

(No Model.)

W. SCOTT.
FLUSHING VALVE FOR URINALS.

No. 533,021.

Patented Jan. 22, 1895.

Fig. 1.

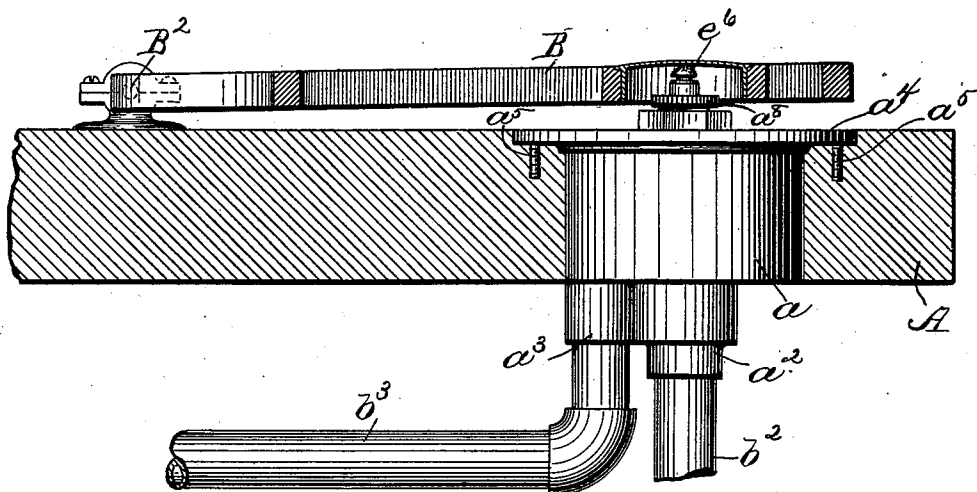


Fig. 2.

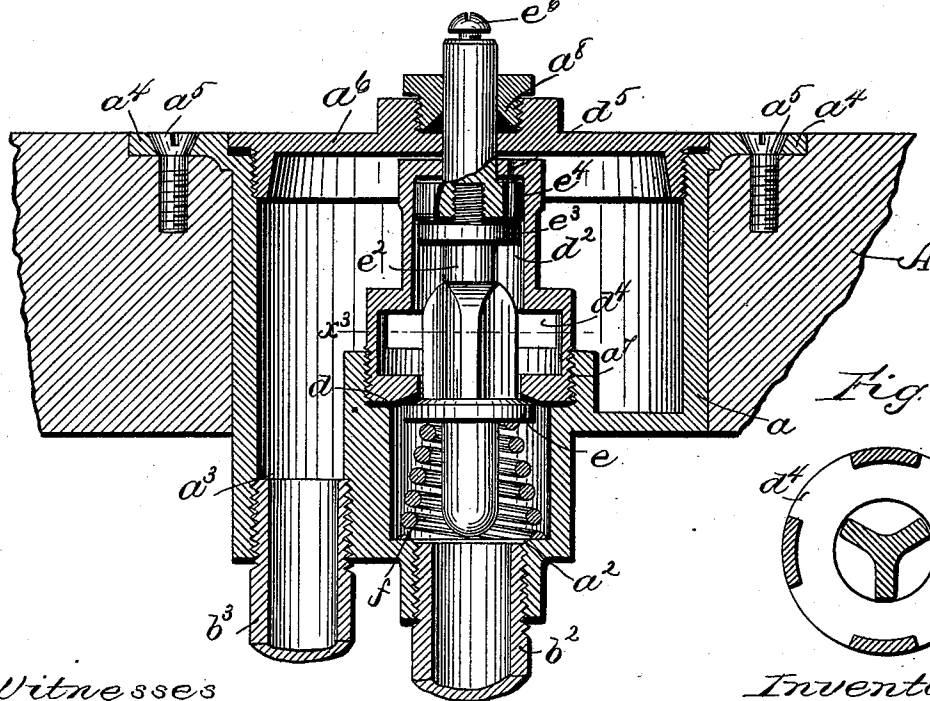
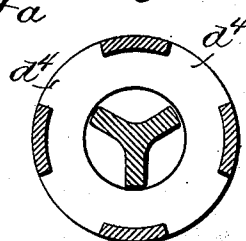


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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FLUSHING-VALVE FOR URINALS.

SPECIFICATION forming part of Letters Patent No. 533,021, dated January 22, 1895.

Application filed January 2, 1894. Serial No. 495,351. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SCOTT, of Medford, county of Middlesex, State of Massachusetts, have invented an Improvement in Flushing-Valves for Urinals, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention relates to a valve apparatus for flushing urinals or for analogous uses, the said apparatus being set in the floor and the valve being opened by the weight of a person stepping on a treadle and closed automatically when the said weight is removed.

15 The object is to produce a more efficient and durable valve than those heretofore used for this purpose, the construction being such that the working parts of the valve may be removed for repair or renewal without disturbing the connection of the main valve body with the floor and piping.

20 Figure 1 is a side elevation of the valve apparatus embodying this invention, the operating treadle being shown in longitudinal section; Fig. 2, a vertical section of the valve shell and mechanism contained therein on a larger scale, and Fig. 3 a horizontal sectional detail on line x^3 , Fig. 2.

30 The working parts of the valve proper are contained in a main shell or case a having inlet and outlet openings a^2 , a^3 , for connection with the supply and delivery pipes b^2 , b^3 , and a flange a^4 adapted to be let into the floor A in which the apparatus is used, and securely fastened thereto in any suitable manner as by the screws a^5 . The chamber a is open at the top, and is adapted to receive a tight fitting removable cover a^6 which as shown in this
40 instance screws into the open end of the cylindrical chamber a closing the same tightly and coming to an even flush surface with the flange a^4 and floor surrounding the same so that there is no depression to accumulate
45 moisture and filth, the entire upper surface of the valve apparatus except the valve-stem and box through which it works presenting a smooth, even surface which can easily be kept clean.

50 The upper end of the inlet passage a^2 to the valve chamber is screw threaded as shown at

a^7 to receive the valve seat piece and valve proper, that controls the flow of liquid through the opening in the said seat. The valve seat d is formed in a piece that screws into or is otherwise detachably secured in the socket a^7 55 and is provided in its upper part with a portion d^2 which serves as a cushioning chamber, co-operating with the valve stem to cushion the closing movement of the valve. There 60 is a chamber between the valve seat and the said cushioning chamber having lateral outlets ports d^4 through which the water that passes through the opening in the valve seat when the valve is open may flow freely into 65 the interior of the valve shell a .

The valve proper e is provided with a stem e^2 that extends up through the cushioning chamber d^2 in the internal valve seat piece and also extends out through an opening in 70 the cover a^6 of the main valve chamber which is preferably provided with a stuffing box a^8 to pack the stem e^2 and prevent escape of the water around the stem from the valve shell a .

75 The stem e^2 is provided with a flange e^3 having a loose fit in the guide passage d^2 and above the same the stem or an enlargement thereof is surrounded by a cup shaped washer or piece of yielding packing e^4 .

80 The valve e is pressed upward toward its seat by a stout spring f and it is furthermore so situated that the pressure of water in the supply pipe, tends to retain it seated, it being opened only when there is a positive downward pressure upon the valve stem sufficient 85 to overcome the force of the spring and pressure of the water. Such downward pressure for operating the valve may be derived from a treadle or movable platform B see Fig. 1, preferably pivotally supported at B² and resting 90 near its free end upon the portion of the valve stem e that projects above the stuffing box a^8 in the cover of the valve shell.

95 The valve stem e^2 is preferably provided with an adjustable bearing piece shown as a screw e^6 that receives the direct pressure from the treadle B and by adjusting the said bearing piece or screw upward or downward the valve e may be caused to open more or less widely by a given amount of depression of the 100 treadle B. The hinging of the treadle at B², enables it to be turned upward to afford ac-

cess to the floor and top of the valve chamber below for the purpose of cleaning the same.

When the treadle B is depressed as by a person stepping upon it, the valve proper *e* is pressed downward from its seat *d* and the water flows from the supply pipe *b*² through the inlet portion *a*² of the valve shell and through the opening in the valve seat and thence out through the ports *d*⁴ in the valve seat piece above the valve seat to the interior of the main valve shell *a* from which the water flows freely through the outlet opening *a*³ to the parts to be flushed or washed. When the valve *e* is thus opened the water will pass by the flange *e*³ on the valve stem and the cup leather or washer *e*⁴ and fill the space in the cushioning chamber *d*² above the said flange and washer which are at this time at some distance below the top of the chamber *d*². As will be readily understood the washer *e*⁴ affords practically no resistance to the passage of the water upward by it but when the weight by which the valve was opened is removed from the treadle B, and the valve begins to close under the action of the spring *f*, the washer *e*⁴ will prevent the passage of water downward past the flange *e*³ and thus trapping the water in the upper part of the cushioning chamber *d*². The water thus entrapped is permitted to escape only slowly from this chamber and thus retards the closing movement of the valve and prevents it from coming to its seat with a sudden shock, which would produce water hammer in the supply pipe *b*². For the purpose of indicating the construction by which this cushioning effect is produced, the upper end of the chamber *d*² is shown in Fig. 2, as provided with a small vent passage *d*⁵ to permit the slow escape of water from above the washer *e*⁴, on the valve stem for the purpose of retarding and regulating the closing movement of the valve; but in practice it will be unnecessary to provide a special vent passage, as the leakage around the stem where it passes through the end of the chamber *d*² with an ordinary working fit is sufficient to produce the desired cushioning effect.

If there is occasion to have access to the working parts of the valve for repairs or renewal, the cover *a*⁶ may be removed from the shell *a* and the valve seat piece *d*, *d*², then unscrewed from the socket *a*⁷ thereby removing the valve proper and valve seat and in fact all the working parts of the valve, leaving only the shell *a* the connection of which with the floor and with the supply and delivery pipes need not be disturbed. It is

therefore possible to repair the valve when necessary, very quickly and at very small cost.

I claim—

1. The combination of the main shell provided with a removable cover and with inlet and outlet openings, and a valve seat piece inclosed in and detachably secured to said shell over the inlet opening thereof, and a valve held in operative position by said valve seat piece and having a stem working through openings in said valve seat piece and in the cover of said shell, substantially as and for the purpose described.

2. The combination of the main shell provided with a removable cover and with inlet and outlet openings, and a valve seat piece inclosed in and detachably secured to said shell over the inlet opening thereof, and a valve held in operative position by said valve piece and having a stem working through openings in said valve seat piece and in the cover of said shell, and a treadle cooperating with the valve-stem outside of said cover, substantially as and for the purpose described.

3. The combination of the main shell provided with inlet and outlet openings and a detachable cover for said shell, with the valve seat piece detachably secured over the inlet opening in the interior of said shell, the valve proper held in operative position by and cooperating with the said seat piece, and having a stem extending through the cover of the main shell, and a spring normally pressing the valve to its seat, substantially as described.

4. The combination of the main shell provided with inlet and outlet openings and a detachable cover for said shell with the valve seat piece detachably secured over the inlet opening in the interior of said shell, and provided with a valve seat and a cushioning chamber, and the valve proper held in operative position by and cooperating with the said seat and having a stem extending through said cushioning chamber and through the cover of the main shell, the portion of the shell in the cushioning chamber being provided with a washer to trap the water in the cushioning chamber for the purpose of retarding the closing movement of the valve, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM SCOTT.

Witnesses:

JOS. P. LIVERMORE,
M. E. HILL.