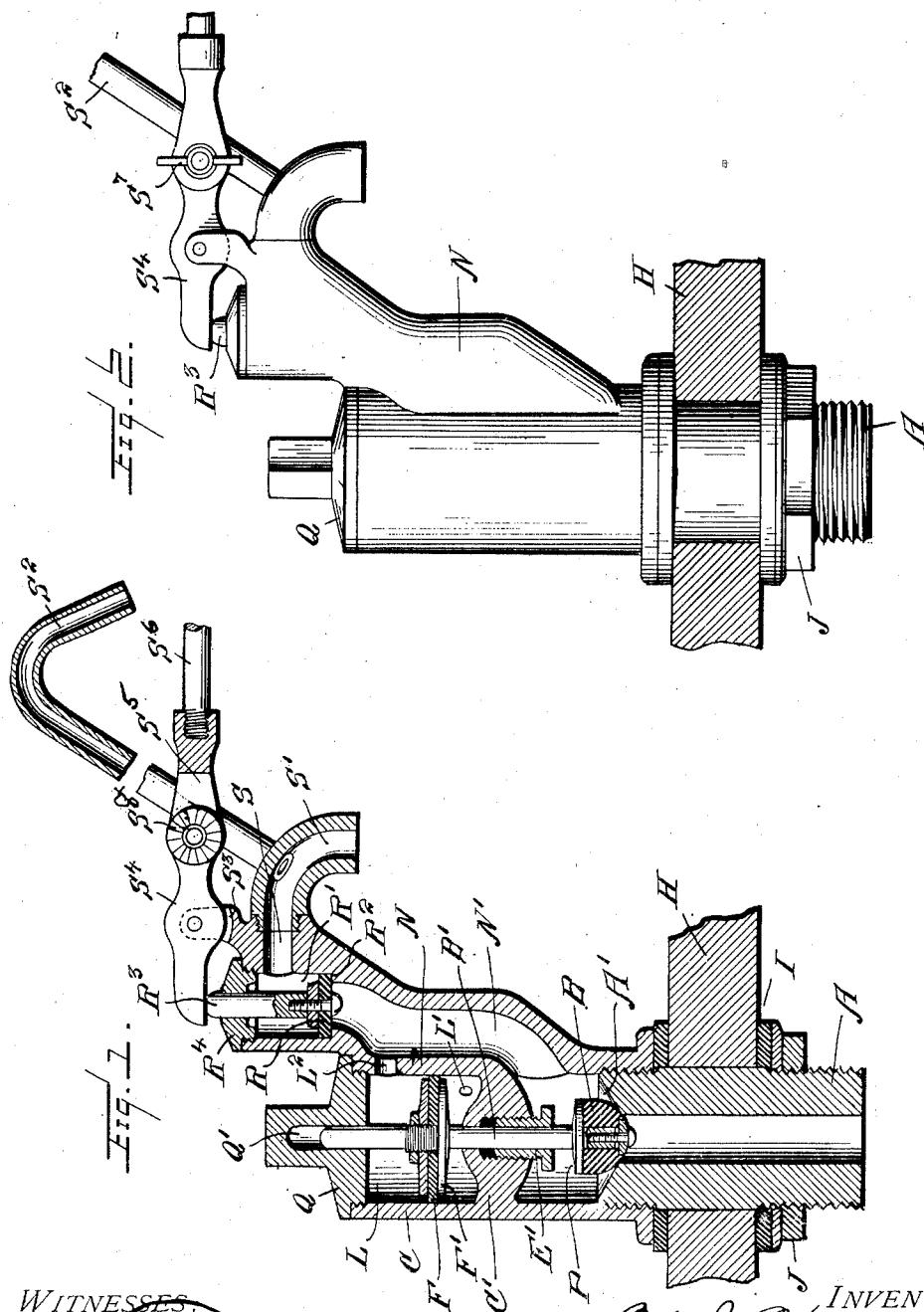


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HIGH PRESSURE REDUCING AND NOISELESS VALVE FOR FLUSH TANKS.
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926,787.

Patented July 6, 1909.



WITNESSES.

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ALPHEUS G. VIRKLER, OF LOWVILLE, NEW YORK.

HIGH-PRESSURE REDUCING AND NOISELESS VALVE FOR FLUSH-TANKS.

No. 926,787.

Specification of Letters Patent.

Patented July 6, 1909.

Application filed March 6, 1909. Serial No. 481,737.

To all whom it may concern:

Be it known that I, ALPHEUS G. VIRKLER, a citizen of the United States, residing at Lowville, in the county of Lewis and State of New York, have invented certain new and useful Improvements in High-Pressure Reducing and Noiseless Valves for Flush-Tanks; and I do hereby declare the following to be a full, clear, and exact description of the invention, 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, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in high pressure reducing valves and the object in view is to produce a simple and efficient apparatus of this nature which will be noiseless in operation and dispensing with springs commonly employed for seating valves.

The invention comprises various details of construction, combinations and arrangements of parts which will be hereinafter fully described and then specifically defined in the appended claims.

My invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a vertical sectional view through the valve, and Fig. 2 is a side elevation.

Reference now being had to the details of the drawings by letter, A designates a tube or pipe having its upper end recessed at A' and forming a seat for the valve member B which is fixed to the stem B'.

C designates a valve member casing having a transverse partition C' which is apertured for the reception of the stem B' of said valve member and is also chambered to receive a hollow plug E' through which the stem passes. Said stem has a piston member, designated by letter F, of larger diameter than the valve member B and is held between the disks F' upon said valve stem. The pipe or tube A, which has threaded ends, has threaded connections with one end of said shell and is adapted to pass through the bottom H of a flush tank or other receptacle in which the apparatus is adapted to be positioned. Suitable washers I are interposed between the shell and the upper surface of the bottom H and also between the nut J and the under surface of said bottom H, and to the lower end of the pipe is adapted to be

connected a pipe through which water from a main may be communicated to the valve casing. A threaded cap Q is fitted within the upper end of the shell and has a recess Q' therein for the reception of the upper end of the stem B', thus serving to guide the stem in its longitudinal movements.

The piston member F, it will be noted, has a movement within the chamber L of said shell, which chamber has an aperture L' formed in the wall thereof to prevent suction underneath said piston member F retarding the upper movement of the latter and an aperture L² leads from said chamber L through the wall N of the shell into a branching duct or passageway N' which leads from the chamber P below the partition C'. A flow actuated valve, designated by letter R, is mounted in a chamber R' of said branching duct or passageway and is adapted to seat against a shoulder R² formed in the circumferential wall thereof. The valve R is provided with a stem R³ passing through a threaded cap R⁴ which is fitted to threads in the upper end of the passageway R'. Leading from the chamber R' is a port or passageway S, and S' designates an outflow pipe from which leads the usual refilling tube S².

Pivotaly mounted upon the fingers S³ of the shell is a lever S⁴, the free end of which is adapted to bear against the stem R³ to hold the valve R seated, while its other end is provided with a threaded aperture for the reception of the tightening screw S' which passes through the forked end of the socket member S⁵, the inner faces of the forked end of the member S⁵ having serrations about the apertures therein adapted to intermesh with one another, said screw being adapted to pass through apertures in the ends of the member S⁵ and, when tightened, to cause the member S⁵ to be held in different adjusted positions. The socket member S⁵ has a stem S⁶ of a float, not shown, connected thereto and which float is designed to rise and lower with the water in a tank.

In operation, when the flush tank is full, the stem of the float and the various parts of the apparatus will assume the position shown in Fig. 1 of the drawings. When the tank is flushed by the opening of the valve to allow the water to make exit therefrom and which exit valve is not shown in the drawings, the stem of the float will lower and the pressure of the water main connected to the pipe A will overbalance the valve mem-

ber B and valve R and allow the water to flow up through the pipe A, the shell and branching passageway N' therein and make exit through the outflow pipe S' in the tank.

5 As the float rises with the water in the tank, the valve R will be gradually closed and the pressure of the intruding water through the pipe A and passageway N' will cause the chamber L to fill with the same pressure and

10 which, acting upon the piston member F which is of larger area than the valve member B, will cause the latter to seat and shut off the supply of water. The refilling tube S² affords means whereby water may be fed

15 from the apparatus to the pipe S' in the usual way.

By the provision of the apparatus as shown and described, all springs are dispensed with and a practically noiseless high pressure reducing valve is afforded and

20 which is automatic in its action.

What I claim as new is:—

1. A high pressure reducing valve comprising a valve casing having a plurality of chambers therein, a valve stem movable

25 through an aperture in the wall separating said chambers, members of different diameters fixed to said stem and one positioned in each of the chambers thereof, a tube connected to said casing and against which the

30 smaller of said members is adapted to seat, a passageway leading from one of said chambers and communicating with the other above the larger member, and a float actuated valve positioned in said passageway, as

35 set forth.

2. A high pressure reducing valve comprising a valve casing having a plurality of chambers therein, a valve stem movable

40 through an aperture in the wall separating said chambers, members of different diameters fixed to said stem and one positioned in each of the chambers thereof, a tube connected to said casing and against which the

45 smaller of said members is adapted to seat, a passageway leading from one of said chambers and communicating with the other above the larger member, said passageway having a shoulder formed in the wall thereof,

50 a valve adapted to seat against said shoulder, and a float adapted to regulate the valve in said passageway, as set forth.

3. A high pressure reducing valve comprising a valve casing having a plurality of chambers therein, a valve stem movable

55 through an aperture in the wall separating said chambers, members of different diame-

ters fixed to said stem and one positioned in each of the chambers thereof, a tube connected to said casing and against which the

60 smaller of said members is adapted to seat, a cap fitted to the upper end of said casing and having a recess therein adapted to receive and guide said stem, said casing having a laterally extending passageway communicating with the chamber in which the

65 larger of said members is held, and a float actuated valve mounted in said passageway, as set forth.

4. A high pressure reducing valve comprising a valve casing having a plurality of chambers therein, a valve stem movable

70 through an aperture in the wall separating said chambers, members of different diameters fixed to said stem and one positioned in each of the chambers thereof, a tube connected to said casing and against which the

75 smaller of said members is adapted to seat, a cap fitted to the upper end of said casing and having a recess therein adapted to receive and guide said stem, said casing having a laterally extending passageway communicating with the chamber in which the

80 larger of said members is held, the circumference of said passageway having a shoulder forming a valve seat, a threaded cap fitted to the upper end of said passageway

85 above said shoulder, a valve and stem positioned in said passageway, a pivotal lever bearing against the stem of the valve in said

90 passageway, a float stem connected to said lever, an outflow pipe leading from said passageway above the valve therein, and a refilling tube leading from said outflow pipe, as

95 set forth.

5. A high pressure reducing valve, comprising a valve casing having a plurality of chambers therein, a valve stem movable

100 through an aperture in the wall separating said chambers, members of different diameters fixed to said stem and one positioned in each of the chambers thereof, a seat for the smaller of said members, a passageway leading from one of said members and communicating with the other above the larger

105 of said members, and a float-actuated valve positioned in said passageway, as set forth.

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

ALPHEUS G. VIRKLER.

Witnesses:

J. R. SCHLIEDER,
WALTER S. SALISBURY.