

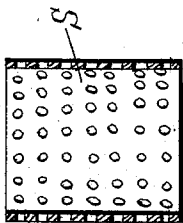
(No Model.)

J. J. CURRAN.
WATER FILTER.

No. 406,126.

Patented July 2, 1889.

Fig. 1.



Figs. 5.

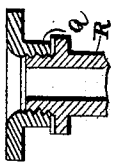


Fig. 6.

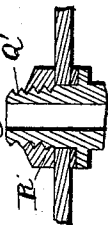


Fig. 4

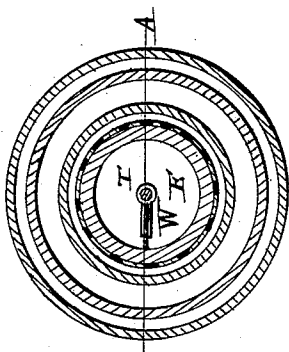


Fig. 3.

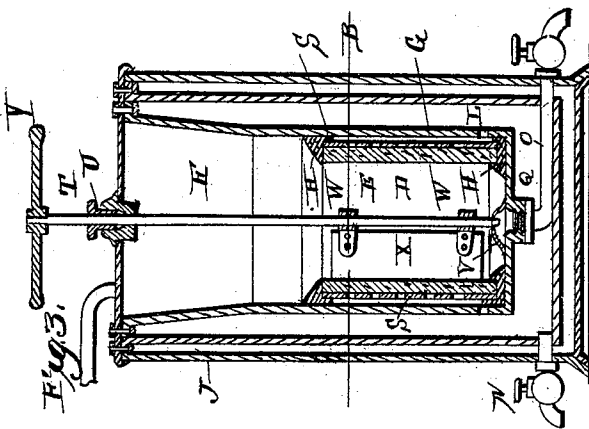


Fig. 2

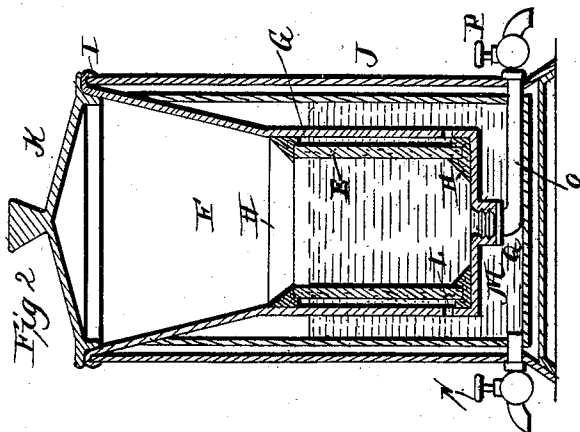
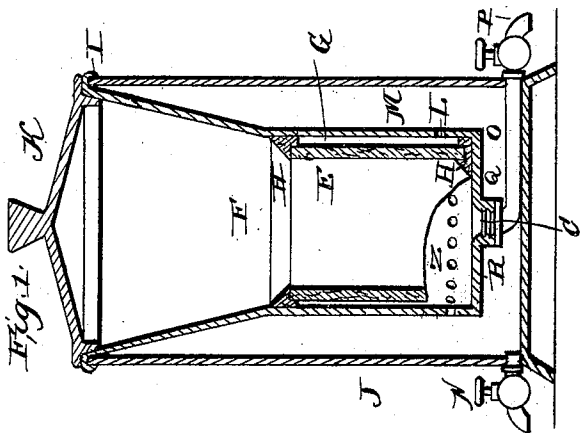


Fig. 1.



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UNITED STATES PATENT OFFICE.

JOHN J. CURRAN, OF TOLEDO, OHIO.

WATER-FILTER.

SPECIFICATION forming part of Letters Patent No. 406,126, dated July 2, 1889.

Application filed January 19, 1889. Serial No. 296,863. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. CURRAN, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Water-Filters; 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.

My invention relates to improvements in water-filters of the class which employ vitrified porous material for filtering, constructed in the form of a hollow shaft having a circular or a polygonal cross-section; and the objects of my improvements are, first, to provide a mechanism which shall be adapted to support such a filter within a pendent case, said case being adapted to be opened at its upper extremity for cleansing and repairing purposes, and the said pendent case being supported within another case, the first of said cases being the receiving-receptacle for the water to be filtered and the second of said cases being the storage-reservoir for said water after it shall have been filtered; second, to provide between the said porous filter and its retaining pendent case an open water-space connecting with perforations through the sides of the said case for the better delivery of the filtered water into the storage-reservoir; third, to construct the sides of the said receiving-receptacle in a flaring form, the better and more economically to connect it with and support it from the interior of the upper extremity of the said storage-reservoir; fourth, to removably and adjustably connect the said pendent receiving-receptacle with a cleansing and refuse-removing pipe located at or near the lower extremity of said pendent receiving-receptacle; fifth, to adapt the said constructed mechanism to be used as a "pressure-filter," so called, first, by providing suitable means for closing its upper extremity or the upper extremity of the said pendent receptacle and the said storage-reservoir against water-leakage under hydraulic pressure; second, by providing the interior of the said porous filter with a rotary wiping-arm adapted to be operated from the exterior of the said storage-reservoir; third, by surrounding, in close proximity thereto, the said porous fil-

ter with a protecting-jacket as a guard against breakage by hydraulic pressure from within. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of my invention in its simplest form. Fig. 2 is a vertical section of the same mechanism shown in Fig. 1, except that the storage-reservoir in this case is made double, and the apparatus is thereby adapted to act both as a filter of and as a cooler of water. Fig. 3 is a vertical section of the entire apparatus when constructed as a pressure-filter, and having the storage-reservoir constructed with double walls for the purpose of more effectually excluding exterior heat from the stored water within the said reservoir. This view is taken on line A, Fig. 4. Fig. 4 is a horizontal cross-section of the apparatus shown in Fig. 3, taken on line B, Fig. 3. Fig. 5 is a vertical section on line C, Fig. 1, of the screw-connection of the receiving-receptacle with its refuse-removing pipe. Fig. 6 is a vertical section of a modified form of the screw-connection shown in Fig. 5. Fig. 7 is a vertical section of the protecting-jacket shown at S in Fig. 3.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, E is a porous filter, preferably made in the form of a hollow cylinder, as shown; but it is obvious that any hollow shaft having a polygonal form of cross-section may be used for this purpose.

At F is a case which is preferably constructed with a flaring upper extremity, though it is obvious that the said flaring sides might extend the entire vertical length of the case without changing the nature of my invention. This case constitutes a water-receiver and carries the porous filter E, between which and the said receiver F is an open space G, the top and bottom extremity of which space is closed by means of layers of cement H, or of other suitable material, such as paraffine, wax, &c.

At I in Figs. 1 and 2, the receiver F is removably attached to the reservoir-case J in any suitable manner, but preferably by means of a flange attached to the top of the said receiver F, and extending over the top of the said reservoir-case, as shown in said figures.

A removable cover K is adapted to close the open top of the receiving-case F, as shown in Figs. 1 and 2. In the pressure-filter, however, the cover K is secured to the parts F and J in such a manner as to form an airtight and a water-tight connection between the said parts. The receiver F is perforated at L to form passage-ways for the filtered water to enter the reservoir M, where it is stored, and where it is drawn from through the faucet N.

O is a pipe connecting the lower extremity of the receiver F with the open atmosphere through the outlet P. This outlet-pipe P is secured to the reservoir J and to the connecting screw-coupling Q. This screw-coupling Q is illustrated in an enlarged form at Q in Fig. 5. The part R, having a nut therein, which is adapted to fit the part Q, may be a separate piece of metal, as shown in said Fig. 5, or it may be formed as an integral part of the receiver F, as shown in Figs. 1 and 2. The object of the screw Q and nut R is to secure the parts F and J detachably together, and to remove or to replace the said receiver F from the case J it is obvious that it is only necessary to give the said receiver a few turns in the proper direction.

In Fig. 3, at S, is shown a perforated jacket, which may be made of any suitable material, preferably of metal. This jacket closely fits the porous filter on its outer surface, and is adapted to protect it against the action of the water-pressure from within the said porous filter, and the water may freely pass through the perforations in said jacket from the said porous filter to the space G.

At T is a shaft journaled in a packing-box at U, and resting upon a bridge-stop at V. To this shaft, at W, are attached radial arms connecting with a wiping-bar X, which bar X, by virtue of its extending the entire vertical height of the said porous filter and contacting with the inner surface thereof, is adapted, by means of the wheel Y, to be turned about the axis of the said shaft and remove accumulations of matter from the inner surface of said filter E, which, by opening the outlet P, may be readily removed.

The operation of this water-filter is as follows: Water is introduced into the receiver F, preferably by removing the cover or through

the cover K, and, passing downward through the porous filter E, the space G, and the perforations L, flows into the storage-reservoir M, where it is drawn off through the outlet N. In lieu of the nut-and-screw connections QR, a nut-and-screw connection Q' R' may be employed; and it is obvious that the jacket S may be replaced by one constructed from common wire-cloth without changing the nature of my invention, and that the shaft T and wiping-bar X may be employed without the packing-box U in such a mechanism as that shown in Figs. 1 and 2.

What I claim, and desire to secure by Letters Patent, is—

1. In a water-filter, an inner receptacle having perforations near its lower extremity and carrying within its walls an outwardly-discharging porous filter, in combination with an outer case, the said outer case and the said inner receptacle being removably connected at their upper extremities and the said inner receptacle being adapted to be screwed into position by means of a central screw and nut at its lower extremity and connecting with the said outer case, substantially as shown and described.

2. In a water-filter, an inner water-receptacle having perforations near its lower extremity and carrying within its walls an outwardly-discharging porous filter, between which and the said water-receptacle is an open space sealed above and below against the passage of water, except in a filtered state, in combination with an outer storage-reservoir, substantially as shown and described.

3. The inner water-receptacle F, having perforations near its lower end, the porous filter E, and the perforated jacket surrounding and tightly fitting said filter, said jacket and its contained filter being located within said receptacle F, with the annular space G between them, in combination with an outer casing J, surrounding said inner receptacle and forming a reservoir M, substantially as described.

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

JOHN J. CURRAN.

Witnesses:

ELISHA B. SOUTHARD,
SAMUEL G. SOUTHARD.