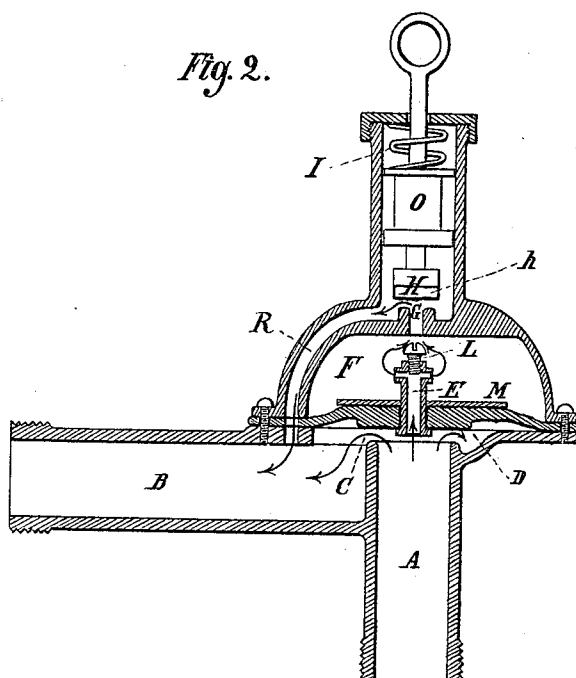
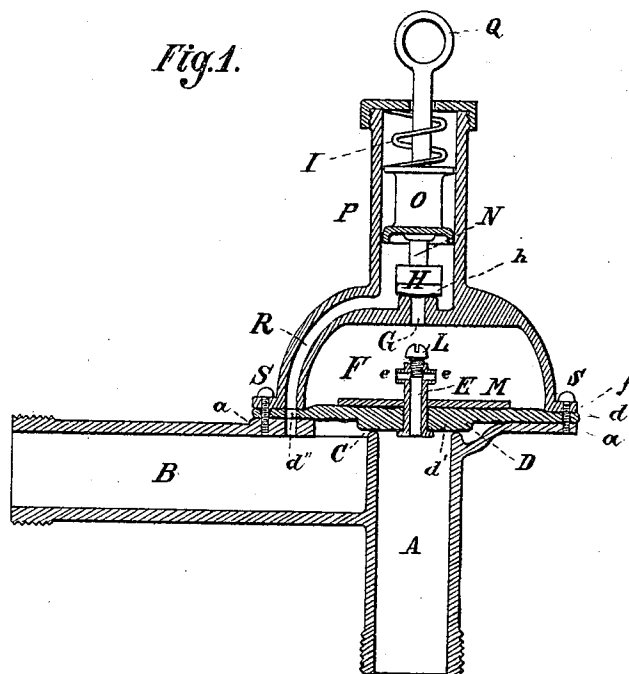


J. SEMPLE.
COCK.

No. 269,886.

Patented Jan. 2, 1883.



Arrest
Carl Spindler
Symphonizing.

Inventor
James Semple
By Knight Bros.
ATTYS

(No Model.)

4 Sheets—Sheet 2.

J. SEMPLE.

COCK.

No. 269,886.

Patented Jan. 2, 1883.

Fig. 3.

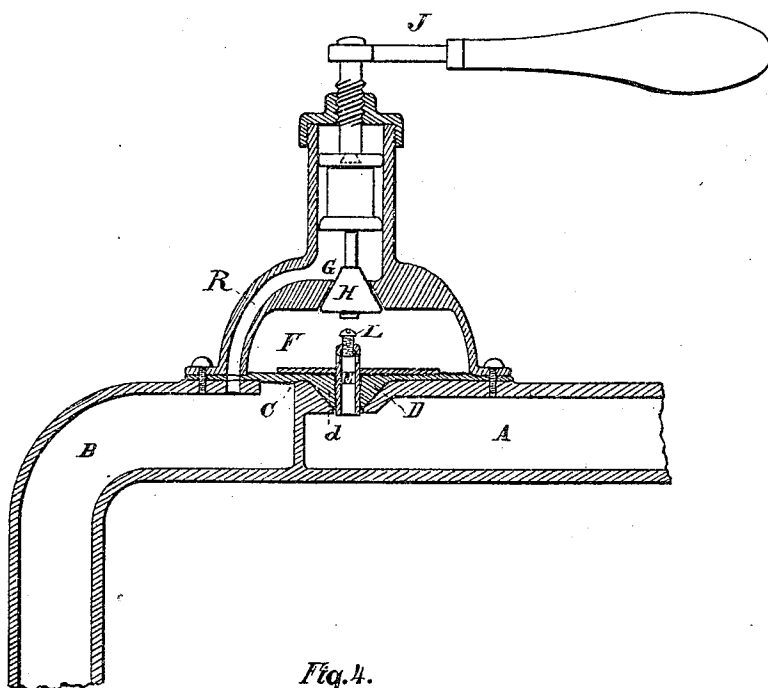
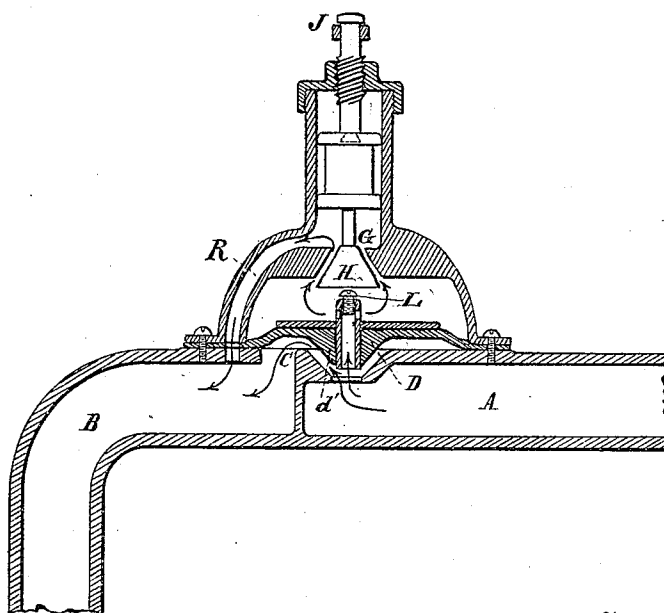


Fig. 4.



Attest
Carl Spengel
Carl Spengel

Inventor
James Semple.
By *Knight Bros.*
attys.

(No Model.)

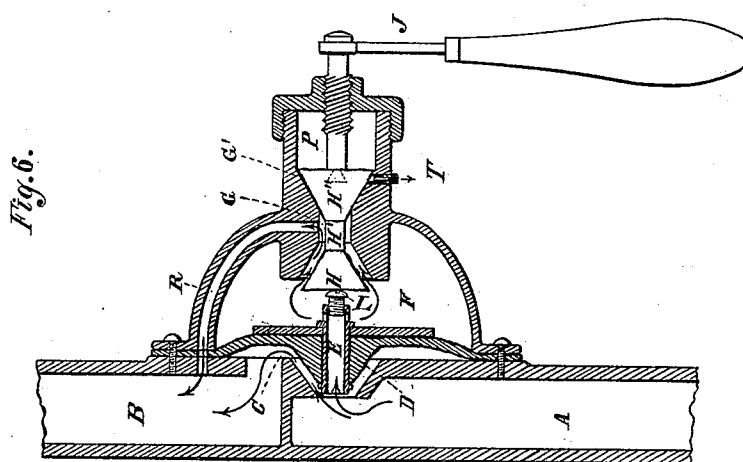
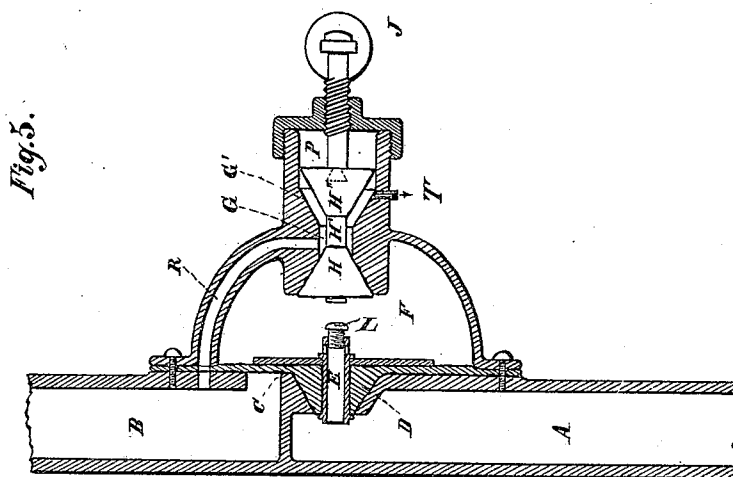
4 Sheets—Sheet 3.

J. SEMPLE.

COCK.

No. 269,886.

Patented Jan. 2, 1883.



Attest
Carl Spengel
Carl Spengel

Inventor
James Semple
by *Knight Bros.*
attys

(No Model.)

4 Sheets—Sheet 4.

J. SEMPLE.

COCK.

No. 269,886.

Patented Jan. 2, 1883.

Fig. 7.

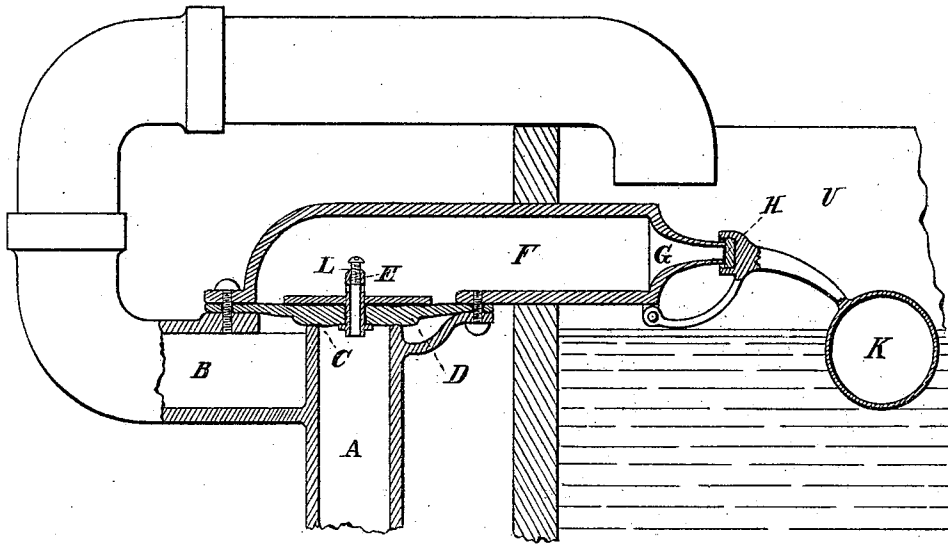
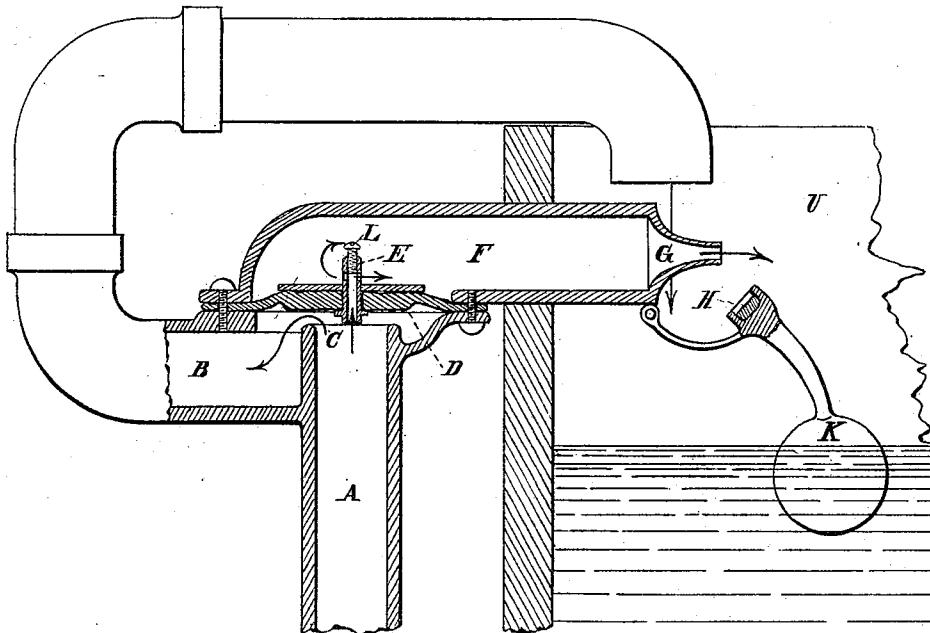


Fig. 8.



Attest
Carl Spengel
Carl Spengel

Inventor
James Semple
By *Knight Bros.*
attys.

UNITED STATES PATENT OFFICE.

JAMES SEMPLE, OF CINCINNATI, OHIO.

COCK.

SPECIFICATION forming part of Letters Patent No. 269,886, dated January 2, 1883.

Application filed March 23, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES SEMPLE, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Improvement in Cocks, of which the following is a specification.

My invention is an improvement in those cocks or faucets in which a small ventage with easily-operated valve, that closes against the pressure of the confined liquid, controls the action of a much larger valve and corresponding opening capable of any desired copiousness of delivery.

In the accompanying drawings, Figures 1, 3, 5, and 7 are axial sections, which respectively show in the closed or inactive condition four slightly diverse forms or adaptations of my invention, and Figs. 2, 4, 6, and 8 are respectively similar sections of the same forms in the open condition.

I will first describe the essential parts common to every form of my improvement—to wit, a service-pipe, A, a discharge-pipe, B, a large port, C, from service-pipe into discharge-pipe, controlled by a valve, D, preferably of rubber, whose outer area is considerably greater than that on the service side or toward the pipe A, a minute duct, E, from service-pipe through valve D—into a chamber, F—which has a ventage, G, which may either empty into the general discharge-pipe, as in Figs. 1, 2, 3, 4, 5, and 6, or independently thereof, as in Figs. 7 and 8. The area of effective delivery of ventage G, while slightly greater than that of duct E, is very much less than that of the main port C. Controlling the ventage G is a small valve, H, which is caused to shut against the pressure of the confined liquid by any suitable means—such as by spring I, as in Figs. 1 and 2, or by a hand-operated lever-screw, J, as in Figs. 3, 4, 5, and 6, or by the buoyant action of a float, K, as in Figs. 7 and 8—and may be capable of being opened by hand, as in Figs. 1, 2, 3, 4, 5, and 6, or by the weight of a float, as in Figs. 7 and 8.

Having described the features common to the several forms of my improvement, I now proceed to explain adaptation of the improvement to several kinds of faucets.

Figs. 1 and 2 are axial sections (Fig. 1 in the closed and Fig. 2 in the open condition) of a discharge-cock applicable to water-closets, &c.

The main port or valve-seat C is somewhat

elevated for the flat sole of a rubber valve, D. Said valve is pierced by a duct that consists of a small tube, E, with one or more minute outlets, *e*, capable of being partially closed by means of a screw-plug, I. A metallic collar, M, secured to the tube E, discharges the functions of a backing or follower to the rubber valve D.

The small controlling-valve H is secured by stem N to a water-tight plunger, O, within a cylindrical neck, P, and is provided with a handle, Q, partly outside of said neck. The said valve H has a rubber sole, *h*, which in the closed condition of the cock rests upon and closes the elevated neck.

The port or ventage G, when open, communicates with the discharge B, through a passage, R, in the wall of chamber F.

The main valve D consists of a disk of sufficient diameter to serve as a gasket, *d*, between the marginal flange *f* of chamber F and the flange *a* of the casting A B, to which it is secured by bolts S. The portion of the valve D which rests upon the port C when closed is thickened by a boss, *d'*. The valve-gasket *d*, being perforated (*d''*) where it registers with the passage R, offers no obstruction to said passage, and yet prevents any leakage therefrom.

A description of the operation of this form of my device is in the main explanatory of all, and is as follows: In the normal or closed condition of the cock (see Fig. 1) the pressures in pipe A and chamber F are manifestly equal, and the side of the valve which is directed toward the chamber F being greater than that presented to the interior of the pipe A, it follows that the valve closely presses the edges of the port C, and by so doing closes the pipe A. Now, let the valve H be raised. This action, opening the ventage G, offers an exit for the contents of the chamber F, which taking place permits a flow of the contents of pipe A through duct E. The upward current thus initiated reverses the relative pressure against the respective under and upper sides of the valve D, and, lifting the latter, opens the large port C, which then discharges direct into the discharge-pipe B, as indicated by arrows in Fig. 2. This continues as long as the valve H is held open, the comparatively large passage C being maintained in a fully or

slightly open condition, at discretion of the user, by the slight effort required for maintaining at a more or less elevated position the valve H. Upon depression of valve H to a point at which the velocity of the current is insufficient to overcome the inequality of areas of the top and bottom of the valve D, the valve D will slowly sink, and thus gradually close the main issue, and such sinking will be accelerated by complete closure of valve H until, the chamber F becoming full of water, received through small duct E, the main valve D resumes its closed condition and the flow ceases. The closure of main valve D after that of the valve H may be expedited or retarded by turning of the screw L to the left or to the right. By this means the flow may be regulated, and concussion and water-ram prevented. In addition to this automatic regulation, the person controlling the handle Q is able at will to adjust the flow at any instant as above initiated.

I do not restrict myself to the above-described mode of automatic closure of the valve H, and consequently of the cock, but, on the contrary, may make the closure at the cock positive by means of a cam-lever or other customary mechanical expedient.

Figs. 3 and 4 are axial sections—Fig. 3 in the closed and Fig. 4 in the open condition—of an embodiment of my invention of a slightly-different form to that last described. In this arrangement the boss *d'* of the valve D is of the conical shape represented, to fit a correspondingly conical seat, C. The valve H is also conical to fit a seat, G, of corresponding form. Both depression and elevation of said valve is effected by a lever-screw, J, thus securing a positive action in both directions.

The arrangement shown in Figs. 5 and 6 differ from that last described only in that, instead of the single conical valve H, there is united by stem H' with such valve an inverted cone, H'', which, in the open condition of valve H, as shown in Fig. 6, closes down

upon a corresponding seat, G', and in so doing shuts a wasteway, T, which is opened by reversal of the valve, as in Fig. 5, so as then to permit the escape of whatever water may be left above the valve after closure, and thus avoid danger of freezing, &c.

Fig. 7 shows in the closed and Fig. 8 in the open condition such modification of the form shown in Figs. 1 and 2 as to adapt my improvement to perform the duties of a self-acting tank-cock. In this form the ventage G and the discharge-pipe B both deliver into the same tank, U, the valve H being opened and closed automatically by the sinking and rising of a ball-float, K.

I am aware that it is not new to construct the main valve of a cock or faucet of a flexible diaphragm traversed by a duct whose delivery, being controlled by another valve, serves to open or close said main valve; and I therefore make no claim to such a device, broadly or separately considered; nor do I claim the use of regulating adjustable plugs, nor of double conical valves, nor of wasteways, such devices being old and well known.

I claim herein as new and my invention—

1. In combination with the main valve D and a controlling-valve, the regulating duct E, adjustable in its delivery by means of plug L, substantially as and for the purpose designated.

2. In the described combination with main opening C and its valve D, and with the duct E in said valve, adjustable in its delivery by means of plug L, the double conical controlling-valve H H' H'' in the corresponding double-seated chamber P, with wasteway T, substantially as set forth.

In testimony of which invention I hereunto set my hand.

JAMES SEMPLE.

Attest:

GEO. H. KNIGHT,

SAML. S. CARPENTER.