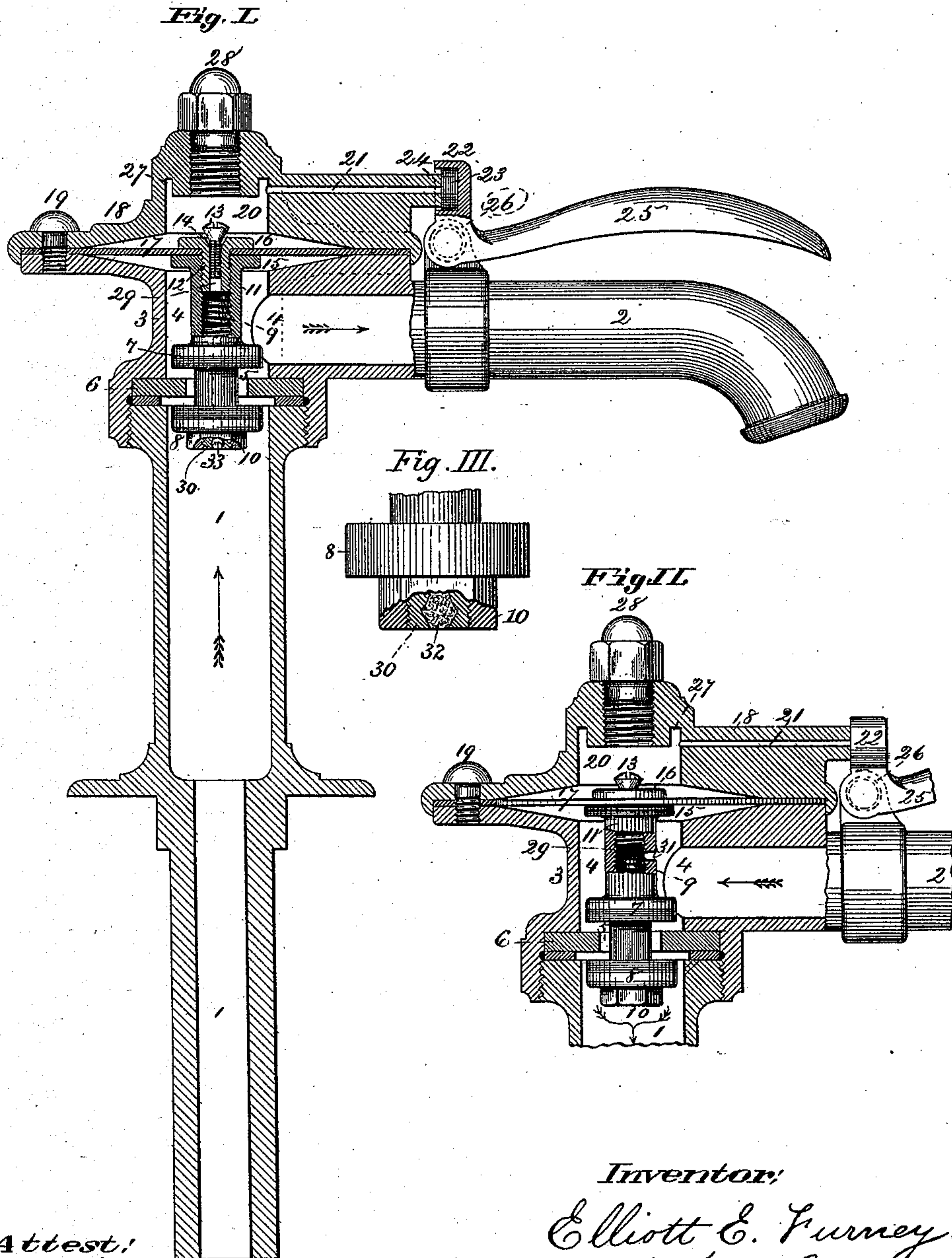


(No Model.)

E. E. FURNEY.  
AUTOMATICALLY CLOSING FAUCET.

No. 402,075.

Patented Apr. 23, 1889.



Attest:  
E. Arthur.  
Geo. E. Burr

Inventor:  
Elliott E. Furney.  
By Knight Bros.  
Atty.



# UNITED STATES PATENT OFFICE.

ELLIOTT E. FURNEY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO NELLIE C. FURNEY, OF SAME PLACE.

## AUTOMATICALLY-CLOSING FAUCET.

SPECIFICATION forming part of Letters Patent No. 402,075, dated April 23, 1889.

Application filed October 31, 1888. Serial No. 289,601. (No model.)

### *To all whom it may concern:*

Be it known that I, ELLIOTT E. FURNEY, of the city of St. Louis, in the State of Missouri, a citizen of the United States, have invented a certain new and useful Improvement in Automatically-Closing Faucets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 This faucet is constructed to give a desired quantity of water each time the small waste-valve is opened, the flow from the faucet not taking place until the waste-valve has been allowed to close.

15 Figure I is an axial section of the improved faucet. Fig. II is a similar section showing a modification. Fig. III is an enlarged detailed view, as hereinafter described.

20 1 in Fig. I represents a water-supply or induction pipe.

2 is the discharge-nozzle or eduction-pipe fixed in or forming part of the casting 3, containing the chamber 4, which is in communication with the outer air through the nozzle 2.

25 The chamber 4 is in communication with the supply-pipe 1 by a valve-port, 5, made in a plate, 6, whose top and bottom form seats of the valves 7 and 8, respectively. These valves may be faced with rubber or other soft substance, or may have metal faces, if desired.

30 These valves are on a hollow stem, 9, upon which they are held by nuts 10 and 11, screwing upon the stem. The nut 11 extends above the stem and forms a screw-threaded socket into which screws a nipple, 12, which is bored through to allow the passage of liquid. The bore of the nipple is screw-threaded and into it screws the stem of a valve, 13, said valve working on a conical seat at the top of the nipple.

40 To allow the passage of liquid between the screw-threaded stem of the valve and the nipple, a longitudinal groove, 14, is made in the screw-threaded stem or the side of the nipple-bore. Upon the nut 11 is a flange, 15, and upon the nipple a flange, 16, between which is held the central part of a flexible diaphragm, 17, through whose center the nipple passes. The periphery of the diaphragm is held between the top of the casting 3 and

the cap 18, which may be connected to the casting by screws 19, or otherwise. Above the diaphragm is a chamber, 20, of small dimensions. From the chamber 20 extends a waste-passage, 21, stopped by a valve, 22, having preferably a rubber face, 23, bearing on the seat 24.

55 25 is a lever by which the valve is opened, the valve being normally pressed against its seat by a spring of any suitable character. A spiral spring for this purpose is shown by broken lines at 26. I prefer that the passage 60 21 shall connect with a recess, 27, in the top of the chamber 20, so that the air will be almost perfectly exhausted from the chamber to insure the most positive action of the valves 7 and 8.

65 28 is a screw-plug, which may be removed to give access to the screw-valve 13, the said valve having a notch for a screw-driver, by which it may be turned to increase or diminish the size of the valve-opening. The lower end of the central bore, 29, of the valve-stem is seen at 30, Fig. I. It is preferred that this bore should contain sponge or other porous substance, 32, as shown in Fig. III, or other device—such as fine gauze 33, as shown in Fig. 75 I—may be used to prevent any obstruction entering the bore. For the reception of such straining device the bore may be enlarged at this point.

80 In the modification shown in Fig. II the device has the same construction, except that the lower end of the bore 29 is closed and an opening, 31, is made through the nut 11 to allow the liquid to pass from the chamber 4 into the bore 29. In this case the pipe 2 is 85 the supply-pipe and the pipe 1 the discharge-pipe.

The operation of my device is as follows: In the normal position of the parts the valve 7 is pressed upon its seat by the pressure of 90 the liquid in the chamber 20 upon the diaphragm 17. To cause the flow of water from the spout 2, the valve 22 is opened, removing the pressure from the top of the diaphragm as the liquid escapes through the passage 21. 95 The pressure of the liquid in the supply-pipe lifts the valves, so as to bring the valve 8 against the seat, and the parts remain in this



position, no water flowing through the spout until the valve 22 is allowed to close. When the lever 25 is released, the valve 22 is closed by the spring, and immediately pressure of the liquid is brought to bear on the top of the diaphragm and the valve 8 is forced down from its seat, and as the water flows through the port 5 the pressure is nearly equalized on the valve 8 and the water finds free exit through the spout. This flow continues until the accumulation of water in the chamber 20 forces down the valve 7 upon its seat and the flow stops.

When the device is made and connected as seen in Fig. II, the induction-pipe is marked 2 and the eduction-pipe is marked 1, the liquid flowing in a reverse direction to that in Fig. I. In the normal position of the parts the pressure is nearly equal upon the bottom and top of the diaphragm, the downward pressure being in excess, and this excess of pressure, with the pressure upon the top of valve 7, keeps the parts in this position until the valve 22 is opened, when the pressure of the liquid is nearly removed from the top of the diaphragm, and the valve 7 is opened and valve 8 closed by the pressure of the liquid on the under side of the diaphragm. When the valve 22 is allowed to close, the liquid again accumulates in the chamber 20, and in a little time the parts regain their normal position and the flow of liquid through the pipe 1 stops.

I claim as my invention—

1. The combination, in an automatically-closing valve, of two valves upon a stem, said valves closing, respectively, in opposite directions upon seats between them, a flexible diaphragm secured at the center to the valve-stem, a chamber on the opposite side of the diaphragm from the valves communicating through a bore in the valve-stem with the source of supply, and a discharge-passage from the chamber controlled by a valve or cock, for the purpose set forth.

2. The combination, in an automatically-closing valve, of two valves upon a stem, a flexible diaphragm giving support to the stem, valve-seats between the valves against which they close, respectively, by an opposite movement of the valve-stem, an induction and eduction pipe on opposite sides of the valve-port, which is common to both valve-seats, a chamber separated from the valve-chamber 4 by the diaphragm and communicating with the induction pipe or chamber by a small passage, and having a discharge-passage governed by a valve, substantially as and for the purpose set forth.

3. The combination of the induction and eduction pipes, a valve-stem carrying two valves closing against the opposite sides of a plate having a valve-port through which the stem passes, through a flexible diaphragm supporting the valve and forming the separation between the valve-chamber 4 and the chamber 20, a small passage forming communication between the chamber 20 and the induction pipe or chamber, a valve, as 13, governing said passage, and a discharge-passage from chamber 20, governed by a valve or cock, for the purpose set forth.

4. The combination of induction and eduction pipes, the two valves 7 and 8, governing a valve-port 5 between said pipes, a valve-stem passing through the valve-port and supporting the valves, a diaphragm, 17, separating the valve-chamber 4 from the chamber 20, a small passage between the induction-pipe or chamber, an adjustable valve governing the passage, a plug, 28, giving access to the adjustable valve, and a discharge-passage from the chamber 20, governed by a valve, substantially as and for the purpose set forth.

ELLIOTT E. FURNEY.

Witnesses:

SAML. KNIGHT,  
BENJN. A. KNIGHT.