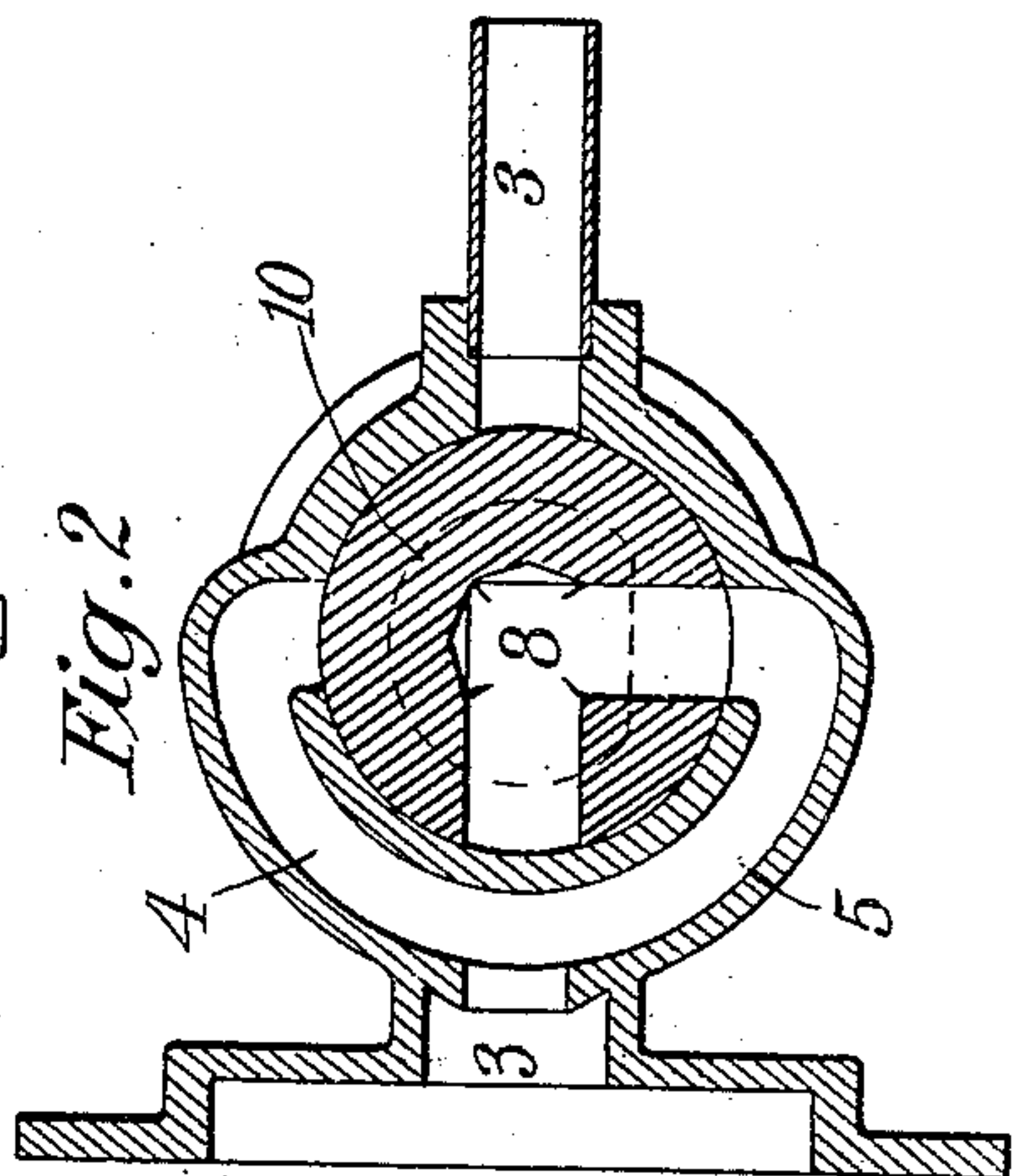
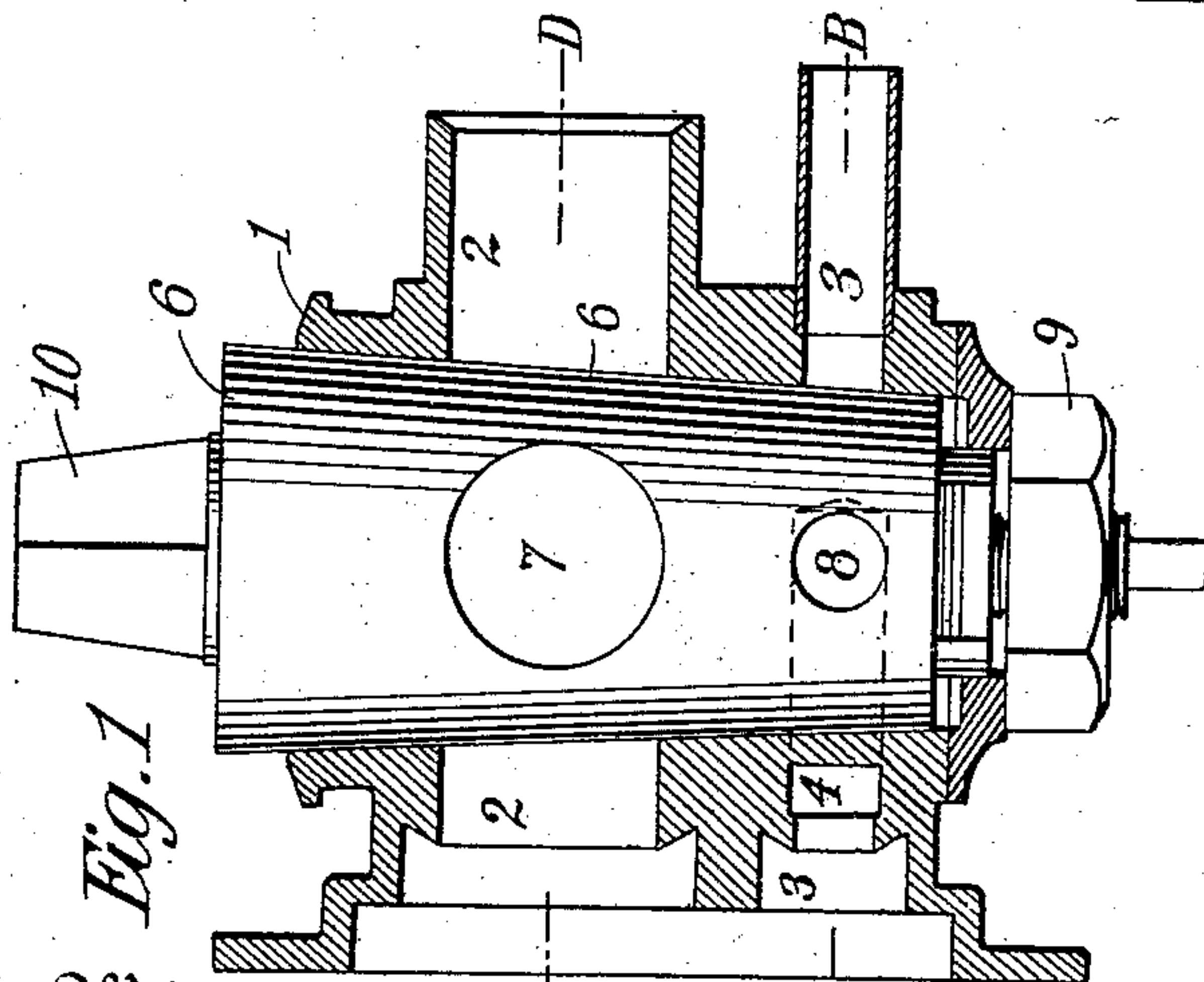
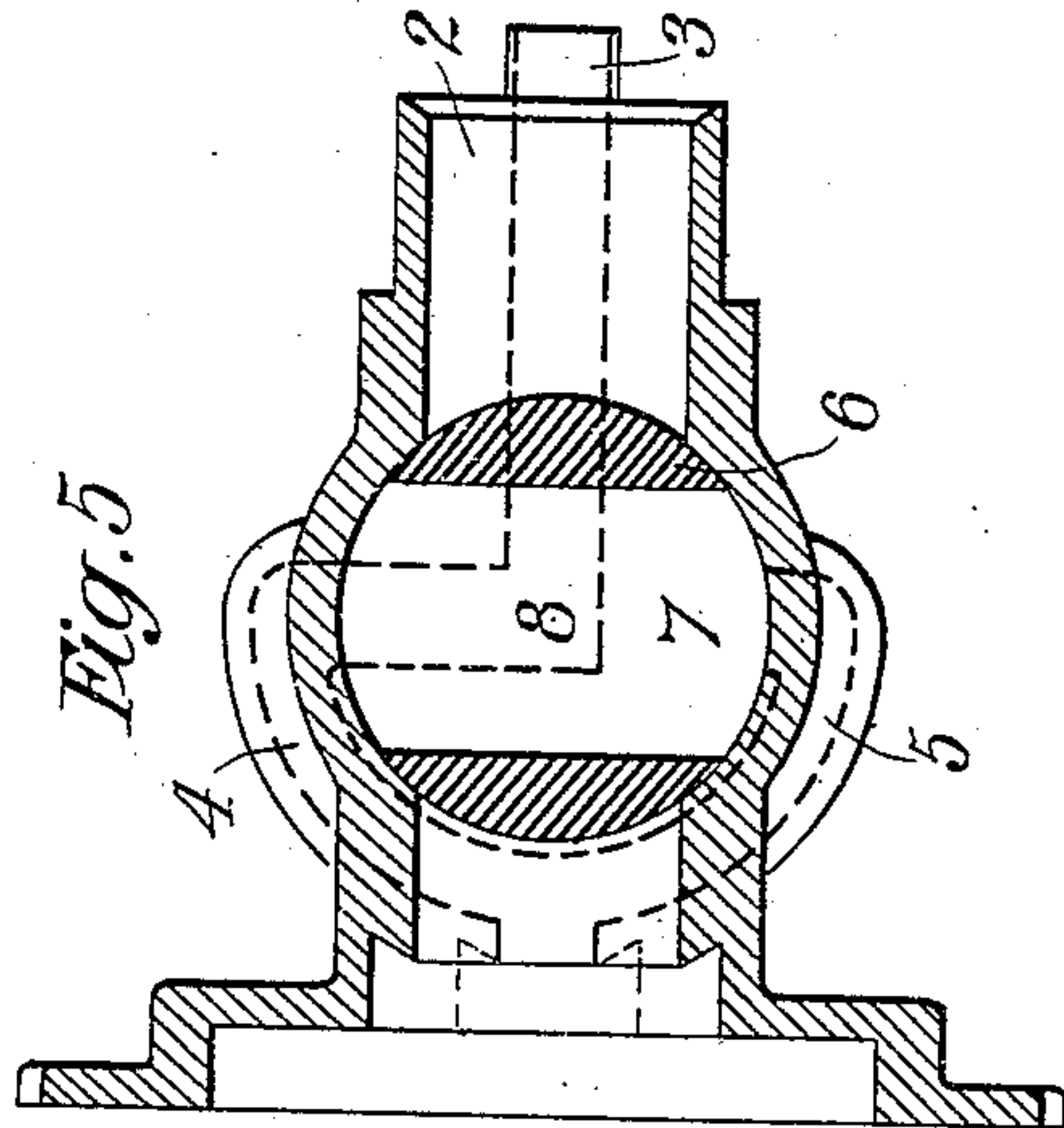
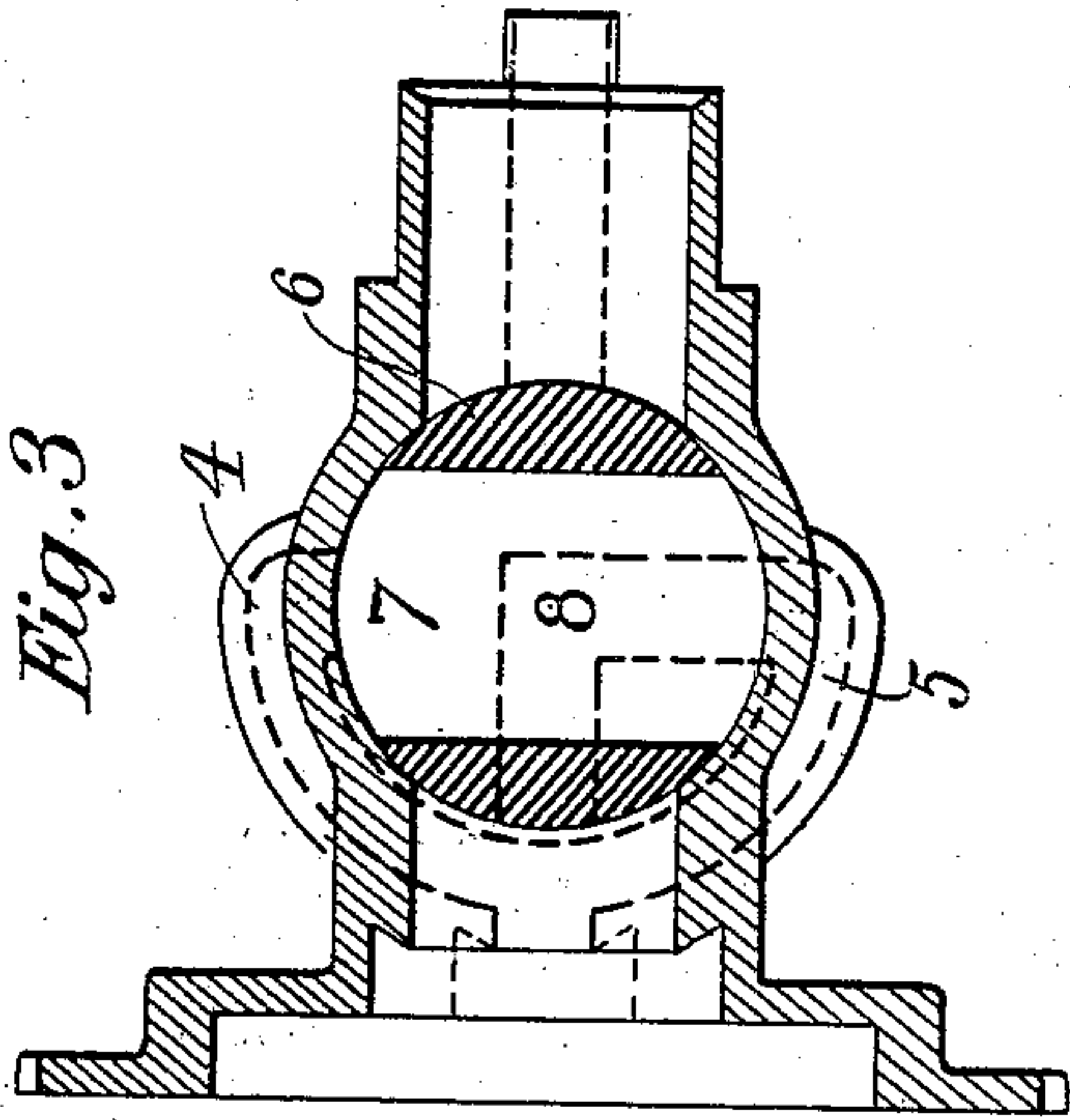
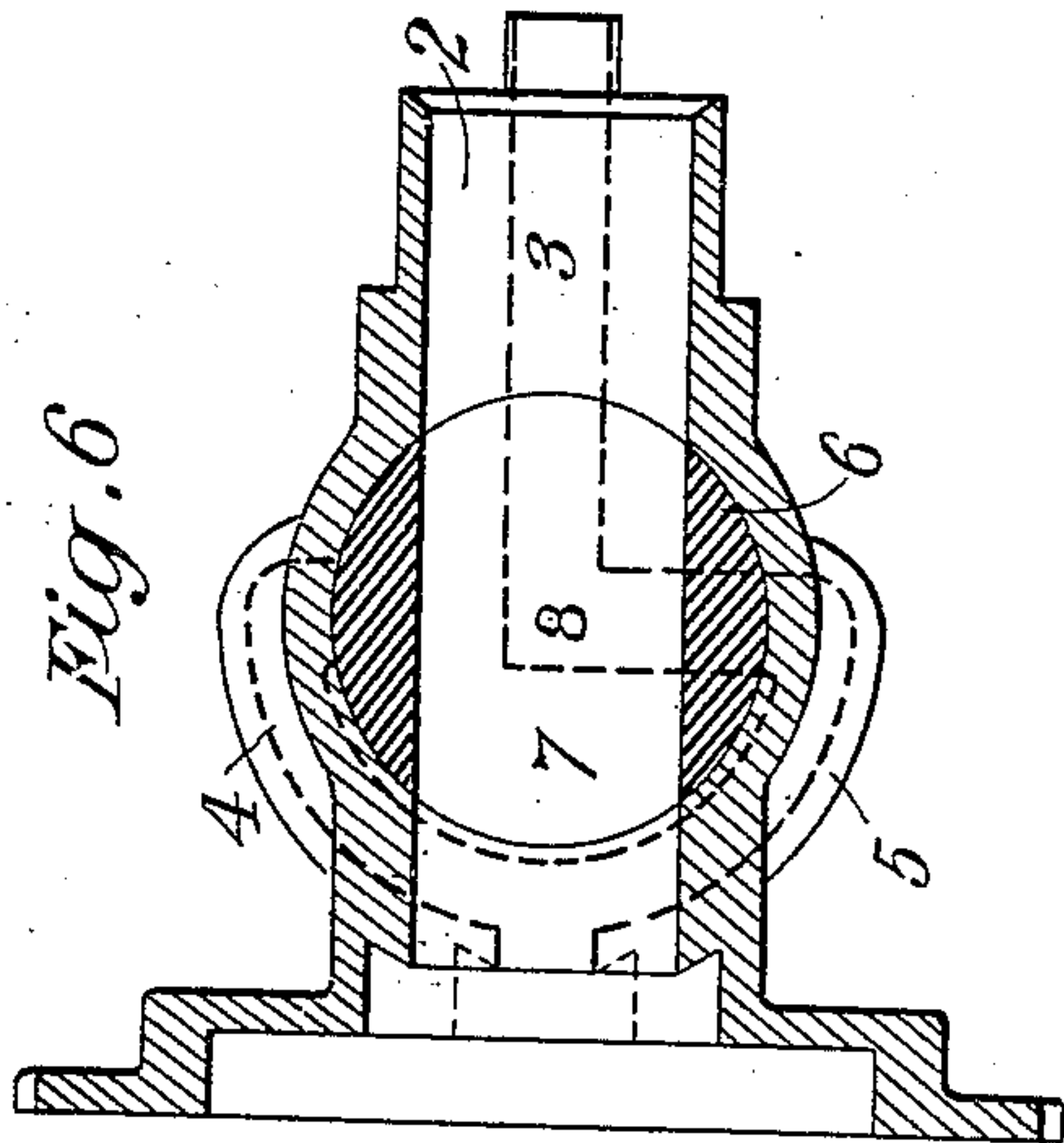
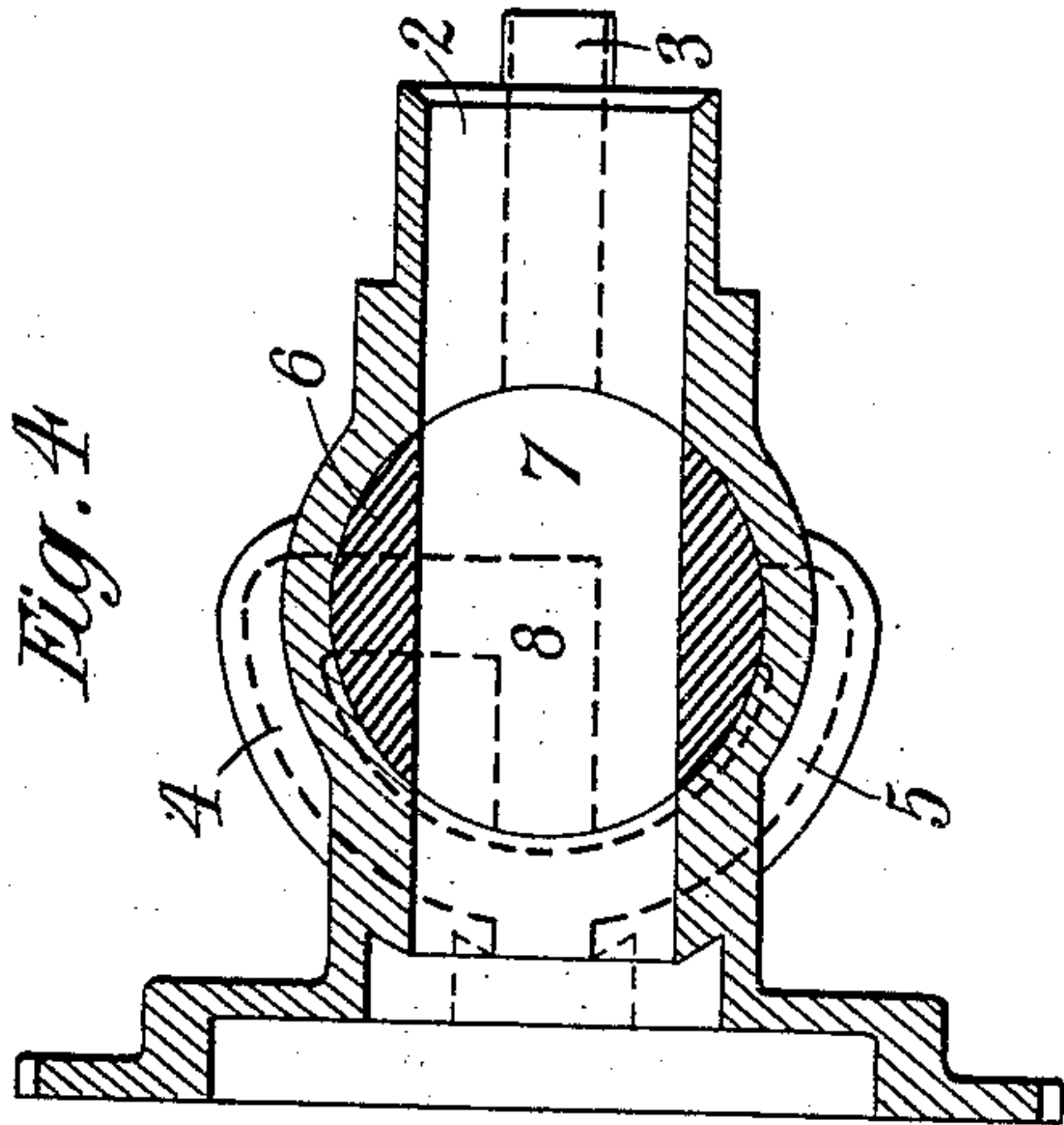


D. T. WILLIAMS.
VALVE.

APPLICATION FILED MAR. 19, 1908.

917,981.

Patented Apr. 13, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

DAVID T. WILLIAMS, OF PATERSON, NEW JERSEY, ASSIGNOR TO VACUUM ENGINEERING COMPANY, A CORPORATION OF NEW YORK.

VALVE.

No. 917,981.

Specification of Letters Patent.

Patented April 13, 1909.

Application filed March 19, 1908. Serial No. 422,106.

To all whom it may concern:

Be it known that I, DAVID T. WILLIAMS, a British subject, and a resident of Paterson, county of Passaic, State of New Jersey, have invented certain new and useful Improvements in Valves, of which the following is a full, clear, and complete disclosure.

My invention relates to that class of valves in which the flow through a plurality of passages or conduits is controlled simultaneously and with the movement of a single valve member.

My invention relates especially to valves having two passages therein, either of which may be opened or closed independently of the other, or both of which may be simultaneously opened or closed. Such valves are of special utility in connection with pneumatic cleaning systems where water is supplied to the cleaning implement through one passage and the vacuum or suction supplied to the cleaning implement through another passage, or where the water and vacuum are supplied to the cleaning implement alternately, through one passage. However, I do not wish to be understood as being limited to this particular use, as the valve herein described may be used in connection with pipes conducting other fluids and for other purposes.

The object of my invention is to produce a valve which will have not only the capabilities and functions above pointed out, but which will, at the same time, have its passages so arranged that the movable valve member may have considerable circular movement without affecting the continuity of the passages when in any particular position, and without permitting leaks from one passage to another owing to the small extent of contacting surfaces between adjacent passages. In my improved valve the contacting surfaces between the different passages are always of sufficient area and extent to prevent the leakage from one passage to another, while at the same time, if the valve is turned into only approximately the position to produce a desired effect, the valve will be completely operative in such approximate position.

For a full and detailed description of one form of my invention which I at present deem preferable, reference may be had to the following specification and to the accom-

panying drawing forming a part thereof, in which—

Figure 1 is a vertical sectional view of my improved valve, showing the movable member thereof in elevation; Fig. 2 is a horizontal sectional view thereof taken substantially on the line A—B Fig. 1; and Figs. 3 to 6 inclusive are horizontal sectional views taken substantially upon the line C—D Fig. 1, and showing the movable portion or stem of the valve in different positions to produce the different arrangements in the continuity of the passages.

The valve casing 1 is provided with two passages 2 and 3, in this instance the passage 2 being to conduct the suction, while the passage 3 is to conduct the liquid.

The passage 3 is branched on the admission side of the valve casing, as indicated at 4 and 5, and the branches enter the valve stem socket at diametrically opposite points. The valve stem 6 is provided with a hole 7, which is adapted to form a continuation of the passage 2, and is also provided with a second hole in the form of a passage having two arms at right angles to each other, as indicated at 8. The valve stem may be retained within the valve casing in any suitable well-known way, such as by the nut 9, and may be rotated by means of the head adapted to receive a wrench, or by any well known form of handle.

Four different positions of the valve plug or stem are shown in Figs. 3 to 6 inclusive. In Fig. 3 the stem is so arranged that both of the passages 2 and 3 are closed, thereby cutting off the supply through both of said passages. In Fig. 4 the valve stem has been rotated 90 degrees, and this allows the hole 7 to come into line with the passage 2, which permits the flow through said larger passage, the smaller passage 3 being closed.

In Fig. 5 the valve stem has been rotated 90 degrees from the previous position shown in Fig. 4, and this movement causes the larger passage 2 to become closed, while the angular hole 8 in the stem forms a connection between the passage 3 and the branch 4 of said passage.

In Fig. 6 the valve stem is shown as rotated 90 degrees from the position shown in Fig. 5, and in this position both of the passages 2 and 3 are open for the flow of air and liquid, the angular hole 8 forming the con-

nection in this case between the passage 3 and the lower branch 5 of said passage. It will, therefore, be seen that I have provided a valve in which two passages through the
5 same may be opened and closed independently of each other, while at the same time both may be opened or closed together, and this result is produced without crowding the parts, or complicating the valve to such an
10 extent as would make it difficult to manufacture.

Having thus described this form of my invention, I do not wish to be limited to the exact details of form and arrangement of
15 parts set forth, for various changes may be made without departing from the spirit and scope of my invention; but

What I claim and desire to protect by Letters Patent of the United States is:

20 1. In combination with a rotary cut-off valve, an auxiliary valve comprising ports located in the valve casing at diametrically opposite points and connected with a common conduit, a port intermediate the first
25 named ports, the rotary valve stem having a transverse passage adapted to connect either of the said first named ports with the intermediate port.

30 2. A valve comprising a casing having two sets of passages therein, one set terminating at diametrically opposite points, the second set having two passages terminating at diametrically opposite points but angularly situated relative to the first set, and a third pas-
35 sage intermediate the passages of the second set, a valve stem having a passage adapted

to connect the passages of the first set and a second passage adapted to connect said intermediate passage with either of the other passages of said second set.

40 3. A valve, comprising a valve casing having branched passages therein, and a valve stem having a transverse passage there-through adapted to connect an intermediate passage through said casing, with said
45 branched passages in two positions of said stem.

50 4. A valve comprising a valve casing having a branched passage therein terminating at diametrically opposite points in said casing, and a valve stem having a passage therein, two portions of which extend at right angles to each other, said casing having a second passage adapted to be connected
55 with either of the branches of said branched passage.

60 5. A valve comprising a valve casing and valve stem having two sets of passages therein for different bodies of fluid, one of the passages in said casing being branched at one side of the casing and cooperating with an intermediate passage, the other passage in
65 said casing being situated diametrically thereof, the valve stem having one angular passage whose ends are located 90 degrees
70 apart, and another passage situated diametrically thereof.

Signed this 16th day of March, 1908.

DAVID T. WILLIAMS.

Witnesses:

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