

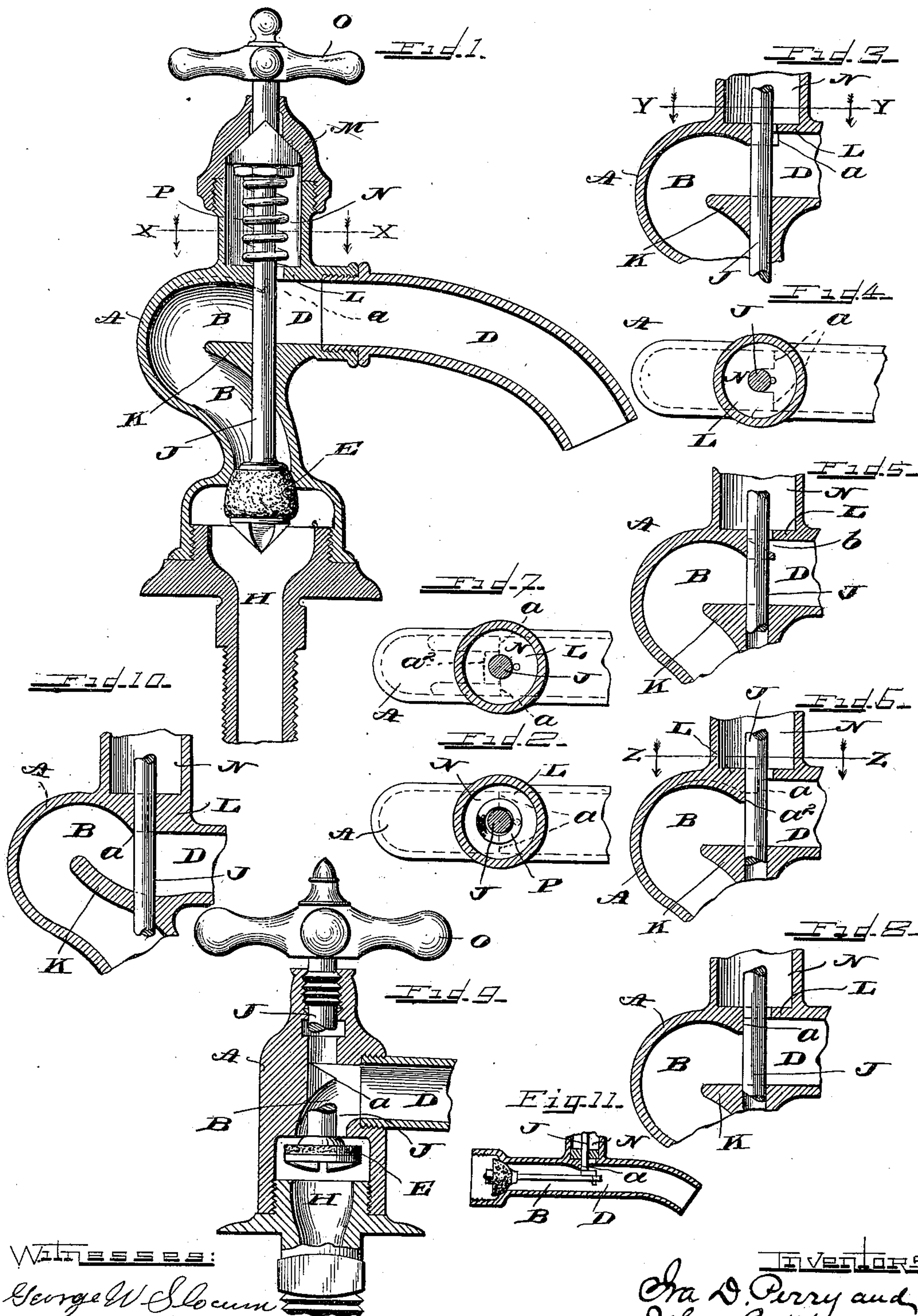
No. 656,262.

Patented Aug. 21, 1900.

I. D. PERRY & J. B. WEIR.
FLUID DISCHARGE VALVE.

(Application filed Dec. 28, 1899.)

(No Model.)



Witnesses:

George W. Slocum
J. A. Pauberschmitt.

Inventors

Ira D. Perry and
John B. Weir
By Chas. C. Bulkley,
Atty.

UNITED STATES PATENT OFFICE.

IRA D. PERRY AND JOHN B. WEIR, OF CHICAGO, ILLINOIS.

FLUID-DISCHARGE VALVE.

SPECIFICATION forming part of Letters Patent No. 656,262, dated August 21, 1900.

Application filed December 28, 1899. Serial No. 741,880. (No model.)

To all whom it may concern:

Be it known that we, IRA D. PERRY and JOHN B. WEIR, citizens of the United States of America, and residents of Chicago, Cook
5 county, Illinois, have invented a certain new and useful Improvement in Fluid-Discharge Valves, of which the following is a specification.

Our invention relates to that kind of apparatus or devices used to cut off or control
10 water or other fluid under pressure, and more particularly to that kind in which the fluid is discharged into free space, such as faucets, bibs, stand-pipes, and the like. In this class
15 of apparatus water or other fluid under pressure is controlled and held in check by means of a valve. This valve is opened and closed usually by means of a stem or spindle connected with the valve and extended to a point
20 beyond the casing, so that a handhold secured to the end of the stem may be grasped to operate the valve. In cocks, faucets, and the like, in which the discharge-channel extends substantially at right angles away from
25 the stem, the water tends to travel in the direction of the stem, and it is necessary to provide a deflecting-partition, which the stream encounters, thereby directing the greater portion of the water into the discharge-channel. A portion, however, of the
30 water passes through this partition about the stem at the point where the stem passes through the partition and tends to escape or leak through the casing at the point where
35 the stem passes through the casing. To prevent this leakage, the stem is packed, and as the packing wears out and is otherwise objectionable effort has been made to overcome the leakage by special diaphragms and
40 supplemental partitions. In bib cocks or faucets the deflecting-partition is unnecessary, as the water flows directly when the valve is opened toward or through the discharge-channel; but in these devices the water tends to
45 leak out about the stem, requiring packing.

The object of our invention is to provide in apparatus of this character means to completely prevent the water under pressure
50 from traveling along or about the stem in such a direction as to escape or leak through the casing and which means shall direct the water completely to and through the dis-

charge-opening and to accomplish this result by the most simple and economical construction.

Reference may now be had to the accompanying drawings, in which—

Figure 1 is a vertical central section through one of our improved faucets. Fig. 2 is a cross-section on the line $x x$ of Fig. 1. Fig. 3 is a
60 detailed view of a portion of the faucet, showing a slightly-changed position of the step from that shown in Fig. 1. Fig. 4 is a section on the line $y y$ of Fig. 3. Fig. 5 is a like view
65 of a modified form, showing a lip or extension forming a step. Fig. 6 illustrates still another form of step. Fig. 7 is a cross-section on the line $z z$ of Fig. 6. Fig. 8 is a view similar to
70 Fig. 6, showing the step formed in the rear of the stem. Fig. 9 is a view similar to Fig. 1, showing the deflector acting to direct the water into the discharge-channel directly
without lateral deflection, said deflector being so formed as to provide a step at the
75 stem. Fig. 10 is a detailed view similar to Fig. 3, showing a construction to laterally deflect the water and then direct it downward, and thus deliver the water into the discharge-channel. Fig. 11 is a central sectional view showing our invention applied to
80 a bib-cock.

In carrying out our invention we provide such a construction and arrangement of parts that the water or other fluid under pressure
85 cannot travel along or about the stem and escape between the casing and the stem, for, in effect, the tendency to so travel and escape existing in present forms is counteracted in our device, and whereas in the former some
90 of the water tends to and does travel in the direction of escape in and by our invention the tendency of the stream as a whole is to or through the discharge-channel. In other words, in our invention the water is prevented
95 from following along the stem to a point of escape between the casing and the stem and is all directed immediately into the discharge-channel.

The casing is designated at A, forming the delivery-channel B, and the discharge-channel
100 at D. A valve E controls the fluid-supply from the pressure-pipe H. A stem or spindle J, secured to the valve, extends through the deflector K, the partition L, and through

the cap M, a chamber N being formed above the partition L. The stem is operated manually to open the valve by the handle O, and a spring P returns the valve to its seat. A step *a* is formed at the stem J.

The operation of our improved faucet is as follows: When the valve E is opened, the water rushes into the delivery-channel B, and it tends to pass directly upward. The shape of the deflector K, which, with the casing A, forms the delivery-channel B, diverts or directs the stream of water laterally away from the stem; but as the delivery-channel beyond the deflector turns about the water is directed toward and beyond the stem into the discharge-channel D and from thence delivered into free space. Some slight portion of water passes through the deflector K about the stem J and then meets the stream of water delivered to the discharge-channel and is taken into the main body of water. As the water rushes past the stem it also moves past the step and by its velocity creates a vacuum and consequent suction in and about the stem, thereby preventing any part of the water from passing about the stem upward into the chamber N to escape or leak out between the stem and casing and causing all of the water to pass into and through the discharge-channel. The presence of the step, notch, or jog *a* at the stem causes all of the water to shoot into the discharge-channel, as the vacuum is formed just beyond the step and between the top level of the stream of water and the partition L. It is thus apparent that the step at the stem prevents the water from passing up about the stem to escape, and it is one of the essential features of our invention that the step be positioned in close or immediate proximity to the stem and in such close proximity as to create a suction directly about the stem, thereby preventing the passage of the water upward about the stem. The step, gradually originating in the rear of the stem and abruptly terminating in immediate proximity to the stem, accomplishes this result.

In Figs. 3 and 4 we have shown the step *a* a very slight distance in advance of the stem, but still in immediate proximity thereto.

In Fig. 5 we have also shown the partition cut away at *b* to form the step, which is just beyond the stem.

In Figs. 6 and 7 we have shown a construction involving a double step *a* and *a*².

In Fig. 8 the step is just in the rear of the stem.

In Fig. 9 we have illustrated a modification in which the gooseneck form of supply-channel B is omitted and the step *a* is still re-

tained to operate in the same manner and accomplish the same result as previously described.

In Fig. 10 we have shown still another form in which the step *a* is formed by the partition L and the top of the supply-channel B.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. Means for controlling the closure of fluid-valves comprising a valve, a supply-channel, a discharge-channel, a stem and a step gradually originating in rear of the stem and terminating abruptly in immediate proximity thereto, so as to create a suction directly about the stem.

2. In a cock or faucet, a supply-pipe, a discharge-pipe, a valve and a spindle therefor, extending through or into the discharge-pipe transversely to the direction of the discharge, said discharge-pipe being of increased diameter relatively to the supply-pipe together with a lip or step formed by said increased diameter, in immediate proximity to the spindle.

3. In a cock or faucet, a supply-pipe and a valve therein, a stem for said valve, said supply-pipe being so shaped as to direct the flow of water away from the spindle, and then transversely across the spindle and a step in immediate proximity to the spindle whereby a suction is created about the stem and the discharge directed past the said spindle.

4. In a cock or faucet, a supply-pipe and a valve therein, said supply-pipe extending in gooseneck form from the valve, away from the spindle and then back transversely across the spindle.

5. In a cock or faucet, a supply-pipe and a valve therein, said supply-pipe extending in gooseneck form from the valve, away from the spindle and then back transversely across the spindle together with a step in immediate proximity to the spindle.

6. In a cock or faucet, a supply-pipe and a discharge-pipe, a valve, and a valve-spindle extending transversely into or across the discharge-pipe, and a step arranged on the pressure side of the spindle, to direct the flow of liquid away from the opening in the spindle-casing.

Signed by us at Chicago, Cook county, Illinois, this 23d day of January, 1899.

IRA D. PERRY.
JOHN B. WEIR.

Witnesses:

GEORGE W. SLOCUM,
ORSANNUS E. PERRY.