(No Model.)

F. DE GARIS.

BOTTLE AND APPLIANCE FOR PREVENTING REFILLING OF SAME.

No. 581,711. Patented May 4, 1897.

Fig. 1,

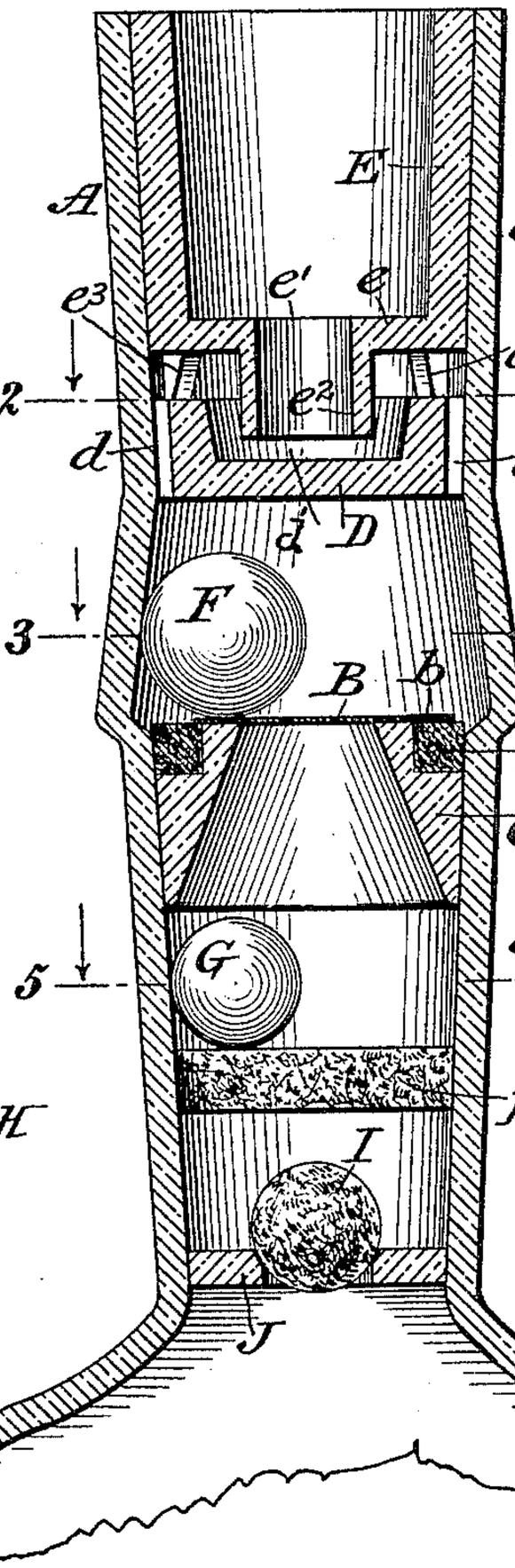


Fig. 2,

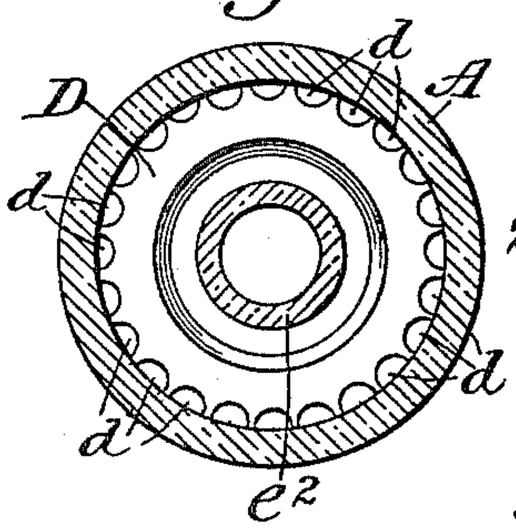


Fig. 3,

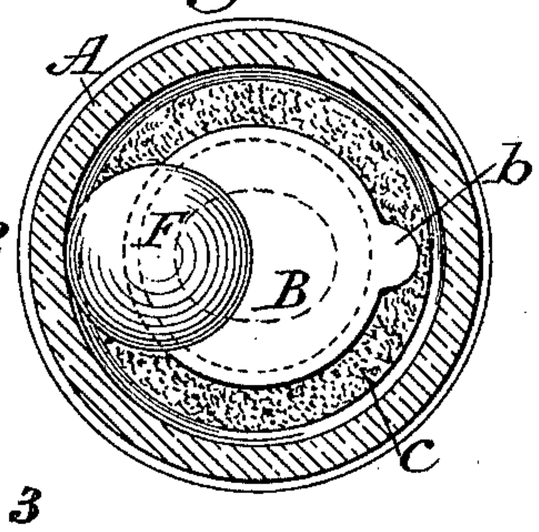


Fig. 5,

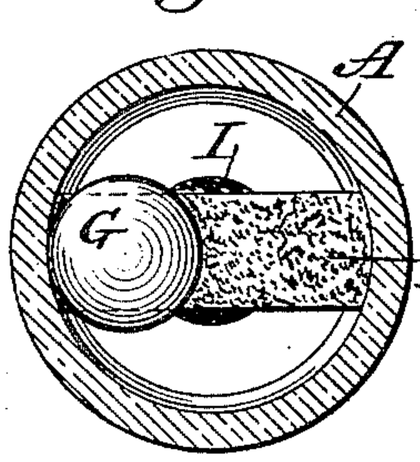


Fig. 4,

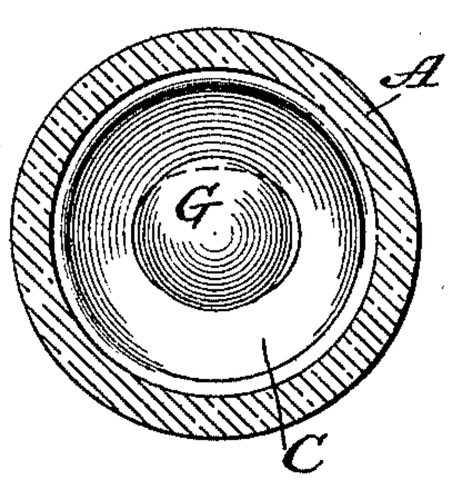
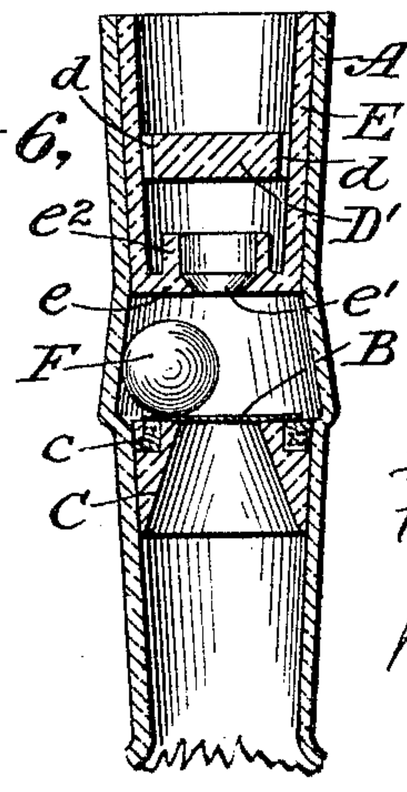


Fig. 6,



WITNESSES:

O. St. Maynard

Chas. Epworth

INVENTOR

Frederic de Garis

BY

Redding & Riddle

ATTORNEY

UNITED STATES PATENT OFFICE.

FREDERIC DE GARIS, OF PATCHOGUE, NEW YORK.

BOTTLE AND APPLIANCE FOR PREVENTING REFILLING OF SAME.

SPECIFICATION forming part of Letters Patent No. 581,711, dated May 4, 1897.

Application filed October 31, 1895. Serial No. 567,462. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC DE GARIS, a citizen of the United States, residing at Patchogue, Suffolk county, Long Island, in the State of New York, have invented certain new and useful Improvements in Bottles and Appliances for Preventing the Refilling of the Same, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

The object of my invention is to produce a bottle which it shall be practically impossible to refill after the original contents have been removed without making it evident that the bottle has been tampered with, and, furthermore, to keep the cost of construction within such reasonable limits as to make its manufacture on a commercial scale practicable. The desired result is accomplished by the construction and arrangement of parts hereinafter described and explained, reference being had to the accompanying drawings, in which a convenient embodiment of the invention is illustrated.

In the drawings, Figure 1 is a vertical central section of the upper part of a bottle having my improvements applied thereto. Fig. 2 is a horizontal section on the line 2 2 of Fig. 1, the direction of sight being downward. Fig. 3 is a horizontal section on the line 3 3 of Fig. 1, the direction of sight being downward. Fig. 4 is a horizontal section on the line 4 5 of Fig. 1, the direction of sight being upward. Fig. 5 is a horizontal section on the line 4 5 of Fig. 1, the direction of sight being downward. Fig. 6 is a view similar to Fig. 1, but on a smaller scale and showing a slightly different arrangement of some of the parts, other parts being omitted.

The neck A of the bottle may have a round, oval, square, or any other desired cross-section. For convenience of description the neck may be considered as divided into three sections a, a', and a^2, the sections a and a' forming chambers through which the liquid may flow on its way from the body of the bottle to the mouth-section a^2 of the neck. The inner walls of the section a flare outwardly and upwardly or are otherwise formed to afford seats for the parts hereinafter referred to, and the inner walls of the section or chamber a' flare outwardly and downwardly. The inner walls of the section a^2 may also flare outwardly and upwardly or be otherwise formed as most convenient to form a seat or seats for parts also to be referred to.

The chamber a' is separated from the chamber a by a valve B, which opens upward or outward. The valve is arranged to close normally, and for this purpose is preferably formed of some elastic, resilient, or springy material, and for this purpose I have found mica to be the most satisfactory, as it has the proper degree of elasticity or resilience desired for my purpose and is not affected by liquids. The valve is preferably formed with an ear b, by means of which it may be secured to its seat, as by cement or otherwise. The valve finds its seat upon an annular shoulder, which is preferably formed by a sleeve or ring C, preferably of glass, the latter being formed independently of the neck for convenience in manufacture and secured to its seat in the section a of the neck A in any suitable manner.

I prefer to form in the outer portion of the ring C a seat for a packing-ring c, of cork or other suitable material, which will be sufficient to hold the ring C in place, will make an air-tight joint, and will also afford a proper surface for the fastening of the valve B, as well as to seat the valve. The walls of the aperture through the ring or sleeve C flare downwardly, so that the walls of the chamber formed by the section a and ring C incline away from the mouth of the aperture for some distance, at least when the bottle is horizontal, or nearly so.

To prevent the introduction of any instrument for the purpose of tampering with the valve B, the mouth of the bottle may be obstructed by any suitable device which will permit the liquid to flow out. I prefer to employ the device shown in Figs. 1 and 2 or that shown in Fig. 6. In the device shown in Figs. 1 and 2 a disk D, formed to permit liquid to pass near its edge, as by having its periphery channeled, as at d, and having a recess d' in its upper side, is seated in the lower part of the section a^2 of the neck A. Above the disk D a sleeve E is secured in the neck, having a transverse web e, with an aperture e' and a flange e^2, which extends into the recess d' of the disk D, but in a manner to leave a clear

passage for the liquid which flows outwardly through the channels *d d'* and the aperture *e'*. The sleeve E may have lugs e^3 to rest upon the disk D and hold it in its seat. It will be obvious without further explanation that it is impossible to introduce a wire or any other instrument to tamper with the valve B and that the liquid can flow outward with sufficient freedom. In the construction represented in Fig. 6 the channeled disk D' is placed within the sleeve E' above the apertured web.

Within the chamber *a'* is placed a weight F, preferably spherical, and in the chamber *a* is placed a weight G, also preferably spherical, said weights being preferably loose in the chambers and coöperating with the valve B under certain conditions, as will hereinafter appear. It is preferable also that the weights should have about the relative proportions represented, both with respect to each other and to the chambers in which they are placed, although it is not essential. The weight G may be kept from dropping into the body of the bottle by a bar H, which is seated in the section *a* of the neck A, or by other suitable means.

In addition to the parts already referred to I may also employ a float-valve I, which opens outward and rises to its seat in the apertured diaphragm J when the bottle is inverted, but I do not regard the use of the float-valve as a practical necessity under ordinary conditions.

In assembling the parts above referred to the diaphragm J is first pressed into its seat, (the bottle being already filled with the desired liquid,) the float-valve I is dropped in, the bar H is pressed into place, the weight G is inserted, the ring C, bearing the valve B, is seated in the section *a*, the weight F is dropped in, the disk D is seated in the section a^2, and finally the sleeve E is secured in position in any suitable manner, as by cementing it in place or by fusing the glass. The ordinary cork stopper may be inserted in the sleeve E.

I will now proceed to describe the functions of the several parts, excepting the obstruction device D E, which has been sufficiently described already.

The valve B normally rests upon its seat and returns to its seat of itself after it has been moved, and as it can be moved only by pressure from within it effectually prevents, when resting against its seat, the entrance of air or liquid into the body of the bottle. In fact, the passage of anything inward can be effected only by rupturing the valve, and as the valve is clearly visible through the walls of the bottle-neck such rupture would indicate that the bottle had been tampered with. If the bottle is completely inverted, the valve B would be held to its seat by atmospheric pressure and the passage outward of the contained liquid be prevented. Therefore I have provided the weight G, which, falling against the valve, is sufficient to open it against the atmospheric pressure. If desired, the aperture through the ring C may be oval, as clearly shown in Figs. 3 and 4, or be otherwise formed to prevent the passage of the weight G without permitting it to prevent the flow of liquid. When the bottle is in a horizontal position or nearly horizontal, the weight G will be caused to roll away from the valve by the inclined side of the chamber formed by the section *a* and ring C. The weight F by reason of the inclined side of the chamber *a'* will rest against the valve B and insure its closing tightly when the pressure from within is removed, even when the bottle is turned to or slightly beyond a horizontal position. If the bottle is turned farther vertically and liquid should be forced past the valve B inward, although it is not admitted to be possible, the float-valve I will rise to its seat and effectually prevent the entrance of the liquid into the body of the bottle.

When it is desired to withdraw from the bottle a portion of its original contents, the bottle is tipped over partly or wholly. The liquid then unseats the float-valve I, passes through the aperture in the ring C, the weight F allowing the valve B to open sufficiently, but preventing it from opening too far, and then flows through the channels *d* of the disk D and through the aperture *e'* of the web *e* and out of the mouth of the bottle.

It will be obvious that the details of the construction herein described may be varied without departing from the spirit of my invention, and that the invention accordingly is not to be limited to the precise construction shown, nor to the use of the particular materials herein referred to.

I claim as my invention—

1. The combination with a bottle having its neck flared upwardly and outwardly, then upwardly and inwardly and then upwardly and outwardly to form the three sections *a a'* a^2, of a glass ring C inserted in the neck at the upper end of the chamber *a* and provided in the margin of its upper side with an annular groove, a packing-ring within said groove and serving to hold the glass ring in place, a flap-valve secured at one side to the packing-ring and closing downwardly; the packing-ring thus serving also as a means for attaching the valve, a ball in the chamber *a'* and caused by the integral tapered bore of the section *a'* to rest against and hold the valve closed when the bottle is in other than its pouring position and a barrier inserted in the section a^2 to prevent access to the valve, substantially as described.

2. The combination with a bottle having a valve in its neck to prevent refilling, of a barrier in the upper end of the neck comprising a disk tightly fitting the neck and provided in its upper side with a central depression and with peripheral passages, and the tubular cup-like cork or stopper receiving sleeve secured in the upper end of the neck and provided with depending lugs spacing

its lower end from the upper side of said disk and formed on its bottom with a central depending tubular flange entering the said disk depression, substantially as described.

3. A non-refillable bottle having its neck formed in three internally-flared sections a, a', a^2; the middle section a' being flared downwardly and outwardly while the other sections are flared upwardly, an apertured disk in the lower end of section a, a float-ball for said aperture, a cross-bar above said ball, a glass ring inserted in the upper end of section a and having a downwardly-flared bore and an annular marginal groove in its upper side, a weight-ball above said cross-bar to work in the flared bore of said ring and unseat the valve, a packing-ring in said annular groove, a flap-valve secured to the packing-ring and closing downwardly, a weight-ball in the downwardly-flared, integral chamber a' to close the valve, and a barrier inserted in the chamber or neck-section a^2, substantially as described.

This specification signed and witnessed this 26th day of October, A. D. 1895.

FREDERIC DE GARIS.

In presence of—
WM. B. EATON,
JOHN P. TAPPEN.