No. 795,066. PATENTED JULY 18, 1905.

L. E. ROGERS.

FILTER AND CLEANER.

APPLICATION FILED MAR. 26, 1904.

2 SHEETS—SHEET 1.

FIG. I.

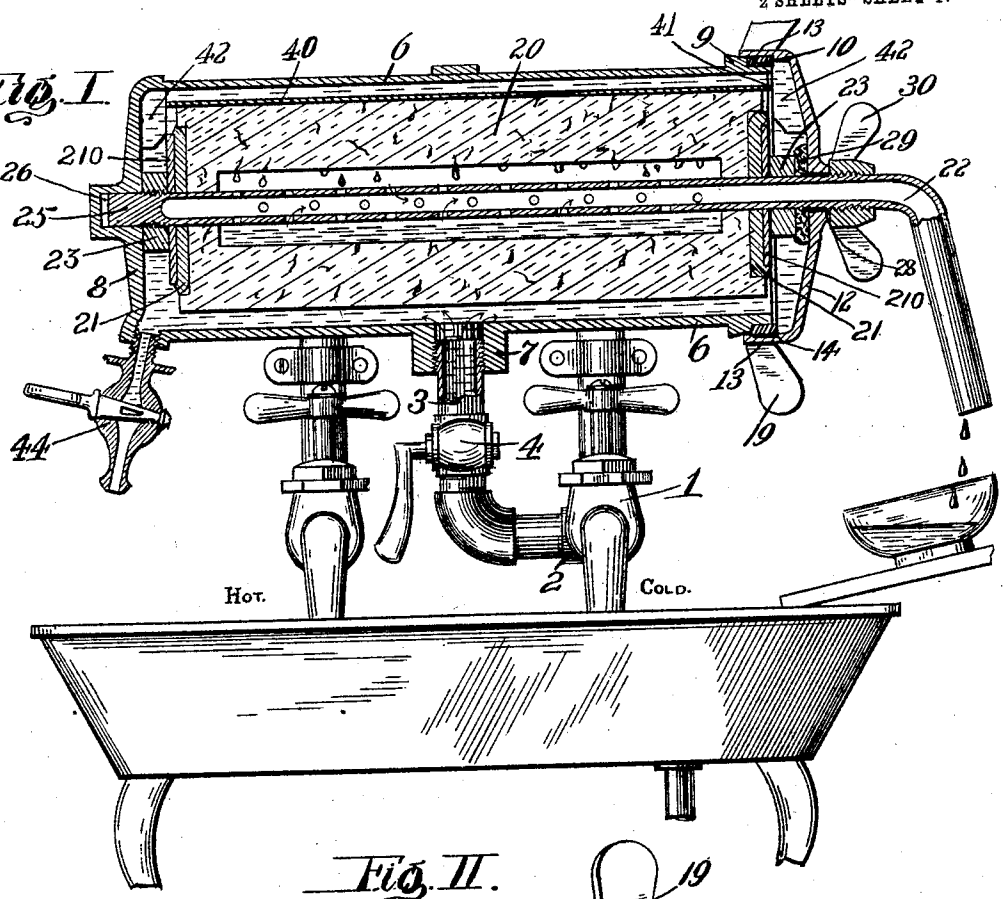
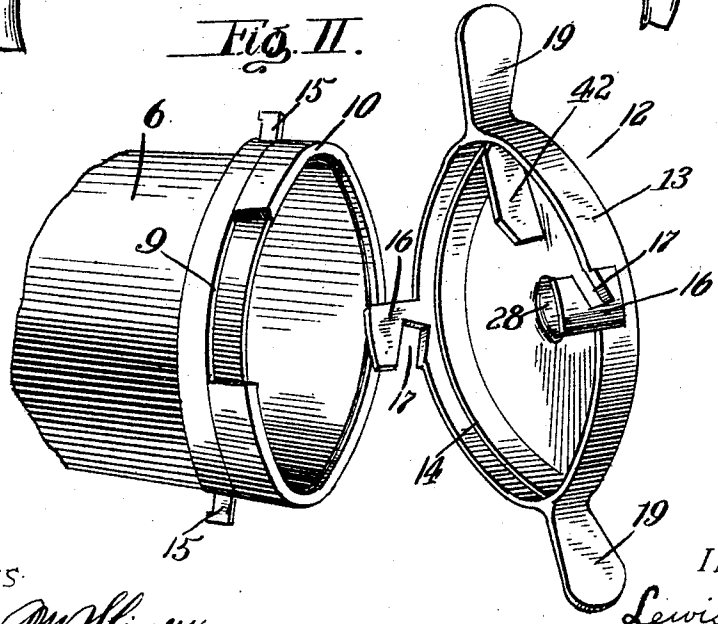


FIG. II.



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2 SHEETS—SHEET 2.

Fig. III.

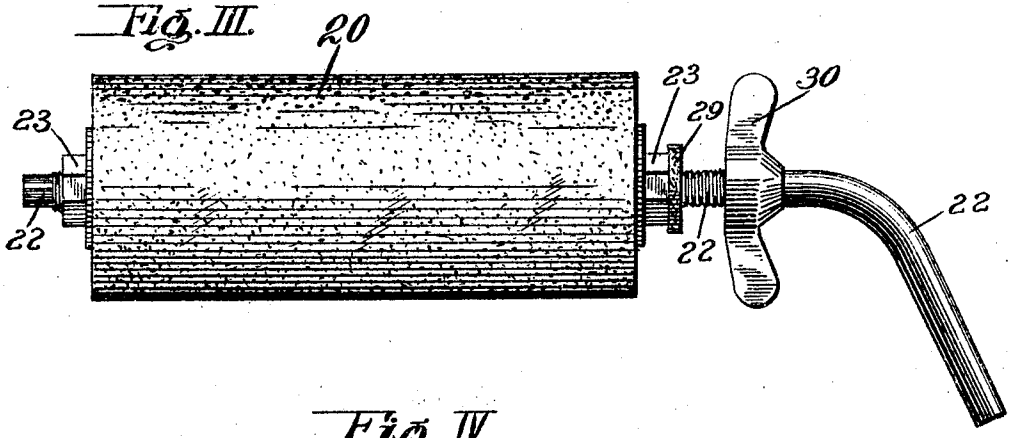


Fig. IV.

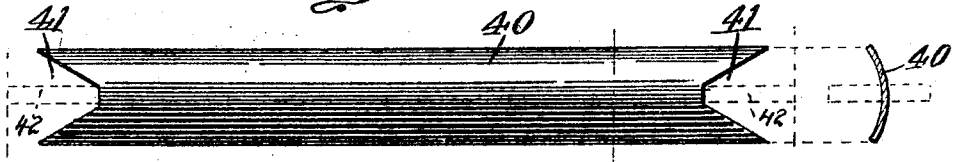


Fig. V.

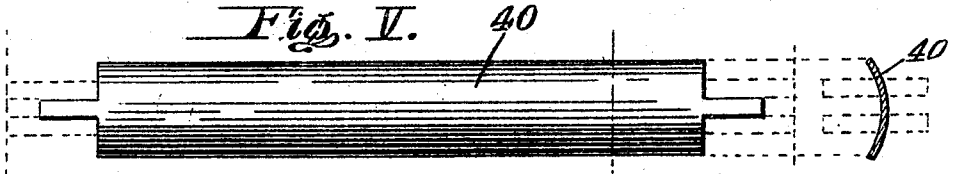
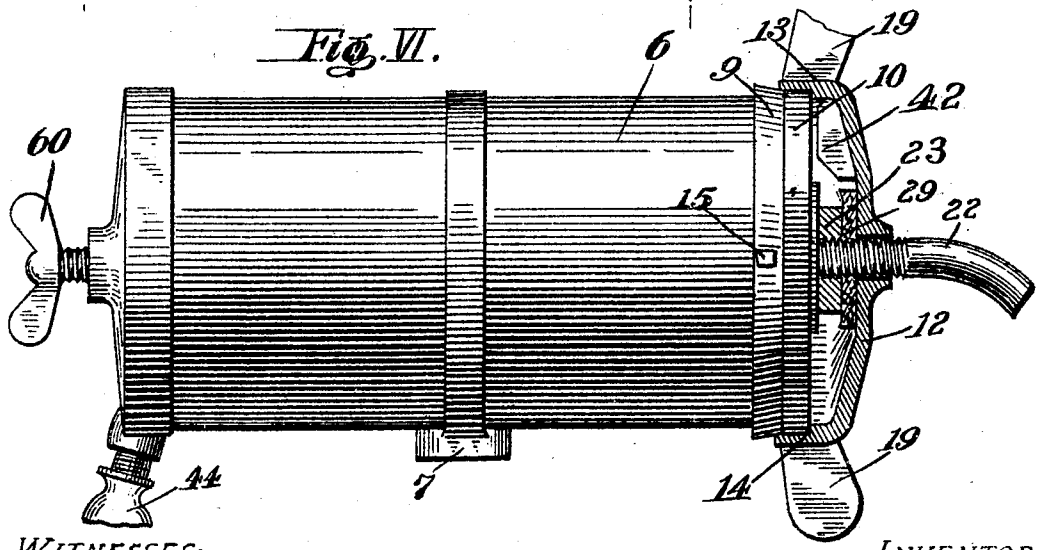


Fig. VI.



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No. 795,066. Patented July 18, 1905.

UNITED STATES PATENT OFFICE.

LEWIS E. ROGERS, OF WASHINGTON, DISTRICT OF COLUMBIA.

FILTER AND CLEANER.

SPECIFICATION forming part of Letters Patent No. 795,066, dated July 18, 1905.

Application filed March 26, 1904. Serial No. 200,199.

To all whom it may concern:

Be it known that I, LEWIS E. ROGERS, a citizen of the United States, and a resident of 128 C street northeast, Washington, District of Columbia, have invented certain new and useful Improvements in Filters and Cleaners; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to filters, and more especially to the means for cleaning the same; and the invention consists both in the details of construction of the filter the better adapting it to the cleaner and in the arrangement of parts whereby the stone and cleaner are readily accessible, all as more fully set forth hereinafter and as shown in the drawings, wherein—

Figure I is a central longitudinal section of this filter in its preferred form, showing it in place on the faucet. Fig. II is a perspective detail showing the outer end of the filter-shell with a portion of its gasket broken away and the cap slightly removed, this view omitting the filter-stone. Fig. III is a side view of the filter-stone and parts carried thereby, showing the wing-nut on the outlet-pipe. Fig. IV is a plan and a section of the cleaner-blade, showing in dotted lines the webs which engage the notches in its ends. Fig. V is a similar view of a modified form of blade, showing double webs which may be employed within the barrel and the closing-cap. Fig. VI is a side elevation of the filter, excepting that its closing-cap is in section, this view showing a modification of the construction illustrated in Fig. I.

The numeral 1 designates the ordinary spigot. Usually inserted into the pipe behind this spigot is a T-joint 2, from which rises a pipe 3, that may be provided with a valve 4, and on this pipe 3 the present filter is shown as mounted. However, any suitable source of supply will answer, this illustration merely showing the ordinary use of my improved filter in the household.

6 is the cylindrical barrel or shell of the filter, provided at about the bottom of its center with a boss 7, constituting the inlet from said pipe 3. The inner end 8 of this shell is closed and its outer end shouldered, as at 9, for the reception of the rubber gasket 10.

12 is the cap for closing the front end of the shell. Its flange 13 flares internally, as shown at 14, so that when pressed home upon the gasket the latter will be compressed within its shoulder. Any suitable means may be employed for detachably connecting the cap with the shell; but in the present instance I have shown the latter as provided with radial lugs 15, and the cap has ears 16, having slightly oblique notches 17, which take over these lugs, as will be understood. If this fastening is used, the cap may well have wings 19, by which it can be turned to connect it with the shell.

20 is the filtering-stone now commonly employed in devices of this character. Into a recess in each end is preferably set a rubber washer 21, with a metal washer 210 outside of it. 22 is the outlet-tube, which extends through all these washers and the bore of the stone and is threaded at proper points, and 23 designates nuts on said threads, which when turned home against the metal washers clamp the tube in place. The inner end of the tube is made solid, as seen at 25, and sits within a step or socket 26 in the closed inner end of the shell. The outer end of the tube projects through a hole 28 in the center of the cap and preferably turns downward to form the outlet. In order to prevent leakage around this hole, a soft washer 29 is forced onto the threads just outside the outer nut, so as to rest against the inner face of the cap, and after the parts are assembled a winged nut 30 is screwed onto these threads outside the cap and draws the soft washer tight against its inner side. It is obvious to those skilled in this art that the inflowing water passes inward through the stone, enters perforations in the pipe extending therethrough, and flows out the latter, and in time the exterior of the stone will become coated with sediment.

The cleaning mechanism employed in connection with this filter is as follows: 40 is a blade having notches 41 in its ends, and 42 designates webs cast into the shell and the cap at their upper sides. It is clear, as shown in Fig. V, that the ends of the blade could ex-

tend between two webs at these points so long as the blade is free to rise and fall. Its position causes it to rest normally by the force of gravity alone on the top of the stone even though the latter may be worn from long use. At a suitable point in the bottom of the shell is placed an escape-cock 44. In order to clean this filter, the escape-cock is opened and the winged nut is loosened. The latter action relieves the clamping effect between the soft washer and the cap, and by grasping the outlet-pipe the entire stone and connections can be rotated within the shell, the closed inner end of the tube and its step and the point where the tube passes through the hole in the cap acting as journals. During such rotation the blade scrapes the exterior of the stone and the sediment passes out the escape-cock 44.

During the process of filtering it is advantageous that the sediment within the shell should not be disturbed by the accidental turning of the stone. Hence I have provided the wing-nut 30 for drawing the stone toward the cap at this time. It is obvious that in time the soft washer 29 will become worn, and in order to permit the replacement of this washer by disks of varying thickness the stone is made longitudinally adjustable on the pipe by means of nuts 23. In clamping the stone at different points on the pipe it is important that the former be protected from chipping. For this purpose rubber washers 21 are provided adjacent the ends of the stone, while metal washers 210 between the rubber washers and nuts 23 afford a smooth bearing-surface for the latter. The inflowing water finds its way into the socket 26 behind the closed end 25 of the central tube, and hence the inner end of the stone is subjected for its entire area to water-pressure, whereas the pressure on the other end of the stone is of an area which is smaller by the size of the tube. Doubtless this is the reason which causes the entire stone and tube to automatically move toward the cap under water-pressure, and such movement compresses the soft washer 29 around the outlet and against the cap and prevents leakage at that point whether the winged nut 30 is employed or not.

It will be noted that the entire internal construction of the filter is immediately accessible. Since the stone is secured to the cap and not to the casing, the stone and pipe may be removed with the cap, or if it is desired merely to take out the cleaner wing-nut 30 may be unscrewed and with the gradually-bent pipe shown in Figs. III and VI the nut and cap may be slipped over the extremity of the pipe. In this way the outer end of the blade becomes disengaged and the cleaner may be slipped out without removing the stone or even passing the cap farther than a little below the bend of the outlet-pipe.

Inasmuch as one of the webs 42 is on the interior of the cap while the other is in the casing, it is essential that some means of alining the two webs be provided. After the stone, pipe, and blade are placed in the casing the cap is slipped on over the outlet-pipe so that its web is opposite the end of the blade. The slight turn given to the cap to cause the notches 17 to take over lugs 15 does not materially affect the relative positions of blade and web, and when the cap is turned the length of the slots in the opposite direction the two webs are exactly in alinement and the outer one is moved within the notch in the outer end of the blade. It is obvious that with a screw-cap or similar construction such assemblage of parts would be impossible.

In Fig. VI is shown a modification wherein the winged nut is omitted and a thumb-screw 60 is inserted from the rear through the boss which forms the step-bearing. It is clear that whether I employ a nut at the front end to draw the washer toward the cap or a set-screw at the rear end to push the entire stone and the washer toward the cap the same result will be produced, leakage will be avoided, and when the screw member is loosened the stone can be rotated, as above described.

Other modifications in details and many additions could be made without departing from the principle of my invention.

What is claimed as new is—

1. In a filter, the combination with a casing having an aperture in one end and its other end closed and provided with a socket, an inlet to the casing, and an outlet-pipe journaled in said aperture and having a closed end journaled in said socket; of a filter-stone on the pipe, washers against its extremities, nuts outside the washers, and a soft washer between one of said nuts and that end of the casing through which the pipe projects, as and for the purpose set forth.

2. In a filter, the combination with a casing having one open end and one closed end provided with an axial socket, a cap for the open end provided with an axial aperture, an inlet to the casing, and an outlet-pipe having a closed end journaled loosely in said socket and a body journaled in said aperture; of a filter-stone on the pipe within the casing, nuts and washers for holding it in position, a soft washer between one nut and the cap near the outlet end of the pipe, and means exterior of the casing for mechanically compressing this washer.

3. In a filter, the combination with a casing having an open end and an inlet, and a cap closing said end and having an aperture; of an outlet-pipe passing through said aperture and standing within the casing, a stone upon the pipe within the casing, a web upon the interior of the casing, an alined web on the interior of the cap, a cleansing-blade whose extremities loosely engage said webs so that the blade rests on the stone, and means for permitting the removal of the cap over the

extremity of the pipe, whereby the blade may be removed through the open end of the casing.

4. In a filter, the combination with a casing having an open end, a cap adapted to close said end, a filter-stone within the casing, a cleaning-blade resting loosely upon the stone, and an inlet and an outlet; of a web upon the interior of the casing, a second web upon the interior of the cap, the ends of the blade being adapted loosely to engage said webs, and means for alining said webs when the cap is in place, comprising radial lugs on the exterior of the casing, and ears on the cap having oblique notches adapted to engage said lugs.

5. In a filter-cleaner, the combination with a cylindrical casing standing in a substantially horizontal position and having an inlet, an escape-cock, a cylindrical filter-stone journaled axially in the casing, an axial outlet-pipe, and means for permitting the rotation of the stone; of upright webs above the stone, and carried by the ends of the casing, and a cleaning-blade of curved cross-section provided with notches in its extremities loosely engaging said webs whereby the blade rests by gravity upon the stone.

6. In a filter, the combination with a casing having an aperture in one end and its other end closed and provided with a socket, an inlet to the casing, and an outlet-pipe journaled in said aperture and having a closed end journaled in said socket; of a filter-stone on the pipe, means for cleaning said filter-stone, washers against its extremities, nuts outside the washers, and a soft washer between one of said nuts and that end of the casing through which the pipe projects.

7. In a filter, the combination with a casing having an aperture in one end and its other end closed, an inlet for said casing, an outlet-pipe journaled in said aperture and having a closed end fitting the closed end of the casing, a filter-stone mounted upon said outlet-pipe, a cleaner fitting snugly upon a portion of the surface of the filter-stone, and means engaging both ends of said cleaner to secure it in proper relation to the filter-stone and to act as guides for said cleaner.

In testimony whereof I have hereunto subscribed my signature this the 23d day of March, A. D. 1904.

LEWIS E. ROGERS.

Witnesses:
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J. F. BRANDENBURG.