No. 793,698. PATENTED JULY 4, 1905.

E. L. WALTER.

TIME VALVE.

APPLICATION FILED MAR. 19, 1904.

2 SHEETS—SHEET 1.

FIG. 1.

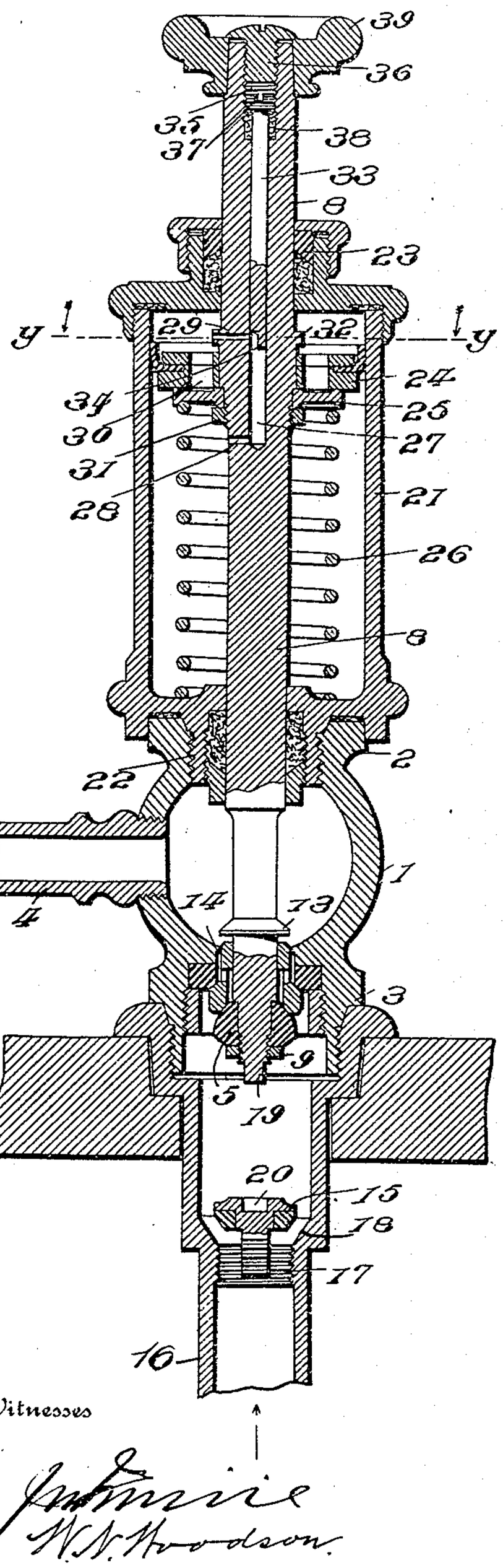
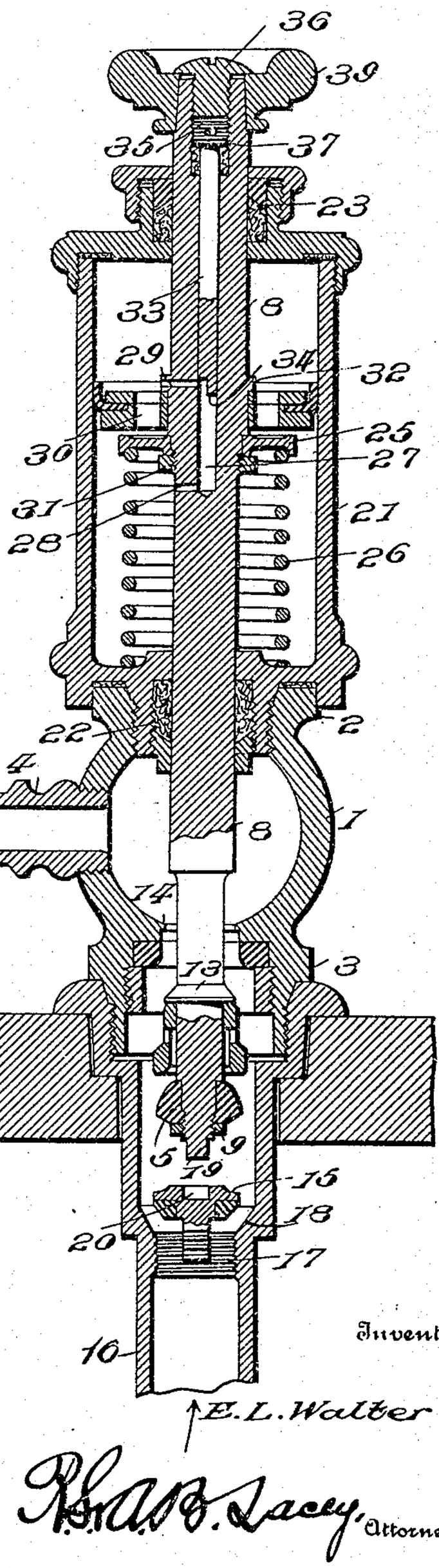


FIG. 2.



Witnesses

W. S. Woodson.

Inventor

E. L. Walter.

By R. B. & A. B. Lacey, Attorneys

)3,698. PATENTED JULY 4, 1905.

E. L. WALTER.

TIME VALVE.

APPLICATION FILED MAR. 19, 1904.

2 SHEETS—SHEET 2.

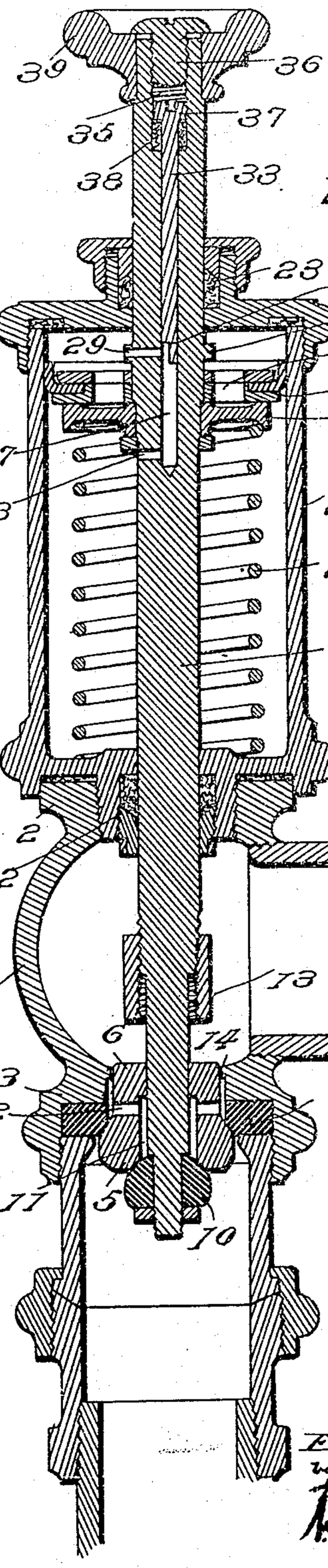


Fig. 3.

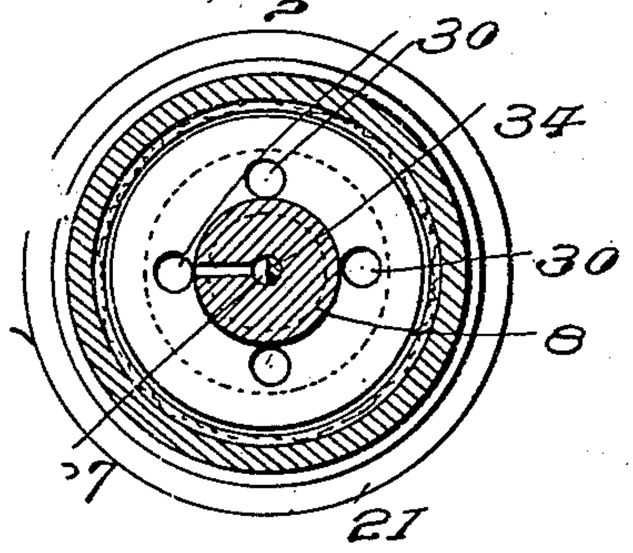


Fig. 4.

Inventor

E. L. Walter.

by

H. B. Wilson & Lacy.

Attorneys.

No. 793,698. Patented July 4, 1905.

UNITED STATES PATENT OFFICE.

EDWIN L. WALTER, OF SCRANTON, PENNSYLVANIA.

TIME-VALVE.

SPECIFICATION forming part of Letters Patent No. 793,698, dated July 4, 1905.

Application filed March 19, 1904. Serial No. 198,935.

To all whom it may concern:

Be it known that I, EDWIN L. WALTER, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Time-Valves, of which the following is a specification.

In its general application this invention is adaptable for the various types and patterns of valves employed in connection with water-pipes to control the outlets thereof.

The invention consists of the novel features, details of construction, and combinations of parts which hereinafter will be more particularly set forth, illustrated, and finally claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a vertical central section of a basin-faucet embodying the essential features of the invention. Fig. 2 is a view similar to Fig. 1, showing the relation of the parts when the valve is open to provide an outlet for drawing off the water. Fig. 3 is a vertical central section of a flush-valve embodying the invention. Fig. 4 is a plan section on the line *y y* of Fig. 1.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The body of the valve is indicated at 1 and is provided with the coupling ends 2 and 3 and a side outlet to which the pipe 4 is coupled, and which pipe may be the nozzle or the flush, according to the style of the fixture and the purpose for which the same is designed. The valve proper is designated at 5 and is provided with a reduced portion 6, the latter performing an important function in either capacity of the fixture, whether used as a faucet or flush-valve. A seat 7 is provided at one end of the valve-body, as at 3, for the valve 5 to close upon, and this seat is preferably of some soft material to insure the formation of a tight joint when the valve 5 is closed. The reduced portion 6 of the valve 5 nearly fills the opening in the end 3, whereby a small flow of water is obtained when the valve 5 is moved a short distance only from its seat. This construction obviating the waste which would be occasioned if the time mechanism was required to be operated nearly or quite to its utmost extent before the valve would be opened. When this feature is applied to a flush-valve, a small quantity of water is assured after the flushing of the bowl or like part prior to the complete closing of the valve to form the necessary water seal.

A relief-valve 10 is connected to the valve-stem 8, so as to move therewith. The main valve is provided with a chamber 11 and side outlets 12, and the valve 10 closes the chamber 11, thereby preventing any flow of water past the valve when the same is seated. The chambered valve has a limited movement upon the valve-stem between the valve 10 and shoulder 13. The play of the chambered valve may be very slight, as shown in Figs. 1 and 2, sufficient to unseat the valve 10, and the movement may be comparatively great, as indicated in Fig. 3, thereby necessitating setting of the time mechanism before the main valve is unseated in order to obtain a full flow of water. As shown in Fig. 3, the shoulder or stop 13 is adjustable, being connected to the valve-stem by a screw-thread.

A shoulder 14 extends into the opening provided in the end 3 and within which the reduced portion 6 of the valve enters. This shoulder constitutes an abutment, and when the relief-valve 10 is unseated and the water rushes into the chamber 11 through the outlets 12 into the space surrounding the reduced portion 6 it impacts against the abutment or shoulder 14 and reacts upon the upper side of the valve 5 and materially assists in unseating the same, whereby the force required to open the valve is materially reduced.

In certain forms of the invention a regulating-valve 15 is provided to enable adjustment of the fixture to the pressure of the water. This regulating-valve may be arranged in an extension of the valve-body or in a coupling 16. The valve 15 is provided with a stem 17 having screw-thread connection with the coupling or extension 16, and this stem to admit of

ter by moving the valve 15 to a greater or less distance from said seat 18. The lower end of the valve-stem 8 is provided with a point 19 to make connection with the valve 15, so as to admit of varying the distance of said valve from its seat by turning it either to the right or to the left. It is necessary to depress or move the valve-stem inward to cause the point 19 to enter a slot or depression 20 in the head of the valve, said point 19 and depression 20 being of angular or other formation to cause turning of the valve 15 when rotating the valve-stem after said parts 19 and 20 have been connected.

The time mechanism is arranged within a cylinder 21, which is coupled to the end 2 of the valve-body. A stuffing-box 22 at the lower end of the cylinder 21 insures the formation of a tight joint between the valve-stem 8 and the parts 1 and 21. A corresponding stuffing-box 23 is provided at the upper end of the cylinder 21 to insure a tight joint between said upper end of the cylinder and the valve-stem. The time mechanism comprises a piston 24, plate 25, spring 26, and by-pass 27, the latter having lateral outlets 28 and 29 arranged the one below and the other above the piston 24. The spring 26 performs the twofold office of automatically closing the valve when released from the pressure exerted to open the same and to return the piston 24 to a normal position. Openings 30 are formed in the piston and are normally closed by the plate 25, as indicated in Fig. 1. The plate 25 is confined upon the valve-stem between a shoulder thereof and a clamp-nut 31. The piston 24 has a limited play upon the valve-stem between the plate 25 and a shoulder 32. A liquid, such as oil or glycerin, is supplied to the cylinder 21 to nearly or quite fill the same. When the valve-stem 8 is pressed upon to cause movement thereof within the cylinder 21, the plate 25 leaves the piston 24, and the liquid below said piston passes freely above the same through the openings 30, which are amply large for this purpose. Upon a reverse movement of the valve-stem the piston 24 closes upon the plate 25, thereby sealing the openings 30, and the liquid above the piston 24 is compelled to pass through the openings 29, 27, and 28, constituting the by-pass, and since this passage is comparatively small the return of the piston to a normal position is retarded, the interval of time corresponding to the period determined upon before the valve becomes seated, so as to shut off the flow of water. Obviously the length of time between the opening and the closing of the valve may be regulated by controlling the size of the by-pass, which is effected in the manner illustrated and now to be described.

An opening is formed in the upper or projecting portion of the valve-stem 8, and the by-pass is a continuation or part thereof. A rod or stem 33 is mounted in this opening, and its inner end carries a projection 34, which, in effect, constitutes a gate to close the opening 29 more or less. The outer end portion of the opening in which the rod or stem 33 is fitted is enlarged and internally threaded, as shown at 35, and is closed at its upper end by a screw-plug 36. A head 37 is formed upon the outer end of the rod 33 and is slotted to receive a screw-driver by means of which the rod 33 may be turned to vary the size of the opening 29. A packing 38 is confined between the head 37 and the lower end of the opening 35. A button or handpiece 39 is fitted to the projecting end of the valve-stem 8 to receive the pressure of the hand when opening the valve.

Having thus described the invention, what is claimed as new is—

1. In a faucet or like fixture, the combination with the valve-body provided with an inlet and an outlet, the inlet having an inner shoulder at one end to form an abutment, a valve closing against the opposite end of said inlet and having a reduced portion passed therethrough to form an annular space between it and the casing, said valve having passages opening in the said annular space, and a relief-valve for closing the passages through the aforementioned valve, substantially as set forth.

2. In a faucet or like fixture, the combination of the valve-body having an inlet-opening, provided at one end with a valve-seat and at the opposite end with an inner shoulder forming an abutment, a reciprocating valve for closing upon said valve-seat and having a reduced portion to enter the inlet-opening and form an annular space between itself and the casing and provided with a passage opening into said annular space, a relief-valve coöperating with the main valve, and a valve-stem fixedly connected with the relief-valve and having a limited play with reference to the main valve, substantially as set forth.

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

EDWIN L. WALTER. [L. S.]

Witnesses:
A. B. LACEY,
JNO. ROBB.