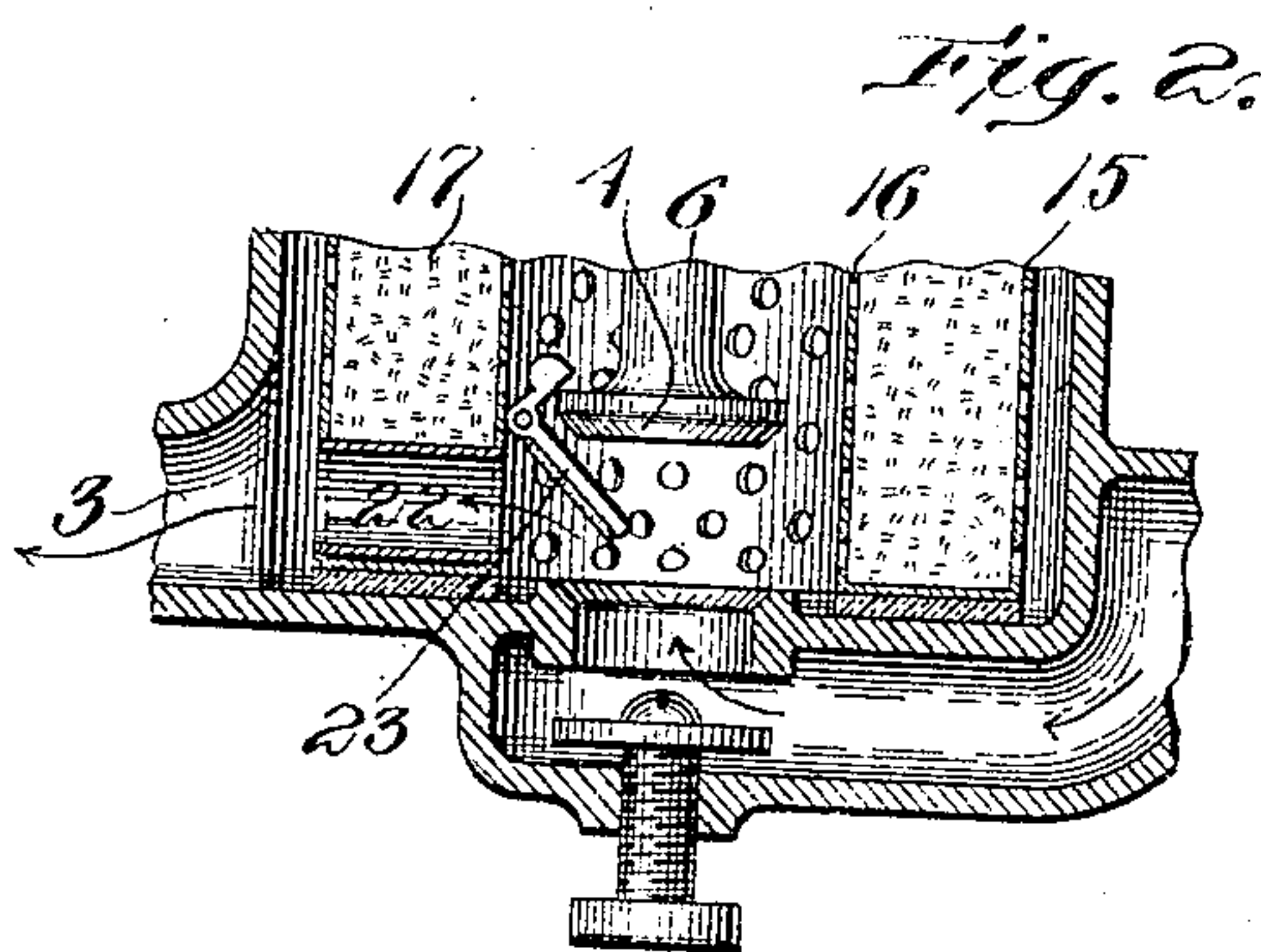
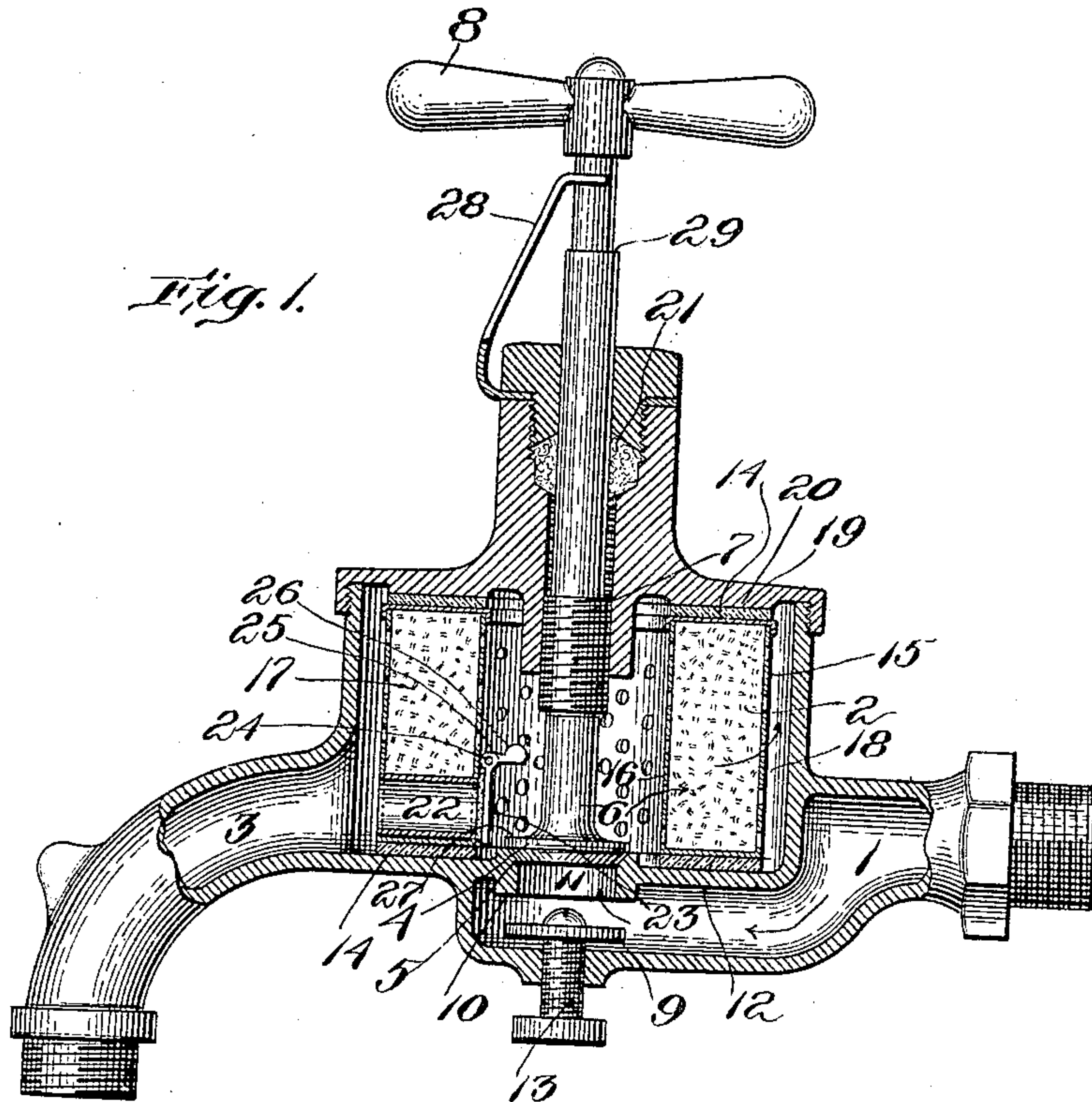


No. 816,517.

PATENTED MAR. 27, 1906.

A. P. WHALEN.
COMBINED FAUCET AND FILTER.
APPLICATION FILED JULY 10, 1905.



Witnesses:
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UNITED STATES PATENT OFFICE.

AUGUSTUS P. WHALEN, OF SOUTH PORTLAND, MAINE.

COMBINED FAUCET AND FILTER.

No. 816,517.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed July 10, 1905. Serial No. 268,959.

To all whom it may concern:

Be it known that I, AUGUSTUS P. WHALEN, a citizen of the United States, residing at South Portland, in the county of Cumberland and State of Maine, have invented new and useful Improvements in a Combined Faucet and Filter, of which the following is a specification.

This invention relates to an improved form of combined faucet and filter.

The object of the invention is to provide a faucet which will normally deliver filtered water and can readily be adjusted to deliver water unfiltered and without the reduction of volume and pressure which results when water is passed through a filter. It is among the objects of the invention to provide means for accomplishing these purposes by a device which is simple and inexpensive to construct, convenient in use, and in which the parts can be conveniently cleaned or replaced.

Specifically, it is among the objects of the invention to provide a faucet in which the filter does not cause an inconvenient prolongation of the spout, and this is accomplished by arranging the filter around the valve-stem of the faucet instead of attaching it below the spout; also, to enlarge the filtering capacity by causing the water to flow in all directions radially from the filter instead of diametrically, as is customary; also, to provide a passage of unreduced size for unfiltered water; also, to simplify and reduce the number of packings necessary to prevent leakage of water, thus materially reducing the expense of construction over some types heretofore known; also, to guard against the danger of obtaining unfiltered water unwittingly when filtered water is desired by the arrangement of gate herein provided and also by the latch provided therefor; also, to provide the other advantages which are incidental to the invention hereinafter described.

In the accompanying drawings, Figure 1 shows a longitudinal sectional view of a combined filter and faucet embodying the invention with the faucet closed. Fig. 2 shows a portion of the same with the parts arranged to deliver unfiltered water.

Referring to the drawings, and especially to Fig. 1, 1 is the inlet-passage for water, 2 is the filter, and 3 is the outlet or spout. A valve 4 is provided having a seat 5, the valve being supported on a stem 6, which may be

55 moved toward and from the seat by any suitable means. This means is represented in the present drawings by a screw 7 in the casing, through which the valve-stem passes. A handle 8 is provided in the ordinary way for turning the valve up and down. Another valve 9, hereinafter called an "auxiliary" valve, is provided with a seat 10, arranged between the valve 4 and the source of water-supply, so that when said auxiliary valve is closed no water reaches the first valve or the filter. This auxiliary valve may conveniently be arranged to use the same port 11, which is the port of the valve 4, and this is accomplished by arranging the valve 9 in line with the valve 4 and its stem 6 upon the opposite side of the port 11 through the partition 12 of the faucet and providing a seat 10 for the valve 9 at the edges of the said port. Said valve 9 may consist of a flexible disk of leather or rubber mounted on the end of a valve-stem 13, formed by a thumb-screw which is set in the wall of the faucet. Normally this valve is retracted from its seat. When it is closed, the normally working parts of the faucet and filter can be opened for access for examination or repair without the necessity of shutting off the water in the entire system of supply-pipes leading to the faucet. As this valve is not often used, the flexible rubber or leather will serve all purposes, the water pressure pressing the edges thereof tight upon the valve-seat, while the valve-stem 13 prevents the same pressure from forcing the flexible center of the valve through the port. The advantage of this construction is that it enables the valve to be put in place when the faucet is constructed through a hole 11, which is smaller than the area of the valve, thus reducing expense of construction. Another advantage is that the valve-seats 5 and 10 may then be formed directly on the partition 12. Obviously any other suitable form or arrangement of this valve might be used instead. On the other side of the partition 12—namely, the side where the valve 4 operates—is a chamber 18, within which the filter 2 is set. The filter is preferably of cylindrical form, having outer and inner cylindrical walls 15 and 16, respectively, perforated or composed of any suitable material through which water can permeate and inclosing within them a body of filtering material 17. The port 11 delivers water into the

hollow interior of the filter. Sufficient space is provided between the exterior of the filter and the walls of the chamber 18 for water to flow thence to the main passage leading to the spout. A removable cover 19 is provided for the chamber. In the form shown in the drawings this cover screws into place and has on its under side an annular boss 20, which bears against a packing-ring or washer 14 between it and the top of the filter, thus forcing the filter down upon another packing-ring 14, inserted between the filter and its seat 12, thus preventing the escape of water from the interior of the filter, except through the filter itself or through the gate, which will hereinafter be described. The valve-stem 6 is within and surrounded by the filter and passes out through a stuffing-box 21 in the cover of the chamber. When the cover is removed, the stem 6, valve 4, and filter 2 may readily be removed. A free passage 22 is provided through the filter or in some other convenient place, so that water can pass freely from the port 11 to the spout without passing through the filter, thus constituting a by-pass around the filter. This is closed normally by a valve 23, which in order to avoid confusion is hereinafter called the "gate." It will be obvious that this gate may be made of any suitable type and arrangement; but I have illustrated the type which I regard best. In this type the gate is a hinged lid or valve, the hinge 24 being located above the entrance to the by-pass, and there is a projecting lug or tailpiece 25, carrying a weight 26, which helps keep the gate normally closed. This gate is located at such a place and the lug projects in such a way that when the valve-stem 6 of the valve 4 is being raised to open the valve 4 the lug 25 is engaged by a lug on the stem after the latter has been raised a certain predetermined distance. Continued movement of the stem 6 results in opening the gate 23. I find it best to utilize the back side 27 of the valve 4 as the lug on the stem for this purpose, as shown in Figs. 1 and 2. As the gate opens it swings about its hinge into the position shown in Fig. 2, and if moved far enough will be automatically opened wide by the current of water which begins to rush through the by-pass. When the valve-stem is returned toward the valve-seat, the front surface 4 of the valve encounters the lid of the gate 23 and pushes it downward, as will be clearly seen in Fig. 2, until the water-pressure automatically shuts it, after which the gate 23 will be maintained tightly closed by the pressure of water upon it. Placing the filter on the spout side of the valve 4 instead of the supply side and arranging the gate 23 at the entrance of the by-pass makes it possible to utilize the water-pressure for this purpose.

As the means for opening the gate 23 are concealed from view within the faucet, I have also arranged means to enable the user of the faucet to open the valve 4 to the widest extent necessary to get the largest flow of water possible from the filter, yet not so far as to be in danger of opening the gate 23, and thus unwittingly letting some unfiltered water pass. This consists of a latch 28, which may be supported or anchored in any desired way on the outside of the faucet and which is adapted to engage the valve-stem 6 and lock it against further movement when it reaches a point where it is about to open the gate 23. As represented in the drawings, this latch has a flat base with a hole which permits it to be mounted with the valve-stem passing through the hole and screwed into place by the nut which fastens the stuffing-box 21. The shank of the latch may be made of spring metal. It reaches up to a certain distance alongside the valve-stem and is equipped at its end with a claw which rests against the valve-stem. Said valve-stem is provided with a shoulder or notch 29, located at such a place that as the valve-stem is raised and the gate is about to be opened the shoulder 29 encounters the claw 28, and the valve-stem is thus latched or locked against further movement. If the user is willing to receive unfiltered water, the latch can easily be pressed outward by his finger, and when thus released the valve-stem can be moved farther and the gate 23 thus opened, allowing a free passage from the port 11 to the spout. It will thus be seen that the filter is packed against leakage of water by inexpensive and efficient means, and means is provided for operating the by-pass valve without the use of an extra packing, and the same is automatically locked against opening without the will of the owner. Sometimes the latch may be omitted, for when the lug on the valve-stem encounters the lug to open the gate the water-pressure on the gate will cause sufficient resistance to warn the user that further movement will open the gate.

The operation is as follows: Normally the valve 9 is open and the valve 4 closed, the faucet thus being closed. Upon opening the faucet by turning the handle 8, and thus raising the valve-stem 6, water flows through the port 11, the filter 2, and out to the spout 3, the gate 23 being closed. The faucet can be safely and carelessly used in this condition without possibility of delivering unfiltered water until the latch 28 has been released, after which the handle being raised higher the gate 23 is opened and unfiltered water flows freely under full head. When the valve-handle is screwed down again, the gate 23 closes and the latch 28 springs into position

to lock the valve-stem again. Thus the faucet normally delivers filtered water and cannot be made to deliver unfiltered water without a conscious and deliberate act of the person using it, after which it automatically returns to its position for delivering filtered water only.

It will be observed that in the preferred construction the filter being in the form of a hollow cylinder and the water flowing radially outward therefrom, all the water will pass through an equal thickness of filtering material by reason of the cylindrical arrangement, and a much greater area of filtering material can thus be arranged in a given space than would be possible if the filter were between two plane surfaces set in the same space, with the result that the capacity of the filter is larger.

I claim—

1. The combination with a faucet, having a passage for water and a valve therein, of a filter set in the passage separate from the valve; a free by-pass around the filter; a gate for the by-pass, independent of the valve and arranged in series therewith; and a single stem arranged to operate both valve and gate successively by a continuous motion in the same direction.

2. The combination with a faucet, having a passage for water and a valve therein, of a filter separate from the valve and set in the passage between the valve and the spout of the faucet; a free by-pass leading around the filter and back to the passage; a gate for the by-pass arranged in series therewith; and a single stem arranged to operate both valve and gate successively by a continuous motion in the same direction.

3. The combination with a faucet, having a passage for water and a valve therein, of a filter set in the passage; a free by-pass around the filter; a gate for the by-pass; a single stem arranged to open both valve and gate in different portions of its travel; and a latch arranged normally to lock the stem from the portion of its travel which would open the gate.

4. The combination with a faucet, having a passage for water and a valve therein, of a hollow cylindrical filter set within the passage and arranged for water to flow radially through it; a stem for the valve passing through the cylinder; a free passage by the filter; a gate for said by-pass; and means whereby the stem of the valve during a portion of its movement operates the gate.

5. The combination with a faucet, having a passage for water and a valve therein, there being a chamber arranged in the passage; of a cylindrical filter with hollow interior set in the chamber, the said valve being arranged to admit water to the interior of the cylinder;

a stem for the valve passing through the said interior; a free by-pass from the said interior to the exterior of the filter; and a gate for the by-pass, operated by said stem.

6. The combination with a faucet, having a passage for water and a valve therein, there being a chamber arranged in the passage, of a removable cover for the chamber; a cylindrical filter with hollow interior set in the chamber, the said valve communicating directly with the interior of the cylinder, and having a valve-stem passing through the said interior and cover; a free by-pass between the interior and exterior of the filter; a gate for the by-pass; and means to operate the gate.

7. The combination with a faucet, having a passage for water and a valve therein, of a hollow cylindrical filter set within the passage and arranged for water to flow radially through it; a stem for the valve passing through the cylinder; a free passage by the filter; a gate for the said by-pass; means whereby the stem of the valve during the extreme portion of its movement operates the gate; and a latch arranged to engage the exterior portion of the stem and arrest its movement before the stem opens the gate.

8. The combination with a faucet, having a passage for water and a valve therein and a stem for the valve, of a filter set in said passage; a free passage by the filter; a hinged gate for said by-pass, opening against the current; and means whereby the stem of the valve during a portion of its movement operates the gate.

9. The combination with a faucet, having a passage for water and a valve therein and a stem for the valve, of a filter set in said passage; a free passage by the filter; a hinged gate for said by-pass at its entrance; and means whereby the stem of the valve during a portion of its movement operates the gate, the hinge being arranged for the gate to close by its own weight when released.

10. The combination with a faucet, having a passage for water and a valve therein, there being a chamber in the passage, of a cylindrical filter with hollow interior set in the chamber, the said valve being arranged to admit water to the interior of the cylinder; a removable cover for the chamber bearing against the end of the cylinder opposite the valve; a stem for said valve passing through the cylinder and cover; an auxiliary valve arranged in line therewith and operating in the opposite direction on the supply side of the port of said valve; a free by-pass from the interior to the exterior of the filter; a gate for the by-pass; and means to operate said gate.

11. The combination with a faucet, having a passage for water and a valve therein, there

being a chamber in the passage, of a cylindrical filter with hollow interior set in the chamber and provided with a packing-ring at each end, said valve being arranged to admit water to its interior; a removable cover engaging the packing-ring on the end of the cylinder opposite the valve; a stem for the valve passing through the cylinder and cover; a free by-pass from the interior of the filter to

its exterior; and a gate for the by-pass operated by said valve-stem.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

AUGUSTUS P. WHALEN.

Witnesses:

MARY H. NORTON,
H. C. BLANCHARD.