W. R. COMINGS.

VALVE, FAUCET, AND THE LIKE.

APPLICATION FILED MAR. 6, 1920.

1,401,879. Patented Dec. 27, 1921.

2 SHEETS—SHEET 1.

Fig. 4.

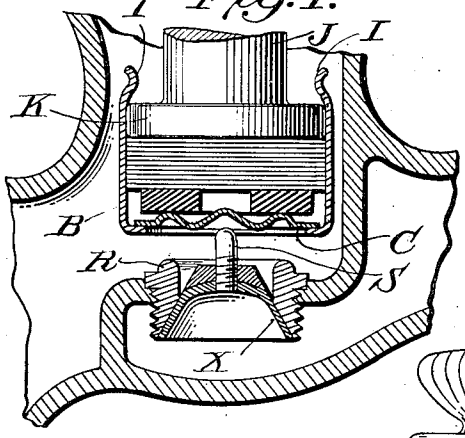


Fig. 5.

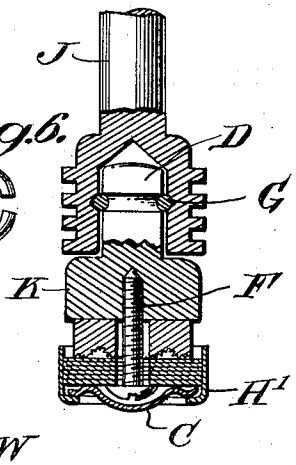


Fig. 6.

Fig. 1.

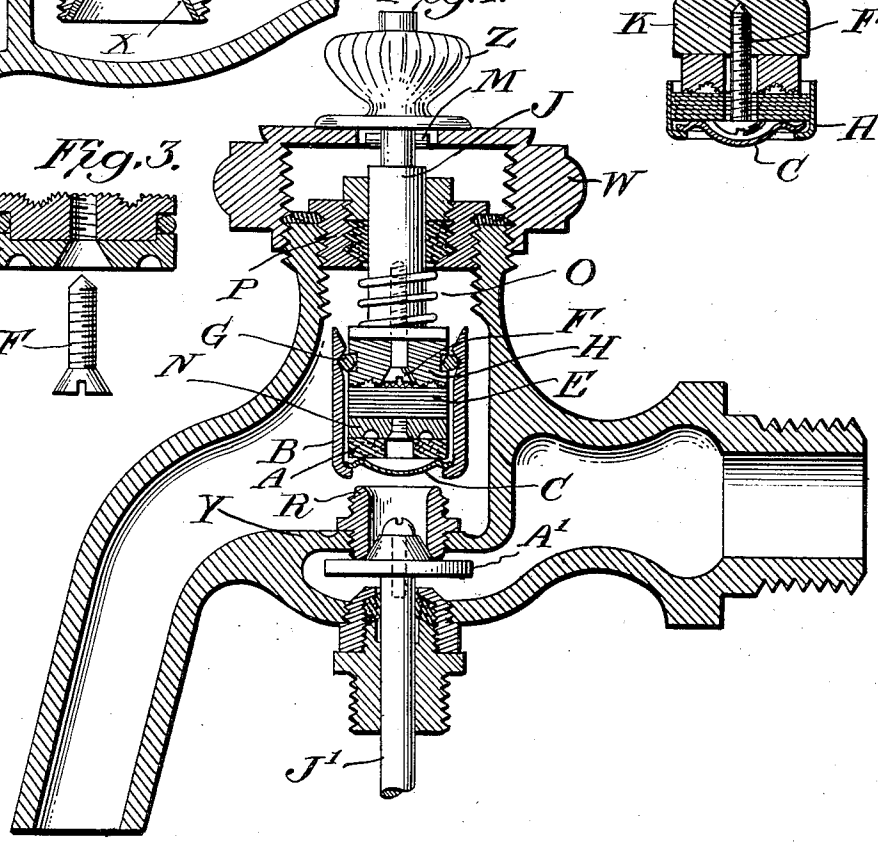
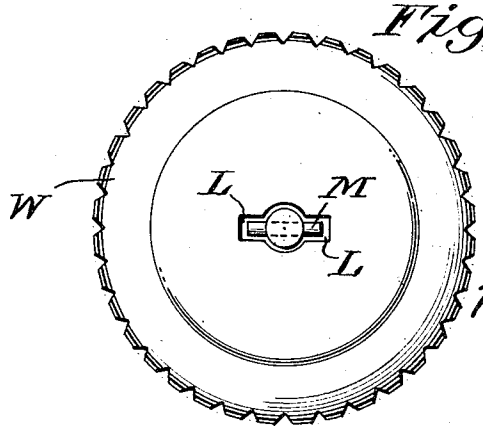


Fig. 3.

Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 7.

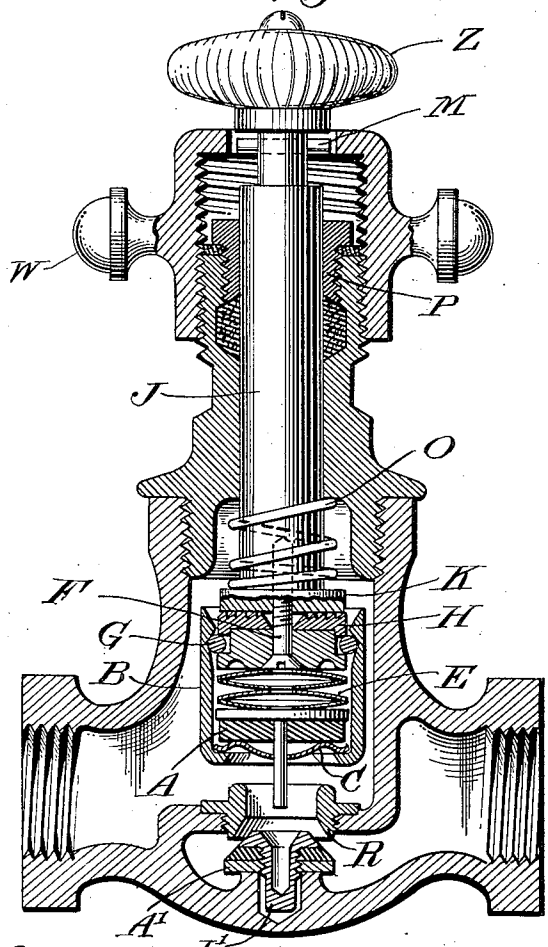
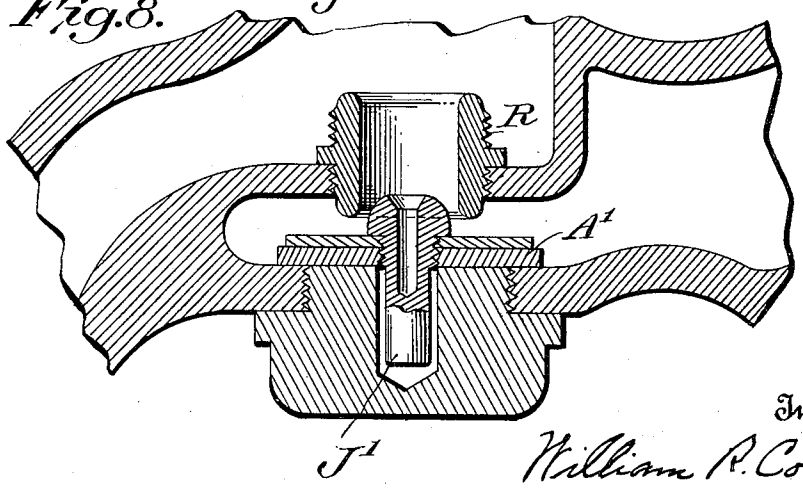


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM RIGHTER COMINGS, OF SURREY, ENGLAND.

VALVE, FAUCET, AND THE LIKE.

1,401,879. Specification of Letters Patent. Patented Dec. 27, 1921.

Application filed March 6, 1920. Serial No. 363,740.

To all whom it may concern:

Be it known that I, WILLIAM RIGHTER COMINGS, a citizen of the United States, residing at Surrey, England, have invented certain new and useful Improvements in Valves, Faucets, and the like, of which the following is a specification.

My invention relates to valves for controlling the flow through pipes of water, steam, gas, air, or other liquids or fluids, and embodies a valve or faucet carrying a self-contained supply of washers and spare parts, together with tools for polishing or resurfacing the valve seat or seating, and which is provided with means for readily changing or removing a washer, and also with means for rotating the valve member for repolishing the seating surface, and comprises the arrangements and combinations as set forth in the claims.

In order that my invention more readily may be understood reference is made to the accompanying drawings, in which similar letters of reference denote corresponding parts in the several views.

Figure 1 is a vertical longitudinal sectional view of an ordinary water faucet, embodying my improved construction.

Fig. 2 is a top plan view of Fig. 1, the operating handle being removed.

Fig. 3 is an enlarged detail sectional view of a reversible cutting and polishing head.

Fig. 4 is a view similar to Fig. 1 showing a modified construction.

Fig. 5 is a detail sectional view, illustrating still another modification.

Fig. 6 is a detail view of the split ring shown in Fig. 1.

Fig. 7 is a view similar to Fig. 1, showing the improvements applied to a different type of valve.

Fig. 8 is a view similar to Fig. 1 of the Fig. 7 type of valve, showing a modified form of secondary valve.

In the said drawings, referring more particularly to Figs. 1 and 2, the reference letter J denotes the valve stem of an ordinary type of water faucet having detachably fixed thereto at its lower end, by means of a screw F, a cutting or abrading head H, said head being grooved annularly on its outer face to receive a spring ring G, adapted to engage and detachably retain a magazine member B thereon. Said magazine member B contains a number of spare washers E, a suitable polishing member N, a cushion washer A of rubber or other elastic material, and the washer C disposed in position to engage the valve seat R removably positioned in the partition Y of the valve. The valve stem J passes through a stuffing gland or nut P which is in screw-threaded engagement at the upper end of the valve casing, as shown, and interposed between said nut and the lower enlarged end of said valve stem is a coiled spring O acting normally to force said valve stem downwardly. The upper end of the valve casing is exteriorly screw-threaded to receive the interior screw threads of a hand wheel W, said hand wheel being centrally apertured to permit the passage therethrough of the smaller portion of the valve stem J, and said aperture being extended on opposite sides into slots L adapted to receive a clutch pin M fixed in said valve stem. Also fixed to the upper end of said valve stem is a knob or handle Z, for a purpose hereinafter to be described.

The valve seat R has a double face, which adapts it to be engaged by a washer A′ and a secondary closing valve carried by valve stem J′, said secondary valve being capable of operation to close the flow of water through the faucet when the primary valve is open, of such operation is desired. Inasmuch as the mechanism for controlling this secondary valve forms no part of the present invention, the details of the same have been omitted.

In operation, when it is desired to close the main valve, the hand wheel W is screwed down, and the tension of the spring O at the same time forces down the valve stem J so as to retain the clutch pin M in the slot I until the washer C at the lower end of the magazine B engages the valve seat R. Further downward movement of the hand wheel W will result in carrying the same below the clutch pin M so that the latter will disengage from the slot in said hand wheel and the valve stem J will be free to be rotated independently of the hand wheel W. The result of this operation is that as the washer C first contacts with the seat R its downward motion will be arrested, but a limited rotary motion will be imparted thereto, thereby polishing the seat R, which operation will continue until the clutch pin M disengages from the hand wheel W. The spring O should be of a strength just sufficient to give a good polishing result without any tendency to cut or

tear the washer. For one-half inch water faucet I find that five to ten pounds is a suitable pressure for this purpose. By varying the dimensions of the clutch parts, the valve stem J may be given any desired amount of rotation before it is released, though in practice I find that one-half to a one full turn gives a good result and keeps the valve bright and clean.

When it is desired to recut or especially polish the valve seat R, the valve stem J is taken out of the valve casing by unscrewing the hand wheel W and gland nut P. The magazine member and its contained parts are removed, thus exposing the cutting member H in proper working position. The valve stem J then is reseated and screwed down by the hand wheel W until the head H is in firm cutting contact with the valve seat R, whereupon a few turns on the fixed handle Z will recut and aline the valve seat R with the valve stem J, as readily will be understood. If it is desired simply to repolish the valve seat R more effectually than can be accomplished by means of the washer C, the cutting disk H may be removed from the valve stem J, and the polishing disk N attached thereto, and operated as hereinbefore described in respect to recutting the valve seat.

In Fig. 3 I have shown a slightly modified construction, whereby the cutting disk H and polishing disk N are combined in one part in a reversible member, instead of being two separate members, as shown in Fig. 1.

Fig. 4 shows a modified construction of the attaching means for the magazine B, the same being connected with the enlarged head K at the lower end of the valve stem J, by means of spring clips I instead of by means of the split ring G. In this construction also there is shown a slightly different form of secondary valve X, the same being provided with a stem S adapted to be engaged by the washer C as the latter moves into contact with valve seat R, thereby automatically opening said secondary valve. In this construction, the open position of the faucet is obtained when the valve stem J has been moved down sufficiently to force open the secondary valve X, and yet not close the primary valve.

Fig. 5 illustrates still another modified construction, wherein the magazine B is dispensed with and the several members are attached by the screw F to the swivel head K, which is secured to the valve stem by a shank D and a spring ring G locking in a groove in the interior of said valve stem. In this connection I employ a sleeve B′, retained in position by frictional engagement with the edges of the washers E, and inturned at its lower edge to retain the washer C.

Fig. 7 shows the invention applied to a conventional steam valve. Where such valves are subjected to very high temperature, such as would affect rubber or other cushion members, I omit the cushion member A and obtain the elastic yielding action by forming the members E slightly dished and then assembling them in the magazine so as to obtain an elastic result.

The cutting members H, I preferably make from rustless steel, and the abrasive members C and E should be made from material that is unaffected by any chemical action from the flow of liquid, fluid or gas passing through the valves.

I do not limit myself herein to the precise forms and constructions described, as the same may be modified or altered in various ways without departing from the spirit of the invention.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A valve or faucet, comprising a valve stem, a magazine member detachably attached thereto and adapted to contain both a washer for coöperating with the valve seat and spare washers, and a split ring forming the connecting element between said valve stem and member and engaging grooves therein.

2. A valve or faucet, comprising a valve stem, a resurfacing tool detachably fixed to the lower end of said stem, and a magazine member detachably attached to said tool and adapted to contain both a washer for coöperating with the valve seat and spare washers.

3. A valve or faucet, comprising a valve stem, a resurfacing tool detachably fixed to the lower end of said stem, a magazine member detachably attached to said tool and adapted to contain both a washer for coöperating with the valve seat and spare washers, and a spring split ring engaging grooves in said magazine member and resurfacing tool and forming the detachable connection between the two.

4. A valve or faucet, comprising a valve seat, a valve stem, means for imparting a rotating advance to said stem toward said seat until it has made polishing contact therewith and then changing said motion to a straight thrust without rotation.

5. A valve or faucet, comprising a valve seat, a valve stem, a rotatable handle in screw-threaded engagement with the valve casing adapted to engage, rotate and advance with said stem toward said valve seat, and to automatically disengage itself from the stem after contact of the stem with said seat has been made, and means for rotating said valve stem independently when so released.

6. A valve or faucet, comprising a valve

seat, a valve stem movable toward and from said seat, a spring for normally pressing said stem toward said seat, a rotatable handle in screw-threaded engagement with the valve casing, coacting pin and slot connections between said stem and handle held in engagement by said spring while said stem is out of contact with said seat whereby the longitudinal and rotary movements of said handle will be imparted to said stem, the contact of said stem and seat automatically disengaging said pin and slot engagement, and means for rotating said stem independently against said seat.

In testimony whereof I affix my signature.

WILLIAM RIGHTER COMINGS.