

No. 855,800.

PATENTED JUNE 4, 1907.

J. D. MITCHILL.  
NON-REFILLABLE BOTTLE.  
APPLICATION FILED SEPT. 4, 1906.

2 SHEETS—SHEET 1.

Fig. 1

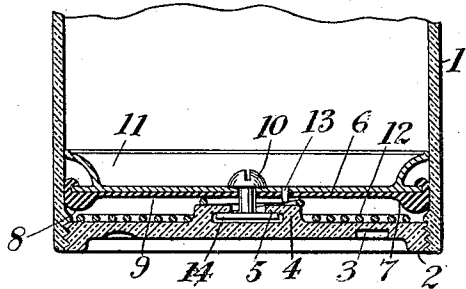


Fig. 6



Fig. 7



Fig. 2

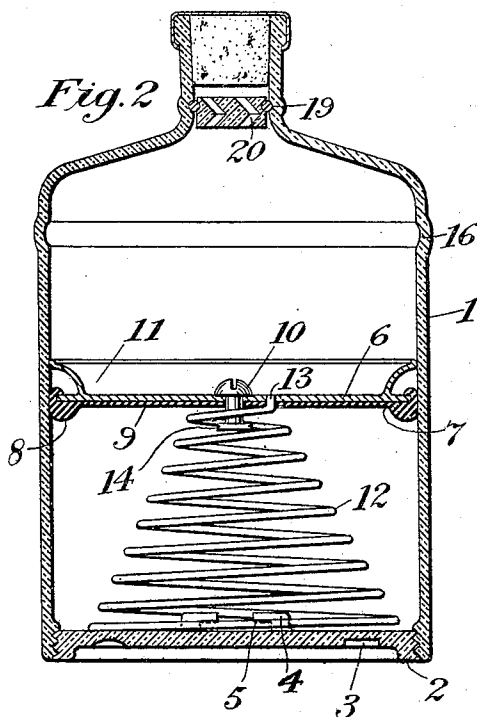
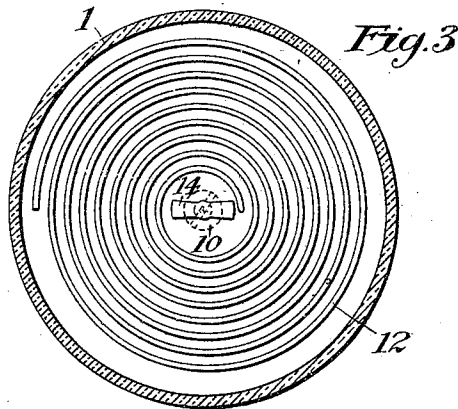


Fig. 3

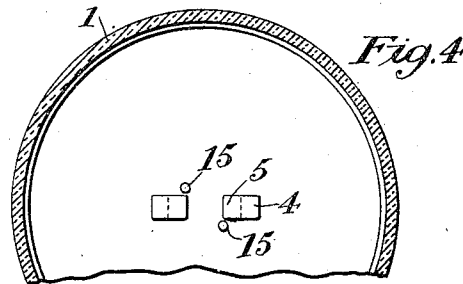


Fig. 4

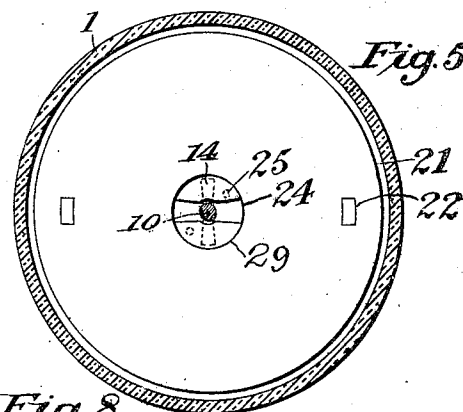


Fig. 5

Fig. 8



Witnesses:  
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Adolph Engle

Inventor:  
Joseph D. Mitchill  
by  
Dunn Turk  
Attys.

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2 SHEETS—SHEET 2.

*Fig. 9*

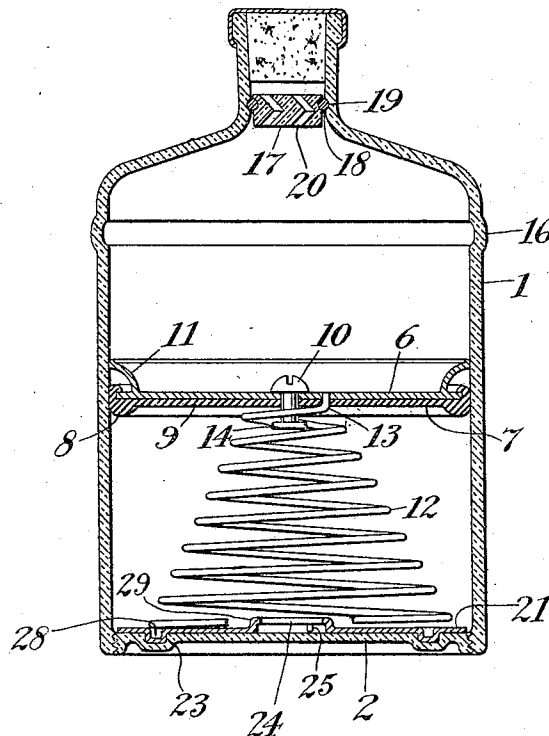
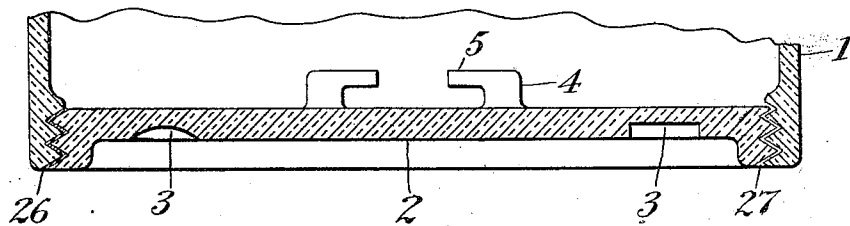


*Fig. 10*



*Witnesses:*

*Henrietta E. Workman.*  
*Charles A. Scheuber.*

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*Joseph D. Mitchill*  
*by* *Dunn Turk*  
*Attys.*

# UNITED STATES PATENT OFFICE.

JOSEPH D. MITCHILL, OF APOPKA, FLORIDA.

## NON-REFILLABLE BOTTLE.

No. 855,800.

Statement and Declaration.

Patented June 4, 1907.

Application filed September 4, 1906. Serial No. 333,051.

*To all whom it may concern:*

Be it known that I, JOSEPH D. MITCHILL, a citizen of the United States, residing at Apopka, county of Orange, State of Florida, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a full, clear, and exact specification.

My invention relates to a non-refillable bottle, and has for its object to provide said bottle with simple and inexpensive means whereby, after the contents of the bottle have been withdrawn, the same will be effectually sealed against the admission of any further liquid, and likewise the provision of means whereby the admission of liquid to take the place of that which may be withdrawn from the bottle from time to time is prevented; and particularly my invention consists in a piston which is situated within the body of the bottle and underneath the liquid therein contained, and which will move up as the liquid is withdrawn, so that the remaining portion of the liquid shall always remain at the upper part of the bottle and may not be forced down, and to devices for preventing the downward movement of said piston.

My invention also relates to sundry other features of construction fully shown in the accompanying drawings, wherein

Figure 1 is a vertical section of part of a bottle equipped with my invention; Fig. 2 a vertical section showing the piston in operation; Fig. 3 a plan view of a spring used to maintain the piston in position, showing the bottle in section; Fig. 4 a horizontal section showing the bottom of the bottle in plan; Fig. 5 a horizontal section showing a modification of my invention; Figs. 6 and 7 are detail views showing locking ring and slotted disk used to prevent the insertion of tools in the bottle. Fig. 8 is a detail sectional view of part of the modification of Fig. 5. Fig. 9 is a vertical section wherein the modification of Fig. 5 is employed, and Fig. 10 is a detail vertical section of the bottom enlarged for the purpose of showing a leaky connection of the bottom through which air may be admitted.

In carrying out my invention, a bottle 1, is preferably formed with a separate bottom 2, which is united to the bottle by means of screw threads, and is equipped with a series of thumb holes 3, for the purpose of easy insertion. Upon the inner surface of this bot-

tom are contained two upwardly projecting studs 4, having ears 5, which project toward each other, the purpose of which will be presently explained.

A circular disk 6 is provided, which forms a piston and is equipped with a packing 7, which may be formed of rubber or other suitable material, which will effectually seal the piston and will not contaminate the contents of the bottle. This packing 7 is formed with an internal groove, which receives the periphery of piston 6. Above the piston the packing projects but a short distance, and as this surface of the bottle is wet by the presence of the liquid therein, no obstruction is offered to the upward movement of the piston. The packing has an enlarged portion constituting an annular ring 8 formed in it below the piston 6, and upon an attempt to move the piston downward, the said enlargement 8 will pinch upon the dry sides of the bottle and crowd up under the edge of the piston 6, and effectually lock the said piston against downward movement. Within the said annular ring 8, a diaphragm 9 is formed integrally with the said packing which lies on the under side of the piston, and in turn forms a packing to prevent the passage of the liquid through openings made in the piston for the passage of headed bolt 10, and bend 13 of spring 12.

A ring 11, is suitably attached to, or formed upon the piston 6 a short distance inside of its periphery, and is dished outward so as to touch the sides of the bottle and maintain the said piston 6 in a proper horizontal position and prevent one side from proceeding in advance of the other. This ring may be made in one piece as shown, or it may be made of several small pieces. Between the said piston 6 and the bottom of the bottle is placed a helical spring 12, the upper convolution of which has a rectangular bend at 13, which passes through the diaphragm 9, and is received in a hole in the piston 6. The bottom convolution of the said spring rests upon the bottom of the bottle, where it may be held in position if desired. The strength of this spring is such that it shall be sufficient to support the column of liquid above it, and owing to its shape it has a gradually diminishing strength as it is forced upward and in turn is required to support a diminishing column of liquid, so that if any quantity of liquid is poured out of the bottle, the piston 6 will be forced

upward under the action of the spring sufficiently to bring the liquid up to its proper position in the neck of the bottle.

The headed bolt 10 carries at its bottom a pin 14, which projects upon each side sufficiently to pass under the ears 5, formed integrally in the bottom of the bottle, and before the bottle is filled with liquid the said pin will be passed under said ears and hold the piston 6 in the position illustrated in Fig. 1. Upon each side of the bottom of the bottle and close to the said ears are formed integrally studs 15, which project upwardly from the bottom of the bottle, and in the path of movement of the said pin 14. This pin 14 is made of some material which easily becomes fractured or bent. Therefore, a revolution of headed bolt 10 in a clockwise direction (Fig. 4) will cause pin 14 to pass out from under the ears 5, and engage studs 15, whereby the said pin 14 will be broken off or bent so as to permit the free vertical movement of the piston, and it is obvious that should the said piston be forced down again, the pin 14 may not be replaced under the ears 5. Figs. 2 and 9 illustrate the said pins 14 as broken or bent, while Fig. 1 illustrates them in position under ears 5 prior to breaking. The destruction of the said lock will be performed by an authorized person, and the situation of the studs 15 is such that the pin 14 will be broken off or bent so that no further locking can be effected between those parts.

At the upper part of the bottle the same is formed with an annular bead 16 forming an internal circumferential groove, against the walls of which the packing 7 locks at the completion of its upward movement, and the lower wall of which effectually holds the same against any downward movement.

In the lower part of the neck of the bottle I have shown a disk 17 having a circumferential groove adapted to receive the split spring ring 18. This ring being placed around the said disk 17 and forced down in the neck of the bottle will spring out in the groove formed in the bottle neck at 19 and effectually lock the said disk in place. The disk has formed in it liquid passages at 20, which are inclined relatively to the horizontal faces of the disk and are designed to prevent the insertion of any tools which might be intended to tamper with the piston 6. If preferred, the said liquid passages might be tortuous in shape, or V-shaped, or of any shape which will properly and effectually prevent the insertion of tools, while freely permitting the passage of liquid.

A modified form of my invention is shown in Figs. 5 and 9, wherein, instead of permitting the spring 12 to rest directly upon the bottom of the bottle, and instead of equipping the said bottle with the inwardly projecting studs 4, I have provided a separate

bottom disk 21, a portion of which is pressed downward as in Fig. 9, forming two flanges or locking projections 28, which are adapted to enter rectangular recesses 23 in the bottom 2, to provide against the rotation of the disk 21. This disk 21 will lie immediately under the spring 12, and has a central raised boss 29 in which is formed at 24 a slot through which may be passed the pin 14. Likewise formed on the under side of the said disk 21 are two pins 25, one of which is shown in Fig. 9, which project downwardly therefrom, and which, upon a rotation of the headed bolt 10, will break off or bend pin 14. As shown in Fig. 5, bolt 10 will be revolved in a clockwise direction to bend or break off pins 14, but in this form of my invention the bolt 10 may be revolved in either direction to break off or bend said pins.

If desired, instead of having the lugs 28 integral with disk 21, separate lugs 22, as shown in Figs. 5 and 8, may be provided and securely held in said disk.

In Fig. 10 I have illustrated a manner in which the bottom 2 may be held in place, while air will be admitted to permit of the upward movement of the piston. It is intended that the said bottom will be held in place by a suitable cement, applied at suitable intervals to the screw thread, and that air may pass through the point where the cement is omitted. Accordingly I have shown the cement in place at 26, and at 27 is illustrated a section of screw thread from which the cement is omitted. The space between the male and female screw threads here is exaggerated for clearness of illustration.

The manner of assembling the bottle equipped with my invention is as follows: The piston 6 with guiding ring attached has inserted upon its periphery the packing 7, and the headed bolt 10 is then passed through the said piston, and the pin 14 attached. Spring 12 is then attached to the said piston by bend 13 and to the separate bottom of the bottle by passing pins 14 under ears 5, and the piston and bottom being then connected, are inserted in the bottle. The bottom has had applied to it a slight amount of proper insoluble glass cement at several points in its circumference and it is screwed in place, the headed bolt 10 revolving in unison with the bottom. Care should be taken that the bottom 2 is not sealed air-tight to the bottle 1, as it is desirable to provide a leaky joint here, so that air may freely enter for the purpose of facilitating the upward movement of the piston and preventing the formation of a vacuum. A leaky joint is better for this purpose than it would be to perforate the bottom 2, as such perforation would facilitate the insertion of a tool to pull the piston down. Liquid is then poured into the bottle and it is filled up to a proper height, after which a screw driver or suitable tool is in-

serted through the mouth of the bottle and the headed bolt 10 revolved until the pin 14 is removed from under the ears or disk 21, and in so doing the said pin 14 will be broken off or bent so as to be useless, and the piston 6 is then released. This turning of the headed bolt 10 will be done by an authorized person, whose duty it will be to see that the pin 14 is broken off so as to prevent a subsequent use. Split ring 18 and disk 17 are then inserted and locked in the position shown in Fig. 2. The usual cork and cap, as illustrated in Fig. 2 may then be inserted.

All parts which come in contact with the liquid should be made of material which will not contaminate it, and to this end the disk 17 should be formed of glass porcelain and split ring 18 of aluminium, as should also the piston and its guiding flange 11, as well as the headed bolt 10. The packing and diaphragm, I propose to make of rubber. Spring 12 and lower disk 21 are not supposed to come in contact with the liquid, and therefore may be made of any cheap suitable material. Aluminium may, however, also be used in the construction of these parts if desired. Separate bottom 2 may be made of glass.

It is obvious that the embodiment of my invention described and shown in the foregoing description and drawings is but a typical form thereof, and that many modifications and changes may be made in matters of construction and arrangement of parts without departing from the spirit of the invention, and I do not mean to limit myself to the specific form shown and described, but

What I claim and desire to secure by Letters Patent is:

1. In a non-refillable bottle, a piston underneath the liquid, and actuating means therefor adapted to advance the piston as the liquid is decanted, and means to prevent the downward movement of said piston, substantially as described.

2. In a non-refillable bottle, a piston underneath the liquid, and actuating means therefor adapted to advance the piston as the liquid is decanted, and to maintain the upper surface of the liquid at the top of the bottle, and means to prevent the downward movement of said piston, substantially as described.

3. In a non-refillable bottle, a piston underneath the liquid, and actuating means therefor adapted to advance the piston as the liquid is decanted, and means to prevent the introduction of tools in said bottle, and means to prevent the downward movement of said piston, substantially as described.

4. In a non-refillable bottle, a piston underneath the liquid, and actuating means therefor adapted to advance the piston as the liquid is decanted, and a lock for locking said piston in its uppermost position, substantially as described.

5. In a non-refillable bottle, a piston underneath the liquid, means for maintaining said piston in its effective position, and actuating means therefor adapted to advance the piston as the liquid is decanted, and means to prevent the downward movement of said piston, substantially as described.

6. In a non-refillable bottle, a piston underneath the liquid, and actuating means therefor adapted to advance the piston as the liquid is decanted, a lock for securing said piston in its lowermost position, which is destroyed in releasing said piston, and means to prevent the downward movement of said piston, substantially as described.

7. In a non-refillable bottle, a piston underneath the liquid, means for maintaining said piston in its effective position, actuating means therefor adapted to advance the piston as the liquid is decanted, a lock for locking said piston in its uppermost position, and means to prevent the introduction of tools in said bottle, substantially as described.

8. In a non-refillable bottle, a piston underneath the liquid, means for maintaining said piston in its effective position, actuating means therefor adapted to advance the piston as the liquid is decanted, a lock for securing said piston in its lowermost position, which is destroyed in releasing said piston, a lock for locking said piston in its uppermost position and means for preventing the introduction of tools in said bottle, substantially as described.

9. In a non-refillable bottle, a piston underneath the liquid, means for maintaining said piston in its effective position, actuating means therefor adapted to advance the piston as the liquid is decanted, a separate bottom for said bottle, means for holding same in place which permit the ingress of air beneath said piston, a lock for locking said piston in its uppermost position and means for preventing the introduction of tools in said bottle, substantially as described.

10. In a non-refillable bottle, a piston beneath the liquid, a packing of resilient material surrounding the periphery of said piston, and preventing the downward movement thereof, a spring engaging the under side of said piston and forcing the same upward as the liquid is withdrawn, substantially as described.

11. In a non-refillable bottle, a piston beneath the liquid, a packing of resilient material surrounding the periphery of said piston, and contacting with the bottle and preventing the downward movement of said piston, a spring engaging the under side of said piston and forcing the same upward as the liquid is withdrawn, the said bottle being grooved to receive said packing at the uppermost position of the piston, substantially as described.

12. In a non-refillable bottle, a piston be-

neath the liquid, a packing of resilient material surrounding the periphery of said piston and preventing the downward movement thereof, a spring engaging the under side of said piston and forcing the same upward as the liquor is withdrawn, and means to prevent the insertion of tools in said bottle, substantially as described.

13. In a non-refillable bottle, a piston beneath the liquid, a packing of resilient material surrounding the periphery of said piston, and preventing the downward movement thereof, a spring engaging the under side of said piston and forcing the same upward as the liquid is withdrawn, a lock for holding said piston in its lowermost position, and means for destroying said lock upon a release of the piston, substantially as described.

14. In a non-refillable bottle, a piston beneath the liquid, a packing of resilient material surrounding the periphery of said piston, and preventing the downward movement thereof, a spring engaging the under side of said piston and forcing the same upward as the liquid is withdrawn, a separate bottom in said bottle, means for securing the same to the bottle which permit the ingress of air beneath said piston, substantially as described.

15. In a non-refillable bottle, a plurality of disks beneath the liquid, a packing around the edge of one of said disks, means for anchoring the lower disk against rotary movement, a spring interposed between said disks, and raising the upper disk as the liquid is withdrawn, a separate bottom for said bottle, means for securing the same to the bottle which permit the ingress of air beneath said piston, and means for obstructing the bottle neck against the admission of tools, substantially as described.

16. In a non-refillable bottle, a plurality of disks beneath the liquid, a packing around the edge of one of said disks, means for anchoring the lower disk against rotary movement, a spring interposed between said disks and raising the upper disk as the liquid is withdrawn, and means for obstructing the bottle neck against the admission of tools, substantially as described.

17. In a non-refillable bottle, a plurality of disks beneath the liquid, a packing around the edge of one of said disks having its major portion below said disk, whereby it locks said disk against downward movement, means for anchoring the lower disk against rotary movement, a spring interposed between said disks and raising the upper disk as the liquid is withdrawn, and means for obstructing the bottle neck against the admission of tools, substantially as described.

18. In a non-refillable bottle, a plurality of disks beneath the liquid, a packing around the edge of one of said disks, a projection from said upper disk engaging the side of the bottle, whereby the said piston is held in

proper position, means for anchoring the lower disk against rotary movement, a spring interposed between said disks and raising the upper disk as the liquid is withdrawn, and means for obstructing the bottle neck against the admission of tools, substantially as described.

19. In a non-refillable bottle, a plurality of disks beneath the liquid, a packing around the edge of one of said disks, means for anchoring the lower disk against rotary movement, a spring interposed between said disks and raising the upper disk as the liquid is withdrawn, said bottle provided with a retaining portion at its upper part which receives said packing and locks said upper disk at its upper position, and means for obstructing the bottle neck against the admission of tools, substantially as described.

20. In a non-refillable bottle, a plurality of disks beneath the liquid, a packing around the edge of one of said disks, means for anchoring the lower disk against rotary movement, a spring interposed between said disks and raising the upper disk as the liquid is withdrawn, a lock for holding said disks together which is destroyed in releasing the upper disk, and means for obstructing the bottle neck against the admission of tools, substantially as described.

21. In a non-refillable bottle, a plurality of disks beneath the liquid, a packing around the edge of one of said disks, having its major portion below said disk, whereby it locks said disk against downward movement, a projection from said upper disk engaging the side of the bottle, whereby the said piston is held in proper position, means for anchoring the lower disk against rotary movement, a spring interposed between said disks and raising the upper disk as the liquid is withdrawn, said bottle provided with a retaining portion at its upper part which receives said packing and holds said upper disk at its upper position, a lock for holding said disks together which is destroyed in releasing the upper disk, and means for obstructing the bottle neck against the admission of tools, substantially as described.

22. In a non-refillable bottle, a piston beneath the liquid, a packing of resilient material surrounding same, means for forcing the piston upward as the liquid is withdrawn, and means locked in said bottle neck permitting the passage of liquid, but preventing the insertion of tools, substantially as described.

23. In a non-refillable bottle, a piston beneath the liquid, a packing of resilient material surrounding same and constituting a lock against the downward movement of the piston, means for forcing the piston upward as the liquid is withdrawn, the bottle being internally grooved at the upper limit of the piston's movement to receive the packing and lock the piston against downward movement.

ment, and means firmly anchored in said bottle neck permitting the passage of liquid, but preventing the insertion of tools, substantially as described.

5 24. In a non-refillable bottle, a piston beneath the liquid, a packing of resilient material surrounding same, means for forcing said piston upward as the liquid is withdrawn, a  
10 separate bottom for said bottle and means for attaching the same to the bottle whereby the ingress of air beneath the piston is per-

mitted, and means securely locked in said bottle neck permitting the passage of liquid, but preventing the insertion of tools, substantially as described.

In testimony whereof, I have hereunto set my hand in the presence of two subscribing  
15 witnesses.

JOSEPH D. MITCHILL.

Witnesses:

HENRIETTA E. WORKMAN,  
ADOLPH F. DINSE.