Oct. 21, 1930. W. H. GOHRING 1,779,064

VALVE

Filed March 23, 1923

Fig. 1

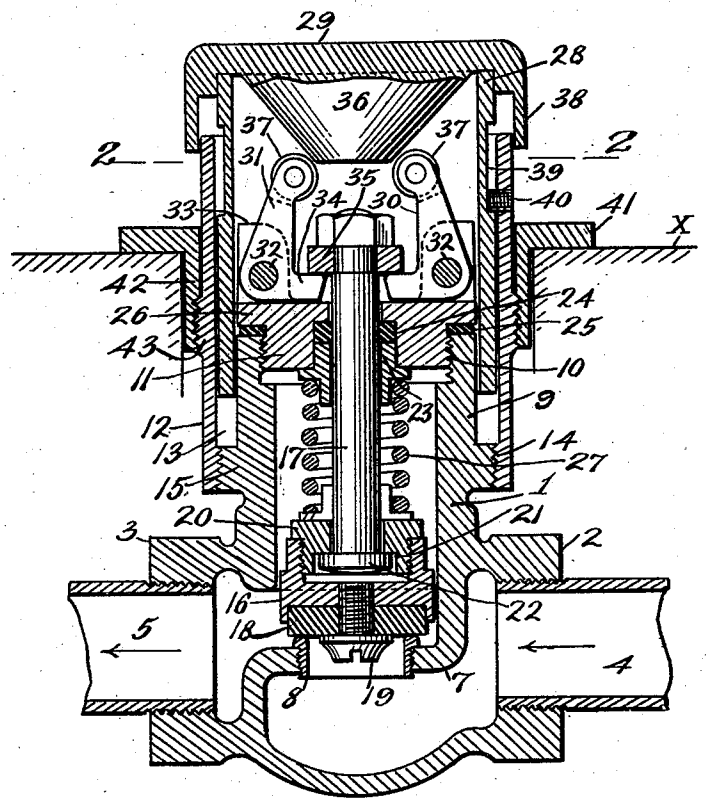
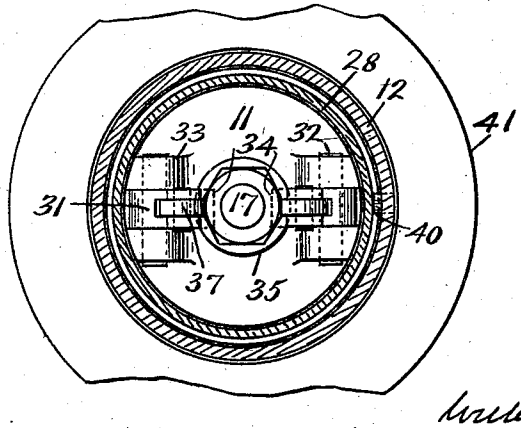


Fig. 2.



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VALVE

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This invention relates to certain improvements in water control valves and more particularly to water control valves for flushing purposes, though capable of use in other relations.

It is the especial object of the present invention to provide a control valve of simple and compact form which can be set in the floor so as to project but slightly above the floor level and in which the valve may be operated by a straight line pressure applied above the valve, as for instance, by a foot of the user stepping on the valve operating mechanism, the valve being so designed that when set in the floor access of accidental water on the floor to the interior of the valve is prevented.

It is a further object of the invention to provide a casing for the valve mechanism which may be set in the floor with a floor plate adjustable relatively to the valve casing so that the parts may be placed in position where there are variations between the floor level and the water supply pipes.

It is a further object of the invention to provide a valve structure in which the parts are so arranged as to permit of easy access for inspection and repair.

With these and other objects not specifically referred to, the invention consists in certain novel parts, arrangements, and combinations, a preferred form of which is illustrated in the accompanying drawings and the novel features of which will be pointed out in the claims hereunto appended.

In the drawings—

Figure 1 is a central vertical sectional view of the improved valve.

Figure 2 is a sectional plan view, the view being taken on line 2—2 of Fig. 1.

Referring now to these drawings, the valve structure selected to illustrate the invention is a compression valve, that is, a valve closing against the pressure in the line, but the invention is not to be restricted to this, but may be employed where the valve will close with the pressure in the line. As shown, the improved valve structure includes a casing 1 formed at its lower end with threaded projections 2, 3 to receive the inlet pipe 4 and outlet pipe 5 respectively. A passage 6 is formed in the bottom of the casing divided by a partition 7 in which is provided a valve seat in the form of a hollow block 8 screwed into the partition.

The casing is provided with an upwardly extending tubular projection 9 interiorly threaded, as indicated at 10, to receive a plate or block 11. The casing, also, includes a sleeve 12, this sleeve being spaced from the upper part of the extension 9, as indicated at 13, this sleeve extending above the top of the extension 9. While this sleeve might, if desired, be formed integral with the casing 1, for convenience in manufacture and assembling it is made separately and is provided with a threaded end 14 which screws on to a threaded flange 15 formed on the casing.

In this casing is positioned the valve mechanism and the actuating mechanism therefor, and this mechanism is of such character that the valve is closed against pressure in the line, the actuating mechanism for the valve operating to lift the valve from its seat, the valve being returned to its seat automatically. While this operating mechanism may be somewhat varied, it will include an actuator for lifting the valve which will operate with a vertical sliding movement caused by pressure applied from above so that no sidewise projecting parts are necessary and a simple and compact structure is provided, one that is out of the way and takes up very little room. Furthermore the mechanism will be such that the operating parts can be removed from the top of the casing so as to provide ready accessibility for inspection and repair.

In the particular construction illustrated there is provided a valve including a head 16 and a stem 17. In the best constructions this head will have a swivel connection with the stem so as to permit of a slight sidewise play which assists in the seating of the valve. As shown the head 16 is provided with a facing 18 of rubber or the like secured to the head by a screw 19, this rubber facing seating on the seat 8. Screwed in the head 16 at its other end is a block 20 having a

shouldered recess 21 which receives a collar 22 on the end of the valve stem 17, the stem thus having a slight play in the head.

The valve stem passes through the plate or block 10 through a suitable stuffing gland 23, packing 24 being provided about the stem and packing 25 also being provided between the top of the extension 9 of the casing and the plate or block, the block being provided with a flange 26 under which the packing 25 is placed. The valve is automatically returned to its seat by means of a spring 27 which bears against the head of the valve and the under side of the stuffing gland 23, the valve being opened against this spring. With this construction a steady closing movement of the valve is obtained and, the valve closing against the pressure of the line, water hammer is prevented.

A mechanism for lifting the valve will, as before stated, include an actuator which has a vertical or straight line movement so that it can be operated by the direct pressure, as for instance, by the foot of the user. In the construction illustrated, this mechanism includes an actuator in the form of a hollow plunger 28, this plunger being provided with a cap 29. The walls of the plunger have a vertical sliding movement in the space 13, before referred to, formed between the extension 9 and the sleeve 12 of the casing. This plunger co-operates with the valve lifting devices which, as shown, include a pair of lifter arms 30, 31, pivoted at 32 in brackets 33 formed on the top of the plate 10, before referred to. These lifter arms at their lower ends have an inwardly directed toe 34 which bears against the under side of a collar 35 on the upper end of the valve stem 17, before referred to. As these lifter arms are rocked outwardly on their pivots the valve is lifted and the plunger is provided with means for effecting this, shown in the form of a cone shaped projection 36 depending from the inner surface of the cap between the upper ends of the lifter arms.

To facilitate the movement of the lifter arms they are or may be provided with rollers 37. Where these valves are positioned beneath the flooring of a room, a use for which they are particularly designed, means are preferably provided for preventing accidental water from getting into the interior of the valve. A convenient way for effecting this is that shown, in which the plunger cap is provided with a depending skirt or flange 38, this flange extending down over the upper edge of the sleeve 12, before referred to, this sleeve projecting, as shown, a short distance above the floor line, indicated at *x*. Means may be provided, if desired, for limiting the upward movement of the plunger so that the plunger will always extend down over the top of the sleeve. As shown, the wall of the plunger is recessed, as indicated at 39, and a set screw 40 is passed through the sleeve wall so as to extend into this recess.

In valves embodying the invention in its best form, particularly where the valves are to be set beneath the floor, a floor plate is provided surrounding the sleeve 12, this floor plate being indicated by the numeral 41. As the distance between the service line and the floor generally varies somewhat, in order to provide for the correct positioning of the plate, the plate is made adjustable with respect to the casing. As illustrated the plate is formed with a depending threaded collar 42 which screws on to a threaded portion 43 formed on the outer wall of the sleeve 12.

With the construction shown and described a very simple and efficient valve has been provided, one which will be simple in operation, which takes up but little space, and one which can be set in the floor so as to project but slightly above the floor surface thus being inconspicuous and out of the way and in which access of accidental water is prevented.

While the valve has been shown in its preferred form, it will be understood that changes and variations may be made in the specific construction shown and described without departing from the spirit of the invention.

What I claim is:

1. The combination of a casing arranged to be set into a floor, a valve therein, a valve seat, connections for moving the valve from its seat, and a floor plate secured on the casing and adjustable thereon relatively to the floor after the parts are in position.

2. The combination of a casing arranged to be set into a floor, a valve and a valve operating mechanism in the casing, a sleeve carried by the casing, and a floor plate secured to the sleeve and adjustable thereon relatively to the floor when the parts are in position.

3. The combination of a casing arranged to be set into a floor, a valve therein, a valve seat, connections for moving the valve from its seat including a plunger operable by pressure applied to its top and a floor plate secured on the casing and adjustable relatively to the floor when the parts are in position.

4. The combination of a casing, a valve therein, a valve seat, connections for moving the valve from its seat including a plunger closing the casing and having a flange extending down over the upper edge of the casing, and a floor plate adjustably associated with the casing below the flange of the plunger.

5. The combination of a valve casing, a valve therein, a sleeve carried by the casing, a plunger having a part movable between the sleeve and the casing for operating the valve, and a floor plate threaded to the sleeve.

6. The combination of a casing secured in a service line opening above the floor line, a valve chamber therein, a block threaded in

the casing, a valve carried by the block, valve operating mechanism mounted on the block, said block and associated mechanism being removable as a unit through the end of the casing, and a sliding plunger closing the casing for operating the valve mechanism and having a part extending down over the upper edge of the casing.

7. The combination of a valve casing, a valve in the casing, a sleeve secured to the casing, a plunger for operating the valve having a part sliding between the sleeve and the casing, and a cap on the plunger extending down over the upper end of the sleeve.

8. A foot valve comprising a valve casing and adapted to be imbedded in a floor and formed with an outwardly extending flange at the floor level and with a cylindrical portion projecting above said flange and open at its upper end, and a movable valve actuating member mounted in said casing and covering said upper end portion of said casing and comprising a depending cylindrical skirt portion which surrounds said upper end portion of the casing.

9. A foot valve comprising a valve casing having a cylindrical open upper end portion and adapted to be imbedded in a floor with said upper end portion projecting above the floor level, and a movable valve actuator covering said portion of said casing and comprising a depending body portion extending into, and a depending cylindrical skirt portion which surrounds said upper end portion.

In testimony whereof, I have hereunto set my hand.

WILLIAM H. GOHRING.