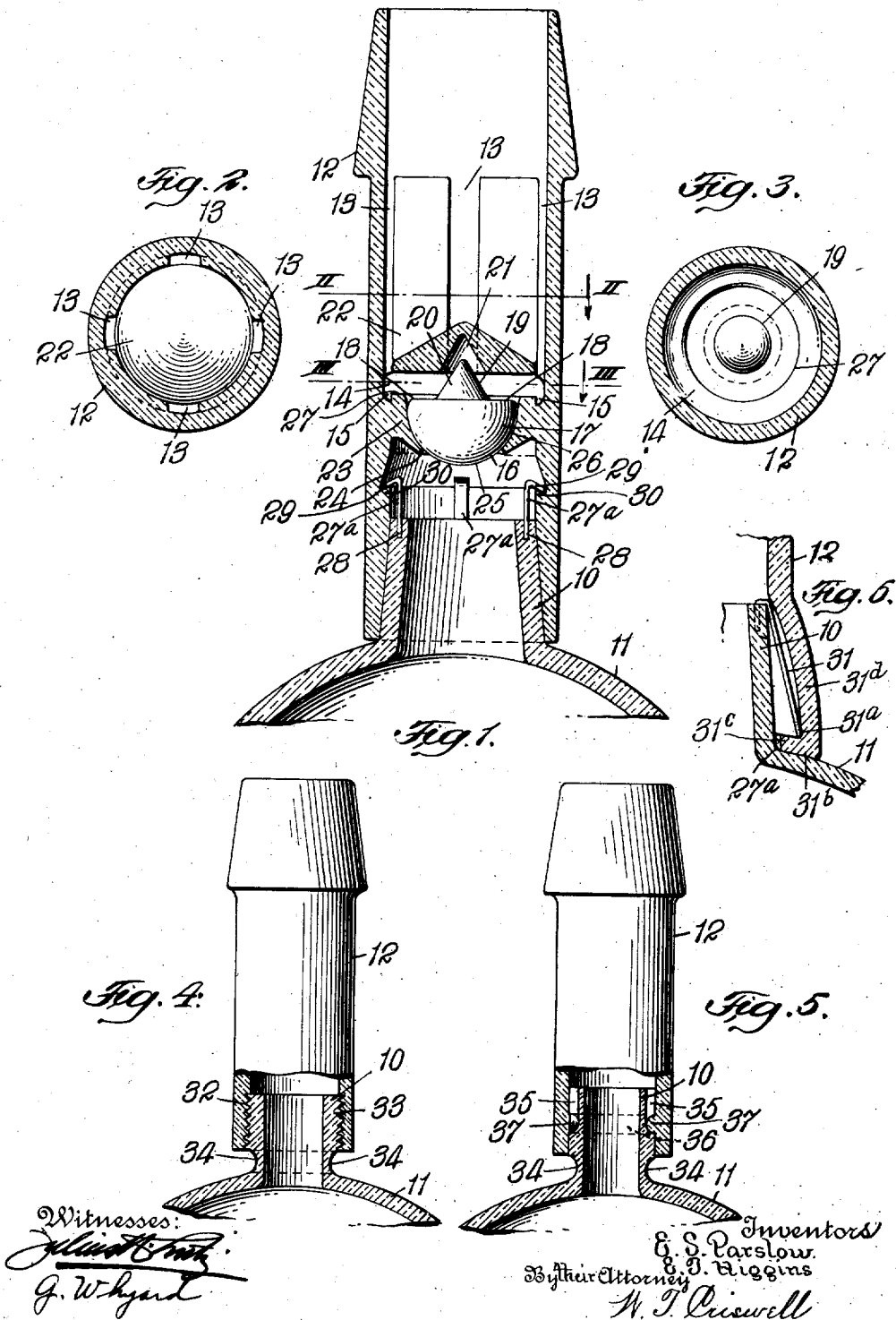


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NON-REFILLABLE BOTTLE.
APPLICATION FILED JAN. 27, 1910.

989,187.

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UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, EDMUND S. PARSLow and EDWARD T. HIGGINS, both citizens of the United States, and residents of New York, county and State of New York, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a full, clear, and exact specification.

Our invention relates to non-refillable bottles and comprises means for preventing the refilling of the bottle after the original contents therein have partly or entirely been poured out or discharged.

There are a great many so-called non-refillable bottles on the market, but they are in the most instances impractical and rather adapted to defeat the object for which they were designed, or they are of too expensive construction to be of any useful value in commerce. It has been found that under a few atmospheres of pressure the aforesaid so-called non-refillable bottles can be refilled as the valves of the same do not effectively remain practically tight under atmospheric pressure and therefore do not properly prevent the refilling operation. In other devices of this kind the valves can easily be kept open by the insertion of a wire, or the like, and consequently they are also of little or no value.

The object of our invention is primarily to overcome these objectionable features by providing a tubular protective cap adapted to be placed over and secured by suitable means to the shortened neck of a bottle so as to prevent removal of said cap in case of attempts being made to gain access to the interior of the bottle for the purpose of refilling the same with fraudulent intention. With this end in view we employ various means for connecting said cap to the bottle, said means consisting mainly in providing the bottle with spring-snaps suitably arranged so as to firmly grip the shoulders or engage the notches of said cap, or the bottle may be provided with threaded shoulders adapted to engage the threaded interior of the bottom of said cap; or the shoulders of said bottle may be vertically slotted and provided with a communicating annular groove for receiving the teats provided on the interior of said cap for holding the same by frictional contact to the shoulders of the bottle.

We further provide for destroying or

damaging the bottle so as to prevent refilling in case of attempts being made to remove the cap therefrom, and this object is attained by providing deep recesses at the point of connection of the neck with the body of the bottle so that by the administration of force the neck will break off thereby making it impossible to re-use the bottle.

Furthermore, our cap consists in providing an efficiently arranged valve adapted to permit the contents of the bottle to be easily and readily poured therefrom, but the novel form of said valve and advantageous constructive parts of the cap in operative relation thereto are such that said valve will always remain seated, and the bottle thereby closed against introduction of liquid under atmospheric pressure as the force of the liquid upon said valve will be above the center of gravity no matter in what position the bottle may be placed, and the bottle will also be closed should a wire or other means be used to unseat said valve for the purpose of allowing the bottle to be re-filled.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification in which similar characters of reference indicate corresponding parts in all the views, the said invention being more fully described hereinafter and then pointed out in the appended claims.

In the accompanying drawing, Figure 1 is a vertical longitudinal section through the neck of a bottle and the protective cap and the parts contained therein of one form of our invention. Fig. 2 is a section there-through along the line II—II of Fig. 1. Fig. 3 is a similar section along the line III—III of Fig. 1 seen from above. Fig. 4 shows a modified form of the means for securing the cap to a bottle's neck. Fig. 5 shows another modified form thereof, and Fig. 6 is a detail fragmentary sectional view showing still another modified form of connection between the cap and bottle neck.

Upon the neck 10 of a bottle 11 of any desired shape, form or material is secured a cap 12 preferably of glass, porcelain or any other suitable material which will answer the purpose for which it is devised. The protective cap 12 is provided in its wall with a plurality of vertically arranged grooves or channels, as at 13, for passage therethrough of liquid, and said grooves communicate at the bottom thereof with an

annular groove 14 intermediate the length of the cap and form downwardly extending notches 15.

To permit liquid to be readily poured 5 from within the bottle, but to positively prevent the bottle from being refilled and also preventing foreign substances from being forced into the bottle to contaminate the contents therein, we provide a valve 16, 10 comprising a body part 17, the upper portion of which having shoulders 18, 18 formed by the base of the projecting part 19, being somewhat smaller in circumference than the body part 17. The projecting part 19 15 may be of any desired shape, but as indicated at 20, is preferably conical in form, and to guide the valve 16 back to its seat after displacement said cone is adapted to enter recess 21 formed in the diaphragm 20 or solid pieces 22 within the neck of the cap 12. Thus it is obvious that should at- 25 tempts be made to refill the bottle with liquid through the mouth of the neck 12 under atmospheric pressure the force of the liquid will always be on the top of said valve and above the center of gravity, thereby pressing the valve downwardly and tightly into its seat and effectually closing the bottle to the admission of any liquid.

30 For the purpose of providing a suitable seat for the valve 16, a substantially cup-shaped disk, as at 23, may be arranged within the cap 12. This disk 23 is centrally apertured at 24, for mainly as an outlet for 35 the liquid in the bottle, but also insuring, as will be seen, perfect closing of said aperture by the semi-circular underside 25 of the valve 16 conforming with the configuration of the inner surface of the cup 26 of the disk 23. The lip 27 of the cup-shaped 40 disk 24, forms a concentric flange or resisting interior wall for the annular groove 14, and should an attempt be made to introduce a wire through one of the recesses 45 or channels 13 with the intention of fraudulently opening the valve, the point of said wire would either be stopped by entering the notches 15, or in case it should pass over the resisting wall or lip 27, said wire point 50 would be deflected by sliding along the shoulder 18 and the mantle of the cone 19 of the valve 16, and thereby any attempt to open the valve and refill the bottle will be successfully foiled.

55 To prevent the removal of the protective cap from the neck of the bottle spring hooks or catches 27^a are provided in any convenient and suitable number, preferably four, arranged at opposite sides of the bottle and 60 firmly embedded with their lower ends 28 into the glass of the neck of the bottle and gripping with their upper hook-shaped ends 29 over shoulders 30 formed in the inner wall of the protective cap.

65 As shown in Fig. 4 the protective cap 12

may be screwed upon the neck 10 of the bottle 11 by an inner thread as at 32 engaging the threaded head 33 of the neck of the bottle, and said neck at the point of connection with the body of the bottle 11 is 70 provided with deep recesses 34, 34 serving to weaken the bottle neck to such an extent that it will easily break off at this point and damage the bottle so that its reuse will be impossible should force be used to remove 75 the cap from the neck for the purpose of gaining access to the bottle with the intention of refilling the same.

In Fig. 5 another modified form for connecting the protective cap 12 to the bottle 11 80 is shown wherein the vertical grooves 35 and the annular grooves 36 are provided in the neck of said bottle and adapted to receive the teats 37 of the protective cap 12. In this form the cap 12 is placed over the neck 85 of the bottle 11, the teats 37 first entering the vertical grooves 35. The cap 12 being turned after being pressed downward, the teats 37 then entering the annular grooves 36, and thereby said cap is firmly held by fric- 90 tional contact to the bottle 11.

Fig. 6 shows still another modified form for connecting the protective cap 12 to the bottle 11 consisting in providing down- 95 wardly projecting spring-hooks 31 the upper ends of which being embedded in the top of the neck 10. Any number of the spring-hooks or catches 31 may be used, or said hooks may be formed by slotting the free 100 end of an annular band held to the bottle neck in any suitable manner. The free ends 31^a of said hooks or catches extend downwardly and outwardly from the neck 10, said ends engaging the shoulders or notches 105 31^b formed by the inwardly projecting annular flange 31^c of the enlarged part 31^d provided at the base of the protective cap 12. In connecting the cap 12 with the bottle 11 the former is placed over the bottle neck 10, the annular flange 31 in its downward 110 direction pressing inwardly the spring-hooks 31 which are released and grips the notches 31^b when the bottom of the cap 12 reaches a point adjacent to the top of the bottle proper; 115 thus providing a very simple and efficient means for securely holding the protective cap 12 to the neck of the bottle.

Changes may be made in the shape and proportions of the parts forming our improved non-refillable bottle without departing 120 from the scope of the present invention as described, illustrated and laid down in the claims, therefore, we do not wish to be limited to the particular form of valve and arrangement of other parts as herein de- 125 scribed, shown and claimed.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. In a non-refillable bottle having a neck; 130

the combination of a protective cap to fit upon the neck and having an annular groove formed in the inner surface of the wall thereof; a diaphragm provided in the upper part of the cap and having a plurality of vertically arranged grooves communicating with said annular groove, said diaphragm also having a cone-shaped recess formed in the underside thereof; a cup-shaped disk arranged within the protective cap and having a central aperture; a valve having a body part to close the central aperture of the cup-shaped disk; and a cone-shaped guide provided upon the upper part of the body part of the valve and adapted to enter the cone-shaped recess of said diaphragm whereby the movement of the valve may be guided.

2. In a non-refillable bottle having a neck; the combination of a protective cap to fit upon the neck, said cap having a plurality of vertically arranged grooves provided interiorly of the upper part thereof, and also having an annular groove formed in the inner surface of the wall thereof and communicating with the lower ends of said vertically arranged grooves; a diaphragm arranged in the protective cap adjacent to the vertical grooves and having a cone-shaped recess formed in the center of the underside thereof; an apertured cone-shaped disk provided in the protective cap at the lower part of the annular groove; a concentric flange formed upon the top of the cup-shaped disk to provide a notch between the outer-wall of the concentric flange and the inner wall of the protective cap, said notch communicating with the annular groove; a valve having a semi-circular body to close the aperture in the cup-shaped disk and provided with a flat annular shoulder upon the upper portion thereof; and a cone-shaped guide formed centrally upon the upper portion of the valve and adapted to enter the cone-

shaped recess of said diaphragm whereby the movement of the valve may be guided. 45

3. A non-refillable bottle having a neck, and a plurality of catches each having an upper hook-shaped end and each having the lower end thereof embedded in the upper edge of said neck; the combination of a protective cap to fit upon the neck and having an annular groove formed in the inner surface of the wall thereof; a diaphragm provided in the upper part of the cap and having a plurality of vertically arranged grooves the lower end of each of which communicates with the annular groove, said diaphragm also having a cone-shaped recess formed in the center of the underside thereof; a cup-shaped disk provided in the protective cap at the lower part of the annular groove and having a central opening therethrough; a concentric flange formed upon the top of the cup-shaped disk to provide a notch between the outer wall of the concentric flange and the inner wall of the protective cap, said notch communicating with the annular groove; a valve having a semi-circular body adapted to be seated in the cup-shaped disk to close the opening therein and having a flat annular shoulder upon the upper portion thereof; a cone-shaped guide formed upon the upper portion of the valve and loosely held in the cone-shaped recess of the diaphragm; and annular shoulders formed in the wall of the protective cap in proximity to the cup-shaped disk and which are adapted to be engaged by the hook-shaped ends of said catches. 50 55 60 65 70 75

This specification signed and witnessed this 22nd day of January A. D. 1910. 80

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Witnesses:

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