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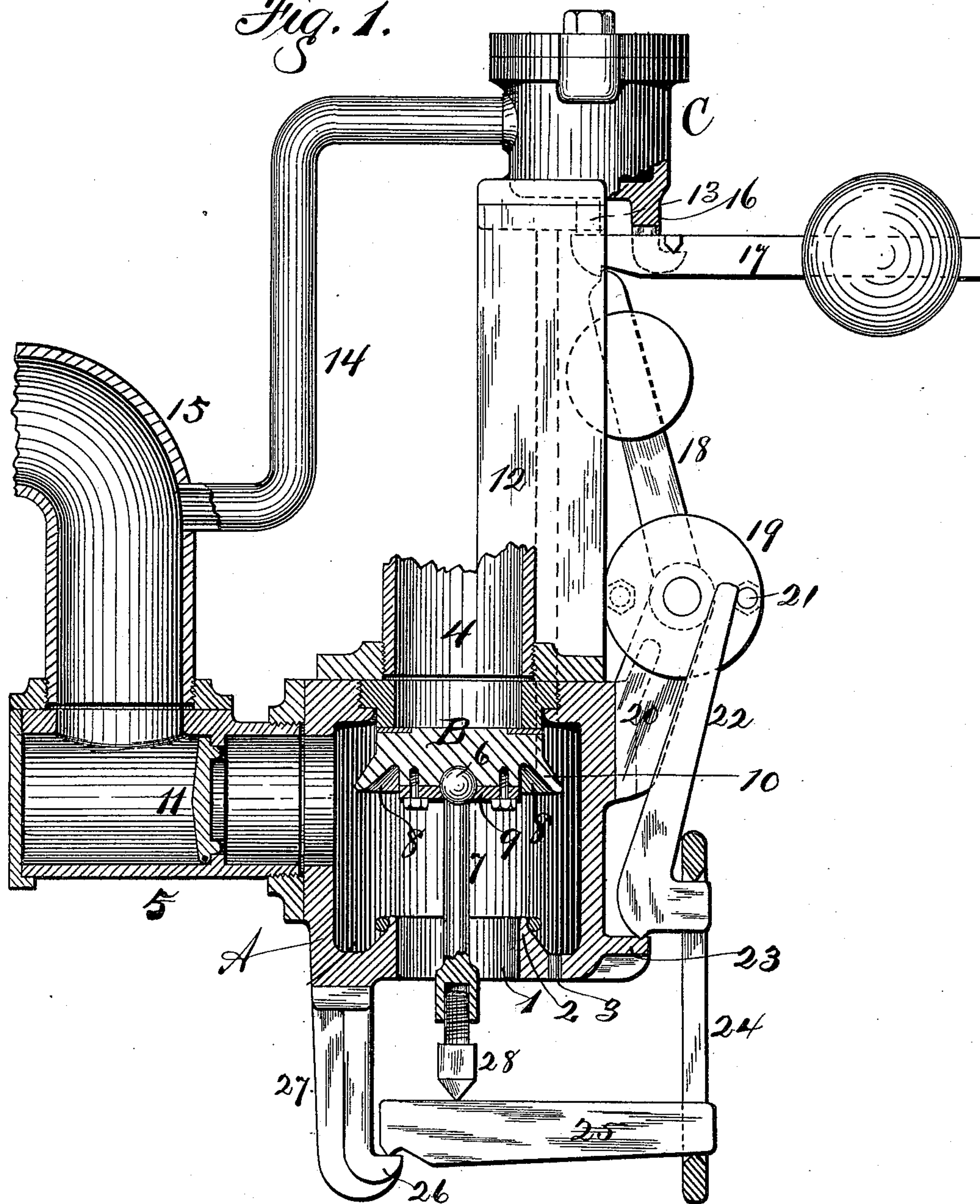
3 Sheets—Sheet 1.

J. D. McRAE.  
AUTOMATIC VALVE.

No. 464,582.

Patented Dec. 8, 1891.

*Fig. 1.*



Witnesses  
H. A. Cochran  
G. B. Kuine

John D. McRae Inventor  
By his Attorneys  
Smith & Benson

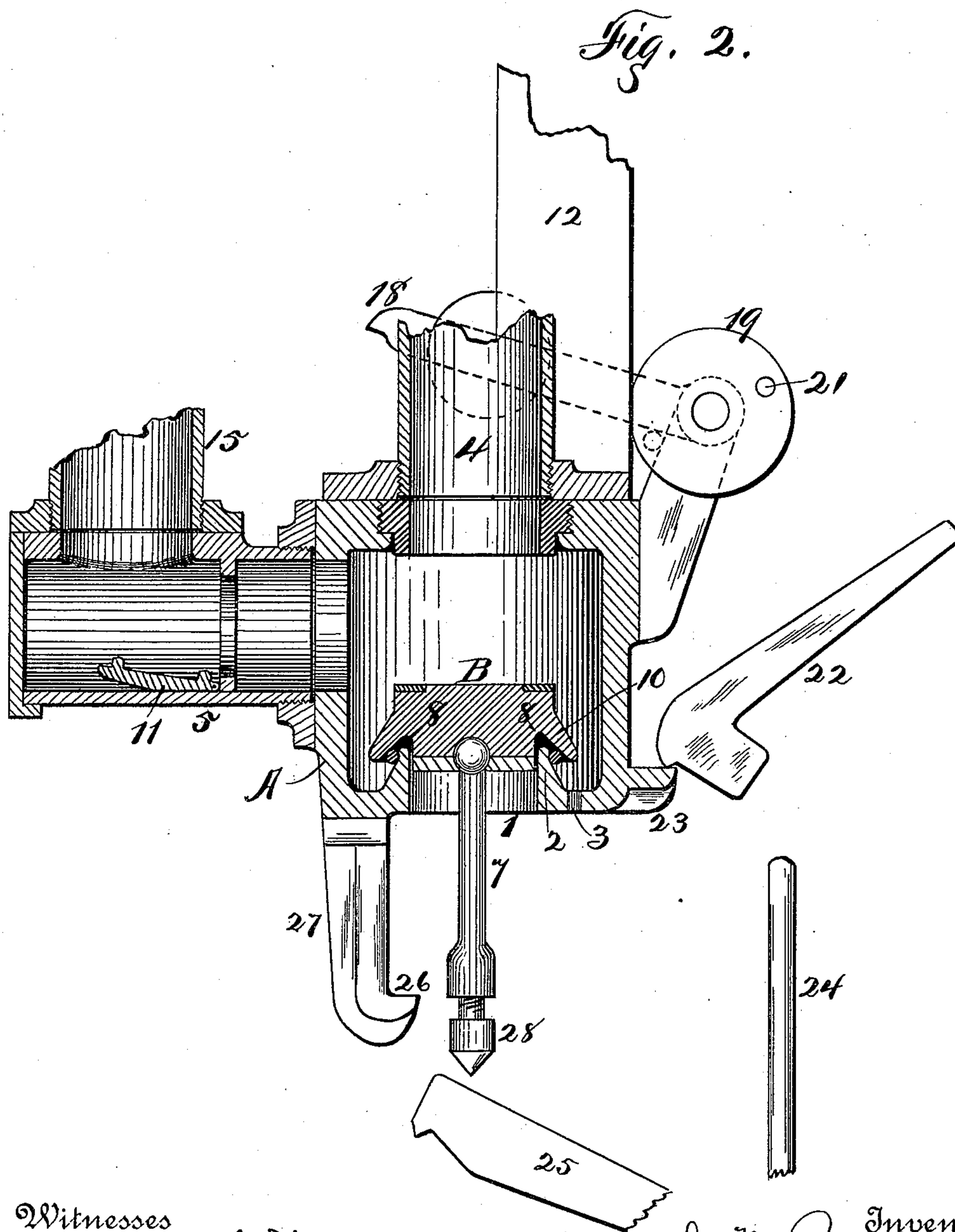
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## Witnesses

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H. G. Carhart

C. B. Kime

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By his Attorneys  
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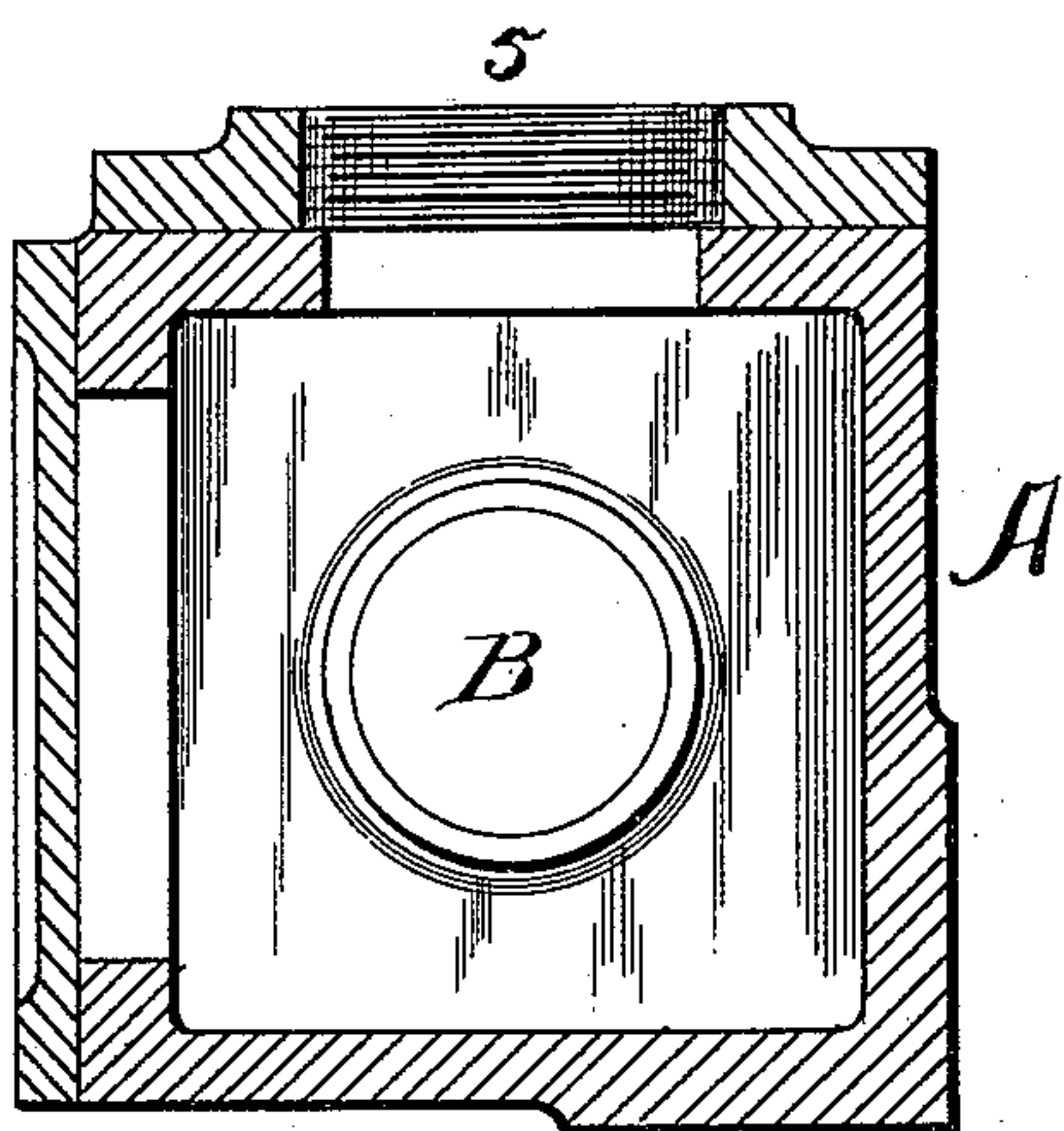
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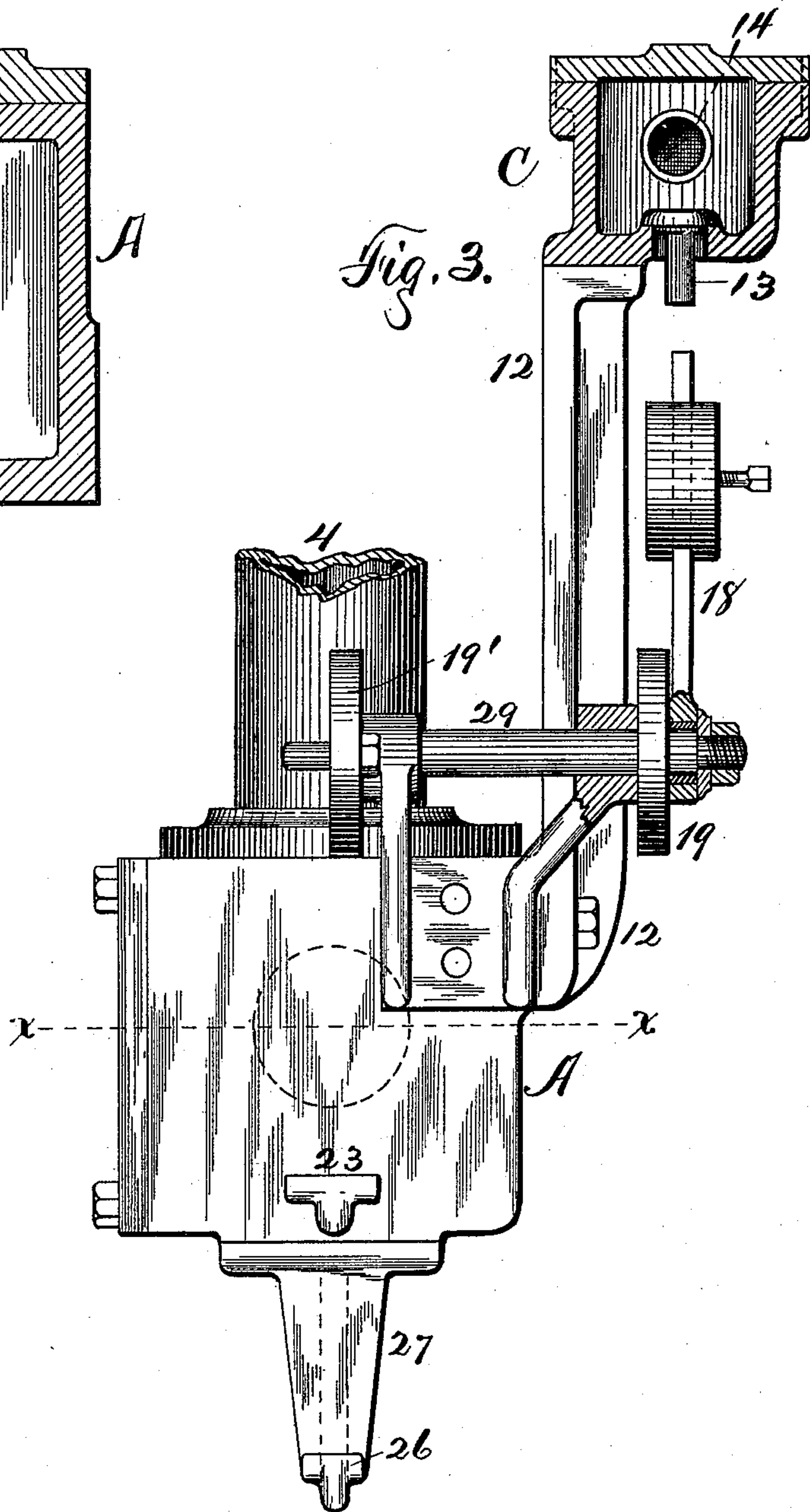
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*Fig. 4.*



Witnesses

*H. A. Carhart,*

*R. B. Kime*

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# UNITED STATES PATENT OFFICE.

JOHN D. McRAE, OF BALDWINVILLE, NEW YORK.

## AUTOMATIC VALVE.

SPECIFICATION forming part of Letters Patent No. 464,582, dated December 8, 1891.

Application filed April 3, 1891. Serial No. 387,482. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN D. McRAE, of Baldwinsville, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Automatic Valves, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to mechanisms for holding closed the inlet-valve in the main water-supply pipe against the head of said water by means of air or other pressure exerted through a system of levers against the stem of the valve.

My object is to produce an improved mechanism for the purpose aforesaid to be used with either a wet or dry pipe system, the normal pressure in such piping being exerted through a system of levers against the valve-stem and holding the valve closed against the head of the water until such pressure is from any cause reduced below a certain point, when the levers become disconnected and cease to bear against said valve, and then the valve is opened by the head of the water and the water is let on into the piping system.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims.

It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional elevation of the valve set to hold the water from the main. Fig. 2 is a like view of the valve open and the water let on and the several parts in the position then assumed by them. Fig. 3 is a front elevation of the valve as open with the pressure-levers removed and showing the chamber of the air-pressure valve in vertical transverse section. Fig. 4 is a transverse section of the water-valve chamber on the line X X in Fig. 3.

A is the casing of the main valve, provided with an opening 1 in its lower face, with a raised valve-seat 2 surrounding said opening, with a drip 3 in the groove around the valve-seat, with a suitable opening to receive the inlet-pipe 4, and with another opening to receive the outlet-pipe 5.

B is the main valve, connected by a ball-and-socket joint 6 to the stem 7 and provided with suitable packing on top to securely close the inlet-pipe and with a circular groove 8 in its lower face, creating a head 9 of proper size to fit closely in the opening through the valve-seat and also creating an outwardly-flaring flange 10, adapted to fit over the outer edge of the valve-seat and receive its packing in the angle of the bottom of the groove. The inlet-pipe is provided with a valve-seat, and 11 is a drop-valve hinged to the inner side of the pipe and adapted to open by the pressure of the water when it is let on.

A post 12 is erected upon the main valve-chamber, upon which I mount the auxiliary pressure-chamber C, having in its bottom a valve-seat and an opening through which the stem 13 of the valve projects below the bottom. A pipe 14 connects this chamber to the pipe 15 of the piping system, so that the same pressure is maintained in it as in the system. A lug 16 projects downward from the side of this chamber and is provided with a shelf on one side, as shown in Fig. 1 by the dotted lines. A weighted lever 17 has its fulcrum upon this shelf, and its inner end bears upward against the lower end of the valve-stem. A second weighted lever 18 is secured to a disk 19, pivoted upon an arm 20 upon the casing of the main valve, and its upper end engages with a notch in the inner end of the lever 17. This disk is provided on the left with a stop-pin (shown in dotted lines) and upon the right with a trip-stud 21, against which the upper end of the trip-bar 22 bears, while its lower end is supported upon a lug 23 upon the casing of the main valve. A link 24 fits loosely over the arm upon the trip-bar, and its lower end fits over the end of the valve-lever 25, which has its direct bearing upon a shelf 26 upon the arm 27, extending down from the valve-casing, and has a bearing upon a screw-threaded and adjustable point 28 in the lower end of the stem 7 of the main valve. Then when the valve 11 is closed by ordinary means and air or other pressure is applied to the piping system such pressure will keep the valve in the chamber C tightly closed. This supports the lever 17, the lever 18, the trip-bar 22 against the stud 21, the link 24,



and valve-lever 25, and through the valve-stem holds the main valve tightly closed, all as shown in Fig. 1.

When from any cause the pressure in the piping system becomes reduced below a certain predetermined point, regulated by adjusting the weight upon the lever 17, then this weight will lower until the lever 18 is free from the notch in lever 17 and said lever 18 will fall to the left until the stop-pin strikes against the arm, as shown in Fig. 2. This will rotate the dial, so that the trip-stud 21 will be raised and the trip-bar released, when the link will fall, the valve-lever 25 will drop, and the water-pressure will force the main valve down into the position shown in Fig. 2, and the valve 11 will drop down, and water will rush into the piping system.

As shown by Fig. 3, it will be seen that the post 12 is offset at one side and that the disk 19 is in two parts, both secured upon a shaft 29, which brings the disk-section 19', upon which the trip-stud 21 is mounted, into proper vertical alignment with the stem 7 of the main valve.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A valve comprising a casing with an inlet and an outlet pipe, a tubular valve-seat raised above the bottom and opposite to the mouth of the inlet-pipe, a groove around the seat, and a drip-hole opening into the groove, in combination with the valve constructed with a flat top, a circular groove in the bottom creating a flaring flange and inclosing a head which fits within the valve-seat, and a valve-

stem connected to the valve-body by a ball-and-socket joint, as set forth.

2. A valve comprising a casing with inlet and outlet pipe openings, a tubular valve-seat opposite the inlet-opening, a groove around the seat, a valve consisting of a body having a groove in its bottom creating a flaring flange and a head adapted to fit into the valve-seat, while the flange fits over, and the valve-stem connected to the valve by a ball-and-socket joint and extending down through the valve-seat and below the casing and provided with an adjustable point, in combination with a valve-lever having its bearing upon the valve-stem and its fulcrum upon a lug below the casing, a link fitting over the outer end of said lever and over the arm of an angular trip-bar supported upon the casing, a rotatable disk journaled upon an arm upon the casing and provided with a trip-stud, with which the upper arm of the trip-bar detachably engages, having its fulcrum upon a lug below the casing of the pressure-chamber and a bearing against the stem of the valve in said chamber and provided with a notch, with which the trip-bar engages, a pressure-chamber above the main-valve casing, a valve therein having a downwardly-projecting stem, a pipe connecting said chamber to the piping system, and a drop-valve in the eduction-pipe.

In witness whereof I have hereunto set my hand this 28th day of March, 1891.

JOHN D. McRAE.

In presence of—

C. W. SMITH,

HOWARD P. DENISON.