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J. A. JOHNSTON.  
SELF CLOSING BASIN COCK.  
APPLICATION FILED SEPT. 16, 1902.

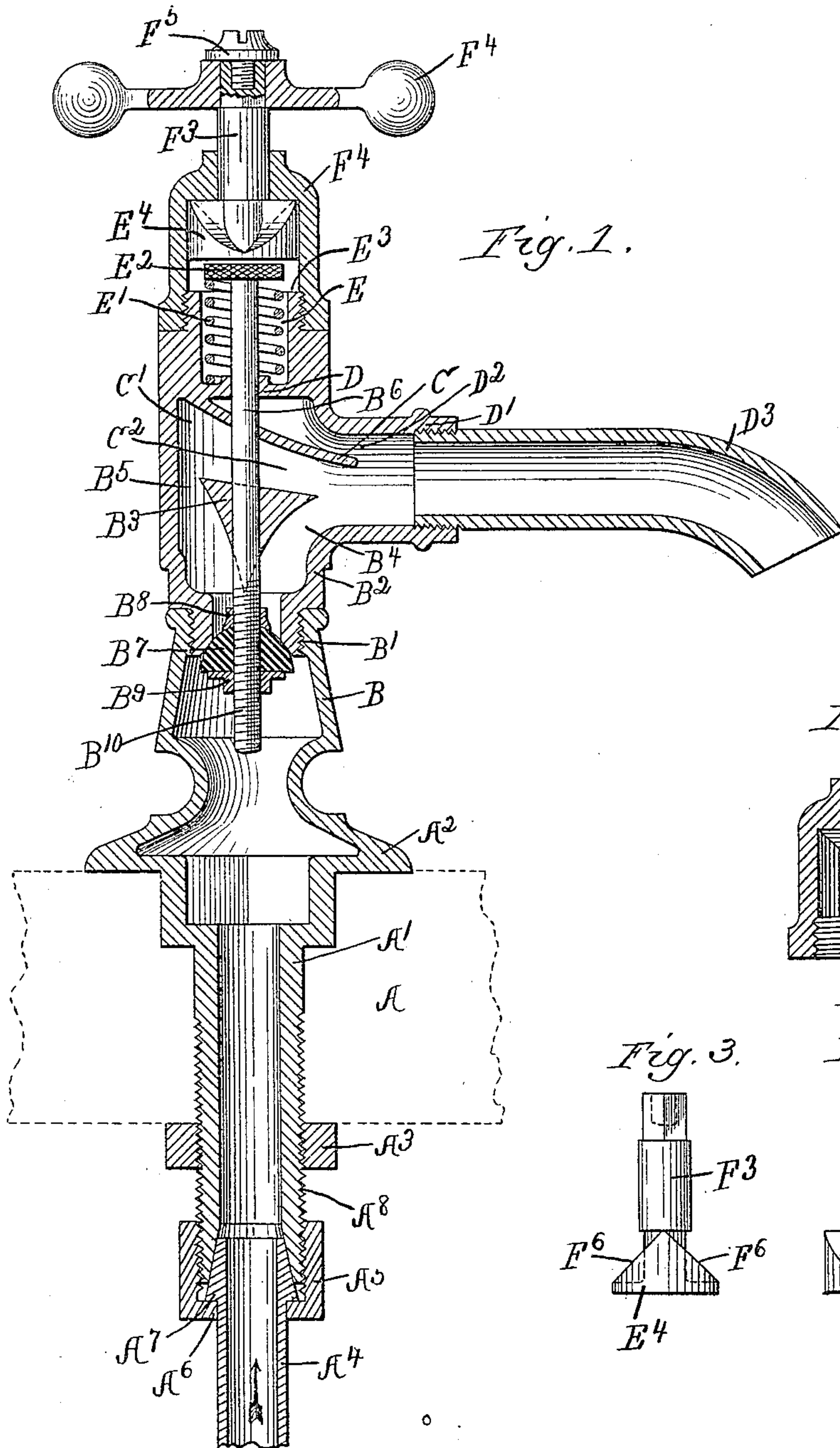


Fig. 1.

Fig. 2.

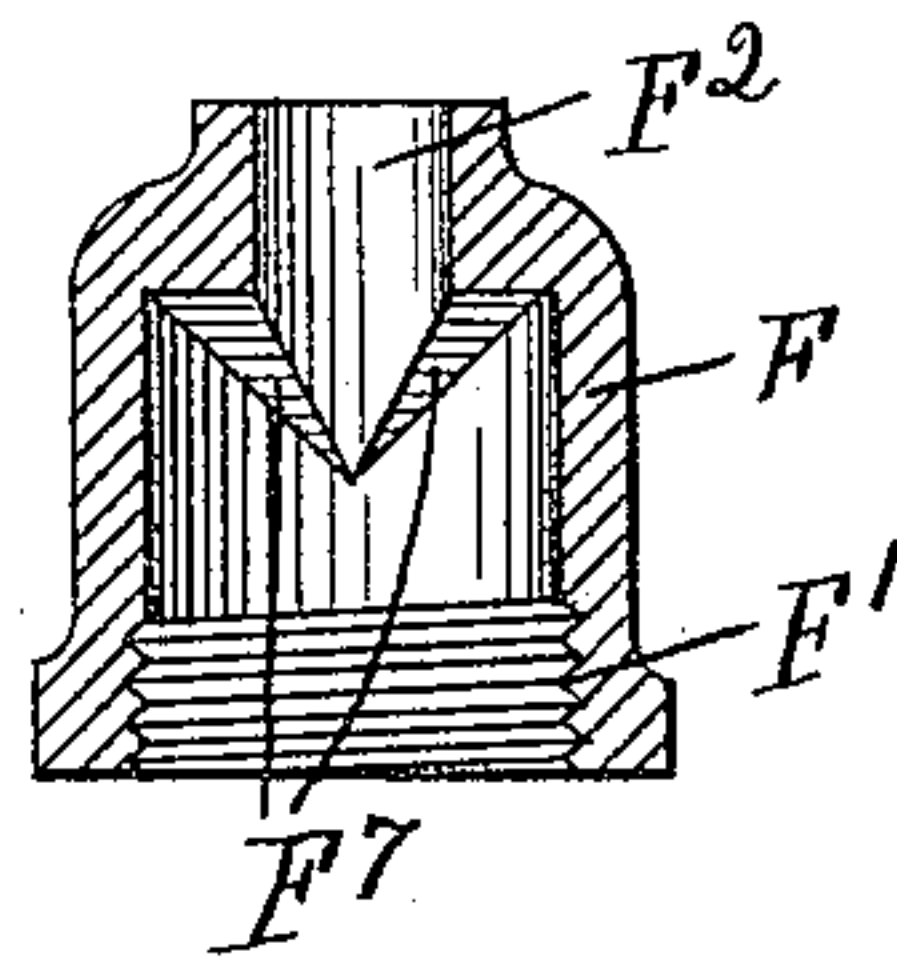


Fig. 3.

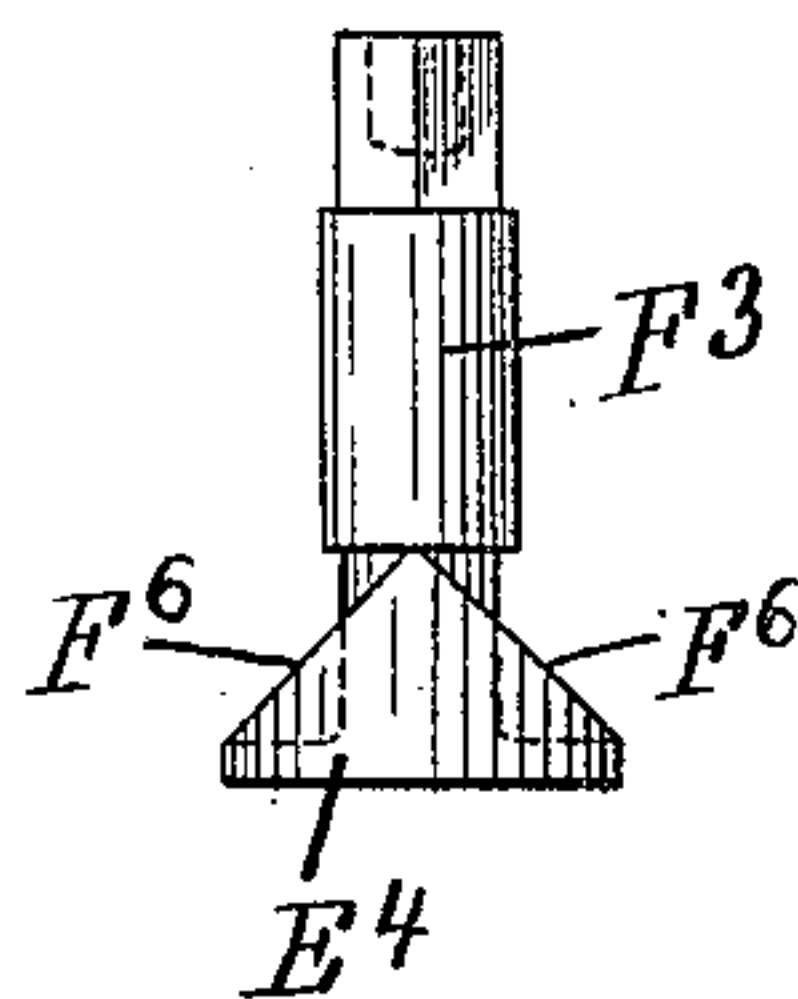
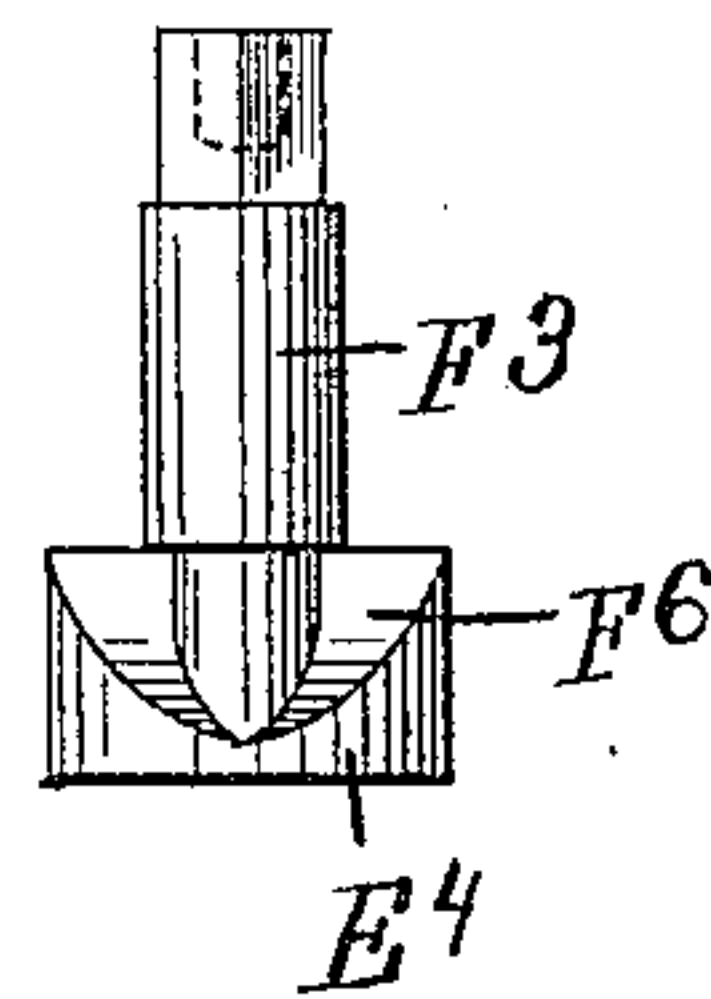


Fig. 4.



Witnesses.

Edward T. Wray  
Weston B. Lyster

Inventor.

Joseph A. Johnston  
by Parker & Carter  
Attorneys.



# UNITED STATES PATENT OFFICE.

JOSEPH A. JOHNSTON, OF CHICAGO, ILLINOIS.

## SELF-CLOSING BASIN-COCK.

No. 816,329.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed September 16, 1902. Serial No. 123,563.

*To all whom it may concern:*

Be it known that I, JOSEPH A. JOHNSTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Self-Closing Basin-Cocks, of which the following is a specification.

My invention relates to self-closing cocks for basins, sinks, and the like, and has for its object to provide means whereby a basin-cock, particularly a self-closing basin-cock, may be adapted to operate without the need of packing about the stem. One form of my invention is illustrated in the accompanying drawings, which is intended to be in a certain sense diagrammatic and illustrative of the general features of my device. Some of these features may be altered without altering the others, and some may be used without using the others, and they may any or all of them be applied to basin-cocks differing materially in construction from that here shown; but I have illustrated in the drawings sufficient to present the matter.

Figure 1 is a vertical section. Figs. 2, 3, and 4 are details.

Like parts are indicated by the same letter in all of the figures.

A is the basin-body, through which passes the tube-like part A', having the flange A<sup>2</sup> above and the nut A<sup>3</sup> below, whereby the tube-like part is clamped to the stand.

A<sup>4</sup> is the pipe, through which the water is led to the cock in the direction indicated by the arrow.

A<sup>5</sup> is a screw-fitted coupling having the lip A<sup>6</sup> to engage the shoulder A<sup>7</sup> on the upper end of the pipe A<sup>4</sup>. By rotating the coupling, which travels upon the screw-threaded part A<sup>8</sup> of the tube, the tube and the inleading pipe are brought firmly together.

B is an upper chamber, shaped in any desired manner and preferably screw-threaded at B' to receive the screw-fitted portion of the cock-body B<sup>2</sup>. This cock-body is provided with a central guide-piece B<sup>3</sup> shaped as shown and providing a primary waterway B<sup>4</sup> and a secondary waterway B<sup>5</sup>. This guide also serves as a guide for the valve-rod B<sup>6</sup>, on the lower end of which is screwed the ball-valve B<sup>7</sup> by means of the nuts B<sup>8</sup> and B<sup>9</sup> on the lower screw-threaded end B<sup>10</sup> of the rod.

C is a deflector in the shape of a thin diaphragm, preferably downwardly bent, as indicated, and forming therefor an upper cham-

ber C', continuous with and opening into the secondary waterway B<sup>5</sup>, and a third waterway C<sup>2</sup>, which passes above the guide B<sup>3</sup> and opens into the primary waterway B<sup>4</sup>. The rod B<sup>6</sup> is also guided by the deflector C.

D is a diaphragm in the upper part of the valve-body, through which the rod B<sup>6</sup> passes and by which it is guided and formed between the lower part of this diaphragm and the inner upper surface of the projecting part D', and above the deflector C is formed the drip-waterway D<sup>2</sup>.

D<sup>3</sup> is the discharge-pipe, which projects from the part D', which is in this case integral with the body of the cock.

In the upper part of the body of the cock is formed a chamber E, which contains a spiral spring E', the upper portion of which bears against the head or nut E<sup>2</sup> on the rod B<sup>6</sup> and the lower portion of which bears upon the bottom of such chamber. This chamber has an outer upper valve-like seat E<sup>3</sup> to receive the lower portion of the disk E<sup>4</sup> when the latter has descended to its lowest point.

F is a cup-like piece screw-threaded at F', so as to be received on the outer screw-threaded portion of the valve-body which forms the spring-chamber. It is provided with an aperture F<sup>2</sup>, through which projects the handle-rod F<sup>3</sup>, on which is the handle F<sup>4</sup>, the parts being perfectly held together by the set-bolt F<sup>5</sup>. The disk E<sup>4</sup> is attached to the handle-rod F<sup>3</sup>. It is beveled off at the sides F<sup>6</sup> F<sup>6</sup>, so as to form a sort of cam-surface, and on the inner upper surface of the cup-like portion are formed correspondingly-beveled surfaces F<sup>7</sup> F<sup>7</sup>. The sets of the beveled surfaces are laid to each other, so that when the handle is turned and the disks are turned with it the beveled surfaces engage each other and travel, the handle and disk moving inwardly and compressing the spring E' until the inner face of the disk E<sup>4</sup> engages the valve-like portion E<sup>3</sup>. By this action the rod is forced inwardly and the valve opened, as hereinafter explained.

As previously stated, I do not wish to be limited to the process, forms, and construction shown here.

I will now describe my invention to indicate the functions of its several parts. When the parts are at rest, they are in the position indicated in Fig. 1, and no water is flowing. If now the handle be turned, the two sets of beveled faces will engage and



travel upon each other and the handle and its rod will move downwardly. This action, however, takes place against the spring E' and tends to compress it and to force the rod B<sup>6</sup> and the valve B<sup>7</sup> downwardly or inwardly. This action is continued until the lower face of the disk E<sup>4</sup> is brought firmly into contact with the valve-like seat E<sup>3</sup>, and here the parts may be held by the hand. If the hand is released, the action of the spring will immediately force the parts back into the position shown in Fig. 1. As long as the hand is held in this position the water is free to flow, and it will flow in the following manner: A portion of the stream will take the shortest path to the outlet or through the primary waterway B<sup>4</sup>. This will produce a suction somewhat like the action of an injector through the third waterway C<sup>2</sup> and tend to draw whatever water there may be in that passage-way, along with the water flowing through the primary waterway, out through the discharge. When the valve is first opened, a certain amount of water will pass through the secondary waterway B<sup>5</sup> directly up into the pocket or recess C', and here it is deflected by the deflector downwardly into the third waterway. The result of these several actions or tendencies is to reduce the pressure on the water at the point where the stems or rods pass through the deflector, and there is little, if any, tendency for the water to pass through the opening and about such rod. This action is facilitated, first, by the suction or injector-like action of the water passing through the primary waterway; second, by the action of the pocket C', which destroys the velocity of the water and turns it back toward the outlet, and, third, by the downwardly-inclined position of the deflector. Any one of these features might be omitted or modified and less than all of them could be used to more or less effectually bring about the desired result. Whatever water passes through the opening about the rod D<sup>6</sup> is received into the drip-waterway, and here again it tends to pass out through the discharge, first, as a result of the suction of the current passing from the primary waterway, and, second, as a result of the downwardly-inclined deflector along which this water tends naturally to flow. Such pressure as may exist in this passage, if strong enough to force the water up, will cause it to pass along the rod D<sup>6</sup> into the spring-chamber; but it cannot pass out of the spring-chamber, because the face of the disk E<sup>4</sup> is held in firm engagement with the valve-like seat E<sup>3</sup>, and thus the valve by its own action is normally firmly seated at one end when open at the other. This action of itself might be sufficient to prevent the discharge of the water near the handle, but in coöperation with the other devices which I have described is very effectual to that end.

For convenience I have called the valve B<sup>7</sup> the "supply - valve" and the valve construction of the parts E<sup>3</sup> and E<sup>4</sup> the "cut-off valve."

I claim—

1. In a basin-cock the combination of a supply-pipe with a valve therein, a body, a discharge-pipe leading therefrom, a valve-stem projecting down through the body, a support for said stem within said body a partition separate from the support in the upper part of the body through which the valve-stem snugly passes, a valve and valve-chamber beyond said partition and a handle whereby the two valves are simultaneously controlled.

2. In a basin-cock the combination of a supply-pipe with a valve therein, a body, a discharge-pipe leading therefrom, a valve-stem projecting down through the body, a support for said stem within said body a partition separate from the support in the upper part of the body through which the valve-stem snugly passes, a valve and valve-chamber beyond said partition and a handle whereby the two valves are simultaneously controlled, and a spring to keep the supply-valve normally closed.

3. In a basin-cock the combination of a chamber, a passage-way leading thereto and one leading therefrom, a valve to control the supply to said chamber, a triangular piece within said chamber and in close proximity to said valve, a downwardly-projecting deflector within said chamber and a diaphragm above said deflector, said triangular piece, deflector and diaphragm each serving in turn to direct the flow of the inlet-supply toward the outlet and also as an obstruction to prevent its escape above said diaphragm, substantially as shown and described.

4. In a basin-cock the combination of a cock-body with a valve-stem therethrough, a supply-inlet leading into the body, a controlling-valve therefor, a discharge-pipe leading from the body, a stream-dividing device in the body above the supply-opening and provided with inclined surfaces to produce two passage-ways through the body on opposite sides of the valve-stem, a downwardly and forwardly projecting diaphragm in the upper part of the body arranged so as to leave a passage-way between it and the top of the stream-dividing device.

5. In a basin-cock the combination of a hollow body portion with a supply-pipe leading thereinto, a controlling-valve in such supply-pipe, a discharge-pipe leading from the body portion, a stop-valve above the hollow body portion, a valve-stem on which the two valves are supported, a handle for operating them so that when one is closed the other is open, a stream-dividing device in the hollow body portion above the end of the supply-pipe and a deflector within the hollow body



portion between its upper surface and the upper surface of the stream-dividing device, substantially as shown.

5 6. In a basin-cock the combination of a cock-body with a guide therein to divide the water into two separate channels and a pocket into which one of said channels opens, and a channel leading from such pocket to the other channel and a diaphragm above  
10 the guide and a channel above the same which unites with the other channel.

7. In a basin-cock the combination of a cock-body with a downwardly-inclined deflector in its upper portion forming a water-  
15 way above the same, and a guide-piece in its lower portion which divides the lower portion into two channels, one leading directly from the inlet to the outlet and the other leading in a circuitous path from the inlet to the outlet.

20 8. In a basin-cock the combination of a cock-body with a downwardly-inclined deflector in its upper portion forming a water-way above the same, and a guide-piece in its lower portion which divides the lower por-  
25 tion into two channels, one leading directly from the inlet to the outlet and the other leading in a circuitous path from the inlet to the outlet, and a pocket into which the circuitous way first discharges.

30 9. In a basin-cock the combination of a cock-body with a downwardly-inclined deflector in its upper portion forming a water-way above the same, and a guide-piece in its

lower portion which divides the lower por-  
tion into two channels, one leading directly 35 from the inlet to the outlet and the other leading in a circuitous path from the inlet to the outlet, the latter portion of the circuitous passage-way being approximately parallel with the direction of discharge. 40

10. In a basin-cock the combination of a cock-body with a valve-stem therethrough, a controlling-valve at the supply-inlet, and a guide for dividing the body of the valve into  
45 two waterways, one of which leads directly from the supply to the discharge, the other of which leads by a circuitous passage from the supply to the discharge, a portion of such waterway which contains the valve-stem be-  
50 ing arranged to carry a current approximately at right angles thereto and a diaphragm above the guide and a channel above the same which unites with the other channel.

11. In a basin-cock, the combination of a supply-pipe with a valve therein, a body, a  
55 discharge-pipe leading therefrom, a valve-stem projecting down through the body, a partition in the upper part of the body through which the valve-stem snugly passes, a valve and valve-chamber beyond said par-  
60 tition, and a handle whereby the two valves are simultaneously controlled.

JOSEPH A. JOHNSTON.

Witnesses:

HOMER L. KRAFT,  
FANNY B. FAY.