

(No Model.)

2 Sheets—Sheet 1.

C. G. MOREMEN.
APPARATUS FOR CLEANING CISTERNS.

No. 532,685.

Patented Jan. 15, 1895.

Fig. 1.

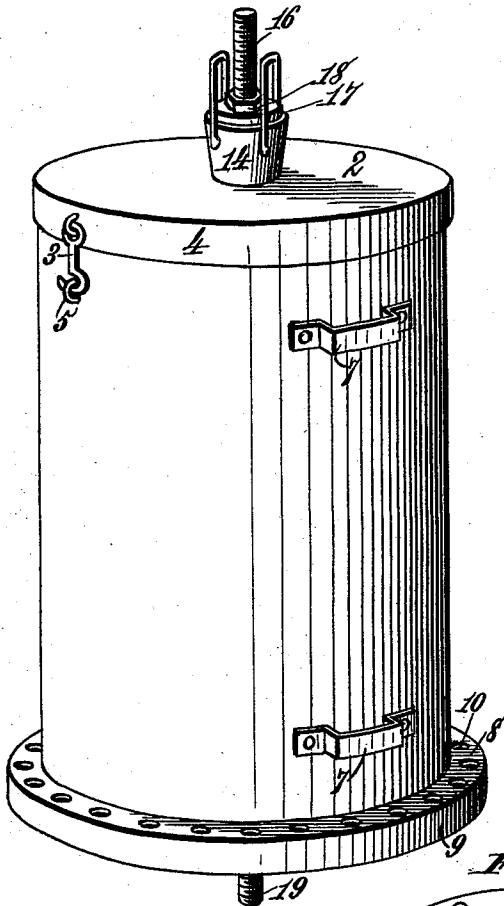


Fig. 2.

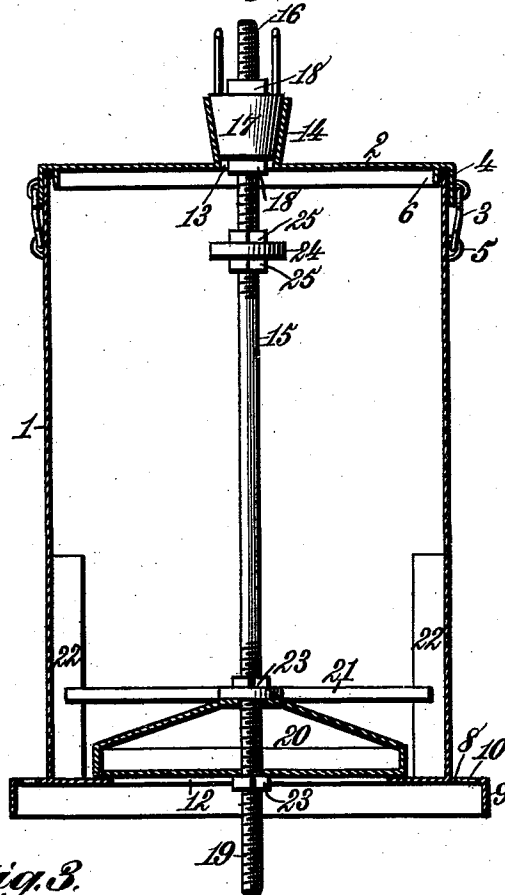
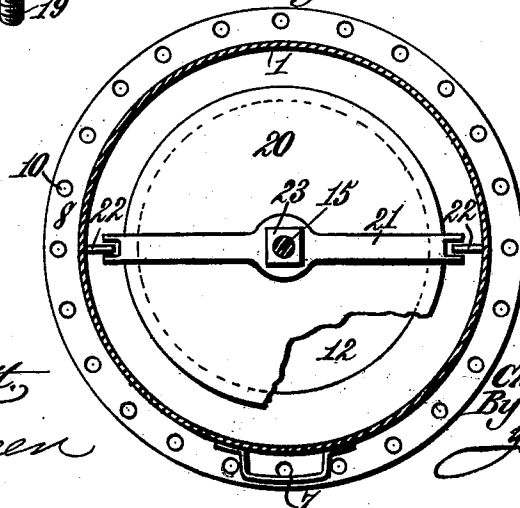


Fig. 3.



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Inventor:
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By *James L. Norris*
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Fig. 4.

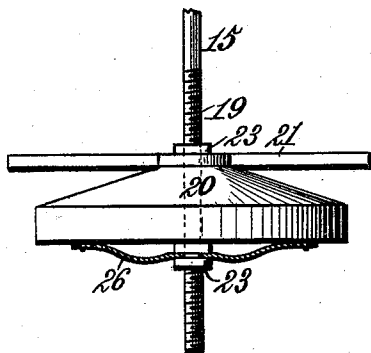


Fig. 5.

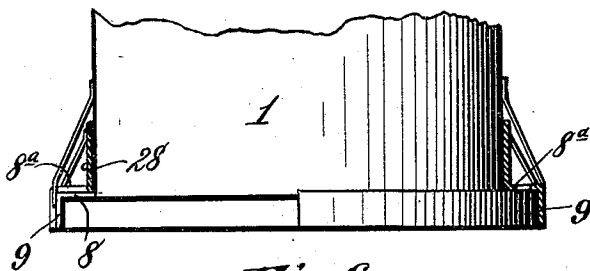
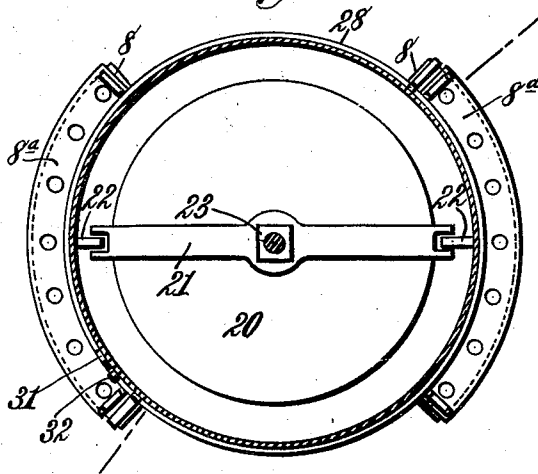


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES G. MOREMEN, OF BRANDENBURG, KENTUCKY.

APPARATUS FOR CLEANING CISTERNS.

SPECIFICATION forming part of Letters Patent No. 532,685, dated January 15, 1895.

Application filed August 2, 1894. Serial No. 519,277. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. MOREMEN, a citizen of the United States, residing at Brandenburg, in the county of Meade and State of Kentucky, have invented new and useful Improvements in Apparatus for Cleansing Cisterns, of which the following is a specification.

My invention relates to apparatus for cleansing cisterns, my purpose being to provide simple means whereby the sediment, and other impurities accumulating in cisterns, which remain in suspension in the water, or precipitated to the bottom, may be entirely removed without emptying the cistern, and without sacrificing more than a comparatively small part of the water.

It is my purpose, also, to provide an apparatus of the kind specified in which a receiving drum, forced to the bottom of the cistern, is opened at a suitable point for the admission of the water thereto and the corresponding escape of air therefrom, the point at which this valve-movement takes place being rendered variable so that the extent of the opening and the distance from the bottom at which it is produced may be adjusted according to the circumstances of any individual case.

It is a further purpose of my invention to provide an apparatus of this type having such organization that, upon the opening of the admission valve and air-exit, the inflowing water shall be directed forcibly against the bottom of the cistern and driven over the same and into the drum, thereby scouring and effectually cleansing the cistern floor, or bottom from adhering impurities.

It is my object, also, to simplify and improve the construction and operation of this type of apparatus, to render the same more efficient and rapid in action and to make it adaptable to cisterns of different construction and subject to impurities of various kinds.

The invention consists, to these ends, in the novel features of construction and in the parts and combinations of parts hereinafter fully described and then particularly pointed out and defined in the claims which conclude this specification.

To enable others to fully understand and to make and use my said invention, I will

proceed to describe the same in detail, reference being had, for this purpose, to the accompanying drawings, in which—

Figure 1, is a perspective view of an apparatus containing my invention. Fig. 2, is a central vertical section of the parts shown in Fig. 1. Fig. 3, is a plan view of the same, the cover of the drum being removed. Figs. 4, 5, 6, and 6, are views showing slightly modified constructions of the inlet-valve and flanged circular wall at the lower end of the drum.

The reference-numeral 1, in said drawings, indicates the drum of an apparatus for cleansing cisterns. This drum, which is usually of cylindrical form, is constructed of any suitable material and dimensions, and is provided with a removable top 2, connected to the body of said drum by means of hooks 3, which are pivotally mounted on the flange, or rim 4, of the cover and engage studs 5 on the body of the drum. Upon the interior of the cover, and concentric with its rim 4, is a stuffing-rim, or flange 6, lying inside the body of the drum, when the cover is on. Between the two concentric rims 4 and 6 is placed any suitable packing, such as a rubber gasket, by which the escape of air and entrance of water will be prevented, when the drum is submerged. Upon the exterior of the drum are placed loops 7, within which a staff, or pole, of any suitable kind can be inserted, for the purpose of forcing the empty drum to the bottom of the cistern. At its lower end the drum is provided with a horizontally projecting wall 8, of annular form, and provided, on its outer edge, with a downwardly turned flange, or rim 9. The wall 8 is provided at suitable intervals with openings 10, formed near the rim 9. The wall 8 extends into the interior of the drum and approaches the axis thereof but terminates at such a point as to leave a large central opening 12. In the cover of the drum is formed a much smaller central opening 13, at the lower end of a short tubular neck 14, which rises from the cover. Running vertically through the drum, in the line of its axis, is a valve-stem 15, which passes below the bottom and through the opening 13 in the cover, above which it extends for some distance. The upper and lower portions of said stem are screw-threaded, and upon the threaded upper portion 16 is mounted a valve

17 which is shaped to fit the tubular neck 14, the latter being preferably flared, or slightly increased in diameter, from its lower end upward. The threaded part of the valve-stem 5 passes loosely through an opening in the valve 17, and above and below the latter are nuts 18, turned against the top and bottom of the valve to hold it in place and render it adjustable on the stem. Upon the lower threaded 10 portion 19, of said stem, is mounted, in like manner, a valve 20, which closes the opening 12, in the bottom of the drum. Resting upon the top of the valve 20 is a cross-head 21, the opposite notched, or recessed extremities of 15 which slide upon vertical guide-ribs 22, on the inner face of the drum, to guide the lower valve 20 and enable it to seat in proper position. Nuts 23 are turned upon the lower threaded part of the valve-stem, one resting 20 on the cross-head 21 and the other below the valve. The lower end of the stem 15 extends below the bottom of the drum and by its meeting the floor of the cistern the two valves 17 and 20 are unseated and water from the 25 cistern is permitted to flow through the openings 10, in the wall 8, and through the central opening 12, and enter the drum, the air therein escaping through the upper opening 13 and tubular neck 14. A stop-disk 24 is 30 mounted on the upper threaded portion of the valve stem 15 and adjustably secured in place by nuts 25, to limit the upward movement of the stem.

When the valves are properly adjusted 35 upon the stem 15, the drum is submerged and pushed to the bottom of the cistern by the pole, or staff, its valves being unseated and raised by the contact of the lower end of the stem 15 with the bottom of the cistern. At, 40 or about, the same instant, the rim 9 seats upon the floor, or bottom of said cistern and the water in the latter rushes through the openings 10, in the wall 8, being driven with considerable force against that portion of the 45 floor comprised within the rim 9. Between the cistern floor and the horizontal bottom-wall 8 of the drum the water rushes to the central opening 12 and enters the drum, scouring that part of the floor over which it passes 50 and removing the adhering impurities and sediment, which are carried into the drum with the water. When filled to the proper point, the drum is lifted out, the valves 17 and 20 closing as it rises from the bottom, and its 55 contents having been emptied the operation is repeated until the whole interior is cleansed.

By making the valves adjustable upon the stem 15, I am able to regulate the volume and force of the inflow from the cistern to the 60 drum according to the requirements of the work in each case. For example, if a current of large volume and force is required, in order to properly scour and cleanse the floor of the cistern, the valves are adjusted in such man- 65 ner as to secure an increased lift of the same, thereby enlarging the inlet and permitting more water to enter in a given period. Where

the impurities consist, however, of finely divided, non-adhering sediment, more or less held in suspension in the lower strata of water in the cistern, the apparatus will be more 70 efficient by reducing the inflow of water to the drum, thereby drawing the suspended sediment from a greater area.

By extending the bottom wall 8 beyond the 75 lower end of the drum, the water entering through its perforations 10 is directed against the floor of the cistern and is caused to flow with force over the same in the confined space, between the said floor and wall, whereby its 80 efficiency in scouring and cleansing the cistern and removing adhering foreign matter is largely increased, while the area subjected to such action is considerably extended.

In order to prevent leakage around the 85 stem 15, between the same and the opening in the inlet-valve 20, a flexible circular shield 26 is secured to the lower face of the valve, said shield being formed of leather, rubber, or other suitable material. A hole is formed 90 in its center to allow the stem 15 to pass through and the edge of the material is clamped firmly between the stop-nut 23 and a jam-nut 27. Sufficient slack is given to the shield to allow of the required adjustments 95 and movements of the valve.

In many cisterns now in use, the top is covered by a heavy slab of stone having a comparatively narrow oblong opening for the pump. In order to enable the cleansing apparatus to 100 be used without lifting the stone from the cistern, I may provide the drum 1 with a sectional, circular wall 8, in place of that shown in Figs. 1 to 3, which is integral with the drum. In Figs. 5 and 6 I have shown this part of 105 the apparatus as formed in two quarter-sections 8, which are integral with the drum, and, two similar quarter-sections 8^a, which are part of a band 28 surrounding the lower end of the drum 1 and capable of circular adjust- 110 ment thereon. The quarter-sections 8 are supported by braces 29 extending from their edges to the wall of the drum, and the quarter-sections 8^a are similarly supported by braces 30 connected to the band 28. By turning 115 the latter the movable and rigid quarter-sections may be caused to coincide, thereby contracting the diameter of the lower end of the drum sufficiently to permit its insertion through the opening formed in the stone for 120 the pump. After insertion a quarter turn of the band 28 returns the sections 8^a, to their normal position, the circular movement being arrested at the proper point by a shoulder 31 on the band 28, which abuts on a pin 32, pro- 125 jecting from the wall of the drum.

What I claim is—

1. An apparatus for cleansing cisterns, consisting of a receiving-drum provided with a bottom which has a large, central valved opening and which extends outwardly beyond the 130 wall of the drum to form an annulus surrounding the lower end of said drum, said annulus being provided at its edge with a hang-

ing rim, the edge of which is adapted to rest upon the floor or bottom of the cistern, said annulus being provided with openings between its edge and the wall of the drum, whereby the inflowing water is directed downward against the bottom of the cistern and then caused to rush toward a common center to enter the drum, thereby sweeping the impurities off the space inclosed within the hanging rim without disturbing the sediment outside said hanging rim, substantially as described.

2. In an apparatus for cleansing cisterns, the combination with a receiving-drum having an inlet and air-outlet in its bottom and top, respectively, of a valve-stem passing vertically through said drum and extending above and below its top and bottom, valves adjustably mounted upon threaded portions of said stem, and a guiding cross-head having its ends sliding upon ribs on the inner face of the wall of the drum, substantially as described.

3. In an apparatus for cleansing cisterns, the combination with a drum having its bottom wall extended outward and provided with inlet openings and a depending rim, of a valve stem passing through and extending below and above said drum, and valves adjustably mounted on threaded portions of said stem, one closing an air-outlet in the top, or cover, and the other a water-inlet in the bottom of the drum, substantially as described.

4. In an apparatus for cleansing cisterns, the combination with a receiving drum having its bottom wall extended beyond the cylindrical wall of the drum and provided with a rim on its edge and with inlet openings near said rim, of a central valve stem extending below and above the bottom and top of the drum, valves adjustably mounted

thereon, and nuts turned upon threaded portions of said stem above and below the valves, substantially as described.

5. In an apparatus for cleansing cisterns, the combination with a drum having an air-outlet and water inlet in its top and bottom, respectively, of a valve stem passing vertically through and extending above and below the top and bottom, valves loosely mounted on threaded portions of the stem, nuts turned against the upper and lower faces of said valves, and a cross-head lying between the lower valve and the nut above the same, the ends of said cross-head engaging guide-ribs on the drum, substantially as described.

6. An apparatus for cleansing cisterns, comprising a receiving drum having its bottom wall extended and provided with a depending rim and with inlet openings near said rim, valves closing an inlet in the bottom and an air outlet in the top, a flexible shield attached at its edge to the bottom of the inlet valve and clamped centrally between two nuts screwed on the stem, and means for operating said valves, substantially as described.

7. An apparatus for cleansing cisterns having a valved receiving-drum provided with a bottom formed in quarter sections, two of which are rigid with the drum and two mounted on a movable band encircling the bottom of the drum, said sections extending outward beyond the wall of the drum and having depending rims and inlet openings, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

CHARLES G. MOREMEN. [L. S.]

Witnesses:

D. W. LEWIS,
I. W. LEWIS.