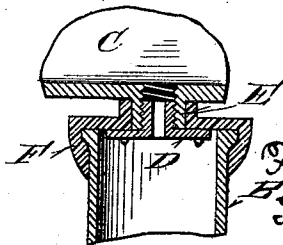


F. K. WAY.
NON-PRESSURE FILTER.

Patented June 13, 1893.



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NON-PRESSURE FILTER.

SPECIFICATION forming part of Letters Patent No. 499,268, dated June 13, 1893.

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To all whom it may concern:

Be it known that I, FRANK K. WAY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Non-Pressure Filters, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in filters, being especially adapted to the kind known as non pressure or gravity filters, by which term is meant those not operating under city water pressure, but depending upon the weight of the water adjacent to the filter to effect the percolation through the filtering medium.

The peculiarities and advantages of my apparatus will be hereinafter fully described and particularly pointed out and claimed.

In the accompanying drawings on which like reference letters indicate corresponding parts: Figure 1, represents a front view of my apparatus with portions broken away to show the construction; Fig. 2, an enlarged plan view of a section on the line *xx* of Fig. 1; Fig. 3, a perspective view of a collector partly in section; and Fig. 4, a detailed view of a portion of the collector and filtering tube attached thereto.

In many localities, where the water requires filtration, the pressure of the city water works is not obtainable, and an independent filtering apparatus must be employed. My device is especially adapted for such localities and circumstances, and consists essentially of a supply tank A of considerable height, as compared with its cross section, in order to afford a pressure due to the weight of the superposed water, which will cause the filtration of the same through a filtering device located at or near the bottom of said tank. This device is adapted to be increased or diminished according to the circumstances, and the amount of water required for use. It consists of a battery or series of filtering tubes B, of porous material, adapted to the amount of pressure, and the degree of filtration, desired. These tubes are secured to collectors, C, by means of a screw threaded perforated sus-

pending piece D, engaging with a matching teat E, on the collector, and having a flange extending out to support the elastic gasket F, of rubber or other material, which engages with the tube B, as shown in Fig. 4. Each collector consists of a tubular or chambered piece, provided with a number of the before mentioned teats E, at the under side thereof, interiorly screw-threaded to engage with the suspending cap-piece D, the neck of the gasket fitting tightly around the outside of the teat to perfect the joint. On opposite sides near the center of each collector, are located a screw-threaded cap-piece G, and a cone shaped head-piece H, the cone being of a size corresponding with the interior of the cap-piece G. A rotatable screw-threaded coupler I has a projecting rib adapted to engage with the collar formed by the cone-shaped head of the portion H, and provided with projecting knobs J, for rotation of the coupler. A handle, K, facilitates the location of the collectors within the supply tank, wherein they are supported by cross bars L.

Referring to Fig. 2, a series of such collectors are shown in their coupled positions, the coupler I, on each cone-shaped rib engaging with the matching cap-piece G, of the adjacent collector, whereby the said collectors are connected by communicating passages, substantially as shown. Thus the water percolating through the filtering tubes will enter one common connected or ramified chamber, whereby the water may be drawn therefrom by a conducting pipe M, coupled to one of said collectors, in a similar manner to which they are coupled together, as shown in Fig. 2.

A storage vessel N, of glass, metal, or other suitable material, preferably globular in form, and transparent as shown in Fig. 1, is attached to the bottom of the supply tank by a screw-threaded coupling having an interposed packing O to effect a tight joint. The filtered water from the collectors fills this storage vessel, which being transparent, presents a beautiful sparkling appearance when filled with filtered water exposed to the rays of light. A draw-off cock P delivers the water for use.

To allow of readily drawing off water from

the storage vessel, and to cause the complete filling of the same from the collectors, I provide a vent tube Q, extending up from the said storage vessel to a point above the level of the water in the supply tank, and preferably located within said tank as shown in the drawings. The initial filling of the storage vessel will drive out the air through the tube Q, and as the filtration proceeds, the water will rise within said tube to substantially the level of the water in the supply tank, as shown in Fig. 1. When a quantity of the water is delivered from said vessel, the air will enter the said tube to the storage vessel until again expelled by the filtered water filling the vessel as before. Thus the storage vessel tends to remain always full and the water out of contact with the air, whereby any microbes or contaminating dust is prevented from coming in contact with the filtered water in the vessel, the only air aperture being through the vent tube.

As before mentioned, the capacity of the filtering device may be increased as desired by coupling a larger number of collectors to constitute one connected chamber. Also the height of the tank may be regulated according to the amount of pressure and quantity of water desired. The bottom of the tank is supplied with a discharge cock R Fig. 1.

The supply tank being filled with water, the pressure, due to the distance of the water level above the filtering device, will cause the filtration through the filtering tubes into the ramified chamber, from which the water is conducted to the storage vessel and gradually fills the same. The air, meanwhile, is driven out through the vent pipe Q, and after the vessel is filled, the water rises within the vent pipe, till it reaches the water level in the tank, following the well known law of water in seeking its own level. The filtering action will then stop, but will be started again on drawing off a portion of the water from the storage vessel, thus lowering the water in the tube Q, and, if sufficient quantity is drawn off, admitting air within the vessel, which is driven out again under the operation of the filtering device. Thus the filtration starts and stops automatically.

I wish to lay broad claim as to the means for preventing the overflow of the reservoir,

by conducting the water back to the level of that in the supply tank.

Another point of special advantage is the adaptability of the tank with the storage vessel supported thereby, to be hung upon the wall or in any convenient place, by means of the lugs a, which may receive screws or nails for attachment. The whole device therefore, is self contained,—that is, it may be moved any where and placed in position, without being coupled to any connecting pipe,—the tank supplying the storage vessel which it also supports, and containing the filtering device delivering the filtered water to the storage vessel, being all combined and independent. The convenience of such construction and arrangement is apparent.

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

1. In a filtering apparatus, the combination with a supply tank, of a series of straight, horizontal chambered pieces arranged side by side and each provided with a series of perforated teats on their lower sides, porous filtering tubes supported by said teats to deliver water into said chambered pieces, detachable couplings between said chambered pieces to constitute a communicating chamber, a reservoir carried by said tank below said filtering device, a pipe connecting said reservoir with one of said chambered pieces, and means to effect the discharge of water from said reservoir.

2. In a filtering apparatus, the herein described collectors adapted to be combined in a series and form a battery, the same consisting of a chambered piece having perforated teats to connect with filtering tubes and receive filtered water therefrom, lateral coupling connections forming a communicating passage from one collector to another, the first of the series having an outlet opening and the last of the series adapted to deliver the water from said collectors, whereby any number of collectors may be combined according to the supply of filtered water desired.

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

FRANK K. WAY.

Witnesses:

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