(No Model.)

H. P. FREAR.

NON-REFILLABLE BOTTLE.

No. 590,309. Patented Sept. 21, 1897.

Fig. 1

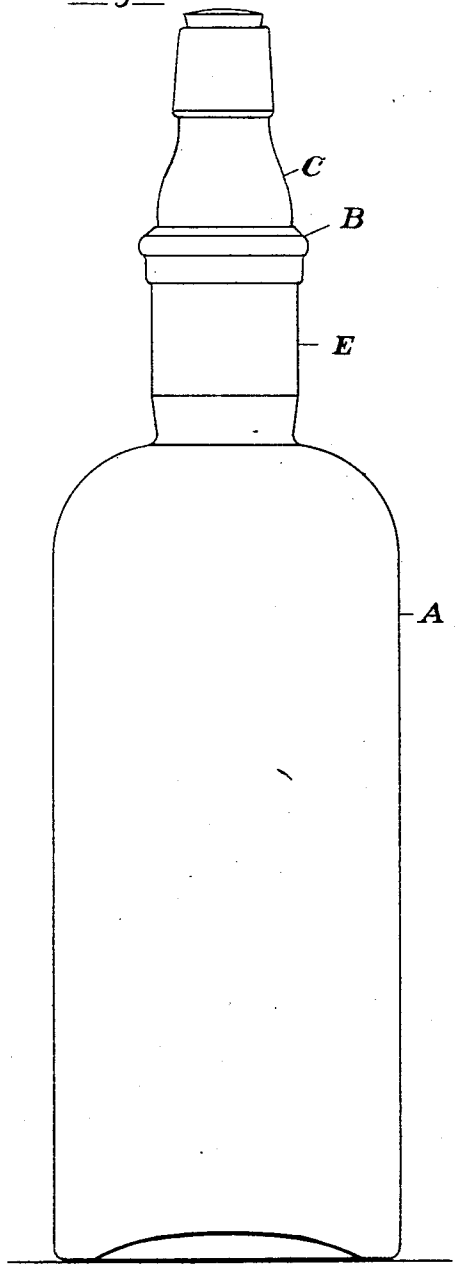
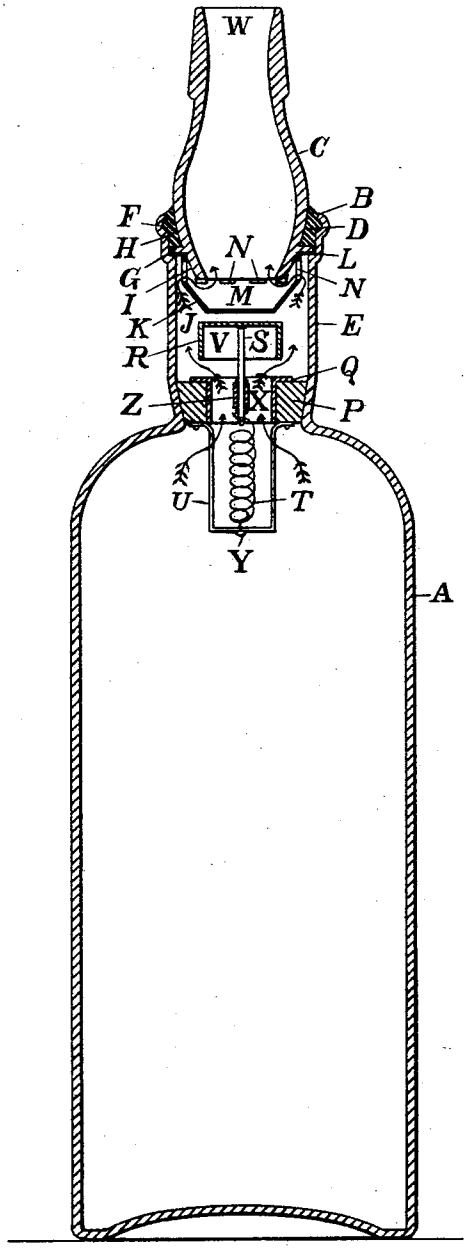


Fig 2.



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UNITED STATES PATENT OFFICE.

HUGO P. FREAR, OF SAN FRANCISCO, CALIFORNIA.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 590,309, dated September 21, 1897.

Application filed June 30, 1896. Serial No. 597,555. (No model.)

To all whom it may concern:

Be it known that I, HUGO P. FREAR, a citizen of the United States, residing at San Francisco, county of San Francisco, and State of California, have invented certain new and useful Improvements in Non-Refillable Bottles; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to bottles that when once emptied cannot be refilled; and it consists of an automatic valve opening outward and closing inward, a shield or guard to prevent access to this valve, an extension or reducing nozzle cemented in the neck of the bottle, and other elements that will be hereinafter more particularly described in connection with the drawings and pointed out in the claims at the end of this specification.

The object of my invention is to avoid the refilling of bottles with different or inferior liquids after the original contents have been decanted.

Referring to the drawings, Figure 1 is an elevation of a bottle provided with my improvements. Fig. 2 is a vertical or longitudinal section through the same bottle, showing the construction and arrangement of the various parts.

Like letters of reference in the two figures indicate corresponding parts.

The main member or body of the bottle A terminates at B, the extension or reducing nozzle C being inserted and cemented at D, as seen in Fig. 2.

The neck E of the bottle A is made somewhat shorter than common and is provided with a recess at D, having an indented groove F to hold the cement H, as seen in the section.

The extension C, a main object of which is to reduce the bore of the bottle's neck to the common size, has around its bottom a flange G, held by the cement H, and below this flange G a contracted or inward curved nipple I, that extends downward into the chamber J in the neck E of the bottle A. Other means of attachment can be employed, but this I consider best.

Beneath the flange G is held a shield or guard K, made, preferably, of thin metal in the form of a pan, having a fastening-ledge L at the top, a solid bottom at M, and perforations N around the sides, through which the liquid can flow from the chamber J into the discharge-nozzle C, these perforations N being high enough in respect to the nipple I that no kind of an instrument can be inserted through the extension C into the chamber J.

In the bottom of the neck E of the bottle A, I provide a close-fitting annular stopper or seat P, forming a bottom of the chamber J. This stopper or collar P can be made integral with the bottle A, but is preferably fitted therein at the neck, the sides being in that case preferably made tapering, as seen in Fig. 2. In this annular stopper P is a valve-seat Q, and on this an inverted cup-formed valve R, resting with its mouth on the flange of the shell Q, inserted in the valve-seat or inner stopper P, forming a close joint against the entry of liquid from the chamber J.

To the interior of the valve R is attached a rigid stem S, that slides in the bearings Z, and to this stem a weak coiled spring T, fastened at Y to a light frame or to an extension of the seat Q, as is preferred. This spring can be placed above the valve R, but is preferably arranged as shown. This spring T is made strong enough to support and close the valve R when the bottle A is inverted and the cup V of the valve is empty, but not strong enough to raise or close the valve R when the cup V is filled with liquid or is subjected to the weight or pressure of liquid contained in the bottle A.

The extension or nozzle C can be corked or sealed at W before or after it is secured in the neck E by any of the usual appliances in use, the same as for a common bottle.

The operation is as follows: The bottle A being originally filled, the annular stopper P, with its connected parts, are inserted. Then the extension-nozzle C is inserted and sealed at D in the manner before described. To empty the bottle, the stopper at W is removed and the bottle turned so its contents will flow out at X through the inner stopper P by the weight and pressure of the fluid raising or opening the valve R, so the liquid will flow into the chamber J, and from there out through the perforations N, up through the nozzle C and be discharged at W, as indicated by the arrows in Fig. 2. The action of this

valve R is peculiar. First, the pressure of the liquid forces the valve open. Then the spring acts to reseat the valve.

The spring T is made with strength enough to close the cup-valve R in all positions of the bottle when the cup is empty, but not strong enough to close the valve when the latter is filled or partially filled with liquid, so that when the bottle is being emptied and its mouth is inclined downward the rush of the liquid into the cup and the weight of what the cup contains holds the valve open until the bottle is drained. This action does not take place if the valve is made flat, closing on a flat seat.

In order that the bottle may not be refilled, it is essential that the valve come readily to its seat under all possible conditions and in every possible position. It is also desirable that the bottle have a free discharge. To attain these ends I employ a valve that is buoyant when in its normal or vertical position, and a spring of such strength that it will not close the valve when the bottle is empty and is inverted, but will barely close the bottle in an approximately horizontal position.

When the contents are discharged and the liquid contained in the chamber V of the valve R has wholly or partially ran out, the spring T closes this valve R and keeps it seated so the bottle cannot be refilled.

The shield or guard K effectually prevents the insertion of a wire or any kind of instrument to interfere with or raise the valve R, and the bottle cannot be refilled except by breaking the cemented or sealed joint at D.

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

1. In a non-refillable bottle, the reducing-nozzle C, flared at the outer end to receive a cork, inwardly curved or contracted at the bottom and provided with an outward-projecting flange G adapted to be fastened with cement in the main neck of the bottle, and a guard surrounding the inwardly-curved portion of the nozzle, substantially as set forth.

2. In a non-refillable bottle, the reducing-nozzle C, curved inward at its bottom and provided with its fastening-flange G, in combination therewith the guard-plate K also provided with a flange L, abutting against and held by the nozzle C on a suitable ledge in the main neck of the bottle, substantially as described.

3. In a non-refillable bottle, the separate nozzle C adapted to fit in and be cemented to the main bottle-neck E, in combination therewith the flanged pan-formed guard K provided with perforations N, the latter extending above the bottom of the nozzle C so as to prevent the insertion of instruments from the top and below the guard K, in the manner substantially as described.

4. In a non-refillable bottle, the combination of the annular stopper P, at the bottom of the chamber J, the inverted cup-formed valve R, the flat valve-seat Q, the guiding-stem S, guide-bearing Z, and spring T, of such strength and tension as to support and close the valve R when the bottle is inverted and empty, but of insufficient strength to close the said valve when the cup V is subjected to the weight or pressure of the contained liquid in the bottle, substantially as specified.

5. In a non-refillable bottle, the reducing-nozzle C, having incurved bottom, and the guard-plate K, with flange L and perforations N, in combination with the annular stopper P, inverted cup-formed valve R, flat valve-seat Q, guiding-stem S, guide-bearing Z, and the spring T, of such strength and tension as to support and close the valve R when the bottle is inverted and empty, but of insufficient strength to close the said valve when the cup V is subjected to the weight or pressure of the contained liquid in the bottle, substantially as specified.

6. In a non-refillable bottle, the separate or attachable nozzle C, pan-shaped guard K, surrounding and overlapping the inner portion of the nozzle so as to prevent the insertion of instruments into the bottle inner annular valve-seat and stopper P, in combination with the inverted cup-formed valve R, the whole combined and operating in the manner substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

HUGO P. FREAR.

Witnesses:
JAMES L. KING,
W. T. GROVER.