

No. 740,366.

PATENTED SEPT. 29, 1903.

E. M. KNIGHT.
FILTER.

APPLICATION FILED MAR. 4, 1903.

NO MODEL.

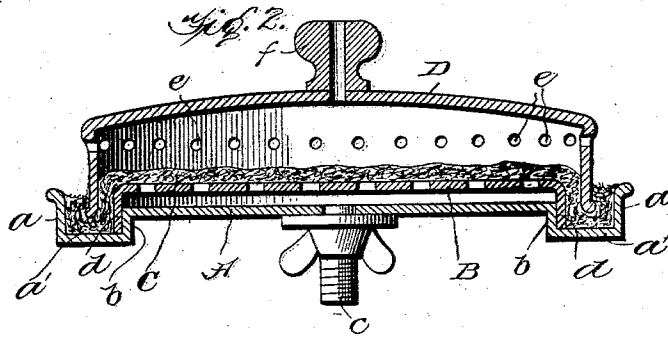
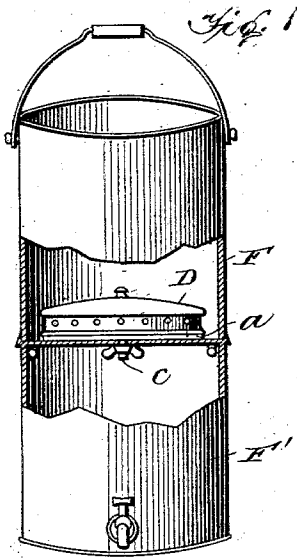


Fig. 3.

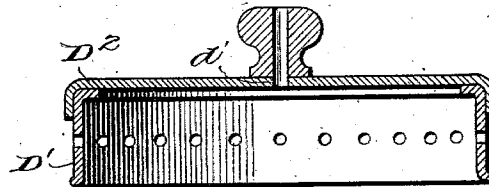
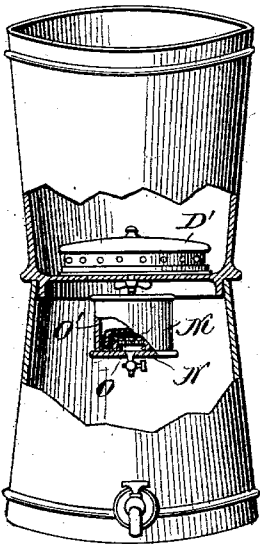
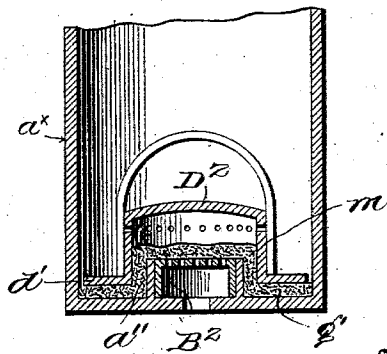


Fig. 5.



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UNITED STATES PATENT OFFICE.

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FILTER.

SPECIFICATION forming part of Letters Patent No. 740,366, dated September 29, 1903.

Application filed March 4, 1903. Serial No. 146,122. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. KNIGHT, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Filters, of which the following is a specification.

This invention relates to filters generally, and particularly to that class designed for filtering water for domestic purposes and employing a filter-bed composed of fibers of asbestos compressed to form a pad or diaphragm, which is the medium for removing the sedimentary or suspended matter from the water; and the invention consists of the parts and the constructions and combinations of parts, which I will hereinafter describe and claim.

Referring to the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts throughout the several views, Figure 1 represents a side elevation of a filter embodying my invention and showing one method of using the same. Fig. 2 is an enlarged vertical sectional view of the filter. Fig. 3 illustrates a modified form of filter, showing parts broken away. Figs. 4 and 5 represent other modifications.

In carrying out my invention I prefer to form the filter so that it shall have the general shape of a relatively shallow disk, although I do not limit it to this specific shape. The filter consists of four essential parts—namely, a base-plate A, a foraminous cap B, fitting said base, a fibrous pad or diaphragm C, fixed to or over the cap, and an exterior cap D, having openings to admit the water to the pad or diaphragm. The base-plate is preferably a circular piece of metal and may be spun, stamped, or otherwise shaped to form a circumferential groove bounded on one side by a circumscribing flange *a* and on the other side by a wall *b*. The bottom of the plate is also pierced to receive an outlet-pipe, to which may be attached a flexible tube for drawing off filtered water into a vessel or tank. In Fig. 1 I illustrate the filter in connection with two superposed buckets F F', one of which (the upper) receives the water to be filtered, while the other (the lower) serves as a receiver for filtered water. In

the bottom of the upper bucket is made a hole to receive the outlet-pipe *c* of the plate, which pipe in this instance is threaded and is engaged by a suitable nut and washer, whereby the filter is held in position. The buckets may be of any suitable character, and one may be inverted and telescoped into the other when not in use to facilitate packing. Over the wall *b* of the groove or channel in the plate A is closely fitted the annular flange *d* of the foraminous cap, and over this cap is placed a pad or diaphragm of asbestos or other material, which is preferably formed between dies and has a soft flexible edge and a compressed central portion, as described more in detail in a companion application, Serial No. 146,123, filed by me of even date herewith. The pad or diaphragm C has a diameter in excess of that of the foraminous cap B, so that its edges project sufficiently to allow them to be pressed into and substantially fill the groove formed in the inner face of the base-plate.

When the pad or diaphragm is placed upon the foraminous cap B, it is "set" and secured in position by means of an exterior flanged cap D, whose diameter is slightly in excess of that of the cap B, whereby upon being placed in position upon the latter cap its flange forces the soft edge of the pad or diaphragm inward into the groove *a'*, circumferentially and tightly compressing the edge of the pad or diaphragm and making a joint that is proof against the leakage of unfiltered water. The height of the cap D is sufficiently greater than that of the inner cap B that a chamber is formed in the upper portion above the pad, into which the unfiltered water is admitted through holes *e*, formed in the annular flange of the exterior cap. This cap D is also provided with a vent for air in the chamber, which vent in Fig. 2 is shown as a hole made through a handle *f*, secured to the cap D and facilitating the insertion and removal of the filter. In operation the filter is secured in position, say, as shown in Fig. 1, and the unfiltered water upon being poured into the upper vessel will pass through the perforations *e* to the inside of the outer cap or "setter" and thence through the fibrous pad or diaphragm, giving up its impurities and finally

passing out through the discharge-pipe in the bottom of the base-plate.

If desired, for the purpose of inspecting the pad or diaphragm without removing the exterior cap D therefrom I may form said cap of two parts, as shown in Fig. 4, one of said parts, D', constituting the circumferential clamping-ring for the pad and the other, D², forming a removable cover-plate, said ring portion having the perforations for the inlet of water and said cover-plate having an aperture or vent at *d'*.

If it is desired to further purify the water which passes through the filter-pad, there may be screwed upon the projecting threaded end of the outlet-pipe the nipple end of a vessel M, filled with charcoal or other granular filtering material having a base portion N, which is a substantial duplicate of the base-plate A and which includes two foraminous caps O O' and the interposed fibrous pad, as before described. In using the charcoal-filled attachment the filtered water is drawn through its final outlet into a pail, tank, or other vessel.

In Fig. 5 I illustrate a modified form of filter in which the flange *a* of the base-plate of Figs. 1 and 2 is carried upward and forms a wall *a*^x of a containing vessel, such as a bucket. In this construction the interior foraminous cap B² fits inside of the inner flange *a*^x, rising from the bottom of the vessel, and the pad or diaphragm *m* is placed upon this cap and is set and secured substantially as before described by means of the exterior cap or setter D², which in this instance has a wide lateral flange *d'* at the bottom, which presses the free edge of the pad down flat upon the bottom of the groove or channel *g'*. The setter or cap D² has the water-inlets and a handle, substantially as described for the before-mentioned cap.

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

1. In a filter the combination of an annularly-channeled base-plate having a filtered-water discharge; a foraminous cap-shaped member supported upon said base-plate; a pad or diaphragm supported upon said cap-shaped member and an outer cap-shaped member for "setting" the pad and circumfer-

entially clamping its edge portion, and having lateral inlets for unfiltered water.

2. A filter including a base having a groove bounded by inner and outer concentric walls; a foraminous cap having an inwardly-extending flange or band fitting one of said walls; a pad or diaphragm fitting over said cap; and an outer cap-shaped member fitting over the pad or diaphragm and circumferentially clamping the pad against the outer wall of the first-named cap, said outer cap-shaped member having lateral openings for the inlet of water.

3. A filter including a base member provided with an annularly-grooved inner surface; a foraminous cap-shaped member having a circumferential flange or band, to fit one of the walls of the groove in the base-plate; a pad or diaphragm fitting over the cap-shaped member and the flange or band thereof, and substantially filling said groove; and an exterior cap-shaped member having a band or flange to fit over the pad or diaphragm and circumferentially compress the same to form a tight joint; said last-named cap-shaped member having lateral inlets for unfiltered water, and said base having means for fixing the filter in position in the unfiltered-water vessel.

4. A filter including a grooved base and means for fixing it in position in a tank or vessel of water; an inner and outer cap-shaped member and an interposed cap-shaped fibrous pad said pad circumferentially clamped between the flanges of the cap-shaped members and one of said members having water-inlets and the other being foraminous to permit the free passage of filtered water; a supplemental vessel attached to the discharge of the filter and containing a granular material; and foraminous cap-shaped members and interposed fibrous pad disposed in the base of the supplemental vessel, said vessel having a discharge for filtered water.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD M. KNIGHT.

Witnesses:

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