

E. E. HAUER.

ROTARY MOTOR.

APPLICATION FILED OCT. 15, 1909.

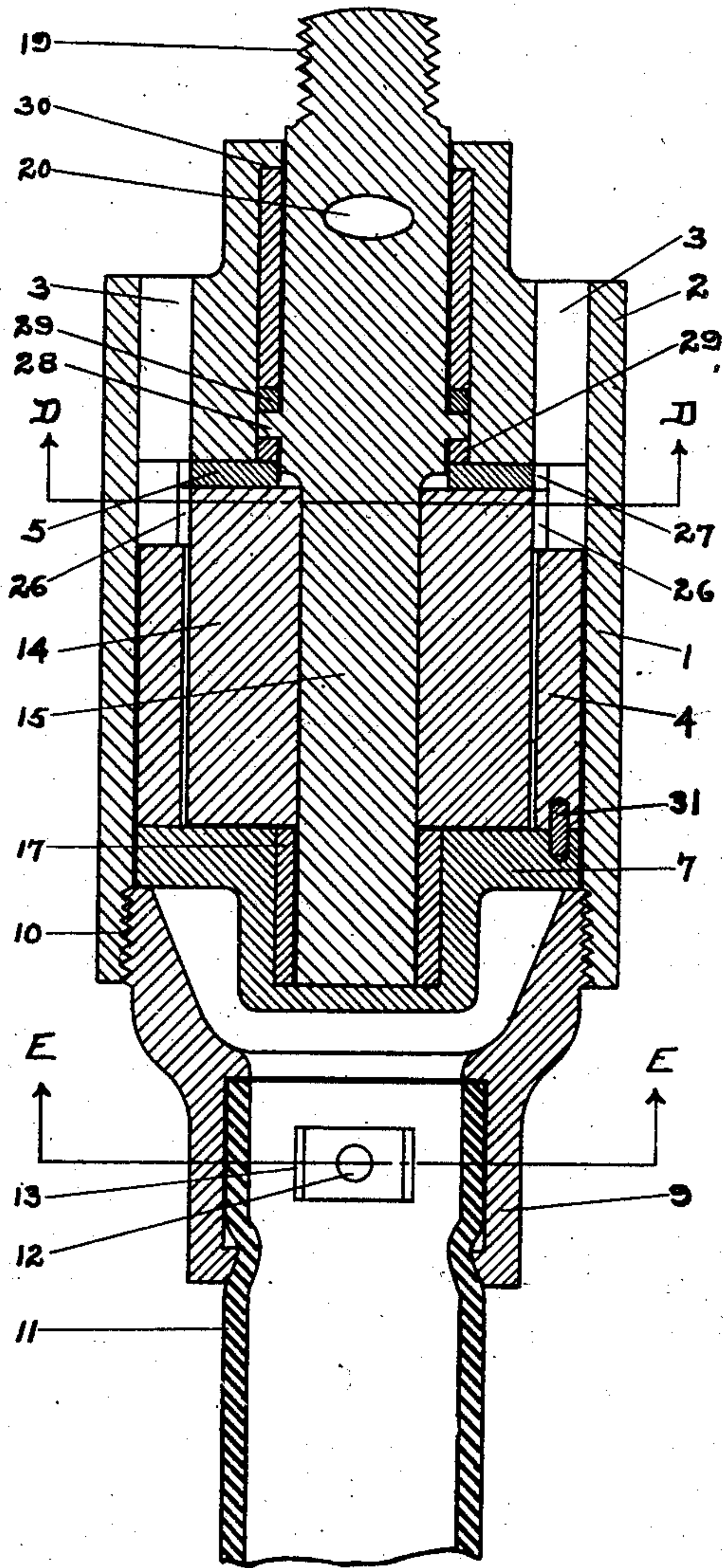
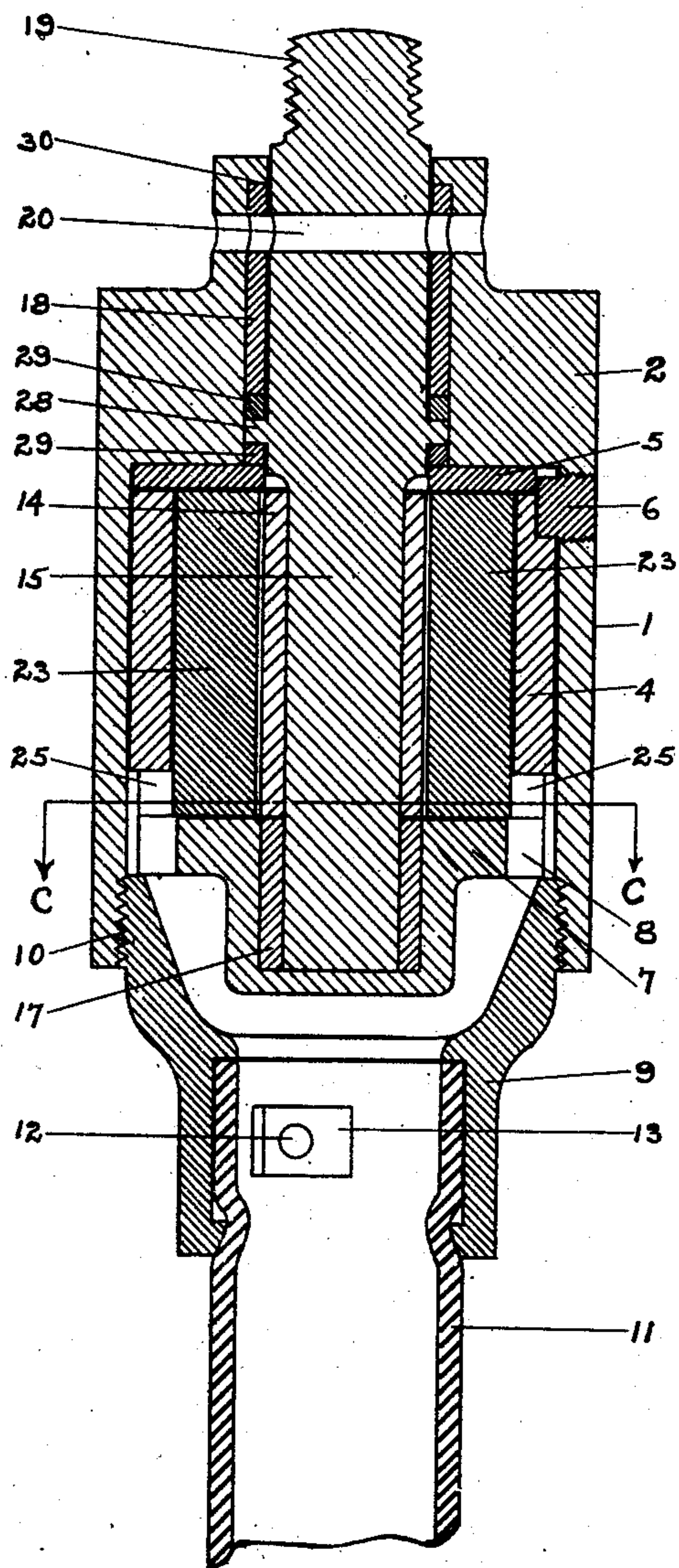
994,391.

Patented June 6, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

Fig. 2.



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Witnesses

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2 SHEETS-SHEET 2.

FIG. 3.

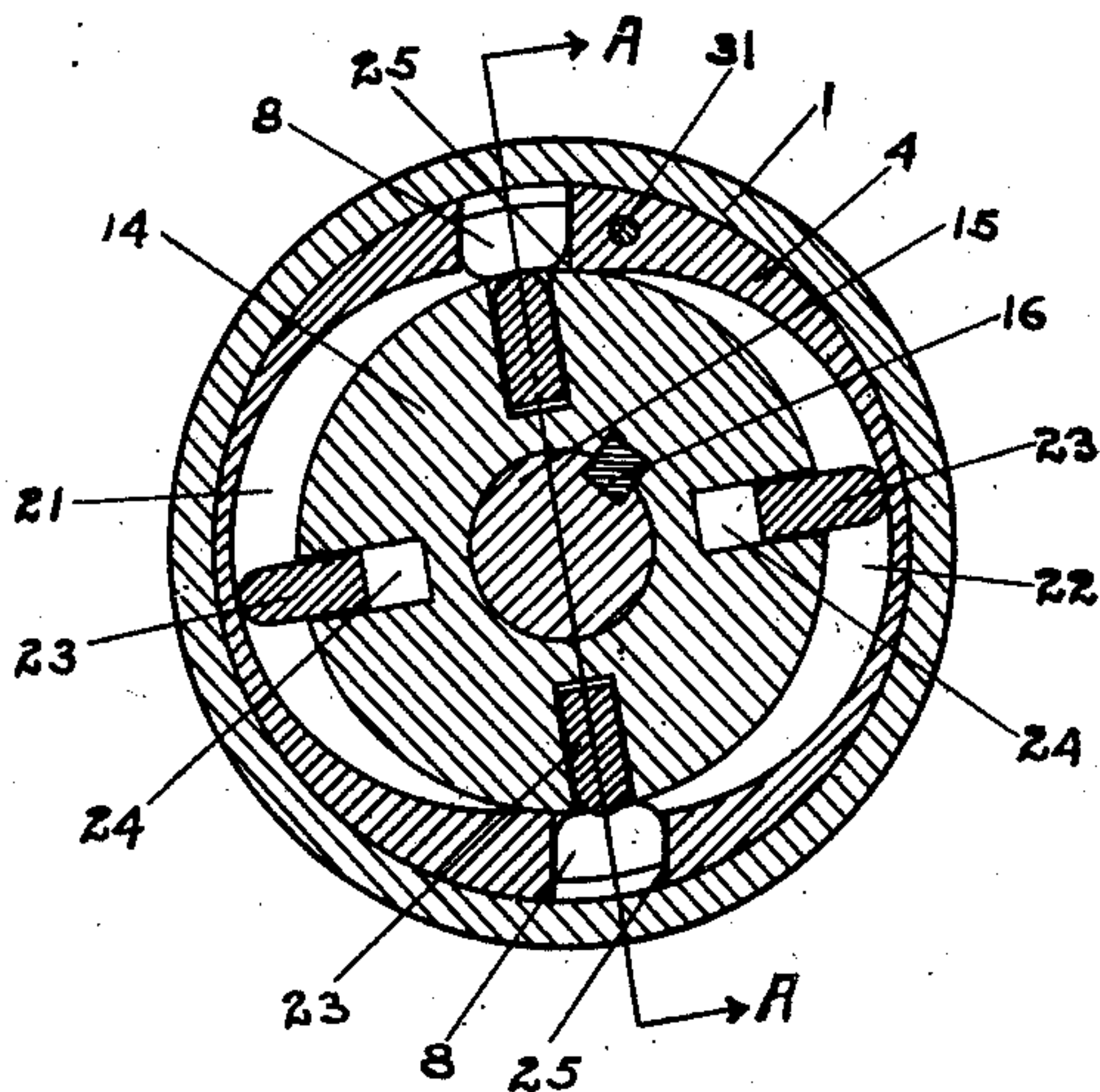


FIG. 4.

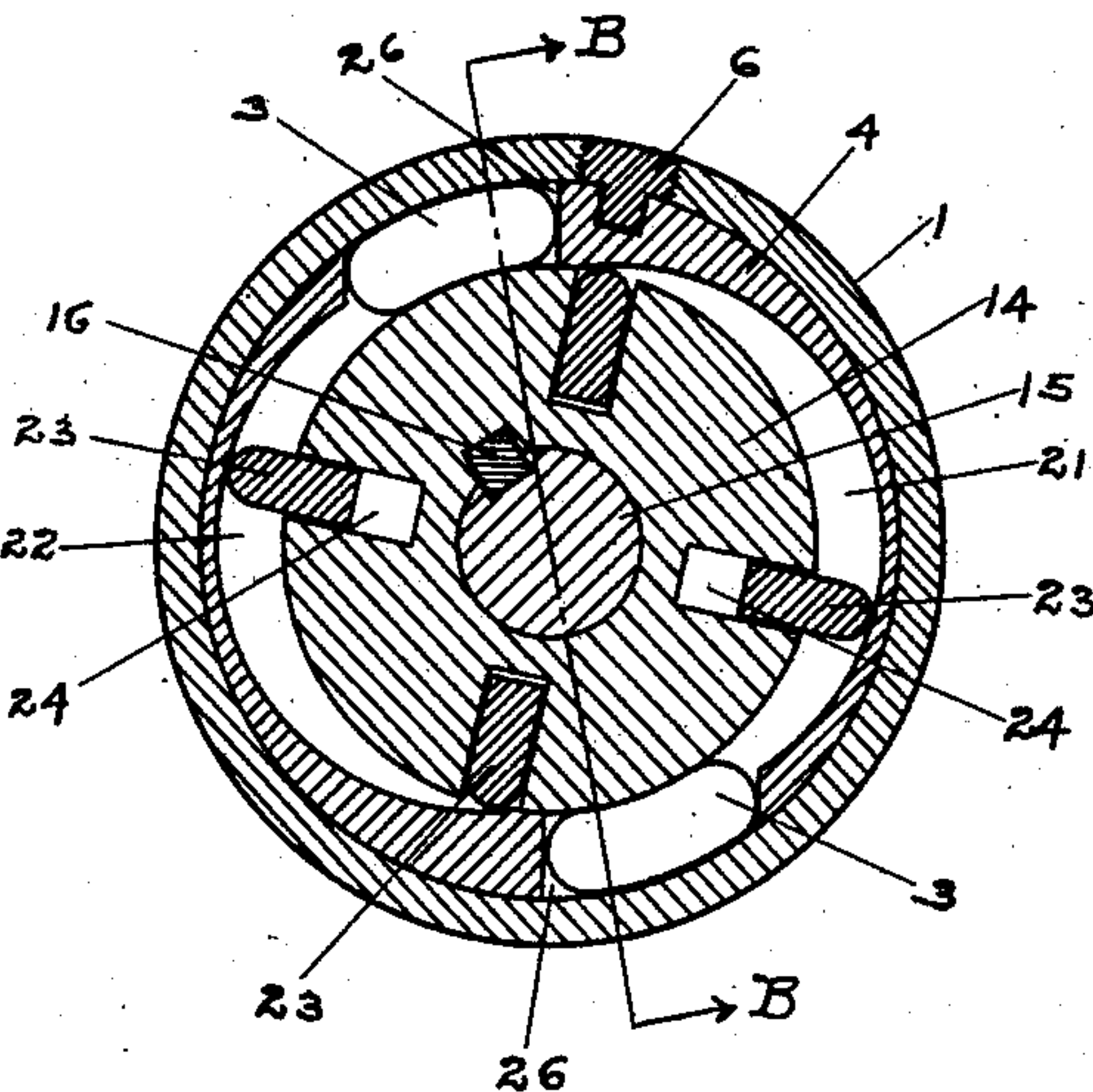
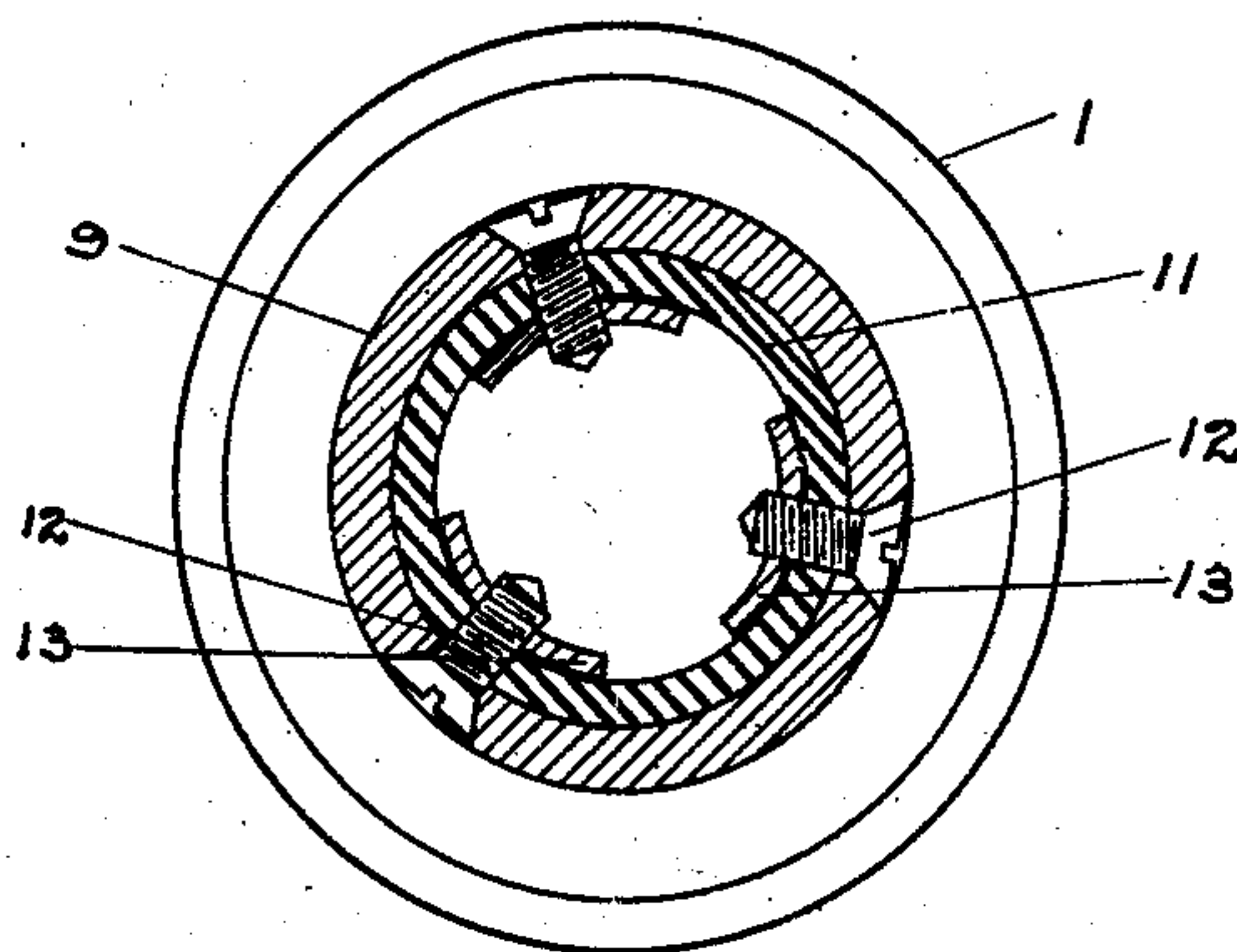


FIG. 5.



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UNITED STATES PATENT OFFICE.

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ROTARY MOTOR.

994,391.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed October 15, 1909. Serial No. 522,892.

To all whom it may concern:

Be it known that I, ELMER E. HAUER, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Rotary Motors, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to rotary motors and more particularly to motors operated by air or steam or like actuating medium.

15 The object of my invention is to provide a simple, strong, durable and efficient motor for driving tube cleaners although it may be used for other purposes.

20 With this and other objects in view my invention consists of the constructions and combinations hereinafter described and set forth in the claims.

25 In the accompanying drawings Figure 1 is a longitudinal section of a motor embodying my invention taken on the line A A of Fig. 3 through the inlet ports, Fig. 2 is a longitudinal section of the motor taken on the line B B of Fig. 4 through the exhaust ports, Fig. 3 is a cross section on the line C C of Fig. 1, Fig. 4 is cross section on the line D D of Fig. 2, and Fig. 5 is cross section on the line E E of Fig. 2.

30 Like numerals represent the same parts in the several views.

35 In the drawings 1 represents a cylinder with a head 2 preferably formed integrally therewith having exhaust openings 3. A sleeve 4 and a wearing plate 5 are held from turning in said cylinder by a screw plug 6, and a removable head 7 having inlet ports 8, is seated against the sleeve 4 and held in place by a hose coupling screw-threaded into the cylinder at 10, as particularly shown in Fig. 1. The feed hose 11 is shown secured to the coupling by screws 12 extending through perforations in the wall of the coupling and hose and engaging segments 13.

45 A rotary piston 14 is mounted on a shaft 15 and secured thereto by a key 16, said shaft being journaled at its rear end in the head 7, a bushing 17 being preferably provided to form a bearing therefor, said shaft has an enlarged portion projecting forwardly through the head 2 and journaled therein, a bushing 18 being preferably provided to form a bearing therefor; and the

front end 19 of the shaft is screw-threaded to attach a tool to be driven. An opening 20 through the head 2, bushing 17 and shaft 15 is provided to insert a bar to hold the shaft stationary while the tool to be driven is being attached.

60 The sleeve 4 forms a chamber of such dimensions that when the piston 14 is mounted therein it will contact the walls of the chamber in two places opposite each other forming two oppositely disposed crescent shaped chambers 21 and 22 as particularly shown in Figs. 3 and 4. Paddles 23 are seated in recesses 24 of the piston and are adapted to move radially into the chambers 21 and 22 in a well known manner. Said sleeve is formed with inlet recesses 25 held in register with the inlet ports 8 of the head 7, by a dowel pin 31, the cylinder 1 forming the outer walls of said inlets; and said sleeve is further provided with exhaust recesses 26 adapted to register with exhaust ports 27 in the wearing plate 5, the cylinder 1 forming the outer walls of said exhaust openings, said openings also registering with the exhaust openings 3 of the head 2.

75 A thrust collar 28 on the shaft 15, preferably provided with spacing rings 29 on each side thereof, is located between the head 2 and wearing plate 5; and the bushing 17 is preferably interposed between said collar and a shoulder 30 in said head.

80 It will be seen that by the use of the opening 20 to hold the shaft while the tool to be driven is being attached, and further by the use of a coupling in which the end of the feed hose is directly secured, the device is shortened and better adapted for use in bent tubes.

85 The operation of the motor will be readily understood; the actuating medium being introduced through the inlet openings 8 and 25, moves the paddles through the chambers and discharges through the exhaust openings 26 and 27 and escapes through the openings 3 of the exhaust head, the paddles successively operating through each of the chambers in like manner to rotate the piston.

90 By providing a sleeve, the piston chamber with its inlet and exhaust openings can be more easily and accurately formed and hardened to receive the wear of the piston paddles and being removable can be readily renewed at the minimum of expense.

110

Having thus described my invention, I claim:

1. In a rotary motor, a cylinder having an exhaust head with a central opening forming a bearing therein, a rotary piston having a shaft projecting through said bearing and adapted to attach the tool to be driven, said head and shaft having transverse openings adapted to register with each other, substantially as described.

2. In a rotary motor, a cylinder having an exhaust head with a central opening having an inwardly extending flange at its outer end, a rotary piston having a shaft projecting through said opening and adapted to attach the tool to be driven, a collar on said shaft, a bushing in said opening between said flange and collar forming a bearing for said shaft adapted to take the end thrust in one direction, means to take the thrust in the opposite direction and transverse openings through said shaft, head and bushing adapted to register with each other, substantially as described.

3. In a rotary motor, a cylinder having a head at one end thereof with a port there-through, a ported plate abutting said head, a sleeve in said cylinder forming a piston chamber and having a recess at one end

thereof adapted with said cylinder to form a port to said piston chamber and a screw-plug in said cylinder engaging said plate and sleeve to hold the ports of said sleeve, plate and head in register, substantially as described.

4. In a rotary motor, a cylinder having inlet and exhaust heads, a sleeve in said cylinder forming a piston chamber and having recesses in the respective ends thereof adapted with said cylinder to form ports to said piston chamber, a ported plate between said sleeve and exhaust head, a screw-plug in said cylinder adapted to engage said sleeve and plate to hold the ports of said sleeve, plate and exhaust head in register, said inlet head being removably seated against said sleeve and a supply coupling screw-threaded to said cylinder against said inlet head, said supply coupling having an opening into which the feed hose projects and means to secure it therein, substantially as described.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

ELMER E. HAUER.

Witnesses:

GROVER ILGEN,

ROBT. C. RODGERS.