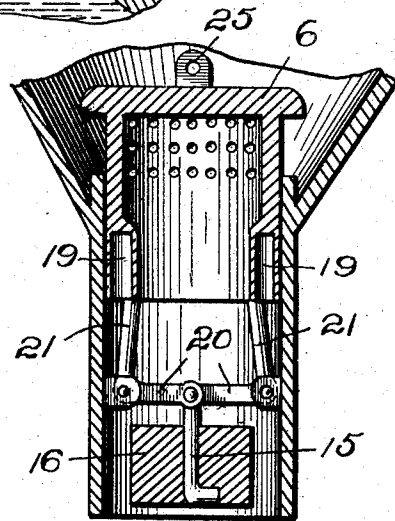
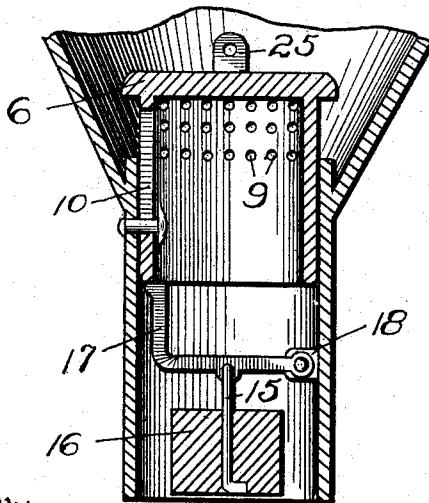
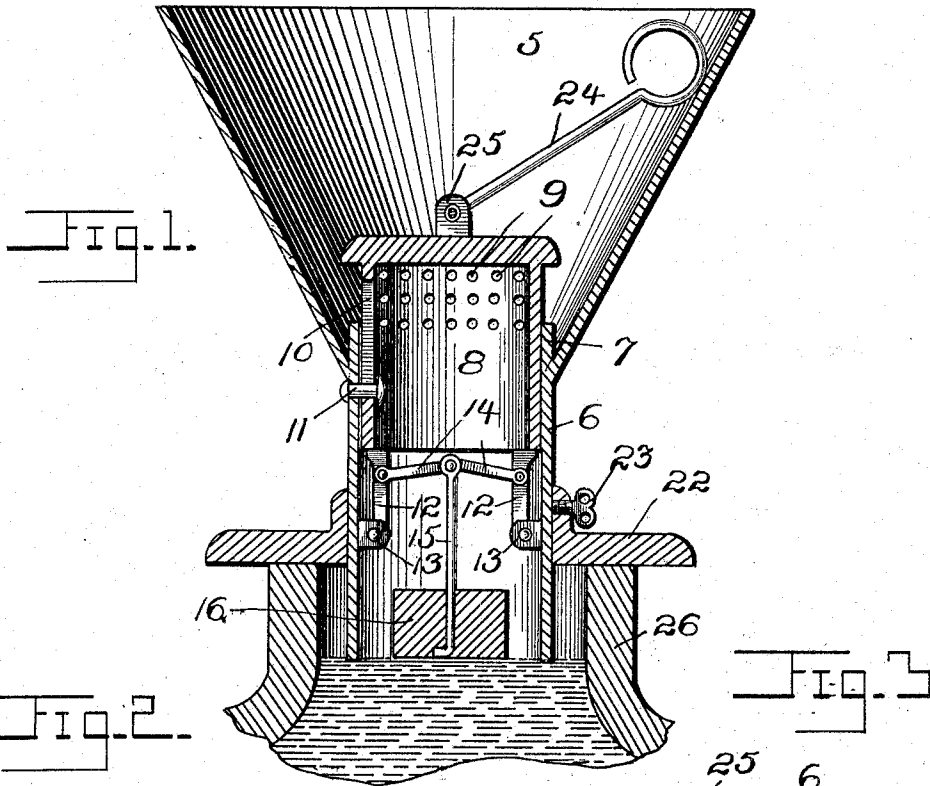


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 AUTOMATIC CLOSING VALVE FOR FUNNELS.
 APPLICATION FILED MAR. 27, 1909.

947,170.

Patented Jan. 18, 1910.



Witnesses
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UNITED STATES PATENT OFFICE.

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AUTOMATIC CLOSING-VALVE FOR FUNNELS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY M. WILLIAMS, a citizen of the United States, residing at Vincennes, in the county of Knox and State of Indiana, have invented certain new and useful Improvements in Automatic Closing-Valves for Funnels, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to valve attachments for funnels, and similar containing receptacles, and the object thereof is to provide a funnel, or the like, with a valve which will be automatically closed to shut off the flow of the liquid as soon as the latter has reached a given height in a vessel to which it is desired to transfer said liquid.

As contemplated, the invention embodies essentially a funnel, or a similar containing receptacle, in the neck of which is seated a hollow valve, toggle members engaging the lower end of said valve and a float connected to said toggle members which is designed to release the latter from engagement with the valve when the liquid in a vessel reaches a given height and thereby causes said valve to gravitate to a closed position.

In the drawings:—Figure I is a vertical sectional elevation of a vessel, showing the application of the invention. Fig. II is a fragmentary vertical section of the funnel stem, showing a slight modification in the trip mechanism, and Fig. III is a similar view illustrating another modification of the valve trip mechanism.

Referring more particularly to the drawings for a detail description of my invention, the numeral 5 designates a funnel having a stem (6) which presents a slight annular continuity (7) at the lower base portion of the funnel proper to serve as a valve seat.

The valve (8) comprises a tubular member having its top closed and equipped with a plurality of apertures (9) adjacent the upper portion thereof which serve to filter the liquid, as will be hereinafter explained. It will also be observed in this connection that the top of the valve (8) is extended slightly beyond the diameter of the latter, and is shown as a lateral margin which is designed to contact with the valve seat (7) when the valve has been liberated by the trip mechanism. To serve as a guide for the vertical movement of the valve relative the stem (6) of the funnel the former is preferably longi-

tudinally slotted, as at 10, and a headed pin (11) is extended through said stem and slot to maintain this relation.

As shown in Fig. I, the trip mechanism comprises a pair of diametrically disposed trips or triggers (12) which are hingedly connected at their lower ends to the inwardly projecting lugs (13), their upper ends being enlarged for the purpose of establishing a positive engagement with the lower portion of the valve. Mounted on the upper proximal ends of the trips (12) are toggle links (14), which in turn have their distal ends secured to the rod (15) carrying the float (16).

In Fig. II, I have shown a slight modification in the mechanism for controlling the valve (6), the stem constituting a single angle arm (17) hinged to the lug (18). Otherwise, the operation is precisely the same as will be set forth.

In Fig. III still another modification is disclosed wherein the lower portion of the valve (6) is provided with oppositely arranged slots (19) and each of the toggle links (20) has connected thereto a trip (21) which engage said slots when the float (16) is actuated by the height of the liquid in the vessel.

To provide for an adjustment of the funnel, considered as an entirety, to various shapes and sizes of vessels I mount a collar (22) on the stem (6) and secure the desired position of the latter with respect to the stem and the vessel through the medium of a thumb screw (23). I have also devised means for resetting the valve subsequent to the automatic actuation of the stem and this means embodies a terminally eyed rod (24) which is pivotally secured to the vertically extending projection (25) of the upper portion of the valve (6).

When it is desired to use my improved funnel, or similar receptacle containing the valve device, to transfer liquid from one receptacle to another, the same is placed upon the neck of the vessel, as clearly exhibited in Fig. I of the accompanying drawings. The liquid is then poured into the funnel portion (5) and finds its way through the filtering apertures (9) of the valve (8) into the jar, as 26. As the level of the liquid reaches the float (16) it naturally forces the latter upwardly, which movement through the toggle connecting links (14) draws the trips (12)

inwardly, thereby disengaging the same from the bottom of the valve (8) and causing said valve to gravitate and in this manner occlude the passage of any liquid to the vessel. The trip mechanism may be readily reset by pulling slightly on the rod (24).

It will thus be seen that with the use of my improved device radiators, gasoline cans, oil cans, kegs, barrels, bottles, jugs, jars, and the like may be filled without any danger of the liquid overflowing, as when the device is once arranged in position it needs no further attention, and may be left with impunity to automatically shut off the flow of the liquid when the same has reached the given level. Furthermore, the complete device is extremely simple and composed of comparatively few parts, which features will obviously tend to augment its efficiency.

It should be understood that in its broader aspects the invention comprehends not only the employment of a "funnel" but equivalent containing receptacles, which may manifestly be used in conjunction with the valve device.

What I claim as new is:—

1. The combination with a funnel having a stem, of a valve movable in said stem and provided with a slot, a pin carried by the stem for engaging the slot, means for automatically closing said valve, and means for resetting said valve.

2. The combination with a funnel having a stem projecting upwardly therethrough to form a valve seat, a valve movable in said stem, means carried by the stem for guiding said valve, means for automatically closing said valve, and means for resetting said valve.

3. The combination with a funnel having a stem projecting upwardly therethrough to form a valve seat, a valve movable in said stem and provided with a slot, a pin carried by the stem for engaging the slot, means for automatically closing said valve, and means for resetting said valve.

4. The combination with a funnel having a stem projecting upwardly therethrough to form a valve seat, a valve movable in said stem, trips hingedly supported upon said stem and adapted to engage the lower edge of said valve, a float, toggle connections for said trips and float, and means for resetting said mechanism.

5. The combination with a funnel, of a hollow valve movably mounted in said funnel, and float-actuated means mounted in said funnel and adapted to normally engage the lower end of said valve for holding the same in a set position and capable of being automatically unset for allowing the valve to close and partly surround said float-actuated means.

6. The combination with a funnel, of a

hollow valve provided with an open lower end and a closed upper end, slidably mounted within the funnel, said valve provided with filtering-apertures on the sides, and float-actuated means engaging the open lower end of the valve for holding the same in a set position and capable of being automatically actuated by the rise of liquid in a receptacle for releasing the valve and permitting the same to move to a closed position for closing the filtering apertures.

7. The combination with a funnel, of a hollow valve vertically movable in said funnel, and a trip device pivotally mounted in the funnel, under the valve, and adapted to engage the lower end of the valve for holding the same in a set position, said trip device including means for automatically releasing the valve and permitting the same to be moved to a closed position within the funnel when liquid rises to a predetermined height in a receptacle.

8. The combination with a funnel, valve means movably mounted in said funnel, of trips in said funnel, means pivotally mounting said trips upon the funnel, links pivotally connected to the trips near their upper ends, and a float provided with a stem, means connecting the stem to all of the links, whereby when the trips are holding the valve in a set or open position and the float is raised, parts of the trips will be moved inwardly for releasing the valve and permitting the same to move to a closed position.

9. The combination with a funnel, of a valve movably mounted in said funnel, a plurality of trips pivotally mounted in the funnel, below the valve, a float, and link means pivotally connecting the float to the trips, intermediate their ends.

10. In a device of the character described, the combination with a funnel, including a depending stem, of a hollow valve mounted in said stem and provided with an open lower end, a plurality of trips in said stem, means pivotally supporting said trips upon said stem, said trips adapted to normally engage, at one of their ends, the lower end of the valve, and hold the valve in an open position, links pivotally connected at their outer end to the trips, and float means pivotally connected to the inner end of the links, whereby the valve-engaging ends of the trips will be drawn inward for releasing the valve and permitting the same to move to a closed position upon the funnel.

11. The combination with a funnel, of a movable hollow valve-member in said funnel, a trip mounted in the funnel and pivotally mounted thereon below the valve, said trip adapted to engage the lower end or edge of the valve for holding the same in a set position, and float-means connected to

the trip and adapted to automatically release the trip and allow the valve to move to a closed position.

12. The combination with a funnel, of a
5 vertically movable valve mounted in said funnel, trips disposed under the valve and adapted to engage opposite portions thereof for holding the same in a set position, a float, and means pivotally connecting said
10 float to the trips near one end, whereby the trips are automatically actuated, releasing the valve when the same is in a set position.

13. The combination with a funnel, a valve movably mounted in said funnel, said valve

provided with an elongated slot, means 15 mounted upon said funnel and extending through said slot for normally securing the valve against displacement, and means for holding said valve in a set position and being capable of automatic movement for per- 20 mitting the valve to close.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

HENRY M. WILLIAMS.

Witnesses:

F. W. RITTERSKAMP,
BERT WHITEHOUSE.