No. 803,722. PATENTED NOV. 7, 1905.

T. L. SMITH.

LIQUID DISCHARGING TANK.

APPLICATION FILED JULY 20, 1904.

Fig. 1.

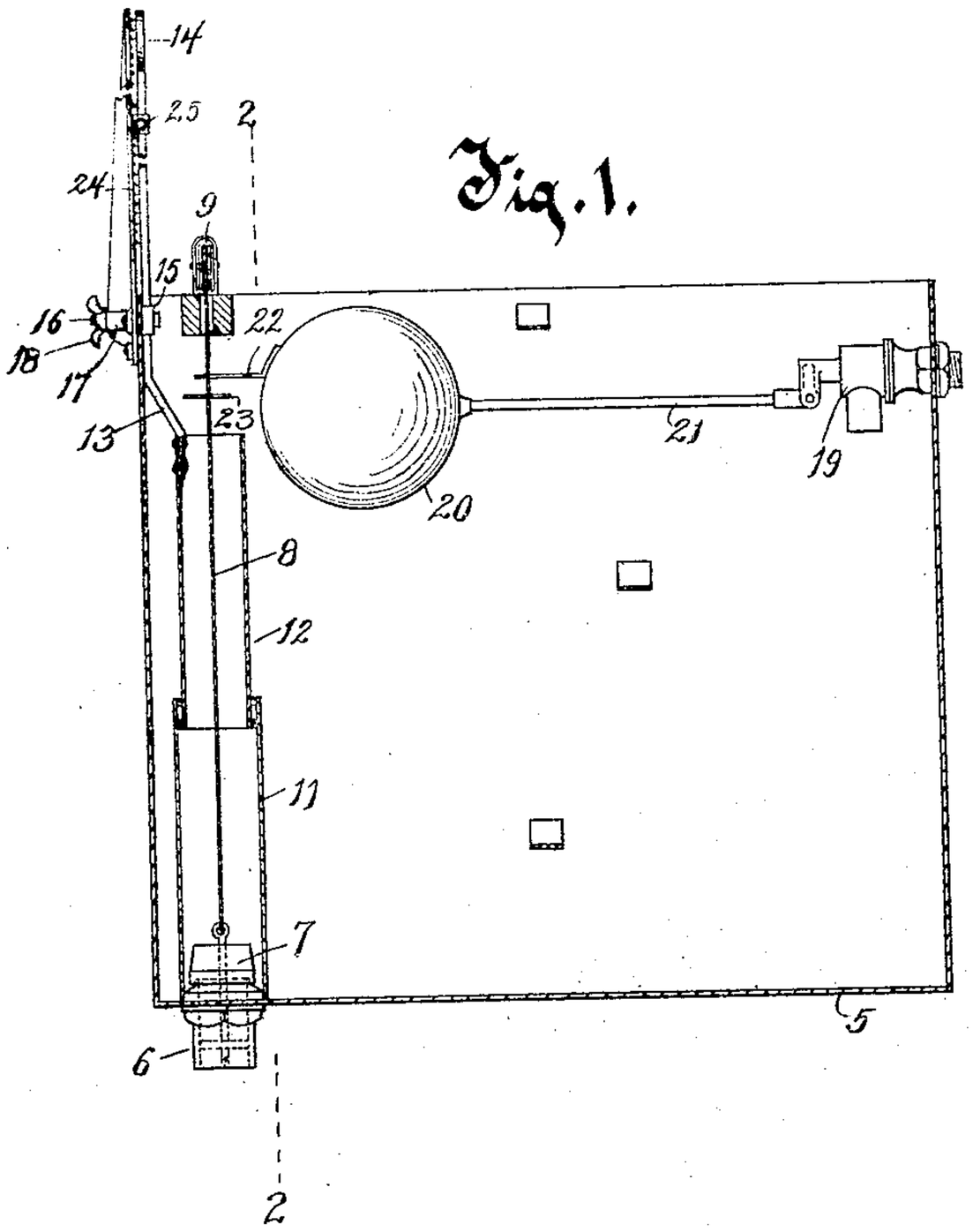


Fig. 2.

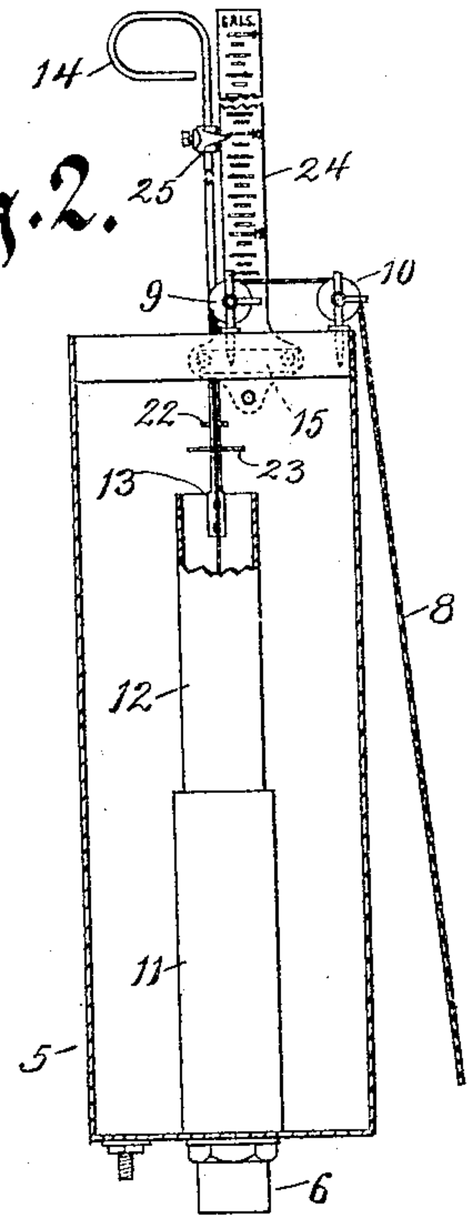


Fig. 3.

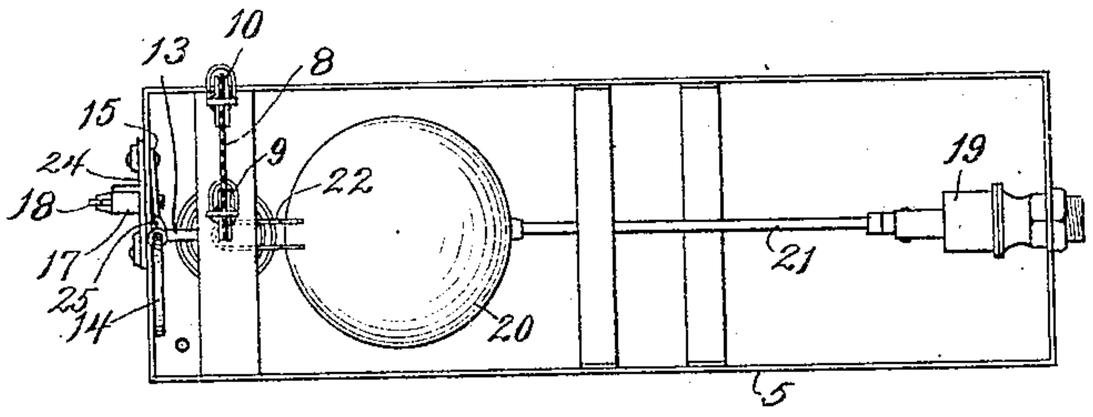
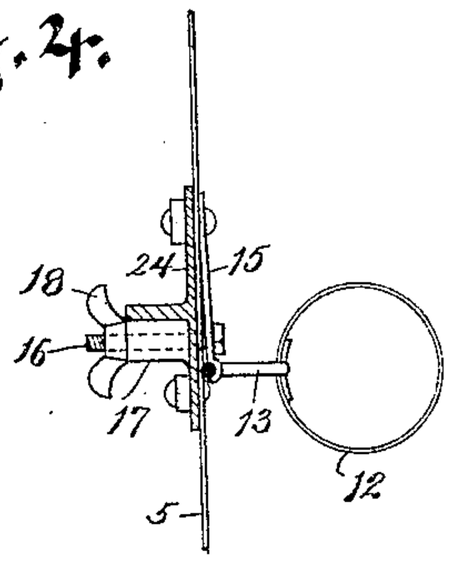


Fig. 4.



Witnesses.

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LIQUID-DISCHARGING TANK.

No. 803,722. Specification of Letters Patent. Patented Nov. 7, 1905.

Application filed July 20, 1904. Serial No. 217,322.

To all whom it may concern:

Be it known that I, THOMAS L. SMITH, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Liquid-Discharging Tanks, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in liquid-discharging tanks.

The object of the invention is to provide a construction whereby regulating mechanism is employed capable of being set so as to discharge from the tank the liquid contents thereof automatically in measured quantities. For instance, the regulating mechanism may be so set as to discharge, say, ten gallons from the tank. Under this adjustment each time the outlet-valve is opened ten gallons of the liquid will be discharged, and this operation will be repeated upon each successive opening of the outlet-valve until such a time as the regulating mechanism is set to discharge another given amount of the liquid.

The invention is particularly adapted, although not necessarily, for use in connection with concrete-mixing machines. In machines of this character where a batch of material is mixed at one time the several ingredients are preferably measured, so that the quantity of each ingredient will be the same in the several successive batches. My improved device therefore when employed in connection with concrete-mixing machines is adapted to be set so as to measure the quantity of water which it is desirable to supply to each batch. Under different conditions, however, different amounts of water are required to be supplied to the mixing-receptacle of the mixing-machine, and hence the necessity exists for a simple and easily-manipulated mechanism for regulating the quantity of water to be supplied.

Having the above ends in view, the invention consists of the devices and parts or their equivalents, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a vertical sectional view through a tank embodying my improvements. Fig. 2 is a cross-section on the line 2 2 of Fig. 1. Fig. 3 is a plan view of Fig. 1, and Fig. 4 is an enlarged detail view of a portion of the mechanism.

Referring to the drawings, the numeral 5 indicates the tank, which may be of any desirable form, but is preferably of the shape illustrated in the accompanying drawings. An opening is provided in the bottom of the tank, and in this opening is fitted a nipple 6. This nipple is controlled by means of an outlet-valve 7, which valve is operated by means of a chain or equivalent flexible device 8, which extends upwardly over pulleys 9 and 10, respectively, mounted on the upper edge of the tank, the chain being thence extended downwardly to within convenient reach of the operator. The portion of the nipple 6 within the tank and also the valve 7 are surrounded by a pipe-section 11, having adjustably telescoping within it a tube 12, which is open at both ends and has connected to its upper end a rod 13, said rod preferably formed or provided at its upper end with an operating-handle 14.

The tube 12 is adjustable vertically within the pipe-section 11 by means of the rod 13. When the rod 13 is pushed downwardly, the tube 12 is necessarily lowered, and hence the quantity of water to be discharged from the tank is increased—that is to say, a larger volume of water will be permitted to pass out of the tank through the tube and the pipe-section with which said tube telescopes whenever the valve 7 is raised and the nipple 6 thereby opened. Under these conditions water will continue to flow from the tank until the level of the water falls to such an extent as to be even with the upper end of the tube 12. Of course, when the rod 13 is raised and the tube 12 thereby raised the quantity of water permitted to discharge from the tank when the valve 7 is opened is decreased in accordance with the extent of the raising of the rod 13.

It is desirable when the tube 12 is adjusted so as to discharge a certain quantity of water to secure said tube in such adjusted position. Any desirable mechanism may be employed for this purpose, and in the accompanying drawings I have shown a convenient form of mechanism, consisting of a clamp 15, in the nature of an arm or strap, riveted at one end to the wall of the tank and having its opposite free end bent into curved or hooked form to fit over the rod 13. A bolt 16 passes through this clamping-arm, through the wall of the tank, and through a tubular laterally-projecting boss 17. Upon its inner end the bolt is

provided with a head which bears against the clamping-arm, and at its outer end the bolt is threaded to receive a winged nut 18, which is adapted to be turned against the end of the tubular boss. By turning the nut in one direction it is evident that the clamping-arm will be caused to clutch or tightly engage the rod 13, and hence retain said rod in adjusted position, and by turning the nut in the opposite direction the arm is unclamped from the rod to permit of changing the adjustment of said rod.

The tank is provided with an ordinary float-controlled valve, the casing thereof being indicated by the numeral 19. The float-ball is indicated by the numeral 20, and the connecting rod between the float-ball and the inlet-valve mechanism by the numeral 21.

In order that the float-valve will not admit water to the tank during the time the outlet-valve is raised and water is passing out of the tank through the nipple 6, a projection 22, preferably in the form of a wire loop, extends from the float-ball, and a button 23, carried by the chain 8, is adapted on the raising of the chain to contact with the projection 22, and thereby hold the float-ball in its raised position even when the water (by reason of the level thereof falling) no longer supports said float. When the projection from the float is in the form of a wire loop, the chain 8 passes through said loop.

A pipe, (not shown,) preferably a flexible tube, is employed for conducting the water from the nipple to the point of discharge. This pipe may lead to the mixing-receptacle of a concrete-mixing machine or to any other device into which the water is to be discharged.

A scale 24, in connection with an index-finger or pointer 25, the latter carried by the rod 13, may be conveniently employed to indicate the quantity of water contained in the tank above the level of the upper end of the tube 12, and thereby indicate the quantity of water which will be discharged under a given adjustment of the tube 12 each time the outlet-valve is raised from its seat. The scale-marks are shown on an arm secured to and extending upwardly from one of the side pieces of the tank, and the position of the scale-arm is such that the index-pointer will traverse the graduated face thereof when the rod 13 is raised or lowered. The tubular boss 17, hereinbefore referred to, may conveniently project outwardly from the lower end of this scale-arm. In initially adjusting the pointer it is set on the rod 13 the same distance below the zero-mark on the scale-arm that the top of the tube 12 is below the top of the water in the tank. Subsequent adjustments of the tube 12, therefore, will correspondingly adjust the pointer, and hence enable the operator at any time to determine the quantity of water which is discharged when an outlet-valve is opened so long as the service-pressure in the supply-pipe remains constant.

In the operation of my device if the parts are in the position illustrated in the drawings and the chain 8 is raised this will have the effect of opening the outlet-valve 7, and consequently permit the water to flow out of the tank. When the chain 8 is raised, the button 23 thereon will come in contact with the projection 22 of the float-ball and will consequently maintain said float-ball in its raised position so long as a pull is exerted on the chain, and thereby prevent the float-ball from falling and admitting a quantity of water through the inlet-opening during the time water is discharging from the tank. So long as the pull is continued on the chain 8, the water will flow out of the tank through the telescoping sections 12 and 11 and through the nipple 6 until the level of the water in the tank is flush with the upper end of the tube 12. As soon as the water ceases to flow the operator releases the chain 8 and the valve 7 then reseats itself and at the same time the float-ball 20 then seeks the new level of the water in the tank, and thereby opens the inlet-valve and admits water until the normal level is again reached.

What I claim as my invention is—

1. The combination of a liquid-containing tank provided with a discharge-opening, telescoping tube-sections within the liquid-containing tank, one of said sections communicating, within the liquid-containing tank, with the discharge-opening, and means for telescopically adjusting one of the tube-sections within the other, whereby the inlet-opening of said adjusted tube-section is brought at a greater or less distance below the normal level of the liquid in the tank.

2. The combination of a liquid-containing tank provided with a discharge-opening, telescoping tube-sections within the liquid-containing tank, one of said sections communicating, within the liquid-containing tank, with the discharge-opening, means for telescopically adjusting one of the tube-sections within the other, whereby the inlet-opening of said adjusted tube-section is brought at a greater or less distance below the normal level of the liquid in the tank, and means for holding said adjusted tube-section releasably in adjusted position.

3. The combination of a liquid-containing tank provided with a discharge-opening, telescoping tube-sections within the liquid-containing tank, one of said sections communicating, within the liquid-containing tank, with the discharge-opening, an arm extending from one of said tube-sections, said arm, when raised or lowered, bringing the inlet-opening of the tube-section to which it is connected at a greater or less distance below the normal level of the liquid in the tank, and means for

holding said arm releasably in adjusted position.

4. The combination of a liquid-containing tank provided with a discharge-opening, telescoping tube-sections within the liquid-containing tank, one of said sections communicating, within the liquid-containing tank, with the discharge-opening, an arm extending from one of said tube-sections, said arm when raised or lowered bringing the inlet-opening of the tube-section to which it is connected at a greater or less distance below the normal level of the liquid in the tank, a clamping-bar engaging the adjusting-arm, and means for causing said clamping-bar to engage the adjusting-arm so as to hold said arm releasably in adjusted position.

5. The combination of a liquid-containing tank provided with a discharge-opening, a valve for controlling said discharge-opening, a flexible device connected to said valve and carrying a button, float-ball-controlled inlet-valve mechanism, and a projection from the float-ball, said projection, when the flexible device is pulled and the outlet-valve thereby opened, adapted to be acted upon by the button carried by the flexible device whereby the inlet-valve mechanism is held at a closed position, and when the flexible device is released and the outlet-valve thereby seated, the inlet-valve is opened to admit a quantity of liquid into the tank to replace the liquid discharged therefrom.

6. The combination, of a liquid-containing tank provided with a discharge-opening, a valve for controlling said opening, means for operating the said valve to open and close the discharge-opening, telescoping tube-sections within the liquid-containing tank, one of said sections surrounding the discharge-valve, and means for telescopically adjusting one of the tube-sections within the other, whereby the inlet-opening of said adjusted tube-section is brought at a greater or less distance below the normal level of the liquid in the tank.

7. The combination of a liquid-containing tank provided with a discharge-opening, a valve for controlling said discharge-opening, telescoping tube-sections, one of said sections surrounding the discharge-valve, means for telescopically adjusting one of said tube-sections within the other, whereby the inlet-opening of said adjusted tube-section is brought to a greater or less distance below the normal level of the liquid in the tank, a flexible device connected to the discharge-valve and passing through the telescoping tubes, said flexible device carrying a button, float-ball-controlled inlet-valve mechanism, and a projection from the float-ball, said projection, when the flexible device is pulled and the outlet-valve thereby opened, adapted to be acted upon by the button carried by the flexible device, whereby the inlet-valve mechanism is held at a closed position, and when the flexible device is released and the outlet-valve thereby seated, the inlet-valve is opened to admit a quantity of liquid into the tank to replace the liquid discharged therefrom.

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

THOMAS L. SMITH.

Witnesses:
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