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C. J. GARDNER

STOCK WATERING BOWL

Filed August 8, 1925

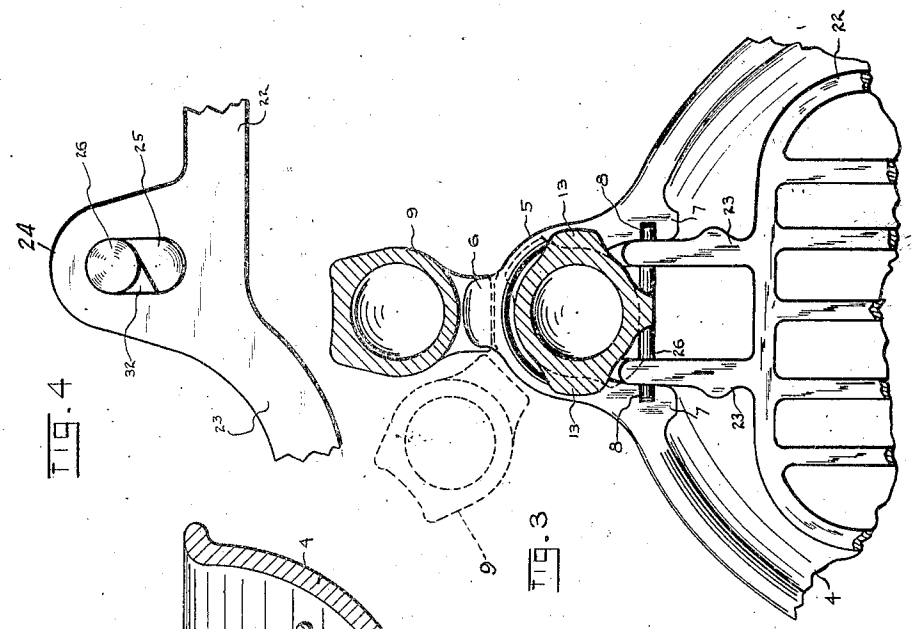


FIG. 4

FIG. 3

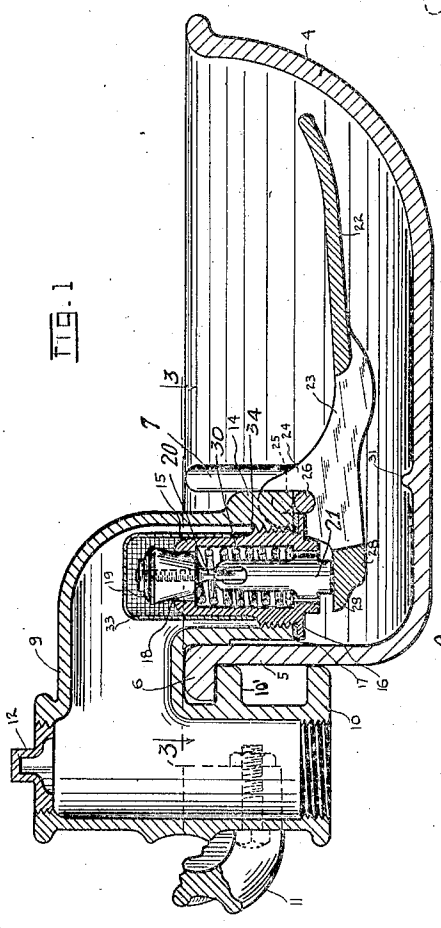


FIG. 1

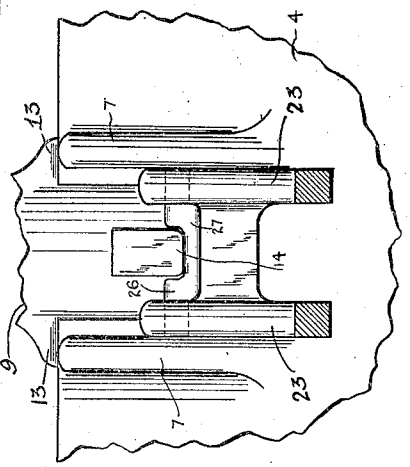


FIG. 2

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UNITED STATES PATENT OFFICE.

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STOCK-WATERING BOWL.

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My invention has relation to improvements in stock watering bowls.

In devices of this character, it is a desideratum to provide for ready removability of the bowl for cleaning purposes, and also for ready replacement of the bowl, after the cleaning operation has been performed.

It is important in a bowl of this character, after it is adjusted to position ready for use, that it be held firmly in said position, against the possibility of being moved in any direction, and to avoid the possibility of its being accidentally detached owing to pressure exerted by the nose of the cow, when the cow inserts her head in the bowl.

It is one of the objects of this invention, to provide an improved means of connection between the supply pipe and the bowl, whereby when the bowl is in its attached position, there is no possibility of the bowl being moved in any direction by pressure exerted by the animal, while yet the easy attachment and replacement of the bowl is not interfered with.

The invention further contemplates improved valve operating means, which not only provides for easy manipulation of the valve mechanism by the animal, but furthermore provides for easy and rapid removal or adjustment of the valve mechanism, when it is desired to gain access to all parts of the bowl for cleaning purposes.

A still further important object is the provision of a construction whereby the necessity of machining of the parts is rendered unnecessary, inasmuch as the construction of my improved bowl is such that the different component parts thereof may be cast and the machining operation dispensed with.

With the above main objects and other incidental objects in view, the invention consists of the devices and parts and all equivalents thereof as hereinafter more fully set forth.

In the accompanying drawing,

Fig. 1 is a sectional view through the bowl, valve mechanism, and supply pipe, as well as the attaching clevis, the parts being in assembled position ready for use;

Fig. 2 is a fragment of the inner side of the rear of the bowl, and the inner face of the inner leg of the supply pipe;

Fig. 3 is a plan view of a fragment of the rear of the bowl the valve casing and valve mechanism being removed, the supply pipe being in horizontal section as indicated by the dotted lines 3—3 of Fig. 1, and an adjusted position of the supply pipe being shown by dotted lines; and

Fig. 4 is a detail view of the pivot pin and valve-operating mechanism mounted thereon.

Referring to the drawing, the numeral 4 indicates the bowl, said bowl being provided at its rear with an extension 5, preferably partly circular in cross section, to conform to the circular contour of the inner leg of the supply pipe. This extension is provided at the center of its upper edge with a rearwardly projecting horizontal lip 6.

The rear portion of the bowl, where the extension 5 opens into the bowl, is provided with vertical ribs 7—7, each rib being formed with a vertically-extending recess 8.

The supply pipe is indicated by the numeral 9, and is of the usual inverted U-shaped form of construction.

The outer leg of this supply pipe has projecting from the inner side thereof two spaced-apart horizontally extending lugs 10 and 10′. The lower lug 10 bears against the outer surface of the circular extension 5 of the bowl, and the upper lug 10′ also bears against said surface, and furthermore, when the bowl is adjusted to the pipe to its normal position, it fits beneath the rearwardly-extending lip 6, of the bowl, said lip 6, resting upon said lug 10′.

Suitably bolted to the outer leg of the supply pipe, and extending diagonally therefrom is a clevis 11, the inclined position of which renders it capable of engaging either a vertical or horizontal post or other supporting medium, whereby the supply pipe is held firmly in supported position.

Either end of the outer leg of the supply pipe may be connected to a source of water supply, threaded openings in the opposite ends of said outer leg being provided for that purpose. As shown in the drawing, the connection should be made at the lower end of the outer leg of the supply pipe, said lower end being open and interiorly threaded. A similar threaded opening is provided at the upper end of the outer leg of the supply pipe, and a screw cap 12 is shown as closing this upper opening. When, however, it is desired to connect the upper end

of the outer leg of the supply pipe to the source of water supply, the cap 12 is removed from the upper opening, and screwed into the lower opening.

The inner leg of the supply pipe, at the upper portion thereof, is provided with oppositely-disposed laterally-extending lugs or ears 13—13, which, when the bowl is in its normal position for use, rest upon the upper edge of the rounded extension 5 of the bowl.

Also the inner side of the inner leg is formed with a lug 14, the function of which will be hereinafter set forth.

The valve-casing is indicated by the numeral 15, said casing having a threaded connection at its lower end with the lower end of the inner leg of the supply pipe. The valve-casing near its lower end is provided with an annular flange 16, which extends beneath the lower end of the inner leg of the supply pipe, a packing 17, being interposed between the two.

The upper end of the valve-casing is provided with an opening 18 through which water from the supply pipe may flow and enter said valve-casing. The valve-opening is controlled by means of a tapered plug valve 19. The stem of this valve is made of two parts, viz, an upper part 20 depending from the valve, and a lower portion 21 articulating with said upper part, and projecting downwardly below the lower end of the inner leg of the supply pipe.

The opening of the valve is controlled by means of a pressure plate 22, which plate is operated by the pressure of the nose of the cow downwardly on said plate. The main portion of the plate is provided with spaced-apart cross bars, to permit of the water flowing upwardly through the spaces between said bars. Projecting from one side of this main portion of the pressure plate are two upwardly curved arms 23—23, having upwardly-extending ears 24—24, said ears being provided with vertically-elongated slots 25—25, which receive loosely therein a transverse pivot pin 26. The central portion of said pin which lies between the arms is offset to form a crank-like formation or bend 27. The ends of this pin extend outwardly laterally through the elongated slots 25, and loosely fit in the vertical recesses 8, so as to be capable of movement vertically in said recesses.

Connecting the two arms 23 beyond the lugs 24 is a cross member 28, having projecting from the center thereof, a finger 29.

This finger, when the parts are in operative position, extends beneath the lower end of the lower valve stem member 21, so that when the outer end of the presser plate is depressed, said plate will turn on its pivot and cause the finger 29 to turn upwardly and act against the lower end of the valve stem member 21, and raise the latter so as to cause an up movement of the valve 19 and consequent uncovering of the valve opening 18. The water is then free to flow from the supply pipe into the valve casing, thence through the lower open end of said casing into the bowl. When the cow ceases to press upon the presser plate, a coiled spring 30 which encircles the valve stem member 21, expands and causes a descent of the valve and a closing of the valve opening 18.

It will be noted that when all the parts are in their assembled condition, the off set or crank-like formation 27 of the pivot pin is beneath the lug 14 formed on the inner side or face of the inner leg of the supply pipe, the lug, by reason of its fitting within said off set portion of the pivot preventing upward movement of said pin within the vertical recesses 8. At times it is important that the presser plate be adjusted, and held in such position as to prevent the cow from operating the same. In order to accomplish this, all that is necessary to be done is to tilt the presser plate slightly to the extent permitted by contact of the finger 29 of the presser plate with one side of a lug 31 upstanding from the bottom of the bowl. The cranked or off set central portion 27 of the pivot pin is next grasped, and turned so as to bring said off set portion from beneath the lug 14.

The pin being held in its outturned position and the presser plate in its slightly tilted position, by the fingers, the said parts are then raised, the ends of the pin, of course, being free to move upwardly in the recesses 8. After being raised a desired distance to bring the finger 29 above the upper edge of the lug 31, the presser plate is then free to be turned to a full vertical position, which vertical position brings the finger 29 in a line in advance of the lug 31. The pin and presser plate are then lowered until the finger 29 strikes the bottom of the bowl, and the presser plate having been turned to a vertical position, the said finger when the plate is so lowered is brought in advance of and in engagement with the lug 31, and hence the presser plate is held in its adjusted vertical position, where it is impossible for a cow to operate the same.

It will be noticed from the Figure 4 of the drawing that each straight end of the pivot pin is provided with a lug 32. These lugs are so positioned as to be located within the elongated slots 25 of the ears 24, and act as stops to limit the extent of the movement of the presser plate in either direction.

Frequently sediment accumulates in the water which enters the supply pipe, and as it is desirable for the water which enters the bowl to be as clean as possible, and free from all sediment, I prefer that the valve casing

be covered with a reticulated or screened covering 33, the lower edge of which rests upon an annular shoulder 34 formed on the valve casing.

With my improved construction, it will be seen that the presser plate and its pivot pin can be readily removed, all that is necessary to be done being to turn the pivot pin sufficiently to bring its offset or cranked portion out of engagement with or from beneath the lower end of the lug 14. The pin and presser plate can then be raised, the ends of the pin moving in the vertical recesses until the upper open ends of said recesses are reached, when of course the pin can be removed and with it the presser plate. If desired, after the removal of the pivot pin and presser plate, said pivot pin can be removed or disassembled from the presser plate merely by turning the pivot pin so as to bring the offset portion thereof in line with the vertically-elongated slots 25 of the ears or lugs 24, and the pin can then be readily pulled through said slots.

It is further to be noted that when the presser plate and pin are removed as previously explained, access to the valve casing and related parts is made possible, and the valve casing and valve removed for cleaning, or other purposes, merely by unscrewing the valve casing.

If it is assumed that the parts are in the position shown in Figure 1, and it is desired to remove the bowl for cleaning purposes, the first step necessary to be taken is to remove the presser plate and pivot pin in the manner previously explained. After these are removed, the bowl is then free to be turned. The bowl is turned sufficiently to bring the lip 6 thereof from its normal position above the upper lug 10′ of the outer leg of the supply pipe. It is evident that there is then no impediment to the complete downward withdrawal and disconnection of the bowl. After such disconnection, the bowl can be taken to a point outside of the stall for cleaning purposes, and the soiling of the floor of the stall by splashing water which would result if the bowl were cleaned in the stall, is avoided.

After the cleaning operation is completed, the bowl is brought back to the stall and raised upwardly between the legs of the supply pipe, with the bowl so positioned that the lip 6 is out of line with the lugs 10 and 10′ of the outer leg of the supply pipe. After the bowl has been raised to such an extent that the upper edge of the rear projection 5 thereof is in contact with the lateral ears 13 which extend from the inner leg of the supply pipe, the bowl is then turned so that the lip 6 is brought to a position above and resting upon the lug 10′. The presser plate and pivot pin are then readjusted to place in an obvious manner.

It will be evident that the bowl cannot be raised or tilted by pressure exerted by the cow beneath the bottom of the bowl in view of the fact that the projecting lip 6 is immediately below and in contact with the underside of the connecting portion between the inner and outer legs of the supply pipe, and also by reason of the provision of the ears 13.

It will be furthermore evident that the bowl cannot be given a sidewise swing when pressure is exerted by the cow upon the inside wall of the bowl by reason of the provision of the lugs 10 and 10′, and also by reason of the more or less close fit of the inner leg of the supply pipe between the walls of the curved extension 5 of the bowl.

It will be further evident that the construction is such that machining of parts is unnecessary, as said parts are all of such nature that they can be readily cast. Furthermore, there are no bolt holes to be drilled, all parts being so constructed that they can be assembled without the necessity of the employment of bolts or other fastening device.

What I claim is:

1. In a stock watering bowl, the combination of a bowl provided at the upper edge of the rear portion thereof with a horizontally projecting lip, a supply pipe of inverted U-shape form, between the legs of which the bowl is insertable, the inner leg of said supply pipe extending into the bowl, and the outer leg thereof provided upon its inner side with a horizontally projecting lug adapted to bear against the rear side of the bowl, the bowl, when in normal supported position, having the projecting lip thereof extending over and engaging said lug, and valve mechanism operable within the bowl, to permit water to flow from the supply pipe into the bowl.

2. In a stock watering bowl, the combination of a bowl provided at the upper edge of the rear portion thereof with a horizontally projecting lip, a supply pipe, of inverted U-shape form, between the legs of which the bowl is inserted, the inner leg of said supply pipe extending into the bowl, and the outer leg thereof provided upon its inner side with horizontally projecting lugs adapted to bear against the rear side of the bowl, the bowl, when in normally supported position, having the projecting lip thereof extending over and engaging the upper of said lugs, and valve mechanism operable within the bowl, to permit water to flow from the supply pipe into the bowl.

3. In a stock watering bowl, the combination of a bowl having a rear extension, a supply pipe of inverted U-shape form, between the legs of which the bowl is insertable, the inner leg of said supply pipe fitting within the rear extension of the bowl and extending

downwardly into said bowl, and having projecting from the upper portion thereof laterally-extending ears which are adapted to rest upon the upper edge of the rear extension of the bowl, and the outer leg of said supply pipe provided on its inner side with a horizontally projecting lug adapted to bear against the rear side of the bowl, and valve mechanism operable within the bowl, to permit water to flow from the supply pipe into the bowl.

4. In a stock watering bowl, the combination of a bowl provided at its rear portion with vertically-extending recesses open at their upper ends, a supply pipe extending into the bowl, valve mechanism within the supply pipe, the valve thereof normally closing the valve opening of the valve mechanism, a presser plate within the bowl, said plate adapted to operate the valve, a pivot pin for said plate, the ends of said pin fitting within the vertically-extending recesses, so as to be capable of movement therein, and consequent withdrawal of the pin and presser plate from the bowl, and means within the bowl for normally holding the pivot pin against upward movement in the recesses to prevent the withdrawal of the pin and presser plate, but adapted, when operated, to permit such upward movement and withdrawal.

5. In a stock watering bowl, the combination of a bowl, provided at its rear with vertically-extending recesses open at their upper ends, a supply pipe extending into the bowl, and formed on its inner face with a lug, a valve casing fitting in said supply pipe, and having a valve opening, a valve normally closing said opening and having a valve stem extending downwardly in the valve casing, a presser plate provided with bearings, said plate in line with and extending beneath the valve stem, and adapted to act upwardly on the valve stem to open the valve, when the plate is turned on its pivot, a pivot pin for said plate and turnably mounted in the bearings thereof, and having a central offset or cranked portion fitting beneath the lug of the supply pipe, and adapted, when the pin is turned, to be out of engagement with the supply pipe lug, the ends of said pivot pin loosely fitting the vertical recesses so as to be capable of movement therewithin, and consequent withdrawal of the pin and presser plate from the bowl.

6. In a stock watering bowl, the combination of a bowl, a supply pipe extending into the bowl, valve mechanism within the supply pipe, the valve thereof normally closing the valve opening of the valve mechanism, a presser plate within the bowl, said plate adapted to operate on the valve mechanism to open the valve, a vertically movable pivot pin for said plate, and detachably engaging means between the presser plate and bowl, and adapted to provide a detachable engagement between the presser plate and bowl when the presser plate is tilted upwardly and the pivot pin is moved upwardly a desired distance, whereby the presser plate is held out of position to be engaged by the cow for operation of the valve mechanism.

7. In a stock watering bowl, the combination of a bowl provided at its rear with vertically-extending recesses, open at their upper ends, a supply pipe extending into the bowl and formed on its inner face with a lug, a valve casing within the supply pipe and having a valve opening, a valve normally closing said opening and having a valve stem extending downwardly in the valve casing, a presser plate provided with bearings, and also having one end in line with and beneath the valve stem, so that when the plate is operated in one direction, it will act on the valve stem to open the valve, a pivot pin for the presser plate, and turnably mounted in the bearings thereof, and having a central offset or cranked portion fitting beneath the lug of the supply pipe, and adapted, when the pin is turned, to be brought out of engagement with the supply pipe lug, the ends of said pivot pin loosely fitting the vertical recesses so as to be capable of movement therein and consequent withdrawal of the pin and presser plate from within the bowl, and an upstanding lug on the bottom of the bowl, adapted, when the presser plate is tilted upwardly and the pivot pin is moved upwardly a desired distance, to engage back of the end of the presser plate, when said plate is lowered to the extent permitted by contact of the extremity thereof with the bottom of the bowl.

8. In a stock watering bowl, the combination of a bowl provided at its rear portion with vertically extending recesses open at their upper ends, a supply pipe extending into the bowl, said pipe provided on its inner face with a lug, valve mechanism within the supply pipe, the valve thereof normally closing the valve opening of the valve mechanism, a presser plate within the bowl, said plate adapted to operate on the valve mechanism to open the valve, and said plate provided with vertically-elongated slot bearings, a pivot pin for said plate, said pin provided between its ends with an off set or cranked portion which normally extends beneath the supply pipe lug, and said pin also turnably seated in the vertically-elongated bearing slots of the presser plate, and having its opposite ends fitting in the vertical recesses of the bowl, whereby the pin, when turned to bring its offset portion out of engagement with the lug, can be raised upwardly, together with the presser plate, so as to bring said pin and presser plate out of engagement with the bowl, and whereby also the pin after such removal, can be withdrawn longitudinally from engagement with

the presser plate, by turning said pin so as to bring the offset portion thereof in line with the vertically-elongated slots.

9. In a stock watering bowl, the combination of a bowl, a supply pipe extending into the bowl, valve mechanism within the supply pipe, the valve thereof normally closing the valve opening of the valve mechanism, a presser plate within the bowl, said plate adapted to operate on the valve mechanism, to open the valve, and said plate provided with vertically-elongated slot bearings, a pivot pin for said plate passing through the vertically-elongated slots of the plate, and having its ends mounted in said bearings, the portion of the pivot pin passing through a slot being provided with a lug, which is adapted to engage with the bordering edges of the slot when the presser plate is turned, to thereby limit the extent of the turning of the presser plate in either direction.

10. In a stock watering bowl, the combination of a bowl provided with a rear extension, said extension having a lip projecting rearwardly from the edge thereof, a supply pipe of inverted U-shape form, between the legs of which the bowl is insertable, the inner leg of said supply pipe extending into the bowl, and fitting the rear extension of the bowl, and the outer leg thereof provided upon its inner side with projecting lugs adapted to bear against the rear side of the bowl, the bowl, when in normal supported position, having the projecting lip thereof extending over the upper of said lugs, and said inner leg also provided with laterally-projecting ears resting on the upper edge of the rear extension of the bowl, valve mechanism within the inner leg of the bowl, and normally closed, and a pivoted presser plate within the bowl, and adapted when depressed to open the valve mechanism to permit the water to flow from the supply pipe into the bowl.

In testimony whereof, I affix my signature.

CLARENCE J. GARDNER.