

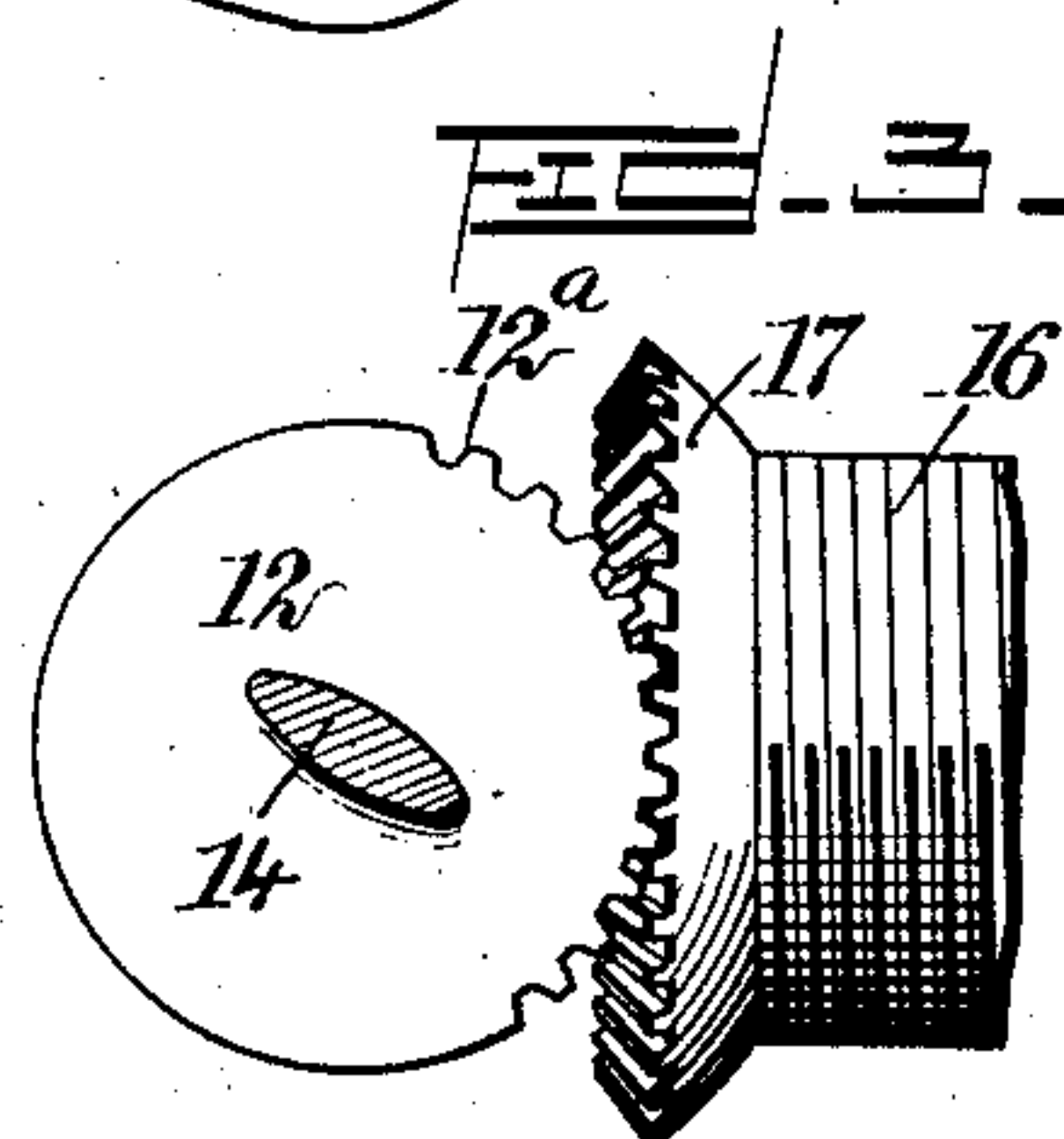
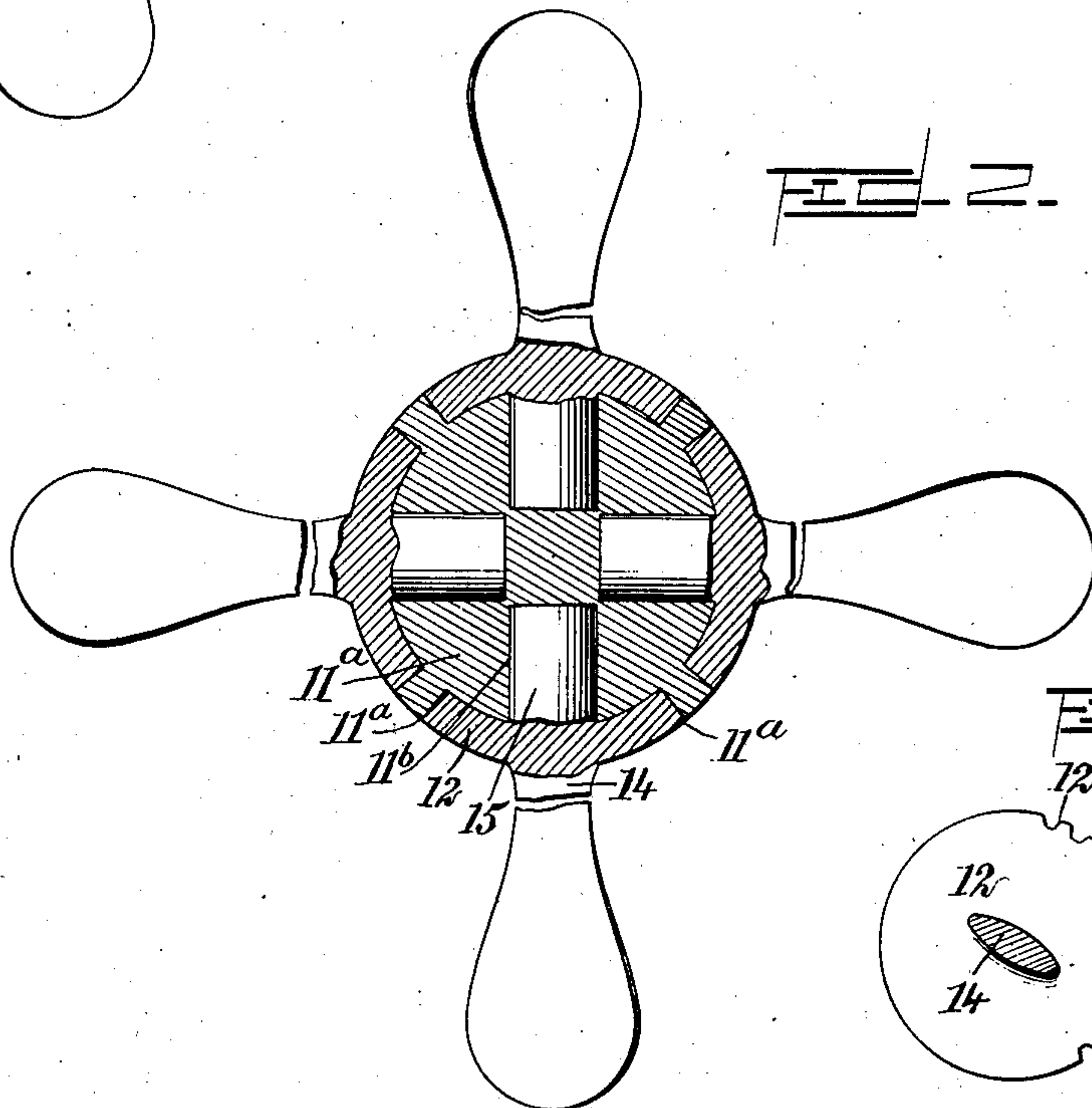
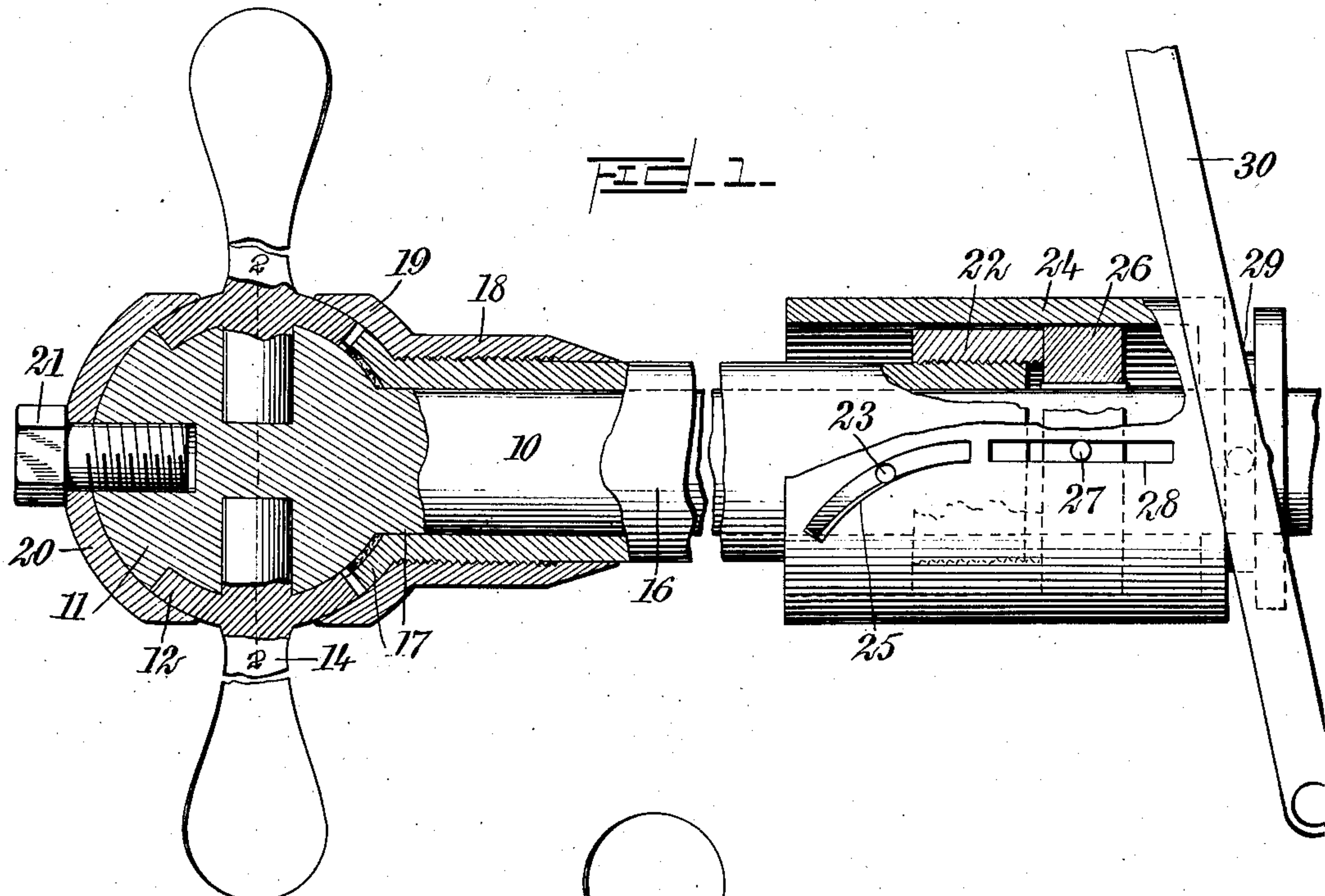
No. 819,540.

PATENTED MAY 1, 1906.

F. C. GORDON.

PROPELLER.

APPLICATION FILED MAY 27, 1905.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## PROPELLER.

No. 819,540.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed May 27, 1905. Serial No. 262,596.

*To all whom it may concern:*

Be it known that I, FYNIS COLWELL GORDON, a citizen of the United States, and a resident of Asotin, in the county of Asotin and State of Washington, have invented a new and Improved Propeller, of which the following is a full, clear, and exact description.

The invention relates to a propeller in which the blades are reversible, so that the shaft turning continuously in one direction may be made to turn the vessel ahead or astern to exercise no propelling action thereon.

The invention resides in certain novel features of construction and arrangement of parts, which will be fully set forth hereinafter and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings, which illustrate, as an example, the preferred embodiment of my invention, in which drawings like characters of reference indicate like parts in the several views, and in which—

Figure 1 is a view showing the hood of the propeller in section and illustrating the sleeve for reversing the blades. Fig. 2 is an enlarged detail section on the line 2 2 of Fig. 1, and Fig. 3 is a detail view showing one of the blades and the toothed sleeves for operating the same.

10 indicates the propeller-shaft, which is connected with the engine and has an enlargement 11 at its rear or after end. This enlargement 11 is formed with cavities 11<sup>a</sup>, which loosely receive the concave or convex disks or circular flanges 12 attached to the propeller-blades 14. Projecting inward from the said disks or circular flanges 12 are radial studs 15, which are loosely seated in cavities 11<sup>b</sup>, formed in said enlargement 11 of the shaft. The blades 14, with their parts 12 and 15, are thus connected with the enlargement 11 of the shaft 10, so that the blades may be turned around their longitudinal axes to exert the driving influence either ahead or astern or by moving the blades to their intermediate position the rotation of the propeller will impart no driving force to the vessel. Fitted loosely in the shaft 10 is a sleeve or tubular shaft 16, which has a miter-gear 17 at its rear end. The teeth of this gear mesh with the corresponding teeth 12<sup>a</sup>, formed on the flanges 12, (see Fig. 3,) so that by turning the shaft 16 relatively to the shaft 10 an individual turning movement will be given to the blades 14, thus reversing or otherwise adjusting the propeller, as will be un-

derstood from the foregoing description. Screwed on the after end of the shaft 16 is a sleeve 18, which has a curved flange 19, covering the gear 17 and the forward portion of the flanges 12 of the blades 14. At the after end of the enlargement 11 a concave or convex hood 20 is arranged, which engages the rear portions of the flanges 12 and, with the flange 19, serves to hold the propeller-blades in place. The hood 20 is held in position by any desired means—for example, by a bolt 21, as shown. It will then be seen that the blades are mounted so that they may be readily disconnected and new blades inserted in case of breakage or injury to any of the parts.

At its forward end the tubular shaft 16 carries a collar 22 and pin 23. Fitting over said end of the shaft is a sleeve 24, which has a spiro-form groove 25, seating the pin 23. Keyed in the shaft 14 at the front extremity of the tubular shaft 16 is a collar 26, which is engaged by the collar 22. This collar carries a pin 27, fitting in a slot 28 in the sleeve 24, the slot 28 extending longitudinally of the sleeve, as shown in Fig. 1. At its front end the sleeve 24 has an annular groove 29 formed therein to facilitate the connection with the sleeve of a reversing-lever 30. The parts 30 and 24, with their connections, are arranged within the vessel rearward of the engine, the shaft 10 extending forward for connection with the engine, as will be understood from the prior art. By throwing the lever 30 the sleeve 24 is moved longitudinally of the shaft 10, and the cam-slot 25, acting on the tubular shaft 16 through the pin 23, imparts a rotation to this sleeve relatively to the solid shaft 10, and by this rotation the blades of the propeller may be shifted, as hereinbefore explained.

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

1. In a reversing propeller the combination of a main shaft having a substantially spherical enlargement at one end thereof, and having portions of the surface of the enlargement cut away to form recesses circular in outline, propeller-blades having flanges to fit within the recesses, a sleeve on the main shaft and having a flange for engaging the flanges of the propeller-blades, a hood on the end of the shaft for engaging the flanges of the propeller-blade and means whereby to reverse the propeller-blade.

2. In a reversing propeller, the combina-



tion of a main shaft having an enlargement  
at one end thereof, a propeller-blade pro-  
vided with a concavo-convex disk or flange  
engaging the enlargement on the after end of  
5 the main shaft, a tubular shaft or sleeve  
loosely mounted on the main shaft, a gear on  
the tubular shaft, said gear being meshed  
with the teeth on the flange or disk of the pro-  
peller-blade, a sleeve mounted on the tubular  
10 shaft and having a flange engaging the flange  
of the blade, a hood attached to the after end

of the enlargement on the main shaft and also  
engaging the flange on the blade, and means  
for turning said tubular shaft or sleeve to re-  
verse the propeller.

In testimony whereof I have signed my  
name to this specification in the presence of  
two subscribing witnesses.

FYNIS COLWELL GORDON.

Witnesses:

W. S. ROGERS,  
JOHN B. BELL.