J. F. POUND.

FUNNEL.

APPLICATION FILED FEB. 17, 1917.

1,320,649. Patented Nov. 4, 1919.

Fig. 3.

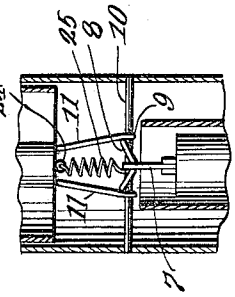


Fig. 2.

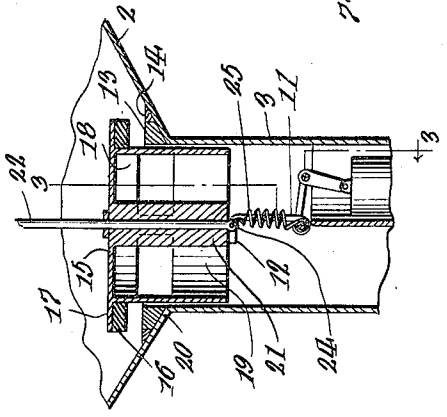
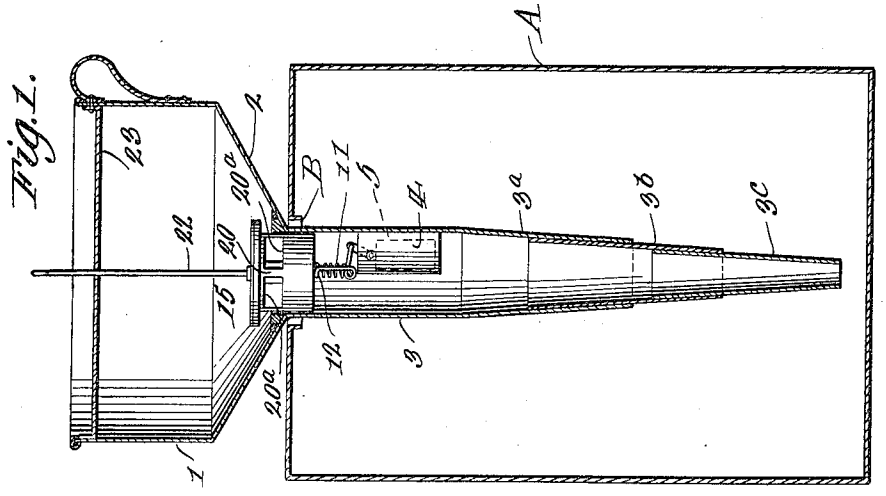


Fig. 1.



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FUNNEL.

1,320,649. Specification of Letters Patent. Patented Nov. 4, 1919.

Application filed February 17, 1917. Serial No. 149,280.

To all whom it may concern:

Be it known that I, JOHN F. POUND, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Funnels, of which the following is a specification.

This invention relates to funnels, and more particularly to a funnel of that type in which means is provided for automatically closing the spout of the funnel so as to prevent overflowing of a container being filled.

One of the main objects of the invention is to provide a funnel of the character stated of simple construction and operation composed of very few elements and which may be produced at small cost. A further object is to provide a funnel having a valve for closing the spout and a float for actuating the valve, connections being provided between the float and valve for releasing the valve when the float is raised. A further object is to provide means for holding the valve in closed or seated position, and means for raising the valve into open position and for maintaining it in this position. Further objects will appear from the detailed description.

In the drawings:—

Figure 1 is a central vertical sectional view through a funnel constructed in accordance with my invention and a container in connection with which the funnel is used,

Fig. 2 is a fragmentary sectional view taken through the funnel spout and valve mechanism,

Fig. 3 is a section taken on line 3—3 of Fig. 2.

The letter A designates a container of any suitable type which is provided through its top with an opening having a downwardly directed peripheral flange B, this opening being adapted to receive the spout of a funnel for filling purposes. The funnel is provided with the cylindrical receiving portion or body 1 the bottom 2 of which is of inverted frusto-conical shape. A discharge spout 3 is secured to the bottom of the funnel at the apex thereof. The lower portion 3^a of the member 3 tapers downwardly to receive a downwardly tapering section 3^b in which is mounted a downwardly tapered section 3^c. The members 3, 3^b and 3^c constitute a telescopic spout, the sections of which are held tightly together frictionally when extended so that the liquid is discharged at the bottom of container A, thus forcing the air within the container above this liquid out through the space between the funnel spout and the edge of the container opening. Mounted in the upper section 3 of the spout, adjacent the upper end thereof, is a cylindrical guide casing 4. This casing is open at both ends and receives a float 5 which is mounted loosely within the casing for vertical movement. This float is open at its lower end as at 5^a. Float 5 is provided, at the center of its top, with two spaced ears 6. A link 7 is pivotally secured at its lower end between these ears and has its upper end loosely secured about the inner arm 8 of a trigger 9. This trigger is formed by bending from a continuous piece of wire or other suitable material and is rockably mounted on a shaft 10 which is secured in the funnel spout extending diametrically of the same. The trigger 9 is provided with two spaced upwardly extending arms 11 which are disposed at substantially right angles to the arm 8. Each of these arms 11 is bent over at its upper end as at 12. When the float 5 is raised it will act, through link 7 to rock the trigger 9 so as to move the arms 11 thereof downward out of vertical position. On the other hand, when the float is lowered it will act to rock the arms 11 upward into vertical position.

A metal ring 13 is mounted on the bottom 2 of the funnel concentric with the upper end of the funnel spout. The inner face of this ring is flush with the inner face of the funnel spout, and the upper face of the ring is ground to provide a suitable valve seat. This ring 13 is maintained in position by a concentric collar 14 of solder which is secured to the funnel bottom 2. Ring 13 provides a seat for valve 15 which is provided with a gasket or packing ring 16 of leather, rubber, or other suitable material. The upper plate 17 of this valve is provided with an integral downwardly directed collar 18 which supports a lower collar 19 by means of spaced arms 20 integral therewith and with the upper collar. The lower collar 19 fits loosely within the funnel spout and provides means for guiding the valve during its movement into closed and opened positions. The upper plate 17 of the valve is further provided with a central cylindri-

cal downwardly directed member 21. The lower end of member 21 is flush with the lower end of collar 19. This member 21 is so positioned as to be engaged by the upper ends 12 of the trigger arms 11 when these arms are in vertical position, as in Figs. 1 to 3 of the drawings. By this means the trigger acts to hold the valve in raised position so as to permit the fluid to flow from the funnel between the arms 20 and into container A by means of the funnel spout.

An operating rod 22 is slidably mounted through a bar 23 secured across the interior of the funnel body 1, and is fixedly secured through the member 21 of the valve 15. This rod is provided at its lower end with an eye 24. This eye receives the upper end of a tension spring 25 the lower end of which is secured about the shaft 10 midway between the arms 11 of the trigger. This tension spring is comparatively light its object being to provide means for holding the valve properly seated after it has been moved into its lowered or closed position. As will be noted, the line of tension of the spring is coincident with the axis of the valve so that there is no tendency to cause binding of the valve in the funnel spout. When it is desired to fill a receptacle such as the container A, the funnel is first placed in position, after which the valve 15 may be raised by means of rod 22. When the valve is thus raised, the float 4 acts by gravity to rock the arm 8 of the trigger downward moving arms 11 upward into vertical position so as to engage the lower end of the cylindrical member 21, as in Fig. 3 of the drawings, thus normally maintaining the valve in raised position. In this position, the openings 20^a between the arms 20 connecting collars 18 and 19 are positioned so as to extend somewhat above the ring 13 thus permitting the liquid which is poured into the funnel to flow through these openings and the funnel spout into the container. When the level of the liquid rises in the container to the plane of the bottom of float 5 the air contained within this float will be trapped by the liquid. As the liquid continues to rise, this air will be compressed and will exert sufficient upward pressure on the underface of the top of the float to cause upward movement of the float. This upward movement of the float will rock the trigger arms 11 downward and outward from under the cylindrical member 21 thus releasing the valve, which will move into lowered position by gravity, this movement of the valve being facilitated by the tension spring 25. When the valve is in lowered position, the washer 16 fits snugly against the upper face of ring 13 so as to effect a liquid tight closure therewith. By this means the flow of the liquid from the funnel into the container is stopped, thus preventing overflowing of the container, the excess liquid being retained within the body of the funnel above the washer 15. When the valve has thus been closed, the funnel may be removed and the liquid contained thereby poured into a suitable receptacle, the tension spring 25 serving to prevent lateral movement of the valve when the funnel is tilted so as to pour this excess liquid, thus preventing spilling or leaking of this liquid through the funnel spout.

What I claim is:—

In a funnel including a spout and valve seat, a valve, a transverse shaft in the spout, a pair of arms mounted in spaced relation on the shaft and engaging the valve to retain the same in unseated position, a spring secured at one end to the valve and at the other end to the shaft at a point between the arms, a bail extending from the arms at an angle thereto, a float casing within the spout, a float, and a link supporting the float from the bail.

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

JOHN F. POUND.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."