(No Model.)

A. I. & D. HYMAN.

FILTER.

No. 531,190. Patented Dec. 18, 1894.

Fig. 1.

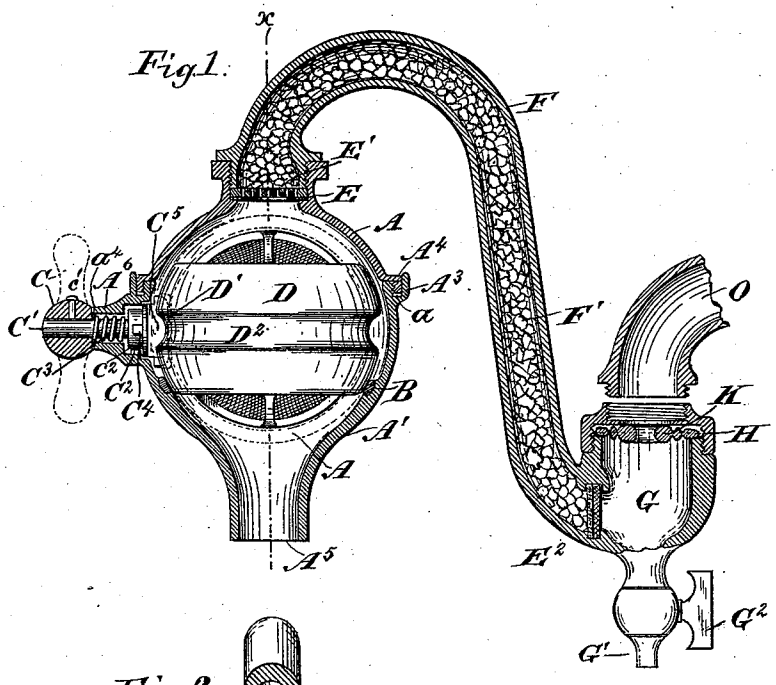


Fig. 2.

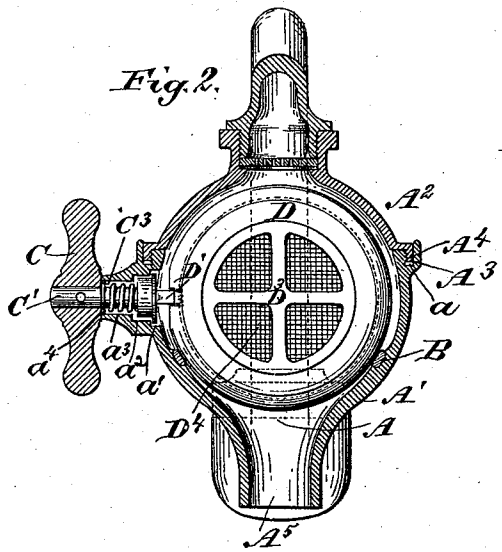


Fig. 3.

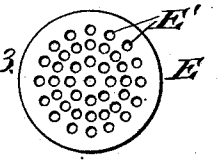
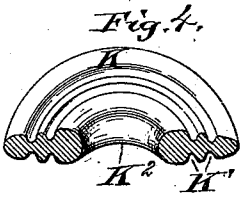


Fig. 4.



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FILTER.

SPECIFICATION forming part of Letters Patent No. 531,190, dated December 18, 1894.

Application filed April 25, 1894. Serial No. 508,917. (No model.)

To all whom it may concern:

Be it known that we, ALBERT I. HYMAN and DANIEL HYMAN, both citizens of the United States, residing at New York, county and State of New York, have invented a new and useful Improvement in Filters, of which the following is a full and clear description, enabling others skilled in the art to which it pertains to make the same.

Our invention relates to filters, and more particularly to such filters as are used to filter water. Its object is to secure a more perfect means of filtering water, by primarily devising a means whereby the coarser particles that may exist in fluid are arrested before reaching the purifying filter, and to devise a means whereby the filter may be adjusted to any inlet for the water. We effect this result by means of the device, and combination of parts, shown in the accompanying drawings, in which like letters refer to like parts in each.

Figure 1 is a sectional view of the filter, showing the rotating filter box in position to filter water passing through it. Fig. 2 is a cross section of the rotating filter box chamber, showing rotating filter in position to admit the flow of water passing around it through channel D. Fig. 3 is a face view of foraminated disk. Fig. 4 is a sectional view of perforated diaphragm showing manner of construction of the same.

In the drawings, A is a chamber preferably spherical in shape. This chamber is in two parts A′, and A^2. These are connected by forming a channel A^3 upon A′, the lower part, and a flange A^4 on the upper portion A^2. A thread is formed on the inner side of the channel, and on the flange. This thread is lettered *a*, in the drawings. The two parts A′ and A^2, are by means of this screw thread held together, and may be separated without trouble, by merely unscrewing the one from the other. An outlet to the chamber formed by A′ and A^2 is provided at the bottom A^5 and an inlet at the top.

Within the chamber A, on the lower portion is the seat B, for the rotating filter D. This seat is preferably made of Babbitt metal and extends entirely around the chamber A. It is intended as a close fitting seat for the rotating portion of the filter when in use, and is ground so as to conform as nearly as possible to the form of the edge of the filter D. On one side of the chamber A is an orifice for the lever C. This lever C is located in a projection forming an integral portion of the lower portion of the chamber A. At this point A^6, an annular chamber is formed, having three interior diameters, one a', another a^2, and an outer one a^3. These three annular chambers form one continuous passage for the lever C. This lever C, is the means by which the filter box D is rotated. It is removable. On the edge of the outer chamber a^3, a lip is formed a^4, against which a coiled spring C^3 lodges. This spring is strung on the shank C′ of the lever. One end of said spring rests against the lip a^4; the other against the back of a flange C^2, formed on the shank C′, and located in the chamber a^2. The flange C^2 has a projection C^4, upon it. This projection is adapted to come in contact with a like projection on the chamber c^2 not shown in the drawings, which prevents the lever making more than a half turn. To the flange C^2 is attached the key C^5, which operates in a slot D′, on the filter box D.

The rotating filter D, is located in the chamber A. It is not axled, but is rotated by means of the key C^5, which is held in a slot formed for that purpose D′, upon one side of the box. This key C^5, has upon its shank the coiled spring C^3. This spring causes the key to be pressed forward and into the key-way or slot D′.

When the filter box D is to be removed the upper portion of the chamber A is removed and the filter box pulled forcibly out. The key C^5 will then project into the chamber A. When the box D, is returned to the chamber A, the point of the key is placed in the slot D′, and a pressure exerted upon it. At the same time the box is forced down into the chamber A. This causes the spring to collapse, and when the box is seated in A the key holds it firmly in position, and at the same time allows of its free rotation. Any character of filter substance, such as gravel, or charcoal, may be used to fill this box. Its sides, where the water is passed through are preferably closed with an open, or spider frame

D^3, and the filter substance held in position with a screen D^4. Upon the perimeter of this filter box, is formed the channel D^2. This channel is very pronounced. The function of this channel is to admit of the water, which enters the chamber A, passing through it, when the filter box is in the position shown in Fig. 2, without passing through the filter box, as it would be obliged to do if the box was in the position shown in Fig. 1.

The upper portion of the chamber box A^2, is screw tapped to the goose neck pipe F. At the point of connection a foraminated disk E, is lodged. The foraminations E′, in this disk are small enough to prevent particles of filter substance, such as crushed quartz with which the pipe F may be filled from entering the chamber A. The close fit required in filters rotating in a box of this kind, have been in a great measure the cause of their not being of any practicable value, as the sand lodging between the outer wall of the filter, and inner wall of the chamber A, choked and plugged the passage, thus prevented the rotating of the filter. The disk E is for the purpose of preventing these particles from any source reaching the chamber A.

The goose neck branch pipe F, has two functions. Its major function, is to admit of the filter being placed or located, so that the level of the outlet A^5 will be about the same as the level of the inlet from the bib cock O. Its minor function, is to furnish a preliminary filter to the water passing through it, and into the chamber A. For this purpose this pipe is packed with a filter substance such as coarse gravel or the like F′, its entire length, the foraminations in disks E preventing this from entering the chamber A, at one end, and another disk F^2, or screen, or other suitable means, such as filter cloth retaining it in position at the other end. The end of the pipe F, attached to the bib O, terminates at the part where it is adapted to connect with the bib O. In a chamber G, upon the side where the pipe F opens into this chamber, is placed a perforated disk screen, or any other suitable device for retaining the filtering substance F′, with which the pipe F is packed. On the bottom an outlet G′, controlled by a plug G^2 is located. The inlet or upper portion of this chamber, has a cap H upon it, so that it may be attached to a threaded bib cock. It has also, to be used when the bib is plain, a flexible diaphragm K. This diaphragm has a perforation K^2, centrally for the reception of a plain bib. It has also a series of concentric grooves formed upon it K′. The object of these grooves is to give greater expansion possibilities to the central and thicker portion of the diaghragm. The diaphragm is held in position by lodging it on the upper lip of the chamber G, and screwing the cap H down upon it.

The chamber G having an outlet at its bottom G′, controlled by a cock G^2 admits of the unobstructed flow of unfiltered water passing through it and out of the outlet when it is required, by opening said cock G^2.

The operation of this filter is as follows: The proper attachments having been made to the inlet pipe and the water turned on, it enters the chamber G. Should unfiltered water be required the flow is conducted through the outlet on the bottom of the chamber G, by turning the plug G^2 in the proper position. This outlet is also used to wash out of chamber G, such coarse products of filtering as may lodge in it. When filtered water is wanted the plug G^2 is closed, and the water is caused to flow through the pipe F and disk E into the filter chamber A. The filter substance in the pipe F arrests the coarser particles before the water reaches the chamber A. The partially filtered fluid now passes through the filter D, and is then thoroughly filtered. By turning the lever so that the filter D will be in position shown in Fig. 2 the water will pass freely around the rotating filter box through the channel D^2 formed on its side, and in this way a larger amount but less pure water, may be obtained than by permitting the flow to pass through the rotating filter D.

We claim—

In a filter adapted to be connected to a bib cock, consisting of a chamber having an inlet provided with a screw cap as a means of connection with a threaded bib, said cap holding in position on the inlet a flexible and centrally perforated diaphragm arranged to be used as a means of connecting said inlet to a plain bib cock, the said diaphragm being formed thicker at the point of perforation than at its perimeter and having formed on its superior superficies a series of concentric rings, said chamber having two outlets, one controlled by a cock, the other closed by a screen located upon one end of an outlet pipe containing filtering material, the other end of said pipe closed by a foraminated disk, in combination with chamber A and rotatable box D, operated by means of a lever and spring key, said box having filtering material inclosed therein, arranged to admit of fluid passing through it, said box provided on its outer surface with an annular groove adapted when the box is rotated to the proper position to allow fluid to flow from the chamber A through said groove and out through an opening provided for such purpose in the bottom of said chamber, as herein shown and described.

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Witnesses:
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