

L. ARNAVAT.
NON-REFILLABLE BOTTLE.
APPLICATION FILED MAR. 2, 1911.

1,036,412.

Patented Aug. 20, 1912.

Fig. 1.

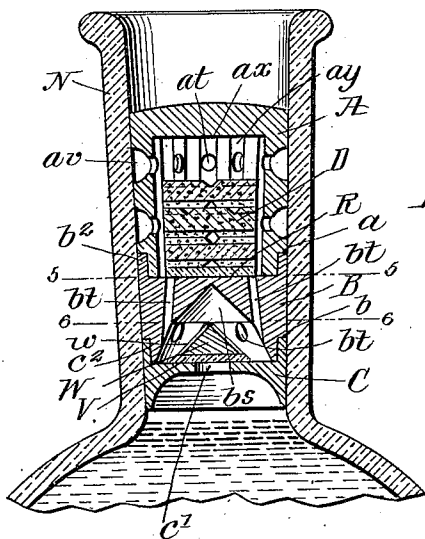


Fig. 2.

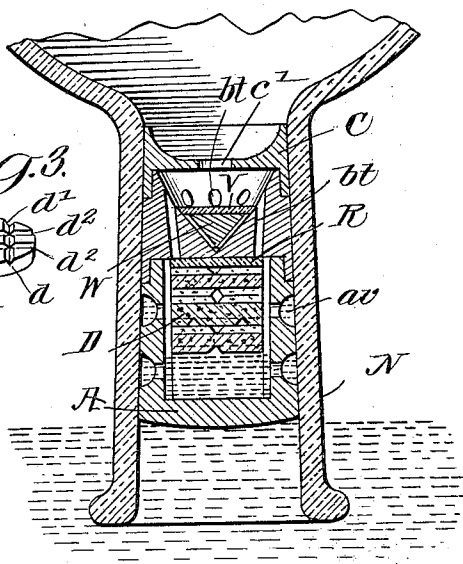


Fig. 3.

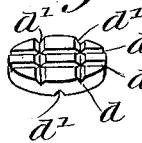


Fig. 4.

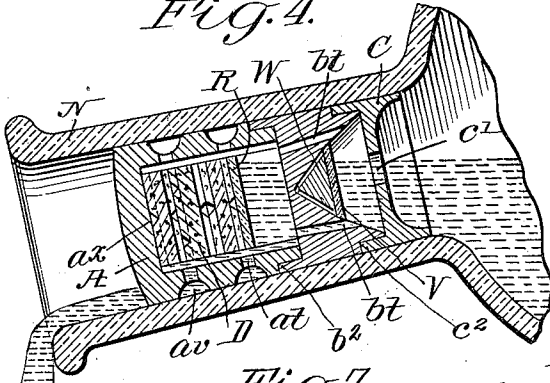


Fig. 5.

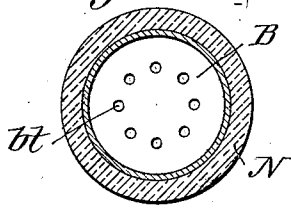


Fig. 7.

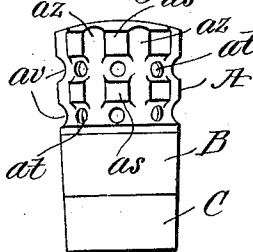
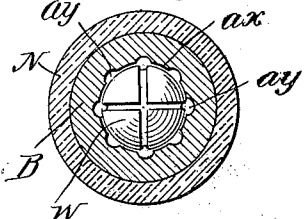


Fig. 6.



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LUIS ARNAVAT, OF TAMPA, FLORIDA.

NON-REFILLABLE BOTTLE.

1,036,412.

Specification of Letters Patent.

Patented Aug. 20, 1912.

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To all whom it may concern:

Be it known that I, LUIS ARNAVAT, a citizen of the United States, and a resident of Tampa, in the county of Hillsboro and State of Florida, have made certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

My invention relates to improvements in non-refillable bottles, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a device which will permit the liquid within the bottle to flow out whenever it is desired to use it, by the mere act of tipping the bottle, but which will prevent the introduction of a liquid from without.

A further object of my invention is to provide a novel form of valve mechanism for preventing the filling of the bottle by the insertion of the neck of the bottle in a liquid.

A further object of my invention is to provide means for preventing the manipulation of the valves by a wire or other instrument.

A further object of my invention is to provide novel forms of valves which prevent them from sticking, and thereby render their action more positive and certain.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming part of this application in which—

Figure 1 is a section through the neck of a bottle provided with a non-refilling device, Fig. 2 is a similar view showing the bottle in its inverted position in a liquid, Fig. 3 is a detail view of one of the cork floats, Fig. 4 is a section similar to that shown in Figs. 1 and 2, showing the position of the valves when the bottle is tipped downwardly, Fig. 5 is a section along the line 5—5 of Fig. 1, Fig. 6 is a section along the line 6—6 of Fig. 1 and, Fig. 7 is a view of the non-refilling device removed from the bottle.

In carrying out my invention, I provide a device which is adapted to be inserted in the neck of a bottle and to be secured therein by cement or in some cases by frictional contact. This device consists of an upper portion A, a central portion B and a lower

portion C. As will be seen from the drawings the portions A and B have annular grooves *a* and *b* on their under sides arranged to receive the respective flanges *b*² and *c*² of the portions B and C. This is for the purpose of making a continuous surface for the three parts in the manner shown in Fig. 7. Referring now particularly to the upper part A, it will be seen that it is provided with a central bore *a*^{*} (see Fig. 6) this bore being bordered by a series of longitudinally extending grooves *a*^v. The exterior of this portion A has the circumferential grooves *a*^v crossed by the longitudinal grooves *a*^z. Communicating with the circumferential grooves *a*^v are the openings *a*^t. The construction thus described leaves a projecting portion such as that shown at *a*^s over each one of the openings *a*^t.

The portion B is provided with a recess *b*^s on its under side. The upper part of this recess is conical in shape. A series of downwardly and outwardly extending passages *b*^t are provided. It will be noted that these passages terminate below the cone-shaped part of the recess *b*^s. The third or bottom portion C is provided with a central opening *c*^t.

In Fig. 3, I have shown one of the three members which constitute the float valve. These members are of similar construction and a description of one will suffice for them all. It consists of a disk of cork having grooves *d*¹ running in one direction, and similar grooves *d*² at right angles thereto on both sides of the disk. Three of the disks thus formed are used as a float valve in the manner hereinafter described.

From an inspection of Fig. 1, it will be seen that a valve V of glass or other suitable material normally covers the opening *c*^t in the lower member C. A weight W of conical shape, and provided with grooves *w* on its sides and on its base, normally keeps the valve V on its seat. A second valve R also made of glass or other suitable material normally covers the openings *b*^t in the member B. Above this valve are the three sections which constitute the float valve D.

From the foregoing description of the various parts of the device the operation thereof may be readily understood. The members A, B and C with the valves and the weight in the positions shown in Fig. 1 are inserted in the neck N of the bottle and are there secured by any suitable means,

such as cement or by friction. In the normal position of the bottle as shown in Fig. 1 the valve V is held by the weight W against its seat, so as to close the opening c' , while as stated, the valve R serves to close the openings b^t in the member B. The bottle is therefore doubly closed. Now, when it is desired to empty the bottle of its contents it needs only to be tipped in the position shown in Fig. 4. In this position, it will be observed that the weight W has left its normal position and is now in the conical portion of the recess b^s . The valve V has left the openings c' through which the liquid can now pass. The liquid passes through the passages b^t and (since the valve R has left its seat) through a^t , grooves a^v and a^z and out through the neck of the bottle.

It is obvious that no liquid can be introduced into the bottle in the position shown in Fig. 1, since both of the valves V and R are on their seats. If the bottle be inverted, as shown in Fig. 2, and plunged into a liquid, the liquid will enter and cause the cork valve sections to lift the valve R so as to close the openings b^t . This will effectually prevent the introduction of liquid into the bottle by immersing it in the liquid.

Referring again to Fig. 4, it will be seen that if the bottle is tipped into a horizontal position the weight W will fall away from the position in which it is shown in Fig. 4, and will bring the valve V against the openings c . This will then prevent any liquid from being forced into the bottle.

I desire to call especial attention to the fact that it is of prime importance to make the cork float in sections. It will be noticed that when the bottle is tipped the cork float moves to the opposite end of the member A from that which it has in its normal position. In case of an undue adhesion between the cork and the glass which would prevent the cork float from operating to hold the valve R against its seat, as shown in Fig. 2, the two inner portions of the float will separate from the third, and will carry up the valve R against its seat. In order to insure this action and to prevent the sticking of the valves by suction, I have grooved the cork floats and also the weight W. This prevents the undue adhesion between the engaging parts.

Another feature of the divided valve is that in some cases attempts have been successfully made with float valves to create a suction, which will draw the float valve away from the main valve, thus permitting the liquid to be forced into the bottle while the float valve is held by the suction. This could not occur with a divided float valve, since if the outermost valve section should be held by suction away from the others,

the others would hold the valve R against its seat whenever an attempt is made to introduce the liquid.

Owing to the construction described the weight W will fall back against the valve V whenever the bottle is between its upright position, as shown in Fig. 1 and a horizontal position, the cone-shaped recess lending to this end.

The rifled walls of the member A permit the air to flow into the bottle, while the liquid is flowing out, and, as stated before, the projections a^s are located above the openings so as to prevent the introduction of a wire or other means in an attempt to tamper with the cork disks. The use of a valve such as V, and of a weight, such as W, instead of a single weighted valve prevents the filling of the bottle by "jumping", for when the bottle is shaken the weight will "jump", but the valve will still adhere to its seat until the bottle is turned past the horizontal position, when, of course, the liquid cannot be gotten into the bottle in this manner.

I claim:—

1. In a non-refillable bottle, a closure provided with a central opening and having a conical recess above said central opening, a valve for said central opening, a conical grooved weight disposed within said conical recess and arranged to normally hold said valve against said opening, passages in said closure having their lower ends below said recess, an auxiliary valve for closing the upper ends of said passages, and a float valve disposed above said auxiliary valve, said float valve comprising a series of grooved buoyant disks.

2. In a non-refillable bottle, a closure provided with a central opening and having a conical recess above said central opening, a valve for said central opening, a conical grooved weight disposed within said conical recess and arranged to normally hold said valve against said opening, passages in said closure having their lower ends below said recess, an auxiliary valve for closing the upper ends of said passages, and a float valve disposed above said auxiliary valve and arranged to hold the latter on its valve seat when the bottle is inverted, said float valve comprising a series of buoyant flat disks, each of said disks having grooves on its upper and its lower surfaces, each of said grooves extending from one edge of the disk to the other, and intersecting other similar grooves.

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Witnesses:

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FANNIE CARABALLO.