(No Model.)

W. A. TURNER.

SELF CLOSING FAUCET.

No. 570,306. Patented Oct. 27, 1896.

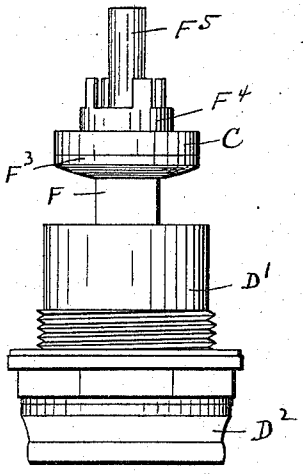

Fig. 2.

Fig. 1.

Fig. 3.

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WILLIAM A. TURNER, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO EDMUND CONVERSE, OF SAME PLACE.

SELF-CLOSING FAUCET.

SPECIFICATION forming part of Letters Patent No. 570,306, dated October 27, 1896.

Application filed March 22, 1894. Serial No. 504,633. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. TURNER, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Slow-Closing Faucets, of which the following is a specification, accompanied by drawings forming a part of the same, and in which I have shown a faucet embodying my present invention, the body or shell of the faucet being shown in central vertical sectional view in order to disclose the operating parts.

Referring to the drawings, Figure 1 represents a side view of the faucet with the body or shell shown in sectional view. Fig. 2 is a detached view of the valve; and Fig. 3 represents a detached view of the adjusting-screw, considerably enlarged, by which the flow of water through the valve-piston is regulated.

Similar letters refer to similar parts in the different figures.

A denotes the body or shell, having a water way or passage divided by a partition A′ into two parts B and B′. The partition A′ is provided with a circular opening A^2, forming a communication between the parts B and B′ of the waterway. Surrounding the opening A^2 is an annular valve-seat A^3, against which the circular valve-disk C rests in closing the opening A^2.

The shell A is provided with a screw-threaded opening D to receive a cylindrical shell D′, having its lower end closed by the cap D^2, forming a chamber D^3 for a reciprocating piston D^4. The piston D^4 consists of a hollow shell having its heads formed by the disks E and E′, provided with screw-threaded flanges E^2 and E^3, which are screwed together to unite the heads E E′ and form a chamber E^4. The edges of the heads E E′ project beyond the flanges E^2 and E^3, so as to leave an annular space around the piston to receive a packing E^5 in order to form a water-tight joint between the piston and the interior of the shell D′.

Extending upward from the head E, and preferably integral therewith, is a rectangular piston-rod F, passing through a rectangular opening in the end of the shell D′, and having a shoulder F′ and a screw-threaded section F^2 to receive a washer F^3, valve-disk C, and nut F^4.

Between the piston D^4 and the cap D^2 is a spiral spring G, by which the piston is raised and the valve-disk C held in contact with the valve-seat A^3.

Held in the upper part of the shell A is a vertically-sliding spindle H, surrounded by an annular chamber H′ to receive a packing H^2, which is crowded into contact with the spindle by a nut H^3, engaging the screw-threaded wall of the chamber H′.

Pivoted to a lug I, projecting upward from the shell A, is a lever-handle I′, carrying a friction-roll I^2, arranged to press against the upper end of the spindle H by the angular movement of the handle.

The lower end of the spindle H is hollow to receive the cylindrical end F^5 of the piston-rod F, so that when the spindle H is depressed by the pressure of the roll I^2 the valve C will be pushed downward against the tension of the spring G and out of contact with the valve-seat A^3.

The angular motion of the handle I′ is limited by an annular adjusting-nut J, held in the screw-threaded chamber H′ and provided upon its surface with a recess J′, into which the roll I^2 enters. The rim of the nut, being in the path of the corners I^3 of the handle, limits the angular movement of the handle and downward motion of the valve-disk C, and thereby varies the opening of the waterway.

The upper head E of the piston is provided with holes *a a*, communicating with the chamber E^4, and the lower head E′ of the piston is provided with a hole *b*, forming a communication between the chamber E^4 and the chamber D^3, but which is normally closed by the valve-disk *f*, which lies upon the head E′. The lower head E′ is also provided with an annular channel or groove *c*, from the bottom of which a screw-threaded hole *d* extends through the disk to the chamber D^3.

The hole *d* is closed by a screw *e*, having a tapering groove *e′* in its side constituting a passage-way between the chamber E^4 and the

chamber D^3, so the area of the passage-way can be varied by the adjustment of the screw *e* in the disk.

In the sectional view shown in Fig. 1 the operating parts of the faucet are represented as occupying their normal position with the water way or passage through the faucet closed by the valve C.

The operation of the faucet is as follows: An angular motion is imparted to the lever-handle I′, carrying the roll I^2 into the recess J′ of the annular nut J until the movement of the handle is limited by the contact of the corner I^3 with the nut J. The downward movement of the roll I^2 pushes the spindle H and the rod F downward, carrying the valve C off from the valve-seat A^3 and opening the faucet. The downward motion of the piston D^4 as the valve is opened compresses the spiral spring G and causes the air or water which may be contained in the chamber D^3 to lift the valve-disk *f* and pass up through the central hole *b* and chamber E^4 and holes *a a* to the upper side of the piston. When the handle I′ is released, the tension of the spring G will reverse the movement of the piston and connected valve to close the faucet; but during the upward movement of the piston D^4 the valve-disk *f* will rest upon the head E′, as shown in Fig. 1, thereby closing the hole *b*, and the water which has filled the space in the shell D′ above the piston when it was depressed will pass through the holes *a a* into the chamber E^4 of the piston, and, as the central hole *b* is then closed by the valve-disk *f*, the water will pass into the annular groove *c* and through the restricted groove *e′* in the screw *e* to the space below the piston. As the spiral spring G raises the piston D^4 it produces a partial vacuum in the chamber D^3 below the piston, so the piston has to be raised against the water-pressure above it, which tends to balance the pressure of the spring and restrain the upward movement of the piston until a sufficient amount of water has passed through the groove *e′* to partially restore the water-pressure upon the under side of the piston, and as the flow of water through the groove *e′* is necessarily slow the upward movement of the piston and valve will be retarded, causing the valve to close slowly.

The time required for the valve to close will be determined by the distance the valve C has been depressed by the angular movement of the handle I′ and also by the area of the groove *e′*, and these factors can be varied by the adjustment of the annular nut J, so as to regulate the downward motion of the valve-disk C and by the adjustment of the screw *e*, so as to vary the effective area of the groove *e′* for the passage of water. The shell D′, with the rod F, is readily unscrewed from the shell A to allow the valve-disk C to be replaced.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a faucet, the combination of a shell inclosing a water-passage and having a partition dividing said water-passage, said partition having a circular opening, a valve-seat surrounding said opening, a screw-threaded opening D in said shell having its axis in alinement with the axis of the circular opening in said partition, a detachable shell D′ screwed into said screw-threaded opening and having its upper end closed and provided with a rectangular opening to receive a rectangular piston-rod, a detachable cap D^2 closing the lower end of said shell D′, a piston-rod F provided with a rectangular section fitting the opening in said shell, whereby said rod is rotated by the rotation of said shell, a piston carried by said rod and inclosed in said shell D′ said piston consisting of a head E provided with openings *a*, *a*, and a head E′ provided with openings *b*, and *d*, said openings communicating with a chamber inclosed between said heads and a valve-disk carried by said rod and means for reciprocating said rod, substantially as described.

2. In a faucet, the combination of a shell inclosing a water-passage, a circular valve-seat arranged in said water-passage, a reciprocating piston-rod, a valve-disk carried by said rod, a shell D′ with its axis in alinement with the axis of said valve-seat and inclosing a piston-chamber, a piston carried by said rod and consisting of a head E provided with openings *a*, *a*, head E′ provided with an opening *b*, an annular groove *c* and a screw-threaded opening *d* communicating with said groove, an adjusting-screw *e* having a groove *e′* and held in said screw-threaded opening, said heads E and E′ having screw-threaded flanges E^2 and E^3 by which they are united in closing a chamber E^4 and a valve *f* held in said chamber and arranged to close said opening *b*, substantially as described.

Dated this 5th day of March, 1894.

WILLIAM A. TURNER.

Witnesses:

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RUFUS B. FOWLER.