(No Model.)

C. A. CRIQUI.

GERM PROOF WATER FILTER.

No. 511,757. Patented Jan. 2, 1894.

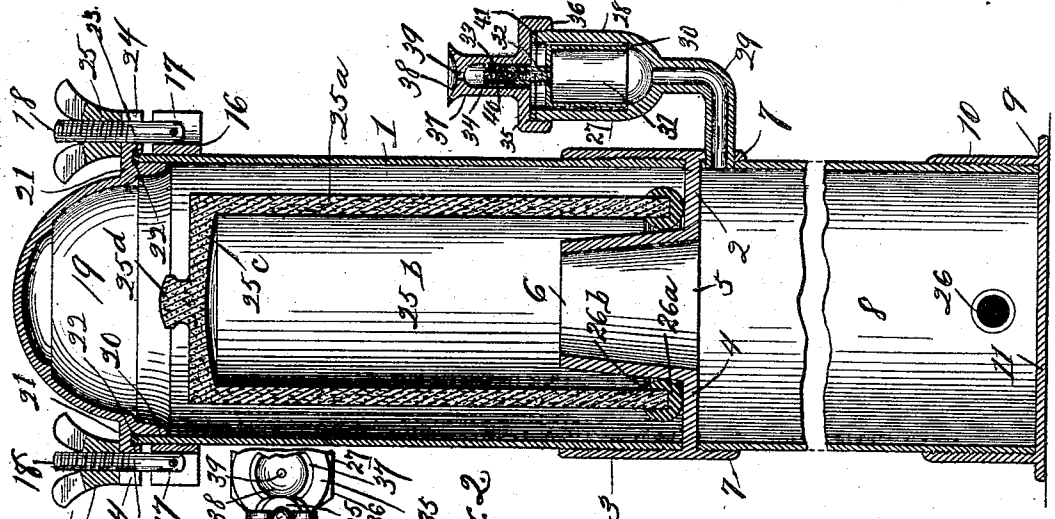

Fig. 2.

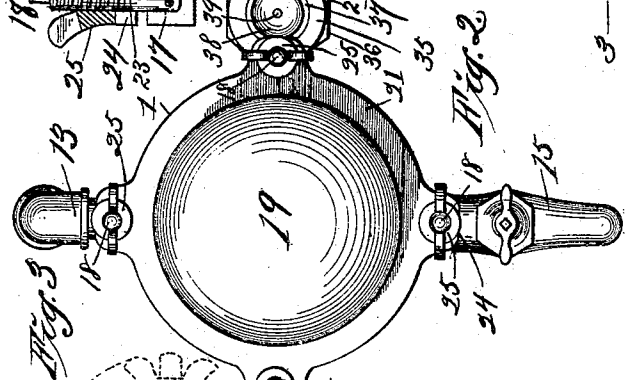

Fig. 3.

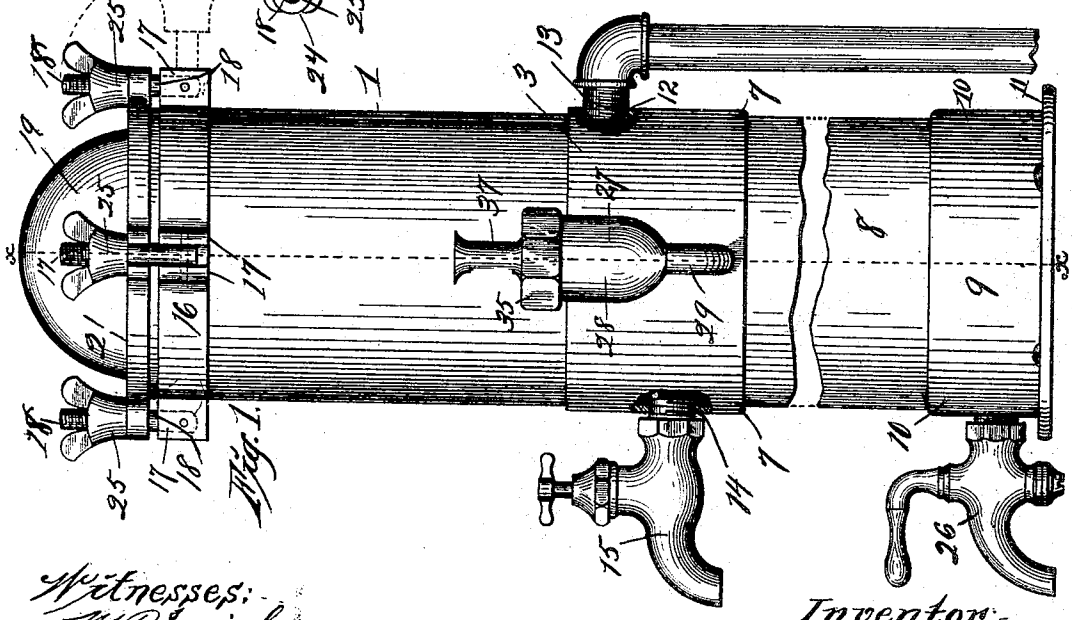

Fig. 1.

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CHARLES A. CRIQUI, OF ST. JOSEPH, MISSOURI.

GERM-PROOF WATER-FILTER.

SPECIFICATION forming part of Letters Patent No. 511,757, dated January 2, 1894.

Application filed January 23, 1893. Serial No. 459,401. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. CRIQUI, of St. Joseph, Buchanan county, Missouri, have invented certain new and useful Improvements in Germ-Proof Water-Filters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in filters, for removing sediment and other impurities from water and other liquids, and the objects of my invention are to produce an efficient apparatus for this purpose, which is simple, durable and inexpensive of construction, which is provided with an automatic and effective air valve, to induce the free flow of water, and also to provide a top or cover, which can be readily removed from the upper end of the filter to give access to the interior of said filter, when necessary or desirable.

To the above purposes my invention consists in certain peculiar and novel features of construction and arrangement as will be hereinafter fully described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1, represents a side elevation of a filter, embodying my improvements. Fig. 2, represents a vertical section of the same, taken on the line *x*—*x* of Fig. 1. Fig. 3, represents a top plan view of the filter shown in Fig. 1.

In the drawings, 1 designates the body-portion of the filter, which is shown as of cylindrical form, but which may be of any other shape desired, without departing from the essential spirit of the invention. The lower end of this body portion is exteriorly screw-threaded to engage the interior threads of a vertically and upwardly extending flange 3, of a casting 2, the horizontal portion 4 of which closes the lower end of the body-portion of the filter. An opening 5 is provided centrally of the said horizontal portion 4 of the casting, and an annular and frusto-conical guide wall 6 extends upwardly from said horizontal portion 4 of the casting, and marginally surrounds the opening 5 therein. The casting 2, is also provided with a marginally depending flange 7 which is screw-threaded on its inner side to engage the exterior screw-threads of the upper end of the water receptacle 8, the lower end of which is also exteriorly screw-threaded to engage the interior threads of a vertical flange 10 of a casting 9, the horizontal portion 11 of which forms the bottom of the lower receptacle 8. The horizontal portion 11 of said casting 9, extends outward beyond the vertical flange 10, and is secured by bolts, or in any other suitable manner to a table (not shown) or other desirable support.

An opening 12 extends horizontally through the lower end of the body-portion of the filter and also through the upwardly extending flange 3 of the casting 2, and is screw-threaded to receive the threaded end of the feed-pipe 13, the said feed-pipe being connected up to the supply-pipes of the water-supply system, in the usual manner. A similar opening 14 is provided in the opposite side of the body-portion of the filter, and which also extends through the vertical flange of the casting 2, and is screw-threaded to receive the threaded end of the discharge faucet 15, of the usual construction.

The upper end of the body-portion of the filter, has permanently secured thereto in any suitable manner, the inclosing ring or band 16, which is provided at suitable intervals with the outwardly extending and parallel sets of vertical ears 17, between which are pivoted or hinged the bolts 18.

19 designates the top or cover of the filter which is dome-shaped or arched, and is provided with the depending and vertical flange 20 at its lower margin, which fits snugly within the upper end of the body-portion of the filter, and is also provided at the upper end of the depending flange 20, with the horizontal and outwardly extending flange 21, which projects beyond the outer margin of the upper end of the body-portion of the filter, and is provided in its under side with the annular recess 22 which is of inverted frustum-shape in vertical cross-section. A rubber gasket or ring 23 is placed within said recess and rests upon the upper end of the body-portion of the filter. The object in having the recess of the shape described, is to prevent the rubber gasket or ring from dropping out of the recess 22 when the top or cover is removed from the filter.

The outer margin of the flange 21 of the top or cover 19 is also provided at suitable intervals with the recesses or notches 24, with which the hinged or pivoted bolts 18 are adapted to register and engage, and the upper projecting ends of said bolts 18, are engaged by wing-nuts 25 which are screwed down upon the flange of the top or cover 19 and bind said top or cover firmly upon the upper end of the filter.

Arranged vertically within the body-portion 1 of the filter, is the filtering wall 25^a, which is shown as of longitudinal cylindrical form, and which is of any suitable composition or material, sufficiently porous to permit the water to percolate or seep through it and into the inner chamber or cavity 25^b. The filter-wall 25^a is provided with a closed top 25^c, which is of the same material as the vertical wall thereof, and this top is provided with a handle or knob 25^d, by which the said filtering-wall may be removed from the filter, when necessary or desirable to clean it. It will be seen that a considerable space intervenes between the upper end of the filtering-wall and the chamber of the cap or cover for the filter, wherein a quantity of water resides, the pressure from which is sufficient, taken in conjunction with the weight of the filter-wall, to prevent the said filtering wall being lifted or displaced, by the pressure of the water around it. The lower end of this filter-wall is left entirely open, and the lower margin thereof is inserted into a groove 26^b in the upper side of the annulus or ring 26^a. This ring is of rubber or any other suitable material, which will exclude water and at the same time possess sufficient elasticity to act as a packing, and the said annulus or ring rests directly upon the horizontal portion 4 of the casting, which forms the bottom of the filter, and said annulus or ring surrounds and fits tightly against the outer side of the upwardly extending flange of the horizontal portion of the casting 2. A draw-cock or faucet 26 communicates with the lower part of the water receptacle 8, through which the filtered water may be drawn, when desired.

To insure the free flow of water through the draw-cock or faucet 26 from the receptacle 8, I provide an automatic air-vent or valve 27. This air-vent or valve 27, has the cylindrical body-portion or cup 28, the lower end of which communicates through the pipe 29, with the upper interior portion of the filtered water-receptacle 8. The interior of the cup-portion 28 of the air-valve is provided near its lower end with the annular and horizontal shoulder 30, upon which is adapted to rest at times the lower margin of the cylindrical float 31, the upper end of which is closed and has projecting centrally from its upper side the sleeve 32, in which is secured a rubber plug 33, the upper end of which is rounded at 34 as shown. The object of the said plug 33 will be presently explained.

The upper end of the valve-cup 28 is externally screw-threaded, to receive the interior threads of the depending flange 36, of the cap or cover 35 of the said cup. The flange 36 is of angular form marginally, so that it may be engaged by a nut wrench.

The cap or cover 35 is provided with an upward extension 37, which projects vertically and centrally of the cap or cover, and a cup 39 is formed in the upper end of said extension 37, and a small vertical passage 39 communicates at its opposite ends with said cup and with an enlarged vertical channel 40, the upper end of which is rounded to correspond with the rounded upper end of the rubber-plug 33. A gasket or ring of rubber 41 is interposed between the upper end of the valve-cup 28 and the cap or cover 35, to make the connection between the cup-portion 28 and the cap or cover 35 therefor, perfectly water tight.

In operation, the parts being arranged in their proper relative positions, the water is permitted to flow through the supply-pipe 13 into the body portion of the filter, and to fill up the space surrounding the filter-wall. Owing to the weight of the said filter-wall the water can not displace the same and escape into the inner chamber 25^b, and the rubber annulus or ring prevents any water from passing beneath the lower end thereof. Should water by any possibility pass beneath said annulus or ring, it would be impossible for it to enter the chamber 25^b, because the ring or annulus is forced tightly upon the upwardly extending guide-wall 6. The pure liquid then gradually percolates or seeps its way through the porous filter-wall, and into the inner chamber or cavity 25^b, while the sediment and all foreign impurities are retained in the space between the said porous filter-wall and the body-portion 1 of the filter, and settle toward the lower end thereof. The pure liquid passes through the openings 5 in the casting 2, and into the filtered water-receptacle 8, where it remains until drawn off through the draw-cock or faucet 26 for use. The sediment is withdrawn from the filter through the draw-cock or faucet 15, when it is desired to partially cleanse the filter, and when a more thorough cleansing is required, the clamping wing-nuts 25 are loosened, and hinged or pivoted bolts are moved outward from engagement with the marginal notches or recesses 24. The top or cover 19 may then be lifted from the upper end of the body-portion of the filter and the filter-wall lifted therefrom and cleansed, and the interior of the filter may also be cleansed. As the receptacle 8 gradually fills with water, the air is forced therefrom through the air valve 27, and as the water enters and fills said cup-portion the float rises and the upper rounded end of the rubber plug engages over the adjacent end of the passage and prevents the entrance of air to or overflow and escape of water from the receptacle 8. As the water is withdrawn from the receptacle 8, and allows the float to descend, the air enters the passage

37 and passes into the receptacle, causing the water to flow freely into the draw-cock or faucet 26.

From the above description, it will be seen that I have produced a filter which is simple, durable and inexpensive of construction, and which is provided with a simple and effective air-valve, to induce the free flow of water, and which is also provided with a top or cover which can be quickly and easily removed or secured upon the filter.

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

1. In a filter, the combination with a suitable body-portion having a removable top or cover, and having an opening in the bottom of said cylinder, and a porous-filter wall surrounding said opening, of a receptacle located beneath said body-portion and communicating therewith, and having a draw-cock or faucet near its lower end, and an automatic air-valve communicating with its upper end and having a cup-portion, a float arranged within said cup-portion having an upward extension or plug and a cap or cover secured upon said cup-portion and having an upwardly extending hollow extension, and an opening communicating with the passage of said extension, substantially as set forth.

2. In a filter, a suitable body-portion having an opening in its bottom, in combination with a receptacle located below said body-portion and communicating therewith, and having a draw-cock or faucet near its lower end, and an automatic air-valve near its upper end, having a cup-portion having an annular shoulder in its lower end, a float 30 having a closed upper end located within said cup-portion and adapted to rest upon said shoulder, and a plug extending upwardly from said float and having a rounded upper end, and a cover screwed upon the upper end of the cup-portion and having an upward tubular extension therefrom, a cup formed in the upper end of said tubular extension, and a small passage connecting the interior of said cup with the interior of said tubular extension, and adapted to be closed by the said rubber plug, substantially as set forth.

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

CHARLES A. CRIQUI.

Witnesses:

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M. P. SMITH.