(No Model.)

M. E. DONALLY.

BOTTLE.

No. 582,011. Patented May 4, 1897.

Fig. 1.

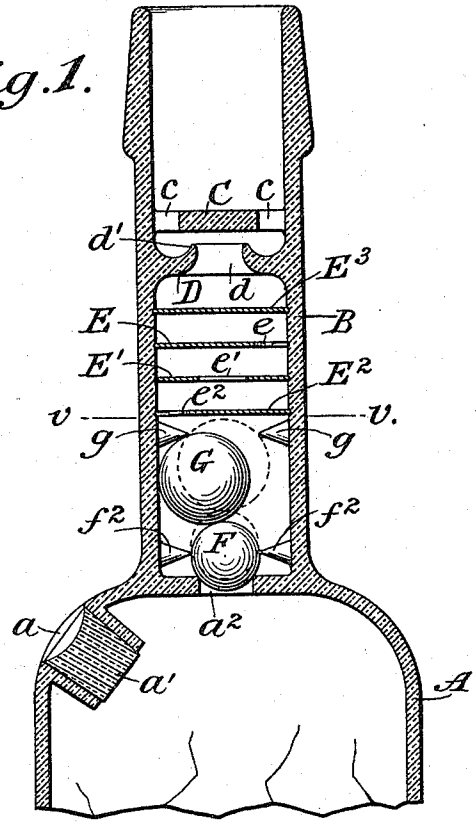
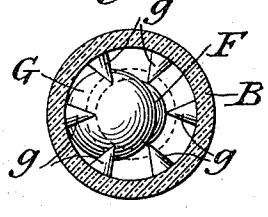


Fig. 2.



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UNITED STATES PATENT OFFICE.

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BOTTLE.

SPECIFICATION forming part of Letters Patent No. 582,011, dated May 4, 1897.

Application filed June 15, 1896. Serial No. 595,514. (No model.)

To all whom it may concern:

Be it known that I, MELVIN E. DONALLY, a citizen of the Dominion of Canada, residing in the city of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Bottles, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to devices which are intended to prevent the fraudulent refilling of bottles after they have once been exhausted of their original and proper contents; and it has for its object to provide means which shall operate for the intended purpose more effectively than means hitherto devised, while at the same time they shall be of such simple and easy construction as to render the manufacture of the bottle possible without a prohibitive increase in the cost thereof.

My improvements will be fully described hereinafter with reference to the accompanying drawings, in which I have illustrated certain practical and convenient embodiments of the invention.

In the drawings, Figure 1 is a sectional view of the upper portion of a bottle to which my improvements are applied. Fig. 2 is a section on the plane indicated by the line *v v* of Fig. 1.

The body A and the neck B of the bottle may be of any ordinary or suitable size and shape, the mouth or top of the neck being preferably adapted to receive an ordinary cork in the usual manner.

At some point in the body of the bottle, preferably in the shoulder thereof, as represented, is formed an aperture *a*, having slightly-converging walls and adapted to form a seat for a slightly-tapering stopper *a'*, which is preferably of the same material as the body of the bottle or of other similarly hard substance, and is formed without any projecting head. The stopper *a'* is so related to its seat, which does not project exteriorly from the body of the bottle, as to enter the same flush with or slightly below the adjacent surface of the bottle. Moreover, having a very slight taper and being fitted closely to its seat, it becomes bound so firmly in its seat, when pushed home, as to be incapable of removal therefrom except by breaking the bottle. It will be observed that as neither the seat nor the stopper projects beyond the adjacent surface of the bottle, and as the outer end of the stopper is practically smooth, none of the ordinary methods of extracting tightly-fitted glass stoppers will prove effective, and in point of fact the stopper cannot be removed without breaking the bottle.

It will be understood that the liquid with which the bottle is to be filled is introduced through the aperture *a* after the bottle has been completed, as hereinafter described, and that the stopper *a'* is then pressed home in its seat.

The neck of the bottle, below its mouth, is provided, as usual, with an obstruction device to prevent the introduction of a wire or other tool for the purpose of tampering with the parts below. I have shown such obstruction device as comprising a disk or plate or diaphragm C, having peripheral apertures *c c*, and a plate or diaphragm D in close proximity to the plate or diaphragm C, having a central aperture *d*, preferably with an upturned edge *d'*, as represented.

Next below the obstruction device I prefer to introduce into the bottle-neck a series of diaphragms, such as E, E', and E^2, which have for their object to prevent the introduction of a body of liquid into the valve-chamber below them when the bottle is in a substantially horizontal position, and, as will be observed, the diaphragm D coöperates with the diaphragms E E' E^2. The diaphragm E is provided with a single aperture or opening *e* near the edge thereof, such opening not extending toward the center of the diaphragm as far as the edge of the opening *d* in the diaphragm D. The diaphragm E' has a central aperture *e'*, which does not overlap the aperture *e* of the diaphragm E, and the diaphragm E^2 has an aperture or opening e^2, which does not extend far enough toward the center to overlap the aperture *e'* and is placed at the opposite side of the bottle-neck from that occupied by the opening *e* of the diaphragm E. A fourth diaphragm E^3, either above or below the others, has a peripheral opening (not shown) which is positioned midway between the openings *e* and e^2 of the diaphragms E and E^2 and does not extend far enough toward the center to overlap any one of the other apertures.

It will be clearly understood that no mat-

ter how the bottle is held nor how it is rotated when in a horizontal position no portions of the apertures e e' e^2 and the aperture in the diaphragm E^3 can be brought into the same horizontal plane, wherefore no liquid can flow either from the body of the bottle out through its mouth nor through the mouth into the body of the bottle when the bottle is held in a horizontal or nearly horizontal position. Furthermore, even if the bottle is rotated upon its own axis while in a horizontal position and while submerged or partially submerged in a body of liquid no quantity of liquid can be introduced through the diaphragms D, E^3, and E sufficient to flow through the aperture e' of the diaphragm E'.

To prevent the passage of liquid into the body of the bottle when the bottle is in an upright or nearly upright position, other means are provided, as hereinafter described, which means will nevertheless permit the passage of liquid outward from the body of the bottle when the bottle is tipped beyond a horizontal position, and with a little manipulation such liquid can be made to pass the several diaphragms not too slowly.

The means to prevent the passage of liquid into the body of the bottle from the neck and to prevent the opening of the port a^2, except when the bottle is tipped considerably beyond a horizontal position, will now be described.

The port a^2, between the body of the bottle and the neck, forms a seat for and is adapted to be closed by a movable valve-body F, which is preferably spherical or substantially so and is centered and guided by ribs or studs f^2, projecting internally from the bottle-neck, which prevent lateral movement, but permit free longitudinal movement of said valve-body F. Superimposed upon the valve-body F is another movable body, also preferably spherical, which is limited in its movements by studs g. The said studs g project interiorly from the bottle-neck toward the axis of the neck far enough to leave between their extremities a clear space of a minimum diameter slightly less than the diameter of the body G, so that said body may move toward the bottle-mouth between the ends of the studs to an extent indicated by the dotted line in Fig. 1, thereby permitting the valve-body F to move from the port or seat a^2. As will be seen, this movement can take place only when the bottle is tipped considerably beyond a horizontal position. The distance from the under side of each of said studs g at the extremity thereof to the nearest point of the valve-body F is nearly equal to though slightly less than the diameter of the body G, so that whenever the said body G rests against the side of the bottle-neck, which will be the case when the bottle is upright or in any position between that and the position which will cause said body G to roll forward, as already described, it will hold the valve-body F firmly to its seat, closing the port a^2. It is only when the bottle is inverted far enough to cause the body G to drop forward into the space between the studs g g that it releases the body F and permits it to move away from its seat and to open the port a^2. Hence it is impossible to introduce liquid into the body of the bottle even if it should be made to pass the diaphragms into the valve-chamber. In this construction, therefore, the diaphragms merely supplement the operation of the valve and afford additional safeguards to prevent tampering with the valve in any manner. Moreover, it will be evident that by reason of the fact that the body G cannot pass between the studs g no shaking of the bottle will be effective in introducing liquid into it, especially if the valve-body F is buoyant, as it should be, so that when the bottle is inverted far enough to dislodge the body G the valve-body F shall rise against the port a^2, to be moved therefrom only by pressure from within the body of the bottle.

I claim as my invention—

1. A bottle having a port between the neck and the body, a movable valve-body to rest upon and close said port, means to center and guide said valve-body, a second substantially spherical and movable body adapted to rest upon said valve-body, and a series of studs projecting inward from the bottle-neck, leaving between them a space of slightly less diameter than said second body and having their under sides distant from the nearest point of the valve-body when the latter is seated upon the port by about the diameter of said body, whereby when said second body moves forward between the studs it releases said valve-body and when it rests against the side of the bottle-neck it holds said valve-body closely against its seat, substantially as shown and described.

2. A bottle having a port between the neck and the body, a spherical and movable valve-body to rest upon and close said port, means to center and guide said valve-body, a second substantially spherical and movable body adapted to rest upon said valve-body, and a series of studs projecting inward from the bottle-neck, leaving between them a space of slightly less diameter than said second body and having their under sides distant from the nearest point of the valve-body when the latter is seated upon the port by about the diameter of said body, whereby when said second body moves forward between the studs it releases said valve-body and when it rests against the side of the bottle-neck it holds said valve-body closely against its seat, substantially as shown and described.

This specification signed and witnessed this 12th day of June, A. D. 1896.

MELVIN E. DONALLY.

In presence of—
MIRON WINSLOW,
W. B. GREELEY.