(No Model.)

K. KIEFER.

FUNNEL.

No. 482,578. Patented Sept. 13, 1892.

Fig. I.

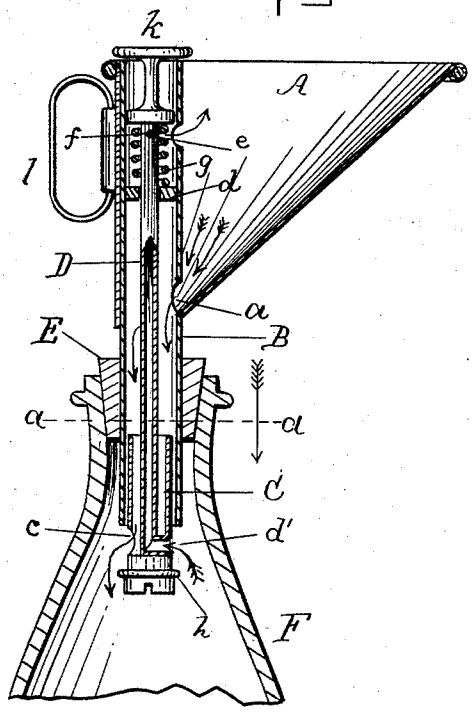


Fig. II.

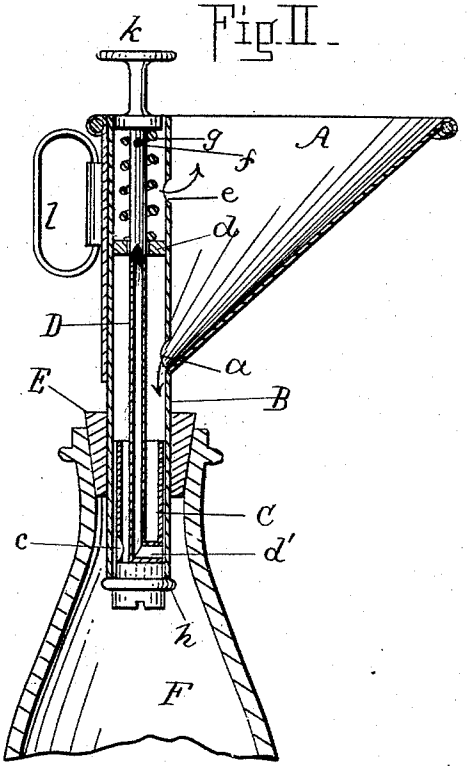


Fig. III.

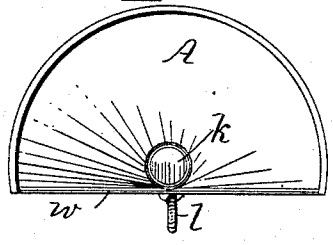
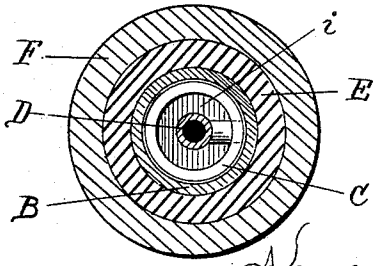


Fig. IV.



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UNITED STATES PATENT OFFICE.

KARL KIEFER, OF CINCINNATI, OHIO.

FUNNEL.

SPECIFICATION forming part of Letters Patent No. 482,578, dated September 13, 1892.

Application filed June 20, 1892. Serial No. 437,355. (No model.)

To all whom it may concern:

Be it known that I, KARL KIEFER, a citizen of Germany, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Funnels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to funnels for filling vessels, principally adapted for bottles, that will be automatically closed when the liquid rises to a certain elevation therein.

My invention is hereinafter fully described, illustrated in the drawings, and specifically pointed out in the claims.

Referring to the accompanying drawings, wherein like letters of reference point out similar parts on each figure, Figure I is a vertical central section of a funnel inserted within the neck of a bottle in position for passing liquid therein. Fig. II is a similar view showing valve closed when the bottle is filled up to a desired elevation. Fig. III is a top view of preferred form of funnel. Fig. IV is an enlarged cross-section on line *a a* of Fig. I.

In the drawings, A is the funnel; B, combined inlet and valve tube; C, tubular open-ended cup-shaped chamber surrounding lower end of tubular stem D, having lower outlet-aperture *c*, through which the fluid from the funnel will flow into the vessel, as indicated in Fig. I by downwardly-pointing arrows. The wall of cup C is concentric with tube B and adapted to readily move therein vertically, in a manner and for a purpose presently pointed out.

D is a tubular valve-pipe reaching full length of the tube B, its upper end being permanently attached to press-button *k*, its lower end carrying valve *h* to seal the open end of tube B when the bottle F is filled to a given elevation. The pipe D extends within the center of tube B and is maintained therein vertically by passing through orificed fixed disk *d*, adjusted in horizontal position within tube B at the upper section thereof, said disk also serving as support for end of coiled spring *g*. Pipe D furnishes means for outward passage of air from within vessel F as it is gradually filled with fluid. At its lower end next above valve *h* said pipe has a lateral open-ended air-inlet branch *d'*, and near its upper end is an outlet *f*, for a purpose that will be readily understood. Above the branch *d'* the pipe D carries a cup C, open at its upper end, surrounding said pipe circumferentially and having outlet-aperture *c*.

E is an orificed cork movable on the tube B, outwardly shaped to conform to the inside of the mouth end of vessel F. In practice this cork, which is made of rubber or suitable yielding material, is adjusted on tube B in position so that the lower section thereof will extend downwardly therethrough a predetermined distance, whereby the closing-valve *h* will be located in position to be actuated when the injected fluid rises to a given height. The orificed disk *d* divides the tube B into two sections, the upper one of which is provided with coiled spring *g*, surrounding pipe D, its lower end resting on said disk *d*, its upper end bearing against the lower flat end of push-button *k*. By compressing said push-button the pipe D will be projected downwardly, removing valve *h*, whereby the device will be in the position shown in Fig. I, ready for action as the bottom of the valve-chamber C will be open for downward outflow of liquid through its orifice *c* and upward outlet of air through branch *d'*, as indicated by oppositely-turned arrows. Normally the device after the cork has been inserted within mouth of the vessel will be in position illustrated in Fig. II.

In Fig. IV the bottom of the cup C is shown at *i*. *l* is the handle.

It is my intention to have divers sizes of funnels, each adapted to contain a given quantity of liquid of required volume to supply a respective vessel F up to a given height or to place graduated denominative scale thereon for like purposes.

The funnel main chamber is not a complete cone as commonly employed in devices of analogous character, but a section thereof. It may be a full half, as illustrated in Fig. III; but I do not limit myself to the precise shape shown. The straight-back wall *w* composes a hemispherical upper opening; but it may be nearer to or farther from the true diametrical line of a circle without departing from

the scope and purview of my invention; but in all forms said wall is flat to compose a bearing for the vertical tube B.

From the foregoing description, in connection with the drawings, the nature, object, and practice of my invention will be readily understood by all familiar with the special branch of art to which it is allied.

Its operation may be thus briefly described: The funnel is filled up to a height indicated by a scale shown thereon to be a required quantity either before or after being inserted within the vessel's mouth and replenished as necessary. Its contents will flow through opening *a* and rise within the tube B up to disk *d*. When adjusted in position shown in Fig. II, the button *k* is pressed downwardly and the device assumes the position shown in Fig. I. As the fluid passes into the vessel the compressed air will flow upwardly through inlet branch *d'* and be discharged through opening *f* into the upper section of tube B above disk *d*, and from thence through outlet *e* of said tube.

Having thus fully described my invention and the manner of its operation, what I claim, and desire to secure by Letters Patent of the United States of America, is—

1. A funnel for filling bottles or similar receptacles, consisting of a section of a cone having a straight back, to which is attached, vertically, tube B, having orifice *a* opening into and communicating with the lower end of the funnel, said tube provided with valve-pipe D, extending the full length thereof, and the disk *d*, having orifice in which said pipe is movable, said orificed disk being permanently adjusted near the upper end of tube B, the pipe D, carrying at its lower extremity valve *h*, and the open-ended cup C above said valve, integral with said pipe and surrounding it concentrically, having eduction-orifice *c*, all in combination with hollow stem of the valve-pipe, having open-ended branch *d'* and upper aperture *f*, as and for the purpose intended, substantially as described.

2. In a funnel having its body formed of a section of a cone and flat back *w*, vertical tube B, hollow pipe D within the tube, adjusted to move reciprocatingly in vertical directions within said tube, the pipe D, having at its lower end valve *h* and at its opposite end push-button *k*, spiral spring *g* under the push-button, bearing upwardly against the under surface of said push-button, orificed disk *d*, horizontally adjusted within tube B at the opposite end of the spring, all in combination with lower air-inlet *d'* and upper air-outlet *f*, and valve-cup C, integral with and surrounding the lower end of pipe D, concentric therewith and movable vertically within tube B, substantially as described.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

KARL KIEFER.

Witnesses:
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