No. 669,415. Patented Mar. 5, 1901.

O. B. JACOBS.

STOCK WATERER.

(Application filed Mar. 2, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

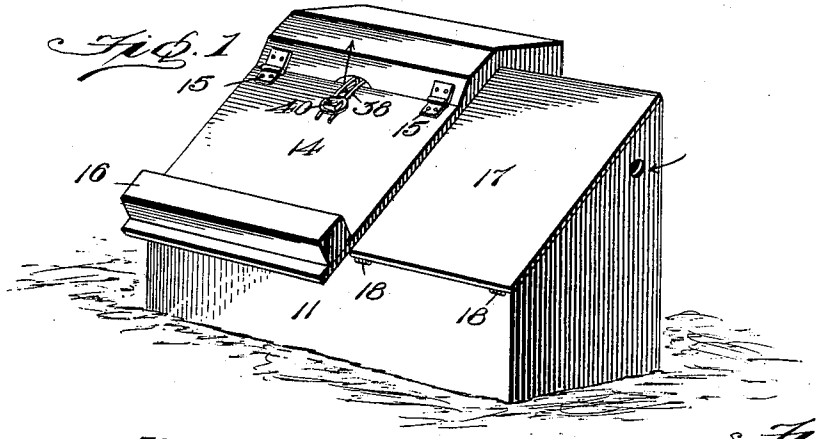


Fig. 2.

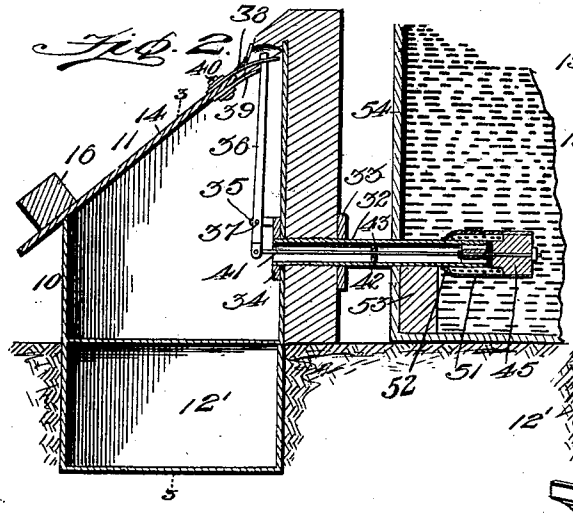


Fig. 3.

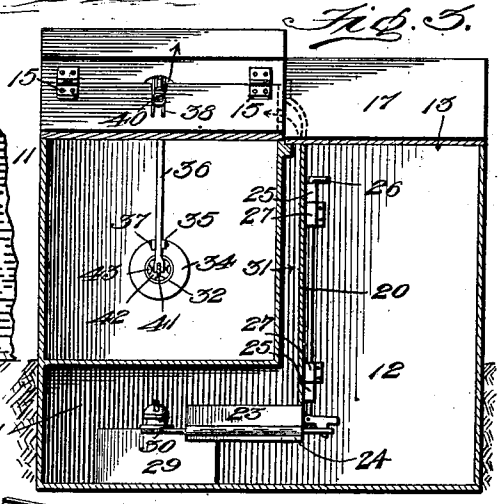
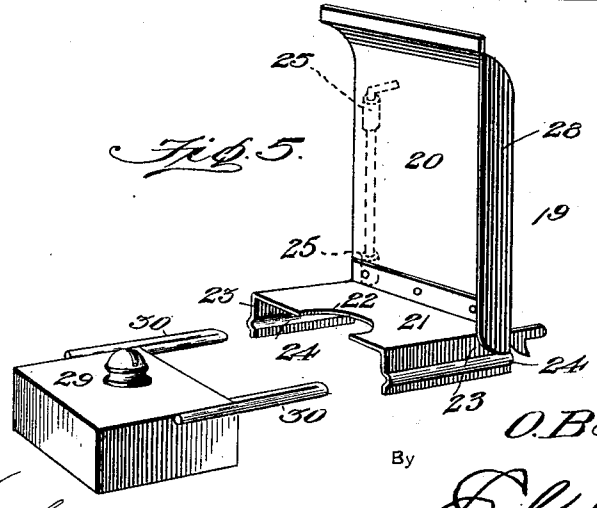


Fig. 5.



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O. B. JACOBS.

STOCK WATERER.

(Application filed Mar. 2, 1900.

(No Model.) 2 Sheets--Sheet 2.

Fig. 4.

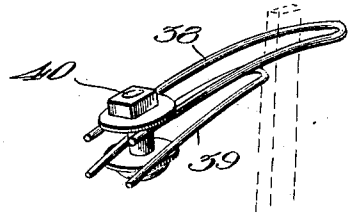


Fig. 6.

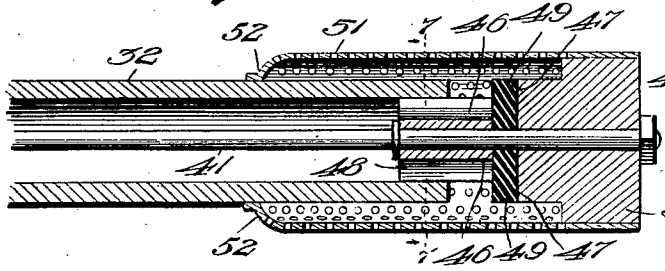


Fig. 7.

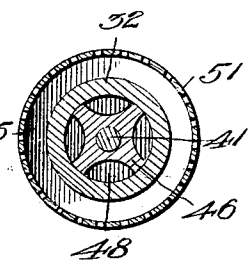
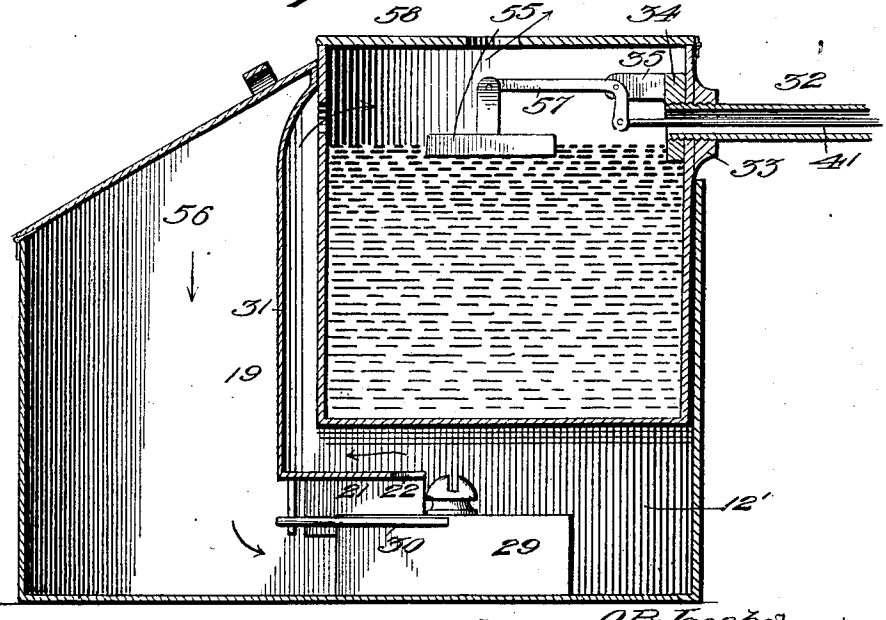


Fig. 8.



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UNITED STATES PATENT OFFICE.

OLAUS B. JACOBS, OF ROLAND, IOWA.

STOCK-WATERER.

SPECIFICATION forming part of Letters Patent No. 669,415, dated March 5, 1901.

Application filed March 2, 1900. Serial No. 7,111. (No model.)

To all whom it may concern:

Be it known that I, OLAUS B. JACOBS, a citizen of the United States, residing at Roland, in the county of Story and State of Iowa, have invented a new and useful Stock-Waterer, of which the following is a specification.

My invention relates to improvements in stock-waterers of that class in which a drinking-trough is equipped with a valve mechanism that is normally closed and is operable to establish a flow of water by the animal thrusting its muzzle into the trough.

One of the chief objects of this invention is to provide means for heating the water in the drinking-trough to prevent it from freezing in cold weather and to keep the water at a proper temperature for drinking purposes.

A further object is to provide an improved heating appliance which distributes the heat to the best advantage, effects economy in the quantity of fuel consumed, and provides for easy access to the heater to facilitate the introduction and removal thereof.

Another important object of the invention is to provide an automatic valve mechanism which is regulatable to cut off and control the flow of water, is simple in construction and efficient in action, and which includes a self-clearing strainer.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty in the combination of devices and in the construction and arrangement of parts will be defined by the claims.

In the drawings, Figure 1 is a perspective view of a stock-waterer constructed in accordance with my invention. Fig. 2 is a vertical sectional view taken in a plane through the valve mechanism which controls the supply of water to the drinking-trough. Fig. 3 is a vertical cross-section in a plane at right angles to Fig. 2 and indicated by the dotted lines 3 3 thereon. Fig. 4 is an enlarged detail view of the means employed by me for actuating the valve-lever. Fig. 5 is a detail perspective view of the heating appliance, showing the lamp separated from the lamp-carrier. Fig. 6 is an enlarged detail sectional view taken longitudinally through the valve. Fig. 7 is a cross-section in the plane of the dotted line 7 7 on Fig. 6. Fig. 8 is a sectional elevation of my improved heating appliance adapted to an ordinary drinking-trough which is equipped with a float for controlling the valve mechanism.

The same numerals of reference are used to indicate like and corresponding parts in each of the several figures of the drawings.

The drinking-trough 10 is a metallic water-tight structure open at its upper end for the stock to obtain access to the water contained therein. A casing 11 is employed to serve as an inclosure for this drinking-trough, and this casing is provided with a chamber 12, the latter having an opening 13 at one side of the open upper end of the drinking-trough. It is my practice to construct the drinking-trough considerably smaller than the chamber of the casing, so that the trough may be set down into the casing at one side of the opening 13 thereof, the bottom of the trough terminating a sufficient distance above the bottom of the casing in a manner to form a lamp-receiving compartment 12′ below the bottom of the trough, which compartment is in communication with the chamber 12. The upper end of the drinking-trough is normally closed by a cover 14, which is arranged, preferably, in an inclined position to have its lower edge extended beyond the casing, and the upper edge of this cover is hinged to the casing or to the trough, as at 15, whereby the stock may lift the cover to obtain access to the trough. The cover 14 may be kept in a normally-closed position by the employment of a weight 16, which may be secured near the free edge of said cover; but any equivalent means for depressing the cover may be used in lieu of the weight—such, for example, as spring-hinges—to connect the cover to the casing, or the cover may be hinged in the ordinary way and a separate closing-spring connected thereto, such expedients being readily applied by a skilled constructor. The opening 13 to the chamber 12 of the casing is normally closed by a cover 17, which is also arranged in an inclined position. To prevent the stock from opening this cover to the lamp-chamber of the casing, I prefer to hinge the lower edge of said cover to the casing, as at 18, whereby the two covers are hinged to opposite sides of the casing, and they are adapted to open in opposite directions.

The important feature of my invention consists of a heater appliance which prevents the water in the trough from freezing during cold weather and keeps the water at a temperature suitable for drinking purposes. This heater appliance includes an adjustable and removable lamp-carrier, which in its entirety is designated by the numeral 19 and is arranged within the chamber 12, so as to be movable therein in a manner to place the lamp 29 beneath the drinking-trough or to permit the attendant to gain access to the lamp through the opening 13 in the casing 11, whereby the lamp may be replenished with fuel. This lamp-carrier comprises a flue-plate 20, having an offset foot 21 at the lower part thereof. This foot of the lamp-carrier is recessed at 22 for the burner of the lamp to extend therethrough, and said foot has the depending flanges 23, the latter being provided at their lower edges and in the opposing faces thereof with the guides 24. The flue-plate 20 of the lamp-carrier is furthermore provided on one of its vertical edges with the alined ears 25, which receive a latch-rod 26, connected to a latch 26', arranged to engage with one of the loops 30 to detachably connect the lamp-carrier to the lamp. The recessed foot 21 extends into the compartment 12' in a manner to support the lamp 29 below the trough. The flue-plate may be provided at its free edges with a flange 28, adapted to engage with the walls of the chamber in order to secure a better fitting of the loose wall, to divide apartment 12, and to form an air-course to bring air more direct to flame of lamp from the opening provided near top of case under cover 17. A narrow space 31 is provided between the trough and the flue-plate, and this space constitutes a flue adapted to ventilate the compartment 12' below the trough and to provide for the upward circulation of the heat and products of combustion in contact with the bottom and one of the sides of the metallic trough and connecting with chamber above water in water-trough and passing out through vents in cover 14, whereby heat is applied to under side of water-trough and passed under cover 14 to exclude the cooling effects of atmosphere against the cover of box. The lamp 29 is provided on its sides with the rods or slides 30, which are adapted to fit in the guides 24 of the foot 21, which forms a part of the lamp-carrier, whereby the lamp is removably connected to the carrier. It will be observed that the lamp-carrier is removably supported in the chamber of the casing and the carrier and the lamp connected thereto may be withdrawn bodily from the chamber 12 through the opening 13 thereof. The operator may obtain access to the lamp and withdraw the latter from the carrier by slipping the lamp sidewise and disengaging the rods or guides from the ways of the flanged foot, whereby the lamp may be withdrawn from the carrier, and thus access may be obtained to the lamp for trimming the wick, cleaning, and replenishing the supply of oil. It is furthermore evident that the heat may be confined within the chamber 12 by closing the door or cover 14, and the arrangement of the flue-plate provides for a circulation of air and the products of combustion through this chamber and in contact with the walls of the tank, whereby the heat is applied to the best advantage and economy of fuel is effected.

The drinking-trough may be supplied with water from any convenient source of supply, such as a reservoir or tank 54, by means of a feed-pipe 32. The stock-waterer of my invention may be placed close to the source of supply, although it may be located several feet away from the same. The pipe 32 extends into the tank or reservoir close to the bottom thereof, so as to be supported partly by a cleat 53, but the other end of this pipe extends through the casing and the trough, so as to deliver the water to the latter. A nut 33 is screwed on a threaded part of this pipe in a manner to bind against the casing, and a clamping-collar 34 is screwed on the pipe to lie within the trough, whereby the pipe is clamped to the trough to make a tight joint. This collar 34 is provided with upstanding lugs 35, between which is arranged a vertically-disposed lever 36, said lever being fulcrumed at 37 to the lugs of the fixed collar.

In the preferred embodiment of the invention I employ means on the hinged cover 14 to positively move the lever 36 back and forth on the opening and closing of said cover. This means consists of the bails 38 39, which are fitted, respectively, to the outer and inner surfaces of the cover 13 in a manner to be clamped thereon by a single bolt 40. The bail 38 is somewhat longer than the bail 39, and this long bail has its looped end extended beyond the hinged edge of the cover 14, so as to embrace the free end of the lever 36, whereby the bail 38 positively moves the lever in one direction when the cover is opened. The other short bail 39 has its looped end arranged to engage with the opposite edge of the lever in a manner to positively move the latter in an opposite direction on closure of the cover 14, and this short bail is adjustable on the bolt 40 on the cover 14, so as to regulate the position in which the cover shall shut off the flow of water. As it is desirable to leave the cover partly open to teach animals unaccustomed to the device to readily open it themselves, it can by this means be set to shut the valve in any position. It is obvious also that the upper bail can be adjusted to regulate the amount of flow by the movement of the lever which closes the valve mechanism, whereby the valve may be opened when the cover is lifted, so as to establish the flow of a limited volume of water from the tank to the drinking-trough.

A rod 41 extends through the feed-pipe for its front end to be pivoted to the lower end of the lever, and this rod is supported by one

or more guides 42, fixed on the rod, each guide having openings or recesses 43 for the free flow of water therethrough. The inner end of the valve-rod extends beyond the corresponding end of the pipe 32, and to it is secured the valve 45. This valve is provided with a guide 46, which forms a shoulder 47, and said guide has the recesses 48, whereby the valve-stem is slidably fitted in the pipe, when the valve is moved to its open position and the water is free to flow through the recesses of the stem. A gasket 49 is fitted on the rod between 46 and 50 to bear against the shoulder thereof, and in the closed position of the valve this gasket is seated against the edge of the pipe to make a tight joint therewith. The rear part of the valve is a cylinder 50 to provide for the support and attachment of the strainer 51, the latter being firmly secured to the valve in any suitable way, so as to reciprocate therewith. This strainer is of cylindrical form and constructed of perforated sheet metal, although the shape and material are not essential. The strainer is elongated to embrace the inner part of the feed-pipe, and it is contracted, as at 52, to slidably embrace the pipe. It will be noted that the strainer is movable with the valve and its rod, and it is thus made self-cleaning against accumulations of moss and sediment in the tank or reservoir.

The improvements which I have made in stock-waterers are also applicable to devices ordinary in the art which employ a float 55 to actuate the valve-rod, as indicated by Fig. 8 of the drawings. In adapting my improvements to this type of stock-waterer the casing 56 is constructed or fashioned to partly surround the ordinary drinking-trough, and this casing is equipped with the lamp-carrier constructed and arranged for operation in the manner hereinbefore set forth. The drinking-trough of the ordinary stock-waterer may have the feed-pipe 32 clamped thereto by the nut 33 and the collar 34, and the float-carrying lever 57 may be hinged to the lugs on said collar 34. The ordinary trough may be closed by a simple hinged cover 58, the opening and closing of which has no effect on the valve mechanism, which is controlled by the rise and fall of the float.

I prefer to make the flue formed by the plate 31 in Fig. 8 open into the tank above the water-level therein and to provide an opening in the top of the tank for the products of combustion to circulate from the flue over the top of the water. This same course in the circulation of the products of combustion is obtainable by a similar construction of posts in the embodiment of the invention represented by Fig. 3.

The lamp may be locked to the hinged carrier in any suitable way—as, for example, by extending the hinge-rod 26 into engagement with one of the rods 30 on the lamp, (see Fig. 8)—or I may employ a catch 30′ (see Figs. 3 and 5,) said catch being connected to the lamp-carrier and adapted to engage one of the lamp-rods.

The apparatus may be partially buried in the ground, as shown by Figs. 1, 2, and 3.

An advantage of a water-tight casing opening upward is the protection of the fuel-box from overflow water from trough-ice, snow, or thaw.

Changes within the scope of the appended claims may be made in the form and proportion of some of the parts, while their essential features are retained and the spirit of the invention is embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described the invention, what I claim is—

1. In a stock-waterer, the combination with a drinking-trough, of a casing provided with a chamber partly surrounding the trough, a heating appliance contained within the casing, and common means for supporting the heating appliance and also for directing the products of combustion from the heating appliance into contact with the walls of the trough.

2. In a stock-waterer, the combination with a casing, of a drinking-trough housed partly within the casing, a removable lamp-carrier located within the casing, and a lamp located under the trough and mounted on the lamp-carrier for removal therewith.

3. In a stock-waterer, the combination with a casing and a drinking-trough, of a lamp located within the casing, and a lamp-carrier separate from the lamp and arranged to direct the products of combustion against the walls of the drinking-trough.

4. In a stock-waterer, the combination with a casing having a compartment which opens upwardly at one side of a drinking-trough, and a heater-support disposed within said casing and beneath the trough and capable of removal through the top of the casing, as set forth.

5. In a stock-waterer, the combination of a casing, a drinking-trough housed or contained partly therein, a heater below said trough, and a flue-plate removably supported in the casing adjacent to the trough and forming an intermediate circulating-flue therewith, as set forth.

6. In a stock-waterer, the combination with a drinking-trough, of a casing provided with a flue-plate which subdivides its chambers by an intermediate circulating-flue disposed contiguous to the trough, and a heater in one compartment of the chambered casing and adjacent to the drinking-trough, as set forth.

7. In a stock-waterer, the combination of a casing, a drinking-trough therein, a lamp-carrier having a flue-plate within the casing for said plate to lie contiguous to the trough in one position of the carrier, and a lamp mounted on the carrier, as set forth.

8. In a stock-waterer, the combination of a

casing, a drinking-trough, a lamp-carrier having a flue-plate and the offset foot provided with guideways, and a lamp having means for engaging slidably with said ways, whereby the lamp is adjustable with the carrier and is removable at will therefrom, as set forth.

9. In a stock-waterer, the combination with a feed-pipe, of a valve controlling the ingress of fluid to the pipe, and a strainer carried by the valve and surrounding the pipe, said strainer having an internal diameter greater than the external diameter of the pipe and having one end only in slidable contact therewith, whereby an extended chamber is formed between the pipe and strainer and the frictional contact of the latter with the pipe is reduced to a minimum.

10. In a stock-waterer, the combination with a trough, of a feed-pipe therefor, a rod extending through the pipe, a shouldered valve fixed to the rod and having a recessed stem slidably fitted in the pipe, a gasket on the shouldered valve, a strainer fastened to the valve and slidably embracing the pipe, and means for operating the rod, substantially as described.

11. In a stock-waterer, the combination with a tank or trough and a feed-pipe therefor, of a self-closing cover connected with said tank, a valve mechanism controlling the flow of water through the pipe, a lever for said valve mechanism, and adjustable means carried by the cover and engaging with the valve-lever to positively vibrate the same when the cover has been opened or closed to the desired extent, as set forth.

12. In a stock-waterer, the combination with a trough, and a feed-pipe therefor, of a cover, a valve mechanism for the pipe, a lever connected with said valve mechanism, and lever-actuating bails clamped to the cover and engaging with the valve-lever, one of said bails being adjustable, for the purpose described, substantially as set forth.

13. In a stock-waterer, the combination with a trough and a feed-pipe, of the coöperating nut and collar having threaded engagement with the pipe and binding against the trough, said collar being disposed within the trough and provided with lugs, a lever fulcrumed to the lugs, a valve mechanism in operative relation to the lever, and means for actuating the lever, substantially as described.

14. In a stock-waterer, a casing provided with a chamber which opens upwardly from one side thereof, a drinking-trough contained within said casing on one side of the opening to its chamber, and inclined covers hinged to the casing on opposite sides thereof and adapted to close the chamber and the trough, respectively, in combination with a feed-pipe to the trough, a valve mechanism therefor, means for operating said valve mechanism, and a heater contained within the chambered casing, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

OLAUS B. JACOBS.

Witnesses:
CHAS. E. ARMSTRONG,
H. E. MYRAH.