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2,642,839

AUTOMATIC DRINKING TROUGH

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2 Sheets-Sheet 1

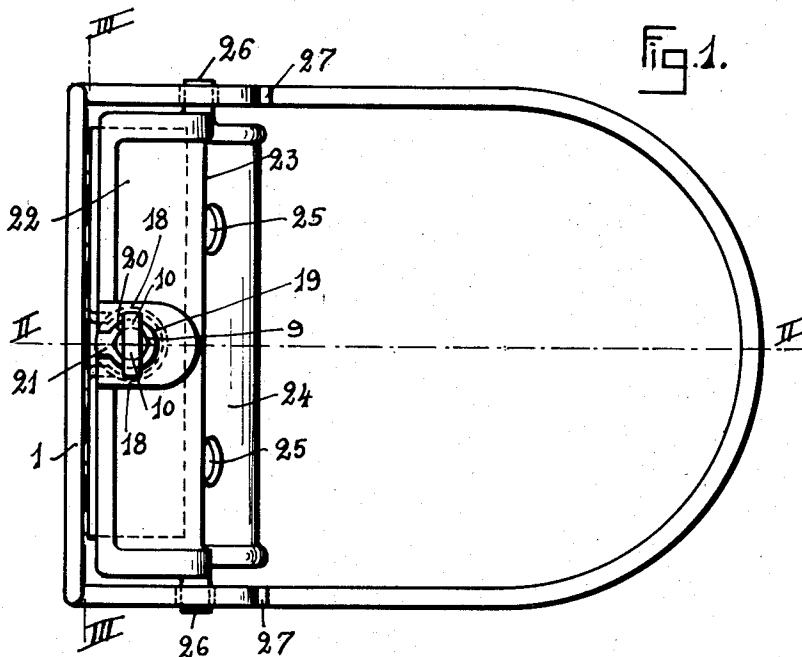


Fig. 1.

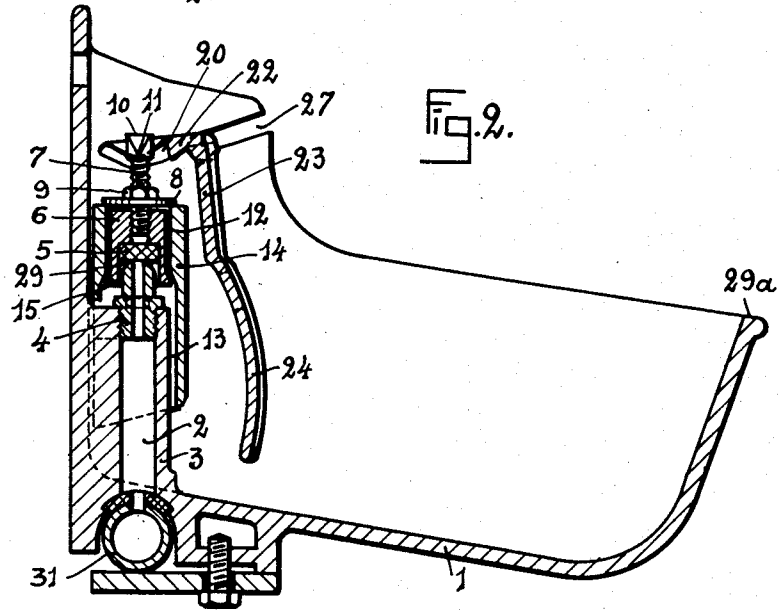


Fig. 2.

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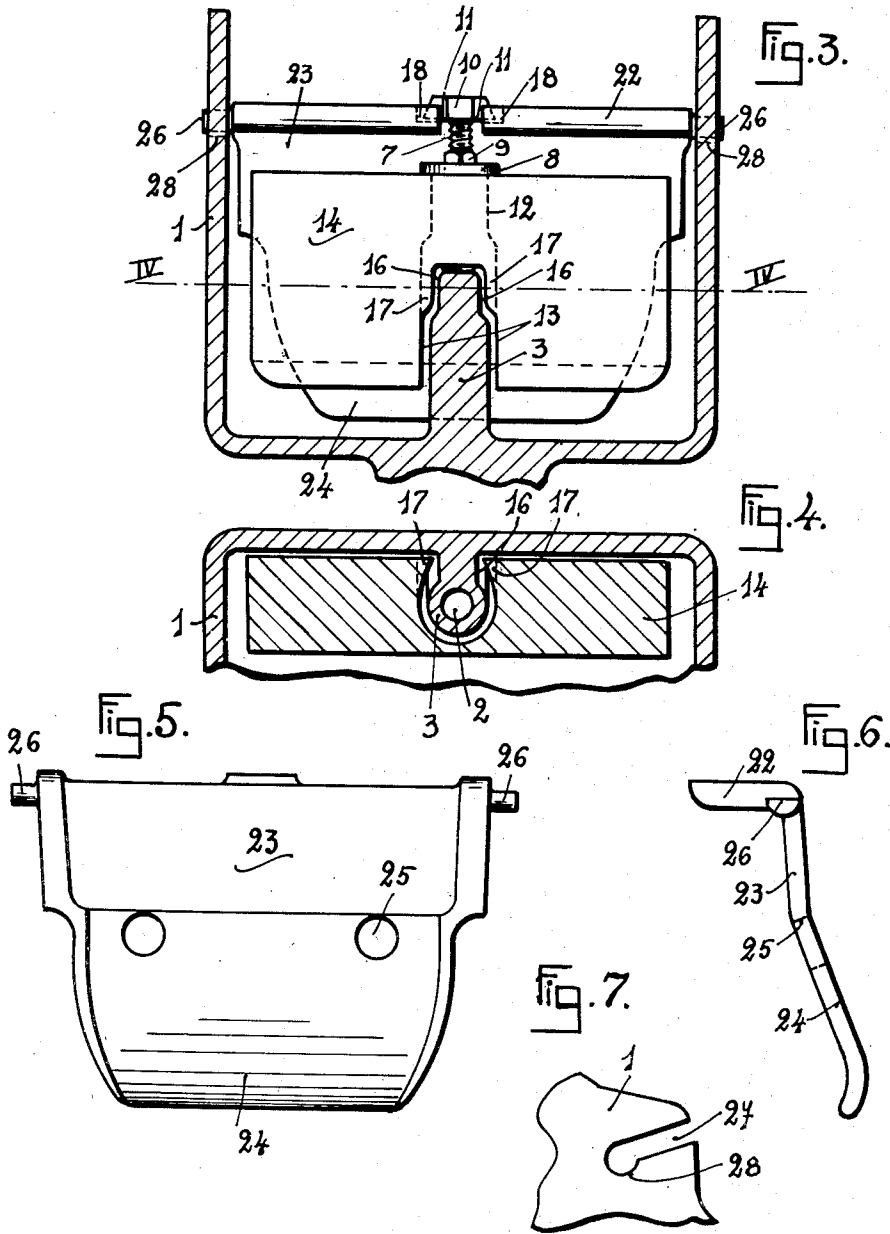
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UNITED STATES PATENT OFFICE

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AUTOMATIC DRINKING TROUGH

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1 Claim. (Cl. 119-75)

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The present invention has for its object to provide an automatic drinking trough for animals which, when the animals exert pressure, by their heads, upon a plate or panel within the trough basin, ensures the automatic admission into the trough of the water necessary for the animals' requirements, and the cutting off of such admission when this pressure ceases.

For attaining this object, different kinds of drinking troughs, in which complicated mechanical arrangements are employed, have already been proposed.

Recently, an automatic drinking trough, which operates by the action of a weight, made up of one or several units, and acting as means for closing the liquid supply orifice, has shown itself to be particularly suitable for giving every satisfaction from the point of view of simplicity, absence of delicate mechanism, and certainty of operation.

The present invention achieves, in an automatic drinking trough of the last named kind, certain important improvements which ensure perfect operation with simple and durable mechanism that cannot get out of order, thus giving entire satisfaction and fulfilling all conditions essential for this kind of apparatus.

To this end, in the automatic apparatus according to the present invention, the shutting off of the supply is affected by the body forming the weight acting as a closing means at a point well above its centre of gravity, which has the great advantage of always affecting a perfect closure, especially if to this is added a central guide for the weight, as well as an adjustable hook connection, to the weight, of the arm of the plate which causes the raising of the weight, thus permitting of regulating the amount of angular displacement of the plate which takes place before it operates. Further the hook connection of the plate does not permit of the latter being lifted off or unhooked by the animal, but only allows it to be removed by a preliminary operation which has to be effected by hand.

Thus, the proposed automatic drinking trough is essentially characterised by the fact that in the trough basin wherein a movable body constituting a weight acting as a means for closing the water supply orifice, this orifice is disposed above the centre of gravity of the said body in a manner such that the action of the weight always ensures a perpendicular closing action by means of the orifice sealing disc, the body being guided on a central guide member in the trough basin, carrying at its summit the supply nozzle for the

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liquid, and the body having to permit of such guiding, a central recess of circular form open at the rear, which recess is extended upwards by a cylindrical housing in which is located, above the centre of gravity of the weight, a valve device provided with an adjustable screwed rod constituting the means for controlling the lifting of the body which acts as the closing means, being provided for this purpose with a crosspiece under which engages the outer face of the lateral circular edge portion of a slot or opening provided in the rear central portion of the operating plate, the latter being provided with lateral trunnions of semi-cylindrical section engaging slots formed in the side walls of the trough basin and in the inner ends of which semi-cylindrical bearing recesses ensure the pivoting of the operating plate.

Other characteristic details will be mentioned in the course of the description of this automatic drinking trough.

In order to clarify the description the accompanying drawings represent one construction of automatic drinking trough in accordance with the invention, in which:

Figure 1 represents a plan view of the apparatus.

Figure 2 represents a sectional view on line II—II, Figure 1.

Figure 3 is a sectional view on line III—III, Figure 1.

Figure 4 is a horizontal section on line IV—IV, Figure 3.

Figure 5 is an elevational view of the operating plate.

Figure 6 is a side view of this plate.

Figure 7 is a fragmentary view of the side wall of the trough, showing the slot.

Referring to the above drawings, 1 represents the basin or reservoir of the drinking trough, being provided on the front of the rear wall with a guide pillar 3 having an interior passage 2 at the upper end of which is fixed the outlet or discharge nozzle 4 for the liquid which is supplied to its lower end by the feed pipe 31. On this nozzle 4 rests the sealing disc 5 located in the end of a recess 29 in the valve device 6 in the upper part of which is engaged the lower end of a screwed rod 7 provided with a washer 8 and a lock-nut 9 and at its upper end with a straight crosspiece 10 of triangular form with supporting edges 11. This valve device 6 is located in a cylindrical housing 12 provided above a vertical guide groove or semi-cylindrical recess 13 open at the rear of the

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body 14 forming the weight for acting as the closing means.

The valve device 6 is held by its lower edge 15 against an internal shoulder at the bottom of the housing 12 by the tightening of the nut 9 5 screwed on the threaded rod 7 controlling the lifting of the weight 14 which, by its recess 13, is guided on the central pillar 3. At its upper part its pillar 3 is provided with recesses or notches 16 in which are located projections or wings 17, being the upper lateral edges of the central recess 13, the arrangement being such that the weight 14, when it is engaged vertically over the member 3, cannot be disengaged by displacement, whether accidental or not, in a horizontal or approximately horizontal direction, but can be disengaged only when moved vertically upwards through a distance equal to the height of the projections 17. 15

The edges 11 are arranged to make contact at 20 18 on the upper face around the edge 19 of the circular part of the opening or slot 20 open to the exterior by a gap or slot 21 of a width a little greater than the diameter of the stem of the rod 7 and formed in the rear part of a substantially horizontal arm 22 of the operating or actuating plate 23. Thus, the lock-nut 9 will form a stop, when a displacement of the plate 23 takes place in a horizontal, or substantially horizontal direction, since its diameter being greater than the width of the gap 21 in the arm 22 of the plate 23, it will oppose any removal or withdrawal of this latter unless it should have been previously raised.

The plate 23 thus comprises a horizontal part or arm 22 and, approximately at right-angles, another vertical arm 24 slightly curved towards the back at its lower part in which are perforations 25 for insertion of the fingers to enable the plate 23 to be raised above the lock-nut for its removal, as referred to above.

Laterally, the plate 23 is provided with pivots or trunnions 26 of true semi-cylindrical section which, after having been introduced between the flat edges of slots 27 in the side walls of the trough basin 1, rest on the semi-cylindrical surfaces 28 of the inner ends of the slots 27 which thus form the bearings for the trunnions 26. 45

The outlet or discharge nozzle 4 is located above the front edge 29a of the trough basin 1.

The operation is as follows:

The animal, in pushing its nose against the part or arm 24 of the operating plate 23, causes the latter to pivot on its trunnions 26, and the face 18 of its horizontal part comes into contact with the edges 11 of the cross-piece 10 which it lifts, and consequently also the rod 7 which, in turn, lifts the valve member 6 which is rigid with 55

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the weight 14. When this happens the sealing disc 5 is raised with the other parts, and the liquid can freely discharge through the nozzle 4 and pour out into the pan 1 of the trough. The animal, having ceased to drink, withdraws, and the weight 14 not being held raised, falls correctly, since the centre of gravity of the whole is appreciably below the orifice of nozzle 4.

When it is desired to render the trough unusable, it is sufficient to insert the fingers into the perforations 25 of the arm 24 of plate 23 and to lift it slightly so that the circular part of the slot 20 passes above the upper face of the lock-nut 9; then, to withdraw the plate 23 by itself, since the gap 21 can then pass over the rod 7, by causing it to slide by its trunnions in the slots 27 of the trough pan 1. The replacement of the plate 23 can be effected by a similar operation but in the reverse direction.

What I claim is:

An automatic drinking trough comprising a basin, a vertical hollow cylindrical guide-pillar in said basin adjacent the rear wall thereof having a discharge nozzle at the upper end and connected at the lower end with a fluid feed pipe, a vertically reciprocable weight having a vertical guide groove at the rear embracing the major portion of the guide pillar, a valve device supported by said weight in a position to seat on said discharge nozzle when said weight is in lowered position, said valve device being situated above the center of gravity of said weight, an actuating plate comprising a substantially vertical arm extending across the basin, a substantially horizontal arm integral with said vertical arm and extending rearwardly therefrom to overlie said weight, and pivoting means releasably engageable with the sides of said basin, a rod extending upwardly from said weight having head means thereon, and a releasable pivoting connection between said substantially horizontal arm and said head means.

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