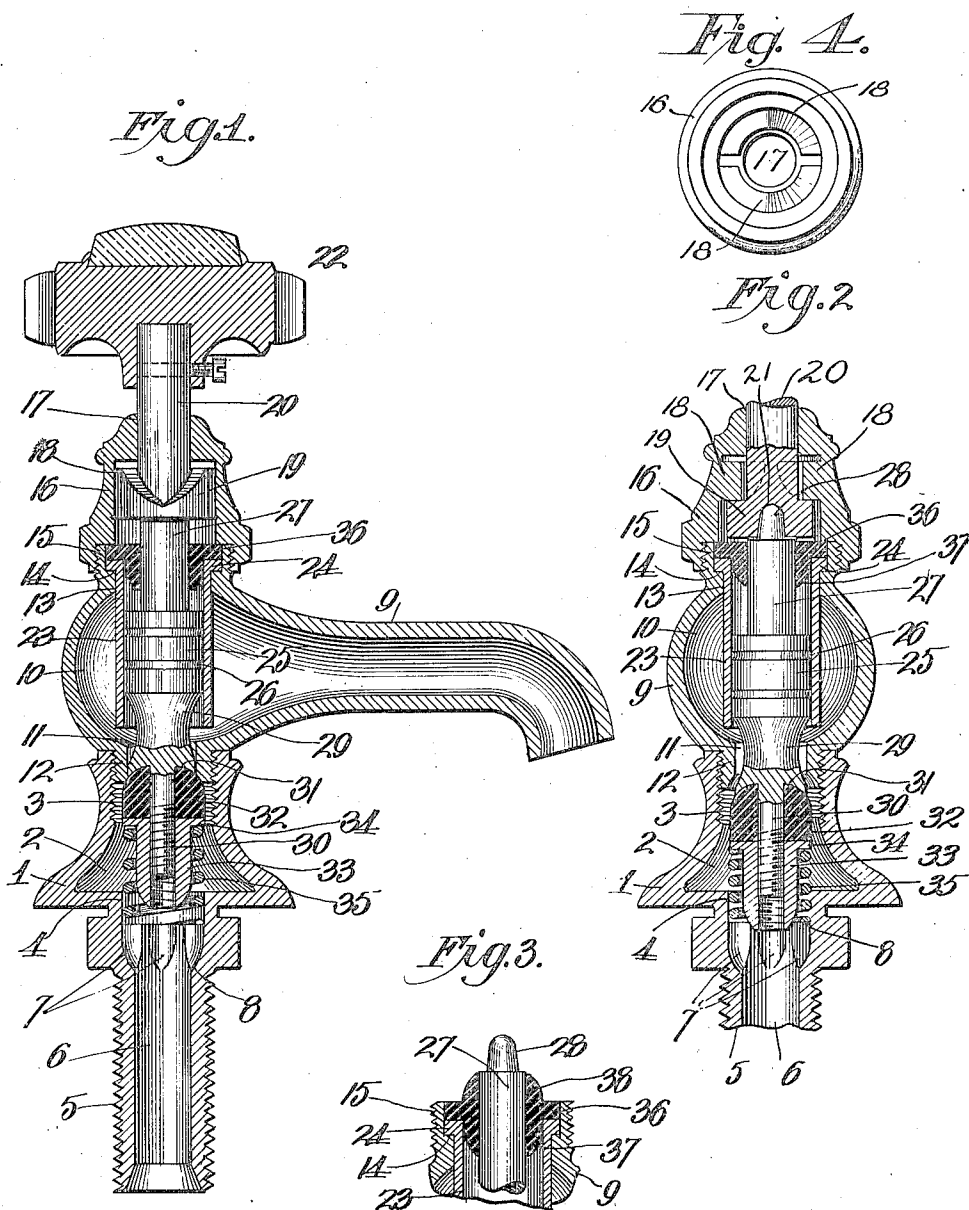


J. P. FARLEY.
SELF CLOSING FAUCET.
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UNITED STATES PATENT OFFICE.

JOHN P. FARLEY, OF KANSAS CITY, MISSOURI.

SELF-CLOSING FAUCET.

971,739.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN P. FARLEY, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Self-Closing Faucets, of which the following is a specification.

This invention relates to self closing faucets, and my objects are to produce a faucet which, once installed, will need no further adjustment or attention for the purpose of removing clogging particles of the size which usually get in faucets at the time of installation; to produce means, in a faucet of this character, for preventing water hammering; and to produce means for guarding against the passage of water up through the cap of the faucet.

With these objects in view and others as hereinafter appear, the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which;

Figure 1, is a central vertical section of a self-closing faucet embodying my invention. Fig. 2, is a vertical section of the faucet taken at right angles to the section shown by Fig. 1, with the valve unseated. Fig. 3, is a view of a slightly modified construction of a washer forming a part of the faucet. Fig. 4, is an enlarged inverted plan view of the cap of the faucet.

In the said drawings where like reference characters identify corresponding parts in all the figures, 1 is a base provided with a chamber 2 and internally threaded at the upper end of said chamber as at 3. The bottom of the base is provided with a central passage 4 communicating with the smaller passage or bore 6 of an externally-threaded stem 5 depending from and cast integral with the base, the upper end of the passage or bore 6 being enlarged by means of a plurality of waterways 7, the variation in the diameter between the passage 4 and the bore or passage 6 providing an upwardly-disposed shoulder 8 for a purpose which hereinafter appears.

9 indicates the spout of the faucet, the same being enlarged at its receiving end to provide the water-receiving chamber 10. At the bottom of the said chamber is an opening 11 and depending from the chamber

around said opening is an externally-threaded stem 12 for engagement with the threads 3 of the base. At the top of the chamber 10 the spout is formed with a cylindrical opening 13 enlarged at its upper end to provide an upwardly-disposed shoulder 14 and a wall 15 which is externally threaded.

16 is a cap of the usual or any preferred type, screwed down upon the wall 15 and provided at its upper end with a central opening 17 and within its chamber with the substantially V-shaped cam lugs 18 for engagement by the V-shaped notches of the cam-collar or enlargement 19 at the lower end of the handle stem 20 extending rotatably and slidably through the opening 17 of the cap. The lower end of the stem 20 is provided with a socket 21 and secured upon the upper end of the handle stem is the head or handle 22 which is turned to effect the unseating of the valve as hereinafter explained. The cam-lugs 18 show clearly in Figs. 2 and 4 and are of common and well known form.

23 is a cylindrical barrel arranged vertically within the chamber 10 of the spout and terminating a slight distance above the bottom of said chamber. Near its upper end it fits snugly in the cylindrical opening 13 and at its upper extremity is provided with an outwardly-projecting flange 24 fitting in the enlargement of said opening and resting upon the upwardly-disposed shoulder 14. Fitting reciprocally in the barrel is a cylindrical plunger 25 provided with one or more annular peripheral channels 26, and projecting upward from the center of said portion is a cylindrical stem 27 terminating at its upper end in a diametrically-reduced extension 28 for engagement with the socket 21 of the enlargement 19 of the handle stem, the extension being of length by preference to prevent the lower face of the said enlargement engaging the upper end of the non-reduced portion of stem 27. Depending from and formed integral with the plunger is a substantially spool-shaped waterway portion 29 formed centrally with a reduced depending stem 30 and with a segmental cavity or recess 31 in its lower end surrounding said stem, and said stem for the greater part of its length is preferably threaded.

Fitting upon the stem and in the cavity or recess at the lower end of the waterway portion 29 is a rubber or equivalent compressible valve 32, and screwed upon the lower end of

said stem 30 is a cylindrical nut 33 having its upper end flanged at 34 and bearing squarely against the flat or lower face of the valve, and loosely surrounding the nut and bearing at its upper end against the flange thereof and at its lower end upon the shoulder 8 of stem 5, is a coil spring 35 for holding the valve pressed yieldingly against the seat formed by the lower end of the stem 12 of the spout.

Closing the upper end of the barrel and establishing an air and water-tight joint between the same, stem 27, spout 9 and the cap 16, is a rubber washer 36 which snugly embraces stem 27, engages wall 15 and is clamped firmly upon the flanged upper end of the barrel by the cap 16, and said washer is provided with a depending and tapering hub or flange 37 which snugly embraces stem 27 and in conjunction with the barrel forms an annular and substantially inverted V-shaped space into which air may be compressed for the purpose of causing said hub to more tightly hug the said stem and thus guard against the passage of air or water through the washer.

In Fig. 3 the washer 36 is shown as provided with an upwardly-projecting hub 38 in addition to the depending hub 37 shown in the other figures. Where this double hub type of washer is used the cap 16 will preferably be higher and the stem 27 will be longer so that when the collar 19 moves downward through the turning of the handle 22, it will not come in contact with and injure said upwardly-projecting hub. This hub simply serves to provide a longer bearing on the stem 27 and thus effect a more perfect air and water-tight joint between the washer and said stem 27.

By reference to Fig. 1 it will be seen that the plunger occupies such a position in the barrel as to provide an air chamber between it and the washer, and that at such time the water in the chamber of the base is exerting its force in coöperation with that of spring 35 in holding the valve firmly against its seat. When the handle 22 is turned it moves downward through the co-action of the cam-lugs 18 and cam-collar or enlargement 19, which downward movement, through the engagement of the socket 21 with extension 28 of the plunger stem, imparts downward movement to the plunger and hence the valve, moving said parts to substantially the positions shown in Fig. 2, and thus permitting water to pass from the chamber of the base around the valve and through the stem 12 into the chamber 10 of the spout, the spool-shaped waterway portion 29 between the valve and plunger, providing a relatively large circular space or way to permit foreign particles in the water, such as beads of solder or chippings of metal or plaster, free passage to the spout in any direction, as

distinguished from the ordinary valve stem having a plurality of relatively small ways through which the water and foreign particles must pass before reaching the spout.

This faucet, once installed, will need no further attention on the part of the plumber, as foreign particles which will clog an ordinary self-closing faucet will gradually work their way through the large circular waterway and be discharged through the spout.

As the water enters and fills the spout it will also pass up into the barrel and work its way around the plunger and into the channels 26 and compress the air in the barrel against the depending hub or flange of the washer and thus clamp said hub so tightly against the stem of the plunger that it will be impossible for the air to escape from the barrel and hence impossible for water to pass such body of compressed air.

When the handle 22 is released the pressure of the water and of spring 35 will effect the reëlevation and reseating of the valve and the upward movement of the plunger, the handle being turned back to its original position through the coaction of the cam-lugs and the cam-collar.

As the drawings show a pair of diametrically opposite cam lugs and a pair of diametrically opposite V-shaped notches in the cam collar of the stem, the latter is never turned a full quarter revolution in effecting the unseating of the valve as such movement would bring the highest point of the collar against the extreme lower ends of the cam lugs and thus perhaps result in preventing the water, assisted by the spring 35, from reëlevating the stem and closing the valve when the handle is released.

The seating of the valve does not occur with any material shock or jar as such is prevented through the opposition of the cushion of air in the barrel between the plunger and the washer, the excess air (if any) in such upward movement of the plunger passing downward through the barrel around the plunger and facilitating the drainage of the water therefrom into the spout, and in this connection it is to be understood that in the upward movement of the plunger the water in the channels exerts an equal pressure on the plunger at all sides and therefore tends to insure undeviating reciprocatory movement thereof. The water in the cylinder also constitutes a seal to confine the air in the barrel that it shall offer an appreciable resistance to the upward movement of the valve. It will be also noticed that by reason of the fact that the barrel fits snugly in the cylindrical opening 13 and its flanged end is clamped upon shoulder 14, there is no possible chance of it vibrating laterally and producing an undesirable noise, and that because it is held rigidly in a vertical position and snugly em-

braces the plunger, the latter cannot move laterally. The lower end of the spool portion 29 also fits snugly in the depending stem 12 when and just before the valve is seated 5 and therefore coöperates with the barrel in guarding against lateral vibration of the valve. The spring also tends to insure direct vibration of the valve because it fits snugly in opening 4 at its lower end, and 10 above said opening snugly embraces the cylindrical nut 33. It will thus be seen that by insuring direct reciprocating movement to the valve, the noise usually termed water hammering and caused through vibratory 15 movement of the valve stem, is avoided.

From the above description it will be apparent that I have produced a self closing faucet of the character named which is susceptible of modification in various particulars without departing from the spirit and 20 scope or sacrificing any of the advantages of the appended claims.

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

1. A self-closing faucet, comprising a base having a chamber, a spout provided with openings in the top and bottom, a cap secured to and in superposed relation with 30 the spout vertically above the base, a barrel fitting snugly in the upper opening of the spout and terminating short of and arranged in alinement with the lower opening thereof, a reciprocatory plunger fitting snugly in the barrel and provided with an upwardly-projecting stem and a depending waterway 35 portion, a valve secured against the lower end of the waterway portion, yielding means for holding the valve closed over said lower opening, a compressible washer establishing a substantially water and air-tight joint between the upper end of the barrel and the 40 upwardly-projecting stem of the plunger, and means for unseating the valve.

2. A self-closing faucet, comprising a base having a chamber, a spout provided with openings in the top and bottom, a cap secured to and in superposed relation with 50 the spout vertically above the base, a barrel fitting snugly in the upper opening of the spout and terminating short of and arranged in alinement with the lower opening thereof, a reciprocatory plunger fitting snugly in the barrel and provided with an upwardly-projecting stem and a depending 55 waterway portion, a valve secured against the lower end of the waterway portion, yielding means for holding the valve closed over said lower opening, a compressible washer establishing a substantially water and air-tight joint between the upper end 60 of the barrel and the upwardly-projecting stem of the plunger, and rotatable and longitudinally-movable means for unseating the valve. 65

3. A self-closing faucet, comprising a base having a chamber, a spout provided with openings in the top and bottom, a cap secured to and in superposed relation with the spout vertically above the base, a barrel 70 fitting snugly in the upper opening of the spout and terminating short of and arranged in alinement with the lower opening thereof, a reciprocatory plunger fitting snugly in the barrel and provided with an 75 upwardly-projecting stem and a depending waterway portion, a valve secured against the lower end of the waterway portion, yielding means for holding the valve closed over said lower openings, a compressible 80 washer establishing a substantially water and air-tight joint between the upper end of the barrel and the upwardly-projecting stem of the plunger, and means engaging the upper end of the plunger stem to move 85 the same endwise and force the valve away from its seat and the lower end of the waterway portion out of the said opening at the bottom of the spout.

4. In a self-closing faucet, a spout having 90 openings in its top and bottom, a barrel fitting snugly in the upper opening, a plunger reciprocally arranged in the barrel, a valve connected to move with the plunger and arranged below the spout and adapted for controlling the passage of water into the same 95 through the said lower opening, and means for closing the upper end of the barrel to confine air in such end whereby upward movement of the plunger and the valve is 100 resisted and the seating of the latter is cushioned.

5. In a self-closing faucet, a spout having openings in its top and bottom, a barrel fitting snugly in the upper opening, a plunger 105 reciprocally arranged in the barrel, a valve connected to move with the plunger and arranged below the spout and adapted for controlling the passage of water into the same through the said lower opening, 110 and a resilient washer closing the upper end of the barrel to confine air in such end whereby upward movement of the plunger and the valve is resisted and the seating of the latter is cushioned. 115

6. In a self-closing faucet, a spout having openings in its top and bottom, a barrel fitting snugly in the upper opening, a plunger reciprocally arranged in the barrel, a valve 120 connected to move with the plunger and arranged below the spout and adapted for controlling the passage of water into the same through the said lower opening, a resilient washer closing the upper end of the barrel to 125 confine air in such end whereby upward movement of the plunger and the valve is resisted and the seating of the latter is cushioned, in combination with a base having a chamber, bearing a rigid relation to the spout and inclosing the valve, and a spring 130

inclosed by said base and bearing against the same at one end and adapted to exert a pressure tending to seat or close said valve.

7. In a self-closing faucet, a spout having 5 openings in its top and bottom, a barrel fitting snugly in the upper opening, a plunger reciprocally arranged in the barrel, a valve connected to move with the plunger and arranged below the spout and adapted for controlling the passage of water into the same 10 through the said lower opening, a resilient washer closing the upper end of the barrel to confine air in such end whereby upward movement of the plunger and the valve is 15 resisted and the seating of the latter is cushioned, in combination with a base having a chamber and bearing a rigid relation to the spout and inclosing the valve, a nut bearing a fixed relation to the plunger and underlying 20 ing and securing the valve in fixed relation to the plunger, and a spring surrounding said nut and tending to hold the valve seated.

8. A self-closing faucet, comprising a base 25 having a chamber and an opening in its bottom and a tubular depending stem having a bore of smaller diameter than said opening and communicating therewith and provided with waterways, a spout superposed upon 30 and rigidly secured to the base and provided with a lower opening communicating with the chamber of the base and with an upper opening, a cap secured to the spout over the said upper opening, a barrel depending into 35 the spout through the upper opening thereof, a plunger fitting reciprocally in the barrel and provided with a cylindrical stem projecting upwardly and with a substantially spool-shaped depending portion and a stem 40 depending from the center of the spool-shaped portion into the chamber of the base, a nut secured upon the last-named stem, a compressible valve fitting on said stem and clamped by said nut against the lower end of 45 the spool-shaped portion and adapted for controlling the passage of water from the chamber of the base into the spout through the lower opening of the latter, a spring

bearing at its opposite ends against the nut and the base, a compressible washer closing 50 the upper end of the barrel and provided with a hub portion snugly embracing the upwardly-projecting stem of the plunger, and means projecting into the cap for imposing 55 a downward pressure on the upper end of said upwardly-projecting stem, to force the same and the plunger downward and unseat the valve to permit water to pass from the chamber of the base into the spout.

9. In a self-closing faucet, a spout having 60 an opening in its upper end, a cylindrical barrel depending into said spout through said opening, a plunger fitting reciprocally in the barrel and provided with a stem projecting beyond the upper end of the barrel, 65 a cap engaging the upper part of the spout and inclosing the upper end of said stem, and a compressible washer closing the upper end of the barrel and secured in fixed relation thereto and fitting snugly on said stem 70 and provided with a central hub depending into the upper end of the barrel and tapered toward its lower end.

10. In a self-closing faucet, a spout having 75 an opening in its upper end, a cylindrical barrel depending into said spout through its upper side, a plunger fitting reciprocally in the barrel and provided with a stem projecting beyond the upper end of the barrel, 80 a cap engaging the upper part of the spout and inclosing the upper end of said stem, and a compressible washer closing the upper end of the barrel and secured in fixed relation thereto and fitting snugly on said stem 85 and provided with a central hub depending into the upper end of the barrel and tapered toward its lower end and provided also with an upwardly-projecting hub surrounding the stem.

In testimony whereof I affix my signature, 90 in the presence of two witnesses.

JOHN P. FARLEY.

Witnesses:

HELEN C. RODGERS,
G. Y. THORPE.