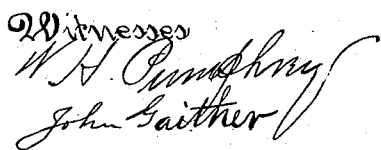


H. DOTZENROTH, Jr.
AUTOMATIC VALVE FOR BOTTLES.

Patented Apr. 21, 1896.



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UNITED STATES PATENT OFFICE.

HENRY DOTZENROTH, JR., OF BELLEVUE, PENNSYLVANIA.

AUTOMATIC VALVE FOR BOTTLES.

SPECIFICATION forming part of Letters Patent No. 558,785, dated April 21, 1896.

Application filed May 28, 1894. Serial No. 512,719. (No model.)

To all whom it may concern:

Be it known that I, HENRY DOTZENROTH, Jr., a citizen of the United States of America, residing at Bellevue, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Valves for Bottles, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain new and useful improvements in automatic valves for bottles.

The object of the invention is to construct a valve of this class that will not permit a bottle to be refilled; furthermore, to place the valve in the bottle-neck in such a manner that it will be impossible to remove the same without breaking the neck of the bottle.

The invention has for its further object to construct an automatically-operated valve that will be actuated when in a horizontal position, or slightly below the same—i. e., approximately at an angle of one hundred degrees.

The invention has for its still further object to construct a valve of the above-referred-to class that will be simple in construction, strong, durable, and thoroughly reliable in its operation.

With the above and other objects in view the invention consists in the novel arrangement and combination of parts to be hereinafter more particularly described, and specifically pointed out in the claim.

In describing the invention in detail, reference is had to the accompanying drawings, forming a part of this specification, and wherein like figures of reference indicate similar parts throughout the several views, in which—

Figure 1 is a central vertical sectional view of a bottle provided with my improved automatic valve. Fig. 2 is a front view of the valve, showing in dotted lines the arrangement of the different parts. Figs. 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14 are detail views of the parts. Fig. 3 is a detail view of the valve-seat shown in vertical section. Fig. 4 is a plan view looking at the underneath side of the same. Fig. 5 is a plan view of the spring which serves to securely retain the valve in the neck of the bottle. Fig. 6 is a front view

of the same. Fig. 7 is a detail plan view of the guide for the valve-stem. Fig. 8 is a side view of the same. Fig. 9 is a vertical sectional view of a collar. Fig. 10 is a vertical sectional view of the inner casing forming part of the valve. Fig. 11 is a vertical sectional view of a sleeve. Fig. 12 is a plan view of the ball or marble. Fig. 13 is a sectional view of the guide for the valve-stem, corresponding to Fig. 8. Fig. 14 is a sectional view of the valve to which is fixed the valve-stem.

In the drawings, 1 represents the bottle proper; 2, the neck of the same, provided with an interior annular groove 3. The neck is further provided at its lower extremity with an interior flange 4, forming a shoulder for the reception of the valve-seat 5. Said seat is apertured centrally at 6 to receive the valve-stem 7 of the valve 8. The valve-seat is cup-shaped and provided with a vertical wall 5^a, on which the arms of the guide 9 rest. The guide 9 for the valve-stem is so constructed as to snugly fit over the valve-seat and is formed of a piece of metal stamped to form a central portion 9^a, with radial arms 9^b, said arms extending upwardly and outwardly from the body to form a seat for the ball to be hereinafter referred to, centrally apertured at 10 to allow the valve-stem to reciprocate. The sleeve 11 is then fitted directly above the valve-guide 9, said sleeve having semicircular sides 12. The inner casing 13 consists of an annular body formed with a cone-shaped extension 14 and provided on its outer surface with bosses 15, and contains a cone-shaped interior chamber 16. The cone-shaped extension of said casing is adapted to fit into a cone-shaped bore 17 of the collar 18, said collar being provided with an annular groove 19, adapted to correspond with the annular groove formed in the interior of the bottle-neck. Said grooves are adapted to receive the spring 20, which serves to hold the entire mechanism in place.

A ball or marble 21 is placed in the cone-shaped chamber of the casing 13.

Operation: The bottle is filled with liquid previous to placing the valve in the neck thereof. Thereafter the valve-seat, the valve-stem and valve, valve-guide, sleeve, ball, inner casing, collar, and spring are fitted in the

above-named order in the neck of the bottle. Then by reversing the bottle the ball will be thrown out of engagement with the valve-stem, thus permitting the latter to open and the fluid to escape through the different channels of exit and thence out of the bottle. When the bottle has been drained in this manner, it will be impossible to refill the bottle, for the following reasons:

10 When the bottle is in an upright position, the ball will retain the valve closed, and by the peculiar construction of the inner chamber formed in the casing the ball will retain the valve in this position when the neck of
15 the bottle is placed at any angle between zero and one hundred and twenty degrees in either direction. It is a well-known fact that if a bottle is reversed in a vessel of water the air-pressure will not admit the water or
20 fluid to enter. At this point the valve would be open. Then let us suppose that the bottle in the fluid be turned gradually to its normal position. The fluid cannot possibly enter until the bottle is placed at an angle of
25 about one hundred degrees, and before this point is reached the automatic valve is actuated, closing the same and not allowing the liquid to enter. The valve is opened by the force of gravity, as will be readily understood.
30

Attention is called to the fact that the valve cannot be removed from the neck of the bottle without destroying the same, as the spring retains it in position, and the latter is
35 inaccessible when once placed in the groove of the collar and neck of the bottle.

It will be noted that various changes may be made—for example, several pieces may be made in one, thus dispensing with a number of parts. Various other changes may
40 also be made in the details of construction of the valve without departing from the general idea involved in this invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters
45 Patent, is—

In a bottle-valve, the combination with a bottle having a neck provided with an internal annular groove near the top and a flange near the bottom, a valve-seat having
50 upwardly and outwardly extending walls resting on the flange and having a central aperture a valve resting in the seat and having a stem working in the aperture, a guide
55 for the upper stem having a central aperture and radial arms engaging the sides of the bottle-neck, a ball resting in the guide and coming in contact with the valve-stem, a collar resting on the guide, a casing having
60 bosses resting on the collar and a central aperture to receive the ball and a collar above and engaging the casing, said collar having an annular groove, and a spring locking-key fitting in the coincident grooves of the collar and bottle-neck, as and for the purpose de-
65 scribed.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY DOTZENROTH, JR.

Witnesses:

H. C. EVERT,

ROBERT T. McELROY.