No. 776,959. PATENTED DEC. 6, 1904.

G. H. STOUT.

COMPRESSED AIR WATER ELEVATOR.

APPLICATION FILED APR. 7, 1903.

NO MODEL.

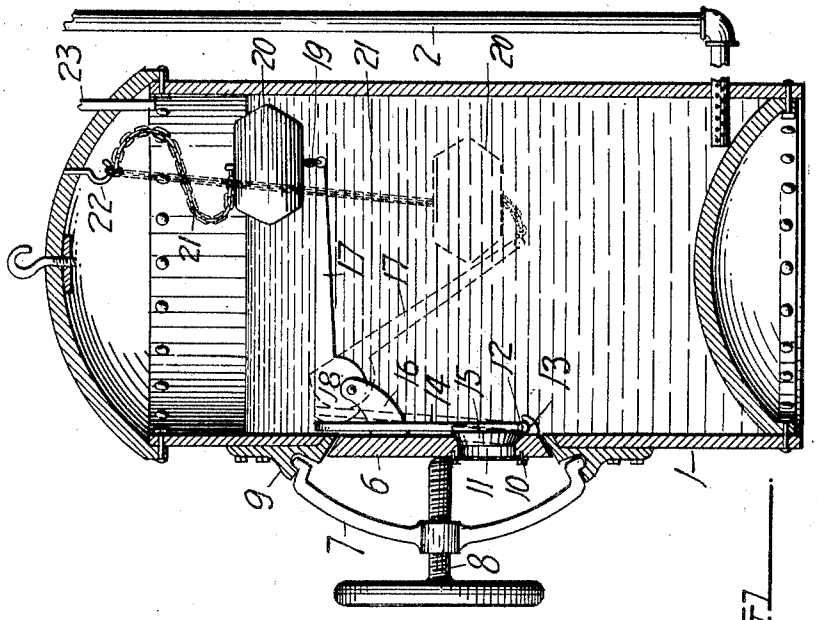


FIG. 2

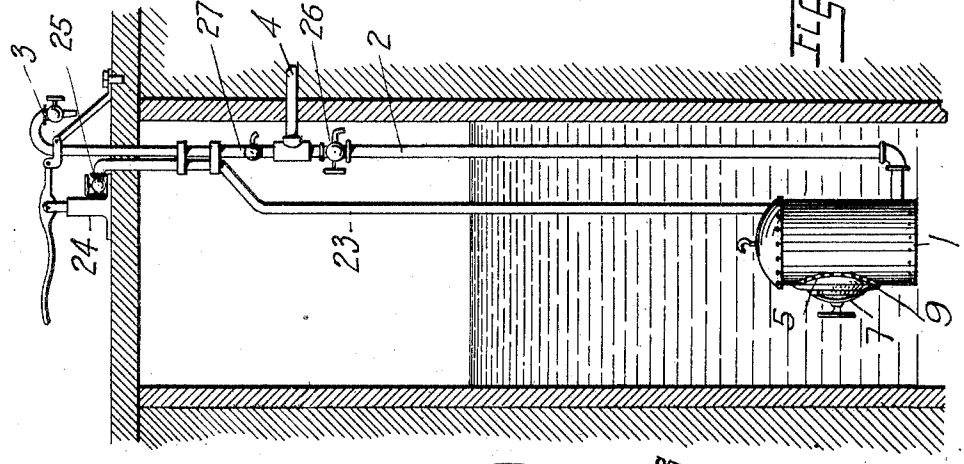


FIG. 1

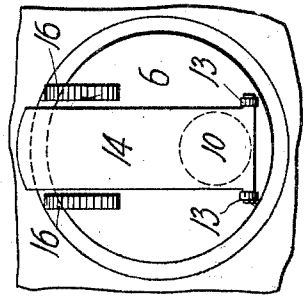


FIG. 3

Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE H. STOUT, OF DENVER, COLORADO, ASSIGNOR OF ONE-HALF TO LUCIUS A. TURNER, OF DENVER, COLORADO.

COMPRESSED-AIR WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 776,959, dated December 6, 1904.

Application filed April 7, 1903. Serial No. 151,499. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. STOUT, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Compressed-Air Water-Elevators, of which the following is a specification.

My invention relates to improvements in compressed-air water-elevators; and the object of my invention is to provide a cheap and durable apparatus of this character in which a submerged tank and all working parts therein are more easily accessible for cleaning and repairs.

Other objects are to insure the presence of a quantity of air in the submerged tank, so as to form a chamber in its dome wherein to compress the air and by which to keep the water in the tank fresh and prevent the water from rising into the dome of the tank, which is more or less corroded and might taint the water.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section through a well, showing the relative positions of the air-pump, submerged tank, and service-pipes. Fig. 2 is a vertical section of the submerged tank and shows in dotted lines the released positions of the valve, valve-controlling cam-lever, and its float. Fig. 3 is an enlarged inside view of the manhole and valve-plate.

The tank 1 is submerged in the water of the well, and from the bottom of the tank a service-pipe 2 leads to a yard-faucet 3 or out through a branch pipe 4 to the house or barn. In one side of the tank is a manhole 5, having the plug 6, yoke 7, press-screw 8, and ring casting 9. The ring casting 9 forms the seat for the plug 6 and has a slot and groove for the ends of yoke, so that the yoke may be readily removed from the ring casting by giving it a turn to meet the slot for the purpose of removing the manhole-plug and all its attached parts for repairs or cleaning. Near the lower edge of the plug is a hole 10, having the screen or sieve 11 at the outside, and on the inside this hole is flared to form a conical valve-seat 12. Just below the valve-seat 12 and on the inside of the plug are studs 13, forming bearings in which rests the valve-plate 14. The valve-plate 14 carries a conical valve-plug 15, preferably made of rubber or leather, which fits into the valve-seat 12. The valve-plate 14 extends upward and near the upper edge of the manhole-plug and passes between two bracket-studs 16, in the ends of which is journaled a lever 17, which is enlarged at its journaled end to form a cam 18, the function of which is presently stated. At the free end of the lever 17 and connected thereto by a chain 19 is a float 20, from which a chain 21 extends to a hook 22 in the dome of the tank.

An air-pipe 23, having sealed connection with the dome of the tank, extends to the top of the well, where it is connected with an air force-pump 24 of well-known construction. An air-relief valve 25, located on the air-pipe 23 above the well-platform, is operated by hand to release the pressure of air in the tank whenever such pressure so far exceeds the pressure of the submerging-water as to prevent the influx of water to the tank.

A drain-cock 26 of well-known construction is interposed in the service-pipe 2 at a point below the intersection of the branch pipe 4 to drain the house-pipes to prevent freezing, and a drain-cock 27 is interposed in the service-pipe 2 at a point to drain the yard-pipes to prevent freezing.

When the tank is submerged, the water quickly enters through the valved opening 10 and fills the tank until it lifts the float 20. In lifting the float 20 the lever 17 is lifted, and its end cam 18 presses against the valve-plate 14 and forces it against the side of the manhole-plug 6 and forces the conical valve-plug 15 into the conical valve-seat 12, and thus closes said valve and closes the interior of the tank against the influx of the submerging-water. It will be seen that the rise of water in the tank is controlled by the action of the float and cam-lever and that the dome of the tank always contains a quantity of air, so that the water is kept fresh by contact with the air and is prevented from rising in

contact with the dome-walls of the tank, which are more or less corroded and might taint the water.

When it is desired to raise the water to the surface, air is forced into the tank from the force-pump, through the pipe 23, and compressed in the dome of the tank. Now by opening the faucets of either the yard or house pipes the compressed air will force the water in the tank up through the service-pipe 2 and out said yard or house faucets. The float will of course fall with the water in the tank, and the cam-lever will also fall and cease to hold the valve-plate 14; but so long as the pressure of the air in the tank exceeds the pressure of the submerging-water the valve-plate will be held close to the sides of the tank-wall and maintain the valve closed against the influx of the submerging-water. The pressure of said submerging-water will open the valve 12 15 and fill the tank again. Should the pressure of air in the tank accumulate to such a degree as to expel all the water of the tank, and yet exceed the pressure of the submerging-water, such pressure may be relieved by opening the relief-valve 25 or the faucets of the service-pipe, when such excess pressure may escape and permit the tank to fill. The tank will never, however, fill to the dome, because no matter what the pressure in the tank or of the submerging-water the valve which admits water is closed by the cam-lever and float, and thus a chamber in which air may be compressed is always maintained at the top of the tank.

It will be seen that the valve-plate and cam-lever, which are the only parts about the tank in anywise liable to become disarranged from wear, are carried solely by the manhole-plug, which, as has been stated, is readily removable, so that any disorder in these parts is most conveniently repaired by removing the manhole-plug, with its attached parts. For this purpose the tank may be raised to the surface by means of the hook shown on its top.

I claim—

1. In a water-elevator, a submerged tank having an opening in its vertical wall, a plug adapted to close said tank-opening and having itself an inlet-opening, a valve-plate mounted to swing on said plug and adapted to close its opening, a lever including a cam pivotally mounted on said plug and adapted to close said swing-valve, a float for actuating said lever, means for fastening said plug from the outside, an outlet-opening in the tank and means for discharging the water from the tank.

2. In a water-elevator, a submerged tank having an opening in its vertical wall, a plug adapted to close said opening and having itself an inlet-opening, a valve-plate mounted to swing on the inner wall of said plug and adapted to close its opening, means mounted on the plug adapted to close said swing-valve, an outlet-opening in the tank and means for discharging the water from the tank.

3. In combination in a compressed-air water-elevator, a submerged tank, a water-outlet therefrom, an air-chamber in the dome of said tank, means for supplying compressed air thereto, a manhole and plug in the side of said tank, an opening in said manhole-plug flared inwardly, a plate supported at its bottom opposite said flared opening in bearing-studs located on the inside of said plug below said opening, a plug on said plate adapted to fit in and close said flared opening when said plate is moved toward said opening, and means for moving said plate toward said opening, substantially as described.

4. In combination in a compressed-air water-elevator, a submerged tank, a water-outlet therefrom, an air-chamber in the dome of said tank, means for supplying compressed air thereto, a manhole and plug in the side of said tank, an opening in said manhole-plug flared inwardly, a plate supported at its bottom opposite said flared opening in bearing-studs located on the inside of said plug below said opening, a plug on said plate adapted to fit in and close said flared opening when said plate is moved toward said opening, means for closing said valve consisting of a cam journaled eccentrically in studs or brackets projecting inwardly from said manhole-plug on either side of said valve-plate, a lever attached to said cam, and a float attached to the free end of said lever adapted to raise the same and turn the eccentric cam to force the plate toward said manhole-plug whereby to close said valve substantially as described.

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

GEORGE H. STOUT.

Witnesses:
A. ROLAND JOHNSON,
SARA P. JOHNSON.