

(No Model.)

H. L. B LEE.
NON-REFILLABLE BOTTLE.

No. 581,597.

Patented Apr. 27, 1897.

Fig. 1.

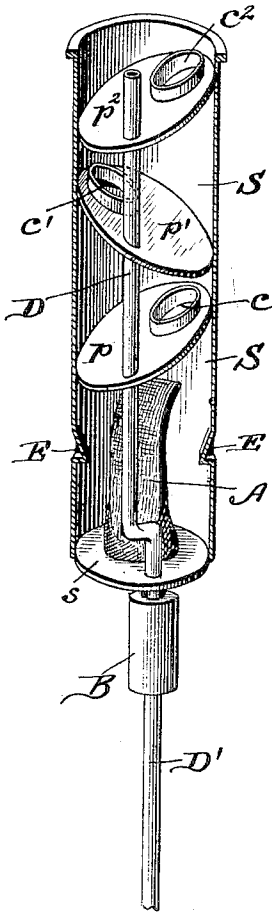


Fig. 2.

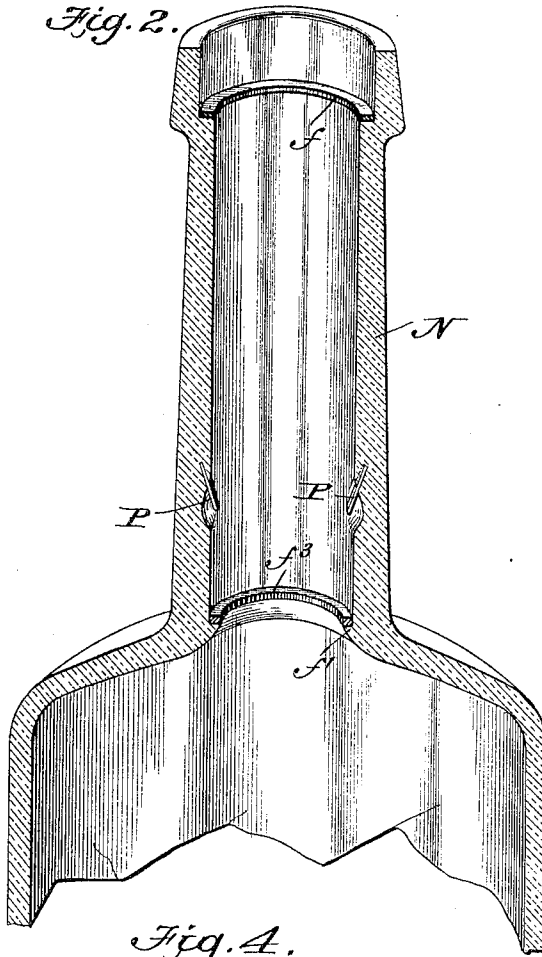


Fig. 3.

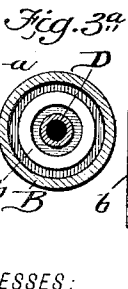
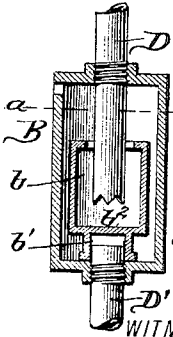


Fig. 3b.

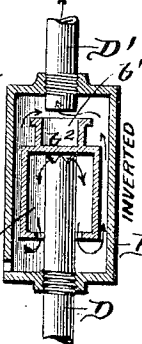


Fig. 4.

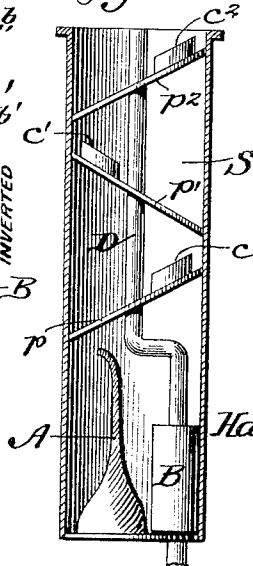
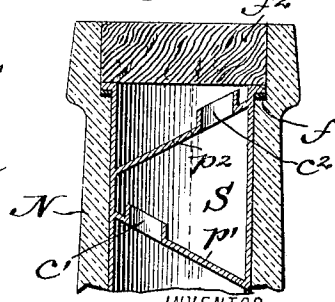


Fig. 5.



WITNESSES:

W. D. Blundell
Edw. W. Byrne

Harry L. Beekman Lee.

BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

HARRY L. BEEKMAN LEE, OF ALBANY, NEW YORK.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 581,597, dated April 27, 1897.

Application filed October 16, 1896. Serial No. 609,083. (No model.)

To all whom it may concern:

Be it known that I, HARRY L. BEEKMAN LEE, of Albany, in the county of Albany and State of New York, have invented a new and useful Improvement in Non-Refillable Bottles, of which the following is a specification.

The object of my invention is to provide a bottle and stopper which renders the same useless after once being emptied and which is proof against refilling by immersion, pumping, or other means; and it consists in the peculiar construction and arrangement of a stopper to be inserted in the neck of the bottle and in its combination with the bottle, whose neck is specially adapted to receive said stopper, as hereinafter fully described.

Figure 1 is a perspective view of the stopper shown detached from the bottle and partly in section. Fig. 2 is a similar view of the bottle, whose upper part is also shown in section. Fig. 3 is a detail sectional view of the air-valve; Fig. 3^a, a transverse section on line *a a* of Fig. 3; Fig. 3^b, a view similar to Fig. 3 except that the parts are in the position occupied when the valve and bottle are inverted, as in pouring out the contents. Fig. 4 is a sectional view showing a modification of the stopper, and Fig. 5 is a sectional view of the upper end of the bottle-neck completely closed.

In the drawings, N represents the neck of a bottle which at the lower portion of its throat has an inwardly-projecting flange *f'*, and near its mouth a short distance from the top is enlarged to form a flange or shoulder *f*, above which fits an external cork stopper *f*², Fig. 5. Between these two flanges *f* and *f'* the stopper or plug carrying valves, &c., is seated and retained. This stopper or plug is shown in Fig. 1, and its lower end rests upon the flange *f'*, with a soft-rubber washer *f*³ between them to make a tight joint. The stopper or plug consists of a cylindrical body part or sleeve S, carrying within it the valves and safety devices, and this plug fits snugly in the throat of the neck of the bottle, and when once seated therein is to be permanently retained, so that it cannot be removed except by breaking the bottle. This plug or stopper may be made of glass, metal, or any other desired material, and in its outer periphery are formed on opposite sides the two locking-

notches E E, and in a corresponding position on the inner walls of the neck of the bottle are permanently and securely seated in the glass two downwardly-projecting spring-pawls P, which, when the stopper is forced into place in the neck of the bottle, yield and then drop into the notches in the neck, so that it cannot be removed. The neck of the bottle is chambered a little below the spring-pawls to give them room to yield or spread outwardly when inserting the stopper.

Instead of using the spring-pawls to lock the stopper I may dispense with them and fill the cavities in the exterior of the stopper and interior of the bottle-neck with any strong and quick-setting cement, which will rigidly lock the parts together equally as well.

The stopper-sleeve S has its lower end closed by an end *s*, through which rises a collapsible soft-rubber valve A, constructed as a flexible tube whose lower end is open and connected to a round seat and whose upper end and body portion are normally flattened and are preferably curled over to insure automatic closing. This valve allows the fluid contents of the bottle to pass upwardly and out through its collapsed and curled end, which opens automatically from the pressure of the liquid when the bottle is inverted and which closes automatically or of its own accord when the bottle is erect on its own base, forming when in this position an effective check-valve that prevents the passage of liquid through it in the opposite direction.

Within the stopper-sleeve and just above the collapsible valve are three (more or less) partition-plates *p p' p*². These are provided with flanged openings *c c' c*² through them that give passage to the liquid as it passes out from the collapsible valve. The openings in these partitions are staggered or set so that they do not coincide or register with each other as to alinement, and, if desired, may be covered with wire-netting, and the partitions are set inclinedly and at an alternately-reversed angle with the openings at the higher side of the partition, to cause the liquid to drain well outwardly. The purpose of these partitions is to prevent the insertion of any small instrument by which the collapsible valve might be manipulated or tampered with in the effort to refill the bottle.

It is necessary, in order that the liquid should flow out of the bottle through the collapsible valve, that a corresponding quantity of air should be introduced into the bottle, 5 for otherwise the partial vacuum and the resistance that the collapsible valve affords to the liquid would prevent the latter from passing. To provide for this, I arrange an air-tube and air-valve in the stopper. D is the 10 upper part of this air-tube, which is housed within the stopper-shell S and passed through the partitions p p' p^2 and the bottom end s of the stopper, which also forms a partition in the neck of the bottle, and D' is the lower 15 part of this air-tube. This lower part descends to the bottom of the bottle and connects with the upper part below the neck of the bottle through the air-valve B, whose function is to admit air to the bottom of the 20 bottle when the latter is inverted and to resist the introduction of air under pressure when the bottle is upright. The construction of the air-valve is best seen in Figs. 3, 3^a, and 3^b.

The cylinder B is rigidly attached to the 25 ends of the tubes D and D', both of which protrude a certain distance into said cylinder, the end of D protruding the farthest and terminating in a toothed edge. A bottle-shaped valve is arranged within the casing B 30 and slides upon the protruding ends of the tubes D and D'. The larger chamber b of the valve surrounds the end of pipe D and the smaller chamber b' closes over the end of the pipe D', the two chambers of this valve 35 being separated by a partition b^2 . When the bottle is upright or on its own base, the valve occupies the position shown in Fig. 3, with the small chamber b' fitting over and closing the end D' of the pipe, so that if any liquid 40 should be introduced into the pipe D it cannot pass to the pipe D'; but when the bottle is inverted the valve assumes the position shown in Fig. 3^b, in which the chamber b' passes off the pipe D', and the air then rising 45 in pipe D passes between its notched edges and the partition b^2 and down the large cham-

ber b' into the outer case B and thence through the uncovered end of pipe D' to the elevated bottom of the bottle to supply an amount of 50 air equal to the amount of liquid poured out.

Instead of having the pipe D' extend to the bottom of the bottle it may stop just below the valve B, and this valve may, if desired, be placed within the stopper-sleeve S, as 55 shown in Fig. 4.

Instead of the closing-cork f^2 any other well-known stopper or cap may be used.

Having thus described my invention, what I claim as new, and desire to secure by Letters 60 Patent, is—

1. A bottle having permanently fixed in its neck a stopper-sleeve with a partition s at the bottom an outwardly-opening valve constructed as a flexible and collapsed tube rising from said partition and having arranged 65 in the sleeve above the valve inclined partitions with alternated openings, and an air-inlet tube passing through all of said partitions and beside the tube-valve substantially as shown and described. 70

2. A non-refillable bottle having an elongated stopper or plug made separate from the bottle with notches E and fitting the interior of the neck and having partition s at its lower end an outwardly-opening valve constructed as a collapsible tube and arranged 75 in said partition, an air-inlet and pawls or detents in the bottle-neck for permanently locking said plug or stopper in the neck of the bottle substantially as and for the purpose 80 described.

3. The bottle-neck stopper having an outwardly-opening collapsible tube-valve A, and partition-plates p p' p^2 above it with openings out of alinement and air-inlet pipe D 85 extending through said partition-plates and beside the tube-valve substantially as and for the purpose described.

HARRY L. BEEKMAN LEE.

Witnesses:

CHAS. L. YALE,

F. H. LIVINGSTON.