

(Model.)

W. BUNTING, Jr.  
SELF CLOSING COCK OR FAUCET.

No. 556,133.

Patented Mar. 10, 1896.

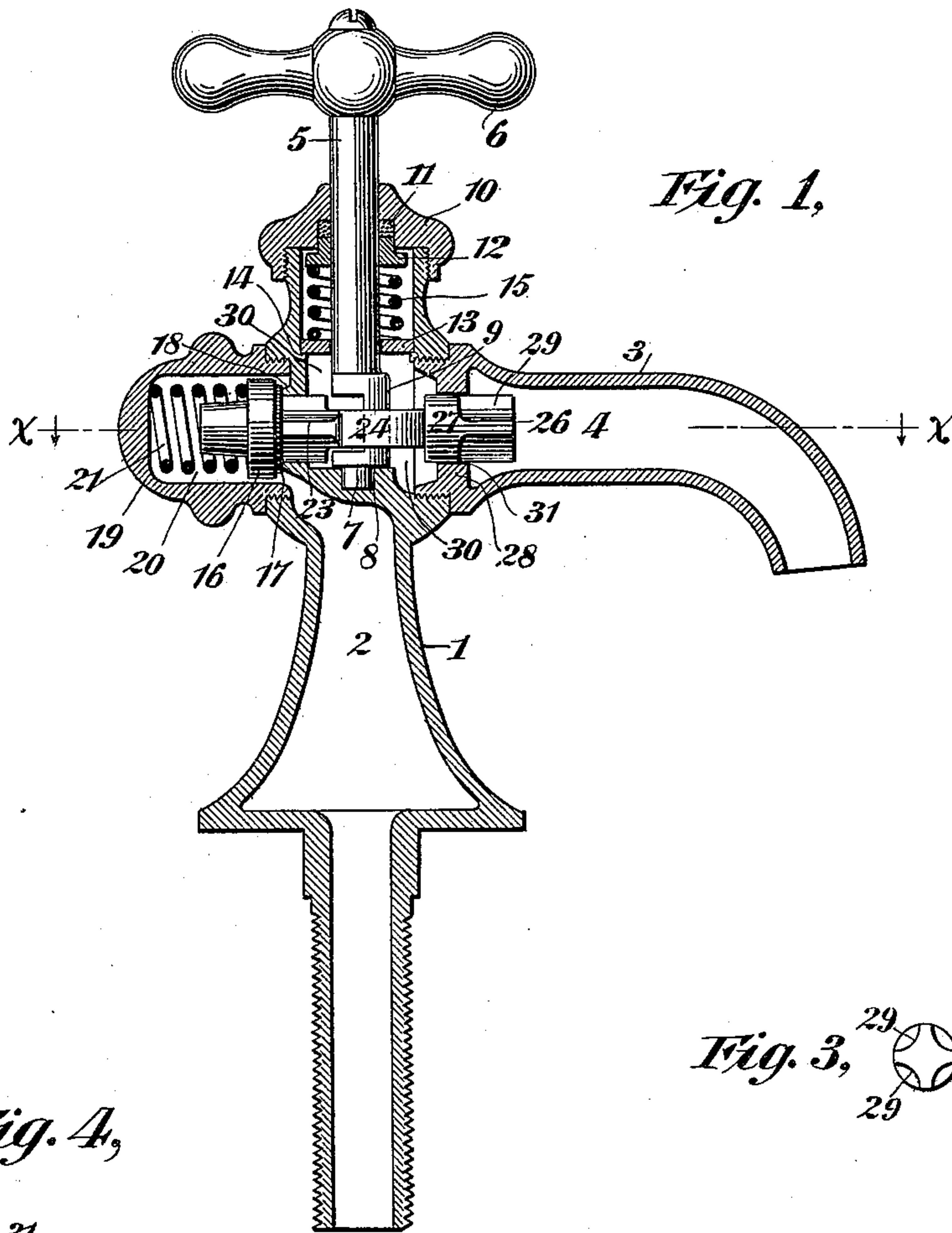


Fig. 1,

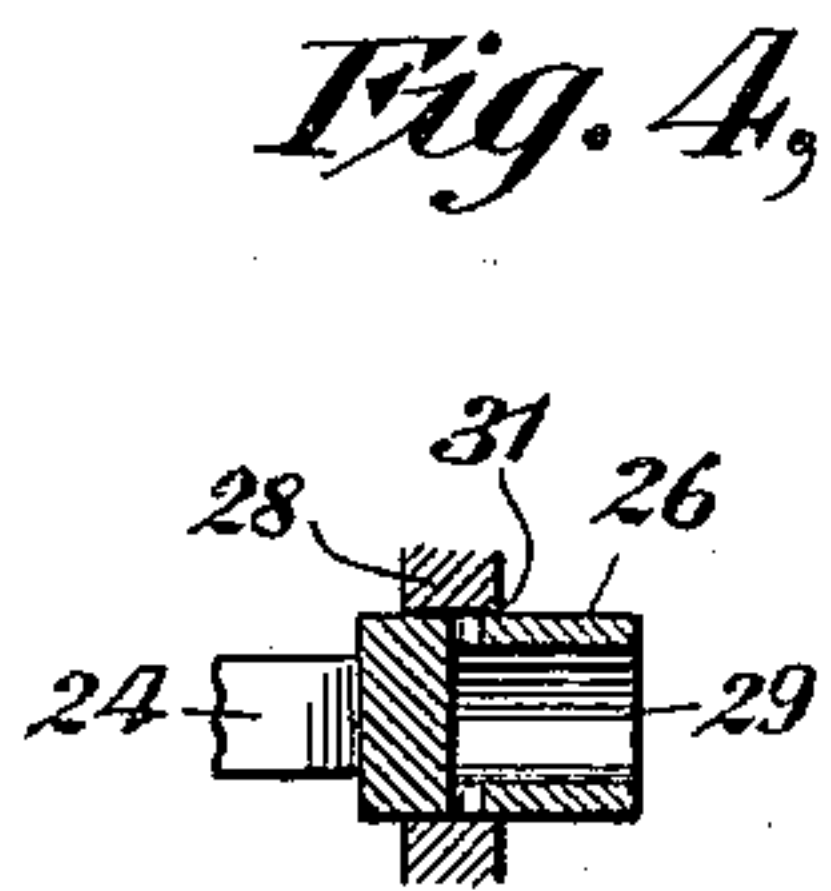


Fig. 4,

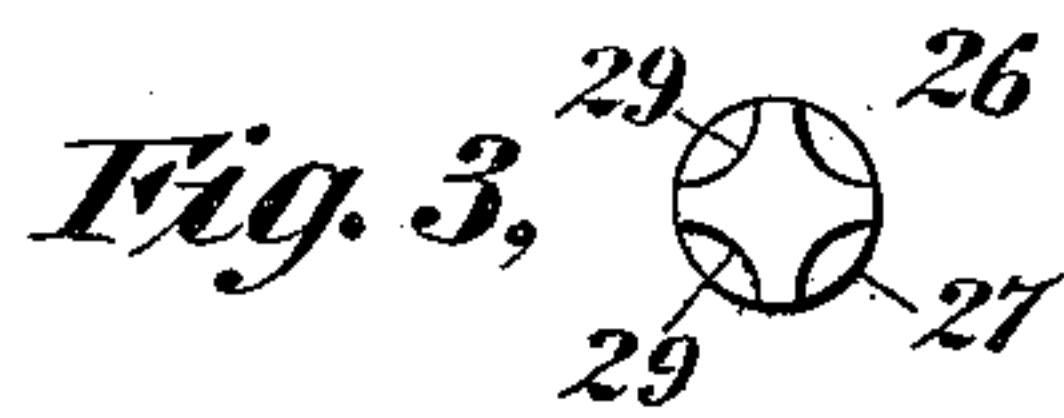


Fig. 3,

Fig. 2,

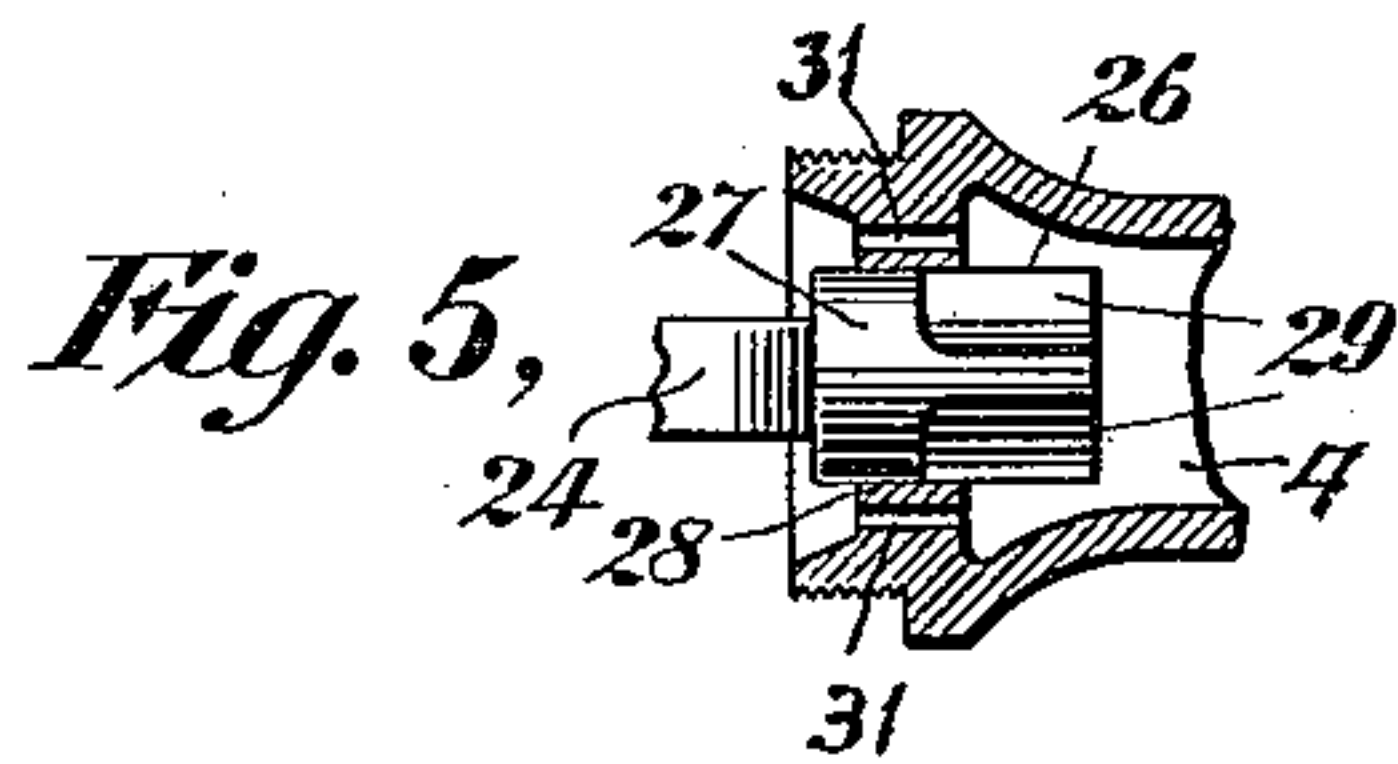
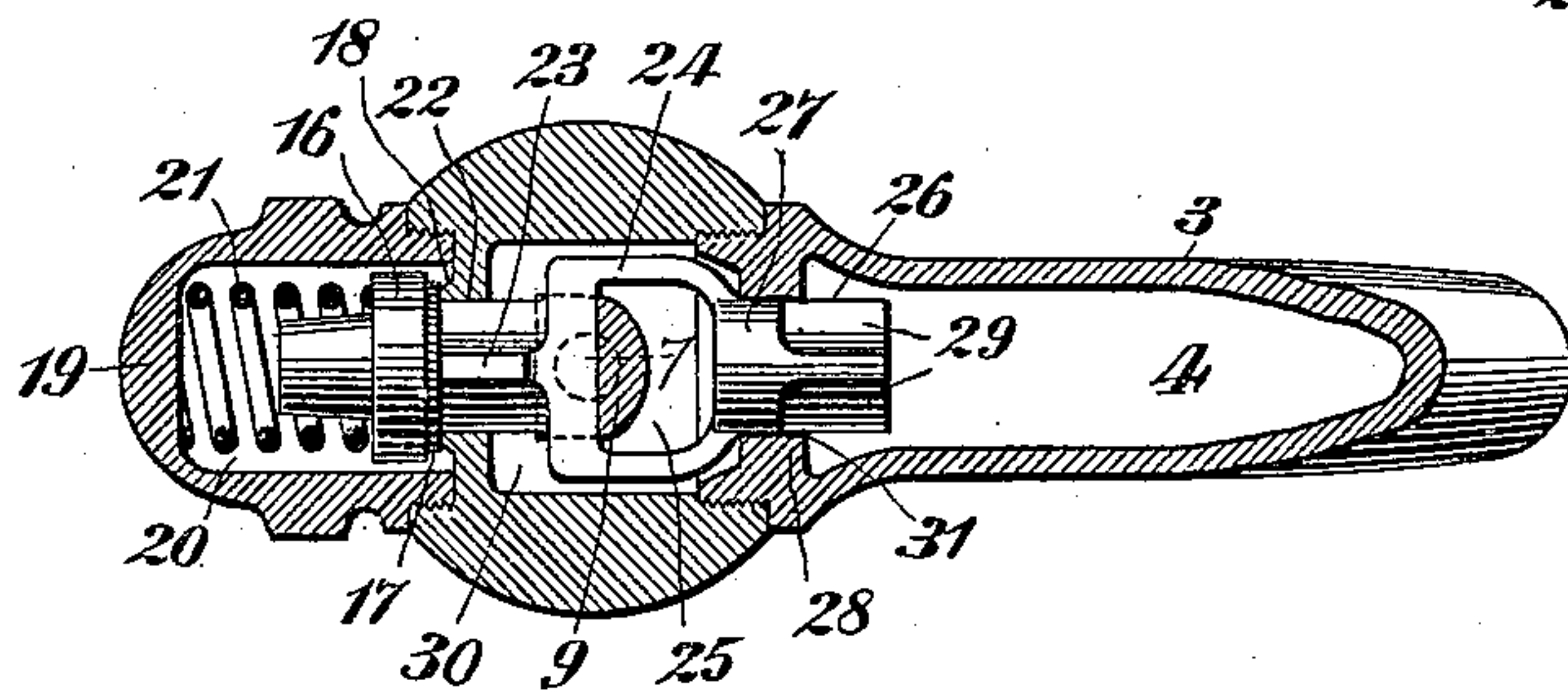


Fig. 5,



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# UNITED STATES PATENT OFFICE.

WILLIAM BUNTING, JR., OF FLUSHING, ASSIGNOR TO THE MEYER-SNIFFEN COMPANY, LIMITED, OF NEW YORK, N. Y.

## SELF-CLOSING COCK OR FAUCET.

SPECIFICATION forming part of Letters Patent No. 556,133, dated March 10, 1896.

Application filed February 2, 1893. Serial No. 460,719. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM BUNTING, Jr., a citizen of the United States, and a resident of Flushing, in the county of Queens and State of New York, have invented certain new and useful Improvements in Self-Closing Cocks or Faucets, of which the following is a specification.

My invention relates to that class of self-closing cocks or faucets in which the supply-controlling valve seats or closes with the pressure of the liquid, and has for its main object to provide a construction whereby all shock, reaction, or "water-hammer" in the seating of the valve may be avoided or eliminated, thus overcoming a serious objection to this class of contrivances.

My invention consists in certain features of construction and combinations of devices, all as will be hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a central vertical section of a cock or faucet embracing my improvements. Fig. 2 is a horizontal section thereof, taken at the line *x x* of Fig. 1. Fig. 3 is a cross-section taken through the ports of the supplemental valve. Fig. 4 is a modification of the supplemental valve, and Fig. 5 is a modification of the escape-passage.

In the several views the same part will be found designated by the same numeral of reference.

I have shown my improvements embodied in a well-known form or construction of self-closing basin-cocks; but it will be understood, of course, that the same may be carried out in other forms or constructions of cocks.

1 designates the shell or casing of the cock; 2, the water-inlet; 3, the spout or nozzle, and 4 the water-outlet.

5 is a vertical spindle, having a handle 6 at its upper end and a pivot 7 at its lower end, which is stepped into a recess 8 in the shell or casing. Between the spindle proper and the pivot is provided an offset or crank 9 for operating the valves, as will be presently described.

10 designates a cap, which is screwed onto the upper end of the shell and is recessed in-

teriorly to receive packing 11 and a gland or follower 12, which surrounds the spindle.

13 is a plate or cross-piece, which is supported upon a cylindrical ledge 14 in the shell or casing and serves as a rest or abutment for the lower end of a coiled spring 15, surrounding the spindle, and whose upper end presses against the under side of the gland or follower. By this construction the spindle is kept properly packed, and any escape of water at the upper end of the cap 10 is effectually prevented.

16 is the main or supply-controlling valve, which may have a rubber or leather or other facing 17, adapted to a valve-seat 18, formed in the shell or casing.

19 is a cap or head screwed into the casing and forming interiorly a valve-chamber 20. Within this chamber is a coiled spring 21, adapted to work with the pressure in forcing the valve 16 to the seat 18.

In the shell is formed a circular opening 22, through which passes a valve-stem 23 having four radial wings which bear at four points on the wall of said opening and serve to guide the valves in opening and closing. From this valve-stem extends a loop or frame 24, in the opening 25 of which is arranged the crank or offset 9 of the spindle. From the loop or frame extends a supplemental valve 26, preferably made in the form of a plug or piston, and consisting of a cylindrical portion 27, which is adapted to a circular thick ring or elongated bearing 28 in the spout or nozzle, and an extension provided with ports or passage-ways 29. The valve-stem 23, the frame 24, and the valve 26 are preferably all cast in one piece, and the valve 16 is preferably screwed onto its valve-stem. Between the valves 16 and 26 is a chamber or space 30, in which the valve-stem, the loop or frame, the valve 26, and the crank 9 are accommodated and adapted to work.

The diameter of the ring 28 is slightly greater than that of the cylindrical portion of the valve 26, to form an escape-passage 31, for a purpose which will presently appear.

In the several views the valve 16 is shown closed or as firmly upon its seat. If the handle be now turned the said valve will be moved toward the left or back against the force of



the spring 21 and the water-pressure, and the water will pass by the valve and valve-stem into the chamber or space 30, and if the valve 16 has been opened to its full extent the cylindrical portion 27 of the supplemental valve will have been slid into the chamber 30 to an extent such as to bring the ports 29 into communication with said chamber, and thus permit the free egress of the water therefrom into the spout or nozzle discharge-passage 4. The parts are so arranged or constructed as that the valve 26 will not be opened or have its ports brought into communication with the chamber 30 until or before the main valve 16 has been opened quite a distance—say about one-half—thus permitting the chamber 30 to completely or substantially fill before a full discharge can take place through the outlet 4. By reason of this construction or arrangement, when the spindle is released the integrally-connected valves move together as one until the valve 26 closes or registers with its seat or bearing, and which occurs before the main valve reaches its seat, or when it is about half-way back to its seat. As soon as the valve 26 thus closes it acts to retard the closing of the main valve, which moves always with and at the same velocity as the supplemental valve. After the latter closes or comes into alignment with the elongated ring or bearing it continues to move forward or to advance farther, but more slowly, and hence the final closing movement of the main valve is gradually effected. During the closing of the valves a portion of the water escapes through the small passage between the supplemental valve and its seat, and also after the valves are both closed.

It will thus be seen that if the valve 16 is opened to its full extent there may be a full and free discharge of the water at the nozzle, and that upon releasement of the spindle the valve 16 will move toward its seat under the pressure of the spring and force of the water, but said movement of said valve will be retarded or restrained as soon as the portion 27 is brought into alignment with the ring or wall 28. The valve 16 is thus cushioned and compelled to seat gradually, and thus all shock or water-hammer in the pipe or passage-ways is effectually prevented, and it will also be seen that if the valve 16 is only partially opened and then suddenly released the same retarding action and cushioning effect will be produced.

At Fig. 4 is shown a valve 26<sup>a</sup> entirely cylindrical and which fits the ring or bearing 28<sup>a</sup> loosely, as above explained. Instead, however, of making the ports 29<sup>a</sup> as shown at Figs. 1, 2, and 3, they are formed by a central longitudinal opening in the valve and by one or more transverse perforations therein meeting the longitudinal opening. The operation of this construction is substantially the same as that already described.

The escape-passage 31<sup>a</sup> for the water, formed

between the parts 27<sup>a</sup> and 28<sup>a</sup> in Figs. 1 and 4, may of course be located or arranged at other portions of the fixture.

At Fig. 5 the by-pass or escape-passage 31<sup>b</sup> is formed in a fixed in lieu of a movable part of the faucet, and preferably through the wall of the ring 28<sup>b</sup>. The escape-passage may consist of one or more perforations, as shown. In this construction the valve 26<sup>b</sup> may fit snugly, (yet not too close to prevent its working freely,) so as not to permit the escape of the water in the manner described, of the construction shown at Figs. 1 and 2, although there may be a slight leakage therethrough, owing to the difficulty of forming a perfectly-tight joint or bearing without packing, the use of which I prefer to avoid. From this construction it will be observed that upon the releasement of the handle and the alignment of the cylindrical part 27<sup>b</sup> of the valve 26<sup>b</sup> with the ring 28<sup>b</sup> the free discharge of the water is cut off, and that a portion of the body of water between the valve 26<sup>b</sup> and the valve 16<sup>b</sup> must be forced or driven past the former through the escape-passage 31<sup>b</sup> before the valve 16<sup>b</sup> can seat, and the escape 31<sup>b</sup> being comparatively small the valve 16<sup>b</sup> is retarded and caused to seat slowly.

Numerous other changes in detail construction of the various parts may be made without departing from the spirit of my invention.

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

1. In a self-closing faucet, the combination of a main supply-controlling valve, a supplemental discharge-valve, and an intermediate water-chamber, said valves being integrally connected to move always together, the said main valve being arranged to open before the supplemental valve moving in unison therewith entirely leaves its seat or bearing, and the supplemental valve being arranged to seat and close the discharge-passage in advance of the main valve and to serve thereafter to effect a retardation in the closing movement of the main valve.

2. In a self-closing faucet, the combination of a main supply-controlling valve, a valve-chamber and a valve-seat therefor, the supplemental piston or plunger valve rigidly connected to the main valve, a discharge-outlet controlled by the piston or plunger valve, an elongated seat or bearing for said plunger-valve, whereby after closing the latter may continue to move and control and retard the final movement of the main valve, and a water-chamber between the main valve and the piston or plunger valve.

3. In a self-closing faucet, the combination of a main supply-controlling valve, a valve-chamber and a valve-seat therefor, a supplemental valve rigidly or integrally connected to the main valve, a discharge-outlet controlled by the supplemental valve, a water-chamber intermediate the said valves, and an escape-passage from said intermediate wa-



ter-chamber to said discharge-outlet, through which the water may pass both when the valves are open and when they are closed.

4. In a self-closing faucet, the combination  
5 of a main supply-controlling valve closing with the pressure, a spring acting to force said valve toward its seat, a valve-chamber for said valve, a supplemental valve, a valve-stem, to one end of which the main valve is  
10 attached, and to the other end of which the supplemental valve is attached, so that both valves move in unison, a discharge-outlet controlled by the supplemental valve, a water-chamber intermediate said valves, an escape-  
15 passage from said water-chamber to said discharge-outlet, and means for opening said valves simultaneously against the pressure of the water and the spring.

5. In a self-closing faucet, the combination

of the valve 16, the valve-seat and chamber 20 therefor, the valve-spring, the valve-stem carrying at one end the valve 16 and at its opposite end the valve 26 and provided between said valves with a loop or frame, the discharge-outlet for the supplemental valve, 25 the water-chamber between said valves and in which the loop or frame works, the spindle passing into said water-chamber, and the crank on said spindle in operative engagement with said loop or frame. 30

Signed at New York city, in the county of New York and State of New York, this 25th day of January, A. D. 1893.

WILLIAM BUNTING, JR.

Witnesses:

H. M. McCANCE,  
AMASA T. DAY.