No. 701,987. Patented June 10, 1902.

U. S. ALZ.

NON-REFILLABLE BOTTLE.

(Application filed Sept. 20, 1901.)

(No Model.)

Fig. 1.

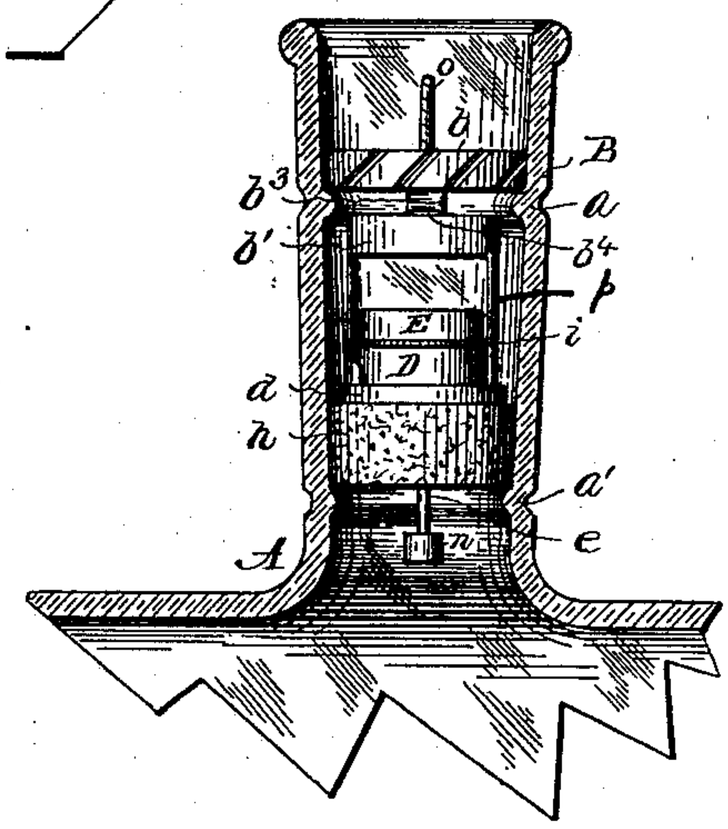


Fig. 2.

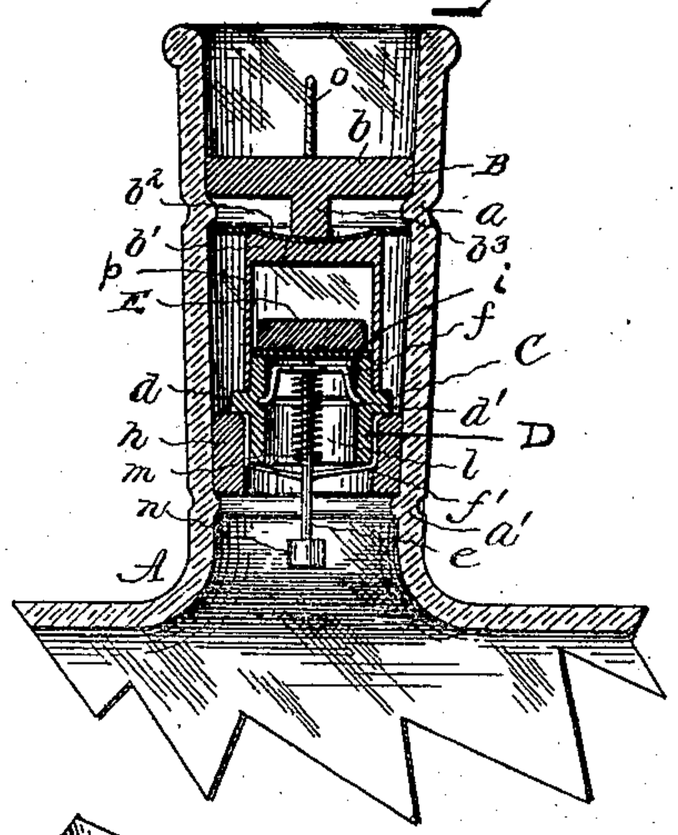


Fig. 3.

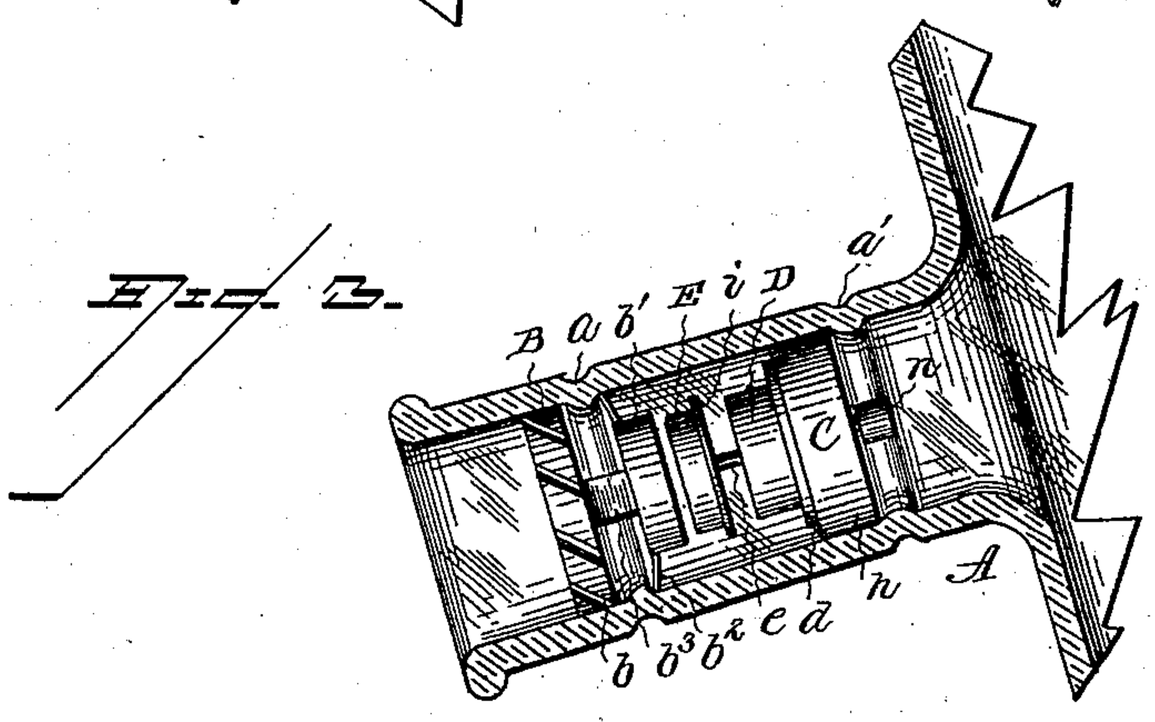


Fig. 4.

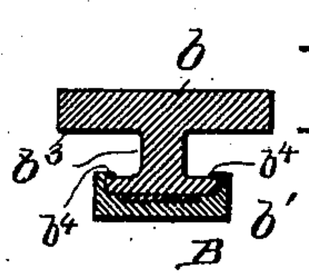
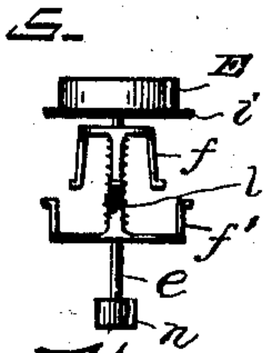


Fig. 5.



Witnesses:
W. A. Dewalt
R. J. Beall

Urban S. Alz.
Inventor,
By
John B. Thomas & Co.
Attorneys

UNITED STATES PATENT OFFICE.

URBAN S. ALZ, OF BALTIMORE, MARYLAND, ASSIGNOR OF THIRTEEN-TWENTIETHS TO AUGUSTUS M. DENHARD, FREDERICK DENHARD, AND WILLIAM R. ENGEL, OF BALTIMORE, MARYLAND.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 701,987, dated June 10, 1902.

Application filed September 20, 1901. Serial No. 75,694. (No model.)

To all whom it may concern:

Be it known that I, URBAN S. ALZ, a citizen of the United States, and a resident of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

This invention is an improvement upon the device shown and described in my prior application for patent, filed June 28, 1901, Serial No. 66,421; and the primary object of the present invention is to improve upon the general construction of the device and increase its effectiveness in operation.

With the above object in view this invention consists in the particular construction and combination of parts, all as will be hereinafter fully described, and more specifically set forth in the appended claims.

In the accompanying drawings, which form a part of this specification, and in which like letters of reference indicate like parts in the several views, Figure 1 is a side elevation showing the application of the invention, the bottle being in section. Fig. 2 is a sectional view. Fig. 3 is a view showing the position of the valve when the bottle is tilted. Fig. 4 is a detail sectional view of the head or cap employed in Fig. 3. Fig. 5 is a detail view of the valve-plug and guides therefor.

Referring now to said drawings, A designates the bottle, which is of the ordinary shape or configuration, the neck being gradually tapered from its upper end and provided with an upper internal bead *a* and a lower internal bead *a'*, forming shoulders against which the parts of the bottle-stopper abut, the upper bead engaging the spring-catch to hold the device permanently in the bottle, while the lower bead limits the downward movement of the stopper.

The bottle-stopper consists of the cap or head B and valved stopper C, which parts may be connected together, as shown in Figs. 1 and 2, or separated, as shown in Fig. 3, for the purposes hereinafter specified.

The cap or head B, which is adapted to protect the valved stopper, comprises two connected disks *b* and *b'*, between which is interposed a flat spring b^2, the ends of the latter engaging the bead or shoulder *a* to hold said cap or head permanently in place. There is a space left between the disks *b* and *b'* to permit a play of the end portions of the spring b^2 and allow said end portions to pass by the bead or shoulder when the cap or head is forced into place. When this cap or head is in place, the upper disk *b* bears upon the upper edge of the bead *a* and the ends of the flat spring engage the lower edge of said bead, and in this way the said cap or head is permanently located in the neck of the bottle and cannot possibly be removed, the downward movement of the ends of the flat spring being prevented by their engagement with the lower disk. To provide for connecting the parts of the cap or head, the disk *b* is formed with a T-shaped projection b^3, and the disk *b'* has a recess to receive the cross-piece of said projection, said disk *b'* being also formed with flanges b^4 b^4, which are adapted to be bent over the ends of the cross-piece and secure the parts together. The flat spring b^4 passes under the cross-head and is slightly curved, as shown, so that the ends will more readily yield in riding over the bead *a* when the head is inserted. The upper disk is provided with peripheral grooves, which form exit-passages for the liquid.

The valved stopper consists of the tube D, having centrally an external flange *d* and an internal groove *d'*, the latter serving to receive the ends of a spider *f*, forming an upper guide for the stem *e* of the plug E of the valve, the lower end of said stem being guided by a spider *f'*, which is sprung on the lower end of the tube and held in place by the cork ring *h*. This cork *h* forms a tight joint around the valved stopper. The plug E closes upon the upper end of the tube D, and at the under side of the same is a flexible disk *i*, which is adapted to tightly close the bottle and prevent refilling of the same. Said plug is moved against its seat by means of a heli-

cal spring *l*, which bears at its ends against the upper spider *f* and collar *m*, the latter being mounted on the stem of the valve and may be adjusted to regulate the strength of the spring. The lower end of the stem is provided with a weight *n*, which limits the upward movement of the plug and partly counterbalances the weight of the same, so that said plug will quickly return to its seat when the bottle is slightly turned.

The cap or head is provided with a projection or pin *o*, upon which is secured an ordinary stopper *o'* to tightly close the mouth of the bottle.

As shown in Figs. 1 and 2, the cap or head of the device is connected to the valved stopper by resilient members *p p*, which depend from opposite sides of the disk *b'* of the cap or head and frictionally engage the tube D above the shoulder *d*, and a cork stopper is attached to the projection *o* of the cap, so that the complete device may be inserted in the bottle at one operation. This is desirable when the device is applied to bottles containing gaseous liquors. For application to bottles containing non-gaseous liquors the parts B and C may be separated, as shown in Fig. 3, and inserted one at a time, the valved stopper being first passed into the neck of the bottle and shoved down upon the bead *a'* and then the cap or head inserted to engage the bead *a* and protect said valved stopper from being tampered with. In pouring out the contents of the bottle the liquid passes through the tube D, past the valve-plug E, and out by the edges of the cap or head. It will be readily seen that an attempt to refill the bottle will be frustrated by the closing of the plug or valve and that the valve is moved toward its seat by the spring, so that it will act quickly. The flexible washer forms a tight joint at the valve, and should the bottle be inverted and an attempt made to force liquid up through the neck the said valve will be readily forced upon its seat.

The present invention is a modification of the construction shown and described in my aforesaid application, the operation being similar.

It will be noted that the liquid contents of a bottle provided with my improved stopper may be readily poured from the bottle and that the valve will close and effectually prevent the refilling. It will also be noted that after the parts have been inserted in the neck of a bottle it is impossible to remove the same without destroying the bottle.

Having thus described my invention, I claim—

1. In a non-refillable bottle, the combination with the neck of the bottle having beads therein; of the cap or head having a transverse opening through the same, a flat spring passed through said opening so that its ends project beyond opposite sides of the head; together with the valved stopper comprising the tube forming a valve-seat, a valve-plug having a stem, spiders forming guides for the valve-plug, a flexible washer at the under side of the valve-plug, and a cork ring encircling the lower end of the tube, substantially as shown and described.

2. In a non-refillable bottle, the combination with the bottle, of a cap or head having springs adapted to engage a bead in the neck of the bottle, a valved stopper comprising the tube D forming a valve-seat and having an internal groove, a valve-plug provided with a stem extending through the tube, a spider inserted in the tube and engaging the groove, a second spider embracing the lower end of the tube, and a cork ring placed over the lower spider, said spiders forming guides for the stem of the valve-plug; together with a spring adapted to move the valve-plug to its seat, substantially as shown and described.

3. In a non-refillable bottle, the combination with the bottle, of a cap or head comprising two disks, one having a T-shaped projection and the other a recess to receive said projection, flanges on one of the disks adapted to be upset upon the projection on the other disk, a flat spring interposed between the disk with its ends projecting beyond the sides of the cap or head; together with a valved stopper consisting of a tube or valve-seat, a valve-plug movable against the upper end of said tube, a stem on the valve-plug having a head at its lower end, spiders for guiding the valve-plug and limiting its upward movement, a spring for moving the valve-plug to its seat, and a cork ring around the lower end of the tube, substantially as shown and described.

In testimony whereof I affix my signature in the presence of two witnesses.

URBAN S. ALZ.

Witnesses:

GRAFTON L. MCGILL,

HORACE S. BEALL.