

F. ANDERSON.
NON-REFILLABLE BOTTLE.
APPLICATION FILED OCT. 14, 1912.

1,060,732.

Patented May 6, 1913.

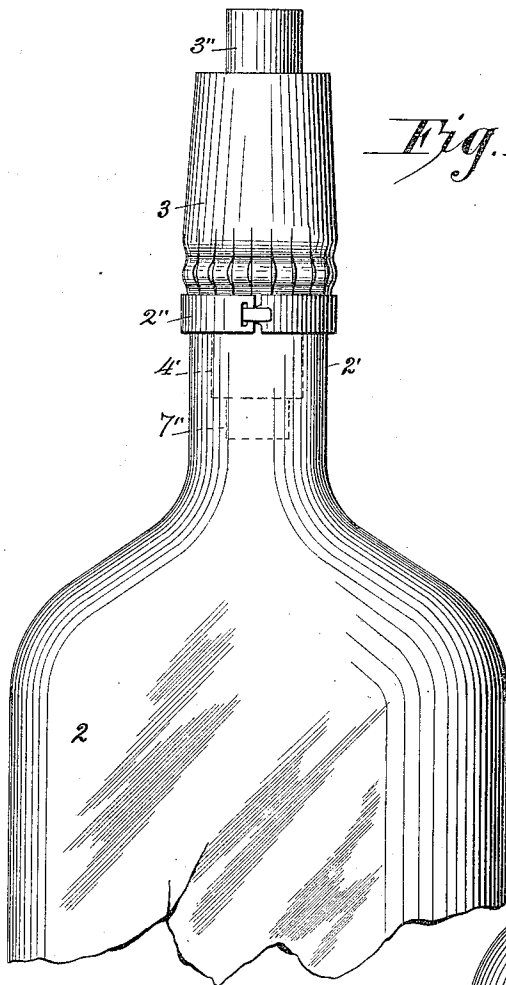


Fig. 1.

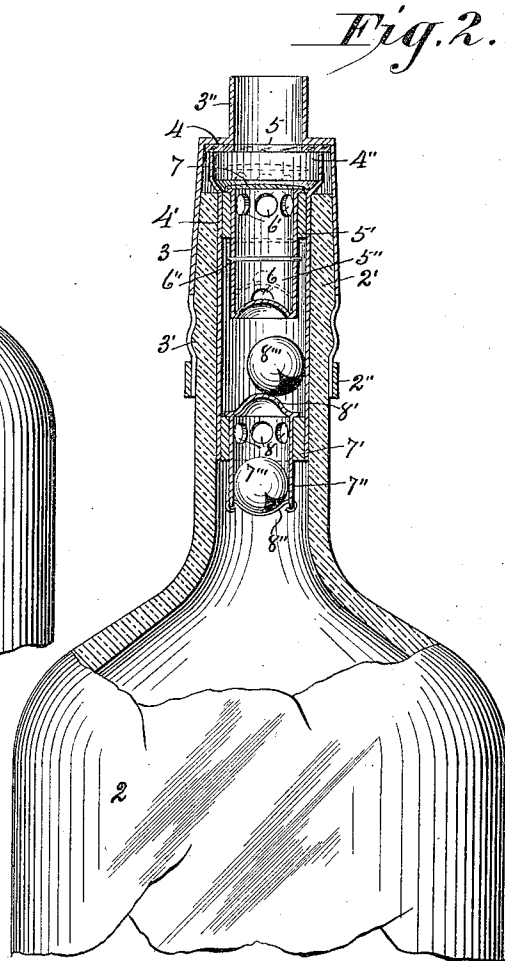


Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

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NON-REFILLABLE BOTTLE.

1,060,732.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed October 14, 1912. Serial No. 725,722.

To all whom it may concern:

Be it known that I, FERDINAND ANDERSON, a subject of Sweden, and a resident of Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Non-Refillable Bottles, which improvements are fully set forth in the following specification.

This invention relates to improvements in non-refillable bottles, and has for its object to provide a bottle of this type which shall be simple and comparatively inexpensive as regards construction; durable, efficient and reliable in practical service; and which shall possess certain well-defined advantages over prior analogous constructions.

The invention consists in the combinations, details and parts whereby, together with the novel disposition and relative arrangement of said parts, the attainment of the foregoing object is rendered practicable, all of which will be hereinafter more specifically referred to and set forth in the appended claim.

The invention is clearly illustrated in the accompanying drawings, wherein similar reference-numerals denote like parts throughout the respective views, as to which—

Figure 1 is a view showing in side elevation a fragment of a bottle embodying my said improvements. Fig. 2 is a view similar to Fig. 1, the neck-portion of the bottle being shown in central, vertical section.

In the accompanying drawings forming a part hereof, 2 denotes the body of the bottle and 2' the neck thereof.

3 is an exterior cap, housing the upper portion of the neck 2', and secured thereto in any appropriate manner, as by means of the metallic tie 2'', in partial coöperation, ordinarily, with an annular rib 3', with which the neck 2' is customarily provided. Cap 3 is reduced at its upper portion to form a nozzle 3'' and an interior, annular shoulder 4, overlying and somewhat removed upwardly from, the extreme top of the neck 2', and is longitudinally slitted at intervals circumferentially thereof to accommodate the rib 3', as clearly indicated in Fig. 1.

There is inserted snugly within the neck 2' a tubular valve-casing 4', having an enlarged or flared upper portion 4'', between the upper edge of which and the shoulder 4 there is disposed an annular flat seal or gasket 5, for closing the joint thereat.

5' is an annular valve-support, snugly inserted within the casing 4', adjacent to its flared portion 4'', and within which reciprocates endwise, as the bottle is turned from an upright to a more or less inverted position; or vice versa, an indirect, cylindrical gravity valve 5'', closed at its opposite ends, and its lower end-closure being suitably concaved, substantially as illustrated in Fig. 2, and for a purpose to be hereinafter explained.

The cylindrical valve aforementioned has a lateral intake port 6 at its lower portion, and a similar outlet port 6', or a plurality thereof, at its upper portion, the latter being closed by the support 5' when the valve 5'' occupies its lowermost position, as indicated clearly in Fig. 2, said valve voluntarily assuming such lowermost position when the bottle is caused to stand upright. Now, upon said bottle being suitably inverted, as in the act of pouring therefrom more or less of the contents thereof, valve 5'' will voluntarily move endwise approximately into the position indicated in dotted lines in Fig. 2, thereby freeing the port or ports 6' from the closing effect of the support 5', said valve being limited in its latter movement in any appropriate manner, as by means of a transverse pin 6'', either or both of whose ends protrude into the plane of, and engage said support 5', at the underside thereof, and this limitation of the opening movement of said valve being essential to the end that its crown, as 7, may not, when the bottle is positioned for withdrawing more or less of its contents, reach and close the nozzle 3'', as will be readily understood.

When valve 5'' shall have been adjusted to its open position, above described, and as by duly tilting the bottle as a whole, more or less of the contents of said bottle will indirectly enter the valve 5'' by way of the port 6, move indirectly outward therefrom by way of the port or ports 6', and then, by reason of the clearance afforded by the enlarged portion 4'', move upwardly and partially around the crown 7 to, and escape by way of, the nozzle 3''.

A secondary valve-support 7' is snugly fitted within the casing 4', at a point suitably distant below the support 5', and conforms in all essential details to the latter; and within the same, said secondary support, there is disposed to voluntarily reciprocate endwise, and in axial alinement with

the valve 5'', a secondary, indirect, cylindrical, gravity valve 7'', having a lateral outlet port 8, or a plurality thereof, at its upper portion, and otherwise, in the main, conforming in details of construction and in operation, relatively to the support 7', to the valve 5'', and the latter's operation relatively to the support 5', save that its crown, as 8', is domed adequately for a purpose to be hereinafter explained, and in place of being closed at its lower end, is provided thereat with a narrow bridge 8''.

To facilitate the opening action of valve 5'' and the closing action of valve 7'', I interpose between the same a freely movable, spherical element 8''', which, when the bottle is suitably inverted, falls into the concaved bottom of valve 5'', and, by its weight, aids said valve in undergoing its opening movement, while, upon said bottle being suitably righted, said spherical element impinges against the top of the crown 8', and, again by its weight, aids the valve 7'' in undergoing its closing movement. Further, I insert loosely within the valve 7'' an additional spherical element 7''' which, when the bottle is suitably inverted, falls into the domed crown 8', and aids valve 7'' in undergoing its opening movement, while, upon said bottle being suitably righted, falls against the bridge 8'', and aids valve 7'' in returning to its closed position. The bridge 8'' prevents the spherical element 7''' from escaping from the valve 7'', and the diameter of said spherical element 7''' is such that, when occupying the domed crown 8' it has substantially no closing effect on the port or ports 8.

The opposite gravity valves open and close in unison, aided automatically in these movements by the spherical elements 8''', 7''', as herein described; and when the bottle is suitably inverted, said gravity valves will each assume its open position, whereupon more or less of the contents of the bottle will pass into valve 7'', by way of the lower, bridged end thereof, thence outward therefrom, by way of the port or ports 8, and thence outwardly by way of the valve 5'' and nozzle 3'' as hereinbefore explained.

The indirect character of the valves 5'' 7'' and their operation, each relatively to the

other, assisted by the spherical elements 8''' 7''', render the refilling of my improved bottle exceedingly difficult if not wholly impracticable, since said gravity valves may not be easily tampered with or controlled for refilling purposes.

It will be seen that my improved non-refillable bottle is well adapted for the purposes for which it is intended, and further that the same may be modified to some extent, without departing from the spirit and principle of my invention.

I claim:

The combination with a bottle having a neck, of a tubular valve-casing inserted tightly within said neck; annular valve-supports, inserted tightly within said valve-casing, respectively, and suitably spaced each from the other; a cylindrical gravity valve, encircled by one of said valve-supports, closed at its opposite ends, having its lower end-closure concaved, and having a lateral intake port adjacent to its lower end, and a lateral outlet port adjacent to its upper end; an additional cylindrical gravity valve, encircled by the other of said valve-supports in axial alinement with the valve first named, closed at its upper end, bridged at its lower end, containing loosely a spherical element, and having a lateral outlet port adjacent to its upper end, said valves being automatically shiftable endwise, each to bring its outlet port into and out of registry with its coöperating valve-support, upon said bottle being caused to occupy an upright or an inverted position, respectively, and for closing and opening such outlet port, accordingly; and an additional spherical element, the latter loosely confined within the valve-casing aforementioned, between said valves, and aiding in the opening movement of one thereof, upon said bottle being inverted, and the closing movement of the other thereof, upon said bottle being brought to an upright position, the spherical element first above named, coöperating with the valve within which it is confined, accordingly.

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Witnesses:

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