

C. G. CRISPIN.

FLUID VALVE.

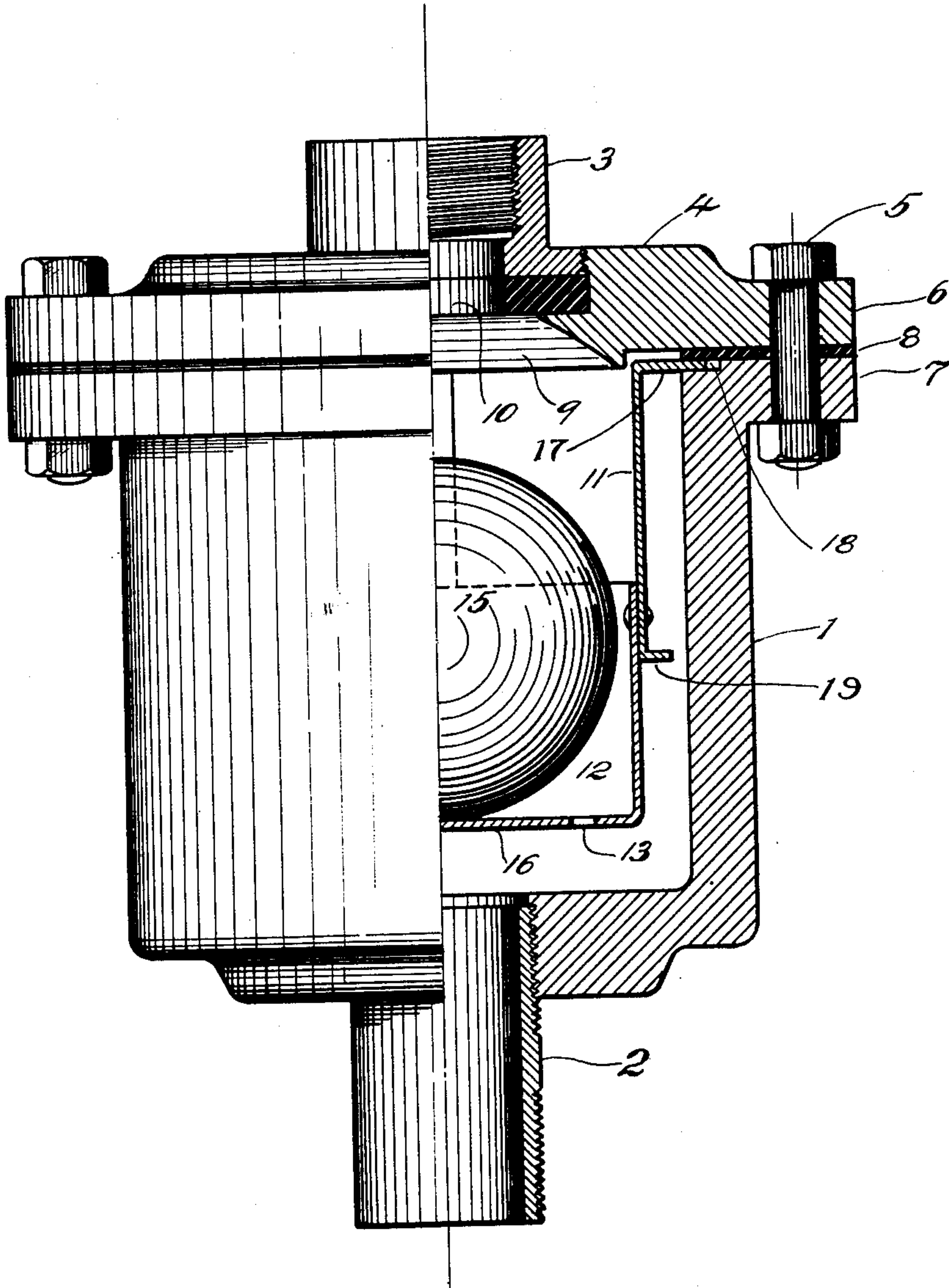
APPLICATION FILED JAN. 19, 1909.

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Patented June 15, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

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Fig. 2.

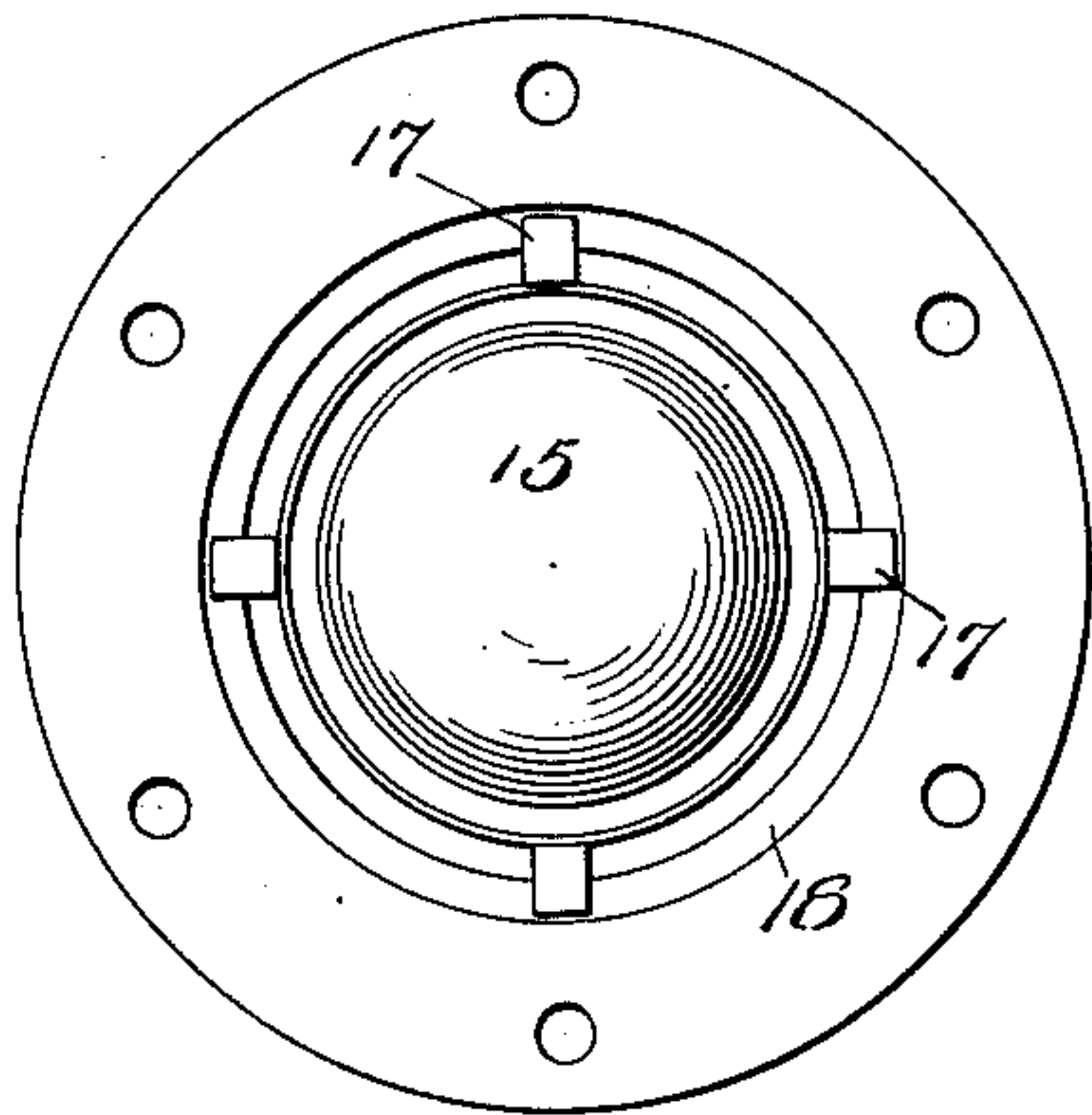


Fig. 3.

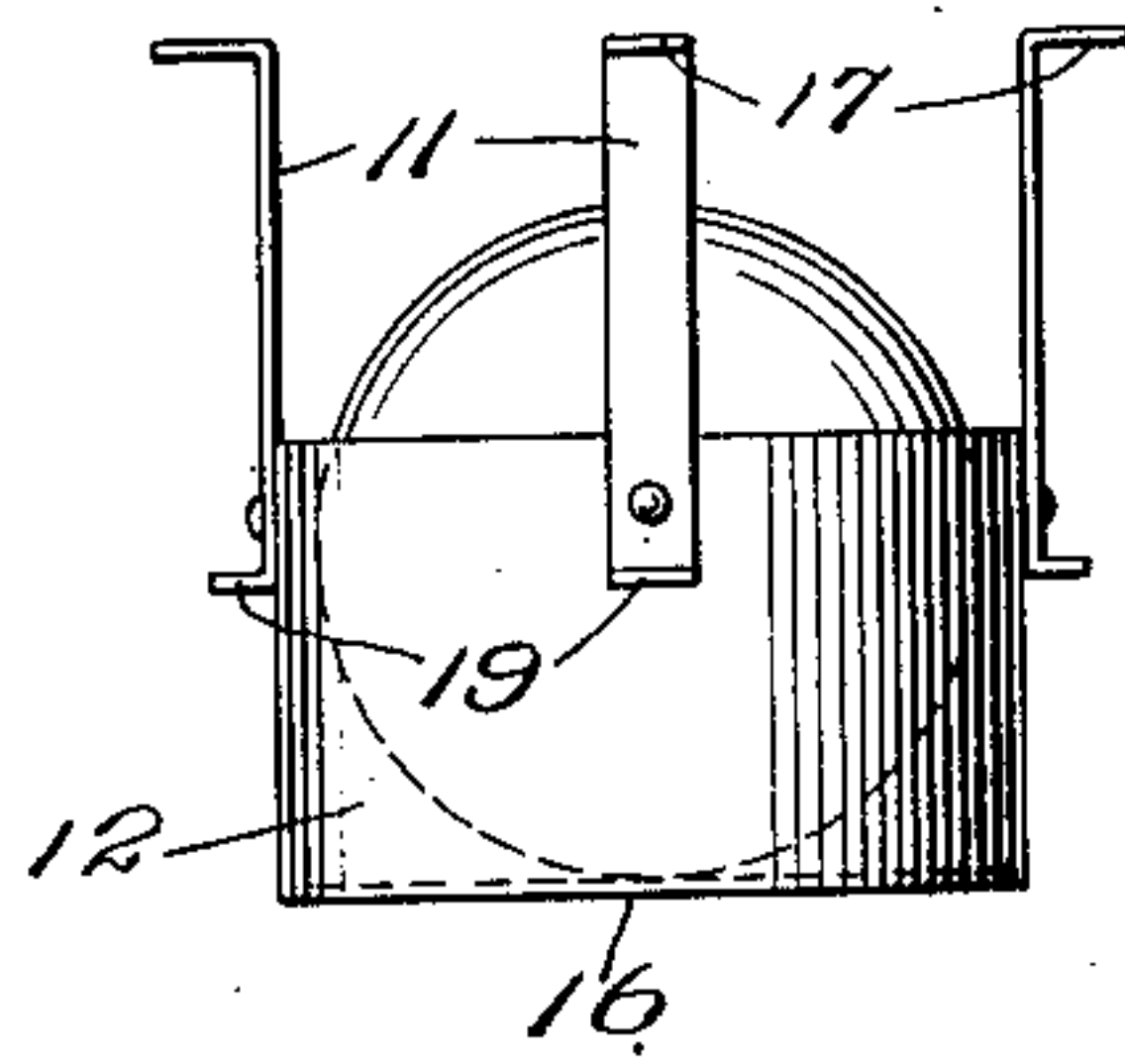


Fig. 4.

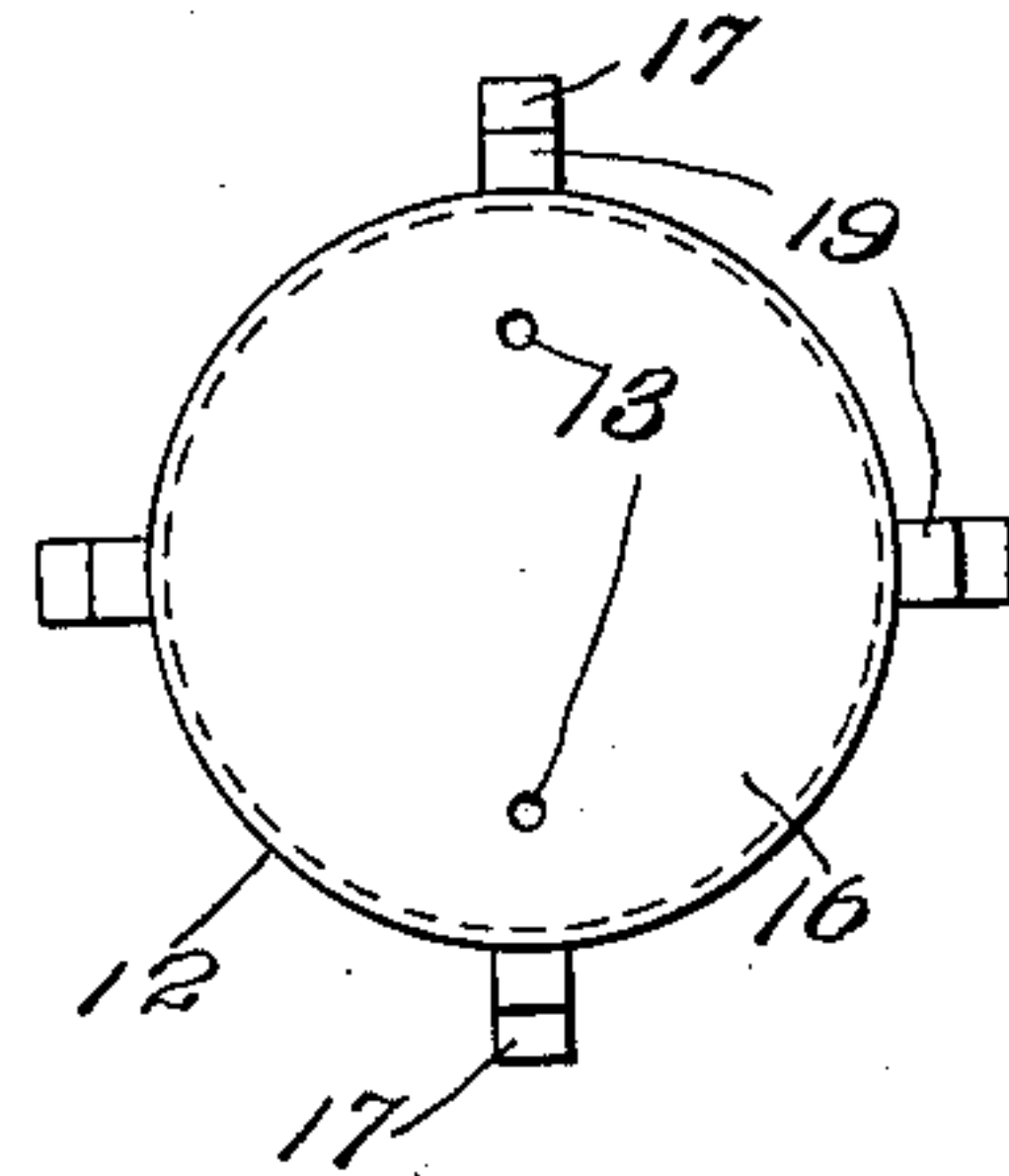
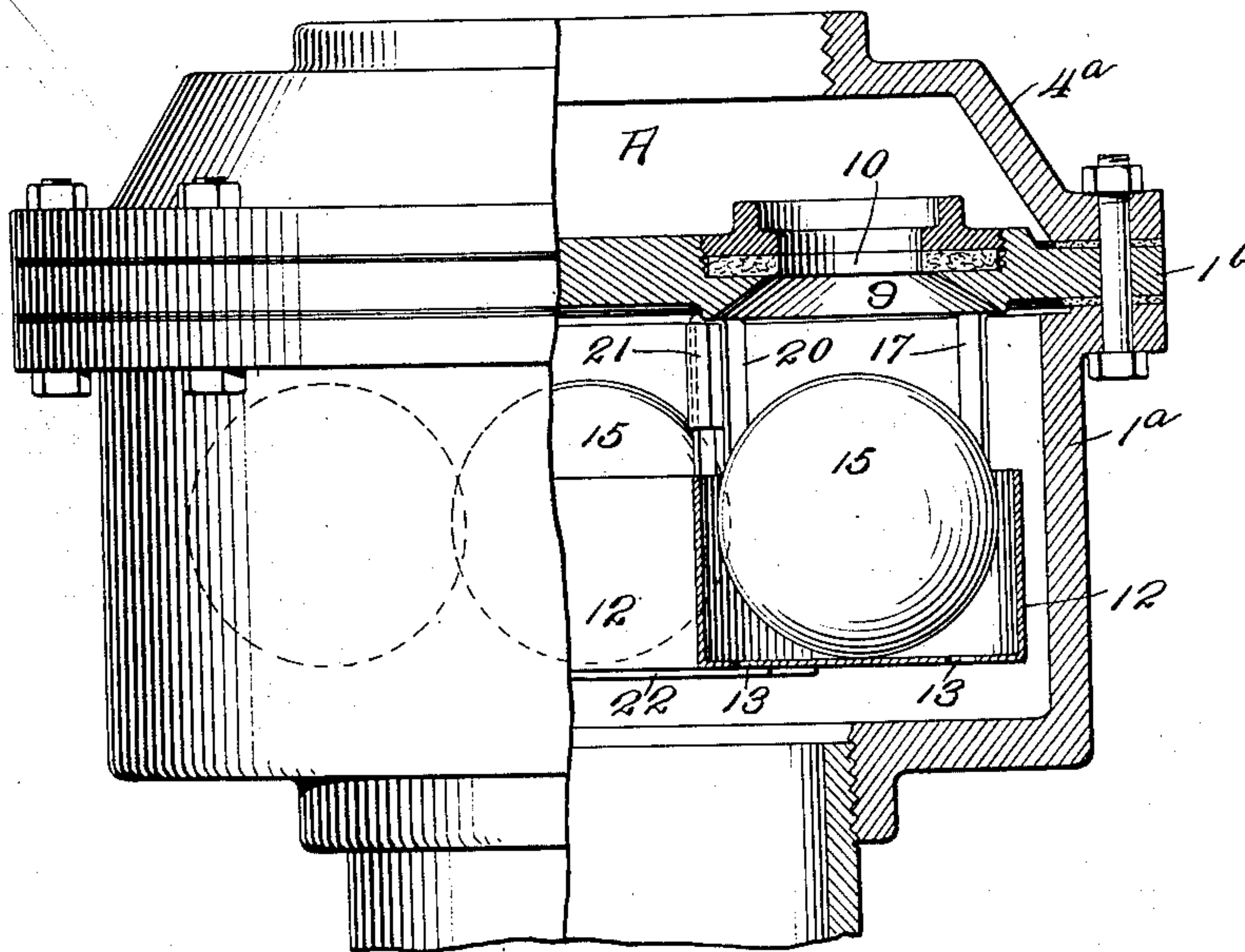


Fig. 5.



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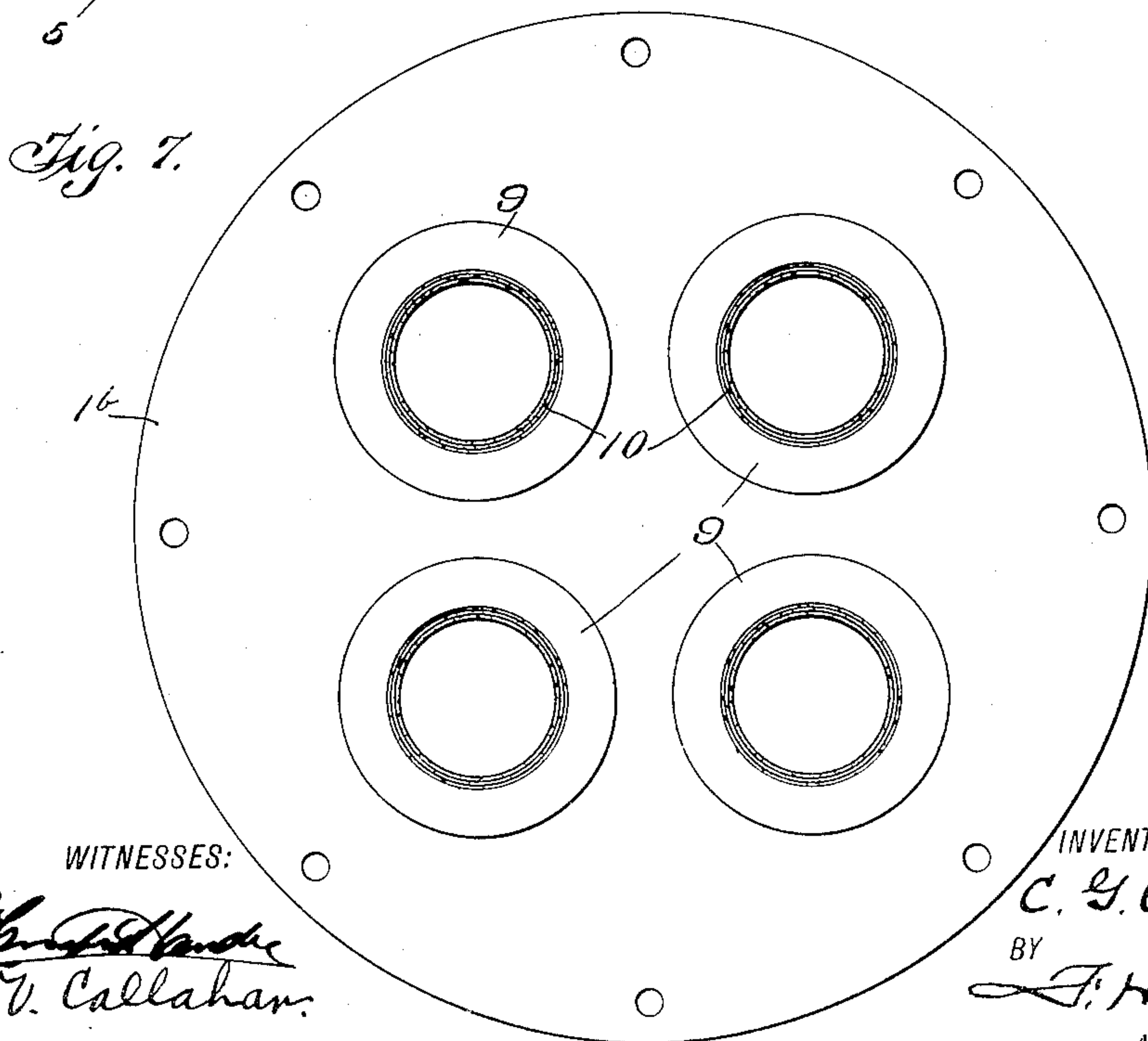
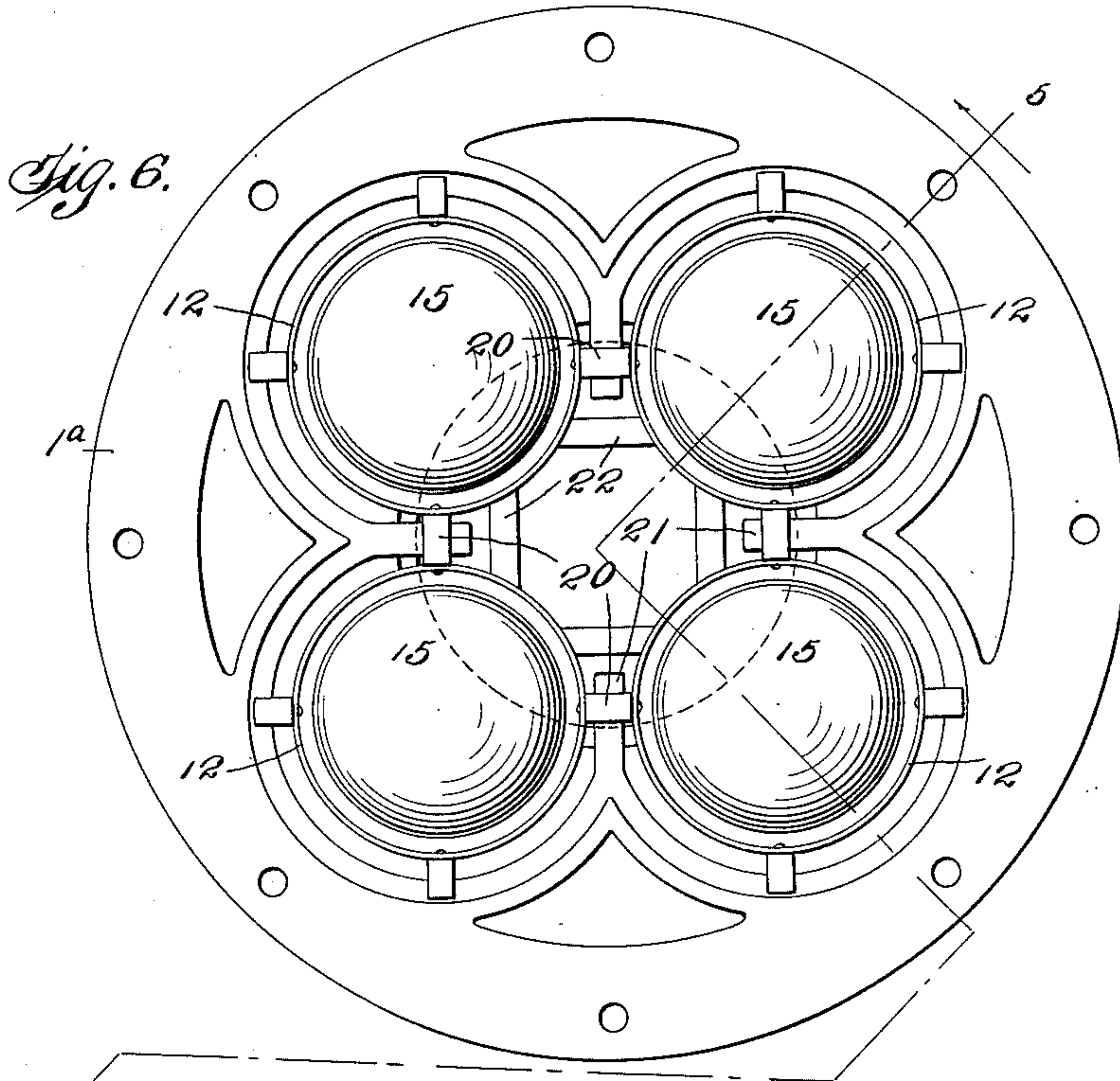
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UNITED STATES PATENT OFFICE.

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FLUID-VALVE.

No. 924,641.

Specification of Letters Patent.

Patented June 15, 1909.

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To all whom it may concern:

Be it known that I, CLARENCE G. CRISPIN, residing at Berwick, Columbia county, Pennsylvania, and being a citizen of the United States, have invented certain new and useful Improvements in Fluid-Valves, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof will occur to persons skilled in the art.

In said drawings: Figure 1 is an elevational view partly in vertical section. Fig. 2 is a plan view with the cover and its appurtenances removed. Fig. 3 is an elevational view of the inner receptacle or cup and its hanger members. Fig. 4 is an inverted plan view of the inner receptacle. Fig. 5 is an elevational view partly in section, the section being taken on line 5—5 of Fig. 6, said Fig. 5 illustrating a modified form of construction. Fig. 6 is a plan view illustrating the modification of the device shown in Fig. 5 with the cover removed, showing how the device may be applied in clusters where a maximum quantity of air is to be exhausted, as from a large pipe. Fig. 7 is an inverted plan view of the inner cover used with the construction shown in Figs. 5 and 6.

My invention relates to improvements in that class of valves especially applicable to or serviceable in connection with water mains or pipes.

It has for its object to provide for venting such water mains or pipes or the release of confined air when admitting water thereto; also, for the admission of air thereinto when the water is withdrawn or otherwise escapes therefrom, and to carry out these ends in a simple and effective manner.

Said invention therefore consists of certain structural features, substantially as hereinafter more fully disclosed, and particularly pointed out by the claims.

In the drawings, 1 indicates the outer shell of my improved valve, which has ingress and egress ports with which communicate respectively the pipes 2 and 3. The shell 1 is provided with a cover 4, which is secured in position by a suitable number of

bolts 5 passing through flanges 6 and 7 of the cover and shell and between the cover and shell is provided a suitable packing 8 to form a watertight joint. Formed in the under side of the cover 4 is a circular opening 9 and above this opening, that is, between it and the pipe 3, is a packing 10 which serves the double function of a packing for the joint between the pipe 3 and cover 4 and as a valve seat for the ball valve hereinafter referred to.

Suspended by the flanged straps 11 in the shell 1 is a cup or inner vessel 12 which is provided with decentralized perforations 13 and in the cup 12 is a globe valve 15, which is of such diameter that when seated in its valve seat or against the packing 10 it will close the egress port through the cover 4, and when seated on the bottom 16 of the cup 12 will leave a clear space between said globe valve and the decentralized perforations 13 in the bottom of said cup, thereby providing for the escape by gravity of any liquids which may remain in the cup when the valve 15 is in its lowermost position. It is to be noted that the cup 12 is imperforate except for said decentralized perforations 13 and the straps 11, which support the cup, are provided with flanges 17 which rest in seats 18 provided therefor in the upper edge of the shell 1, while the packing 8 extends over the flanges 17, thereby preventing the escape of fluids from the shell 1 except through the pipes 2 and 3. In addition to the flanges 17 the straps 11 are provided with lower flanges 19, which assist in centering the cup 12 in the shell 1.

In Figs. 5, 6 and 7 is illustrated a modification of the structure shown in the other figures, in which modification the four cups 12 with four valves 15 are provided to permit the escape from the shell 1^a of a greater volume of fluids. In this modification there is provided a cover 4^a similar to the cover 4 of Fig. 1 but between the cover thus provided and the shell 1^a there is provided an intermediate cover 1^b, which intermediate cover is formed on its under face with four enlarged and tapered openings 9 each of which is provided with a packing ring 10 to form valve seats vertically above the globe valves 15 in Fig. 5, there being a considerable space A between the cover 1^b and the outer cover 4^a of the device shown in Fig. 5 to serve as an air space for the passage of air from the interior of the valve

shell 1^a to a central orifice in the cover of the device shown in Fig. 5. In this modification the cups 12 are supported in series by relatively U shaped straps 20, which rest upon inwardly converging supporting arms 21, which are formed integral with the shell 1^a. The lower portions of the cups 12 are connected by means of straps 22 which, with the straps 20, bind the cups shown in Fig. 5 firmly together so that they may be removed as a unit.

Owing to the space A between the upper edge of the cups 12 and the valve seats there is clear space for the escape of air or other gases which may be in the water pipes, but as soon as water reaches the cups it flows through the perforations 13, over the upper edge of the cups, and lifts the buoyant globe valves to position in contact with the valve seats 10, thereby preventing escape of liquid while permitting free escape of other fluids prior to the lifting of said valve. When the water pressure is reduced the valves 15 drop by gravity and owing to the decentralization of the perforations 13 the liquid in cups 12 will drain off. Another advantage in having the perforations 13 out of contact with the valve 15 is that the cup may be washed out to dispose of sediment which may accumulate in the cups without removing the valve 15, which can otherwise only be done by first removing the cover 4. The valve being underground and communicating with the atmosphere through a pipe extending up through the soil, it is evident that a great convenience results from such disposition of the perforations 13 in the cups, as the operation of the valves may be tested without removing the valves from their connection with the water main. If desired, the valves 15 may seat against the metal 9, the packing 10 or both, as may be desired.

What I claim is:

1. In a valve of the character set forth, the combination comprising an outer shell, a cover therefor provided with a valve opening, an exhaust pipe leading from said cover, a packing between said cover and pipe forming a valve seat, a spherical valve adapted to seat against said valve seat, a cup with flattened bottom, said cup having decentralized perforations therein and means for supporting said cup in said outer shell.
2. In a gravity and liquid operated valve adapted to permit escape of fluids, the combination comprising an outer shell with an

ingress port, a cover member with an egress port and a valve seat, a buoyant globe valve adapted to close said egress port and a non-spherical receptacle for said valve, said receptacle being perforated in its lower portion, the perforation being so positioned as to be always removed from said buoyant valve.

3. In a liquid operated valve adapted to permit escape of fluids, an outer chamber, a perforated non-spherical cup suspended therein with decentralized perforations in said cup, a cover for said outer chamber with a port and valve seat and a buoyant globe valve relatively within said cup, adapted to cut off communication between said chamber and said port.

4. In a liquid operated valve adapted to permit escape of fluids, an outer chamber, a cover therefor provided with a valve opening, a packing above said valve opening cooperating therewith to form a valve seat, an exhaust pipe seated on said packing, an inner receptacle, suspending means therefor resting between said outer receptacle and its cover, said inner receptacle having decentralized perforations therein and a globe valve adapted in one position to seat in the valve seat of the cover and in another position to rest in said inner receptacle removed from the perforations therein.

5. In a cluster valve operated by liquids and adapted to permit the escape of fluids, an outer shell provided with a port and inwardly extending supporting arms, a plurality of valve receptacles supported from said arms, an inner cover provided with a plurality of valve seats in alinement with said valve receptacles, and an outer cover with egress port therein.

6. In a liquid operated valve adapted to permit escape of fluids, an outer chamber, a cover therefor provided with exhaust port and a valve seat, an exhaust pipe in alinement with said port, an inner receptacle, suspending means for said inner receptacle and a buoyant globe valve adapted to close said exhaust port under liquid pressure, the said inner receptacle having decentralized perforations therein so positioned as to be always removed from said globe valve.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

CLARENCE G. CRISPIN.

Witnesses:

E. M. KOCHER,
F. N. RITTER.