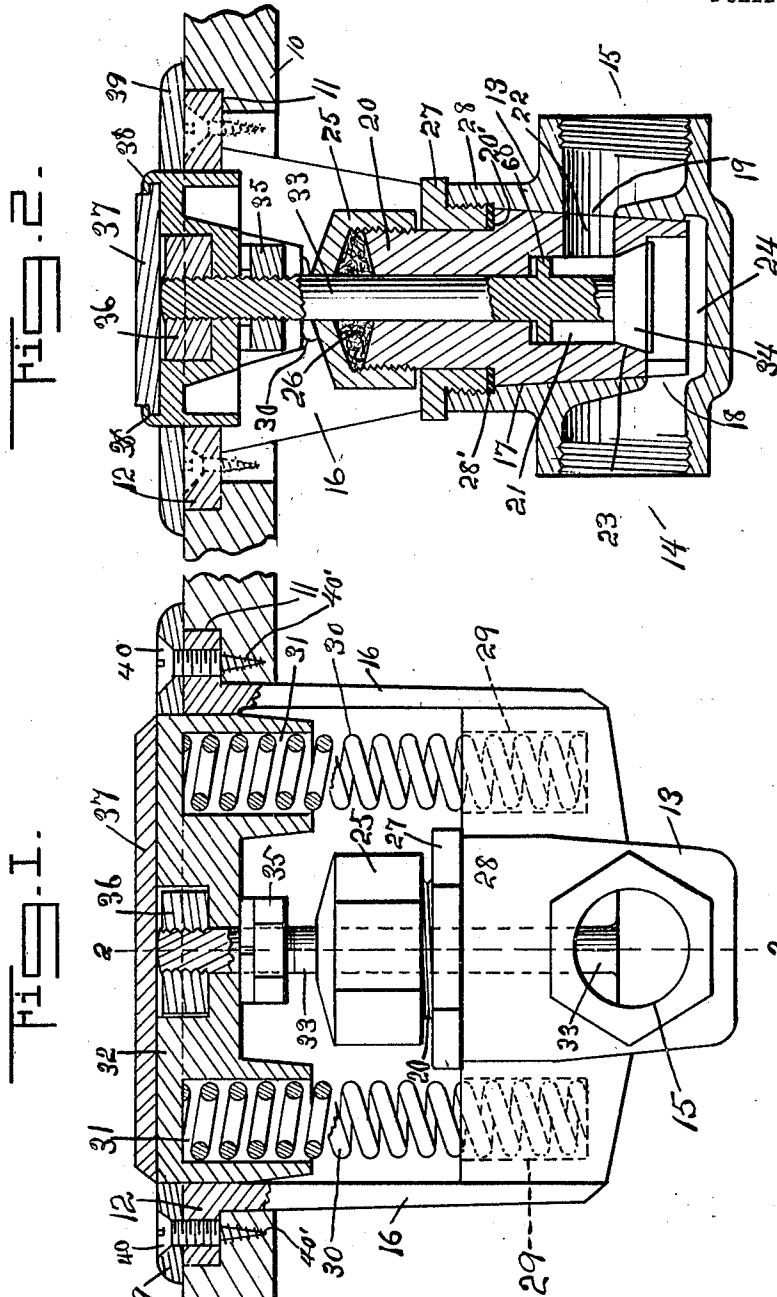


V. D. RENWICK, JR.
 FOOT OPERATED VALVE.
 APPLICATION FILED JUNE 1, 1911.

1,004,467.

Patented Sept. 26, 1911.

2 SHEETS-SHEET 1.



WITNESSES
L. Cloud Newman
A. M. Wilson

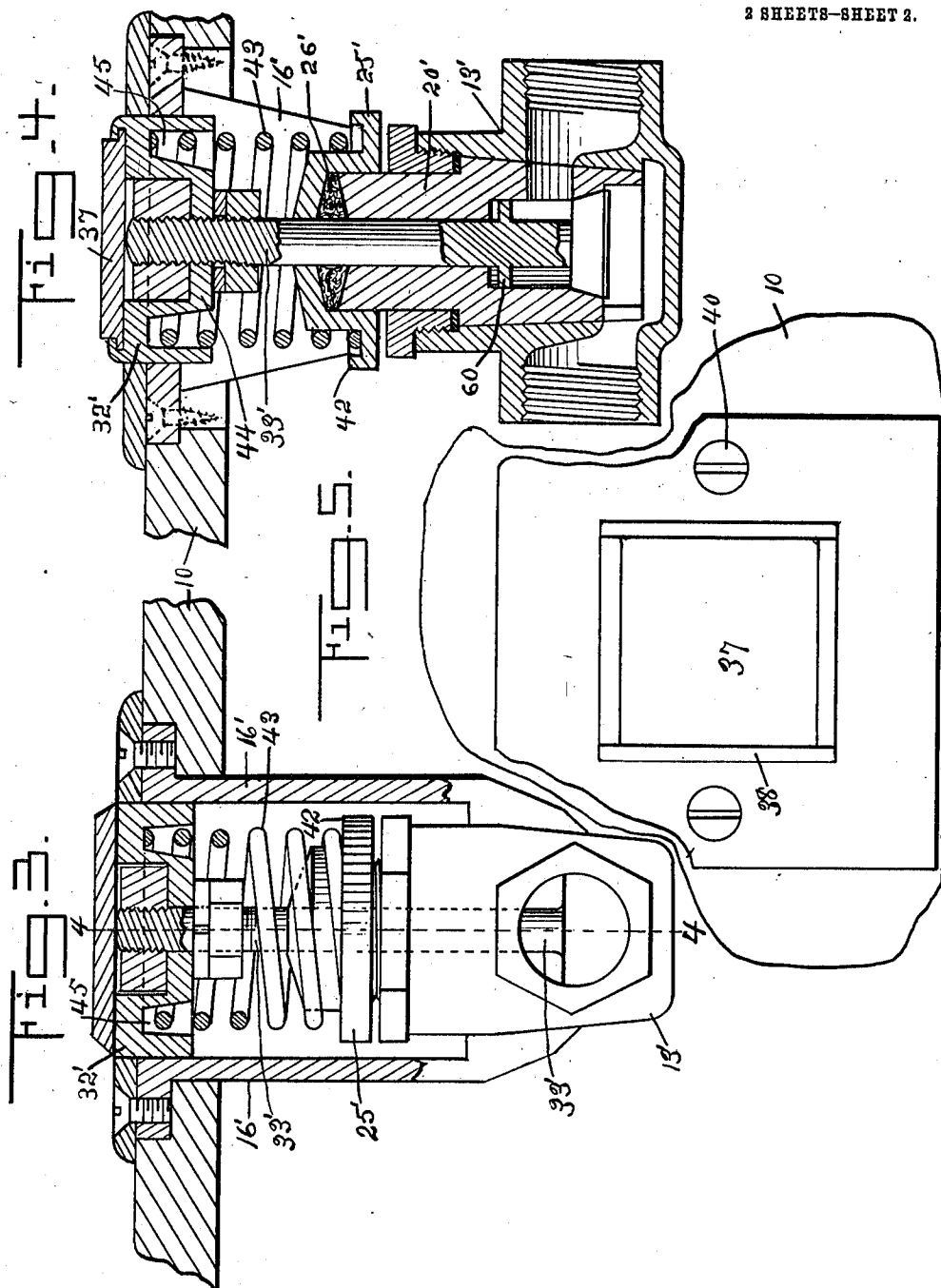
INVENTOR
Victor D. Renwick, Jr.
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UNITED STATES PATENT OFFICE.

VICTOR D. RENWICK, JR., OF PLEASANTVILLE, NEW JERSEY, ASSIGNOR OF ONE-FOURTH TO FREDERICK W. RENWICK, ONE-FOURTH TO GEORGE C. HARRIS, AND ONE-FOURTH TO CLAUDE B. SMITH, ALL OF ATLANTIC CITY, NEW JERSEY.

FOOT-OPERATED VALVE.

1,004,467.

Specification of Letters Patent. Patented Sept. 26, 1911.

Application filed June 1, 1911. Serial No. 630,735.

To all whom it may concern:

Be it known that I, VICTOR D. RENWICK, Jr., a citizen of the United States, and residing at Pleasantville, in the county of Atlantic and State of New Jersey, have invented certain new and useful Improvements in Foot-Operated Valves, of which the following is a specification.

This invention relates to improvements in foot operated valves and more especially to that class of such devices known as push button valves.

An object of the present invention is the provision of a simple valve construction especially adapted for water service pipes and readily operable without the aid of the hands of the operator but solely otherwise manipulated.

The present valves are of the self-closing type and while the use of such valves operated by the feet of the operator is known to be used in special instances, such as in surgical hospitals and also included in the wash basin slab for operation by hand, this broad invention is not now claimed; but the present construction is especially designed for providing a foot operated water valve that is simple and easy to manufacture and at the same time readily adaptable for all common uses, such as in connection with the wash basin or sink of the ordinary toilet room or kitchen. Another object is to provide such a valve construction in which all the parts may be easily accessible and by the releasing of a single element the entire valve member and its mechanisms are freely removable from the valve casing.

While there is herein shown but a single device, it will be understood that the invention is not alone limited thereto but is readily adaptable for the manipulation by a single push button or floor plate of a plurality of valves, such as a separate valve for hot and cold water.

With these general objects in view and others that will appear as the nature of the invention is better understood, the same consists of the novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings forming a part of this application and in which like designating

numerals refer to corresponding parts throughout the several views: Figure 1 is a side elevation of the device with a portion thereof shown in longitudinal section. Fig. 2 is a transverse sectional view taken upon line 2—2 of Fig. 1. Fig. 3 is a side elevation of another form of the device partly shown in section. Fig. 4 is a central section thereof taken upon line 4—4, and, Fig. 5 is a plan view of a floor section including the device positioned therein.

Referring in detail to the drawings, the floor 10 being provided with a mortise opening 11 is illustrated with the plate member 12 positioned therein and to the underneath surface of which the valve casing 13 is suspended, the latter being provided with the usual inlet and outlet ports 14 and 15 respectively, by the opposite side plates 16 forming a yoke suspension for said casing, easily removable through said opening.

The casing 13 is centrally provided interiorly thereof with the tapered opening or bore 17 within which communication is had with the bottom thereof by the contracted portion 18 of the inlet and at a point therein and above said opening by a contracted portion 19 of the outlet. A tapered cylindrical valve plug 20 is ground for closely fitting within the bore 17 and having a hollow chamber 21 therein is afforded communication with the outlet through the port 22 in the wall of said chamber. The bottom wall of said chamber moreover is provided with an inwardly tapering valve seat 23 which seat is in the form of a port affording communication between the chamber 21 and the space 24 beneath the valve plug and the inlet. A cap 25 being screw-threaded upon the top of the plug 20 provides a stuffing box 26 therebetween. A collar 27 is loosely journaled upon said plug at a point beneath said cap and is screw-threaded within the upper extension 28 of the valve casing in such a manner that the unscrewing upwardly of the collar 27 operates by its contact with the cap 25 to forcibly remove and withdraw the plug from the casing. A copper asbestos lined gasket 28' is interposed between said collar and the annular seat 20' of the plug.

Sockets 29 are provided on opposite sides of the valve casing member 13 secured to

the plates 16 for the reception of the bottoms of helical springs 30 which, at their tops, are seated within similar sockets 31 provided in the under surface of the actuating plate 32.

5 A valve stem 33 extending centrally through the valve plug terminates at its lower end in a tapered valve 34 adapted to accurately fit the seat 23 while the upper end of the valve stem is secured to the floor plate 32 by set nuts 35 and 36. In any desirable manner, a friction plate 37 may be secured to the floor plate 32, the same being here shown as slidably mounted therein between the opposing flanges 38 thereon, the said member 37 being preferably formed of a substance which is warm to the touch of the individual when desiring to operate the valve for instance by the hand or bare foot. Surrounding the floor plate 32 is provided a finishing plate 39 secured to the plate member 12 by hold-fast devices 40, while four wood screws 40' secure the plate 12 to the floor 10.

25 In Figs. 3 and 4 a less intricate form of the invention is disclosed and in which the side springs 30 are eliminated while the side plates 16' are secured to the valve casing 13' in substantially an identical manner. The valve and plug construction as well as the valve stem connection with the floor plate being substantially identical to that above described in connection with Figs. 1 and 2, it will be unnecessary to further describe the remaining elements with the exception of those which differ in the two constructions.

Further referring to Figs. 3 and 4, it will be noted that the cap 25' is loosely journaled upon the upper end of the valve plug 20' and includes the packing 26' between the said cap and the upper end of the plug. The cap 25' at its lower periphery is provided with an integral upturned flange or collar 42 extending entirely around the cap and adapted to receive therein a helical spring 43 surrounding said cap and inclosing therein a valve stem 33' and the downwardly-projecting portion 44 of the floor plate 32'. The upper end of said encircling helical spring is seated within the annular socket 45 on the under face of the floor plate.

The complete operation of the invention will be at once apparent from the above description.

The pressure of the foot upon the covering or top insertion of the floor plate results in a downward movement of the valve seat and valve and a consequent unseating of the latter which allows an entrance of the fluid to the valve casing and from which it flows in a manner that will be at once evident. A release of such pressure upon the valve stem allows the resilient means to

again reseat the valve shutting off the flow of fluid through the casing.

In this class of devices, it is desirable that some means be provided for preventing a too rapid seating of the valve upon its seat and thus prevent "water hammering." In both of the present structures therefore, the valve stem is provided with an annular piston 60 secured thereto at a point slightly above the valve and the chamber above the valve seat 23 is of the same diameter as that of the top of the valve seat while the said piston 60 is adapted for reception and free movement therein. The operation of the last described elements is similar to the ordinary dash pot and it will be readily seen that when the valve and the piston 60 upon the valve stem are lowered for allowing the water to pass from the inlet to the outlet of the valve casing, that water will also be admitted above the piston 60, whereupon when the foot pressure is removed and the valve automatically closes, this water will slowly be forced out downwardly and thus allowing the piston 60 to gradually rise until the valve is entirely seated and the water supply cut off. It might be noted that the piston 60 may be provided with small openings if desired or the chamber within which the same operates might be slightly tapered upwardly to allow the water to be more easily expelled therefrom.

In connection with the water faucets or bibs employed with the ordinary sinks or wash basins, the positioning of the present foot actuating devices therefor may be at any place desired but a most convenient position for the same has been found to be at a point a few inches within the front line thereof and slightly underneath the same so that the placing of a foot upon either the hot or cold water floor plate or both readily regulates the flow of water as may be desired.

While the forms of the invention herein shown and described are what are believed to be preferable embodiments thereof, it is nevertheless to be understood that changes may be made in the form, proportion and size of the parts thereof and in minor details of construction without departing from the spirit and scope of the invention as set forth in the appended claims.

Having fully described the invention and the manner in which the same is designed for use, what is claimed as new and desired to be covered by Letters Patent is:—

1. A device of the class described comprising a valve casing having a tapering central bore, a floor member, a plate secured in said floor member, opposite yoke members integral with said plate and casing, a movable plug within said casing, a cap screw-threaded upon said plug, a revoluble collar screwed within said casing and journaled

upon said plug at a point adjacent the bottom of said cap, a valve member, and a valve stem secured to said valve member, a contact member upon the upper end of said stem and positioned within an opening provided in said plate, and a resilient means between said contact member and valve casing.

2. In combination with a valve casing having a tapered central opening therein, of a tapered plug fitting said opening, a cap positioned upon the top of said plug, packing material positioned between said plug and cap, a collar screw-threaded to said casing and journaled upon said plug adjacent the bottom of said cap, a valve seat within said plug, a valve adapted to engage said seat, a valve stem upon said valve, a push plate secured to the top of said stem, a floor plate having an opening therein for the reception of said push plate, and opposite straps integrally secured to said casing and floor plate.

3. In combination with a valve casing having a tapered central opening therein, of a tapered plug fitting said opening, a cap positioned upon the top of said plug, packing material positioned between said plug and cap, a collar screw-threaded to said casing and journaled upon said plug adjacent the bottom of said cap, a valve seat within said plug, a valve adapted to engage said seat, a valve stem upon said valve, a push plate secured to the top of said stem, a floor plate having an opening therein for the reception of said push plate, opposite straps integrally secured to said casing and floor plate, and resilient means engaging said push plate and adapted for normally closing said valve.

4. A device of the class described comprising in combination with a valve casing having a tapered bore therein, a tapered plug, a valve seat within said plug, a valve adapted to fit said seat and having a stem extending therefrom, a push plate secured to the upper end of said stem, a cap journaled upon the upper end of said plug, packing positioned between said cap and the upper end of said plug, resilient means positioned between said cap and push plate, a floor member provided with an open-

ing therein and said push plate positioned within said opening, and opposite integral strap members secured between said casing and floor member.

5. In a foot operated self-closing valve, a valve casing provided with a central tapered bore, a tapered valve plug freely positioned in the latter, a cap journaled upon the top of said plug, a packing positioned between said cap and plug, means for removing said plug from said bore, a valve seat within said plug, and a valve adapted to engage the same, and means adapted for closing said valve and retaining said cap upon said packing simultaneously.

6. In a foot operated self-closing valve, a valve casing provided with a central tapered bore, a tapered valve plug freely positioned in the latter, a cap journaled upon the top of said plug, a packing positioned between said cap and plug, means for removing said plug from said bore, a valve seat within said plug, a valve adapted to engage the same, means adapted for closing said valve and retaining said cap upon said packing simultaneously, and a dash-pot cushioning device within said plug and above said valve seat.

7. In a foot operated self-closing valve, a valve casing provided with a central tapered bore, a tapered valve plug freely positioned in the latter, a cap journaled upon the top of said plug, a packing positioned between said cap and plug, means for removing said plug from said bore, a valve seat within said plug, a valve adapted to engage the same, means adapted for closing said valve and retaining said cap upon said packing simultaneously, said plug having a chamber therein above said seat, a valve stem for said valve, a piston provided upon said stem within said chamber and above said valve, and said plug having an outlet port between said piston and valve when the latter is in its closed position.

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

VICTOR D. RENWICK, JR.

Witnesses:

JOHN W. HUGHES,
PAUL KILLINGS.