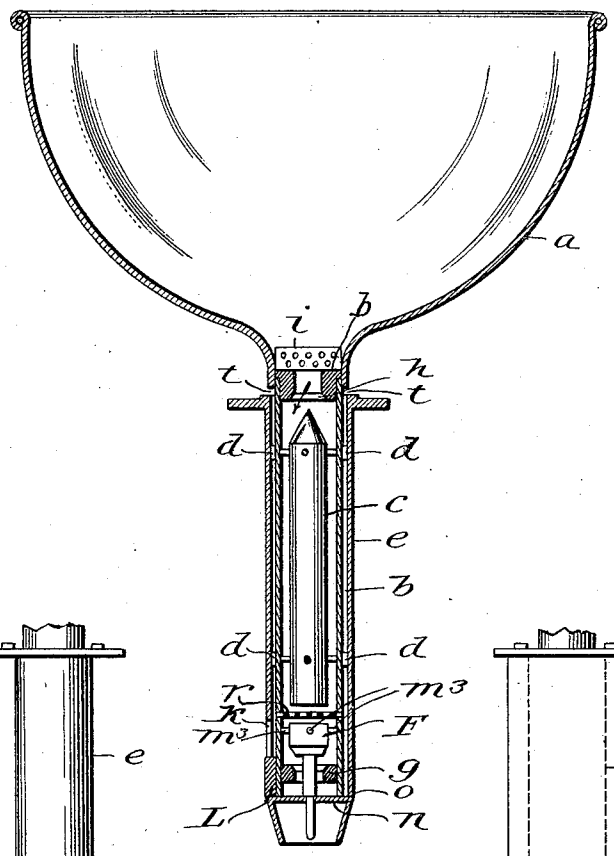
K. H. ROSENAUER.

SELF CLOSING FUNNEL FOR LIQUIDS.

APPLICATION FILED MAR. 18, 1911.

1,074,465. Patented Sept. 30, 1913.

Fig. 1.



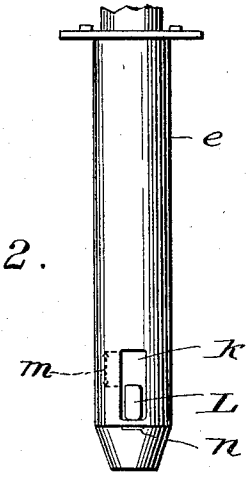


Fig. 2.

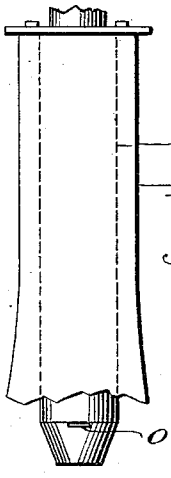


Fig. 3.

Witnesses

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KARL HEINRICH ROSENAUER, OF FRANKFORT-ON-THE-MAIN, GERMANY.

SELF-CLOSING FUNNEL FOR LIQUIDS.

1,074,465. Specification of Letters Patent. Patented Sept. 30, 1913.

Application filed March 18, 1911. Serial No. 615,427.

To all whom it may concern:

Be it known that I, KARL HEINRICH ROSENAUER, a subject of the King of Hungary, and a resident of Frankfort-on-the-Main, Germany, have invented a certain Improved Self-Closing Funnel for Liquids, of which the following is a specification.

The present invention relates to a funnel such as used for filling liquids into bottles and the like, and of the kind provided with a float-valve adapted to intercept the supply of liquid as soon as such liquid rises into the neck of the bottle.

According to the present invention, the float-valve is guided on the inner ends of pins passed through the walls of the funnel's stem. The heads of said pins are adapted to slidably guide a sleeve on the stem so that a passage is formed between these elements for the discharge of displaced air. A bridge in the lower part of the sleeve serves as support for the funnel and also for the bottom valve, the latter being opened when the funnel is placed in the bottle neck and closed when it is lifted. The tail-piece of the bottom valve is guided in the supporting bridge, and the body of the valve is provided with radiating pins by means of which it is guided in the stem.

The invention is illustrated in the annexed drawings, Figure I representing a longitudinal section through the funnel, the valves being open, Fig. II, a view of the lower part of the funnel, seen from the left of Fig. I, and Fig. III, a view of the lower part of the funnel, seen from the right of Fig. I, it being inserted in the neck of a bottle.

In said drawings, *a* is the funnel-bowl and *b* the stem connected thereto. A float-valve *c*, having a cone at its upper end, is loosely fitted in the stem and adapted to close the funnel when raised with its cone against a valve-seat *h* mounted in the upper part of the stem. The valve *c* is guided at each of two places on the ends of four pins *d* which are fitted at right angles in the walls of the stem *b* so as to support the valve on four sides. The heads of said pins are situated on the outside of the stem and serve as guides for a sleeve *e* adapted to slide upon the stem. In the lower part of the sleeve *e* a slot *k* is provided through which a lug L, connected to the stem *b*, projects. Slot and lug allow a displacement of the elements through the distance *m*.

In making the slot *k* in the sleeve *e*, the strip stamped out of the same is only detached at the top and at both sides, the strip being thereupon bent across the sleeve to form a bridge *n*. The outer end of the strip is passed through a slot *o* at the opposite wall of the sleeve and connected thereto.

A seat *g* for a drop-valve F is provided in the lower part of the stem *b*, said valve having a shouldered tail-piece by means of which it is attached to the bridge *n*. Radiating pins m^3 on the valve body guide the upper part of the latter in the stem *b*. A cross-pin *r* in the stem limits the upward movement of the valve F and the downward movement of the valve *c*.

The funnel proper is supported on the bridge *n* which bears against the lower end of the stem *b*, and the whole arrangement is supported on the mouth of the bottle neck by means of a flange provided on the upper end of the sleeve *e*. While the funnel is supported on the bridge *n*, the valve F, owing to the shoulder of its tail-piece being engaged by the bridge, is raised away from its seat, as shown in Fig. I.

Above the valve seat *h* a strainer *i* is provided to prevent the entrance of impurities into the stem.

When the funnel is disposed in the bottle neck P, as shown in Fig. III, the valves have the position as shown in Fig. I. Liquid poured into the bowl *a* passes through the stem and is discharged by the lower tapering end of the sleeve *e* into the bottle. The air displaced by the liquid passes through the slot *k* along the passage between the sleeve and the stem and is discharged at the nozzle *t* of the sleeve. As soon as the liquid rises from the bottle into the neck, the float valve *c* will be lifted up against its seating *h* so as to stop further flow of liquid. When the funnel is lifted from the bottle, the sleeve drops on the stem until the lug L engages the upper end of the slot *k*. This allows the bottom valve F to drop into its seating so as to prevent the liquid contained in the funnel from being discharged until the funnel is placed in another bottle.

Very little friction is produced by the guide pins on the valves so that a most satisfactorily working device is obtained by the arrangement.

I claim:—

1. A funnel for filling bottles comprising

a funnel-bowl, a stem connected thereto, projections within said stem, a float-valve fitted in the stem and guided on the inner ends of said projections, a valve seat in the upper part of the stem for receiving the valve and closing the funnel when said valve is raised, means for discharging the displaced air, and means for closing the lower end of the stem when the funnel is removed from the bottle, substantially as set forth.

2. A funnel for filling bottles, comprising a funnel-bowl, a stem connected thereto, a float-valve arranged in said stem so as to close the funnel, pins fitted in the walls of the stem and adapted to guide said valve with their inner ends, a sleeve slidably fitted on the stem and guided on the heads of said pins so as to leave a space for the discharge of the displaced air, a flange at the upper end of the sleeve for supporting the funnel on the mouth of the bottle-neck, a bridge in the lower part of the sleeve for supporting the stem, and a drop-valve in the lower part of the stem supported on said bridge so as to open when the funnel descends in the sleeve and close when it is lifted, substantially as set forth.

3. A funnel for filling bottles, comprising a bowl, a stem connected thereto, a float-valve in the stem adapted to close the funnel, pins in the walls of the stem to guide the valve with their inner ends, a sleeve slidably fitted on the stem and guided on the heads of said pins to provide a passage for the displaced air, a lug on the lower part of the stem guided in a longitudinal slot in the sleeve, a bridge in the sleeve formed by bending the strip cut out from said slot, a bottom-valve in the stem guided with its tail-piece in the bridge and supported thereon so as to open when the funnel descends in the sleeve and close when it is raised, and radiating pins on the body of said bottom-valve for guiding the same in the stem, substantially as set forth.

4. A spout having in its ends perforated rings forming oppositely arranged valve seats, a buoyant valve adapted to close one of said rings and a non-buoyant valve adapted to close the other ring, a sleeve incasing the spout and means for unseating the non-buoyant valve upon the insertion of the spout into a vessel, as described.

5. A spout having perforated rings forming oppositely disposed valve seats, a tubular buoyant valve incased in the spout adapted to close the upper ring, a sleeve incasing the spout and connected thereto to permit limited relative movement, and a non-buoyant valve in the spout adapted to be unseated by the movement of the spout relative to the sleeve upon the insertion of the spout into a vessel.

6. A spout having perforated rings forming oppositely disposed valve seats, a tubular buoyant valve incased in the spout adapted to close the upper seat, a sleeve incasing the spout and connected thereto to permit limited relative movement, a non-buoyant valve and stem therefor, and an integral portion of the sleeve supporting said valve when it is opened.

7. A spout, a slidable sleeve thereon having an upper flange and a lower instruck finger providing a slot, a valve seat in the spout and a non-buoyant valve therefor, guide fingers for said valve, a valve stem having a projecting finger passing through said instruck finger, and a lug on the spout working in said slot, as and for the purpose described.

KARL HEINRICH ROSENAUER.

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."