April 14, 1953 H. H. HOBBS 2,634,755

LIQUID CONTROL VALVE

Filed June 9, 1949

FIG. 1

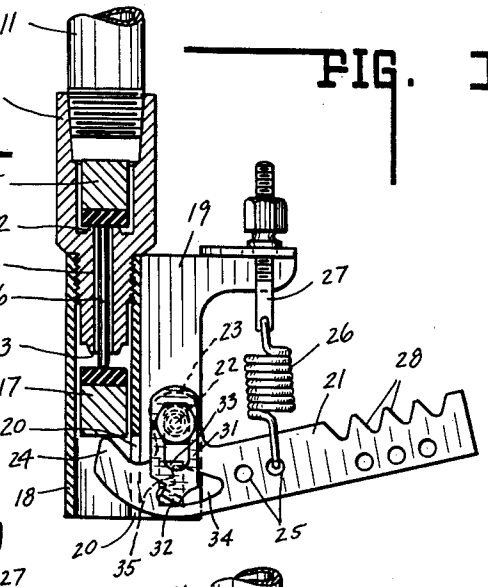



FIG. 2

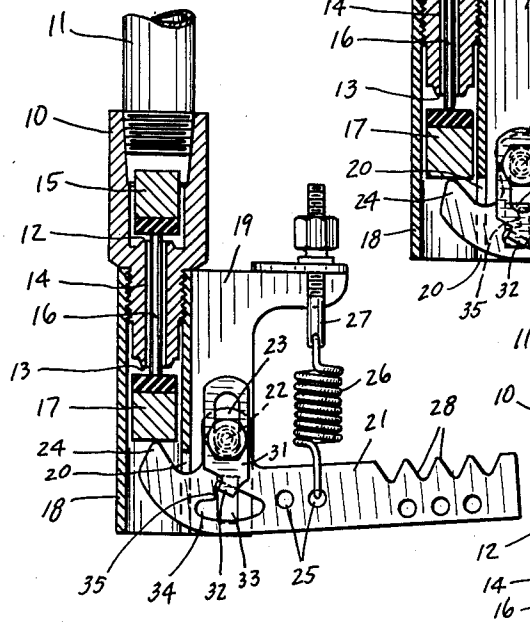
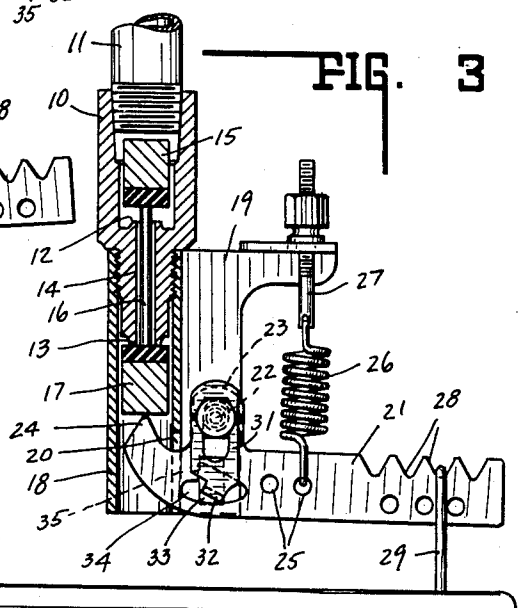
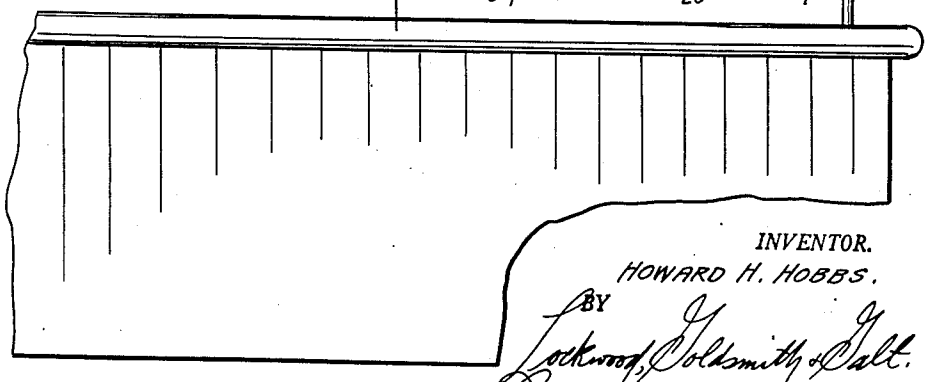



FIG. 3




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Patented Apr. 14, 1953

2,634,755

# UNITED STATES PATENT OFFICE

2,634,755

## LIQUID CONTROL VALVE

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Application June 9, 1949, Serial No. 98,113

4 Claims. (Cl. 137—698)

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This invention relates to a liquid control valve of the character wherein the valve is automatically closed through the weight of a charge of liquid received by a container operatively associated with the valve, being particularly designed for use in connection with poultry waterers and the like.

It is the object of the invention to control the flow of liquid into a container by a two way valve adapted to close under liquid pressure when not in use and be selectively and manually latched to open position when a container is operatively mounted to receive liquid, the latch being automatically released after the container has received sufficient liquid to maintain the valve in open position and until a predetermined charge of liquid is received sufficiently to cause its weight to close the valve.

The feature of the invention resides in the provision of a reciprocating latch mounted to slide upon the valve structure in position to engage a shoulder of the valve control lever and retain it is valve opening position against liquid pressure tending to close the valve, but which will drop by gravity upon movement of the lever under the weight of the initial charge of liquid received therein to release the lever for permitting it to be moved to valve closing position upon the container receiving the full charge of liquid of a predetermined weight.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a central vertical section through the valve showing the control lever and latch in elevation free of latching engagement.

Fig. 2 is the same as Fig. 1 showing the latch and lever in latched position.

Fig. 3 is a view similar to Fig. 2 showing the valve in closed position under the weight of a charge of liquid.

In the drawings there is shown a valve housing 10 having threaded engagement with a fixed downwardly extending liquid supply pipe 11. Said housing is provided with an upper valve seat 12 and a lower valve seat 13 connected by an orifice 14. The double acting valve is provided with an upper valve head 15 for sealing engagement with the valve seat 12 under the influence of the liquid pressure exerted downwardly thereon together with the weight of the valve. A valve stem 16 extending through the orifice 14 supports the upper valve head 15 in spaced relation to a lower valve head 17 adapted to engage and seal the lower valve seat 13 when upward force is exerted thereagainst. The relation of the upper

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and lower valve heads to their respective valve seats is such that when the valve is in an intermediate position free of engagement with either valve seat fluid may flow past the valve heads and through the orifice 14.

Secured to the valve housing 10 and depending therefrom there is a sleeve 18 provided with a laterally extending bracket 19, the lower end of the sleeve being slotted at 20 adjacent said bracket and immediately below the lower valve head 17. A valve control lever 21 is fulcrumed to the bracket 19 at 22 through the pivotal connection therewith of an upwardly extending portion 23. The lever is provided with a valve actuating nose 24 extending through the slot 20 in the sleeve for engagement with the under surface of the valve head 17. Said lever is provided with a series of spaced openings 25 on the other side of its fulcrum 22 from that of the nose 24. Connected with one of said openings there is a load spring 26 suspended by the adjusting screw 27 from the upper end of the bracket 19. At the far end of the lever there are provided a series of notches 28 for receiving a bail 29 of a watering pan 30 for supporting one end of the watering pan, the opposite end of which rests on the ground.

Slidably mounted on the portion 23 of the lever there is a latch bar 31 having an elongated slot embracing the fulcrum mounting 22 of said lever. The lower end of the latch bar is formed with a laterally extending ear 32 which projects through a vertical slot 33 as a guide for the lower end thereof. At that point of the lever extending across the slot 33 there is an elongated opening 34 having a shouldered portion 35 with which the ear 32 is adapted to engage when the latch bar is in its uppermost position. With the ear of the latch bar engaged between the shoulder 35 and the side of the slot 33 of the bracket, the lever 21 will be latched against the tension of the load spring 26 to retain it in a predetermined position.

In operation, with the pan 30 removed and the latch bar in its lowermost position, no upward pressure is exerted by the nose 24 against the lower valve head 17. Therefore, the water pressure exerted downwardly against the valve head 15 will seat the valve and prevent flow of liquid from the pipe 11. In this position, as shown in Fig. 1, the valve remains closed. Thus a container may be suspended from the lever without opening the valve which may thereafter be manually set to open position to permit water to pass into the container. Thus while the container may be set in position or adjusted on the

lever, it does not necessarily mean that the valve will be opened and water introduced into the container until such time as it may be desired to fill it. When it is desired to open the valve, a container being positioned under the sleeve 18 with its bail supported on the far end of the lever, the lever is pushed downward sufficiently to permit manual raising of the latch bar 31 until the ear 32 locks with the latch shoulder 35 against the tension of the load spring 26. In this position, as shown in Fig. 2, the valve is held open by the nose 24 of the lever which raises the upper valve head 15 from its seat, but not far enough to seat the lower valve head.

In this position, liquid will flow into the container until the weight thereof is such as to lower the far end of the lever against tension of the load spring 26 to swing the latch shoulder 35 free of the latching ear 32. Thereupon, the latch bar will drop to its lowermost position with its ear 32 extending in the arcuate opening 34 of the lever. When a predetermined charge of liquid has been received, its weight, in opposition to the load spring 26, will swing the nose 24 of the lever upwardly sufficient to force the lower valve head 17 into its valve closing position. Liquid will thereby be prevented from flowing into the container until sufficient fluid is used to reduce the weight which will permit a slight dropping of the nose and lower the valve head to allow only sufficient flow of liquid to replace that used, bringing the charge of liquid back to its valve closing weight. Upon removal of the container from the lever, it will be freed so that the valve will automatically close through downward fluid pressure on the upper valve head 15.

The invention claimed is:

1. In a liquid control valve having a vertically slotted valve housing provided with two spaced valve seats and opposed interconnected valve heads simultaneously movable to valve open position and alternately to valve closing position, a valve control lever fulcrumed adjacent one side of said housing having a valve actuating end portion engageable with one of said valve heads, said lever being provided with an elongated slot one wall of said slot being recessed to provide a shoulder, and a load spring suspending the opposite portion of said lever from said housing, the combination therewith of a latch member having an elongated slot for slidably supporting and guiding its movement relative to the fulcrum of said lever, and a latching ear on the lower end of said member extending through the slot of said lever in bearing and guiding relation to a vertically extending slot in said housing for interlocking engagement between said housing and the said shoulder of said lever for latching said lever in valve open position under tension of said load spring, said latch member being releasable to drop to unlatched position upon said spring pressure being overcome by a predetermined load.

2. In a liquid control valve having a valve housing provided with two spaced valve seats and opposed interconnected valve heads simultaneously movable to valve open position and alternately to valve closing position, said housing being provided with a slot below and adjacent the lower end of one of said valve heads, and a laterally extending bracket on said housing the combination therewith of, a valve control lever fulcrumed on said bracket to extend through said slot with one end thereof in valve engaging position, said lever having an elongated slot immediately below its fulcrum extending transversely and in overlapping relation with a vertically extending slot in said bracket, the upper wall of said elongated slot being shouldered, a load spring connecting said lever with said bracket on the opposite side of its fulcrum from its valve engaging end, a latch member slidably mounted on said lever at its fulcrum having a latching ear on the lower end thereof extending through the slots of said lever and bracket manually slidably upwardly into latching engagement with the shouldered portion of the lever slot for locking said lever in valve opening position against the tension of said load spring, said latch being adapted to drop by gravity to disengage said shoulder and permit free movement of said lever upon the tension of said load spring being overcome by a predetermined load.



3. In a liquid control valve having a valve housing provided with opposed interconnected valve heads simultaneously movable to valve opening position and alternately to valve closing position, said housing being provided with an elongated vertical slot, the combination therewith of a valve control lever fulcrumed on said housing above said slot with one end thereof in valve engaging position, a shoulder on said lever formed on one wall of an elongated transverse slot immediately below its fulcrum and in overlapping relation with said elongated vertical slot, a load spring connecting said lever with said housing on the opposite side of its fulcrum from its valve engaging end, and a latch member mounted adjacent the fulcrum of said lever having a latching ear extending through the slots of said lever and housing engageable with said shoulder for locking said lever in valve opening position against tension of said load spring, said latch member being biased to move from its locking engagement to permit free movement of said lever upon the tension of said load spring being overcome by a predetermined load.

4. A latch for a liquid control valve including a valve seat and valve head therefor, in combination, a housing for said valve seat and head, a valve control lever fulcrumed on said housing with one end thereof in valve engaging position, a shoulder on said lever formed on one wall of a slot therein, said housing being provided with a slot in overlapping relation with said shouldered slot, a load spring connecting said lever with said housing on the opposite side of its fulcrum from its valve engaging end, and a latch member mounted on said housing having a latching ear extending through said overlapping slots engageable with said shoulder for interlocking said lever and housing in valve opening position against the tension of said load spring, said latch member being biased to move from its engagement with said shoulder to permit free movement of said lever upon the tension of said load spring being overcome by a predetermined load.

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