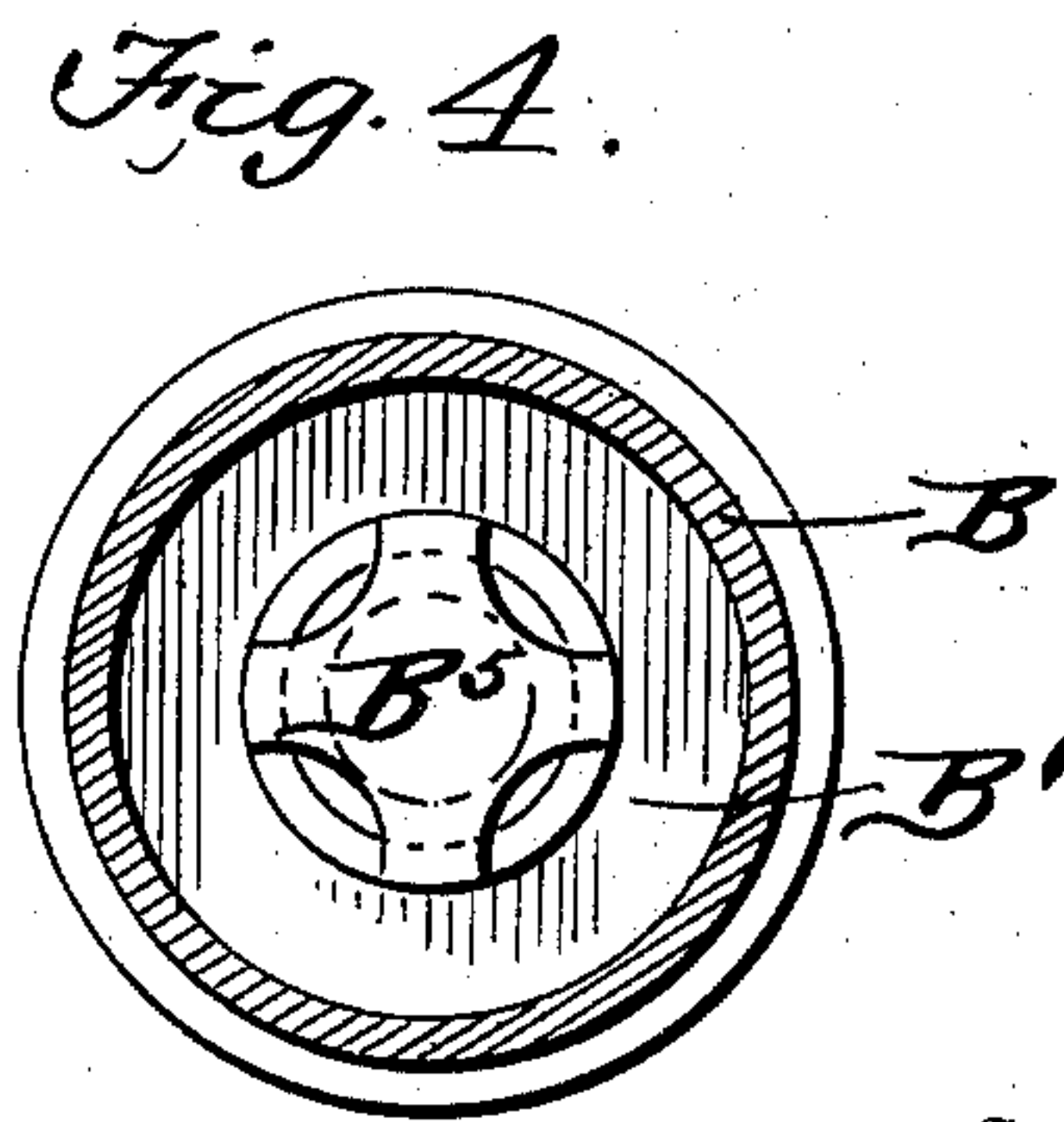
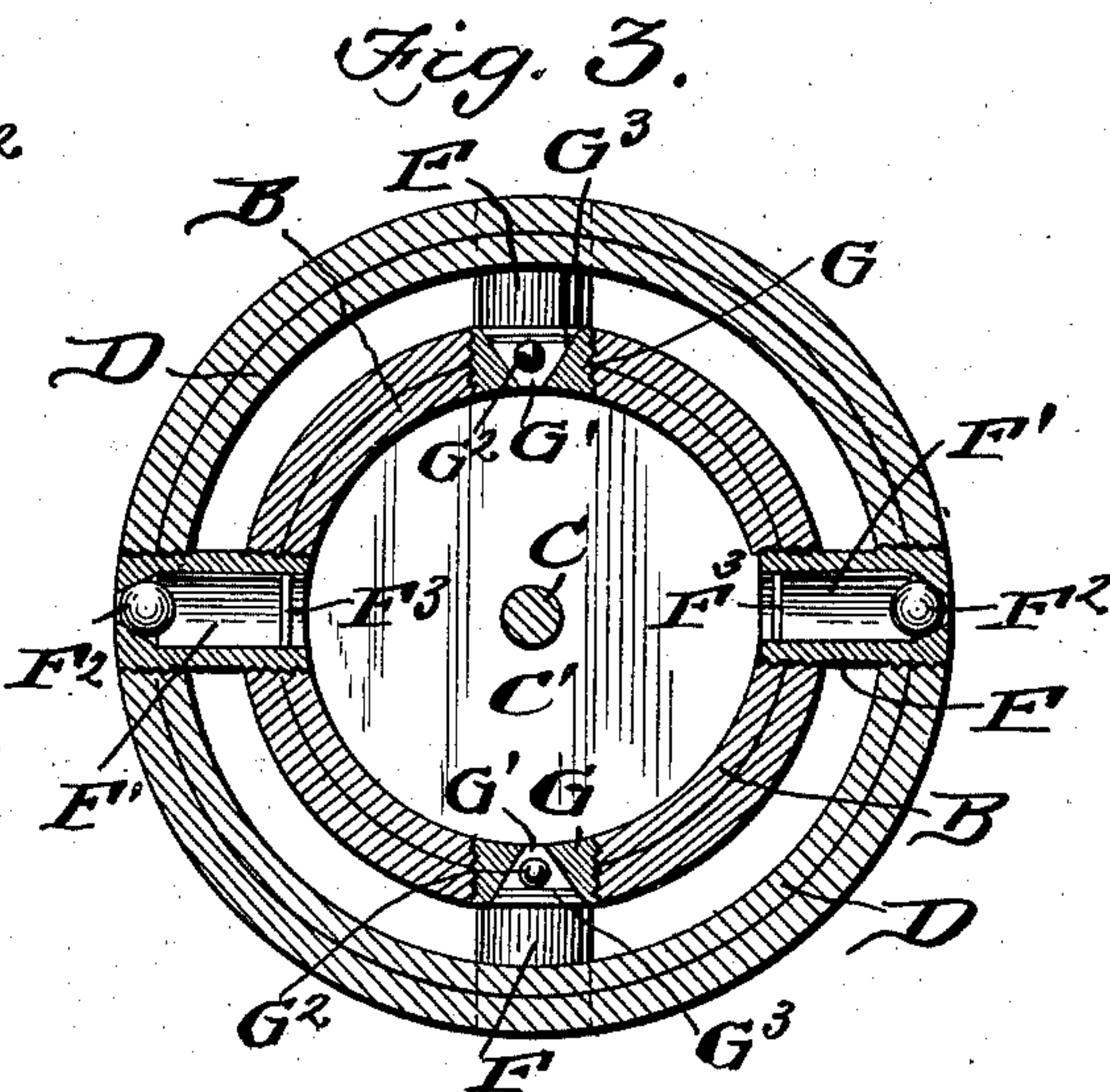
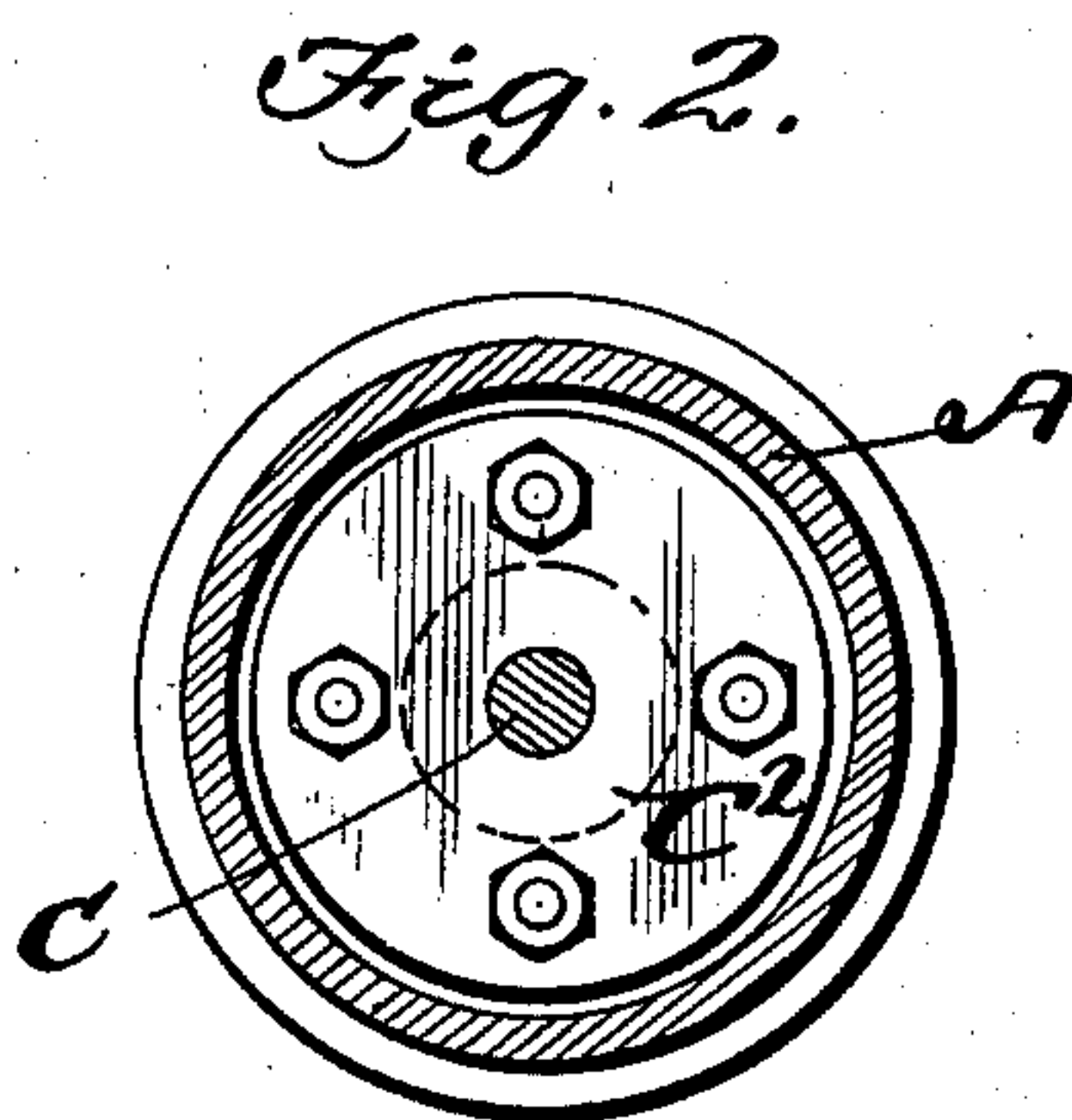
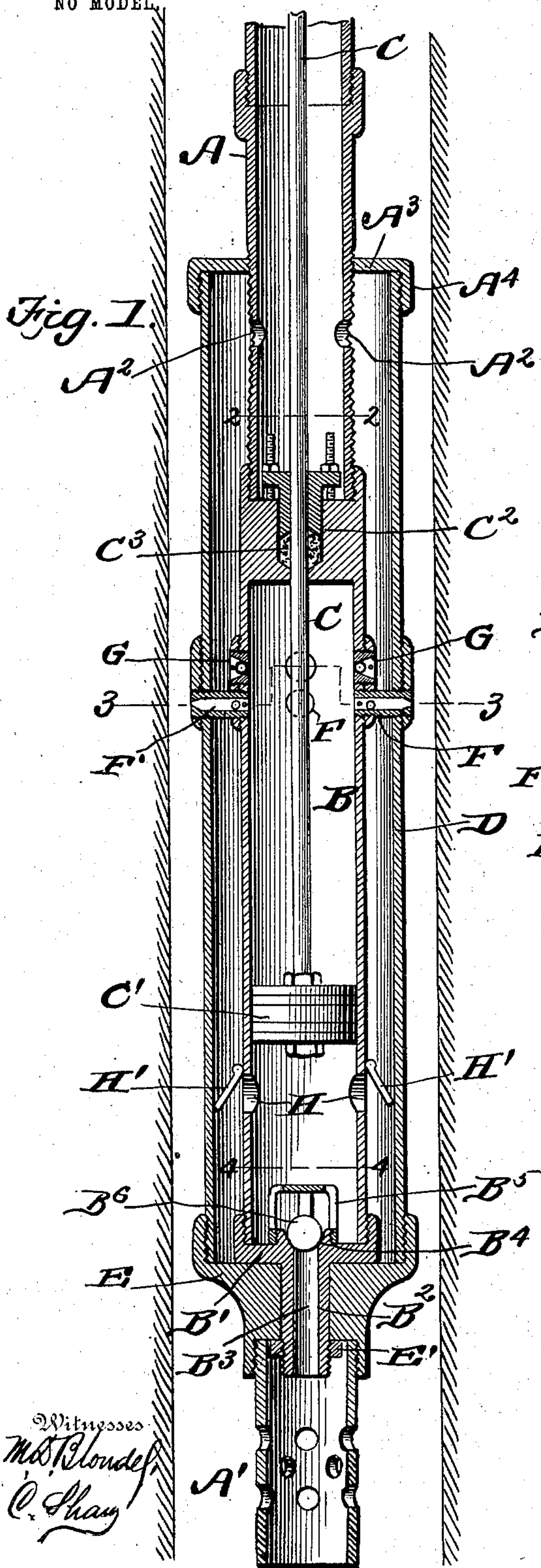


H. A. BOWER.
PUMP FOR DEEP WELLS.
APPLICATION FILED JAN. 24, 1903.

NO MODEL.



Inventor

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PUMP FOR DEEP WELLS.

SPECIFICATION forming part of Letters Patent No. 741,880, dated October 20, 1903.

Application filed January 24, 1903. Serial No. 140,379. (No model.)

To all whom it may concern:

Be it known that I, HERMAN A. BOWER, a citizen of the United States, residing at Findlay, in the county of Hancock and State of Ohio, have invented a new and useful Pump for Deep Wells, of which the following is a specification.

My invention relates to double-acting cylinder-pumps of the type employing solid piston-heads; and my object is to construct a pump of this general class especially adapted for use in deep wells; and the invention relates especially to the particular construction of the working barrel.

In the accompanying drawings, Figure 1 is a vertical section of my improved barrels, the piston and piston-rod being in elevation. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is an irregular section about on the line 3 3 of Fig. 1, and Fig. 4 is a sectional view on or about the line 4 4 of Fig. 1.

In the drawings above mentioned, A indicates sections of the usual delivery or discharge pipe, extending into the lower portion of the well B, while A' is a perforated anchor positioned in the bottom of the well. The lower portion of the lowest section A is exteriorly threaded and perforated at A². Threaded on this is a cap-piece arranged above the perforation A². Threaded on the lower end of the section A and terminating below the perforations A² is the piston-cylinder B. This cylinder is exteriorly threaded at its lower end, and on same is fitted a bottom cap-piece B', having a central depending stem B², having a central bore B³, the stem projecting into the upper part of the anchor A'. At the upper end of the bore B³ is formed a valve-seat B⁴, surrounded by a cage B⁵, in which is confined a ball-valve B⁶. A piston-rod C extends downward into the cylinder B and carries at its lower end a solid piston-head C'. A stuffing-box C² is arranged on the upper part of the cylinder, opening exterior of the cylinder to facilitate changing the packing material, and in this box is arranged the packing material C³, surrounding the piston-rod C.

The cylinder B is surrounded by the cylindrical working barrel D, which, with the cylinder, forms outer and inner barrels, respec-

tively. The barrel D is exteriorly threaded at each end and at the upper end is threaded into the cap A³, engaging the threads on the flange A⁴. At its lower end it is threaded into the upwardly-extending flanges of a block E, which has a downwardly-extending flange engaging the anchor A'. This block has a central bore through which passes the stem B² of the cap B', and a suitable nut E' surrounds the stem where it emerges from the lower end of the bore of the block E.

About midway the ends of the barrel both barrel D and cylinder B have threaded perforations arranged ninety degrees apart and in the same plane, those of the barrel D being in alinement with those in the cylinder B. In these perforations are secured cylindrical plugs F, their outer ends fitting in the barrel D and their inner ends fitting in the cylinder B, and through these plugs are formed valve-passages F', leading from the well A direct to the interior of the cylinder B, their outer ends being contracted. A ball F² is located in each passage and adapted to seat itself in the contracted portion closing the passage and is prevented by a bar F³ from rolling into the cylinder B.

Just above the valve-passages F' the cylinder B has plugs G threaded into it, having a passage G', formed with a valve-seat adjacent its inner end and containing a ball G², held by a bar G³ from entering the barrel D.

In the lower portion of the cylinder are two apertures H, diametrically opposite each other and closed by outwardly-opening flap-valves H'.

The operation of my pump is as follows: The working barrel being submerged beneath the level of the water and the piston being in the upper end of the piston-chamber, it is readily seen that the cylinder B will be filled with water. On the downstroke of the piston the ball B⁶ will be forced to its seat, the valves H' will be opened, and the water below the piston will be forced into the barrel and then up through the openings A² into the delivery-pipe. As the downstroke commences the suction will draw the balls F² from their seats and water from the well will pass into the cylinder B in the rear of the descending piston. As soon as the upstroke

commences the ball B^6 will rise, the balls F^2 will be seated, and the balls G^3 will be unseated, and the water above the piston will be forced out through the passages G' into the barrel and through the passages A^2 into the delivery. During the upstroke the valves H' will drop by reason of gravity, the weight of the water in the barrel balancing the outward pressure of the incoming water through the bore B^3 .

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

1. A double-acting pump, comprising outer and inner barrels, a piston working in the inner barrel, a delivery-pipe having communication with the outer barrel, the inner barrel having a valve-controlled passage at its lower end, and having valve-controlled openings adjacent each end effecting communication between the two barrels, and plugs passing through the walls of each barrel intermediate said openings, said plugs having valve-controlled passages opening into the inner barrel and exterior of the outer barrel.

2. A double-acting pump comprising inner and outer barrels, threaded perforations in the walls of each barrel, the perforations in

one barrel alining with those of the other, plugs threaded into said perforations the inner ends of the plugs fitting into the perforations of the inner barrel and their outer ends fitting into the perforations of the outer barrel, said plugs having a valved passage therein, valve-seats adjacent their outer ends, balls adapted to fit in said seats and bars arranged transversely across the passages and adapted to limit the movement of the balls.

3. A double-acting pump comprising outer and inner barrels, a piston in the inner barrel, plugs connecting the barrels intermediate their ends, and having a valve-controlled passage-way communicating with the interior of the inner barrel and the exterior of the outer barrel, plugs having valve-controlled passages in the walls of the inner barrel opening into the outer barrel adjacent the upper end of the inner barrel, the said inner barrel having apertures adjacent its lower end effecting communication between the inner and outer barrels, and flap-valves controlling said apertures.

HERMAN A. BOWER.

Witnesses:

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