

(No Model.)

J. H. BRADY.
WATER FILTER.

No. 579,254.

Patented Mar. 23, 1897.

Fig. 1.

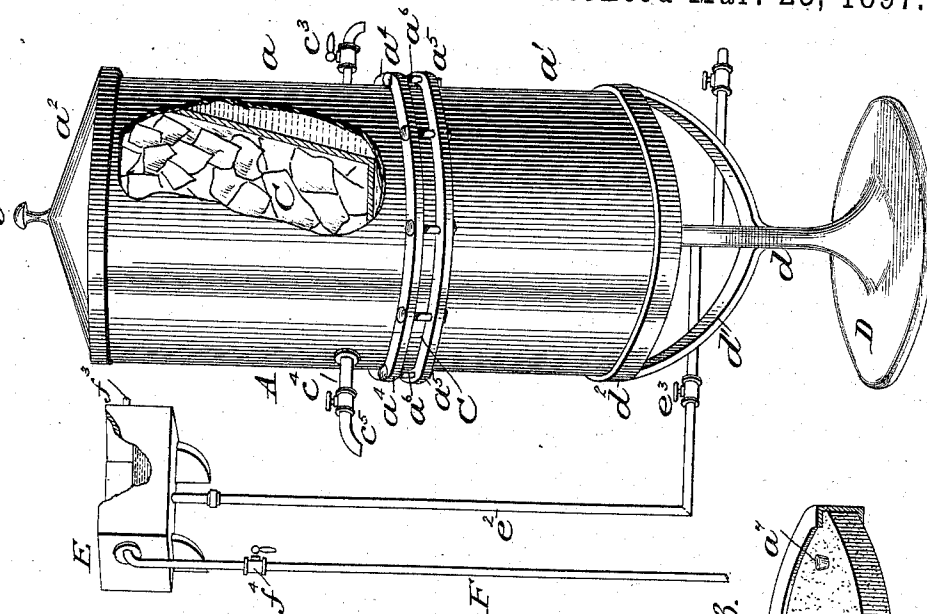


Fig. 2.

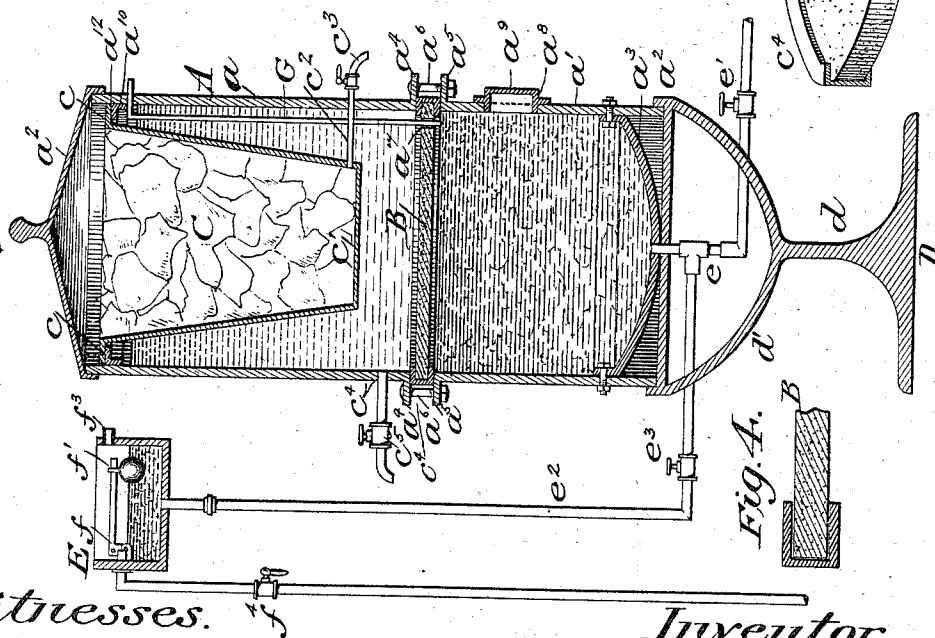


Fig. 3.

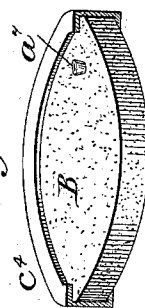


Fig. 4.



Witnesses.

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WATER-FILTER.

SPECIFICATION forming part of Letters Patent No. 579,254, dated March 23, 1897.

Application filed August 22, 1896. Serial No. 603,653. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. BRADY, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Water-Filters; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention is an improvement in water-filters; and it consists in the novel construction and combination of parts, such as will first be fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a front elevation of the improved separate water-filtering tank, a portion of the side being removed to show the cooler; also showing the water-service pipe, the elevated water-supply tank, in which is the float-valve, the supply-pipe to the filtering-tank, and the discharge-pipes to the filtering-tank and cooler. Fig. 2 is a vertical sectional view of the respective filtering and supply tanks as seen in Fig. 1. Fig. 3 is a view in perspective of my improved filtering diaphragm or disk, showing the gasket and the opening in the disk for the air-tube. Fig. 4 is a broken sectional view of a portion of the disk and gasket.

Similar letters of reference indicate corresponding parts in all the figures.

Referring to the drawings, A represents the filtering-tank, which consists of an upright cylindrical case which is separable in a horizontal line a short distance below a point equidistant from the upper and lower ends of the tank in two parts a and a' . In the upper end of the tank is fitted a removable cover a^2 . a^3 is the bottom of the tank, which is concave and bolted to the sides of the tank. On the lower edge and outer side portion of the upper part a of the body of the tank is an annular flange a^4 , which extends at right angles to said tank and is perforated vertically at suitable points in the direction of the flange. On the upper edge and outer side portion of the lower part of the body of the tank is an annular flange a^5 , which is perfo-

rated in the same manner as the flange a^4 and so that the perforations in the respective flanges register one with another.

Between the opposing lower and upper edges of the respective upper and lower parts of the tank is a circular water-filtering disk B, which extends across the tank and separates the tank into two separate upper and lower compartments and forms a diaphragm, the outer vertical edge of which disk is flush with the outer surface of the tank. Extending entirely around the outer edge of the disk or diaphragm B is a gasket c^4 , which gasket is extended over the upper and lower surfaces of the disk a short distance from the edge and between said surfaces of the disk and the upper and lower edges of the respective lower and upper parts of the tank A. The disk or diaphragm B is composed of clay, which is properly tempered, and mixed with said clay is powdered coal in the proportion of two parts of clay to one of coal. The mixture of clay and coal is then burned in an ordinary kiln and at a suitable temperature to liberate the gases of the coal, which pass through and carbonize the clay, leaving interstices in the terra-cotta after burning, the product being terra-carbon or carbonized terra-cotta, and as a filtering medium it prevents the passage of organic substances in the water and affords a chemically-pure filtered water. The product is cut into thin sheets for the diaphragm.

In the registering perforations in the flanges a^4 and a^5 is a bolt a^6 , which is provided with a head upon the upper end and screw-threaded and provided with a nut upon the lower end. In the other registering perforations are bolts which are the same as the bolt a^6 , and when the nuts are properly adjusted they draw the respective separable parts of the tank upon the gasket C^4 and disk B, hermetically sealing the said separable parts of the tank. In the disk B, near the inner side of the tank, is a perforation in which is fitted a rubber plug a^7 , which is perforated for the purpose hereinafter described.

In the lower part a' of the tank A is an opening adapted to receive the hand just below the disk B, around the edge of which, on the outside portion of the tank, is an internally-

threaded flange a^8 , in which flanged opening is inserted a cover which consists of a screw-threaded plug a^9 .

To the inner side of the upper part a of the filtering-tank A, a short distance below the upper edge of said part, is attached an annular flange a^{10} . Upon the upper side portion of said flange is a rubber gasket a^{12} . Within the upper part a of the tank A is the ice-receptacle C, which consists of a circular vessel considerably less in diameter than the tank A. The receptacle C is open at the top, and its sides are contracted and incline inwardly toward each other at the bottom. Upon the outer side and upper edge portion of the receptacle C is an annular flange c , which rests upon the gasket a^{12} on the flange a^{10} . The bottom c' of the receptacle C extends downwardly to a position a short distance above the disk B, and with said bottom portion is connected one end of a drain-pipe c^2 , the other end of which pipe extends horizontally through the side of the tank A, and in said end is a petcock c^3 .

In the side of tank A and on the part a , a short distance above the disk B, is connected a faucet c^4 . The tank A is mounted upon a base D, from which extends upwardly a standard d , and from the upper ends of said standard are outwardly and upwardly curved arms d' , to the upper ends of which is connected a circular ring d^2 , upon which ring the lower end of the tank A rests.

With the bottom a^3 of the tank is connected one end of a pipe e , the other end of which pipe extends downwardly nearly to the standard d , and is then bent at right angles between the arms d' d' and extended a suitable distance for drainage purposes. In the bent portion of the pipe e is a valve e' .

Near tank A, and supported in position at a height nearly that described by the upper end of tank A, is a separate supply-tank E, open at the top. To the bottom of tank E is connected one end of a feed-pipe e^2 , the other end of which pipe extends downwardly to a position below the level of the tank A and thence extended between the arms d' d' of the support and connected with the pipe e at a point a short distance below the bottom of tank A. In the pipe e^2 is a valve e^3 .

F is the water service or supply pipe, the upper end of which extends through the side of tank E at a point nearly equidistant between the upper and lower edges, the other end of the pipe extending to the street and connected with the usual water-supply pipe. In the tank E and in the end of pipe F is a valve f , with the handle of which is connected a float f' . In the side of tank E, a short distance from the top, is a discharge-opening f^3 . In the supply-pipe F is a valve f^4 .

In the perforated rubber stopper a^7 in the disk B is inserted one end of an air-escape pipe G, the other end of which pipe extends in an upward direction to a point a short distance below the flange a^{10} , supporting receiver

C, and is then bent at right angles and extended through the side of the tank A. In operation the receptacle C is filled with ice or any other refrigerant, the top a^2 being removed for the purpose, and the cold increased by the addition of salt, if preferred, the melted water being withdrawn through pipe c^2 upon opening the valve c^3 .

The unfiltered water from the supply-pipe F enters the supply-tank E and rises to a height below the outlet f^3 , when the supply is cut off automatically by the float-valve f' . The water then flows through pipe e^2 and enters the bottom of the tank A and rises in the part a' by the gravity of the water alone and forces its way through the diaphragm B, at which point it is filtered, and the filtered water rises in the tank A above the diaphragm to a position upon a level with the water in the tank E, and, circulating around the side of the cooler C, the degree of temperature of the water is reduced. When the filtered water is required for use, it is drawn through the faucet c^4 , and in proportion to the amount taken from the faucet the equivalent amount is admitted through the pipe e^2 to the bottom of the tank, and as the float-valve lowers in position in the tank E a like amount of unfiltered water flows into said tank from the service-pipe F. At the same time the air accumulating in the tank A beneath the diaphragm B passes through pipe G out of the tank, and the water meets no resistance in its inflow or in its passage through the filtering-disk.

When the water is being filtered, as above referred to, such matter in suspension as comes in contact with the under side portion of the diaphragm will fall into the bottom of tank A as it accumulates. For the purpose of cleaning the diaphragm the cover or plug a^9 is removed from the opening a^8 and the hand introduced within the tank. Should the diaphragm become injured or broken, the bolts a^6 are removed, and the separable parts of the tank are then taken apart and the diaphragm replaced. In this manner I obtain a perfectly-sealed connection between the tank and diaphragm and through which no air can pass, thereby obviating the destruction of the filter in removal for any cause. When it is desired to cleanse the tank from its deposits in the bottom of the tank, the valve e^3 is closed and the valve e' opened, which drains the water in the part a' of the tank, and with the water the matter follows.

In my improved filter the amount of supply of filtered water may be continuous by the obvious connection of the faucet with any water-tank and the admission of the water freely through the service-pipe, any excess of water in tank E escaping through the overflow-pipe f^3 .

Instead of employing a continuous rubber gasket on the outer edge and upper and lower surfaces of the diaphragm B, I propose to enamel the edge of the diaphragm and also

use the gasket on the upper and lower surfaces of the diaphragm only.

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

1. A water-filter comprising an upright tank having separate upper and lower compartments for the filtered and unfiltered water respectively a water-filtering diaphragm between said compartments a water-supply pipe connected with the lower compartment and a refrigerant in the upper compartment, an air-escape pipe connected with the lower compartment and extending through said diaphragm and the side of said tank in the upper compartment, a supply-tank, a valve in the supply-tank, a pipe connected with the said supply-tank and said lower compartment of said filtering-tank and a float connected with the valve in the supply-tank as and for the purpose described.

2. A water-filter comprising an upright tank, having separable, detachably-connected parts, and a chamber in each part of said tank, for the filtered and unfiltered water, a water-supply pipe connected with the lower chamber, and a refrigerant in the upper chamber, and a water-filtering diaphragm between said separable parts of said tank, an air-escape

pipe connected with the lower chamber and extending through said diaphragm and the side of said tank in the upper chamber, a water-supply tank, a pipe connected with said supply-tank and said lower chamber of said filtering-tank, and means for regulating the supply of said unfiltered water to said filtering-tank, as and for the purpose described.

3. A water-filter comprising an upright tank having separable parts, and a chamber in each part for the filtered and unfiltered water, and annular flanges on the upper and lower edge portions of the respective lower and upper parts of the said tank, a water-filtering diaphragm having a gasket between the opposing edges of the separable parts of said tank, and suitable securing-bolts connected with said flanges, said upper chamber having a receptacle and a refrigerant in said receptacle, an air-escape pipe in the lower chamber extending through said diaphragm and also through the side of the tank in the upper chamber, and a water-supply pipe connected with the said lower compartment, as and for the purpose described.

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Witnesses:

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