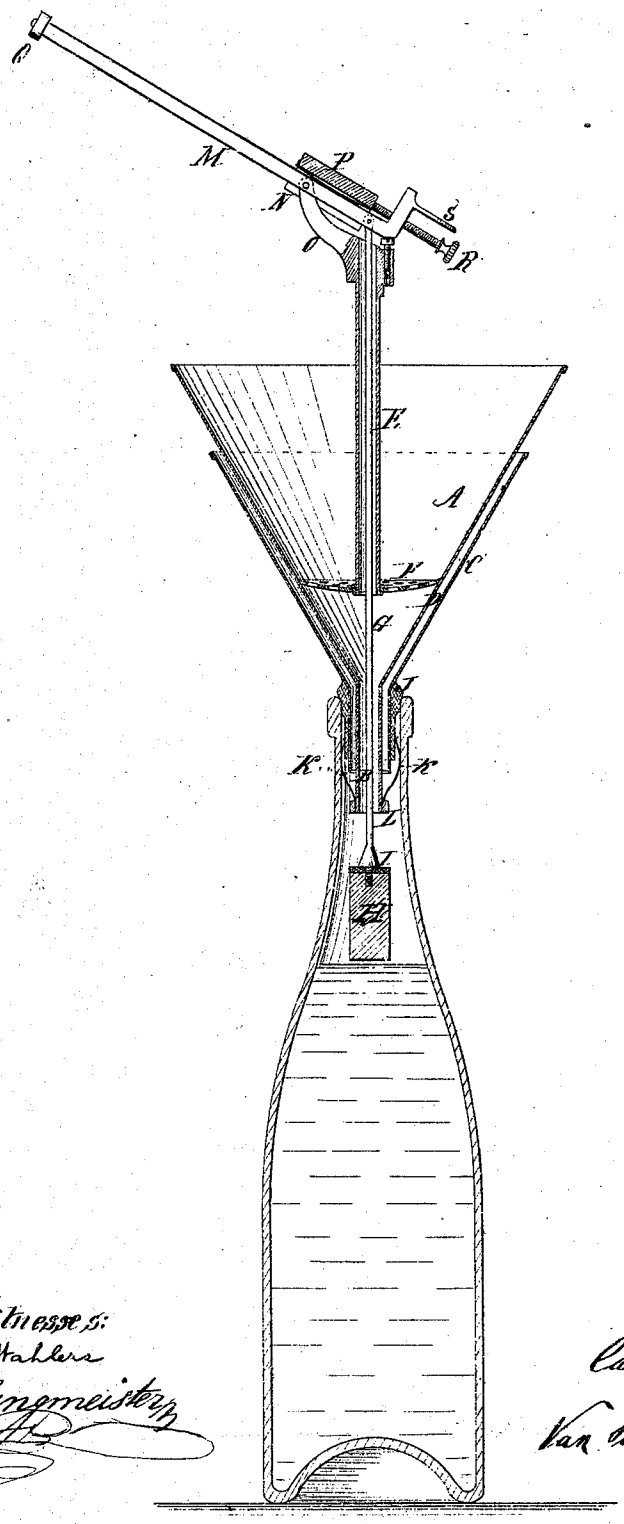
C. Ruf,

Funnel.

NO. 102,974. Patented May 10. 1870.



Witnesses:
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United States Patent Office.

CARL RUF, OF NEW YORK, N. Y.

Letters Patent No. 102,974, *dated May* 10, 1870.

IMPROVEMENT IN FUNNELS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, CARL RUF, of the city, county, and State of New York, have invented a new and useful Improvement in Funnels; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, which drawing shows my improvement in vertical section.

This invention relates to funnels for conducting liquids into bottles or other vessels, and consists in constructing and combining the funnel with a float in such a manner that the nozzle of the funnel is automatically closed by the float when the bottle is filled to a certain height, and the further inflow of liquid arrested, and the funnel can then be removed and applied to a fresh bottle or vessel without spilling the liquid left in it.

The letter A designates the funnel, whose nozzle, B, is shown inserted into the mouth of a bottle.

The funnel A and its nozzle B are surrounded by a jacket, C, open at top and bottom, inclosing a space, D, through which air is free to pass.

The jacket is attached to the funnel by suitable braces.

The letter E designates a tube, supported centrally in the funnel in a skeleton or perforated diaphragm, F, extending across the interior of the funnel.

In the said tube works a rod or stem, G, which extends below the diaphragm F, and goes through the nozzle of the funnel, and is attached to a float, H, arranged below the nozzle.

The top of the float has a packing, I, composed of a ring of rubber or other suitable material, so arranged that, when the float rises up to the nozzle, its packing strikes the end of the nozzle, forming a valve, of which the end of the nozzle is the seat.

The top of the float, above the place of the packing, is made conical, so as to center the float in the nozzle.

The exterior of that part of the jacket which surrounds the nozzle is surrounded by a tapering sleeve, J, composed of rubber or elastic material, which packs the joint existing between the mouth and neck of the bottle or vessel and the funnel, and makes an elastic bearing at that place.

The lower part of the nozzle of the funnel is provided with semi-elliptical springs, K K, arranged on opposite sides of the nozzle, to which they are secured by a collar, L.

Said springs extend upward outside of the lower end of the jacket, their free ends coming opposite the elastic sleeve J, so that, when the nozzle of the funnel is pushed into the mouth of a bottle, the ends of the springs are brought against the outside of the nozzle or its jacket, so as to press against the elastic sleeve, which is thereby kept in place while the nozzle is pushed into the neck of the bottle to the required extent.

The top of the stem G of the float is pivoted to a lever, M, which turns on a fulcrum, N, arranged at the end of a bracket, O, extending from the upper end of tube E.

P is a movable weight, which I arrange to slide freely to and fro upon the lever M, so as to cause it to complete its vibration on its fulcrum after the rising of the float has disturbed the equilibrium of the parts.

The end of the longer arm of lever M is provided with a stop, Q, which arrests the weight when it arrives at that point, and the end of its shorter arm is bent up at right angles, and receives an adjusting-screw, R, by which the position of the weight with reference to the fulcrum N is regulated.

At the bent end of the lever, over the adjusting-screw R, I have arranged a thumb-piece, S, by means of which I push down the shorter end of lever M, so as to bring it to the position shown in the drawing, when the weight P will slide, by gravity, along the lever to a position past the fulcrum N, where it keeps the float depressed and away from the end of the nozzle, the adjustment of the weight being so regulated that the preponderance is slight when the weight is at the shorter end of the lever, and, therefore, a slight upward movement of the float causes the lever M to turn on its fulcrum, and raise its shorter end, and depress its longer end, when the weight slides down toward the stop Q, and brings the float up against the end of the nozzle, and holds it there.

When the parts are in the position shown in the drawing, any liquid poured into the funnel will run into the bottle A until the contents of the bottle lift the float, and cause the reversal of the lever M and the descent of the shifting-weight, whereby the nozzle or discharge-end of the funnel is closed, so that any liquid remaining in the funnel is held there, and the funnel can be removed to a fresh bottle without liability of spilling its contents. This action of the apparatus is automatic, and it takes place without any other attention on the part of the attendant than the raising of the longer arm of lever M, when the funnel is applied to a fresh bottle or vessel, so that the weight may slide down to the shorter arm of said lever, where it remains, just counterbalancing the weight of the longer arm, and keeping the nozzle of the funnel open until the rising of the float reverses the lever. As the liquid enters the bottle or vessel, the air escapes therefrom freely through the air-space D.

The perforated diaphragm F prevents the passage

of foreign substances through the funnel, and thereby facilitates the filling of bottles or vessels in a proper manner, and preserves the float and nozzle from obstructions.

The nozzle of the funnel can be made with a screw or sliding joint in such a manner that its length can be increased or decreased, or the float can be screwed up or down on its stem, or both can be, in this manner, made adjustable, if deemed necessary.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a funnel, of a float-valve, for automatically retaining the contents of the funnel, constructed and operating substantially as described.

2. The combination, with a funnel, of the springs K K, substantially as described.

3. The perforated diaphragm F, supporting the tube E, in combination with the funnel A and jacket C, substantially as and for the purpose described.

4. The vibrating lever M supported on the funnel, as described, in combination with the float-valve H and stem G, substantially as shown and described.

5. The combination of the float-valve and stem with the lever M and its movable weight P, substantially as described.

CARL RUF.

Witnesses:

J. VAN SANTVOORD,

C. WAHLERS.