F. F. LECUYER.

SELF CLOSING COCK.

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1,002,591.

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Fig. 1.

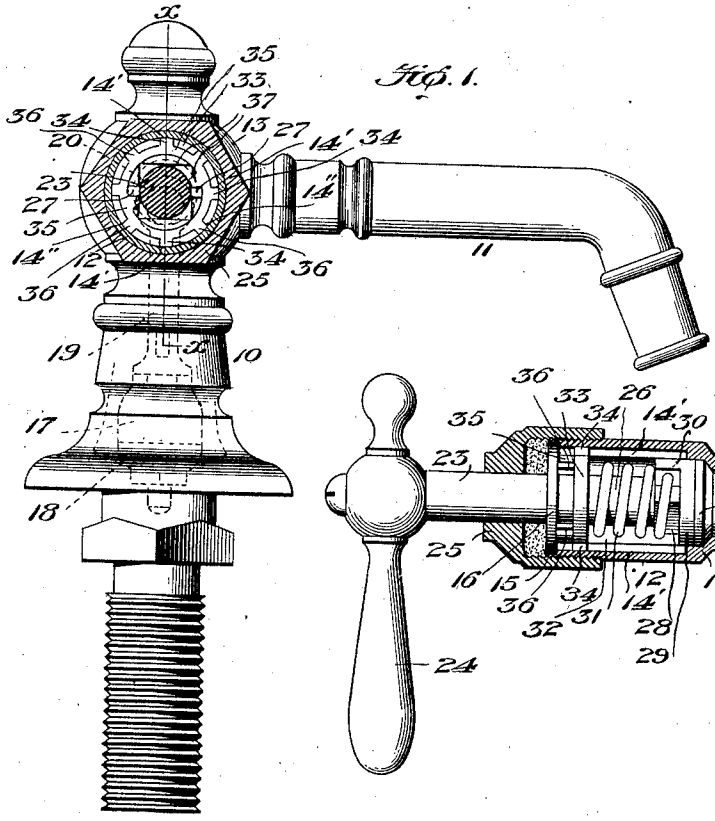


Fig. 2.

Fig. 5.

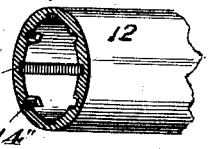


Fig. 4.

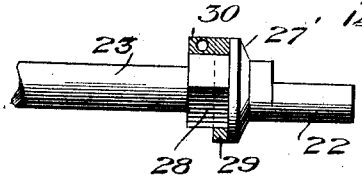
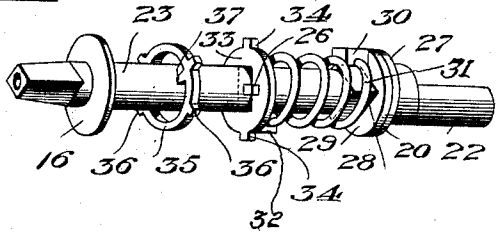


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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SELF-CLOSING COCK.

1,002,591. Specification of Letters Patent. **Patented Sept. 5, 1911.**

Application filed February 17, 1911. Serial No. 609,133.

To all whom it may concern:

Be it known that I, FREDERICK F. LECUYER, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Self-Closing Cocks, of which the following is a specification.

This invention relates to certain new and useful improvements in self-closing cocks or faucets; that is, cocks and faucets in which the plug or other valve may be caused to automatically seat to shut off the flow of liquid by spring pressure after the valve stem has been turned and the valve lifted from its seat by hand manipulation.

The invention consists of the constructions, arrangements and combinations of parts forming the improved faucet which I will hereinafter describe and claim.

In the accompanying drawings forming part of this specification and in which similar reference characters indicate like parts in the several views; Figure 1 is a part elevation and part sectional view of a self closing faucet embodying the salient features of my invention. Fig. 2 is a longitudinal sectional view on the line *x*—*x* of Fig. 1. Fig. 3 illustrates the stem detached and the several parts of the valve in the order in which they are assembled on the stem. Fig. 4 is a view of the valve stem and its connected parts removed from the casing. Fig. 5 is a detail in perspective showing the outer end of the tubular extension, 12, with its grooves and notches.

In the aforesaid drawings I have illustrated my invention in association with a cock or faucet of a well known type, and it will be understood that the invention may be applied to any of the common forms of cocks and faucets known as basin-cocks, bibb, or stop, of whatever size and whether they be right or left hand faucets.

The faucet has the conventional or other form of casing, 10, from one side of which extends the discharge pipe, 11, while from another side and projecting at right-angles to the discharge pipe, 11, is the tubular extension, 12, which connects with the spherical portion, 13, of the casing. In the bottom or inner end of the tubular extension, 12, is formed an inclined or beveled valve seat, 14, while in the inner walls of this extension and extending parallel with each other and lengthwise of said extension are formed the spaced grooves or channels, 14′, which extend from the outer end of the tubular extension to approximately the valve seat, 14, the outer end of said extension being provided with an annular recess, 15, to receive and loosely seat a washer or disk, 16.

The type of cock or faucet shown in the drawings for purposes of illustrating one application of my invention, is commonly known as a "Fuller" cock and it includes a plug, 17, adapted to engage a suitable seat, 18, in the casing to control the flow of water, said plug being attached to a rod, 19, in the customary manner and which rod has an eye or opening, 20, at the inner end substantially within the globular portion, 21, of the casing and adapted to receive the eccentric stud, 22, commonly formed on the lower end of the valve stem, 23, which stem extends through the tubular right-angled extension, 12, of the valve casing, 10, and has its outer end made with flat sides or squared to receive the operating hand piece, 24, of whatever character the same may be, said stem passing through the aforesaid washer or disk, 16, and through the usual nut, 25, as shown in Fig. 2, and being suitably packed to prevent leakage of fluid around the stem.

The valve stem is shown detached in Fig. 3 and it comprises the stem portion, having lugs, 26, projecting from opposite sides at a point intermediate of the ends of the stem. The inner portion of the stem is provided with a rigid collar or flanged enlargement, 27, and a flat sided or squared portion, 28, to which portion is fitted a loose disk, 29, having a square opening to receive said portion, 28, said disk having a lug, 30, to which is secured in any appropriate manner one end of the coiled spring, 31. This spring encircles the valve stem and has its outer end likewise appropriately secured to a corresponding lug, 32, on a second disk or plate, 33, through which the stem also loosely passes; this second disk or plate, 33, is positioned interior to the lugs, 26, on the stem and being held in contact with the outer surface of said lugs, by means of the aforesaid spring, which is interposed between the two disks or plates, 29—33; the outer disk or plate also has a square opening and thereby is adapted to fit over the squared

projection, 28, on the valve stem, 26, and thus become the inner plate when it is desired to reverse the action of the spring, as I will hereinafter explain. The two disks or plates, 29—33, and the interposed spring are thus so mounted upon the stem that the latter may be withdrawn from its casing at any time without danger of the parts becoming detached or disarranged, the said disks being held respectively against the flanged portion, 27, of the stem and the inner surface of the lugs, 26, by the expansive action of the interposed spring. The disk or plate, 33, is also provided with lugs, 34, which project outwardly from its opposite sides, said lugs being fashioned to fit and be slidably guided in the grooves or channels, 14′, formed in the inner walls of the right-angled tubular projection, 12, of the casing, whereby the disk, 33, which holds one end of the spring may be held against turning movement when the valve-stem is turned to open the valve, thus causing the spring to be placed under such tension that it will immediately operate to close the valve when the pressure of the hand is removed from the operating hand piece.

Loosely surrounding the stem at one side of the disk or plate, 33, thereof, is an annulus or locking ring, 35, having on its outer circumference the outwardly projecting lugs, 36, adapted also to engage either the grooves, 14′ or notches 14″ formed in the inner surface of the extension, 12, of the casing, the opening in the center of this ring being sufficiently large to receive not only the stem itself but also the lugs or projections, 26, of said stem, the ring being of substantially the same thickness as that of the projections, and said ring or annulus having lugs, 37, projecting from its inner circumference and disposed in the path of movement of the lugs, 26, on the valve stem whereby said lugs, 37, act as stops to limit the rotation of the valve stem and accordingly the opening movement of the valve and the strain upon the spring. The ring or annulus with its aforesaid lugs are also important, as it forms a simple means for adjusting the tension of the spring, for the stem may be rotated by its hand piece, the ring or annulus having been lifted out of engagement with the grooves or notches in the extension, 12, of said casing, and the valve stem turned until the desired tension is obtained, and the plug nicely seats, when said ring may be slipped back into position with its outside lugs engaging the grooves or notches in the casing; the inside lugs, 37, may now act as stops for the return movement of the stem. In other words if it is desired to increase the tension of the spring at any time, the handle, 24, is removed and the nut, 25, unscrewed and the disk 16, removed or slipped along the stem; the handle may now be temporarily applied to the outer end of the stem and the stem turned thereby, and the annulus or ring, 35, being lifted from its position and turned to advance its outside projections into register with the next succeeding grooves, 14, or notches, 14′ in the casing which correspondingly advances the inside projections, when the outside lugs by their engagement in said grooves or notches will hold the annulus rigidly and the inside lugs will limit the expansion of the spring and will accordingly hold the spring under its increased tension and thereby increase the closing pressure applied to the plug or other valve.

Thus the tension of the spring may at all times be regulated by the position of the stops or lugs which project from the inner circumference of said ring and which are designed to engage the lugs projecting from the valve stem.

As before stated, the invention may be applied to different forms of basin-cocks, bibb, or stop-cocks of both the right and left hand type, that is, the spring may be so disposed on the stem as to be used upon either the right or left hand cocks without departing from the spirit of the invention.

In order to reverse the spring it is only necessary to place the disk or plate, 33, at the bottom so that its squared opening will fit over the squared portion, 28, of the stem near the inner end in which case the plate or disk, 29, heretofore described as the inner disk will become the outer disk and the locking ring or annulus, 35, will seat upon said last-mentioned disk, the operation being substantially the same as that before described.

Various methods may be adopted for securing the ends of the spring to the outer and inner disks, and accordingly it is within the scope of my invention to secure the spring by any of the methods heretofore known for a similar purpose.

When the parts are properly set, the lugs of the locking plate are so adjusted relatively to the projections on the valve stem, that there is no wear on the locking ring, while the interior lugs of this ring act as stops to prevent the same from being turned too far which would put too much strain on the spring and possibly break said spring.

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

1. A self-closing cock having a casing, a valve, a turnable stem for the valve, a spring surrounding the stem, a disk fixed to the stem having one end of the spring secured to it, and a second disk loose on the stem and fixedly secured to the other end of the spring, said loose disk having radial lugs projecting from its periphery, and said

casing having parallel grooves in its inner walls with which said lugs are interchangeably engaged, and a locking ring loose on the stem having radial lugs projecting from its outer circumference and engaging the grooves in the casing.

2. A self-closing cock having a casing, a valve, a turnable stem for the valve, a spring surrounding the stem, a disk fixed to the stem and having one end of the spring secured to it, and a second disk loose on the stem and fixedly secured to the other end of the spring, said loose disk having radial lugs projecting from its periphery, and said casing having parallel grooves in its inner walls with which said lugs are interchangeably engaged, and a locking ring loose on the stem having radial lugs on its outer circumference engageable with the grooves in the casing, said stem having a projection and said locking ring having a projection on its inner circumference to engage the stem projection and limit the axial movement of said stem.

3. A self-closing cock having a casing, a valve, a turnable stem for the valve, a spring surrounding the stem, a disk fixed to the stem having one end of the spring secured to it, and a second disk loose on the stem and fixedly secured to the other end of the spring, said loose disk having radial lugs projecting from its periphery, and said casing having parallel grooves in its inner walls with which said lugs are interchangeably engaged, and a locking ring loose on the stem, said stem having a projection at one side against which the loose disk bears, said locking ring having an inwardly projecting lug arranged in the transverse plane of the projection on the stem and adapted to be engaged by the latter to limit the axial movement of the stem, said ring having, also, other projections on its outer circumference interchangeably engageable with the grooves in the casing whereby the tension of the spring may be adjusted.

4. A self-closing cock having a casing with internal parallel grooves, a valve having a spring actuated turnable stem, a disk connected to the spring of the stem and loose on said stem, said disk having lugs engageable with the grooves in the casing, and a locking ring loose on the stem having radial lugs, said ring being turnable to bring its lugs into register with any of the grooves in the casing, and other engageable lugs on the stem and locking ring for limiting the turning movement of said stem.

5. In a self-closing cock, the combination with the casing having internal grooves, of the valve and the turnable stem therefor, a torsional spring surrounding the stem having one end fixed thereto, a disk loose on the stem, said spring having its other end secured to said loose disk, and a locking ring loose on the stem having a double series of lugs the lugs of one series engaging the grooves in the casing to hold the ring against turning movement and the lugs of the other series adapted as limiting stops for the axial movement of the valve stem, said stem having radial lugs engaging the last named series of lugs.

6. In a self-closing cock, the combination with a casing, of a valve and a turnable stem therefor having a fixed collar, a torsional spring having one end fixed to the collar of the valve stem, said stem having radial lugs intermediate of its ends, a disk loose on the stem and maintained in contact with said lugs, the opposite end of the spring secured to said loose disk, said casing having internal grooves and said loose disk having peripheral lugs slidably fitting said grooves whereby the loose disk is held from turning during the opening and closing movements of the valve.

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

FREDERICK F. LECUYER.

Witnesses:
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