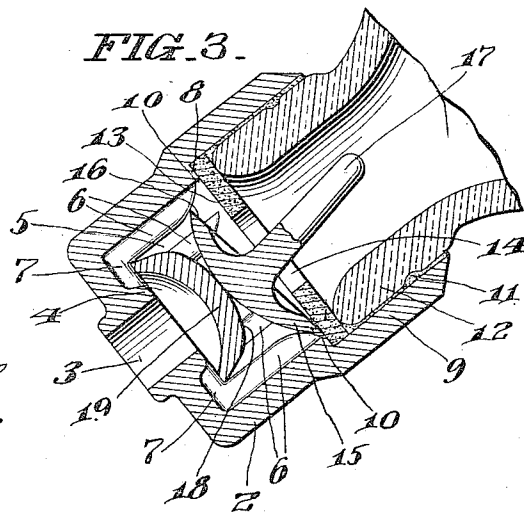
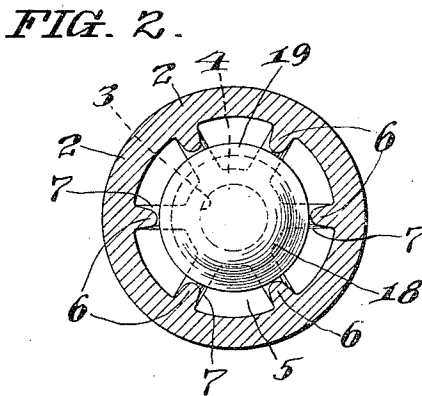
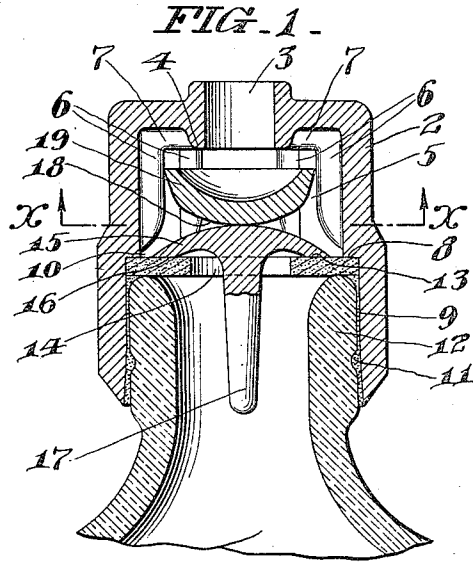


H. W. RIES, L. B. BROWN & F. C. YOCKEL.
 NON-REFILLABLE BOTTLE.
 APPLICATION FILED SEPT. 5, 1914.

1,144,787.

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UNITED STATES PATENT OFFICE.

HARRY W. RIES, OF COLLINGSWOOD, NEW JERSEY, AND LANDY B. BROWN AND
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NON-REFILLABLE BOTTLE.

1,144,787.

Specification of Letters Patent.

Patented June 29, 1915.

Application filed September 5, 1914. Serial No. 860,343.

To all whom it may concern:

Be it known that we, HARRY W. RIES, a citizen of the United States, and resident of Collingswood, county of Camden, and State of New Jersey, and LANDY B. BROWN and FREDERICK C. YOCKEL, citizens of the United States, and residents of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Non-Refillable Bottles, of which the following is a specification.

The object of our invention is to provide a construction of non-refillable bottle which shall be simple, cheap, durable and effective in use.

Our invention consists of a cap for the bottle having a chamber terminating in an outlet and having communication with the passage of the bottle neck by a valve seat, preferably of cork or yielding material, and said cap combined with a valve piece having its valve proper arranged in the chamber and seating upon the valve seat and provided with an arm extending through the thoroughfare of the valve seat to act as a weight in seating the valve piece, said valve piece being rounded or spherically shaped upon its upper surface, and with a loose piece also arranged within the chamber and having a curved or substantially spherically shaped under surface contacting with the rounded or spherically shaped surface of the valve piece and performing the dual function of shielding the valve piece against being tampered with and of assisting in seating itself and in forming a tight joint to prevent inflow of liquid, if attempt were made to refill the bottle.

Our invention also comprehends details of construction which, together with the features above specified, will be better understood by reference to the drawings, in which:—

Figure 1 is a sectional elevation of a non-refillable bottle embodying our invention; Fig. 2 is a cross section of the same on line $x-x$, looking upward; and Fig. 3 is a sectional elevation of the same corresponding to Fig. 1 when inverted as in pouring the contents of the bottle.

2 is a chambered cap or head, and has a cylindrical open body 9 which fits upon the neck 12 of a bottle and may be cemented thereto at 11, or otherwise secured in place. This cap has a shoulder 8 which clamps

down upon the annular valve seat 13 and presses it upon the upper edge of the bottle neck to preferably make a tight joint. The valve seat 13 is preferably formed of cork or other pliable material, and is furnished with the central aperture or thoroughfare 14. The body of the cap is formed with a chamber 5 terminating at the top in the pouring or discharge outlet 3. The inner vertical wall of the chamber is provided with a plurality of ribs 6 which extend radially inward at the top as at 7 and terminate in the annular rib 4 at the inner end of the pouring outlet 3. The vertical ribs 6 preferably terminate at a short distance above the shoulder 8 to provide notches 10, the function of which is to furnish a fulcrum seat about which the valve piece 15 may oscillate.

15 is the valve piece and is made with a substantially spherical upper surface and with an annular or seating surface 16 to seat upon the cork seat 13. This valve piece is also preferably made hollow on its under side and provided with a downwardly extending arm 17 which projects through the opening 14 of the valve seat 13, and acts as a weight for holding the valve piece upon its seat and to rock the said valve piece to reseat itself when the bottle is being righted after pouring. The curved upper surface of the valve piece 15 terminates with the under or seating surface in a circumferential edge which acts as a fulcrum about which the valve piece may rock, said edge being received in confined condition at 10 in a seat between the valve seat and the beveled ends of the ribs 6 (Fig. 3). This valve piece is arranged within the chamber 5 and is associated with a movable part 19 having a substantially rounded or spherically shaped under surface 18, and acts as a shield for the valve piece to prevent the introduction of a wire for holding the valve piece from its seat in any attempt to refill the bottle. This part 19 has a relatively sharp circumferential edge which is guided by the ribs 6 and said part 19 is supported upon the radial ribs 7 when the bottle is inverted so that at all times there is a free passage about it for the flow of fluid. The space within the chamber 5 is such that neither the part 19 nor the valve piece 15 can become displaced or reversed, but at the same time there is sufficient play to these parts that the valve

piece may tilt or rock upon its edge at 10
for permitting the discharge of the fluid
contents of the bottle when the bottle is
slightly inverted beyond a horizontal plane
5 and the piece 19 may tilt about its circum-
ferential edge on the ribs 6 when the bottle
is in a horizontal position, so that its round-
ed under surface 18 may contact with the
valve piece and its weight may assist the
10 valve piece in closing upon its seat.

The operation of the device is as fol-
lows:—When the bottle stands in an upright
position as in Fig. 1, the valve piece 15 seats
upon the annular valve seat 13, and this
15 position is insured by the arm 17 acting as a
weight, and also by the superimposed part
19 acting as a further weight. In this condi-
tion, it is evident that not only would a
volatile beverage be prevented from evapo-
20 ration, but if any attempts were made to
refill the bottle in this position no liquid
could be made to go into the bottle. In
pouring the contents of the bottle from the
outlet, the bottle is turned in a more or less
25 inverted position, as indicated in Fig. 3 for
example. When this position is assumed, it
will be seen that the weighted part 19 takes
a position against the ribs 17 so that there
is a passage around the said part provided
30 by the presence of these ribs, and at the same
time the valve piece 15 slides laterally into
the notch or seat 10 at the lower part and
rocks about the said notch until arrested by
contact with the cup piece 19. In this posi-
35 tion, the valve piece is away from its seat 13
and the liquid may freely flow out of the
bottle. When the bottle is being turned in
righting it to the upright position, like in
Fig. 1, the arm 17 acting as a weight rocks
40 the annular seat 13 somewhat prior to the
bottle assuming a horizontal position, this
being assisted by the weighted action of the
part 19 upon the curved surface of the valve
piece; then as the bottle is turned to a fur-
45 ther degree, the weighted part 19 slides
down by gravity and once more acts con-
jointly with the weight of the arm 17 to
hold the valve piece tightly upon its seat.

In the operation involving the movement of
50 the parts 15 and 19, the fact that these parts
have oppositely directed spherical or round-
ed surfaces, they slide over each other with
small resistance of a ball bearing having ap-
proximatley only one point of contact be-
55 tween them. On account of the weighted
part 19 having its fulcrum or point of sup-
port adjacent to the plane of its upper sur-
face where it contacts with the rib 6, it is
manifest that at all times, excepting when
60 greatly inverted, this cup-shaped piece tends
to act as a counterweight to push the valve
piece 15 back upon its seat, thereby ma-
terially assisting the weighted arm 17 in
65 holding the valve piece to its seat except
when the bottle is very largely inverted.

When the bottle is inverted, no liquid will
run into the bottle by submerging it, as the
air within cannot escape, and whenever the
bottle is turned, approaching a horizontal or
70 more vertical position, the valve piece is
tight upon its seat and prevents the inflow
of liquid as well as the outflow of air. In
this manner, the bottle is practically non-
refillable. In this construction the center
of gravity of the valve piece and its arm is
75 so positioned that the valve piece will seat
upon the seat when the bottle is held hori-
zontally and this action is assisted by the
gravity action of the part 19, so that at all
times when the air might escape from the
80 bottle in an attempt to refill it, the valve
piece will be forcibly held to its seat.

We do not restrict ourselves to the par-
ticular manner in which the cap 2 is at-
tached to the top of the bottle neck, as it is
manifest that this may be accomplished in
85 many ways. However, the cementing of it
in position is inexpensive and satisfactory.
It is also evident that while cork is most
satisfactory for the annular valve seat 13,
rubber or other construction having a
90 slightly yielding surface may be employed.
Broadly considered, however, this annular
seat may be of any suitable material, whether
pliable or otherwise, as the pliability is
95 simply a preferred construction since it
adapts itself to a tight joint with the valve
piece. While the remaining parts may be of
metal, we do not restrict ourselves thereto
as they might be made of porcelain, glass or
100 any hard materials which would not be
affected by the contents of the bottle. While
we have our construction in the form which
we prefer, we do not limit ourselves to the
105 minor details thereof, as these may be modi-
fied without departing from the spirit of the
invention.

Having now described our invention, what
we claim as new and desire to secure by Let-
110 ters Patent, is:—

In a non-refillable bottle, the bottle neck,
with a hollow cap secured to the neck pro-
viding a chamber having an outlet at the
top and the interior walls of the chamber
115 ribbed, and an annular valve seat between
the bottle neck and the chamber of the cap,
said parts forming a circular fulcrum bear-
ing for the valve piece between the ribs and
the seat, in combination with a valve piece
120 seating upon the valve seat and having a
rounded or spherical upper surface and a
thin circumferential edge adjacent to the
seating surface and caused to rock within
the chamber of the cap by said edge and the
125 confining influence of the ribs which provide
a fulcrum bearing adjacent to the annular
seat, and said valve piece provided with an
arm extending through the aperture of the
valve seat and acting as a counterweight to
130 rock the valve piece and seat it, the center

of gravity of the valve piece and its arm being slightly to the neck side of the plane of the seat when the bottle is in horizontal position and to the outlet side of the plane of the seat when the bottle is very slightly inverted beyond the horizontal position, and a relatively light weight piece loosely arranged within the chamber of the cap above the valve piece having relatively sharp circumferential edges in contact with and guided and restricted by the ribs so as to both slide and rock thereon and having its under surface rounded or spherical-shaped so as to provide a limited contact engagement with the rounded surface of the valve piece and assist the gravity action of the

valve piece to quickly and positively seat upon its seat when the bottle is returned from pouring to horizontal position and in the pouring position to act as a support for the valve piece and hold said arm thereof from contacting with the sides of the annular valve seat.

In testimony of which invention, we hereunto set our hands.

HARRY W. RIES.
LANDY B. BROWN.
FREDK. C. YOCKEL.

Witnesses:

DOROTHY CHERTAK,
E. W. SMITH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."