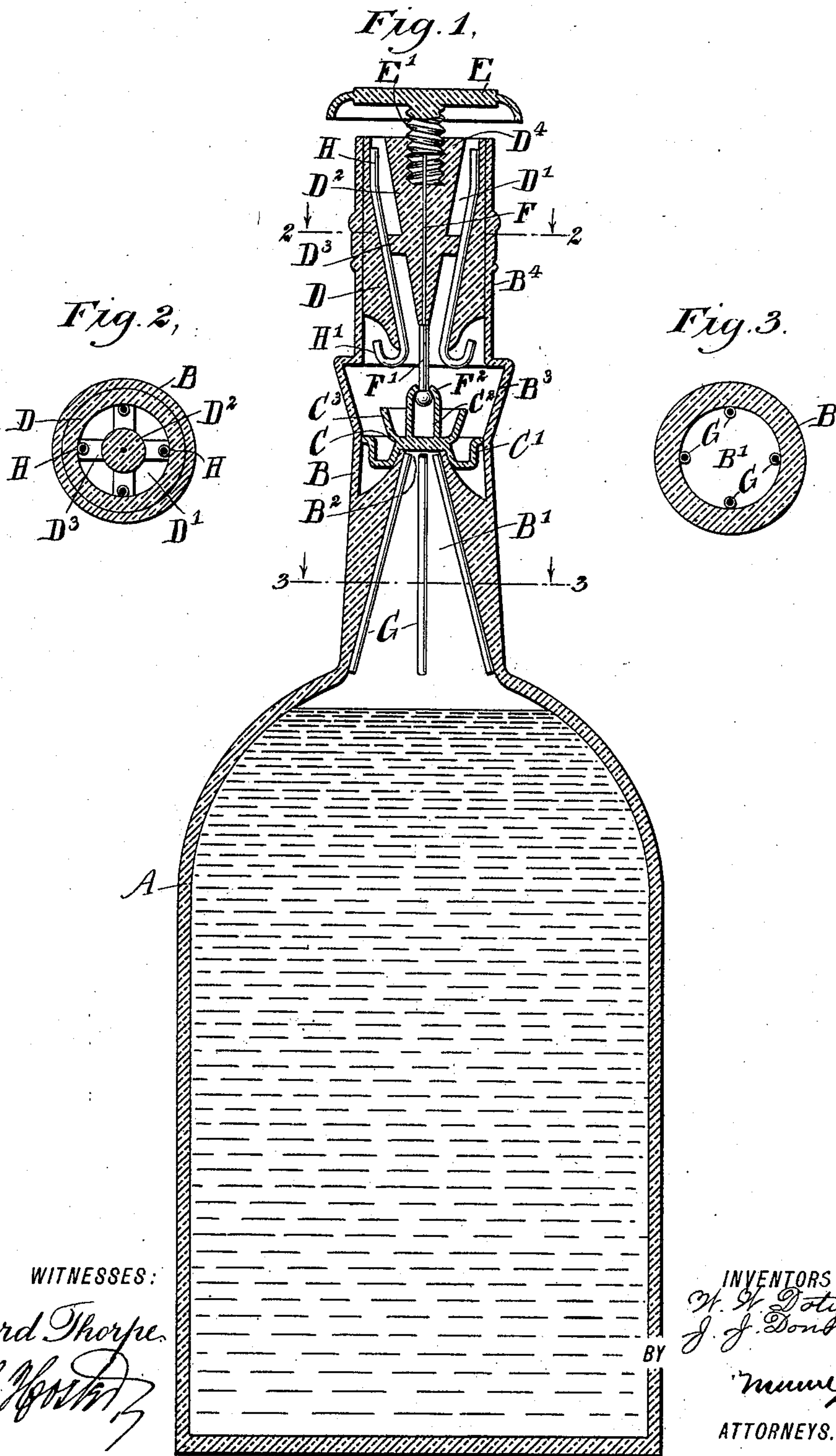


(No Model.)

W. W. DOTY & J. J. DONNELLAN.
NON-REFILLABLE BOTTLE.

No. 581,150.

Patented Apr. 20, 1897.



UNITED STATES PATENT OFFICE.

WILLIAM W. DOTY AND JAMES J. DONNELLAN, OF NEW YORK, N. Y., ASSIGNORS TO SAID DOTY, JAMES A. MACKNIGHT, CHARLES J. BICKMAN, JOSEPH C. GRAUTEN, CHARLES C. GRAUTEN, AND WILLIAM REINHART, OF SAME PLACE.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 581,150, dated April 20, 1897.

Application filed March 10, 1896. Serial No. 582,537. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM W. DOTY and JAMES J. DONNELLAN, of New York city, in the county and State of New York, have
5 invented a new and Improved Non-Refillable Bottle, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved non-refillable bottle which
10 is simple and durable in construction and arranged to effectively prevent refilling of a bottle after it is once emptied of its original contents.

The invention consists of certain parts and
15 details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification,
20 in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a sectional plan view
25 of the same on the line 2 2 of Fig. 1, and Fig. 3 is a similar view of the same on the line 3 3 of Fig. 1.

The bottle A is provided in its neck B with a conically-shaped opening B', leading at its apex into a valve-seat B², formed integrally
30 with the neck, as plainly illustrated in Fig. 1. On this valve-seat B² is normally seated by its own gravity an inverted-cup-shaped valve C, formed at its outer edge with a downwardly-extending flange C', adapted to en-
35 gage the inner surface of the neck below an inverted conical chamber B³, formed in said neck, so that the valve C upon opening—that is, when the bottle is tilted—moves with its flange C' into an enlarged space or chamber
40 to permit the liquid contained in the bottle to flow out through the opening B' and around the inner face of the valve and its flange C' into the enlarged space B³, from which the liquid can pass through an annular channel
45 D', formed in a stopper D, preferably made of glass and cemented or otherwise permanently secured in the upper end of the neck of the bottle, as illustrated in Fig. 1. The
50 annular channel D' in the stopper D forms a

tion of the stopper by wings D³, as plainly indicated in Figs. 1 and 2.

Now it will be seen that the annular channel D' extends throughout the length of the stopper and has the shape of an inverted
55 cone, with the base-opening at the top of the neck of the bottle, so that the liquid can pass through said channel to the outside. A cap E extends over the upper end of the neck of the bottle and stopper D, and this cap is pro-
60 vided at its under side with a centrally-extending screw E', screwing in a thread D⁴, formed in the center piece D² of the stopper to permit of moving said cap E close to the upper end of the neck to close the same or a
65 suitable distance away from it to leave the base of the channel D' open, as indicated in Fig. 1.

From the screw E' extends downwardly and centrally through the center piece D² a
70 rod F, having the enlarged portion F', on which is secured a ball F², engaging the sleeve C² on the top of the valve C, said sleeve being surrounded by a cup C³, formed integrally with the valve C and on the top
75 thereof, as will be readily understood by reference to the drawings. The enlarged part F' serves as a guide for the sleeve C² of the valve as the latter moves to and from its
80 seat to hold the valve centrally and to permit the liquid to pass the flange C' at the time the latter extends in the enlarged space B³, as previously explained. Now it will be
85 seen that when the cap E is screwed downward to close the neck of the bottle then the rod F and its ball F² is likewise moved downward, so that the ball finally engages the top of the valve C to firmly lock the latter on its
90 seat. By this arrangement the contents of the bottle cannot be spilled, as the neck is securely closed by the valve C on the seat B² and by the cap E at the upper end of the neck. This arrangement is especially serv-
95 iceable for shipping bottles, it being understood that the receiver only needs to unscrew the cap E a short distance, as shown in the drawings, to bring the several parts into a working position.

In the lower portion of the neck, preferably at the under side of the wall of the open- 100

ing B', are arranged a number of air-pipes G, extending throughout the length of the opening to permit air to pass into the bottle at the time the latter is tilted to insure a proper flow of liquid in an outward direction. Similar air-pipes H are arranged in the stopper D in the circular channel D' with the inner or lower ends of the pipes formed with an upwardly and outwardly extending bend II', so that the air can pass into the enlarged space B³ at the time the bottle is tilted and liquid runs out through the annular channel D'. Thus it will be seen that air for insuring a ready outward flow of the liquid can pass into the bottle by said air-pipes H and G, but when the bottle is in a vertical position, as shown in Fig. 1, then the valve C immediately seats itself on the seat B².

It will further be seen that by making the valve cup shape, as described, it is evident that any attempt at refilling the bottle by introducing liquid at the upper end of the channel D' causes an immediate seating of the said valve on the seat B², so that the liquid cannot pass into the opening B' and to the interior of the bottle.

In manufacturing the bottle the stopper D with the cap E and valve C are separate from the neck of the bottle, and when the bottle is filled then the stopper is inserted and cemented or otherwise fastened in place, it being understood that the several parts carried by the stopper then move into proper position, especially the valve C.

It will be seen by reference to Fig. 1 that the enlarged inner end F' of the stem F serves as a stop for the upward movement of the cap E upon unscrewing the latter, as the said enlarged portion abuts with its upper end against the lower end of the center piece D² of the stopper.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. A non-refillable bottle, comprising a bottle having its neck provided with a cone-shaped opening, a valve-seat at the top of the cone-shaped opening, and an inverted-cone-shaped chamber above the valve-seat, and an inverted-cup-shaped valve fitting over the said valve-seat and having its outer edge in contact with the inner surface of the neck when the valve is seated, substantially as described.

2. A non-refillable bottle, comprising a bottle having its neck provided with a cone-shaped opening, a conical valve-seat into which the cone-shaped opening leads, and an inverted-cone-shaped chamber above the valve-seat, and an inverted-cup-shaped valve fitting on the valve-seat and having its outer edge in contact with the inner surface of the neck when the valve is seated, substantially as described.

3. A non-refillable bottle provided in its neck with a cone-shaped opening having a valve-seat formed at its top, a stopper located

above the cone-shaped opening and provided with an inverted-cone-shaped annular channel, a cup-valve in the enlarged space between the adjacent ends of the opening and channel and adapted to be seated on the said valve-seat, air-supply pipes located at the sides of the cone-shaped opening in the neck and extending to or near the said valve-seat, and air-pipes arranged in the annular channel in the said stopper and having their lower or inner ends curved outward and upward, substantially as shown and described.

4. A non-refillable bottle provided with an inverted-cup-shaped valve having a flange at its outer edge, and a supplementary cup on the top of said inverted-cup-shaped valve, substantially as shown and described.

5. A non-refillable bottle provided with an inverted-cup-shaped valve having a flange at its outer edge, a supplementary cup on the top of said inverted-cup-shaped valve, and a sleeve on the top of said valve and surrounded by the supplementary cup, and means for guiding the sleeve to hold the valve centrally, substantially as shown and described.

6. A non-refillable bottle provided with a valve-seat in the neck of the bottle and an inverted-cup-shaped valve adapted to be seated on the said seat and engage the sides thereof, the said valve being formed with a flange normally in engagement with the inner face of the neck of the bottle, the said cup-shaped valve being adapted to move into an enlarged space formed in the neck of the bottle, and a guide-rod for guiding said cup-shaped valve centrally in the neck of the bottle, substantially as shown and described.

7. A non-refillable bottle provided with a valve-seat in the neck of the bottle, an inverted-cup-shaped valve adapted to be seated on said seat and formed at its outer edge with a flange normally in engagement with the inner face of the neck of the bottle, said cup-shaped valve being adapted to move into an enlarged space formed in the neck of the bottle, the said valve having a central sleeve on its top, a cup surrounding the said sleeve, and means for engaging the said sleeve for guiding the said cup-shaped valve centrally in the neck of the bottle, substantially as set forth.

8. A non-refillable bottle provided with a valve-seat in the neck of the bottle, an inverted-cup-shaped valve adapted to be seated on said seat and formed at its outer edge with a flange normally in engagement with the inner face of the neck of the bottle, said cup-shaped valve being adapted to move into an enlarged space formed in the neck of the bottle, and a stopper held in the upper end of the neck of the bottle above the said enlarged space and provided with an annular inverted-cone-shaped channel and a center piece formed by said channel and connected with the outer portion of the stopper, substantially as shown and described.

9. A non-refillable bottle provided with a valve-seat in the neck of the bottle, an in-

verted-cup-shaped valve adapted to be seated on the said seat and formed at its outer edge with a flange normally in engagement with the inner face of the neck of the bottle, said cup-shaped valve being adapted to move into an enlarged space formed in the neck of the bottle, a stopper held in the upper end of the neck of the bottle and provided with an annular inverted-cone-shaped channel and having a center piece formed by said annular channel and connected with the outer portion of the stopper, and a cap for closing the outer end of the neck of the bottle, the said cap being provided with a rod extending through the said center piece and adapted to connect with the said cup-shaped valve to hold the latter to its seat, as set forth.

10. A non-refillable bottle provided with a stopper having an annular channel, a center piece formed by said annular channel and connected with the outer portion of the stopper, a cap adjustably held on said stopper, a rod carried by said cap and extending centrally

through the said center piece, and a valve guided on said rod, substantially as shown and described. 25

11. A non-refillable bottle provided with a stopper having an annular channel, a center piece formed by the said annular channel and connected by wings with the outer portion of the stopper, a cap provided at its under side with a centrally-extending screw screwing in a thread formed in the said center piece, a rod connected with the said screw and extending centrally through the said center piece, the said rod having an enlarged portion at its lower end adapted to abut against the lower end of the said center piece, and a valve guided on the enlarged part of said rod, substantially as shown and described. 30 35

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Witnesses:

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