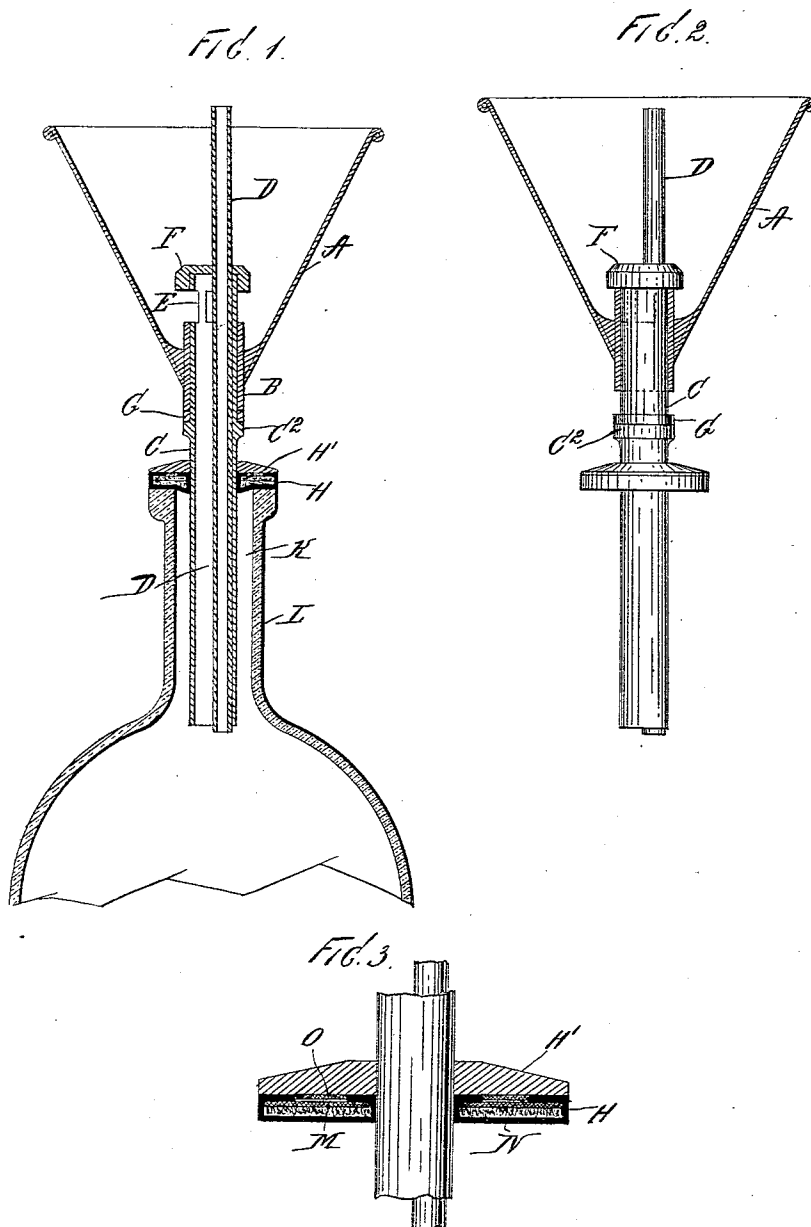


(No Model.)

H. I. KEINER.
AUTOMATIC FUNNEL AND STOPPER THEREFOR.

No. 559,897.

Patented May 12, 1896.



WITNESSES:

John Buckler,
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INVENTOR

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UNITED STATES PATENT OFFICE.

HARVEY ISAAH KEINER, OF WILKES-BARRÉ, PENNSYLVANIA.

AUTOMATIC FUNNEL AND STOPPER THEREFOR.

SPECIFICATION forming part of Letters Patent No. 559,897, dated May 12, 1896.

Application filed July 19, 1895. Serial No. 556,462. (No model.)

To all whom it may concern:

Be it known that I, HARVEY ISAAH KEINER, a citizen of the United States, and a resident of Wilkes-Barré, county of Luzerne, and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Funnel
5 and Stoppers Therefor, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference
10 indicate corresponding parts.

This invention relates to automatic funnels of that class in which a valve mechanism opens or closes and thereby regulates the flow
15 of the liquid from the funnel according as the funnel is applied to or removed from the vessel upon or in connection with which it is to be used.

The invention is an improvement on that described and claimed by me in my Patent No. 530,208, granted December 4, 1894, and is fully disclosed in the following specification,
20 of which the accompanying drawings form a part, and in which—

Figure 1 is a central vertical section of my improved funnel mounted upon a bottle; Fig. 2, a side elevation of the funnel, the upper part of which is shown in section, so that the interior construction thereof may be more
30 clearly understood; and Fig. 3, a sectional view of a detail of the construction.

In the practice of my invention I construct a funnel A, having mounted within its lower end a sleeve B, in which a valve-tube C is
35 loosely fitted, and within the tube C is secured an air-tube D, arranged at one side or in a position eccentric thereto, as best shown in Fig. 1. The upper end of the tube C is provided with openings or ports E and is
40 closed by a cap or valve F, which is attached thereto and through which the air-tube D extends.

The tube C has formed thereon a collar C² at such distance beneath the lower end of the
45 sleeve B as to permit the said sleeve to fall sufficiently to expose the ports or openings E, while preventing too great downward movement thereof. A gasket G immediately above the collar C², and secured thereto, forms an
50 air-tight joint between the collar and the sleeve, and the sliding movement of the tube C within the sleeve is such as to prevent any

liquid entering the joint between them, and the gasket also forms an elastic cushion for the sleeve to rest upon.

The foregoing construction is substantially the same as that described in my Patent No. 530,208, granted December 4, 1894, and constitutes no part of the present invention, but
55 is set out in detail as above in order that the improvement which constitutes the basis of this application may be more readily understood.

Below the collar C² is placed a circular elastic washer or stopper, which is frictionally
65 secured to or connected with the tube C, the said stopper being adapted to serve as a seat for the funnel when placed upon the bottle, and also to seal the mouth of the said bottle during the operation of the funnel. The
70 stopper is formed of two parts H and H', the upper portion H' being preferably composed of rubber of medium hardness, while the lower section H is composed of flexible and elastic material and provided with an interior
75 body portion of flexible material, so as to more effectually conform to any irregularities in the surface of the mouth of nozzle of the bottle and render the space K within the neck L of the bottle air-tight, as will hereinafter
80 more fully appear.

The lower part H of the valve or stopper is preferably composed of soft rubber, and hollow, as shown at M, Fig. 3, and the hollow space therein is filled with wool, cotton, or any
85 preferred kind of soft, flexible, or elastic packing M. The method of inserting this packing is immaterial, and I may employ two separate disks of soft rubber, between which the packing is placed, or the entire washer or the
90 portion H thereof may be made integral or hollow and have holes or openings in the upper side, as shown at O, Fig. 3, through which said packing material is inserted, the object being to fill this space in such manner and
95 with such material that the portion H of the washer will be soft, flexible, or elastic, and thus serve as a perfect cushion for the purposes hereinbefore specified, or in constructing the part H, I may employ a thin annular
100 body of flexible rubber having upon the exterior thereof an upwardly-projecting rim with an inwardly-directed flange upon the upper edge thereof, said annular body being

also provided with a central aperture and an upwardly-directed tubular extension having an annular flange upon the upper edge thereof, this being the form of construction shown in Fig. 3, the opening O being formed by the said inwardly-projecting flange and the flange formed upon the edge of the upwardly-directed tubular extension of the central opening.

The tube C is of sufficient length to permit the requisite movement to open and close the valve and to extend so far into the bottle as to limit the filling of the latter to the height required, and the air-tube D extends from the bottom of the tube C upwardly therethrough to or appreciably above the top of the funnel. The said tube C, fitting loosely in the sleeve B, will, whenever the funnel-body is held in the hand or when removed from the bottle-neck, fall and cause the ports E to be closed and the valve F to rest upon its seat, said valve assuming the position shown in Fig. 2. When the funnel is inserted into a bottle or similar vessel, its weight causes the sleeve to slip down upon the tube until it abuts against or rests upon the gasket G, thereby opening the ports to permit the passage of the liquids therethrough.

The portion II of the washer or stopper has a flat under surface in order that it may cover the mouth of the bottle more perfectly and also be applied to those of different diameters as well, while the upper portion II' is preferably composed of rigid material in order to form a substantial backing or support therefor.

I prefer to arrange the air-tube eccentrically within the valve-tube C, in order that it may be more firmly secured within the latter and allow of a more unobstructed passage of the liquid through the tube, and the operation of the funnel is as follows:

The lower end of tube C is inserted into the neck of a bottle or similar vessel which it is desired to fill, and the stopper, consisting of the parts II and II', rests upon the neck or nozzle, thereby making an air-tight connection with the bottle by reason of the flexible and elastic character of the part II, hereinbefore described. The funnel immediately assumes the open position shown in Fig. 1, the body A sliding downwardly, thereby raising the valve and opening the ports E to permit the free passage of the liquid therethrough and down into the bottle. As the liquid enters the bottle the air escapes therefrom by way of the air-tube D, as will be readily understood, and the operation of flowing continues until the liquid reaches the level of the bottom of the tube C, thus sealing the mouth of the air-tube, whereupon the air in the space K within the neck of the bottle cannot escape and forms an air-cushion, which stops the further flowing of the bottle until the funnel is raised, when the valve instantly falls and cuts

off the further flow of the liquid. The liquid remaining in the funnel, if any, can then be decanted into another vessel or returned to that from which it was drawn.

By frictionally and movably attaching the stopper, consisting of the parts II and II', to the tube C the same may be adjusted vertically upon said tube to regulate the depth of the latter within the bottle, according to the height to which it is desired to fill the bottle, and it is evident that this device may not only be applied to bottles of the usual or any preferred form of construction, but also to jars, cans, lamps, jugs, or other vessel or vessels adapted to hold liquids of any kind or class.

Having fully described my invention, its construction and operation, I claim and desire to secure by Letters Patent—

1. A stopper for automatic funnels, adapted to be used for filling bottles or other vessels, comprising a flat annular body of thin flexible rubber, having upon the exterior thereof, an upwardly-projecting rim with an inwardly-directed flange upon the upper edge thereof, said stopper being centrally apertured, and provided with an upwardly-directed extension having an annular flange upon the upper edge, and a filling of flexible material inserted within said stopper and beneath the exterior flange and the central flange, and the centrally-apertured disk of substantially rigid material secured to both of said flanges, substantially as shown and described.
2. A stopper for automatic funnels, adapted to be used in filling bottles or other vessels, consisting of an annular body of elastic and flexible material having an aperture in the center thereof with an upwardly-projecting extension, and an annular flange upon the top of said extension, and a disk or body of substantially rigid material secured at the upper surface of said body and also provided with a central opening, and secured to the said flange, substantially as shown and described.
3. The combination with a funnel of the character described herein, of a circular elastic washer, which is frictionally connected therewith, and being adapted to serve as a seat for the funnel when placed in the bottle to seal the mouth of the same, said stopper being formed of two parts, the upper part of which is composed of rubber and the lower part being composed of elastic material, and an interior body-filling of flexible material to conform to the irregularities in the surface of the neck of the bottle rendering the same air-tight, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 8th day of June, 1895.

HARVEY ISALAH KEINER.

Witnesses:

P. A. MEIXELL,
CHRIST RAYER.