

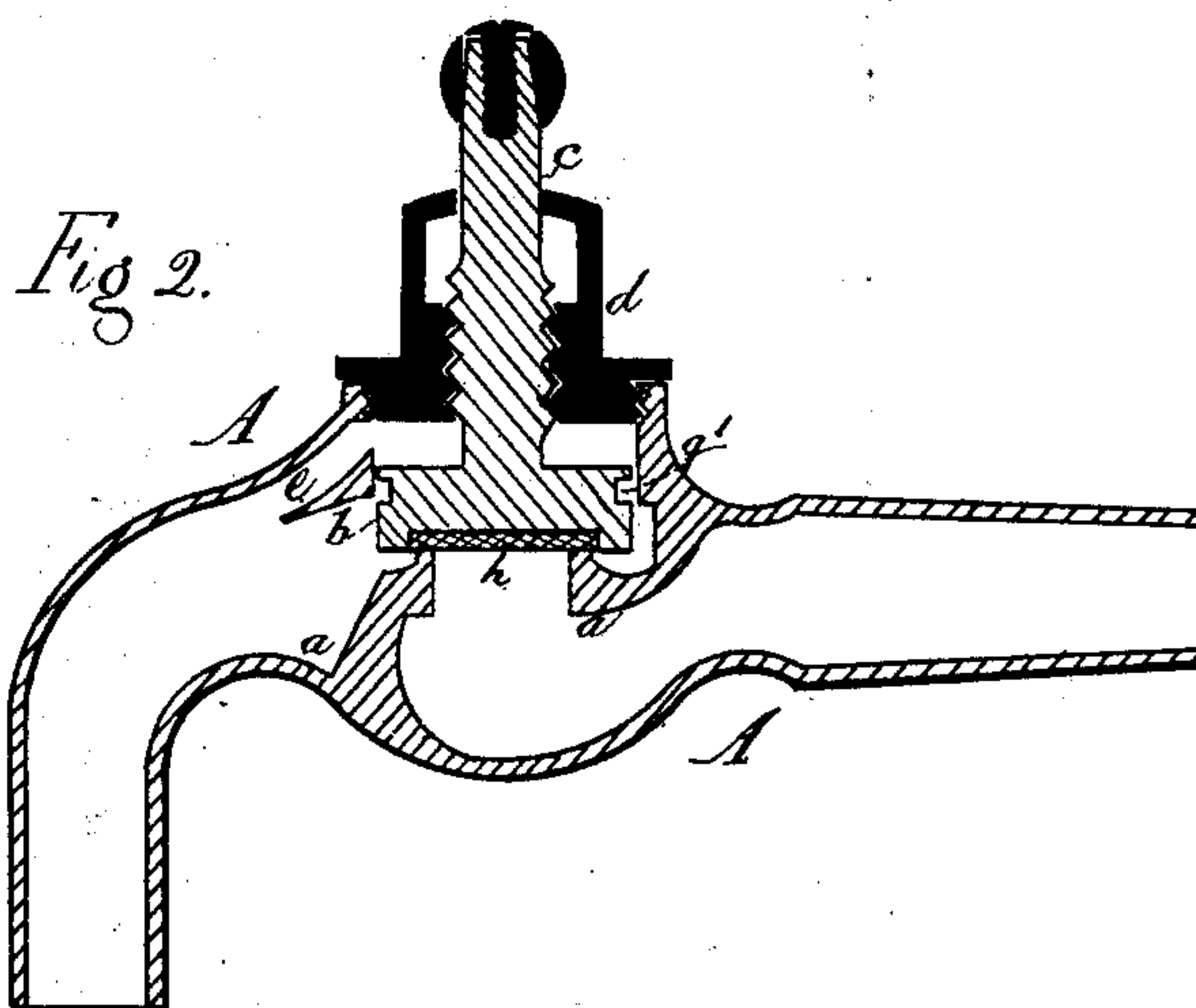
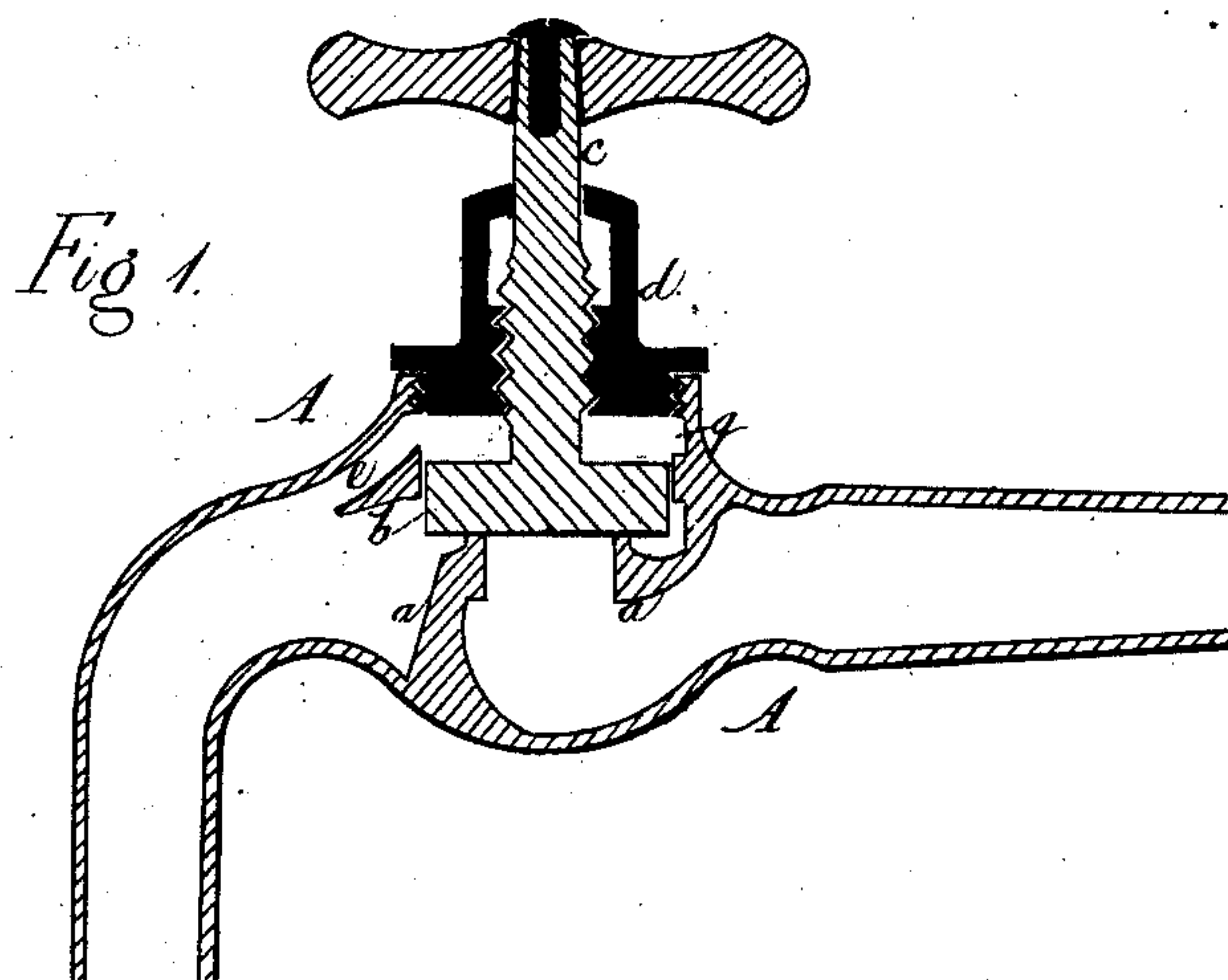
(Model.)

F. A. RENTON.

COCK AND FAUCET.

No. 245,016.

Patented Aug. 2, 1881.



Attest:
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UNITED STATES PATENT OFFICE.

FERGUS A. RENTON, OF GREEN POINT, NEW YORK.

COCK AND FAUCET.

SPECIFICATION forming part of Letters Patent No. 245,016, dated August 2, 1881.

Application filed March 5, 1881. (Model.)

To all whom it may concern:

Be it known that I, FERGUS A. RENTON, of Green Point, in the county of Kings and State of New York, have invented certain new and
5 useful Improvements in Cocks and Faucets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 My invention has relation to that class of devices ordinarily employed for arresting or regulating the flow of fluids, particularly such as water and the like, under pressure, which devices are commonly denominated "cocks,"
15 "stop-cocks," or "faucets," and sometimes "valves;" but the invention is likewise applicable in situations where the flow of other fluids—such as steam and gases—is to be regulated, as will be readily understood from a consideration of the construction and operation of
20 my improved device.

Among the principal objects of my invention are the production of a stop-cock or faucet which is capable of being constructed of few parts,
25 all of which are durable, easily worked, effective, not liable to get out of order, and easy to be taken apart for repairs when any are necessary, and to secure a certain freedom from leakage through the cap which encircles the valve-stem, either by reason of wear of the parts or
30 increased pressure at the inlet, dispensing with any packing or packing-box about the valve-stem.

To accomplish all of this the invention involves certain novel and useful arrangements or combinations of parts, peculiarities of construction, and principles of operation, all of which will be herein first fully set forth, and then pointed out in the claims.

40 In the accompanying drawings, forming part of this specification, I have shown at Figure 1 a vertical axial section of a stop-cock or faucet constructed in accordance with my invention and involving the principles thereof. Fig. 2
45 is a similar view of a slightly-modified construction, the operation whereof is in effect the same as in device shown in Fig. 1 and in all respects an equivalent thereof.

50 In both these figures like letters of reference, wherever they occur, indicate corresponding parts.

As cocks and faucets are now constructed

much annoyance is caused by leakage around the valve-stem either when the fluid passes the valve-seat after closing down of the valve
55 or after the valve is raised either partially or wholly for the purpose of allowing the fluid to flow.

To obviate this disadvantage, as well as to overcome the jarring produced by sudden closing of the valve, many forms of cocks and faucets have been devised, all more or less complicated in structure, and therefore expensive to make, as well as difficult to keep in proper
60 working order. They generally require packing or some form of stuffing or packing box about the valve-stem, and are not then always secure against leakage, especially after a little use.

I am enabled by my improvement to dispense
70 with the packing or packing-box entirely, and to insure a perfect action at all times and under all circumstances of ordinary use.

According to my construction, A is the main body of the faucet or cock, having the bridge
75 a, perforated for the passage of the fluid and forming a seat for the valve. This seat may be flat or plain, or it may be in the shape of a narrow rim surrounding the opening. The valve b approaches or recedes from its seat under the action of the screw upon its stem c,
80 which engages with the female screw in the cap-piece d. The cap d is screw-threaded and enters the main portion of the faucet in the usual way, where it may be set by the application of an ordinary wrench, and should, of course, be so firmly seated that it cannot be displaced by ordinary use of the cock. The lower part of cap d is preferably made so as
90 to form a seat for the upper surface of the valve-disk, in order that, when the valve is raised to its highest point or the cock opened to its full extent, contact with cap d will, in a measure, prevent a tendency to leakage around the valve-stem; but this construction is not
95 essential to the practical working of the device.

From the space above the valve-disk (when closed) I cut, drill, or otherwise form the channel e, which establishes a communication between this space and the discharging-neck of
100 the faucet, and this channel is always open, whether the cock be open or closed. When in the position indicated in the drawings, in order that channel e may always serve to lead water

or other fluid into the discharging-neck, I cut or otherwise form a channel, *g*, in the walls of the faucet, (or an equivalent channel elsewhere, as will appear hereinafter,) so that when the valve is raised it cannot close the said channel *e*. Under this construction, when the valve is seated any leakage past its seat will naturally find its way into the discharge-neck through channel *e*, and will therefore not pass out around the valve-stem. When the valve is raised to its highest point, or any other point above its seat, the fluid, rushing past the open mouth of the channel *e* in the discharge-neck, tends to produce a vacuum in channel *e*, and therefore to draw any fluid out through said channel, which fluid may have found its way to the space above the valve, operating much in the same manner or upon the same principles as the usual forms of injectors or ejectors. So perfect is the action of the improvement that, if water be applied around the outside of the valve-stem, when the valve is opened it will be drawn through the opening in the cap in order to escape through channel *e*. Of course this same action will result in degree no matter what may be the form of the outlet of channel *e*; but I have discovered that the most satisfactory results are obtained if the mouth be formed as plainly shown in the drawings—that is, with the lower edge cut vertically, or nearly so—and the lowest point of this mouth made to extend into the discharge-channel a fraction of an inch—say the thirty-second part, or between that and a sixteenth; but the invention is independent of any particular form, size, or dimensions, all of which must depend upon the different circumstances of construction.

The valve may be plain-faced on each side, as in Fig. 1, or it may have a soft-metal or other packing inserted, as indicated at *h*, Fig. 2.

Any desired form or size of valve and any style of packing therefor may be adopted, according to the style or quality of the faucet or according to other circumstances.

I preferably cast the main part of the faucet with the channel *e* therein, and it is easy and inexpensive to so construct it.

Instead of cutting the communicating groove or channel *g* horizontally in the interior of the screw-neck, a similar channel might be formed in the valve-disk itself, as indicated at *g'*, and this be so located that when the valve is raised from off its seat it will register with the channel *e*, and therefore serve to preserve at all times the desired free communication of the channel *e* with the space above the valve-seat.

The valve-stem might be governed by a spring, in the usual way, instead of by the screw-thread, as herein shown, and in some forms of faucets the stem and cap or equivalent device formed together and made movable together, so as to dispense with the central opening in the cap, in which instances the channel *e* would obviate leakage through the connection between the movable cap and the main body of the faucet.

It will be observed that, as shown in the drawings, my improved cock or faucet consists, essentially, of three pieces or separate parts only—that is, the main body, the valve, and the cap, making no account of the thumb-piece or handle *H*, which may be of any character and secured in any desirable way to the valve-stem. These parts, all fitted, are very simple and cheap, and when in place for use they constitute a device which admirably answers the purposes and objects of the invention, as previously set forth.

By dispensing with the usual packing or packing-boxes I am enabled to make the faucet compact in form, or to make the valve-stem short in comparison with the usual forms—a decided advantage, especially for such cocks or faucets as are intended to be used in cramped or otherwise limited situations—as, for instance, immediately under the cover of a wash-tub or other bowl or basin.

The mere form or outline of the cock or faucet is, of course, no part of my present invention. That shown in the drawings is a good form for ordinary uses; but other styles may be adopted as well, and it is intended to apply the improvements on any and all styles wherein they may be used to advantage.

It will be observed that my improvement is intended to keep the valve-chamber, or the space in which the valve moves, free from water or fluid, and that the channel through which this space is emptied of its contents is always open, which is not the case in former constructions, wherein the valve, upon opening the main fluid-port, is made to close an auxiliary fluid-duct, nor in such as employ an auxiliary duct leading from a space wholly independent of the chamber in which the valve is made to move.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cock or faucet, the open channel leading from the space wherein the valve moves above the valve-seat to the discharge or outlet passage, the same being combined with a communicating groove, as explained, so as to insure the desired exhausting from the space beneath the cap when the valve is opened as well as when closed, substantially as shown and described.

2. The herein-described cock or faucet, composed, essentially, of the main body, having ports or passages formed therein, as explained, a valve and valve-seat, and a removable cap-piece, leakage around the valve-stem from the space in which the valve moves being prevented by an open channel, operating when the valve is opened or closed substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

Witnesses: FERGUS A. RENTON.

GEO. W. PAYNTAR,

J. W. FRASER.