(No Model.)

O. P. BRIGGS.

FILTER.

No. 526,515. Patented Sept. 25, 1894.

Fig. 8.

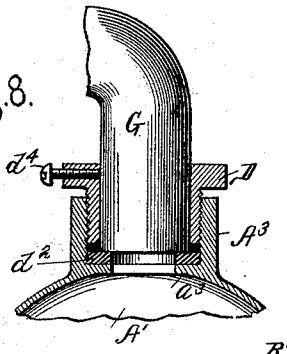


Fig. 1.

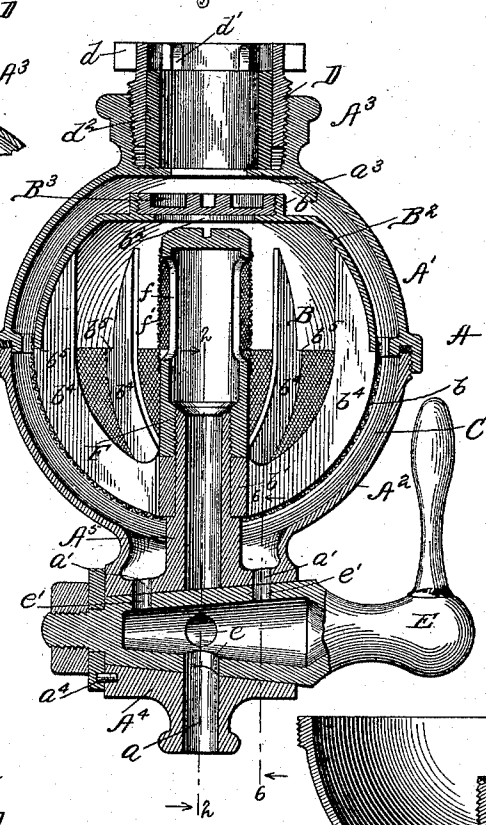


Fig. 6.

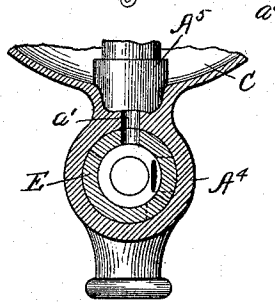


Fig. 7.

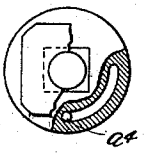


Fig. 3.

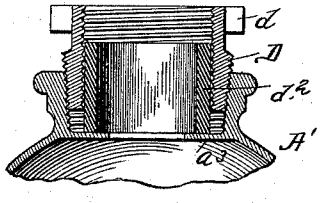


Fig. 4.

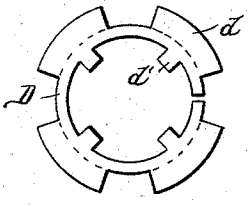


Fig. 2.

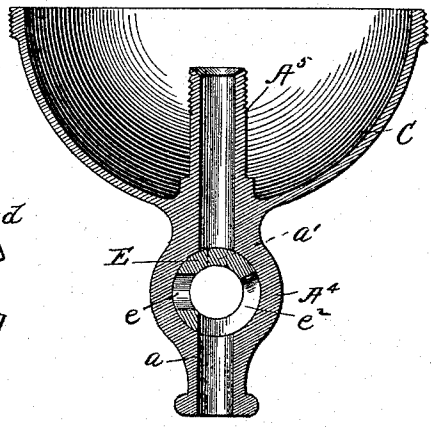
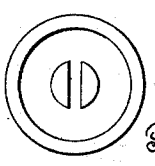


Fig. 5.



Witnesses.

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By Dayton, Voorhees & Brown

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UNITED STATES PATENT OFFICE.

ORLANDO P. BRIGGS, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO ARTHUR W. COOPER, OF SAME PLACE.

FILTER.

SPECIFICATION forming part of Letters Patent No. 526,515, dated September 25, 1894.

Application filed October 15, 1891. Serial No. 408,773. (No model.)

To all whom it may concern:

Be it known that I, ORLANDO P. BRIGGS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Filters; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of filters designed for attachment to ordinary faucets, and has for its object to provide a device of the character indicated which may be readily cleaned without being detached from the faucet to which it is applied.

My invention consists in the matters described in the following specification and pointed out in the claims appended.

In the accompanying drawings—Figure 1, is a central vertical section of a filter embodying my improvements. Fig. 2, is a similar section taken through the lower half of the outer case at right angles to the section shown in Fig. 1. Fig. 3, is a detail section of a thimble designed to couple the filter to a screw threaded faucet. Fig. 4 is a plan view of a thimble designed for use in coupling the filter to the faucet. Fig. 5, is a plan view of the closing cap for the inner case. Fig. 6, is a detail vertical section taken upon line 6—6 of Fig. 1. Fig. 7, is a detail end view of the valve-plug of the filter. Fig. 8, is a detail section illustrating another form of coupling for connecting the device to a faucet.

In the form of device which I have selected as well illustrating the novel features of my invention, two hemi-spherical shells A′ and A^2 are united to form a spherical case A, within which is inclosed a spherical filtering vessel B, and provided at its bottom with a central discharge nozzle *a*.

The walls of the outer and inner cases A and B are arranged concentrically at some considerable distance apart, to leave a space or passage C between them through which the water flows in the operation of the filter.

The semi-spherical shell A′ forming the upper part of the outer case A, is provided centrally with a projecting boss A^3 of large diameter having a central tapering bore threaded to receive the threads of an exteriorly tapered split sleeve D, of length sufficient to project above the boss A^3, and provided at its upper end with a flange *d*, having a milled edge or flat faces or projections to be engaged by a wrench. This split sleeve is also provided at its top with interiorly projecting lugs *d′*, and the boss A^3 terminates interiorly in a diaphragm a^3 pierced at the center by an opening of substantially the same diameter as the discharge opening of a faucet. A packing ring d^2 of rubber, is seated within the split sleeve D, its ends abutting against the lugs *d′* of said sleeve, and the diaphragm a^3 of the case.

The open side of the semi-spherical shell A′ terminates in a double flange composed of inner and outer members a^4 a^5 separated by an annular groove within which is seated a packing a^6 of rubber or other suitable material. The outer member a^5 of this double flange is threaded interiorly to engage male threads formed on the open end of the semi-spherical shell A^2 forming the lower part of the case A, and the metal of this open end of shell A^2 is of proper thickness to fit snugly within the groove between said inner and outer members a^4 and a^5 of the double flange of case A′ and to rest against the packing a^6 therein.

The lower or closed side of the shell A^2 is provided with a transversely elongated boss A^4 having a tapering bore or plug chamber to receive a tapered valve plug E, and a tubular or hollow post A^5 projects from the center of this boss, above the tapered bore or plug chamber, into the case A, and terminates somewhat below the upper edge or rim of the shell A^2. On either side of the post A^5 an opening *a′* is formed, affording communication between the space or passage C and the plug chamber.

The lower half of the inner or filtering vessel B may consist of a skeleton frame or spider B′ covered by a shell *b* formed of fine wire cloth, the lower edge of which is secured to the hub *b′* of the spider, while its upper edge is secured to the open end of a cup shaped shell B^2 forming the upper half of said filtering vessel. The hub of the spider is seated on a shoulder formed on the central hollow

post A^5 and secured in position by a tube F the lower end of which is internally threaded to engage the threaded upper end of the post A^5 which projects above the upper end of the hub b' of the spider B'. This tube F is closed at its upper end and provided at its sides with longitudinal slots *f*, which are covered by wire cloth *f'* of fine mesh, preferably applied in the form of a cylinder surrounding the upper part of the tube. The closed upper end of tube F is grooved transversely to admit of said tube being screwed upon or unscrewed from the post A^5 by means of a screw driver inserted through an opening b^2 in the upper part of the upper shell B^2 of the filtering vessel B. The upper end of this shell B^2 is preferably flattened at the top, and surrounding the opening b^2 therein, is an annular flange b^3, threaded interiorly to receive a screw cap B^3 by means of which said opening b^2 is closed.

The spider B' is composed of a hub b' and ribs b^4 b^4 projecting radially therefrom, the outer edges of said ribs being curved in an arc, corresponding with the curvature of the outer case A, and provided with shoulders b^5 b^5 upon which rests the edge of the upper shell B^2. These ribs b^4 of the spider, serve to hold distended the shell *b* of wire cloth and support it against the pressure of water contained in the space or passage C surrounding it.

The plug E is ground to fit tightly within the tapered plug chamber of the boss A^4 and is provided with a through passage *e* to connect the hollow post A^5 with the discharge nozzle *a*, and with passages *e'* adapted for connecting the openings or passages *a'* of the case A with said nozzle *a*. The passages *e'* *e'* are arranged out of line with the opening *e*, so that when the opening *e* is opposite the passage of the tubular post, the other openings *e'* *e'* will be turned away from the passages *a'* *a'*. I prefer to use the hollow form of plug here shown, and to make the passages *e* and *e'* *e'* in the form of openings in the sides of the plug leading to the hollow interior thereof, a single opening or slot e^2 being provided in the plug adjacent to the exit passage *a*, said opening being of such length circumferentially of the plug, as to remain opposite the said passage *a*, when either the opening *e* or the openings *e'* *e'* are opposite the passages in the case. This particular form of the valve plug is not, however, essential and any other form thereof, adapted for producing the result stated, may be used.

The smaller end of the plug E is provided with a squared seat for the reception of a washer E', and a threaded stud projects centrally from said squared seat for the attachment of a nut E^2 by which the plug is held securely in its chamber.

A pin a^4 projects from the end of the boss A^4 adjacent to the plug E, and engages a segmental groove cut in the inner face of washer E, thus affording a stop to arrest the movement of the plug E, when the passage *e* thereof is opposite the passage in post A^5, and at its opposite limit of movement when the passages *e'* are opposite the passages a^1 in the case A.

For operation the filtering vessel B is filled with a suitable filtering material, such as sand and charcoal, and the attachment is secured to a faucet by the proper manipulation of the split sleeve D. Whatever may be the position of the valve plug E, that is to say, at either limit of its movement there will be free passage therethrough, as either the opening *e* or *e'* will be opposite one of the passages in the case A. Therefore if the faucet is turned to permit a flow of water, said water will flow, when the valve plug E is in the position shown in Fig. 1, through the chamber C surrounding the filtering vessel, and pass from the nozzle *a* unfiltered.

When the plug is at the opposite limit of movement, the passages *a'* are closed by the plug E, and water will pass from chamber C through the shell *b* of wire cloth and through the filtering material in vessel B, and outward through the nozzle *a* by way of the tube F and the hollow post A^5. This arrangement provides for the automatic flushing or cleansing of the outer surface of the filtering vessel B, as the attrition of water flowing past the said outer surface of the vessel on its passage through the chamber C, to the outlet passages *a'* of said chamber, will remove a greater part of the sediment deposited on said vessel during previous filtrations.

The modified form of coupling sleeve D, shown in Fig. 3, is designed for attachment to a faucet having an external screw thread on its discharge end, said sleeve being for this purpose, a complete cylinder internally threaded at its upper end to engage the threads of the faucet. The discharge end of the faucet in this instance, is not inserted within the rubber packing *d*, but bears upon the upper end of said packing to form a tight joint.

In the form of coupling shown in Fig. 8, the inner walls of the boss A^3 are parallel and threaded for direct engagement with the threaded end of a faucet, a packing ring d^2, of proper form, being arranged within the boss, at its lower end, to insure a tight joint. The sleeve D, is in this instance, provided exteriorly with a thread to fit the internal threads of the boss A^3, the interior of said sleeve being of a diameter to receive the discharge end of a plain faucet, as shown. The screw D is provided with a set screw d^4, to lock it securely in position upon the end H, of a faucet.

An important advantage is gained by the construction described, by which the lower part of the spherical inner case or vessel is made of pervious material for the reason that the water is thereby caused to pass upwardly through the filtering material, and sediment is accumulated on the under sur-

face of the pervious wall of vessel, adjacent to the outlet passages, so that said sediment will tend to free itself by gravity, from the outer surface of pervious wall, and the removal thereof, by the downward flow of water, is greatly facilitated, though it will be understood that I do not confine myself to this specific construction as it will be apparent that the advantages of other features described are not dependent on this particular construction of the filter proper, B, but may be advantageously employed with any globular filter which delivers from its interior and is surrounded by a space or passage permitting the flow of water over its exterior.

What I claim is—

1. A filtering attachment for faucets, comprising an outer case having an inlet and a discharge nozzle, and an inner case or vessel, said outer case having an outlet passage communicating with the space between the inner and outer casing and with the said nozzle, and provided with a central tubular post also communicating with said nozzle and forming an outlet passage for the inner case or vessel, said inner case or vessel consisting of a spider secured to the said tubular post, a pervious shell supported on the ribs of the spider and forming the lower part of said inner case, and an upper impervious shell united at its lower edges with the pervious shell and means for simultaneously opening one of said outlets or discharge passages and closing the other, substantially as described.

2. A filtering attachment for faucets comprising an outer case having an inlet and a discharge nozzle, and an inner filtering case or vessel inclosed within the same, said outer case having a passage leading from the space between the inner and outer case to the discharge nozzle, and having a tubular post also communicating with said discharge nozzle and forming an outlet passage for the inner filtering vessel, said inner vessel consisting of a spider secured upon the tubular post, a pervious shell supported upon the ribs of the spider, and an impervious shell united at its edges to the pervious shell and provided with a central opening closed by a removable cap, and a tube surrounding the upper end of the tubular post within the inner vessel and provided with slots or openings covered by pervious material, and means for simultaneously opening one of the said outlet or discharge passages and closing the other, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

ORLANDO P. BRIGGS.

Witnesses:
C. CLARENCE POOLE,
GEORGE W. HIGGINS, Jr.