

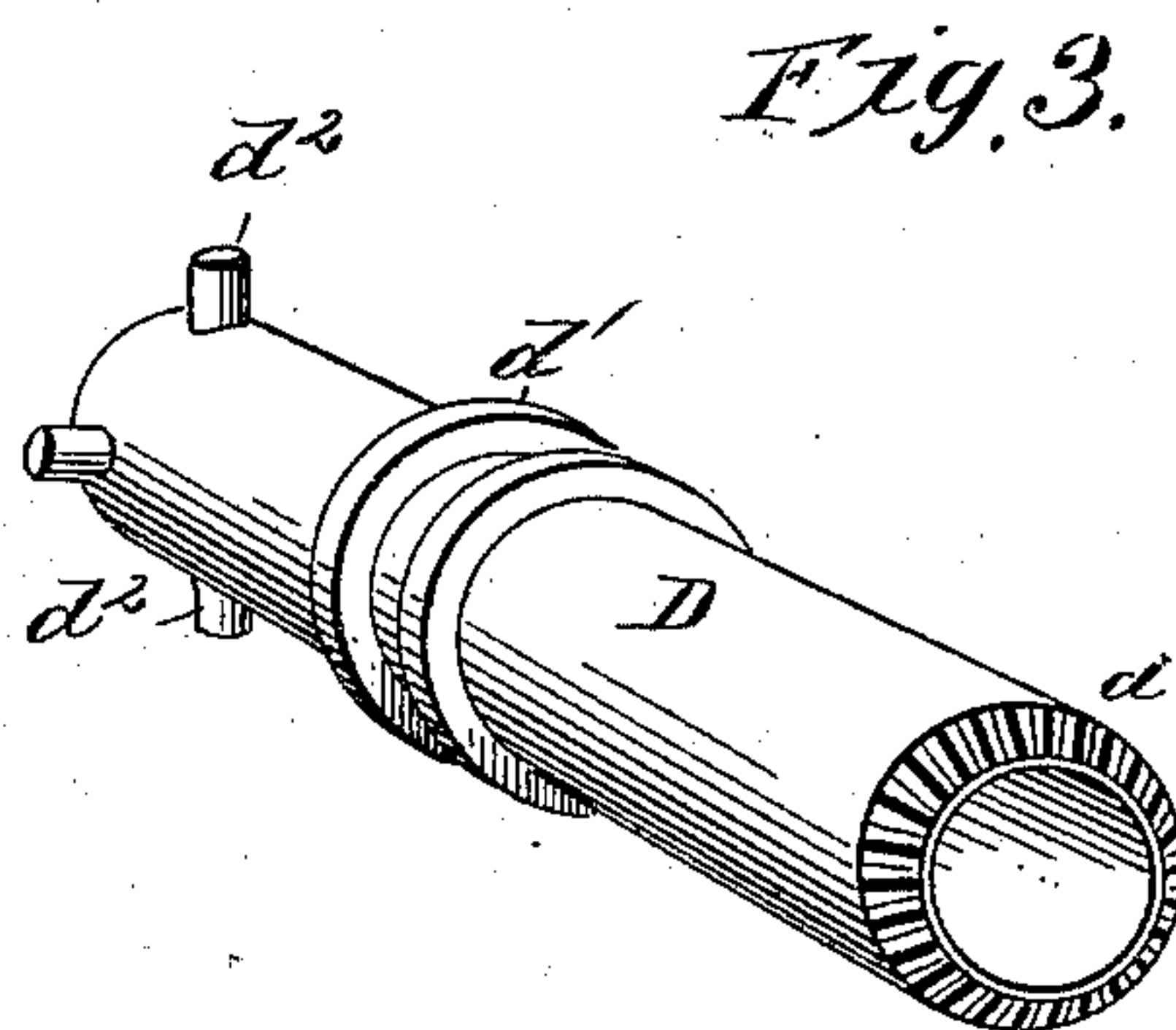
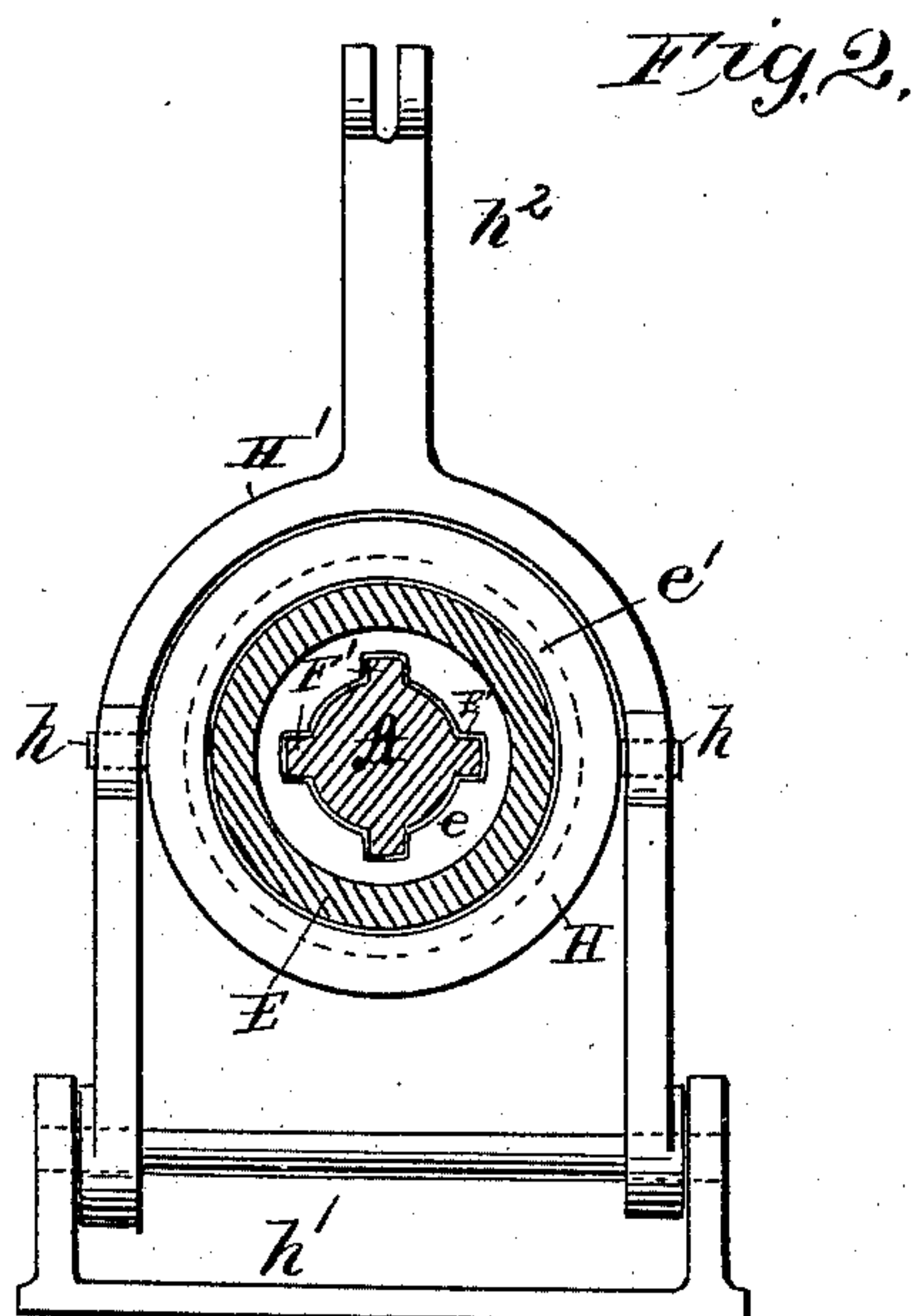
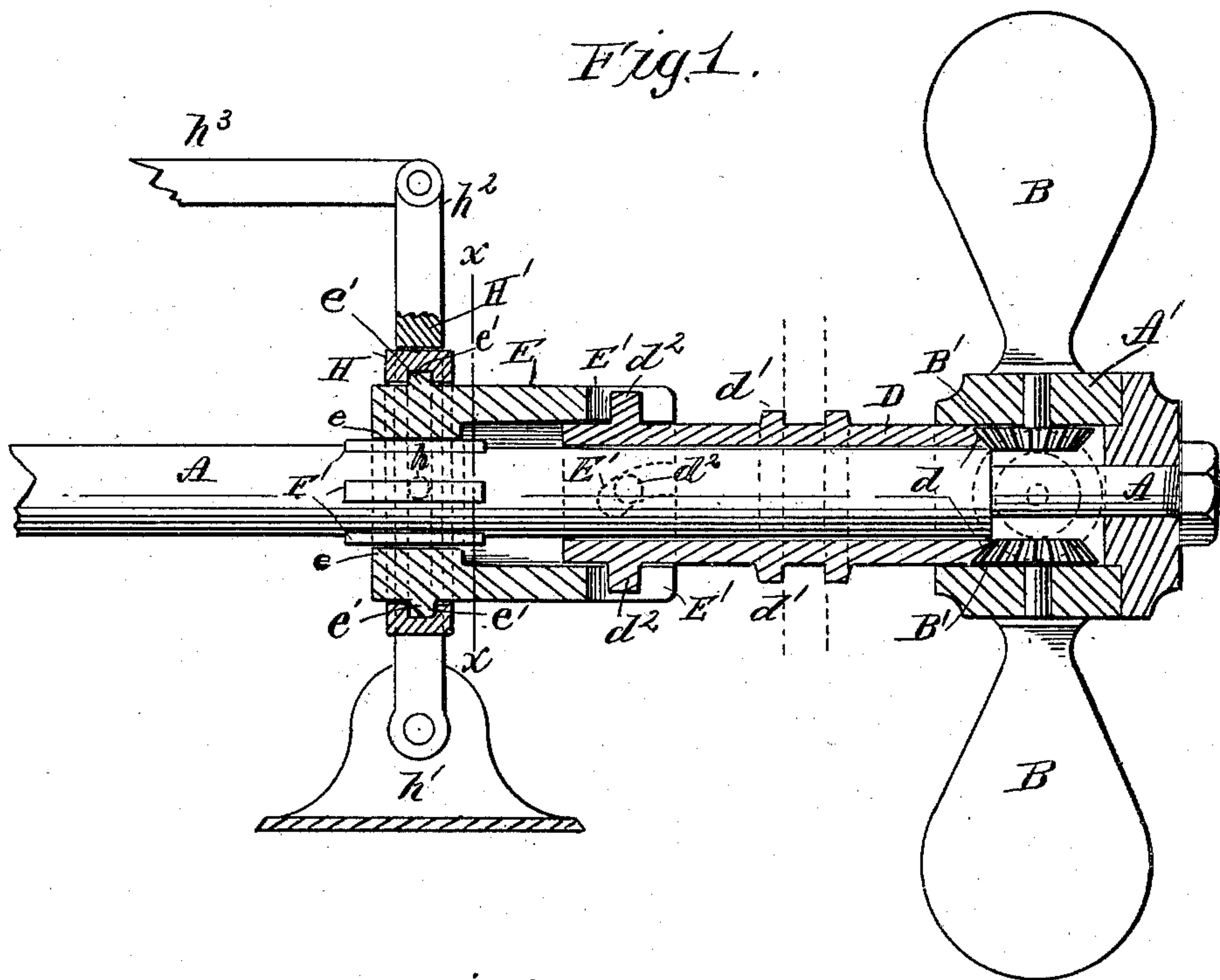
(No Model.)

W. J. STEVES & A. J. HILL.

SCREW PROPELLER.

No. 370,567.

Patented Sept. 27, 1887.



WITNESSES:

J. W. Gasfield
Co. Bridgwick

INVENTOR:

Wm. J. Stever
A. J. Hill
Munn & Co.

BY

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM J. STEVES AND ANDREW J. HILL, OF MECHANICSVILLE,
NEW YORK.

SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 370,567, dated September 27, 1887.

Application filed April 28, 1887. Serial No. 236,464. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM J. STEVES and ANDREW J. HILL, of Mechanicsville, in the county of Saratoga and State of New York, have invented a new and useful Improvement in Propellers, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in propellers, and has for its object to provide a means whereby the blades of a propeller may be changed to any desired angle or pitch required without stoppage of the engine.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a central vertical section through my improved device; Fig. 2, a transverse section on line *x x* of Fig. 1, and Fig. 3 is a perspective view of a geared sleeve employed in the construction of the device.

In carrying the invention into effect, A represents the main or driving shaft of an engine, to the outer end of which a hub, A', is secured, carrying four or more propelling blades or flukes, B. The shank of each blade projecting down through the hub is provided therein with an integral bevel-gear, B', as shown in Fig. 1.

A sleeve, D, is mounted upon the shaft A, having produced upon its forward end a bevel-gear, *d*, the said end being adapted to extend and revolve within the hub A', engaging therein the bevel-gears B'. Collars *d'* are formed upon said sleeve D at each side of the hull of the vessel, through which it passes, and upon the periphery of said sleeve, at the inner end, four integral pins, *d*², are provided, as illustrated in Fig. 3.

A second or reversing sleeve, E, is mounted upon the shaft and sleeve D, provided with four cam-slots, E', at one end and a wide interior collar, *e*, at the other end, together with an exterior collar, *e'*, in alignment with said interior collar, yet slightly removed from the end. The sleeve E is so mounted as that the cam-slots E' receive the pins *d*² upon the sleeve D, and the interior collar, *e*, which is provided with a series of longitudinal grooves, is made

to engage a series of splines, F, formed longitudinally the shaft, whereby the shaft and reversing sleeve E are substantially integral.

The exterior collar, *e'*, is engaged by an interiorly-grooved ring, H, having trunnions *h*, integral with the periphery upon opposing sides, as illustrated in Fig. 2, which trunnions are journaled in the U-shaped lower end of a lever, H', fulcrumed upon a pillow-block, *h'*, secured at the bottom of the boat.

To the upwardly-extending arm *h*² of the lever H' a rod, *h*³, is pivoted, adapted to extend back to the engine-room or other convenient place, when it may be operated by hand or steam power.

In operation, while the propellers are revolving a movement of the lever and strap will also move the sleeve E, which, acting upon the sleeve D, will revolve the gears B', and thereby turn the flukes B to the desired angle or pitch.

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

1. The combination, with the shaft A, the hub A', and revoluble propeller-blades B, having gears B' on their inner ends within the hub, of a sleeve, D, mounted loosely upon said shaft, carrying a gear, *d*, upon the inner end, adapted to mesh with said gear B', the adjusting-sleeve E, the lever H, connected with said sleeve, and means for manipulating the sleeve D through the adjusting-sleeve E from said lever, substantially as shown and described, and for the purpose herein set forth.

2. The combination, with the shaft A, the hub A', and revoluble propeller-blades B, having gear B' attached thereto within the hub, of the sleeve D, mounted loosely upon the said shaft, carrying a gear, *d*, upon the inner end and pins *d*² upon the outer end, a sleeve, E, splined to said shaft, having cam-slots E', adapted to engage said pins, a grooved ring, H, engaging said sleeve E, the lever H', fulcrumed in a pillow-block, and means for operating said lever, substantially as shown and described.

WILLIAM J. STEVES.
ANDREW J. HILL.

Witnesses:

EDWARD H. SAWYER,
SIDNEY CRANE.