No. 780,334. PATENTED JAN. 17, 1905.

E. B. FREEMAN.

FILTERING STOP COCK.

APPLICATION FILED AUG. 30, 1904.

Fig. 1.

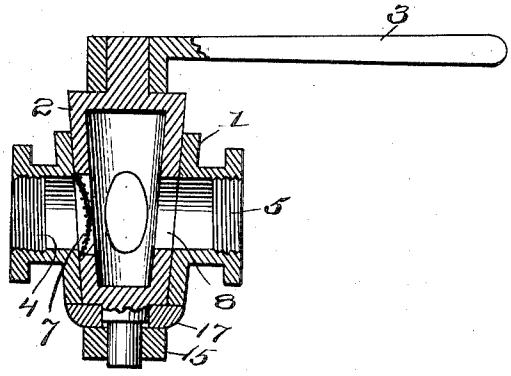


Fig. 2.

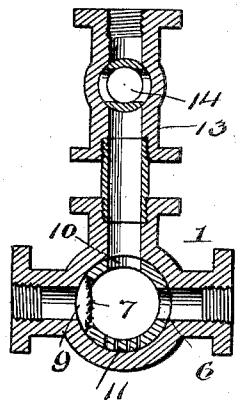


Fig. 3.

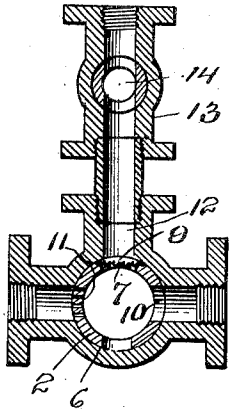
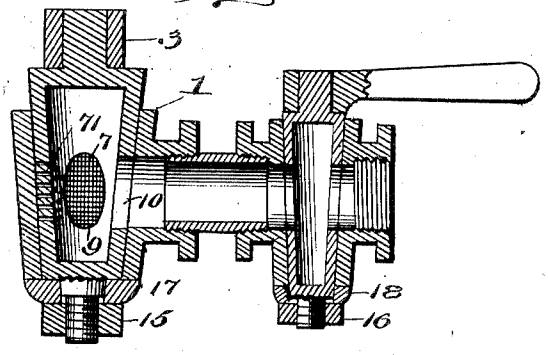


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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FILTERING STOP-COCK.

SPECIFICATION forming part of Letters Patent No. 780,334, dated January 17, 1905.

Application filed August 30, 1904. Serial No. 222,707.

To all whom it may concern:

Be it known that I, ERNEST B. FREEMAN, a citizen of the United States, residing at Middleport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Filtering Stop-Cocks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in stop-cocks for controlling the flow of liquids, and has particular reference to self-cleaning stop-cocks which are adapted for screening or filtering materials which flow through them.

The invention consists in a stop-cock provided with a valve having ports for accommodating the passage of liquids through the same, a screen carried by the valve, and a lateral outlet leading from the stop-cock for permitting of the cleansing of the screen without stopping the flow of liquid through the stop-cock.

The invention also consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a central vertical sectional view through a stop-cock constructed in accordance with the present invention, the valve being in position to permit of the flow of liquids through the said stop-cock. Fig. 2 is a horizontal central section through the stop-cock and the lateral outlet carried by the same, the valve being in the same position as shown in Fig. 1. Fig. 3 is a similar sectional view, but showing the valve turned so that the screened port thereof is in position to be cleansed, and Fig. 4 is a central sectional view taken through the stop-cock and its lateral outlet in the plane of the axes of the principal and auxiliary valves employed.

In controlling the flow of certain liquids it is often necessary to screen or filter the said liquids, and I employ for this purpose a stop-cock which is interposed in the discharge passage or piping used for such liquids, the turn plug or valve of the stop-cock carrying means for screening the liquids. A stop-cock of this kind is especially adapted for use in connection with spraying apparatus where such apparatus is employed for applying insecticides, germicides, or disease-checking ingredients to vegetables or other plants or to trees, especially fruit-trees. In delivering such ingredients they are usually passed through the discharge-nozzles, and the nozzles would become easily clogged if the liquids were not properly strained in passing from the reservoirs or storage-tanks to the said nozzles. My improved stop-cock is adapted for accomplishing the desired purposes, and I have illustrated in the drawings a practical manner of carrying out the invention.

In the illustration, 1 indicates a casing for a stop-cock, 2 the turn plug or valve seated therein, and 3 a handle or wrench for turning the said valve. The casing 1 is formed with threaded ends, as at 4 and 5, which are connected with the line of piping which normally conveys the liquid discharged through the stop-cock. The casing 1 is provided with a centrally-arranged seat 6, into which is fitted the valve 2. The valve 2 is made hollow and provided with oppositely-arranged ports 7 and 8, one of which, as 7, is provided with a screen 9 of suitable mesh to prevent materials of sufficient size to clog the discharging-nozzles from passing through the stop-cock. I usually employ a woven-wire screen, as illustrated in the drawings, though it will be understood that other perforated means may be employed at this point. The valve 2 is further provided with a port 10, which is arranged in the wall of the valve half-way between the ports 7 and 8 and opposite to the said port 10. The wall of the valve is formed with a number of perforations 11, which may be used as a screen when the valve is being cleaned.

The valve-casing 1 is formed with a lateral outlet, as at 12, which is controlled by an auxiliary stop-cock 13. The outlet thus afforded is arranged at right angles to the main passage-way formed in the valve-casing. A turn plug or valve 14 is seated in the auxiliary stop-cock, the said valve being formed with oppositely-arranged ports, so that by turning the valve 14 in one direction, as shown in Fig.

2, the lateral outlet leading from the stop-cock 1 can be closed. By turning the valve 14 in the direction shown in Fig. 3 the said lateral outlet may be opened. In the normal use of the cut-off 1 the lateral outlet 12 is closed, as shown in Fig. 2.

Both of the valves 2 and 14 are preferably tapered, and the valve-seats are correspondingly tapered, the said valves being held snugly in their seats by means of nuts 15 and 16, respectively, carried by threaded end portions formed upon the valves 2 and 14. Washers 17 and 18 are applied between the nuts and the casings of the valves.

In using the device the auxiliary stop-cock is normally closed and the principal valve 2 is turned, as shown in Figs. 1 and 2, so that the liquids flowing through the stop-cock will first pass through the screened port 7 and thence out through the port 8 opposite to the said screened port. The screen 9 when held in this position will operate to catch and hold any foreign substances or large particles which may be carried by the liquid. When the screen 9 becomes more or less clogged by the collection of sediment or foreign substances, it may be cleaned without stopping the flow of liquids through the stop-cock by turning the valve 2 so as to bring the screen-port 7 opposite the lateral outlet 12, as shown in Fig. 3. The auxiliary valve 14 is then opened, as shown in Figs. 3 and 4, and the materials passing through the casing can then escape through the lateral outlet 12, thus passing in a reversed direction through the screen 9. In this manner the substances which have collected upon the outer surface of the said screen will be forced from the same. The flow of materials through the inlet and outlet portions 4 and 5 of the casing 1 need not be interrupted, for the valve 2 permits of a continued flow of such materials through the apertures 11 and the open port 10, which are in alinement with the said inlet and outlet portions 4 and 5. As soon as the screen 9 has been sufficiently cleaned the valve 2 is returned to its original position and the auxiliary stop-cock is closed. When it is necessary to cut off the flow of materials through the stop-cock entirely, the said stop-cock is moved to an intermediate position, so that the solid portions of the valve-walls will be brought opposite the inlet and outlet openings.

It will be observed that the valve above set forth while capable of controlling the flow of materials and of screening or filtering the same can be so manipulated as to be self-cleaning, and the cleansing operation can be carried on without materially interrupting the passage of substances through the stop-cock.

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

1. A stop-cock comprising a casing, a valve mounted therein and provided with ports, an approximately flat screen stretched across one of said ports and secured to the walls of the valve, the mounting of the screen in the port permitting of the same being brought to a position at right angles to the plane of the casing-axis or parallel thereto for reversing the flow of liquids through the screen.

2. A stop-cock comprising a casing having a lateral outlet, a valve mounted in the casing and formed with ports in its walls, a screen stretched over one of said ports and extending approximately in the plane of the valve-wall, the position of the screen being such that when it is moved across the line of direct flow of materials through the stop-cock, it will screen said materials and when it is moved parallel with the direct flow of materials, the materials in passing out of the lateral opening of the casing will be reversed through the screen.

3. A self-cleaning stop-cock comprising a casing having a valve-seat formed therein, a hollow valve mounted in said seat, the valve having ports in its walls, a screen covering one of said ports, an auxiliary valve arranged in an outlet extending at right angles to the main passage in the valve-casing, and means for turning the principal valve so as to bring the screen opposite the main passageway or opposite the lateral outlet as the case may be for reversing the flow of materials through the said screen.

4. A self-cleaning stop-cock comprising a casing, a hollow valve provided with oppositely-arranged ports, a screen extending across one of said ports, while a series of perforations constitute an adjacent port, a lateral outlet-pipe projecting from the outlet-casing, an auxiliary valve for controlling the same, and means for turning the principal valve, the screen upon the screened port operating to remove sediment or foreign substances from the materials passing through the stop-cock, while the lateral outlet makes it possible to turn the valve so that the liquid will flow through the screen in the opposite direction for cleaning the same.

5. A stop-cock mechanism comprising a casing having a valve-seat formed therein, the said casing also having a lateral outlet, a principal valve mounted in the seat of the casing, an auxiliary valve for controlling the lateral outlet, the principal valve being provided with ports in its walls, a screen for covering one of its ports, the said valve being provided with a series of perforations opposite another port for operating as a screen when the liquid is being reversed through the screened port, and means for turning the said valve to bring its ports or its imperforate portions, opposite the inlet of the casing for controlling the flow of materials through the same.

6. A controlling-cock comprising a casing, a valve mounted therein and formed with oppositely-arranged ports, a lateral outlet being

provided for the valve-casing, and a screen extending across one of said ports, the relation of the ports to each other and to the lateral outlet being such that when the valve is turned in one direction the materials flowing through the valve will be filtered by the said screen, while in another position, the material passing through the valve will some of it flow upon one side of the screen only, while some of it will flow through the screen in a reversed direction for cleansing the screen.

7. A stop-cock comprising a casing having oppositely-arranged ports and a lateral outlet-port, a valve seated therein and formed with a plurality of sets of ports, one set of ports having a screen stretched over one port of the set, while the other set of ports is provided with one port formed by a series of apertures in the walls of the valve, the arrangement of the ports being such that when one set of ports is in alinement with the principal ports of the valve-casing liquids passing through the valve will be filtered by the screen and when the other set of ports is in alinement with the casing-ports, the fluids passing through the valve will be filtered by the holes in the walls of the valve and the screen will be cleansed.

8. A stop-cock comprising a casing having direct and lateral ports, a valve seated in the casing and provided with ports, a screen covering one of said ports, while a series of apertures in the walls of the valve constitute another port, the operation of the valve making it possible to pass the materials through the screen approximately at right angles thereto for filtering the said materials or passing the materials parallel with the plane of the screen for cleansing the said screen, the port formed by the apertured wall affecting the filtering operation in the said latter position of the valve.

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

ERNEST B. FREEMAN.

Witnesses:

E. F. LUHEY,

CHAS. F. EWING.