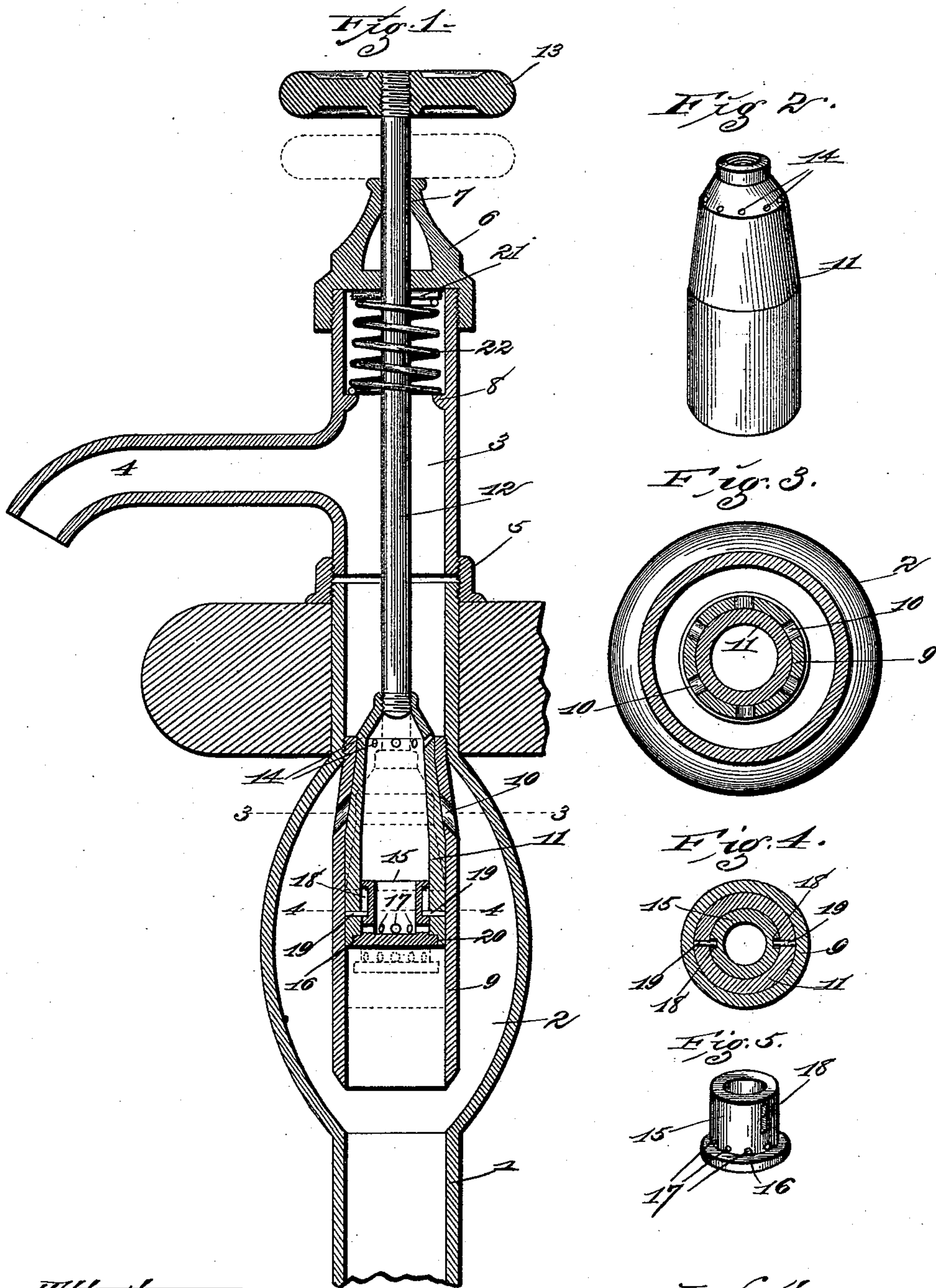


(No Model.)

G. S. MURPHY.
SELF CLOSING COCK OR FAUCET.

No. 539,633.

Patented May 21, 1895.



Attest
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UNITED STATES PATENT OFFICE.

GEORGE S. MURPHY, OF SHERMAN, TEXAS.

SELF-CLOSING COCK OR FAUCET.

SPECIFICATION forming part of Letters Patent No. 539,633, dated May 21, 1895.

Application filed February 25, 1895. Serial No. 539,639. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. MURPHY, of the city of Sherman, Grayson county, State of Texas, have invented certain new and useful Improvements in Self-Closing Cocks or Faucets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved self-closing cock or faucet, and consists in the novel construction, combination and arrangement of parts, hereinafter described and claimed.

In the drawings, Figure 1 is a central vertical sectional view of a faucet constructed in accordance with my invention. Fig. 2 is a view in perspective of a plunger-valve made use of in my improved faucet. Fig. 3 is a horizontal sectional view taken approximately on the indicated line 3 3 of Fig. 1. Fig. 4 is a horizontal sectional view taken approximately on the indicated line 4 4 of Fig. 1. Fig. 5 is a view in perspective of a drop-valve that is located and operates in the lower end of the plunger-valve.

Referring by numerals to the accompanying drawings, 1 indicates the pipe to which my improved faucet is fitted, said pipe being fitted to the wood-work or marble-slab of a wash-basin, bath tub or sink, and in said pipe is formed an elongated chamber 2. The upper end of the pipe that projects through the slab or wood-work is screw-threaded, and a section of pipe 3 from which the faucet nozzle 4 projects is fixed to the pipe 1 by means of a collar or union 5 that engages the meeting ends of the pipes 1 and 3. The upper end of the pipe 3 is exteriorly screw threaded, and a cap 6 constructed with a vertically arranged aperture 7 is located upon said screw-threaded upper end. Formed integral with the inner surface of the pipe 3 a short distance below the top thereof are projecting lugs 8. The interior of the pipe 1 adjacent the upper end of the chamber 2 is screw-threaded, and a short section of pipe 9, the upper end of which is slightly conical and exteriorly screw-threaded, is located in the chamber 2 and held in rigid position by being screwed into the interiorly threaded portion of the pipe 1. The chamber 2 is somewhat longer than the

inner pipe 9, therefore a passage around the lower end of said pipe and from the pipe 1 into the chamber 2 is formed.

Formed in the inner pipe 9 adjacent the upper end thereof is a series of apertures 10, the same inclining downwardly and outwardly.

11 indicates a cylindrical valve that is constructed to fit snugly within the upper end of the inner pipe 9, said cylindrical valve 11 being made slightly conical in its upper half to fit the conical form of the upper end of the pipe 9. The upper end of this cylindrical valve 11 extends a slight distance beyond the upper end of the inner pipe 9, and is threaded upon the lower end of a plunger-rod 12 that extends vertically upward through the pipe 3 and through the aperture 7 in the cap 6, and is provided on its upper end with a handle 13.

Formed in the upper end of the cylindrical valve 11 and above the upper end of the inner pipe 9 is a series of apertures or perforations 14 that incline inwardly and downwardly. When the valve 11 is in its normal position and closes the upper end of the inner pipe 9, the upper ends of these perforations or apertures 14 lie in the same horizontal plane with the upper end of said inner pipe 9.

15 indicates a cylindrical drop-valve that is constructed so as to fit in the lower end of the cylindrical valve 11, said drop-valve having its lower end closed and an annular flange 16 constructed on said lower end. Horizontally arranged in the wall of the drop-valve 15 just above the flange 16 is a series of perforations or apertures 17, and oppositely arranged in the wall of said valve 15 is a pair of vertical slots 18 in which the inwardly projecting ends of pins 19 engage, said pins 19 being rigidly fixed in the wall of the lower end of the cylindrical valve 11.

The annular flange 16 on the lower end of the drop-valve 15 fits in an annular cutaway portion 20 in the lower end of the cylindrical valve 11. When this drop-valve 15 is at its limit of upward movement, the flange 16 is located within the annular cutaway portion 20, the apertures or perforations 17 are closed by the lower end of the cylindrical valve 11, and the projecting points of the pins

19 occupy the lowermost ends of the vertical slots 18. When said drop-valve is at its lowermost limit of movement, the inwardly projecting ends of the pins 19 occupy the upper ends of the oppositely arranged slots 18, and the apertures or perforations 17 occupy a plane below the lower end of the cylindrical valve 11 and water or air may readily pass therethrough.

21 indicates a pin that passes horizontally through the plunger-rod 12, and when said rod is in its normal position engages directly against the under side of the cap 6. Located upon the plunger-rod 12 and interposed between this pin 21 and the projecting lugs 8 on the inner surface of the pipe 3, is an expansive coil-spring 22. The normal tendency of this spring 22 is to hold the plunger-rod 12 and the valve attached to the lower end thereof at their upward limit of movement, and said valve 11 fitting snugly within the upper end of the inner pipe 9 very effectually shuts off and prevents the passage of water upwardly through the apertures 10 in the upper end of said inner pipe 9. The water pressure tends to hold the drop-valve 15 at its upward limit of movement, thus effectually cutting off any passage of water through the apertures 17 into the valve 11 and through the apertures 14.

When the pipe 1 is properly attached to the water supply, the various parts are positioned as clearly delineated in Fig. 1.

When it is desired to draw a supply of water through the valve and to discharge the same through the nozzle 4, the operator manually bears down upon the handle 13, and in doing so the pressure exerted by the coil-spring 22 is overcome and the plunger-rod 12 and valve 11 attached to the lower end thereof are moved downwardly. As the upper ends of the valve 11 and the inner pipe 9 are slightly conical, the valve 11 upon leaving the upper end of the inner pipe 9 will leave an annular space between the upper end of said valve and said inner pipe, and thus establish a free passage for the water from the chamber 2 through the upper end of the pipe 1 and into the pipe 3 and through the nozzle 4. The positions assumed by the handle 13 and the valve 11 when moved downwardly are clearly illustrated by dotted lines in Fig. 1. As soon as the pressure is removed from the handle 13, the resiliency of the coil-spring 22 will return the plunger-rod 12 and valve 11 attached to the lower end thereof to their upward limit of movement and normal positions, and in so doing the passage through the apertures 10 will be effectually cut off.

Very often in the use of water faucets the valves therein become inoperative by reason of the water freezing in and around the same, and much time, labor and expense are entailed in replacing valves and faucets that have become inoperative by freezing of the water therein. I overcome this defect and drain all the water from a faucet and valve

by the employment of the drop-valve, the operation of which is as follows:

As heretofore stated, the water pressure always holds the drop-valve 15 within the lower end of the cylindrical valve 11 and the passage of water or air through the apertures 17 in the lower end of said drop-valve is effectually cut off and prevented.

When it is desired to drain all the water from the faucet and valve to prevent the same from freezing therein, the valve in the pipe from the water main to the pipe 1 is closed and the vent-cock therein opened. This being done the water that is in the pipe 1 and chamber 2 will drain through said pipe 1 and be discharged through the vent-cock. The water pressure being removed from the drop-valve 15 the same will, by reason of its own weight, gravitate downwardly to the position shown by dotted lines in Fig. 1, its downward limit of movement being restricted by the pins 19 engaging against the upper ends of the oppositely arranged slots 18 in said drop-valve 15. When said drop-valve has lowered to this point, the apertures or perforations 17 in the lower end thereof are in a plane below the lower end of the cylindrical valve 11 and the water in the upper end of the pipe 1 and in the valve 11 drains through the apertures 14 in the upper end of the cylindrical valve 11, through said valve 11 and through the apertures or perforations 17 in the lower end of the drop-valve. As soon as all the water has drained from the pipe and valve, air will freely circulate through said pipe, valve and faucet and any freezing of the pipe, faucet or valve rendered impossible.

A faucet of my improved construction is easily manipulated, inexpensive, renders freezing of water in the faucet or valve impossible, and possesses superior advantages in point of simplicity, durability and general efficiency.

The water pressure materially assists the coil-spring 22 in closing the valve 11.

What I claim is—

1. A self-closing cock or faucet, comprising a section of pipe having an elongated chamber formed therein, a nozzle fixed to the upper end of said pipe, an inner pipe vertically arranged within the chamber and constructed with a series of apertures in its upper end, a cylindrical valve with a conical upper end located and operating within the upper end of the inner pipe, a spring-actuated plunger-rod fixed to and extending upwardly from the upper end of the cylindrical valve, a handle fixed to the upper end of the plunger-rod, and a perforated drop-valve arranged to automatically form and close the passage through the lower end of the cylindrical valve.

2. A self-closing cock or faucet, comprising a length of pipe having an elongated chamber formed adjacent the upper end thereof, a pipe having a faucet-nozzle and fixed to the upper end of the first mentioned pipe, an inner pipe having a slightly conical upper end

and provided with a series of perforations in said conical upper end, said pipe being vertically arranged within the chamber in the first mentioned pipe, a cylindrical valve having a slightly conical upper end and constructed to fit snugly within the upper end of the inner pipe, said cylindrical valve having a series of perforations in its conical upper end, a spring-actuated plunger-rod attached to and extending upwardly from the cylindrical valve, and a drop-valve held to move vertically within the lower end of the cylindrical valve and provided with a series of perforations in its lower end.

3. In a self-closing cock or faucet, the combination of a vertically arranged valve-seat or inner pipe located within the supply pipe and provided with a series of perforations in its upper end, a vertically moving cylindrical valve having perforations in its upper end, the same lying in a plane above the upper

end of the valve-seat, a plunger-rod for operating the cylindrical valve, and a drop-valve constructed with a series of perforations in its lower end and held to move vertically in the lower end of the vertically moving valve.

4. In a device of the class described, a vertically moving valve having a plurality of apertures in its upper end and provided at its lower end with an annular cutaway portion, and a drop-valve constructed with a closed bottom, a series of apertures above said closed bottom, and an annular flange at its lower end to engage the annular cutaway portion in the vertically moving valve.

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

GEORGE S. MURPHY.

Witnesses:

J. A. L. WOLFE,
SILAS HARE, Jr.,
JOHN W. B. SMITH.