

Sept. 26, 1933.

D. H. HILL

1,928,103

FLOAT CONTROLLED DRINKING FOUNTAIN

Filed Feb. 24, 1932

2 Sheets-Sheet 1

Fig. 1

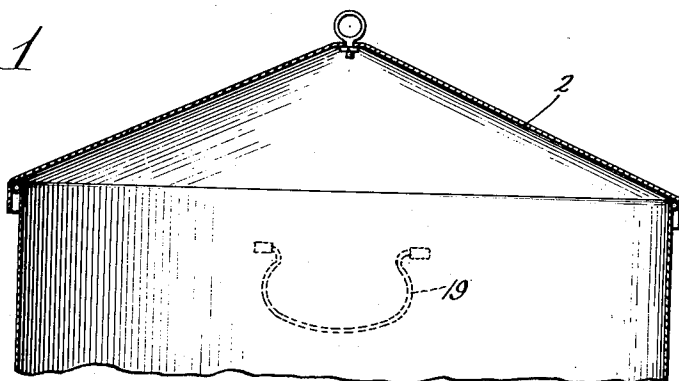
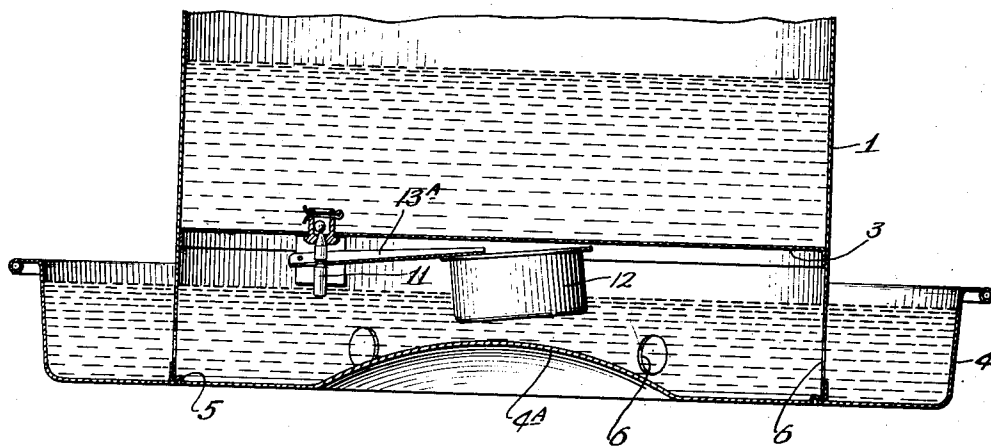


Fig. 2

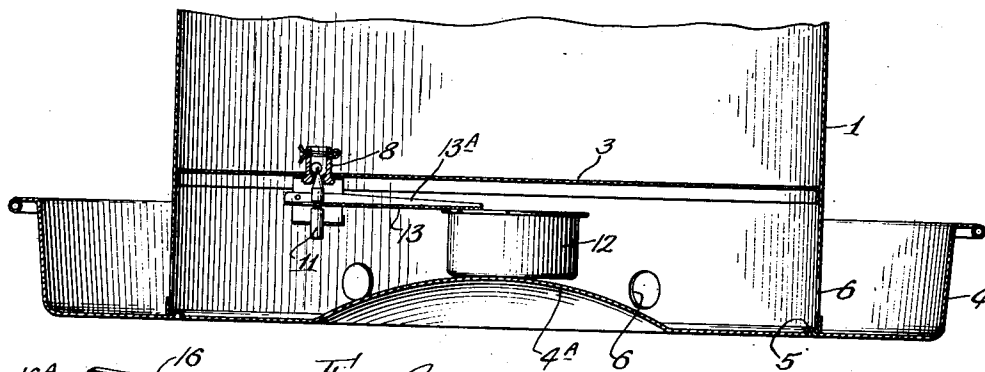
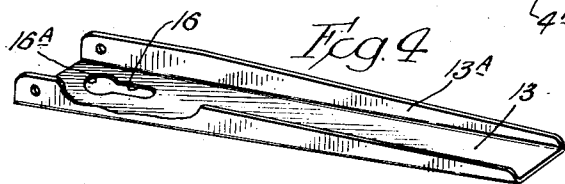


Fig. 4

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Fig. 3

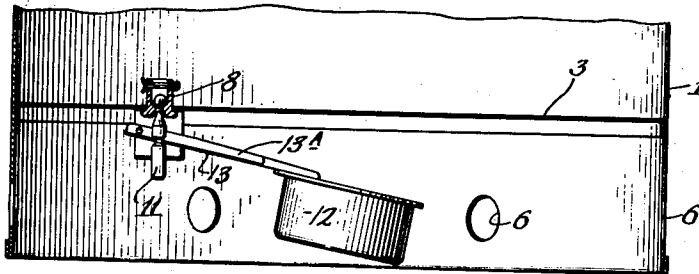


Fig. 11

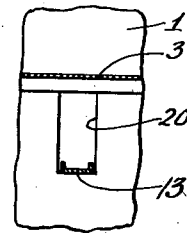


Fig. 10

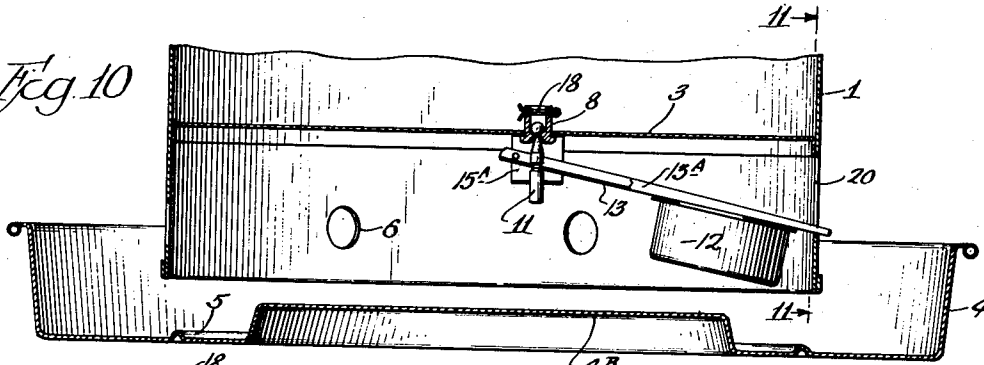


Fig. 5

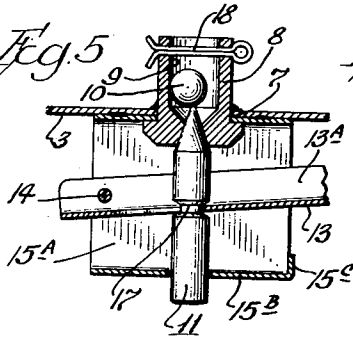


Fig. 6

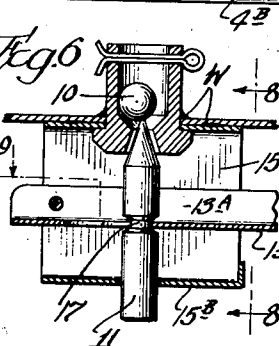


Fig. 7

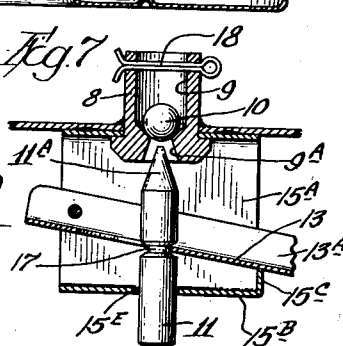


Fig. 8

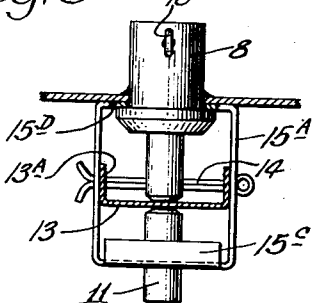
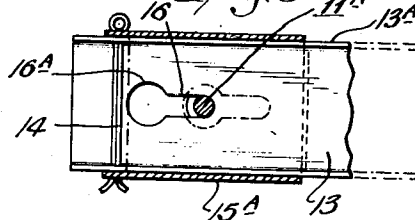


Fig. 9



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UNITED STATES PATENT OFFICE

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FLOAT CONTROLLED DRINKING FOUNTAIN

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Application February 24, 1932. Serial No. 594,871

10 Claims. (Cl. 119—78)

My invention relates to the class of drinking founts in which the water is automatically maintained at a given height in a well, and in which the water-supplying reservoir can be detached from the well to facilitate the refilling.

Founts of this class having long been used in various sizes by raisers of chicks, larger poultry and even hogs; and with the smaller types (in which a so called Mason jar served as the water receptacle) it is customary to attach the well or base portion while inverted to the filled jar, after which the jar and well assembly is turned to its normal position.

With larger sizes, the weight of the assembled fount is too great to permit a similar procedure. Hence it has been customary to provide the mouth end of the receptacle with a relatively small discharge outlet controlled by a spring-pressed valve which has a projecting valve stem disposed for engaging the bottom of the well to open the valve when the receptacle is placed in its normal position on the well. In practice, this arrangement has the serious objection that the valve stem also projects downward from the receptacle whenever the latter has its outlet directed downward, so that the receptacle cannot then be set down on any flat surface without causing its contents to run out. Moreover, both the projecting valve stem and also the projecting outlet neck (which is usually provided for limiting the rise of the water in the well to a level somewhat lower than the adjacent end of the receptacle) are apt to be damaged by the rough handling which farm hands give to such a container. Moreover, the valve closing spring, sometimes catches or otherwise becomes inoperative, and the filled receptacle is so heavy that it cannot easily be inverted by a woman or child.

My present invention aims to overcome these objections by providing a drinking fount of this class in which no part will project below the casing of the reservoir, thereby permitting the latter to be set down freely on any floor or ground without causing liquid to discharge; and in which the reservoir can readily be refilled from the top, either when detached or while still in its normal position with respect to the well, so that no inverting of the reservoir is required at any time.

In addition, my invention aims to provide a valve arrangement requiring no spring; which valve arrangement will automatically close the discharge outlet of the receptacle when the latter is lifted off the well, open this outlet when the receptacle is set down on an empty or inadequately filled well, and close the outlet whenever the

water in the well reaches a certain level. Moreover, my invention aims to provide a simple and cheaply manufactured liquid control arrangement for these purposes, and one which can be attached with equal facility to receptacles of differing sizes.

More particularly, my invention aims to provide a liquid fount of the class described in which all of the valve mechanism portions below the lower end of the reservoir are laterally housed by a reservoir-casing extension which reaches below these ports and prevents such parts from even touching the ground or other floor on which the detached reservoir may be set. Furthermore, my invention aims to provide a liquid control arrangement in which the weight of a float continually tends to open the discharge outlet of the reservoir, in which a check-valve ball is disposed for closing this outlet, in which the raising of the float by water in the well effects both a closing of the said outlet and a lifting of the check valve ball; and in which the well has a portion disposed for limiting the downward movement of the float to a position in which the said outlet is open.

Still further and more detailed objects will appear from the following specification and from the accompanying drawings, in which

Fig. 1 is a central and vertical section through a drinking fountain embodying my invention, with the float in the maximum raised position in which it shuts off a further flow of water from the reservoir to the pan or well.

Fig. 2 is a section similar to the lower portion of Fig. 1, but taken when the pan and the reservoir are both empty.

Fig. 3 is a central and vertical section through the lower portion of the reservoir when lifted off the pan.

Fig. 4 is an enlarged perspective view of the lever through which the float operates the stem of the lower valve member.

Figs. 5, 6 and 7 are enlarged sections of the valve assembly and parts adjacent to the latter, taken in the same plane as Fig. 1 and showing the parts respectively in positions corresponding to Fig. 1, 2 and 3.

Fig. 8 is a side elevation taken from the line 8—8 of Fig. 6.

Fig. 9 is a horizontal section along the line 9—9 of Fig. 6, showing the lever as positioned during the assembling of the valve mechanism.

Fig. 10 is a central and vertical section through the pan and the lower portion of reservoir, showing another embodiment of my invention.

Fig. 11 is a fragmentary elevation, looking toward the right from the line 11--11 of Fig. 10.

In the embodiment of Figs. 1 to 9, the reservoir of my drinking fountain comprises an upright cylindrical wall 1 on the upper edge of which a cover 2 is detachably seated, and a bottom 3 spaced upwardly from the lower end of the wall 1 by a distance considerably greater than the maximum depth to which water is to be admitted to the pan 4 on the bottom of which pan the said lower wall end is normally seated. This pan is of larger diameter than the reservoir so as to present an annular water-exposing trough around the lower portion of the riser wall 1 of the reservoir, which wall is centered on the pan by an annular riser formation 5 on the bottom of the pan, and which wall has apertures 6 near its lower edge.

The elevated reservoir bottom has an aperture 7 through which a tubular valve body 8 extends, the upright bore 9 of this body affording the outlet passage through which the water discharges from the reservoir into the pan. The discharge of water through the bore 9 is controlled by two superposed valve members, the upper of which is a valve ball 10 housed by the upper portion of the said bore and adapted to be rolled by gravity to its seating position of Figs. 1 and 3, in which position it closes the upper end of the smaller diametered lower bore portion 9 A.

This lower bore portion desirably tapers upwardly at the same angle as the tapering upper end 11 A of a stem-like lower valve member 11 which is raised and lowered by a float 12 disposed within the portion of the riser wall 1 of the reservoir which is below the reservoir bottom 3. To afford this motion, the drawings show the float (which may be a hollow metal cylinder) as welded at its top to one end of a float lever, which lever is pivoted on a horizontal pivot pin 14 spanning the opposite sides 15 A of a supporting member fastened to the reservoir bottom 3, the said pin being desirably a cotter pin.

As here shown, the lever includes a flat bottom portion 13 and riser webs 13 A extending upwardly from each side edge of the said bottom portion, through which webs the pivoting pin 14 extends, the spread of these webs being slightly less than that of the sides 15 A of the supporting member. The lower valve member 11 has intermediate its ends a diametrically contracted portion 17 which extends through a perforation in the bottom 13 of the float lever to present an annular shoulder resting on the lever bottom 13 to support the lower valve member. To permit a convenient assembly, the part of the lever perforation through which the contracted part 17 of the lower valve member extends is a slot 16 extending longitudinally of the lever and having at one end a slot enlargement 16 A of larger diameter than the main portion of the lower valve 12.

As here shown, the supporting member 15 includes a bottom portion 15 B connecting the riser sides 15 A and having at the end nearest to the float a riser web 15 C of such a height as to engage the bottom 13 of the float lever before any part of the float reaches the level of the lower end of the reservoir casing 1, as shown in Figs. 7 and 3. The supporting member also includes top webs 15 D which extend toward each other and are welded to the reservoir bottom 3, as by the welds W in Fig. 6.

With the supporting member thus constructed, this can be positioned against the reservoir

bottom and have its top webs welded to that bottom, after which the valve body is also welded to the said bottom as shown in Fig. 5. The lever 13 then has its pivoting end slid between the riser sides 13 A of the supporting member to a position (shown in dotted lines in Fig. 9) in which the enlarged slot end 16 A aligns with a valve guiding perforation 15 E (Fig. 7) coaxial with the bore of the valve body, so that the lower valve 11 can be slid up through this perforation until its contracted portion comes in the general plane of the lever bottom 13.

The lever then is slid (to the position shown in full lines in Fig. 9) to align the perforations in its riser webs 13 A with corresponding perforations in the riser webs 15 A of the supporting member as shown in dotted lines in Fig. 9, after which the pivoting pin 14 is inserted. A stop cotter 18 is also inserted in the valve member to extend across the bore of the latter at some distance above the normal top of the check valve ball 10, thereby completing the assembly.

When the empty reservoir is lifted off the pan or well, as by means of the usual bails 19 of Fig. 1, the float drops to the position of Fig. 3 in which the float clears any horizontal surface on which the reservoir may be set, and in which the lower valve 11 is moved downwardly to a position (enlarged in Fig. 7) permitting the check valve ball 10 to close the upper end of the valve outlet 9 A. The reservoir can then be filled from its top, carried back to the pan, and be set into its operative position on the pan without inverting the reservoir, all without spilling any water.

When the reservoir is thus replaced on the pan, the engagement of the float with a riser formation on the pan (here shown as a bottom boss 4 A) raises the lower valve member to the mid-height position of Figs. 2 and 6, in which the tip portion 11 A of that valve raises the check valve 10 out of its closure position but still leaves considerable clearance between the said tip portion and the outlet bore 9 A of the valve body. Water then flows through this valve body into the pan until the level of the water in the pan is sufficient for raising the float to the position of Figs. 1 and 5 in which the lower valve member closes the valve outlet 9 A and shuts off the flow from the reservoir. Then whenever enough water has been consumed from the outer or trough portion of the pan to lower the liquid level in the pan materially, the valve is partially reopened (as in Fig. 6) to admit a further supply of water to the pan.

Thus, my simple and inexpensive double valve arrangement automatically controls the level of the liquid in the pan and also controls the discharge outlet of the reservoir so that this can be freely and speedily handled for a convenient refilling without any manual manipulation of valve parts, the stop cotter 18 being provided merely to prevent the check ball from rolling out of the valve body if the empty receptacle is turned out of its normal upright position when being carried or shipped.

However, while I have heretofore described my invention in an embodiment in which a valve-controlling lever is halted in one direction by a part of a supporting member on which this lever is pivoted, and in which the lower valve member extends through a slotted portion of this lever, I do not wish to be limited to these or other details of the construction and arrangement thus disclosed, since many changes may be made

without departing either from the spirit of my invention or from the appended claims.

For example, Fig. 10 shows an embodiment of my invention in which the float lever extends through an upright slot 20 in the reservoir wall 1 (below the bottom 3 of the reservoir) and is limited in its downward swinging by engagement with the lower end of this slot. This allows the valve assembly to be disposed more centrally of the reservoir, the float-engaging formation on the pan being suitably altered as shown at 4 B, so that it will dispose a portion of the proper height for engaging the float when the fountain is assembled.

I claim as my invention:

1. A drinking fount comprising a well-forming base member, a water reservoir detachably seated upon the said base member with the bottom of the reservoir spaced upwardly from the bottom of the pan, the reservoir having a discharge outlet in its bottom; and a valve mechanism controlling the said outlet; and riser means on the base member for actuating the said mechanism to open the said outlet when the reservoir is set into the base member, the valve mechanism also includes a float serving to close the said outlet to a greater extent when the water in the pan exceeds a predetermined level.

2. A drinking fount as per claim 1, in which the base member is a pan having an upwardly formed bottom portion affording the said riser means.

3. A drinking fount as per claim 1, in which the base member is a pan having an upwardly formed bottom portion affording the said riser means, the said bottom portion being disposed for engaging the float.

4. A drinking fount comprising a well-forming base member, a water reservoir having its lower end smaller in diameter than the base member and having the said end normally seated on the said base member, the bottom of the reservoir being spaced upwardly from the bottom of the base member, and the reservoir having a discharge outlet in its bottom; and a valve mechanism supported by the bottom of the receptacle, the base member having a riser portion disposed for actuating the mechanism to open the said outlet when the reservoir is set down upon the base member; and the mechanism including a float arranged for closing the said outlet when the container is lifted off the base member, and also for closing the said outlet when the level of water in the base member reaches a predetermined height while the reservoir is positioned on the base member.

5. A drinking fount as per claim 1, in which the lower end of the reservoir is of smaller diameter than the base member and in which the bottom of the base member has a formation engaging the said lower reservoir end to center the reservoir on the base member.

6. A drinking fount as per claim 1, in which the side wall of the container extends below the bottom of the container and seats on the bottom of the base member, the portions of the valve mechanism below the bottom of the container being continually housed by the part of the said side wall which is below the container bottom.

7. Means for controlling the discharge of liquid through a perforation in the bottom of a receptacle for the liquid, comprising an upright tubular valve body extending through the said perforation, the bore of the valve body compris-

ing a lower and upwardly tapering bore portion and an upper bore portion of larger diameter than the upper end of the said lower bore portion; a check valve ball disposed in the upper bore portion and of larger diameter than the said upper end but smaller in diameter than the upper bore portion; a vertically movable valve member having a tapering end adapted to fit into the lower bore portion with the tip of that end projecting above the lower portion into the upper bore portion; a float lever connected to the said valve member, and a pivoting member supported by the receptacle bottom and serving to guide the said valve member, the lever being pivoted on the pivoting member.

8. Liquid discharge means as per claim 7, in which the valve member has intermediate its ends a diametrically contracted portion connected to the upper and lower parts of that member by annular shoulders; and in which the lever has a slot of less diameter than the exterior diameter of the said shoulders, through which slot the said portion normally extends; the slot also having an enlargement through which one end part of the valve member can be inserted, the said enlargement being normally spaced from the contracted portion of the valve member.

9. A drinking fount comprising a base member, a water reservoir detachably supported by the said base member with the bottom of the receptacle spaced upwardly from the bottom of the pan, the receptacle having a discharge outlet in its bottom, a valve member continuously urged by gravity to close the said outlet, and float-actuated means arranged for lifting the said valve member out of its closure position and thereafter closing the outlet independently of the said valve member; the float-actuated means including a second valve member adapted upon upward movement thereof to lift the first named valve member and thereafter close the said outlet, and a float disposed between the bottoms of the container and the base member, a lever supporting both the float and the second valve member, and a pivoting member fastened to the container and upon which the lever is pivoted, the pivoting member having a portion thereof disposed for engaging the lever to limit the downward movement of the lever.

10. A drinking fount comprising a base member, a water reservoir detachably supported by the said base member with the bottom of the receptacle spaced upwardly from the bottom of the pan, the receptacle having a discharge outlet in its bottom, a valve member continuously urged by gravity to close the said outlet, and float-actuated means arranged for lifting the said valve member out of its closure position and thereafter closing the outlet independently of the said valve member; the actuated means including a second valve member adapted upon upward movement thereof to lift the first named valve member and thereafter close the said outlet, and a float disposed between the bottoms of the container and the base member and operatively connected to the second valve member; the bottom of the base member has a portion thereof disposed for engaging the float when the container is set into the base member to raise the float to an extent sufficient for lifting the first named valve member out of its closure position but insufficient for raising the second valve member to its closure position.

DEWEY H. HILL.