No. 715,554.

Patented Dec. 9, 1902.

J. W. CRAINE.

CISTERN FILTER.

(Application filed Jan. 13, 1902.)

(No Model.)

Fig. 1.

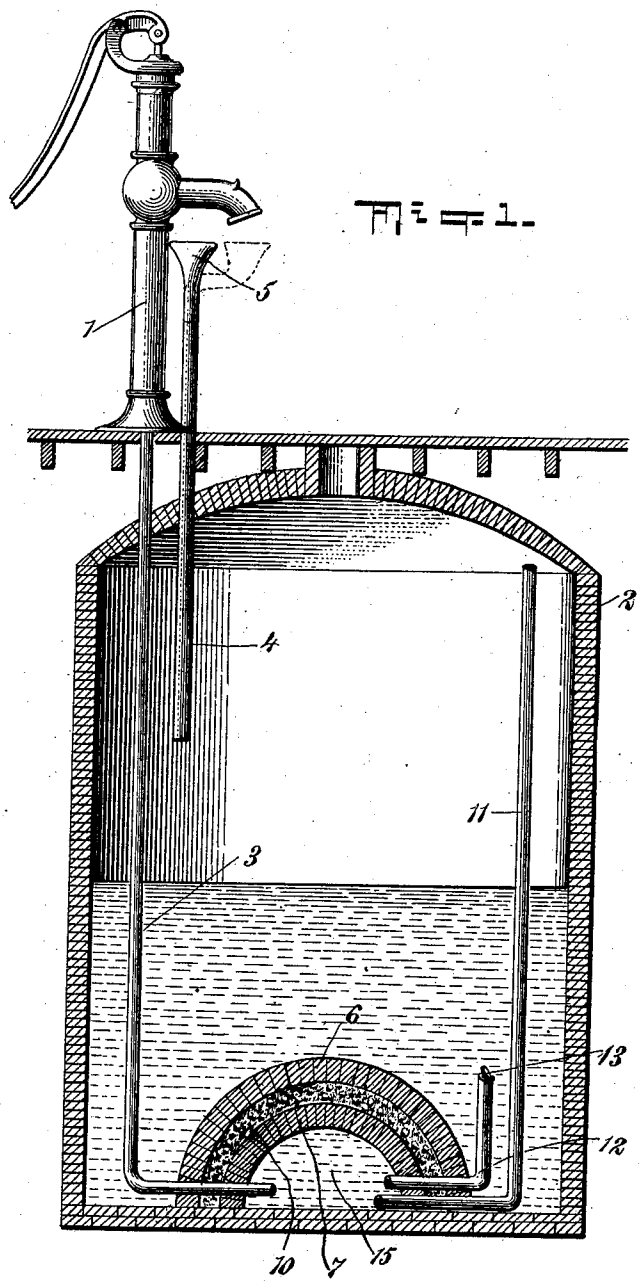


Fig. 2.

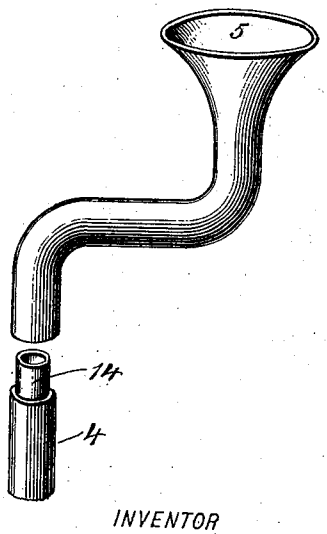
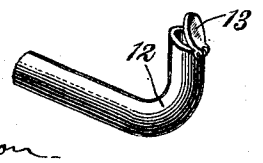


Fig. 3.



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CISTERN-FILTER.

SPECIFICATION forming part of Letters Patent No. 715,554, dated December 9, 1902.

Application filed January 13, 1902. Serial No. 89,492. (No model.)

To all whom it may concern:

Be it known that I, JOHN WHITON CRAINE, a citizen of the United States, and a resident of Winfield, in the county of Cowley and State of Kansas, have invented new and useful Improvements in Cistern-Filters, of which the following is a full, clear, and exact description.

My invention relates to a cistern-filter, the object being to purify water as rapidly as the same is removed from a cistern, provision being made for removing undue pressure from the water upon the interior of the filter, and also for permitting the ready entrance and egress of air to and from the filter.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical sectional view of the filter applied to a cistern. Fig. 2 is a detail view showing means for returning water from the pump to the cistern. Fig. 3 is a detail view showing a pipe provided with a valve for permitting the egress of water from the filter.

A pump 1 is mounted over a cistern 2 and is provided with a pipe 3, extending downward, as usual. Another pipe 4 is provided with a revoluble horn-shaped funnel 5 for the purpose of permitting water to flow from the pump directly back into the cistern, as desired. A pair of domes 6 7 are built in the cistern concentric to each other and are constructed of porous brick, permitting the water to flow through them. A filtering substance 10, preferably consisting of charcoal and sand packed tightly together, is sandwiched between these domes, as shown in Fig. 1. An L-shaped pipe 11 establishes communication between the inner dome 7 and the outer atmosphere. Another L-shaped pipe 12 is provided with a valve 13, and when said valve is open establishes communication between the inner dome 7 and the body of free water outside of the outer dome 6.

A flexible union 14 is provided upon the pipe 4 in order to allow the horn-shaped member 5 to be readily moved, as indicated by dotted lines in Fig. 1.

The operation of my cistern-filter is as follows: The pump 1 being actuated in the usual manner, the water 15 in the inner dome 7 is removed therefrom. The water-pressure closes the valve 13, and the air-pressure above forces the air down through the pipe 11 to the interior of the inner dome. This renders the pumping comparatively easy, for the reason that no matter how slow water may percolate into the filter the air can always enter through the pipe 11. The apparatus thus acts not only as a filter, but as a means for circulating the water and for aerating the same, thus purifying the water otherwise than by filtration.

In order that water flowing downward from the pump through the pipe 3, as is usually the case, may not produce any excessive momentary pressure upon the domes, thereby tending to disrupt or otherwise injure them, the pipe 12 is provided and serves as an exit-pipe for said downflowing water, thus giving instantaneous relief whenever there is any undue pressure of water within the inner dome.

Any air that may accumulate in the top of the dome finds its way through the pores of the domes and makes its escape upward through the water. This serves to thoroughly aerate the water and tends to purify the same.

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

1. A cistern-filter comprising a pair of concentrically-disposed domes provided with perforations, a filtering material sandwiched between said domes, a pump for extracting a liquid from the inner of said domes, a vent for supplying air into said inner dome in place of the liquid thus removed, and means independent of said pump for permitting the rapid egress of water from said inner dome.

2. A cistern-filter comprising a hollow filtering member, means for removing a liquid therefrom, a vent for supplying air to said member in place of the liquid thus removed, and a valvular member for permitting the rapid egress of water from said hollow filtering member.

3. A cistern-filter comprising inner and outer domes through the substance of which

a liquid is free to pass, a pump for removing said liquid from the inner dome, thus producing a partial vacuum, an air-pipe leading from said inner dome to the outer atmosphere, and a pipe provided with a valve and normally connecting the inner dome with the body of free water outside of said outer dome.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN WHITON CRAINE.

Witnesses:

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