

G. M. ANDERSON.
CISTERN.
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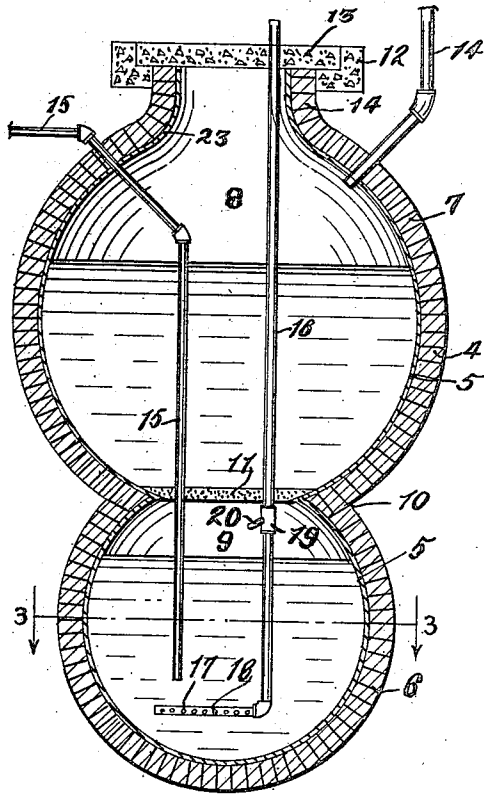


Fig. 1

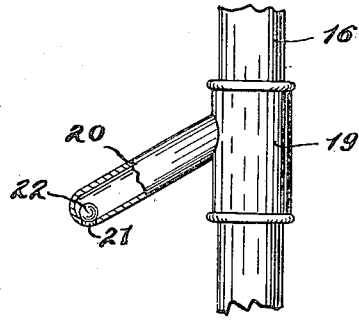


Fig. 2

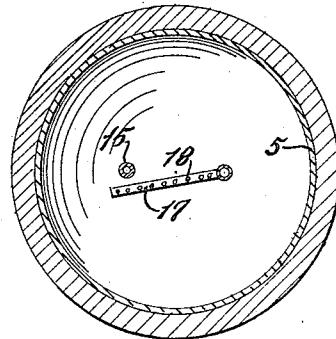


Fig. 3

George M. Anderson
Inventor

By *F. E. Shannon*
Attorney

UNITED STATES PATENT OFFICE.

GEORGE M. ANDERSON, OF AKRON, OHIO.

CISTERN.

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To all whom it may concern:

Be it known that I, GEORGE M. ANDERSON, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented new and useful Improvements in Cisterns, of which the following is a specification.

This invention relates to cisterns and particularly to a new and useful improvement in cisterns of the type usually constructed of mason work sunk in the ground and commonly used to store water for subsequent use.

Other objects of the invention are to provide a cistern of simple, economical construction in which a large amount of water may be stored and to provide a new and improved arrangement of parts therefor, whereby properly aerated, filtered water may be drawn therefrom.

A further object is to provide a strong, substantial cistern which is provided with a filter-stone, arranged therein to partition the cistern into an upper and lower chamber so that the upper chamber may be used to receive the unfiltered water and the lower chamber, the filtered water, and to provide means whereby a supply of water may be constantly maintained in said lower chamber from which it may be drawn for use.

A still further object of the invention is to provide a cistern of the type above designated and to provide means whereby water may be drawn from the lower chamber thereof and a partial vacuum created in said lower chamber which will materially facilitate the passage of the water through said stone.

An additional object is to provide means whereby the filtered water in the lower chamber may be properly aerated without producing a compression of air in the upper portion of said chamber.

The above objects are accomplished and other ends are attained by the novel construction, combination and arrangement of parts hereinafter described and illustrated in the accompanying drawing, which forms a part hereof, and in which I have shown a preferred embodiment of the invention, it being understood that the invention is capable of various adaptations and that changes and modifications may be made which come within the scope of the claims hereunto appended.

In the drawings in which I have employed similar numerals of reference to indicate corresponding parts throughout the several views, and in which,—

Figure 1 is a central, vertical, sectional view of a cistern constructed in accordance with this invention.

Figure 2 is a side elevation of a portion of an air pipe employed in carrying out the invention and showing in central vertical section a portion of the valve used thereon.

Figure 3 is a horizontal, sectional view taken as indicated by the lines 3—3 of Figure 1.

A cistern constructed in accordance with this invention is usually composed of brick-work, cement, or other mason work sunk in the ground and comprises two hollow, substantially globular portions 6 and 7, one arranged above the other to form an upper chamber 8 and a lower chamber 9. The lower portion 6 is substantially smaller than the upper portion 7 which is constructed thereon so as to be integral therewith, thus forming a container provided with a waist 10. The waist 10 forms a seat for the circular filter stone 11, the marginal portions of which are cemented against the interior surface of the upper portion 7, thus closing the communicating opening between two portions and forming a partition between the chamber 8 and the chamber 9. The upper portion 7 terminates in a tubular neck 14 which projects upwardly therefrom and is provided with a top 12 constructed of cement or other suitable material. The top 12 is provided with a lid 13 which is arranged to cover an opening in said top 12. The numeral 14 is used to denote an inlet pipe through which water is admitted to the chamber 8 and the numeral 15 denotes an outlet pipe which extends into the chamber 9 for the purpose of drawing water therefrom. The other end of the pipe 15 is connected to a suction pump (not shown) or other suitable means, whereby water may be drawn from said chamber.

The numeral 16 indicates an air pipe which leads from the atmosphere downwardly to a point adjacent the bottom of the chamber 9 and terminates in a horizontal tube 17, the wall of which is provided with a plurality of closely spaced perforations 18. Both the pipe 15 and the pipe 16 pass through the filter stone 11 and the opening

in said stone through which said pipes extend are carefully cemented so as to form an impervious juncture between the exterior surface of said pipes and the filter stone.

5 The member 19 is interposed in the pipe 16 directly beneath the stone 11 and comprises a coupling provided with a downwardly inclined tubular protuberance. A circular aperture 21 is formed on the underside of
10 the extreme end of said protuberance and a ball 22 is positioned in said protuberance 20 so as to normally seat in said aperture.

It will be seen that a valve is thus formed which will permit air to pass from the chamber 9 through the aperture 21 to the pipe 16, but that no air can enter the chamber 9 through the aperture 21, inasmuch as the ball 22 is seated in said opening. The walls of both the chamber 8 and the chamber 9 are
20 provided with a coating 23 of cement or other suitable material whereby the same is rendered impervious.

In use, water is introduced in the chamber 8 preferably through a pipe 14 which may
25 be connected to a down spout leading from an eaves-trough or may be connected to any source of water supply. The water in the chamber 8 will filter through the stone 11 into the chamber 9 which will be gradually
30 filled with filtered water. As the level of the water raises in the chamber 9 the air contained therein will escape through the aperture 21 as it is displaced by water and the pressure in said chamber is thus prevented
35 from exceeding that of the atmosphere.

As water is drawn from the chamber 9 through the pipe 15, a partial vacuum will be formed in the upper part of the chamber 9 which greatly facilitates the passage of
40 water through the said stone 11 and seats the ball 22 in the aperture 21.

It will thus be seen that the valve in the protuberance 20 will not permit the passage of air from the pipe 16 to the upper part of
45 the chamber 9 and that, if sufficient water is drawn from the chamber 9, the pressure will be lowered to a point that will be sufficient to draw air through the pipe 16 and cause it to issue from the aperture 18 in the horizontal
50 portion 17 of said pipe. The buoyancy of the air will cause it to travel upwardly through the water and the suction in the upper part of the said chamber 9 will be thus relieved.

55 It will thus be seen that the filtered water in said chamber will be properly aerated and that a constant supply of pure fresh water thus insured.

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

1. In a cistern, an upper and a lower chamber, a filter stone separating said chambers,

means to draw fluid from said lower chamber, a pipe leading from a point near the
65 bottom of said lower chamber and extending upwardly to the atmosphere, an opening from said pipe to said chamber adjacent the upper wall thereof, and a check valve controlling said opening so that air under pres-
70 sure may flow outwardly therethrough.

2. A cistern comprising a container adapted to hold water, a filter stone extending thereacross so as to form therein an upper
75 and a lower chamber, a pipe extending upwardly from a point adjacent the bottom of said lower chamber to the atmosphere, said pipe provided at the lower end thereof with a horizontal extension, a plurality of open-
80 ings in the wall of said extension, an opening in said pipe at a point adjacent the top of said lower chamber, a check valve controlling the last named opening so as to permit air to escape from said chamber through
85 said opening and prevent the entrance of air therethrough, and means to draw a fluid from said lower chamber.

3. A cistern comprising a container adapted to hold water, the walls of said container
90 converging at a point intermediate its height to form a relatively narrow neck, a filter stone extending across the opening in said neck so as to divide said container into an upper and a lower chamber, means to draw
95 water from said lower chamber, a pipe extending from a point adjacent the bottom of said chamber upwardly therethrough to the atmosphere, the lower end of said pipe provided with a horizontal extension, a plural-
100 ity of openings in the wall of said extension, an opening in said pipe adjacent the top of said lower chamber and a check valve controlling said opening so that air may pass outwardly therethrough.

4. A cistern comprising a container of
105 mason-work sunk into the ground, the wall of said container converging at a point intermediate its height to form a relatively narrow neck, a filter stone extending across the opening in said neck so as to divide said
110 container into an upper and lower chamber, an outlet comprising a pipe leading to a pump adapted to draw water therefrom, a vent pipe leading from the atmosphere to a point adjacent the bottom of said lower
115 chamber; a horizontal extension on the lower end of said pipe, a plurality of openings in the wall of said extension, an opening in said vent pipe to said lower chamber adjacent the top thereof and a check valve con-
120 trolling said opening so that air may pass outwardly but not inwardly.

In testimony whereof I have hereunto set my hand.

GEORGE M. ANDERSON.