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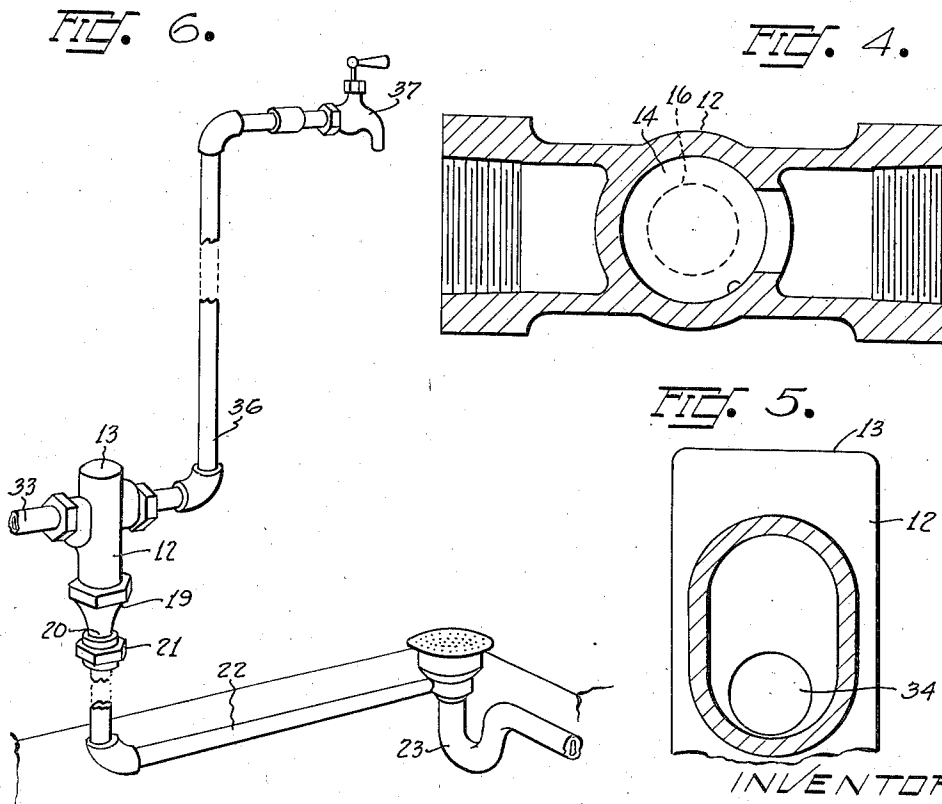
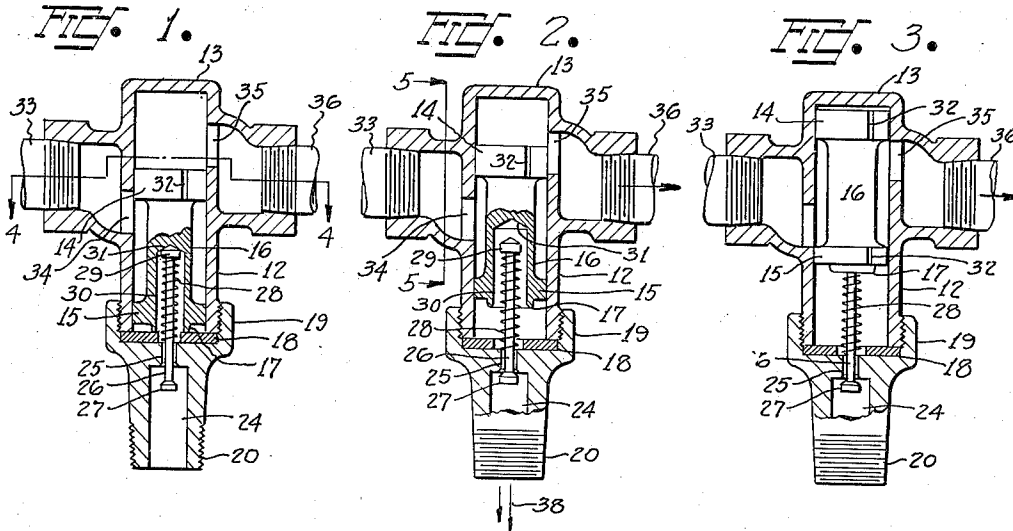
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2,126,140

PRIMER VALVE FOR FLOOR DRAINS

Filed Dec. 5, 1936

2 Sheets-Sheet 1



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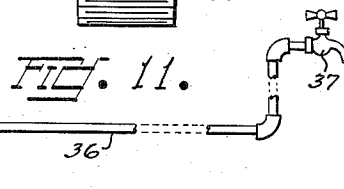
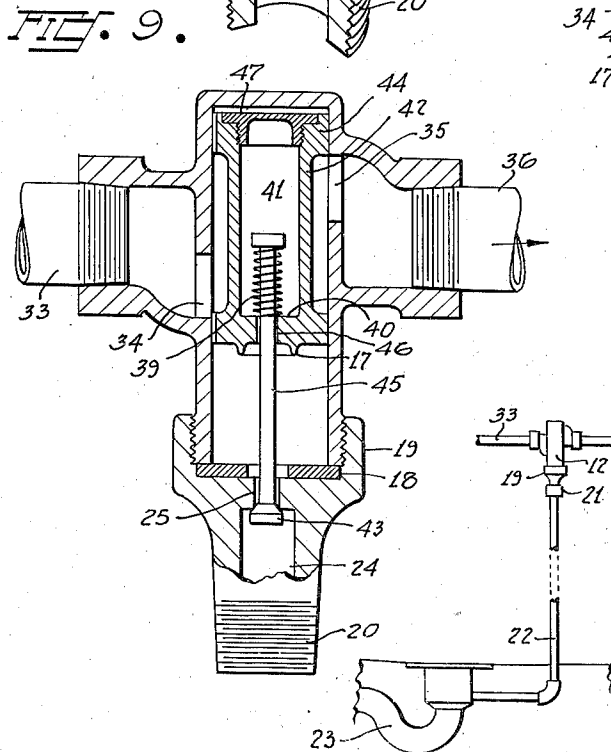
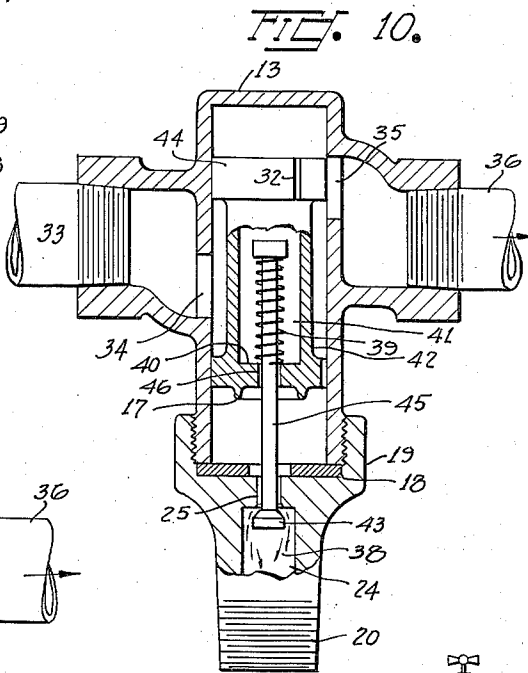
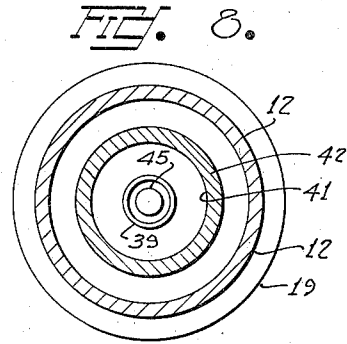
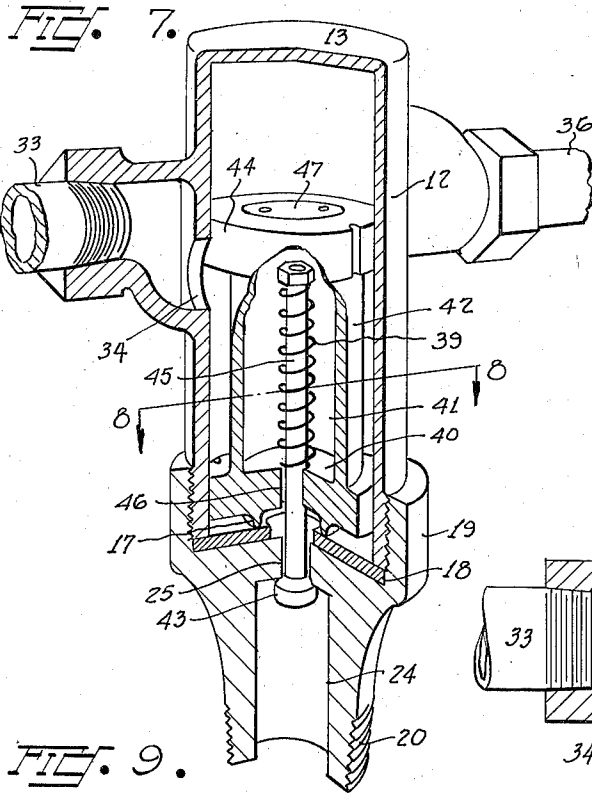
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PRIMER VALVE FOR FLOOR DRAINS

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2 Sheets-Sheet 2



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PRIMER VALVE FOR FLOOR DRAINS

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6 Claims. (Cl. 182—12)

This invention relates generally to primer valves, and particularly to primer valves for floor drains.

The main object of this invention is the provision of a primer valve which will positively insure the seal of a floor drain trap.

The second object is the construction of a primer valve which will operate positively over long periods of time without being objectionably influenced by unfavorable water conditions.

The third object is the construction of a valve of the class described which will positively eject a measured quantity of water each time the valve is operated.

The fourth object is the construction of a valve which will entirely eliminate leakage and which will also make it impossible for water and gas to be siphoned from a trap into a fresh water system and thereby contaminate same.

These and other objects are accomplished in the manner set forth in the following specification as illustrated in the accompanying drawings, in which:

Fig. 1 is a vertical section through one form of the device showing the valve closed at the end of an ejection.

Fig. 2 is a view similar to Fig. 1 showing the valve in a partially open position.

Fig. 3 is similar to Fig. 2 but showing the valve fully opened.

Fig. 4 is a section taken along the line 4—4 in Fig. 1.

Fig. 5 is a section taken along the line 5—5 in Fig. 2.

Fig. 6 is a perspective view showing the manner of installing the device.

Fig. 7 is a perspective view through a modified form of the device with portions broken away to disclose the parts and showing the valve at rest in a closed position.

Fig. 8 is a section taken along the line 8—8 in Fig. 7.

Fig. 9 is a vertical section through the valve shown in Fig. 7 showing water being drawn therethrough but with the outlet to the trap closed by a check valve.

Fig. 10 is a view similar to Fig. 9 showing the check valve opening under the pressure within the valve.

Fig. 11 is a view showing a representative form of installation.

Similar numbers of reference refer to similar parts throughout the several views.

Referring in detail to the drawings, there is shown in Figs. 1 to 6 a valve having a cylinder

body 12, whose upper end 13 is closed and within which is slidably mounted a piston 14 which is connected to a guide 15 by means of a hollow rod 16. The end 17 of the rod 16 is annular and it is adapted to engage the composition seat 18 which constitutes the lower head of the cylinder 12.

The seat 18 is held in place by means of the reducing coupling 19 whose larger end is screwed upon the lower end of the body 12 and whose smaller end 20 is connected by means of a union 21 to the priming pipe 22 which communicates with the trap 23, as shown in Fig. 6, or in any other convenient manner.

The coupling 19 has formed therein a recess 24 which communicates with the interior of the body 12 by means of the seated opening 25 within which is slidably disposed the stem 26 whose lower end has formed thereon a check valve 27 which is adapted to close the opening 25 when the valve 27 is in the uppermost position. On the upper end of the stem 26 is placed a compression spring 28 whose function it is to urge the stem 26 upwardly. The spring 28 reacts at its upper end against the head 29 on the stem 26. The portions of the stem 26 and the spring 28 which are above the seat 18 can occupy a recess 30 formed within the rod 16. The head 29 engages the end 31 of the recess 30 when the piston 14 is in a lowered position. It is desirable to provide grooves 32 in the side of the piston 14 and the guide 15.

Water enters the cylinder body 12 from the supply pipe 33 through the port 34 and escapes from the port 35 into the water delivery pipe 36 to the faucet 37, or other outlet. It will be noted that the ports 34 and 35 are not opposite, the former being somewhat lower than the latter.

The operation of this form of the device is as follows:

With the faucet 37 closed, the water in the body 12 exerts a downward pressure on the piston 14 holding it in the position shown in Fig. 1, that is, with the check valve 27 open but with the rod end 17 engaging the seat 18. If the valve 27 is opened, it causes the piston 14 to rise to the position shown in Fig. 2 and as soon as the check valve 27 engages the seated opening 25, the end 31 of the recess 30 is disengaged from the head 29 and as the faucet 37 is opened the piston 14 continues to rise until it reaches the position shown in Fig. 2.

It will be noted in Fig. 2 that the check valve 27 is not engaging its seat. This illustrates the position when the piston 14 is descending and

represents a period when water 38 is being discharged from the valve.

In the form of the device shown in Figs. 7 to 11, inclusive, the parts are identical with the first described form of the device except that the spring 39 reacts against the bottom 40 of the recess 41 formed within the rod 42.

In this form of the device the pressure on the spring 39 increases the closing action of the check valve 43 as the piston 44 rises. The check valve stem 45 passes freely through the opening 46 which communicates with the recess 41. The recess 41 is closed at its upper end by means of a plug 47 which is threaded into the piston 44.

It will be noted that in both forms of the device, water cannot pass through the opening 25 unless the pistons 14 or 44 are descending, that is, when they are displacing the water from the underside of the guide 15. This means that the movement of water through the opening 25 can only be in a downward direction and that it will be impossible for water or gas to move upwardly through the opening 25 and thereby contaminate the fresh water system which is supplied through the pipes 33 and 36.

It will be noted that with the constructions herein described, a definite quantity of water is delivered to the trap 23 each time the outlet faucet 37 is closed. There is no wastage of water by a positive delivery of a fixed quantity at each faucet closing operation which will insure the maintenance of a water seal at the trap 23 at all times.

I claim:

1. A primer valve consisting of a cylindrical body having an outlet at one end thereof communicating with a floor drain trap, said outlet having a check valve therein adapted to open under internal pressure, a piston actuated closure for said opening, a spring for urging said check valve toward a closed position, a fresh water supply pipe communicating with said cylindrical body between said piston and outlet and an outlet conduit communicating with said cylindrical body at a point more remote from said check valve than is said fresh water supply pipe.

2. A primer valve for floor drain traps consisting of a cylindrical body adapted to be interposed in a fresh water supply line, said cylindrical body having an outlet connection communicating with a floor drain trap, said outlet connection having a check valve mounted therein provided with a spring for urging same toward a closed position and having a piston mounted therein including a

valve for closing the opening of said check valve, said check valve serving to close at all times except when said piston operated valve is moving toward a closed position.

3. A primer valve consisting of a cylindrical body having one end closed and the other end provided with a head having an outlet opening communicating with a floor drain trap, said outlet opening having a check valve mounted therein normally urged to a closed position by a spring disposed within said cylindrical body and a piston operated valve within said body adapted to close said outlet opening independently of said check valve, said piston operated valve serving to open said check valve while said piston operated valve is moving toward a closed position, said cylindrical body having fresh water inlet and outlet openings through which water may be permitted to pass through said body in a manner to move said piston away from said outlet opening when water is permitted to flow through said cylindrical body.

4. The device described in claim 3, characterized by having said spring react between said piston and said check valve.

5. In a device of the class described, the combination of a body having an outlet opening at the lower end thereof through which water may enter a floor drain trap, a spring urged check valve normally closing said opening, said body having lateral inlet and outlet ports formed therein, a metering valve within said body adapted to move to a position closing said first named outlet when no water is passing through said ports and to be moved away from said position when water is flowing through said ports during which time said check valve is closing said outlet.

6. A primer valve consisting of a cylinder having a water inlet connected with a plumbing fixture, a plunger slidably mounted in the cylinder, a valve formed on the lower end of the plunger, a valve seat surrounding a discharge opening in the bottom of the cylinder, said valve adapted to rest upon the valve seat to close the discharge opening when the plumbing fixture is closed, a cleaning pin loosely and yieldingly carried by the plunger and extending through said discharge opening, a valve seat formed in said discharge opening, and a valve formed on the end of the cleaning pin for engagement with the valve seat during upward movement of the plunger.

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