No. 607,429. Patented July 19, 1898.

J. P. FARLEY.

SELF CLOSING FAUCET.

(Application filed May 24, 1897.)

(No Model.)

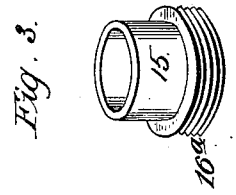


Fig. 3.

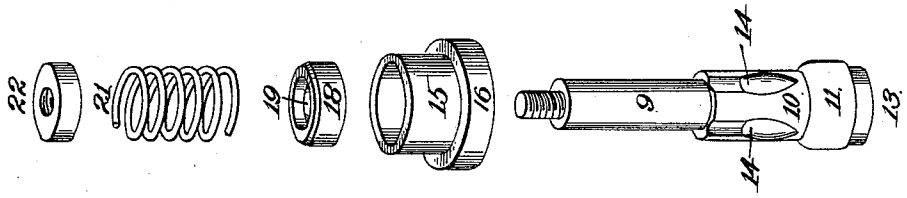


Fig. 2.

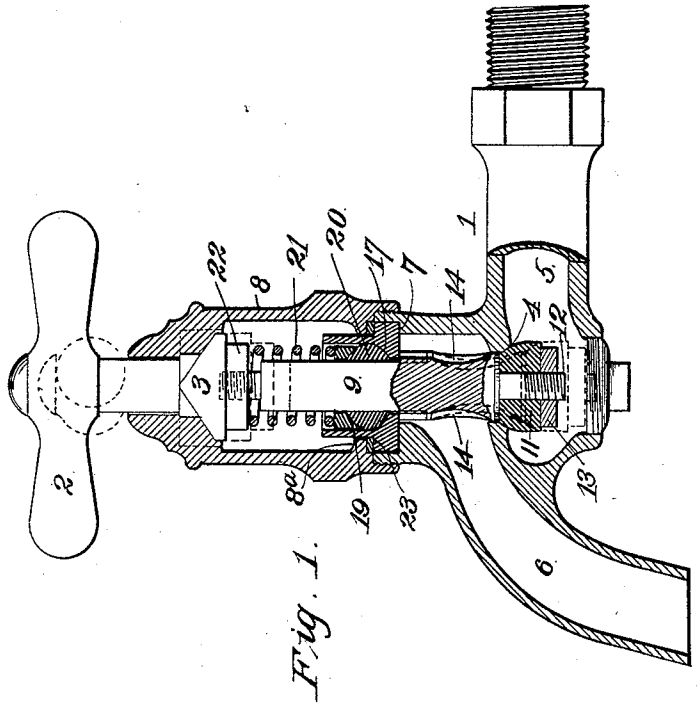


Fig. 1.

Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN P. FARLEY, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-FOURTH TO JOB HOLLINGER, OF SAME PLACE.

SELF-CLOSING FAUCET.

SPECIFICATION forming part of Letters Patent No. 607,429, dated July 19, 1898.

Application filed May 24, 1897. Serial No. 637,926. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. FARLEY, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Self-Closing Faucets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to self-closing faucets; and my object is to produce a device of this character which is reliable, durable, and inexpensive.

To this end the invention consists in certain novel and peculiar features of construction and combinations of parts, as will be hereinafter described and claimed.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents a vertical section of a self-closing faucet embodying my invention. Fig. 2 represents in perspective the internal mechanism of the faucet detached. Fig. 3 represents in perspective a slightly-modified form of packing-box for the valve.

In the said drawings the faucet 1, of the ordinary form, is provided with the customary handle 2, having a cam 3 at its lower end to engage the stem of and force the valve from its seat 4, formed in the partition or diaphragm separating the tubular portion 5 from the spout 6, said tubular portion 5 in practice being connected to a supply-pipe. The valve-casing at the upper end of the spout and above the valve-seat may be formed with a shoulder 7 or it may be internally screw-threaded, as hereinafter referred to.

The cap 8, of the customary form, is screwed down upon the casing and is provided with an internal shoulder 8^a. It is also provided with the customary inclined or cam surfaces for engagement with the cam 3 in order that when the handle 2 is turned the engagement of said cams with said shoulders will force the handle downwardly in the customary manner.

9 designates the cylindrical stem of the valve.

Above the partition or diaphragm formed with the valve-seat it is provided with the diametrically-increased portion 10, against the lower end of which is the valve 11, of rubber or equivalent material. Said valve is retained in place upon the threaded extension 12 of the valve-stem by means of the clamping-nut 13. The enlargement 10 of the valve-stem is provided with the approximately spoon-shaped or tapering waterways 14. These will be hereinafter referred to.

A packing-box comprises two members—viz., two caps fitting telescopically together. One of them, 15, is provided with the annular enlargement or flange 16, which either rests upon the shoulder 7, hereinbefore referred to, or is peripherally threaded, as shown at 16^a, and screws down into the valve-casing instead of resting upon the shoulder 7. Said inverted cap 15 is provided with a circular opening in its base, through which the valve-stem 9 extends, and its inner surface converges or curves downwardly and inwardly to the margin of said opening, as shown at 17. The other cap, 18, is of diameter to fit telescopically within said cap 15. It is provided with an opening 19, through which the valve-stem extends, and is rounded at its upper inner side, so as to converge upwardly and inwardly to the margin of its opening and to converge outwardly with respect to the opposing surface of the lower cavity.

20 designates a suitable packing which is interposed between said caps of the packing-box, and 21 a spiral expansion-spring which encircles the valve-stem and bears at its opposite ends against the tension-nut 22 upon the upper threaded extension of the valve-stem and upon the upper cap 18 of the packing-box in order that this downward pressure of the spring, owing to the peculiar configuration or converging opposing surfaces of said caps, may tend to force the packing tightly against the valve-stem, so as to absolutely prevent any water from leaking up through said box and escaping from the casing by way of the handle-stem passage.

By manipulating the tension-nut 22 it is obvious that the pressure of the spring 21 upon the packing-box may be increased as desired, and in order to pack the joint between the casing proper and its cap 8 and the packing-box I interpose between the shoulder 16 or 16^a of the packing and the internal shoulder 8^a,

hereinbefore referred to, a packing-ring or gasket, as shown at 23. By this arrangement it is obvious that as the handle is turned and the valve forced downward by the engagement of the base of the handle-stem with the upper end of the valve-stem in the customary manner the water rushes from the passage 5 up into and through the spout 6, and at the same time the escape of the water up past the packing-box is reliably prevented, owing to the fact that the pressure applied by the handle-stem upon the valve intensifies the pressure of the spring 21 upon the upper or movable member of the packing-box and therefore compresses the packing therein tightly and firmly against and around the valve-stem. It is also obvious that this pressure continues only as long as the valve is held depressed and that immediately the water is cut off by the release of said handle the spring reasserts itself, raises the handle, and relieves the packing of such intensified pressure. As a result the packing is practically indestructible, comparatively speaking, as it is subjected to appreciable wear only when the valve is manipulated. From the fact that it is subjected to heavy pressure only when the water has a bearing upon the box—viz., when the water is passing through the valve-seat opening, and this pressure is applied incidentally and unintentionally by the operator—I term it an "automatic" packing.

The various pipes, faucets, and plumbing generally are relieved of the action known as "water-hammer," owing to the fact that the water-pressure is restored gradually and never suddenly. This effect is accomplished owing to the tapering or spoon-like formation of the waterways. When the handle 2 is manipulated and the valve depressed, the pointed end of said waterways first open a corresponding number of extremely small passages, through which the water begins to pass, and thence escapes by way of the spout 6. As the downward movement of the valve continues these water-passages increase in size until the middle or widest and deepest portions of the waterways are opposite the valve-seat opening, and consequently the valve is open to its full capacity and a large volume of water escapes. As the handle is released after a sufficient quantity of water has gone the stem is moved upwardly by the spring 21, and the water streams passing up through the waterways are reduced gradually until finally the valve reaches its seat and the water is entirely cut off. By thus cutting the water off gradually it is obvious, as above stated, that the water-pressure on the plumbing is gradually restored and not suddenly, as it would be were the passages of the same capacity for their full length and the water cut off solely by the seating of the valve, as is customary. This water-hammer is one of the chief causes of the frequent visits to the plumber and is due in most cases to the reaction of the water within the plumbing through the house by suddenly cutting it off at some point where it has been escaping in volume.

By the embodiment of my improvements in faucet construction it will be obvious that bills for plumbing will be much less frequent, owing to the fact that the water-hammer is obviated and because the packings, which are the chief source of trouble in most valves, are practically indestructible.

It is to be understood, of course, that various changes in form, proportion, detail construction, and organization of parts may be made without departing from the spirit and scope or sacrificing any of the advantages of the invention.

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

In a self-closing faucet, the combination with a casing having a valve-seat opening connecting its supply and discharge passages and an annular internal shoulder 7, near the upper end of the last-named passage, a packing-box comprising a tubular member or cap seated on said shoulder; the passage of said box tapering downward and inward as at 17, to its base, an upper member, or cap 18, fitting slidingly within the lower member and provided with an opening having its side walls tapering upwardly and inwardly, and a packing-ring of suitable material between said members or caps, a cap inclosing said packing-box and secured to the casing, a valve-stem extending through the packing-box including said ring, and the valve-seat opening, a valve on the lower end of the stem, a nut on the upper end of said stem, a spring upon said stem and pressing against the nut and the member or cap 18, of the packing-box, and a handle journaled in the cap of the casing, whereby the valve may be moved from its seat, substantially as described.

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

JOHN P. FARLEY.

Witnesses:
M. R. REMLEY,
E. B. TINKER.