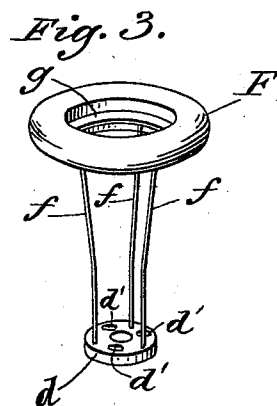
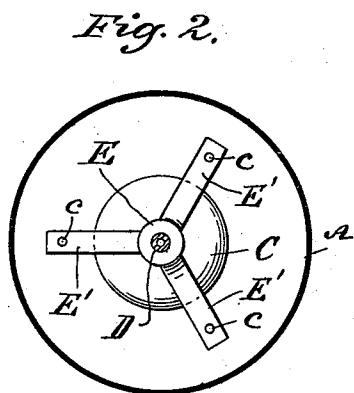
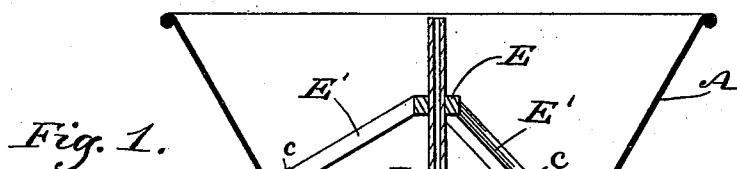


(No Model.)

R. A. BROWN.
AUTOMATIC FUNNEL.

No. 538,766.

Patented May 7, 1895.



WITNESSES:
John B. Deemer
Thos. T. Griffith

INVENTOR
Robert A. Brown
BY
Edgar T. Atter
ATTORNEYS

UNITED STATES PATENT OFFICE.

ROBERT A. BROWN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
FERDINAND S. BOND, OF SAME PLACE.

AUTOMATIC FUNNEL.

SPECIFICATION forming part of Letters Patent No. 538,766, dated May 7, 1895.

Application filed June 27, 1894. Serial No. 515,802. (No model.)

To all whom it may concern:

Be it known that I, ROBERT A. BROWN, a citizen of the United States, and a resident of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Funnels, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts in all the figures.

This invention relates to funnels of that class which are used for the filling of bottles or other vessels with liquids, and which automatically cease flowing when the vessel is filled to a certain height, usually to the mouth of the funnel.

The object of my invention is to provide a device of this character capable of being cheaply constructed, which shall not only automatically cease flowing when the liquid in the bottle reaches its mouth, but which will also, upon being placed in a second vessel after filling the first, instantly re-commence flowing, thereby rendering the funnel purely automatic in its operation, whereas heretofore it has been necessary to mechanically release the valve of the funnel after the latter has once been closed.

The invention consists in the novel inventive construction and arrangement of parts necessary to effect the above-mentioned and other desirable results, and hereinafter fully described.

In the accompanying drawings, Figure 1 is a vertical section taken through the center of a funnel embodying my invention and of a bottle on which the same is mounted. Fig. 2 is a horizontal section taken on the line $x x$, Fig. 1. Fig. 3 is a perspective view of the outside collar and valve-support forming part of the device.

In the practice of my invention I construct a funnel body A, of the usual or any other approved style, and secure to the lower end thereof a tube or stem B, which projects perpendicularly downwardly from the said funnel body for a slight distance, whence it tapers to the width of the usual funnel stem, and thence continues downwardly in substantially

vertical and equally diametered form. This construction of the funnel stem is not obligatory, but in the form of my invention herein illustrated such is preferable, and greatly facilitates the perfect operation of the device. Upon the outside of the funnel stem B, above the tapered portion thereof, I rigidly affix an annular shoulder a .

The interior of the funnel body near where it joins the stem B forms a seat A' for a gravity valve C, which is sectionally circular and has the substantial shape of an inverted cone, and is also beveled or inclined circumferentially at the top. This valve C is mounted upon, or formed integrally with, a narrow tube D, open throughout its length and extending from the top of the funnel body to a point somewhat below the base of the stem.

The funnel body has secured therein above the valve C bearings E, centrally apertured, and having two or more rigid arms or bars E', branching off therefrom and resting upon angle braces b , secured to the interior of the funnel, to which the bars E' are fastened removably, by means of screws c . These bearings may be of any desired form and need not be more than one in number; and in fact, the weight of the valve C would so certainly cause it to fit tightly in the seat A' that such bearings might be dispensed with altogether.

The lower end of the tube D is externally screw-threaded and has mounted thereon a disk d , which by turning upon the said screw-threaded end of the tube, may be held thereon at any desired distance below the stem B. This disk d has openings d' extending there-through and may be more securely held upon the tube D by means of a nut e . The openings permit the liquid to flow through the disk rather than over the edges of the same.

Ranging upwardly from the disk d are rods f , having mounted upon the top thereof a thin wafer-like collar g , open at the center to surround the tapered portion of the funnel stem B, and movable vertically thereon. Upon the periphery of this collar g I secure a ring F, of soft rubber or similar material, interiorly slotted to receive therein the collar g , upon which collar it is stretched.

The operation of the device will be readily

apparent from the foregoing description taken in connection with the accompanying drawings.

The device being placed in the neck of the bottle, the rubber ring F will rest upon the top or rim thereof, and the air tube D, and consequently the valve C, being stationary relatively to the said ring, the funnel body A and the stem B will fall till the annular shoulder *a* upon the said stem rests upon the top of the ring F; and the seat A' by this movement dropping below and away from the valve C, the funnel will be opened and any contents thereof will flow through the stem B and into the bottle. The said bottle is then filled by pouring the desired liquid into the funnel, and as the said liquid, which passes through the stem B, practically seals the same, and further the top of the bottle being closed by the ring F, the air present in the bottle finds its only outlet through the tube D, at the top of which it passes out. When the liquid in the bottle rises to the lower end of the air tube D, the said end is sealed by the said liquid, and there being no outlet for the air present in the bottle above the liquid, the same will be compressed and will tend to prevent any further ingress of the liquid, which latter will but partially flow, until the bottle is filled to the base of the funnel stem, when the liquid will cease flowing altogether. The funnel then being raised and removed, the valve C will fall into the seat A', permanently closing the funnel and preventing any escape of the contents therefrom, however much the funnel body may contain. The funnel may then be inserted in a second bottle, whereupon the dropping of the funnel relatively to the valve C will cause the same to open, the liquid present in the funnel thus flowing into the bottle, and the latter may further be filled as before.

If after filling one bottle it is desired to use the funnel in decanting another species or quality of liquid, the funnel may be held over the main vessel or barrel from which the first bottle has been filled, and the rubber ring F raised to lift the valve C, whereupon the contents of the funnel, left therein after the former operation, may be caused to flow into the main receptacle from which they were withdrawn.

It will be noted that by screwing the disk *d* upwardly or downwardly upon the end of the tube D, the height of the valve from the said disk will be thereby decreased and increased respectively, consequently diminishing or enlarging the space through which the liquid in the funnel may pass, and thus regulating its flow.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A funnel comprising a body, a rubber collar surrounding the same and adapted to

seal the mouth of a bottle, an air tube supported within the body and extending vertically therethrough to temporarily cut off the flow of the liquid in the funnel, connections from the collar to the air tube as shown whereby the same is raised with the collar, and a weighted gravity valve secured upon the air tube to normally close the funnel, and co-operating with the air tube to instantaneously and automatically cut off the flow of the funnel when the raising thereof counteracts the flow-checking of the air tube, substantially as shown and described.

2. A funnel comprising a body, an air tube therein, a normally closed gravity valve upon the air tube, and a collar surrounding the stem of the funnel and detachably secured to the air tube, whereby the attachment or removal of the parts to or from the main body is permitted, substantially as shown and described.

3. A funnel comprising a body, an air tube therein, a normally closed valve upon the air tube, and a collar surrounding the stem of the funnel, detachably secured to the air tube and adjustable thereon, whereby the raising of the collar will open the valve wholly or partially, as desired substantially as shown and described.

4. A funnel comprising a body, an air tube therein, a valve thereon adapted to close the stem of the funnel, a disk longitudinally adjustable upon the air tube, a collar surrounding the stem of the funnel, and connections from the collar to the disk whereby the air tube is raised when the collar is rested upon a bottle, substantially as shown and described.

5. A funnel comprising a body, a collar surrounding the same exteriorly, an air tube extending vertically through the funnel from the top thereof to below the stem and connected to the collar, a conical gravity valve mounted upon the air tube and adapted to rise when the collar is lifted, and one or more bearings above the valve, substantially as shown and described.

6. A funnel comprising a body having a stem enlarged at the top, a shoulder upon the stem, a rubber collar surrounding the funnel below the shoulder and sliding thereon, an air tube extending vertically through the funnel, a disk mounted thereon, and adjustable vertically, rods connecting the disk to the rubber collar, and a conical gravity valve mounted upon the air tube, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 25th day of June, 1894.

ROBERT A. BROWN.

Witnesses:

FERD. S. BOND,
CHAS. L. VIGUERS.