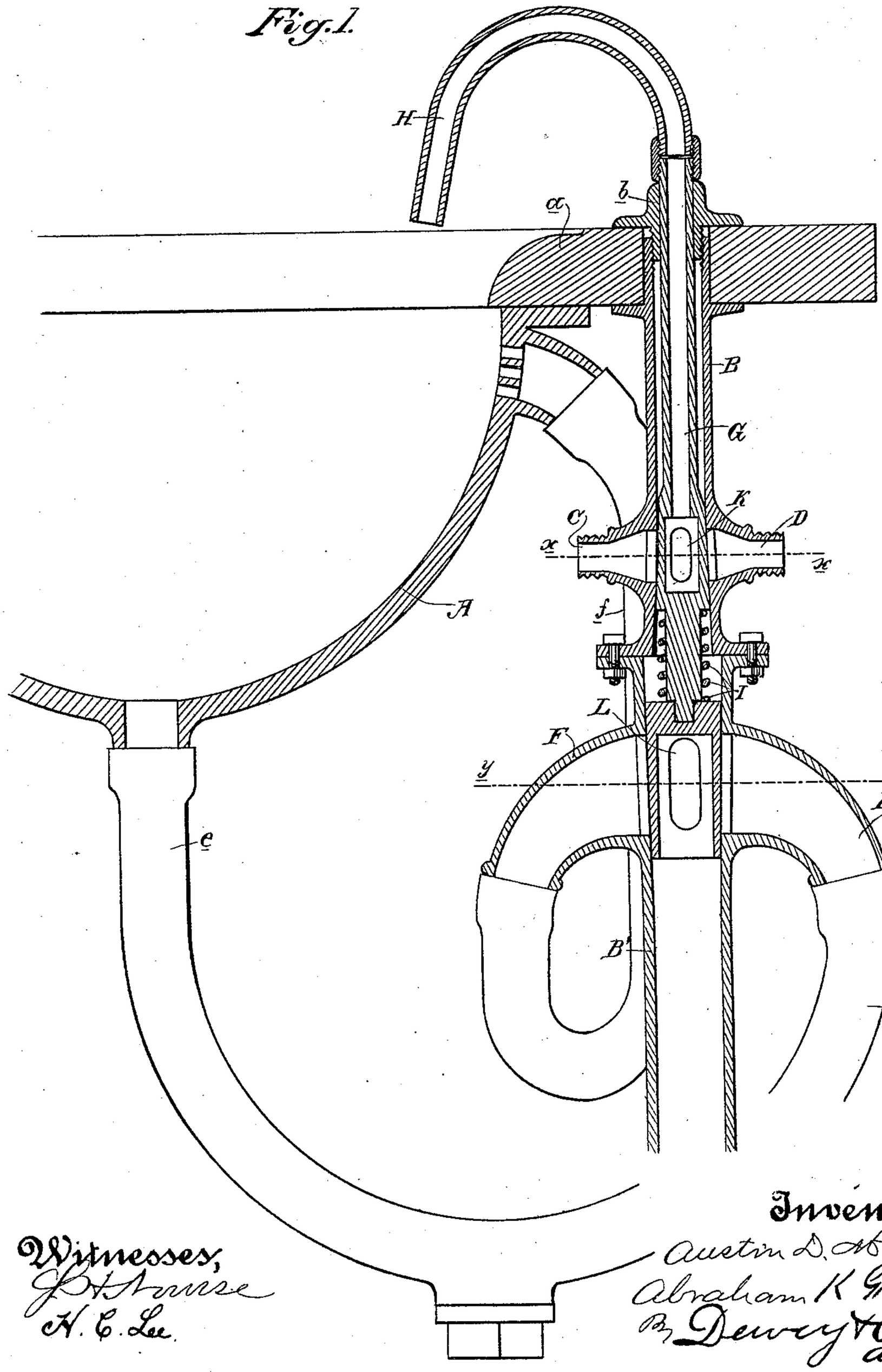
(No Model.) 3 Sheets—Sheet 1.

A. D. MOORE & A. K. GRIM.

FAUCET.

No. 452,526. Patented May 19, 1891.

Fig. 1.



Witnesses;
J. H. Louise
H. C. Lee.

Inventors,
Austin D. Moore
Abraham K Grim
By Dewey & Co.
Attys

(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

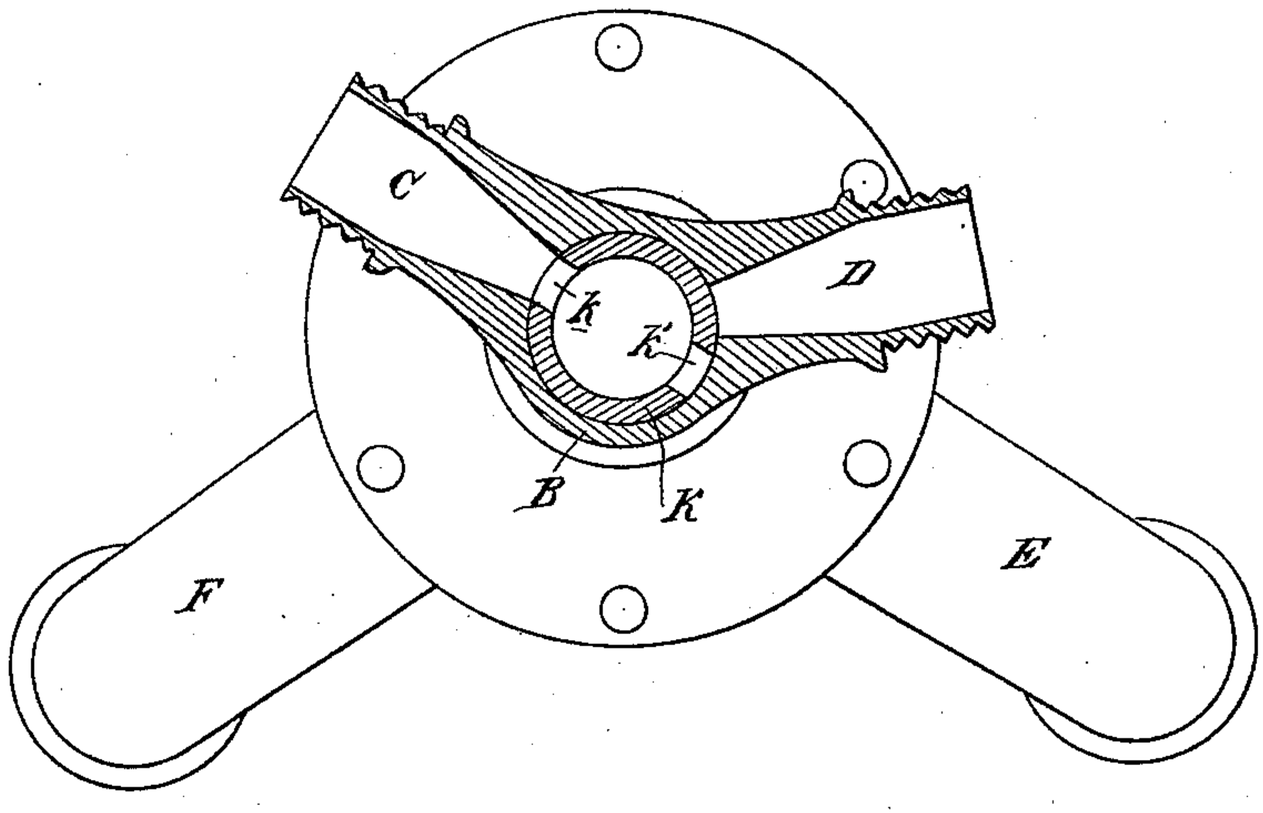
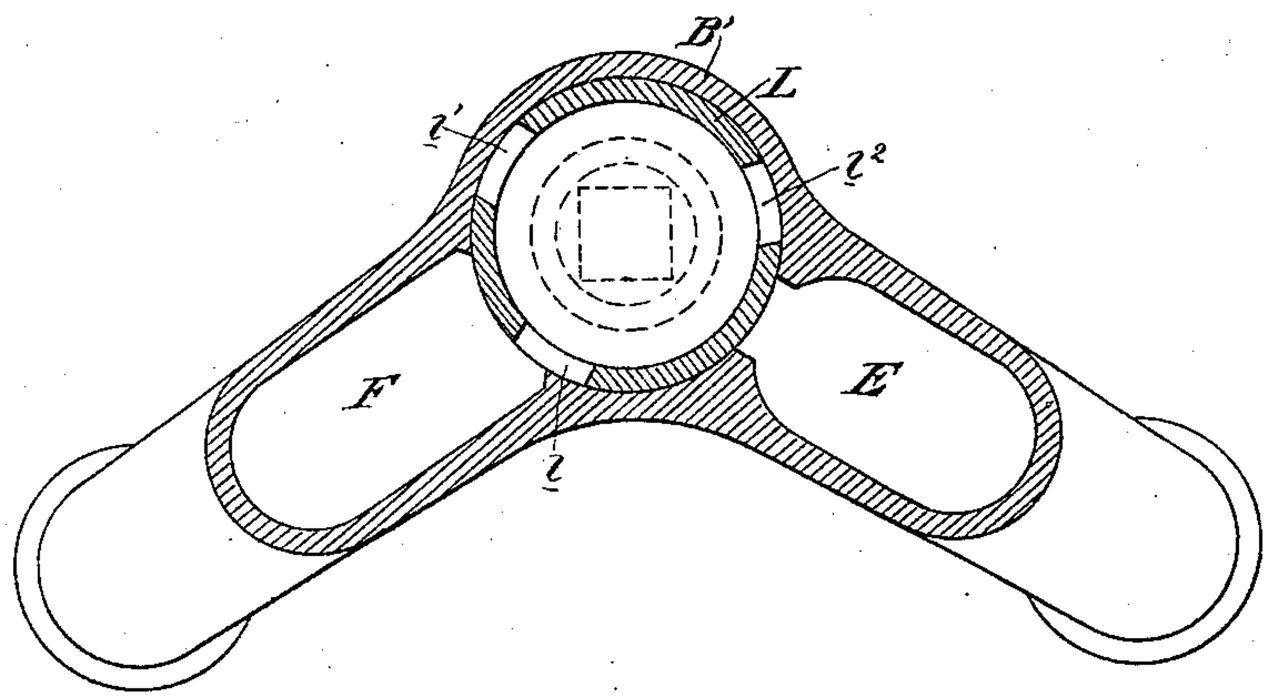


Fig. 3.



Witnesses,
J. B. Morse
H. C. Lee.

Inventors,
Austin D. Moore
Abraham K. Grim
By Dewey & Co. attys

(No Model.) 3 Sheets—Sheet 3.

A. D. MOORE & A. K. GRIM.

FAUCET.

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Fig. 4.

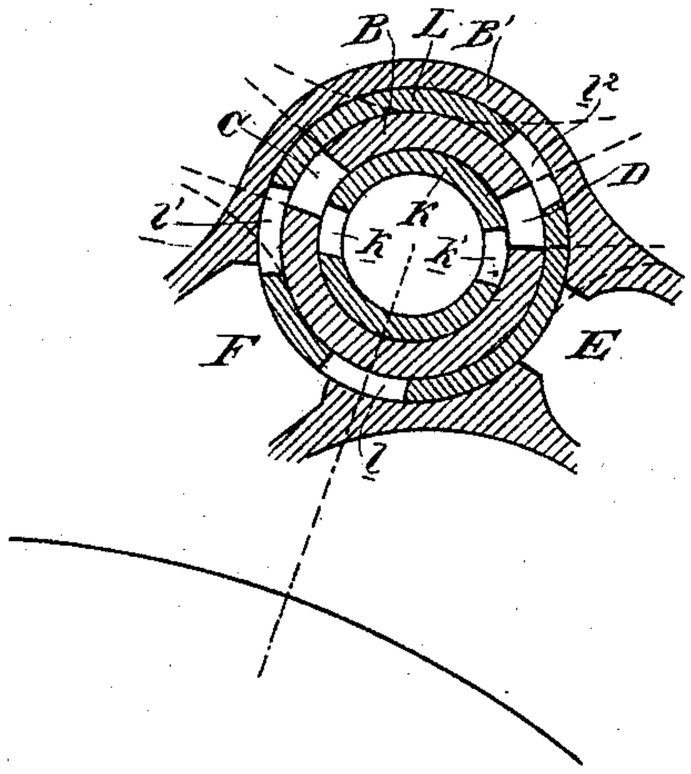


Fig. 5.

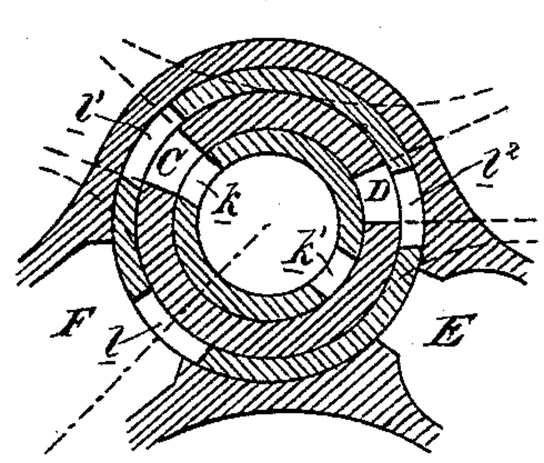


Fig. 6.

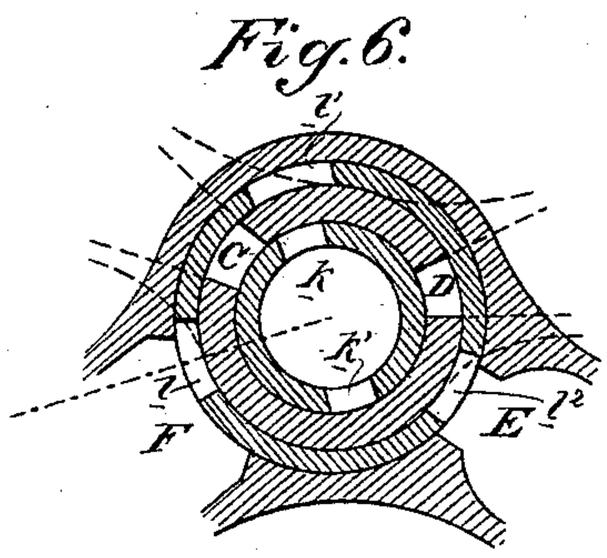
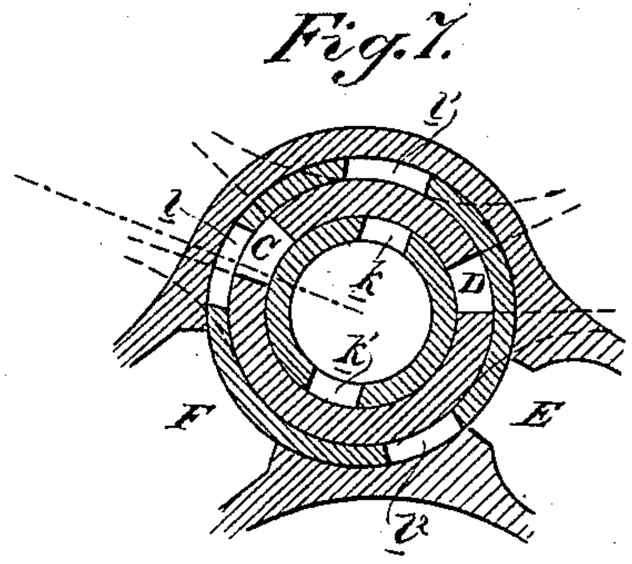


Fig. 7.



Witnesses,
J. L. Morse
H. C. Lee.

Inventors,
Austin D. Moore
Abraham K. Grim
By Dewey & Co. Attys

UNITED STATES PATENT OFFICE.

AUSTIN D. MOORE AND ABRAHAM K. GRIM, OF SAN FRANCISCO, CALIFORNIA.

FAUCET.

SPECIFICATION forming part of Letters Patent No. 452,526, dated May 19, 1891.

Application filed July 25, 1890. Serial No. 359,931. (No model.)

To all whom it may concern:

Be it known that we, AUSTIN D. MOORE and ABRAHAM K. GRIM, citizens of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Faucets; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to that class of faucets especially adapted for wash-basins, sinks, bath-tubs, and water-closets.

It consists in the novel construction and arrangement of parts hereinafter fully described, and specifically pointed out in the claims.

The object of our invention is to control by the various movements of a single lever, handle, or wheel the admission of cold water and hot water and the discharge and overflow, and to do this in such a manner that either cold or hot water can be admitted, or both together, and when being admitted the discharge shall be closed, but the overflow shall be open, and also that both waters, the discharge and the overflow, may be shut off completely and with such tightness that gas will be excluded.

Referring to the accompanying drawings for a more complete explanation of our invention, Figure 1 is a vertical section of our faucet. Fig. 2 is a horizontal section on line *x x* of Fig. 1. Fig. 3 is a similar section on line *y y* of Fig. 1. Figs. 4, 5, 6, and 7 are diagrammatic figures illustrating the several positions of the valves.

For convenience we have here shown our faucet in connection with a wash-basin, of which A is the bowl, and *a* the slab. Secured to the slab by a suitable coupling *b* is a pipe B, extending downwardly and having a connection C for the hot water and a connection D for the cold water.

To the lower end of this pipe is secured an extension B′, having a connection E for the discharge-pipe *e* of the basin, which rises to it in a bend to form a trap. It has also a connection F for the overflow-pipe *f*, which descends from the upper portion of the bowl and bends up to the connection.

G is the hollow or tubular valve-stem passing down through the pipe B and into its extension. Any suitable lever or handle may be used to operate the stem. In the present case we show an ordinary goose-neck H, which is suitably connected with the upper end of the valve-stem. This stem carries a valve K, which controls the hot and cold water connections C and D, and a valve L, which controls the discharge and overflow connections E and F. The upper valve is fast upon or formed with the stem, and said valve is made conical, its sides tapering or converging upwardly, and the seat in the pipe B for said valve is correspondingly tapered. The lower valve is connected with the stem by means of a square socket in its top, into which a square tongue on the lower end of the stem fits, whereby said valve may turn with the stem, but may have a slight lineal movement, in order to provide for fitting its seat tightly. This lower valve is of an inverted-cone shape, its sides tapering or converging downwardly, and the seat in the extension B′ which it occupies is correspondingly tapered.

A spring I rests between the base of the upper valve and the top of the lower valve, and its tendency is to force the former up and the latter down, whereby each is normally kept tight to its seat, preventing any leakage of water or gas past them.

In the upper valve are made two ports *k* and *k′*. These are located nearly opposite one another. (See Fig. 2.) The connections C and D for the hot and cold water, respectively, are somewhat less than a semicircle apart, and are so arranged with relation to the ports *k* and *k′* that when one is open full the other is closed; but when one is partially open the other may be partially open also, or both may be closed. Thus hot or cold water may be had, or both hot and cold water, or both may be shut off.

In the lower valve L are three ports *l l′ l²*, separated, as shown in Fig. 3, and bearing the relative position to the ports of the upper valve shown in diagram, Figs. 4, 5, 6, and 7. The discharge-connection E and the overflow-connection F are separated by a little more than a right angle, and are on the side opposite to the connections C and D above. The entrance or port of the overflow-connection is longer than that of the discharge-connection, as shown.

Now, in order to understand the operation

of the device, reference must be had to the diagrammatic figures. In diagram Fig. 4 the valves have been turned to partially open both the hot and cold water, to open the overflow, and to close the discharge. In diagram Fig. 5 the hot water is full open, the overflow is still open, the discharge is still closed, and the cold water is closed. In diagram Fig. 6 both the hot and cold water are closed, the overflow is still open, and the discharge is open. In diagram Fig. 7 all the connections are closed. In this series of diagrams the goose-neck starts at the center and moves over to the left.

If we now suppose the goose-neck to start at the middle and move to the right, we obtain the following positions, which need not be illustrated, as they will be readily understood: First, the cold water is full open, the overflow is open, the discharge closed, and the hot water closed; second, both cold and hot water are closed, and both overflow and discharge are open; third, all the connections are closed. From this it will be seen that a single lever or handle and a single faucet appliance fully control all the connections, and when they are all shut off everything is tight and no gas can come in. The overflow is always open when either or both the water-connections are open, so that the basin cannot be flooded, and the discharge is always closed when either or both water-connections are open, so that the basin will hold water. It is obvious that the faucet may be arranged horizontally as well as vertically. Where cold water only is used, the hot-water pipe must be plugged or capped.

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

1. In a faucet having four connections with its pipe, a valve having ports controlling two of said connections, and a second valve detachably connected with the first valve, having ports controlling the remaining connections, whereby one of the latter ports may be kept open when either or both of the first two connections are open and to close the last two connections when the first two are closed, substantially as herein described.

2. In a faucet having four connections with its pipe, a valve with two ports for controlling two of said connections to open and close either or both, and a second valve having three ports for controlling the other two connections to keep one open when either or both of the first two connections are open and to keep the other closed at said time and to close said last two connections when the first two are closed, substantially as herein described.

3. In a faucet having four connections with its pipe, a valve with two ports for controlling two of said connections to open and close either or both, and a second valve having three ports for controlling the other two connections to keep one open when either or both of the first two connections are open and to keep the other closed at said time and to close said last two connections when the first two are closed, and a single stem for operating said valves, substantially as herein described.

4. In a faucet having connections with its pipe above and below, an upper ported valve for controlling the upper connection, a lower ported valve for controlling the lower connection, said valves being oppositely tapered and fitting in correspondingly-tapered seats in the pipe, the single stem to which the upper valve is fast and with which the lower valve is connected to turn therewith but have a longitudinal movement thereon, and a spring between the two valves to press them oppositely to their seats, substantially as herein described.

5. In a faucet, the combination of the pipe having the water-connections C D above and the discharge and overflow connections E F below, and the connected valves K L in said pipe controlling said connections and having the ports *k k' l l' l²*, substantially as herein described.

6. In a faucet, the combination of the pipe having the water-connections C D above and the discharge and overflow connections E F below, the valves K L, having ports *k k' l l' l²* for controlling said connections, said valves being tapered in a direction the reverse of each other, the valve-stem carrying said valves, as described, the spring for holding them to their seats, and the single handle for operating said stem, substantially as herein described.

In witness whereof we have hereunto set our hands.

AUSTIN D. MOORE.
ABRAHAM K. GRIM.

Witnesses:
S. H. NOURSE,
H. C. LEE.