

No. 819,470.

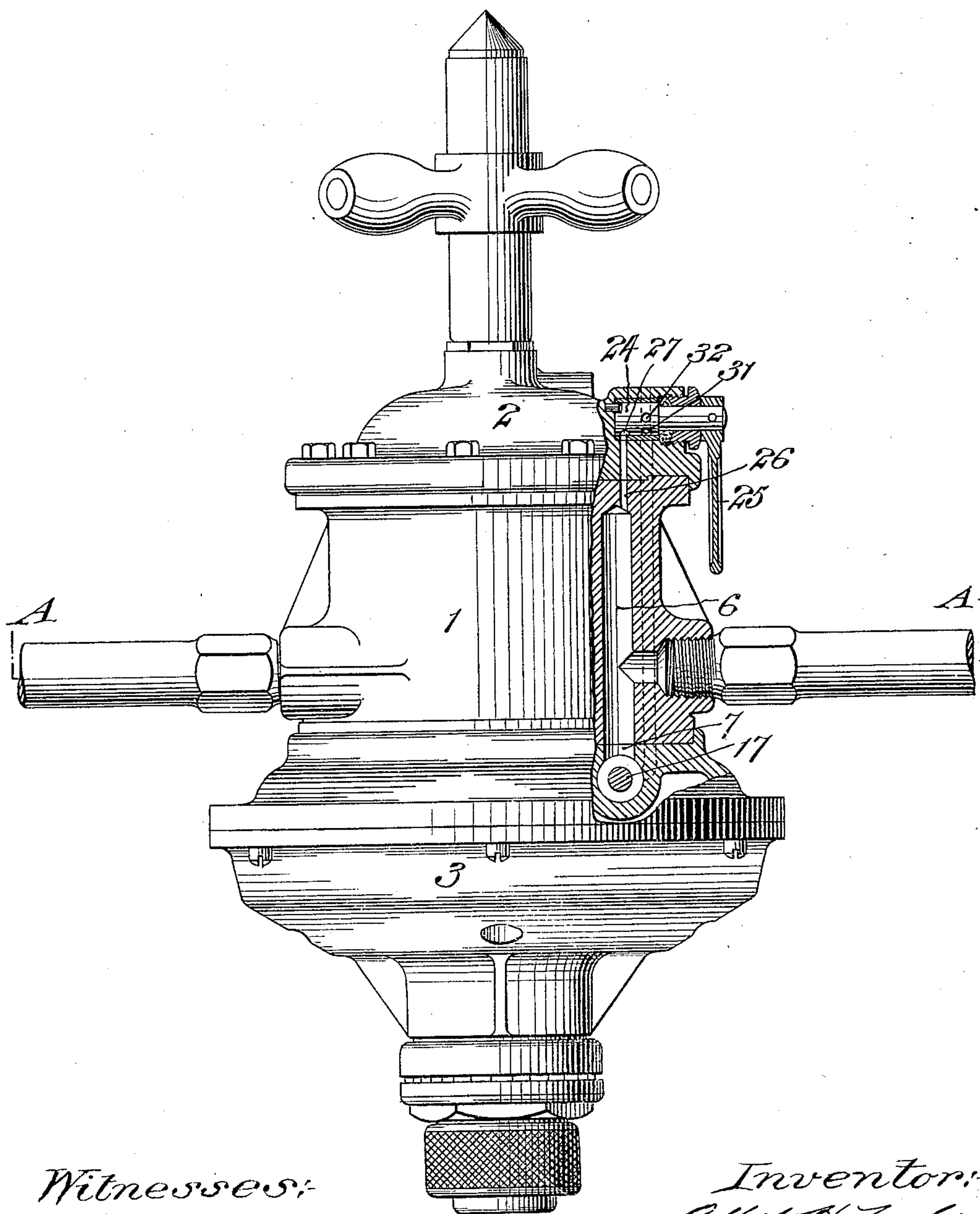
PATENTED MAY 1, 1906.

A. H. TAYLOR.
REVERSING MECHANISM FOR ROTARY MOTORS.

APPLICATION FILED AUG. 1, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
J. George Barry,
Newry Thieme

Inventor:
Albert H. Taylor
by attorneys
Brown & Seward

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Fig. 2.

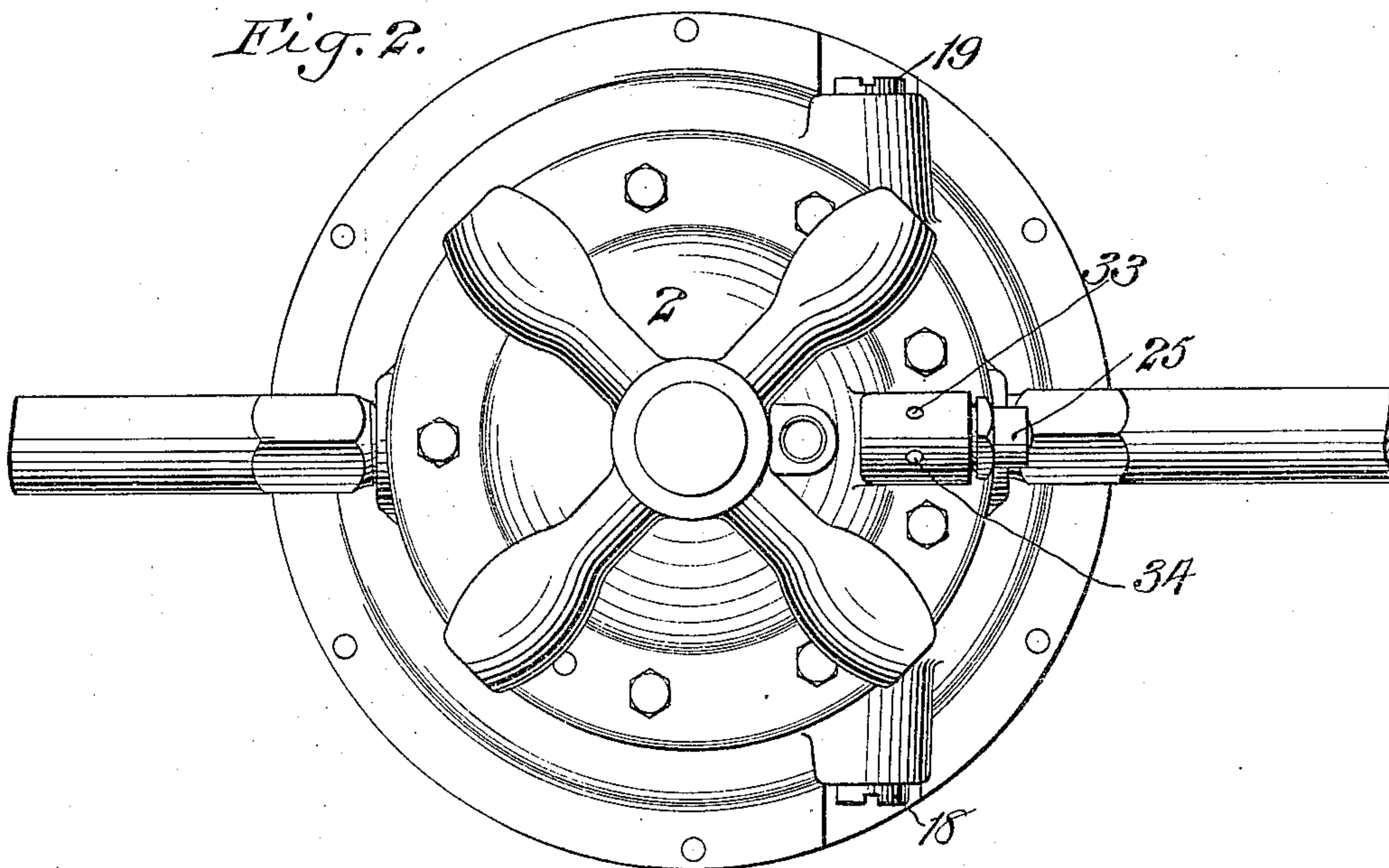


Fig. 3.

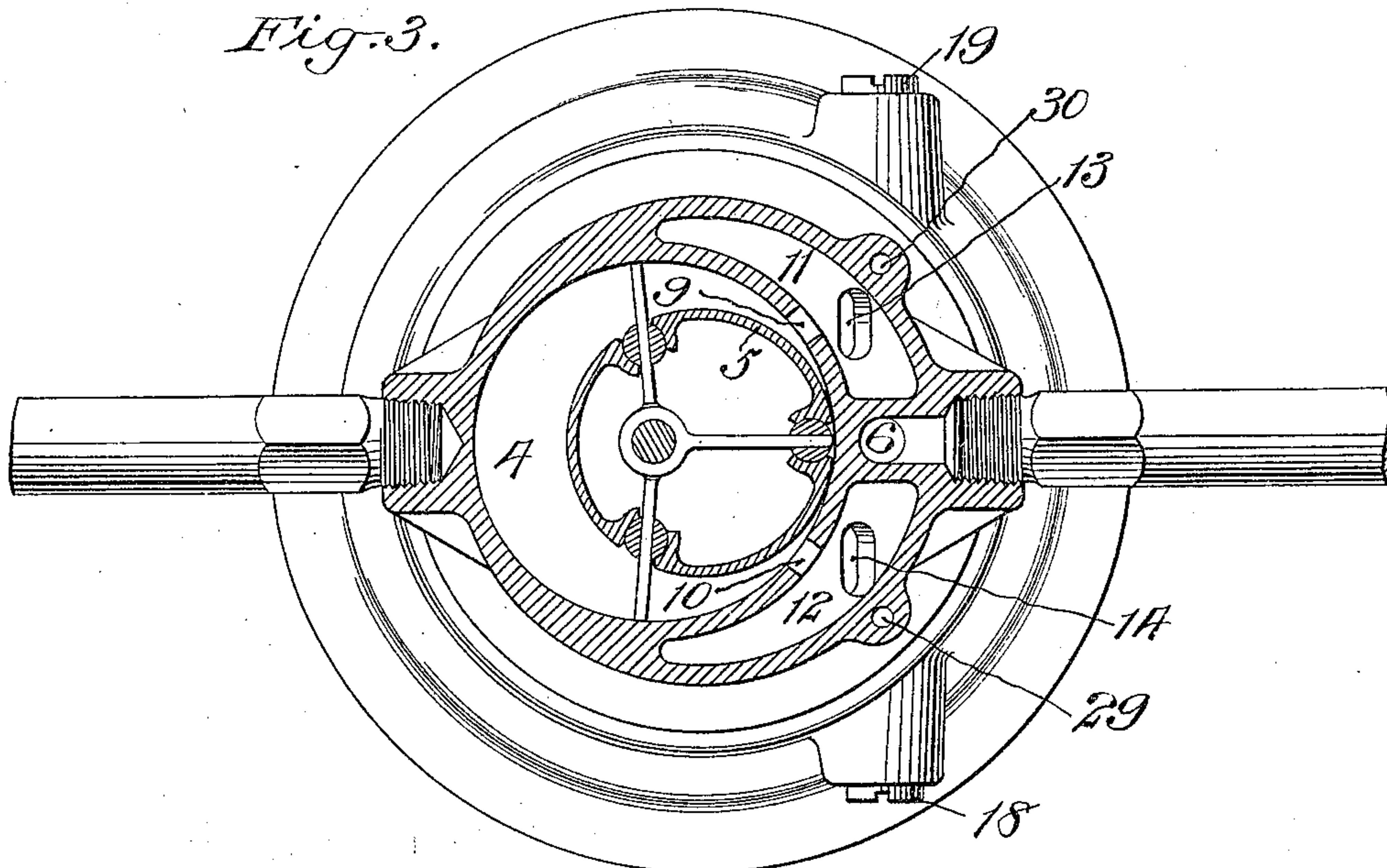
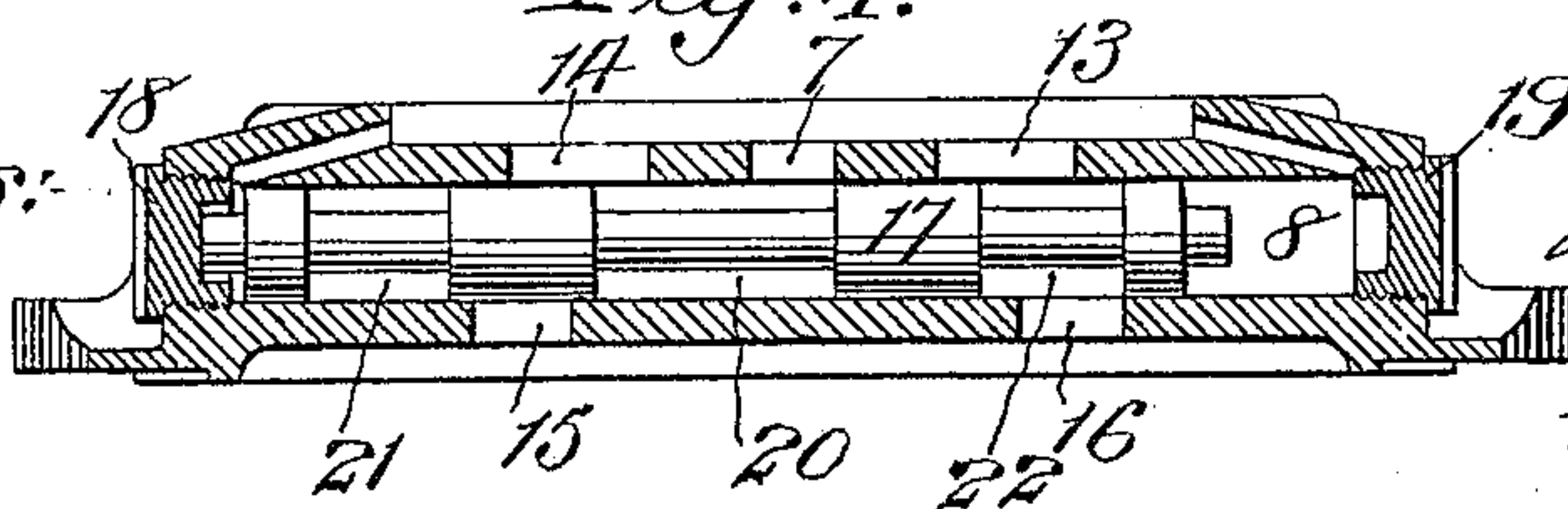


Fig. 4.



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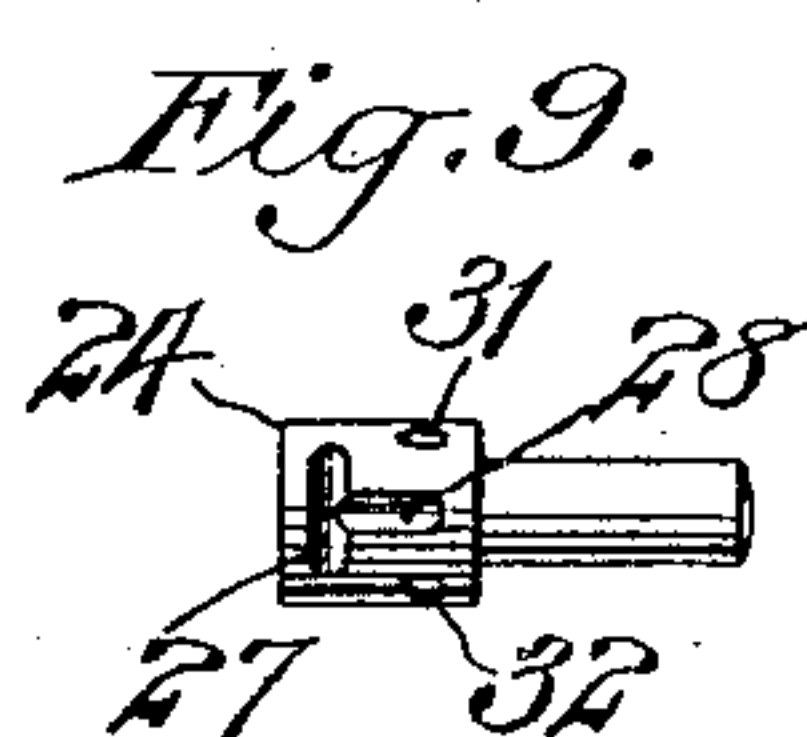
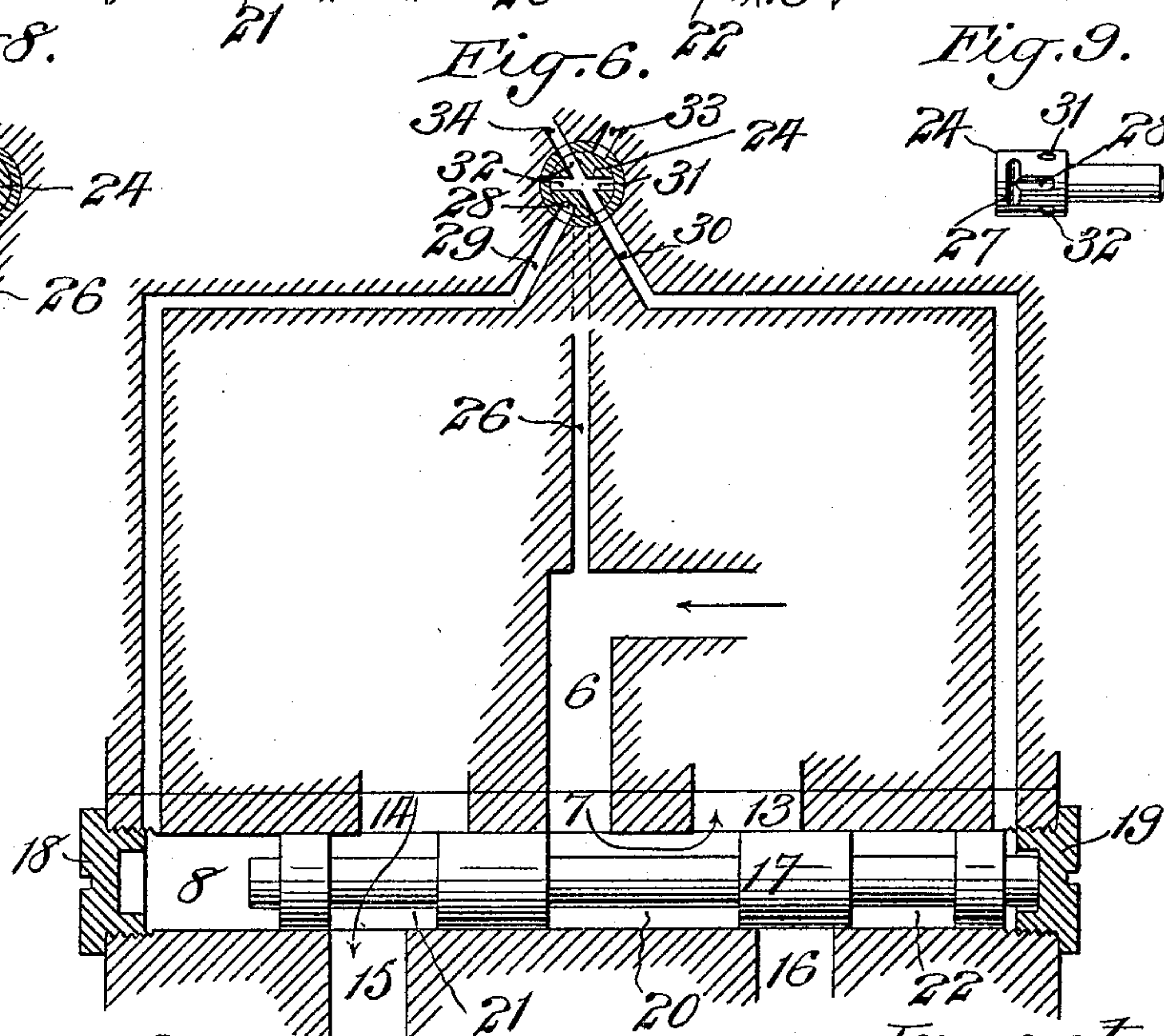
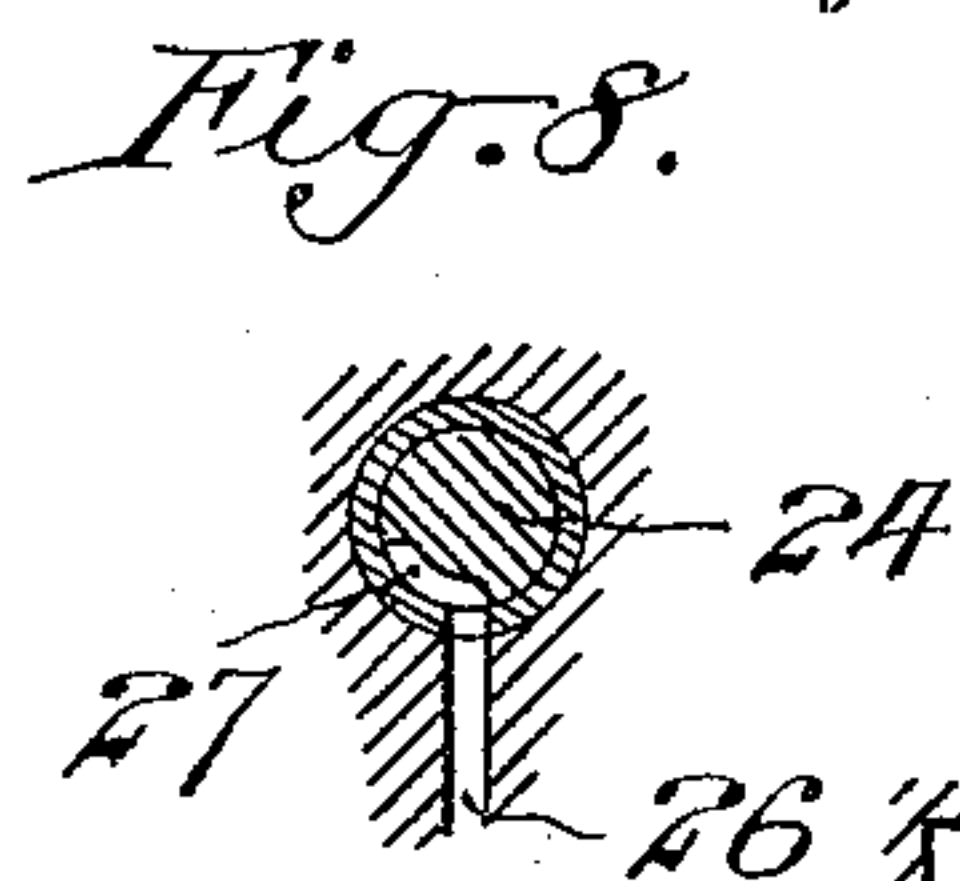
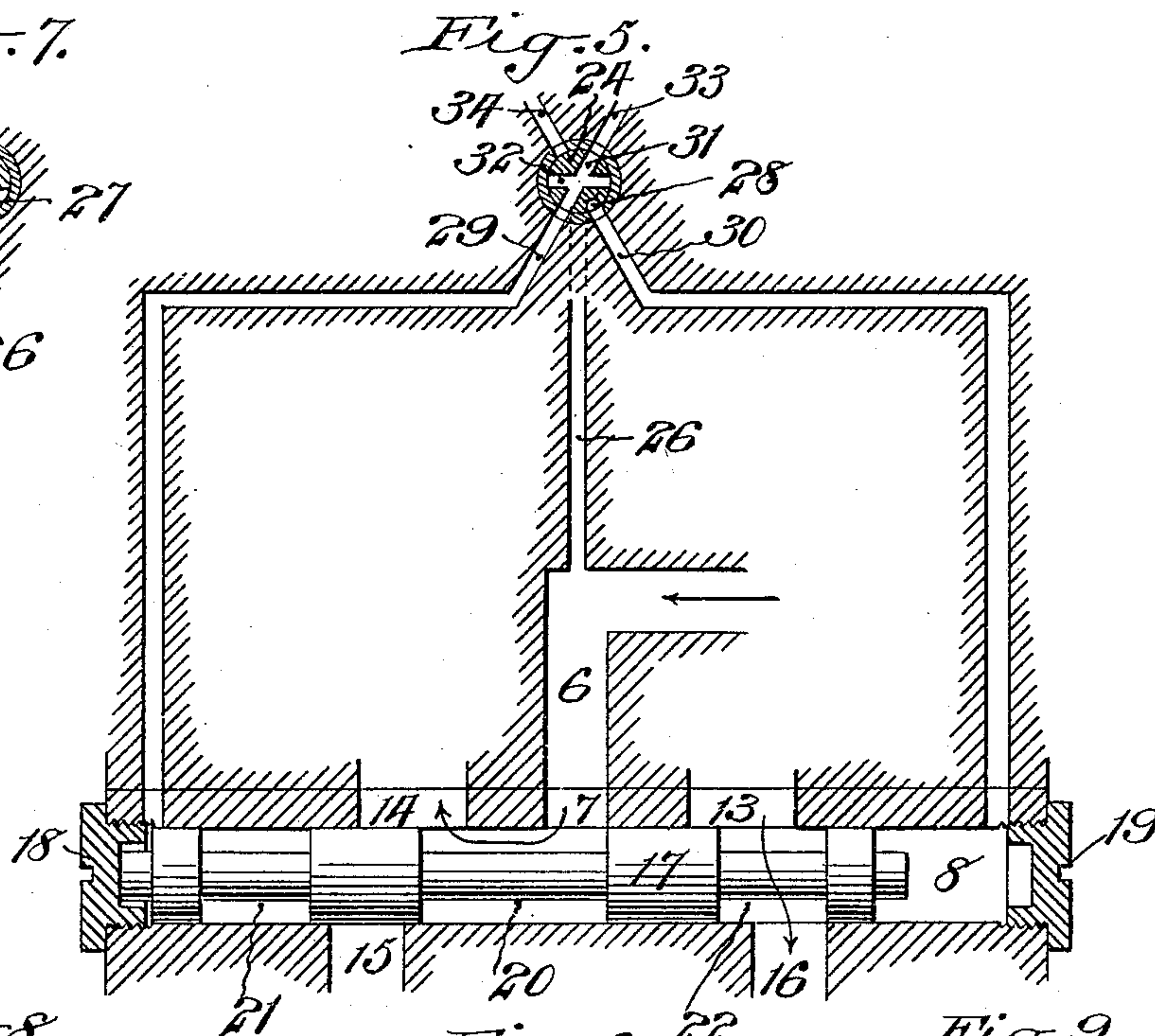
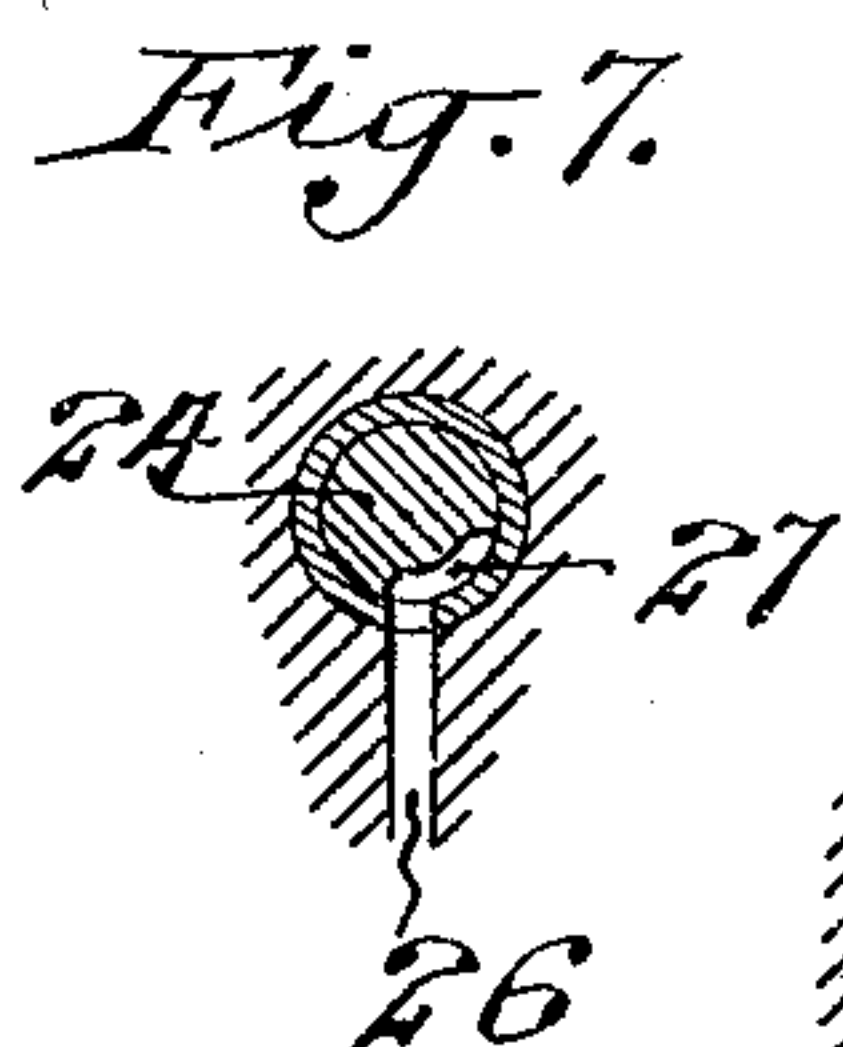
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3 SHEETS—SHEET 3.



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J. George Barry,
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UNITED STATES PATENT OFFICE

ALBERT H. TAYLOR, OF EASTON, PENNSYLVANIA, ASSIGNOR TO THE
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REVERSING MECHANISM FOR ROTARY MOTORS.

No. 819,470.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed August 1, 1905. Serial No. 272,172.

To all whom it may concern:

Be it known that I, ALBERT H. TAYLOR, a citizen of the United States, and a resident of Easton, in the county of Northampton and State of Pennsylvania, have invented a new and useful Improvement in Reversing Mechanism for Rotary Motors, of which the following is a specification.

The object of my invention is to provide certain improvements in reversing mechanism for rotary motors in which the movements of the reversing-valve are controlled by a manually-operated auxiliary valve, the reversing-valve being located in one cylinder-head and the auxiliary valve in the other cylinder-head of the motor.

A further object is to provide a device of the above character in which the reversing-valve is moved in both directions by pressure and is held at the limits of its movement in the one or the other direction, according to the position of the auxiliary valve.

This invention is shown herein as applied to a pneumatic motor of the rotary-piston type adapted for use as a drill.

A practical embodiment of the invention is represented in the accompanying drawings, in which—

Figure 1 represents in side elevation, partially in section, a rotary pneumatic motor embodying my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a horizontal section taken in the plane of the line A A of Fig. 1. Fig. 4 is a section taken through the lower cylinder-head in the plane of the reversing-valve. Fig. 5 is a diagrammatic view showing the positions which the parts assume when the motor is running in one direction. Fig. 6 is a similar view showing the positions which the parts assume when the motor is running in the opposite direction. Fig. 7 is a detail view showing a section through the auxiliary valve in the plane of the passage leading from the fluid-pressure-inlet passage, the valve being in the position represented in Fig. 5. Fig. 8 is a similar section, the valve being in the position shown in Fig. 6; and Fig. 9 is a detail face view of the auxiliary valve to more clearly show the T-port.

The body of the pneumatic motor of the rotary-piston type in connection with which this invention is shown is denoted by 1, its

upper cylinder-head by 2, and its lower cylinder-head by 3. The piston-chamber is denoted by 4, and a piston 5 of any well-known or approved form is mounted eccentrically therein. The passage for admitting the supply of motive fluid to the motor is denoted by 6. This passage is shown as disposed vertically in the wall of the body of the motor and is provided with a port 7, opening into the reversing-valve chamber 8 in the lower cylinder-head 3 of the motor.

Communication is established between the reversing-valve chamber 8 and the piston-chamber 4 upon opposite sides of the contact-point of the piston with the wall of the chamber by means of ports 9 and 10 through the walls of the piston-chamber, which open into separated passages 11 and 12 in the body of the motor, and ports 13 and 14, which open from the said separated passages into the reversing-valve chamber 8.

Exhaust-ports 15 and 16 open from the reversing-valve chamber to the exterior atmosphere.

The reversing-valve, which is mounted in the chamber 8, is denoted by 17. It is preferably confined in the chamber between two removable screw-caps 18 19, which close the opposite ends of the chamber 8. This valve 17 is provided with three ports 20 21 22, which are formed in the present instance by providing the valve with reduced diameters. The port 20 is arranged to open the port 7 of the fluid-inlet to the port 13, communicating with one side of the piston 4, when the valve is at the limit of its movement in one direction and arranged to open the port 7 to the port 14, communicating with the other side of the piston-chamber 4, when the valve is at the limit of its movement in the other direction. When the ports 7 and 13 are in open communication, the port 14 is in open communication with the exhaust-port 15 through the valve-port 21, and when the ports 7 and 14 are in open communication the port 13 is in open communication with the exhaust-port 16 through the valve-port 22.

The means which I have shown for supplying pressure alternately upon opposite ends of the reversing-valve 17 for moving it in a direction to permit the motor to be driven in the one or the other direction is constructed and arranged as follows: A manually-oper-

ated auxiliary valve 24 is mounted in the upper head 2 of the motor, which valve is provided with a handle 25 exterior to the motor for use in operating the said valve. In the present instance this valve is shown as a rocking plug-valve. A passage 26 leads from the fluid-pressure-inlet passage 6 to the cross branch 27 of a port in the face of the auxiliary valve 24, the longitudinal branch 28 of which is arranged to be alternately brought into open communication with the one or the other of passages 29 and 30, according to the direction in which the valve is rocked. The passage 29 leads to the reversing-valve chamber 8 at one end of the valve, in the present instance adjacent to the cap 18, and the passage 30 leads to the valve-chamber 8 at the other end of the valve—as, for instance, adjacent to the cap 19. This auxiliary valve 24 is also provided with two through-ports 31 32, which are arranged to open communication from the one or the other of the passages 29 30 to their exhaust-ports 33 34, leading to the external atmosphere. These ports are so arranged that when the passage 26 is in communication with the passage 30 through the valve, as shown in Fig. 5, the passage 29 is in open communication with the external atmosphere through the valve-port 31 and exhaust-port 33, and when the passage 26 is in open communication with the passage 29, as shown in Fig. 6, the passage 30 is open to the external atmosphere through the valve-port 32 and exhaust-port 34.

It will thus be seen that when the auxiliary valve 24 is moved in a direction to admit fluid-pressure to one end of the reversing-valve—through the passage 30, for instance—the motor will be driven in one direction, because of the opening of the port 7 to the port 14 and the port 13 to the port 16. When it is desired to reverse the motor, the auxiliary valve is moved into position to open the fluid-pressure to the other end of the reversing-valve through the passage 29, at the same time relieving the pressure in the passage 30, and thus permitting the reversing-valve to be moved in position to open the port 7 to the port 13 and the port 14 to the exhaust-port 15.

It will be seen that the reversing-valve is positively held under pressure in either of its positions during the operation of its motor, and the use of springs for operating the valve in one direction is obviated. It will also be seen that by mounting the parts of the reversing mechanism in the cylinder-heads of the motor I am enabled to provide a very simple and convenient arrangement without the necessity of producing a complicated motor-cylinder, the parts of the mechanism at the same time being readily accessible.

While I have shown this mechanism in connection with a pneumatic motor of the ro-

tary-piston type for use as a drill, it is to be understood that I do not wish to limit myself to this construction; but

What I claim as my invention is—

1. The combination with the cylinder and cylinder-heads of a rotary motor and means for supplying motive fluid thereto, of a reversing-valve located in one head and a manually-operated auxiliary valve located in the other head arranged to control the admission of the motive fluid to either side of the reversing-valve to move it in the one or the other direction at pleasure.

2. The combination with the cylinder and cylinder-heads of a rotary motor and means for supplying motive fluid thereto, of a reversing-valve located entirely in one of the cylinder-heads and means for controlling the admission of the motive fluid to either side of the reversing-valve to move it in the one or the other direction at pleasure.

3. A motor, means for supplying motive fluid thereto, a reversing-valve, a manually-operated auxiliary valve, a passage leading from the motive-fluid supply to the face of the auxiliary valve, passages leading from the face of the auxiliary valve to the opposite sides of the reversing-valve and a port in the auxiliary valve for opening the fluid-supply passage to the one or the other of the passages leading to the opposite sides of the reversing-valve.

4. A motor, means for supplying motive fluid thereto, a reversing-valve, a manually-operated auxiliary valve, a passage leading from the motive-fluid supply to the face of the auxiliary valve, passages leading from the face of the auxiliary valve to the opposite sides of the reversing-valve, passages leading from the face of the auxiliary valve to the external atmosphere and ports in the auxiliary valve arranged to alternately open communication from the fluid-pressure supply to one side of the reversing-valve and the other side of the reversing-valve to the external atmosphere.

5. The combination with the cylinder and cylinder-heads of a rotary motor and means for supplying motive fluid thereto, of a reversing-valve located in a horizontal direction in one cylinder-head and a manually-operated auxiliary valve located in the other cylinder-head for controlling the admission of motive fluid to either side of the reversing-valve to move it in the one or the other direction at pleasure.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 28th day of July, 1905.

ALBERT H. TAYLOR.

Witnesses:

WARD RAYMOND,
RUSSELL H. WILHELM.