July 24, 1923. 1,463,129

W. H. MILTON ET AL

AUTOMATIC FLUID CONTROL

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Fig. 1.

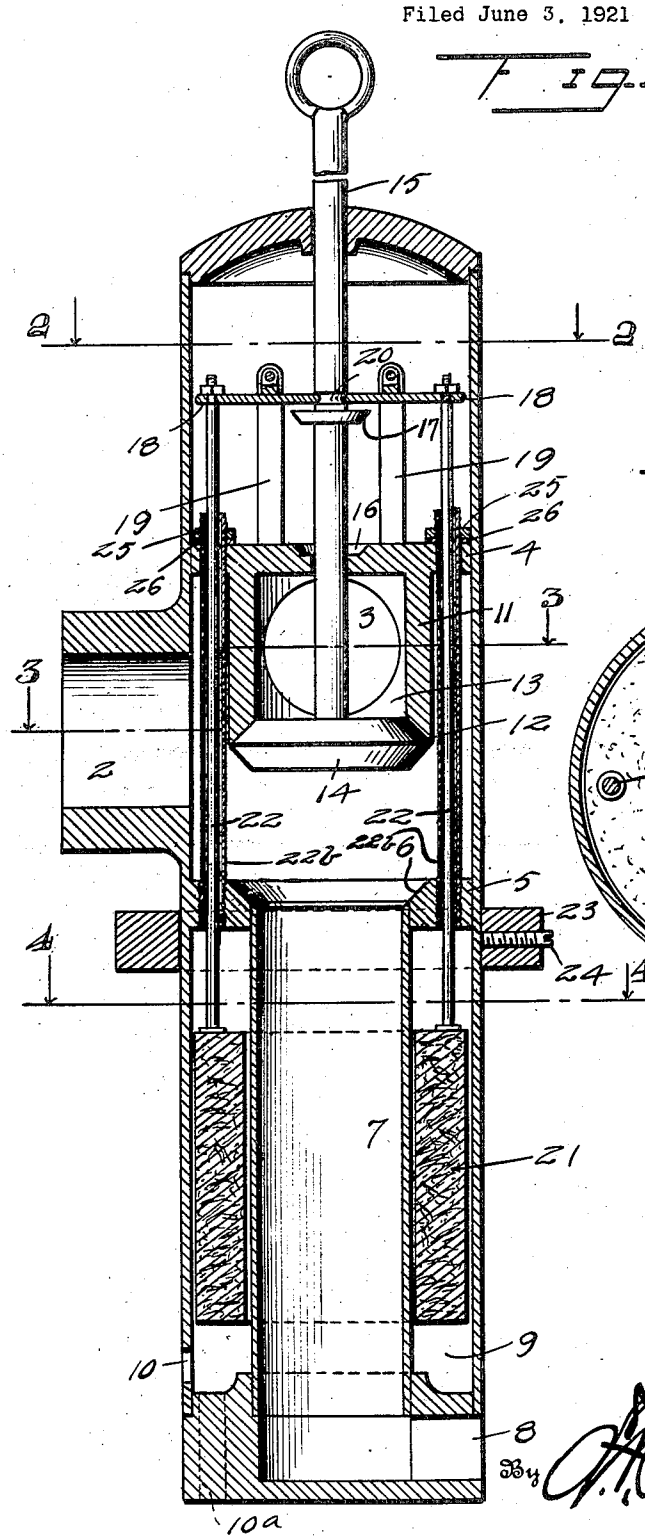
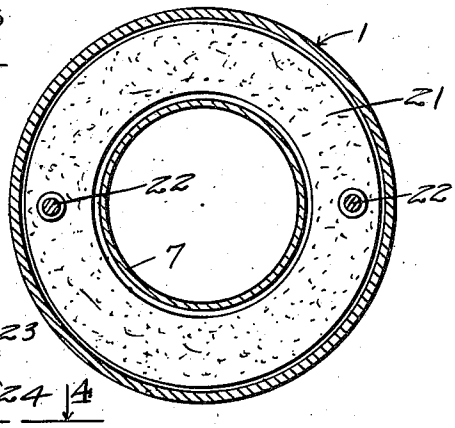


Fig. 4.



Inventor
Wm. H. Milton,
Fred Schermer
By A. Kaudrey Jr.
Attorney

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Fig 2.

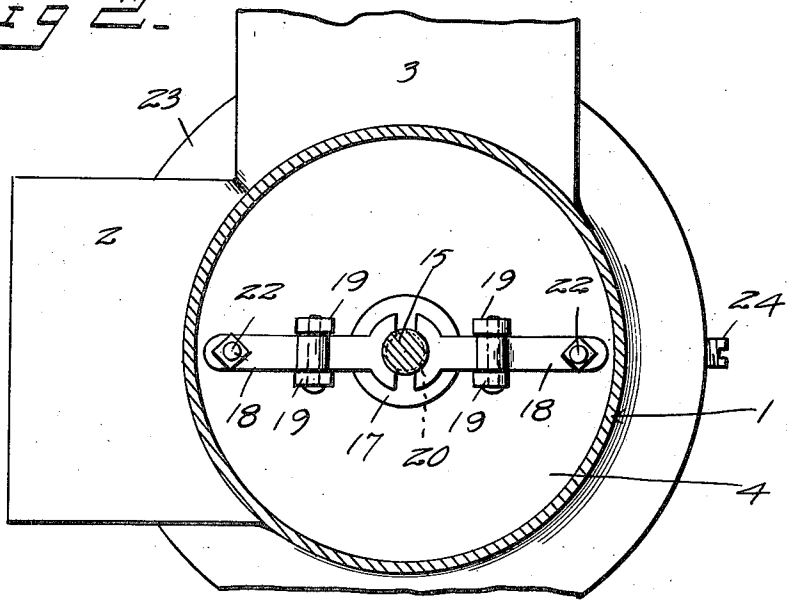
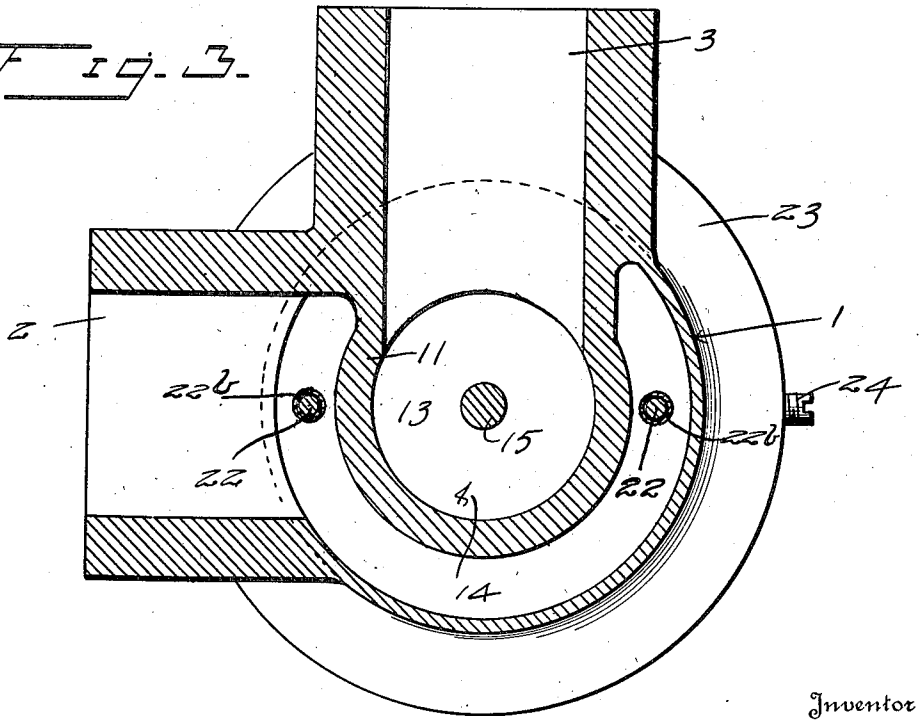


Fig. 3.



Inventor
Wm. H. Milton,
Fred Schermer.
By A. Kaufmann Jr. Attorney

Patented July 24, 1923. 1,463,129

UNITED STATES PATENT OFFICE.

WILLIAM H. MILTON AND FRED SCHERMER, OF MUSCATINE, IOWA.

AUTOMATIC FLUID CONTROL.

Application filed June 3, 1921. Serial No. 474,797.

To all whom it may concern:

Be it known that we, WILLIAM H. MILTON and FRED SCHERMER, citizens of the United States, residing at Muscatine, in the county of Muscatine and State of Iowa, have invented certain new and useful Improvements in Automatic Fluid Controls; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to valve mechanism and is designed primarily to provide means for preventing the overflow or running over of tanks, barrels and other containers such as oil trucks, and the tanks of boats and cars when being filled.

The invention furthermore contemplates the provision of a valve whereby any type of container may be filled without waste of the liquid supplied thereto, said valve being adjustable to admit of filling the container to any desired height without waste.

Other objects and advantages will be apparent and suggest themselves as the nature of the invention is understood.

While the drawings illustrate an embodiment of the invention, it is to be understood that in adapting the same to meet different conditions and requirements, various changes in the form, proportion and minor details of construction may be resorted to without departing from the nature of the invention.

Referring to the accompanying drawings forming a part of the specification,

Figure 1 is a vertical central section of a valve constructed in accordance with and embodying the essential features of the present invention,

Figure 2 is a horizontal section on the line 2—2 of Figure 1,

Figure 3 is a horizontal section on the line 3—3 of Figure 1,

Figure 4 is a horizontal section on the line 4—4 of Figure 1.

Corresponding and like parts are referred to in the following description and designated in the several views of the drawings by like reference characters.

The valve comprises a shell or casing 1 which is preferably of cylindrical form and closed at opposite ends. The casing 1 is provided near its upper end with a lateral inlet 2 and a lateral outlet 3, collars or nipples being in line with the openings to provide convenient means for coupling pipes or conduits thereto. Partitions 4 and 5 are disposed within the casing 1 above and below the inlet and the outlet. The partition 5 is formed with a central opening which is beveled to provide a valve seat 6. A tube or cylinder 7 depends from the partition 5 and is in line with the opening formed therein. The lower end of the tube or cylinder 7 makes close connection with the lower end of the casing 1. A lateral opening 8, in communication with the lower end of the tube or cylinder 7, constitutes an outlet for the discharge of the liquid passing through the device when the same is in active service. The space 9 surrounding the tube or cylinder 7 is closed and constitutes a float chamber. An inlet 10 or 10^a is in communication with the lower end of the float chamber 9. The opening 10 is formed in the side of the casing 1, whereas the opening 10^a is provided in the lower end of the casing. The outlet 8 is lateral to prevent the discharge of the liquid therefrom creating a suction at either one of the openings 10 or 10^a which would materially interfere with the proper entrance of the liquid into the float chamber 9 when the container has been nearly supplied with the predetermined amount of liquid.

A relatively short cylinder 11 depends from the partition 4 and is centrally disposed within the casing 1. The lower end of the cylinder 11 is beveled to provide a valve seat 12. The space enclosed by the cylinder 11 constitutes an outflow chamber 13 which is in communication with the outlet 3. A double faced valve 14 of the poppet type is disposed in the space confined between the partitions 4 and 5 and is adapted to close upon either of the seats 6 or 12. When the valve 14 is closed on the seat 12, the outlet 3 is cut off and the liquid entering the inlet 2 passes through the tube 7 and outlet 8 into the container to be filled. When the valve 14 is closed on the seat 6, the supply of liquid to the container is cut off and in the event of the outlet 3 being clear, the liquid entering the inlet 2 passes into the outflow chamber 13 thence through the outlet 3 to the source of supply or other point for receiving the overflow. The valve stem 15 operates through the partition 4 and the upper closed end of the casing 1 and its upper or projecting end is provided with a

suitable fingerpiece. The opening in the partition 4 through which the valve stem 15 operates is enlarged at its upper end to form a valve seat 16 which receives a valve 17 when the valve 14 is closed upon the seat 6, whereby to prevent liquid passing from the outflow chamber 13 into the upper portion of the casing 1 above the partition 4.

The valve 14, when elevated to the limit of its movement, closes on the seat 12 and is detained in such position by means of opposed holders 18 which engage the valve stem 15 upon opposite sides. The holders 18 consist of short levers pivotally supported intermediate their ends on posts 19 rising from the partition 4. The holders 18 are horizontally disposed and their inner ends are adapted to enter an annular groove 20 formed in the valve stem above and adjacent the valve 17. The valve 17 also acts as a stop to cooperate with the inner ends of the holders 18 for properly setting the same when the valve stem 15 is drawn upwardly or for starting the valve 14 from its seat 12.

A float 21 is located in the chamber 9 and is of cylindrical form and constructed in any manner so as to be buoyant. Oppositely disposed rods 22 pass through the partitions 4 and 5 and connect the float 21 with the outer ends of the holders 18. The combined weight of the float 21 and rods 22 is slightly in excess of the weight of the valve 14 and its stem 15, whereby to maintain the holders 18 in engagement with the valve stem 15 to hold the valve 14 elevated when closed on the seat 12. When the float 21 is buoyed by liquid entering the float chamber 9, the valve 14 automatically unseats from the part 11 and closes upon the seat 6, thereby shutting off the supply to the container being filled. Upward movement of the float 21 elevates the outer ends of the holders 18 and correspondingly depresses their inner ends which impart a positive initial movement to the valve 14 to insure its leaving the seat 12. The down flow of the liquid through the tube 7 and the inrush of the liquid into the outflow chamber 13 insures a quick movement of the valve 14 when leaving the seat 12, whereby to insure its closing upon the seat 6.

A set collar 23 is adjustably mounted upon the casing 1 to determine the level of the liquid when the container is filled to the predetermined point. The set collar 23 is made fast in the desired adjusted position by means of a set screw 24 threaded into a lateral opening of the collar with its inner end in engagement with the casing 1. The lower portion of the casing 1 is introduced into the filling opening of the container and is supported in position by means of the set collar 23 which engages and rests upon the container adjacent the filling opening. The supply pipe, not shown, is connected with the inlet 2 and the overflow or return pipe, not shown, is connected with the outlet 3. The stem 15 is drawn upwardly to close the valve 14 on the seat 12 thereby cutting off communication between the inlet 2 and the outlet 3. Upon admitting the liquid to the inlet 2, it enters the casing 1 and passes through the tube 7 and lateral outlet 8 into the container. When the container is nearly filled to the predetermined level, a portion of the liquid passes into the float chamber through one or the other of the inlets 10 or 10^a and acts upon the float 21. When the float 21 rises, the outer ends of the holders 18 move upwardly and their inner ends are correspondingly depressed whereby the valve stem 15 is released and the valve 14 leaving the seat snugly closes upon the seat 6, thereby shutting off the supply to the container and permitting the overflow to pass into the outflow chamber 13 thence through the outlet 3 to the source of supply or other convenient point of discharge for the overflow. It will thus be understood that running over of the container is prevented and waste obviated, the action of the device being automatic after being set.

The rods 22 pass through tubes 22^b threaded at their lower ends in the partition 5 and passed loosely through openings in the partition 4 and having their upper ends threaded to receive nuts 25 and packing 26, the latter being arranged between the partition 4 and the nuts 25.

What is claimed is:

1. An automatic fluid control comprising a casing having an inlet, an outlet and a discharge, a valve within the casing and adapted to cut off communication between the inlet and the outlet or between the inlet and the said discharge, a holder for maintaining the valve in position to cut off communication between the inlet and outlet, and a float for actuating said holder to effect release of the valve which automatically operates to cut off communication between the inlet and discharge and establish communication between the inlet and the outlet.

2. An automatic fluid control comprising a casing having an inlet, an outlet and a discharge, and having partitions on opposite sides of the inlet and outlet, the lower partition having an opening and a valve seat in line with the opening, an outflow chamber upon the lower side of the upper partition and having a valve seat at its lower end. a tube connecting the opening of the lower partition with the said discharge and forming a float chamber having an inlet at its lower end, a valve operable between the outflow chamber and the lower partition and having its stem operable through the upper partition and the top of the casing, a holder

in the upper portion of the casing adapted to engage the valve stem and hold the valve elevated, and a float in the float chamber adapted to actuate the said holder and effect automatic release of the valve which cuts off the discharge and prevents overflow of the container being filled.

3. In an automatic fluid control, a casing having an inlet, an outlet and a discharge, and having a partition above the inlet and outlet, a valve within the casing for controlling communication between the inlet and outlet and the inlet and discharge, and having its stem passing through the said partition and the top of the casing, a valve carried by said stem for closing the opening in the partition through which the stem operates, a holder coacting with the stem for securing the valve in a given position, and a float for effecting release of the holder whereby the valve may operate automatically to cut off the discharge and prevent overflow of the container being filled.

4. An automatic fluid control including a casing having a partition provided with an opening therethrough, an overflow cylinder extending from the partition and provided with outlet means, a cut off valve in the casing adapted to engage the lower end of the cylinder as a seat, a stem extending from the valve slidable through said opening, a valve on the stem to engage the partition to close the said opening in the lower position of the first mentioned valve, means through which the fluid normally discharges adapted to be closed by the cut off valve in the latter position, a float in the casing, and means connected to the float and passing through the partition exteriorly of the cylinder to engage said stem to maintain the valve in engagement with said seat.

5. In a fluid control, a casing, said casing having an inlet, partitions within the casing between which the inlet is disposed, a tube depending from one of the partitions, means providing a float chamber about said tube, a float operable in said chamber, tubes connecting said partitions, rods extending through the latter tubes from the float, a cylinder depending from one of the partitions having a valve seat at its lower end, outlet means on the cylinder, a valve in one position being adapted to close said first tube and in a second position being adapted to close said cylinder, a stem projecting from the valve and through the last mentioned partition, holder levers to maintain the valve in engagement with said seat engageable with said stem, and said holder levers being connected to said rods.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM H. MILTON.
FRED SCHERMER.

Witnesses:
LYSLE J. PULSE,
ARTHUR C. BRANDT.