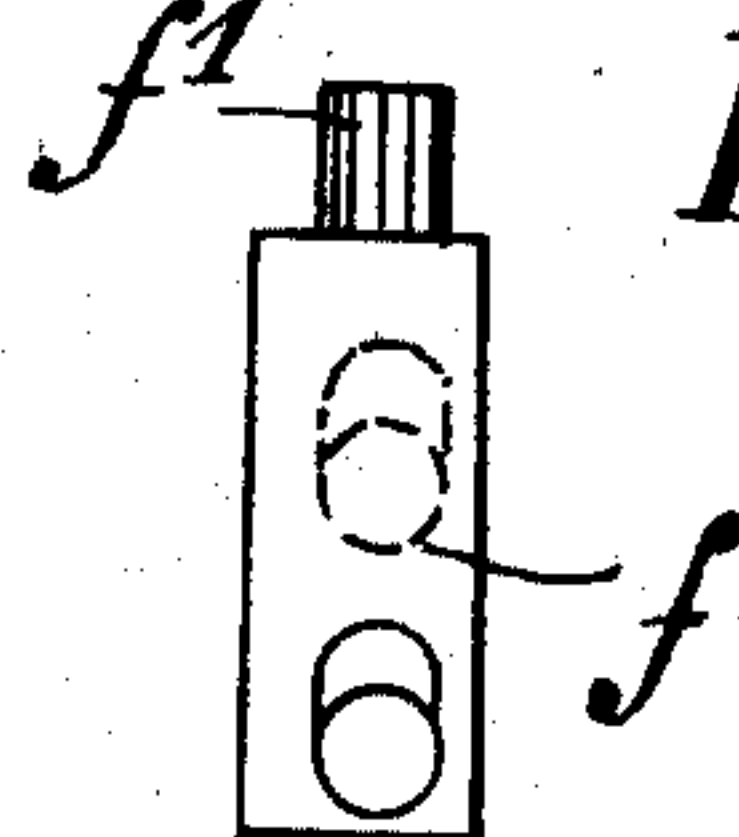


Fig: 7



Witnesses
R. H. Hough
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George Ferdinand Villinger
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UNITED STATES PATENT OFFICE.

GEORGE FERDINAND VILLINGER, OF LONDON, ENGLAND.

REVERSIBLE PROPELLER FOR SHIPS AND BOATS.

No. 864,875.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed December 17, 1906. Serial No. 348,248.

To all whom it may concern:

Be it known that I, GEORGE FERDINAND VILLINGER, a subject of the King of Great Britain, residing at London, England, have invented new and useful Improvements in Reversible Propellers for Ships and Boats, of which the following is a specification.

The object of the present invention is to construct a strong reversible propeller which may be readily reversed at full speed without employing a clutch to release the propeller from the engine.

The invention is illustrated in the accompanying drawings, in which

Figure 1 is a longitudinal section of the boss of a propeller shaft, showing part of the shaft and a shank of one of the blades. Fig. 2 is a cross section of the same on the line 2—2, of Fig. 1; Fig. 3 is a cross section of the boss only on the line 3—3 of Fig. 1. Figs. 4 and 5 are respectively end and side elevations of the stationary center-block which acts as a bearing for the ends of the blades. Figs. 6 and 7 are respectively end and side elevations of a movable block for reversing the blades.

a is the propeller shaft and b the boss screwed or otherwise fixed on the shaft a . The boss b is made in two halves which are connected together by screws b' . This boss b is bored to take as many blades as required. The drawings show bosses made to receive three blades. The blades, which are not shown, have shanks c provided with enlargements c' which fit in recesses in the boss b . In the interior of the boss b , as shown in Figs. 1 and 2, is located a stationary center-block d having three faces, against which fit the inner faces of the enlargements c' , and three recesses or bearings d' for the inner ends c^2 of the shanks c . This block d has a projection d^2 at one end, which enters a corresponding boring in the boss b , and has three lugs d^3 at the other end which fit recesses in the other part of the boss b and prevent the block moving with relation to the boss b . The block d is also bored at d^4 to receive and guide the end e' of the reversing rod e . On the reversing rod e is fixed the moving block f having pins f' , on which are mounted links g ; the other ends of said links g enter slots c^3 in the enlargement c' and are connected to said enlargements c' by pins c^4 , which are eccentric to the shanks c of the blades. If desired a ball h may be located in the center of the stationary block d and the ends c^2 of the shanks c may be formed with recesses to take a bearing on the said ball h , in which case the face of the enlargement c' need not come in contact with the block d . When the reversing rod e is moved longitudinally by any suitable mechanism, the moving

block f is likewise moved and gives rotary motion to the enlargements c' by means of the links g , thereby reversing the blades. The screws b' are locked by the locking ring b^2 .

What I claim as my invention is:—

1. In a reversible propeller, the combination with the propeller shaft, of a propeller boss made in parts, blades carried by said boss and capable of angular adjustment thereon, enlargements on said blades bearing against the interior of the boss, slots in said enlargements, eccentric pins passing through said slots, a separate stationary block having a projection at one end entering the boss, said block being fixed in said boss, rotating therewith and acting as a bearing for the inner ends of the blades, a reversing rod, a block fixed on the reversing rod and movable in the boss, pins on said movable block, links on said pins, the other ends of said links entering said slots and being connected to the said eccentric pins carried by the enlargement, substantially as set forth.

2. In a reversible propeller, the combination with the propeller shaft, of a propeller boss made in parts, blades carried by said boss and capable of angular adjustment thereon, recesses in the ends of said blades, enlargements on said blades bearing against the interior of the boss, slots in said enlargements, eccentric pins passing through said slots, a separate stationary block having a projection at one end entering the boss, said block being fixed in said boss, rotating therewith and acting as a bearing for the inner ends of the blades, a ball located in said block against which the ends of the blades take a bearing, a reversing rod, a block fixed on the reversing rod and movable in the boss, pins on said movable block, links on said pins, the other ends of said links entering said slots and being connected to the said eccentric pins carried by the enlargements, substantially as set forth.

3. In a reversible propeller, the combination with the propeller shaft, of a propeller boss made in two parts, screws fastening said parts together, a locking ring screwing on the after part, blades carried by said boss and capable of angular movement thereon, enlargements on said blades bearing against the interior of the boss, slots in said enlargements, eccentric pins passing through said slots, a stationary block, a projection at one end of said block entering part of the boss, a boring at the other end of said block, lugs on said block, this latter being fixed in said boss, rotating therewith and acting as a bearing for the inner ends of the blades, a reversing rod the end of which enters the boring in the stationary block, a block fixed on the reversing rod and movable in the boss, pins on said movable block, links on said pins, the other ends of said links entering said slots and being connected to the said eccentric pins carried by the enlargements, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GEORGE FERDINAND VILLINGER.

Witnesses:

WM. GIRLING,
H. D. JAMESON.