No. 844,733. PATENTED FEB. 19, 1907.

D. H. MONKS.

VALVE MECHANISM FOR BOTTLES.

APPLICATION FILED JUNE 6, 1906.

Fig. 1.

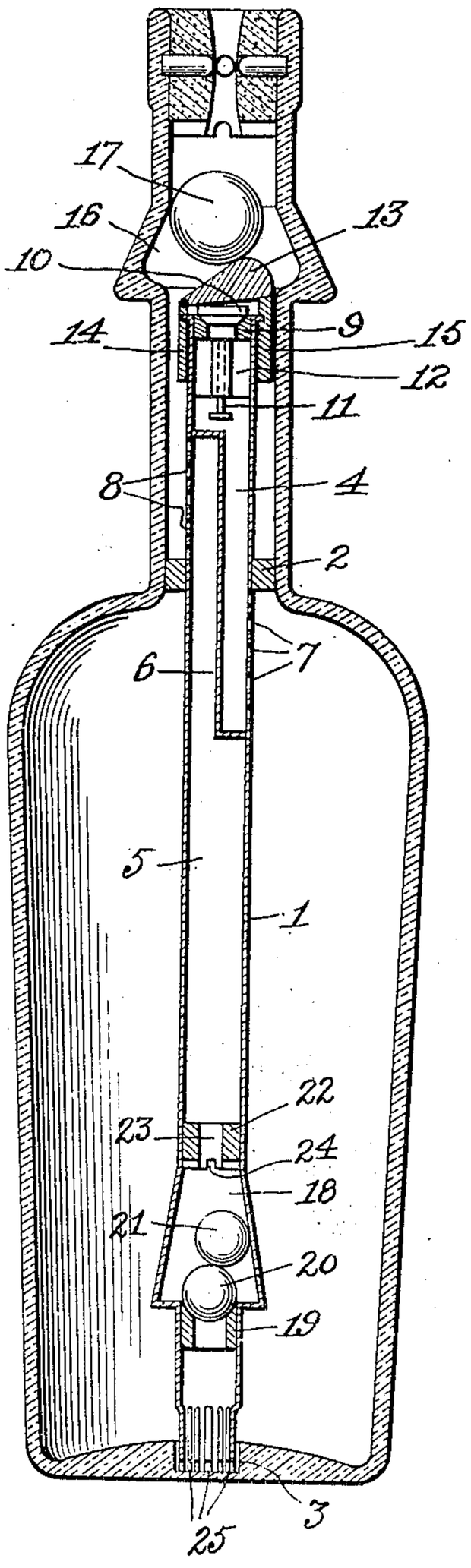
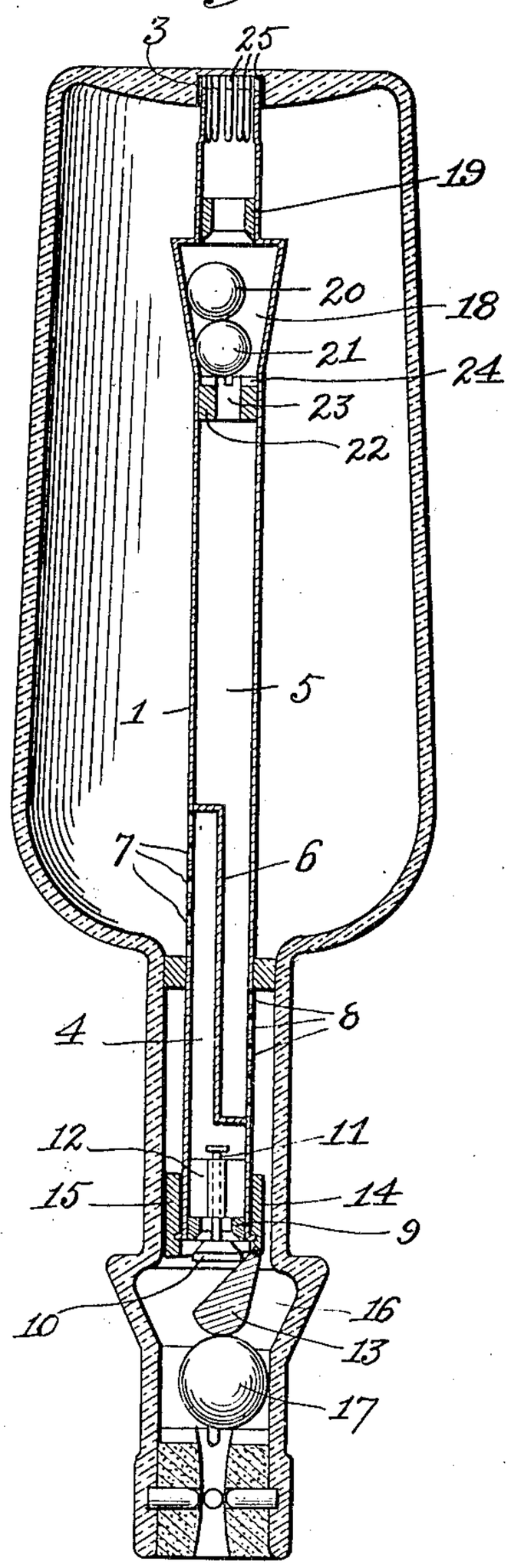


Fig. 2.



Witnesses

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VALVE MECHANISM FOR BOTTLES.

No. 844,733. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed June 6, 1906. Serial No. 320,480.

To all whom it may concern:

Be it known that I, DANIEL H. MONKS, a citizen of the United States, residing at Fishkill-on-the-Hudson, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Valve Mechanism for Bottles, of which the following is a full, clear, and exact description, such as will enable those skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The invention has for its object the provision of means for preventing the refilling of bottles and also to admit air into the body of the bottle as the liquid is withdrawn. It consists in the novel construction, combination, and arrangement of parts, such as will be hereinafter fully described, pointed out in the appended claims, and illustrated in the accompanying drawings.

In the drawings, in which similar reference characters designate corresponding parts, Figure 1 is a vertical sectional view of a bottle and valve mechanism embodying the invention. Fig. 2 is a similar view showing the bottle in an inverted position.

In its general formation the bottle is the same as those in common use. In it is the central tube 1, extending from the bottom of the bottle into the lower part of the neck. A closure 2 in the inner end of the neck of the bottle surrounds the upper part of the tube and holds the latter in place at that point. This closure also forms a partition separating the main part of the bottle from the neck. The lower end of the tube is seated in the recess 3 in the base of the bottle and is thereby held in place at that point.

The tube 1 is divided into the liquid duct 4 and the air-duct 5 by the partition 6. Both ducts extend above and below the closure 2. The liquid-duct communicates with the interior of the body of the bottle below the closure 2 through the openings 7, and the air-duct 5 communicates with the interior of the neck of the bottle above the closure 2 through the openings 8.

The upper end of the tube 1, into which the liquid-duct 4 leads, communicates with the interior of the neck of the bottle through the valve-seat 9, and this communication is controlled by the float-valve 10, adapted to register with the valve-seat. The valve is controlled in its movements by the stem 11, passing through the spider 12 inside of the tube beneath the valve-seat. The valve is closed upon its seat by the gate 13, hinged to the collar 14, loosely journaled on the end of the tube 1. Longitudinal movement of the collar on the tube is prevented by a flange on the edge of the tube engaging with a recess in the collar. The side of the collar opposite to that on which the gate is hung, as at 15, is weighted, so that the collar will turn when the bottle is tilted to place the gate in a pendent position. This movement of the collar is also facilitated by the gate, which has its free end weighted also. The neck of the bottle has a cone-shaped enlargement 16 opposite to the gate to permit free movement of the latter. In this enlargement is the weight 17, operating to aid in the closing of the gate.

In the lower part of the tube 1 is the chamber 18, shaped like the frustum of a cone. At the bottom of the chamber is the valve-seat 19, with which the float-valve 20 is adapted to register. Above the valve is the weight 21 for forcing the valve onto its seat. The valve and weight are in the form of balls, and they are held within the chamber by the partition 22, placed above them. Through this partition leads the passage 23, forming a communication between the air-duct 5 and the chamber 18. In the under side of the partition are the channels 24, forming outlets for the passage 23.

The lower end of the tube 1 is corrugated, and in the recesses formed by the corrugations are the openings 25, forming communications between the lower part of the tube and the interior of the body of the bottle.

The operation of the device is as follows: After the bottle has been filled the tube 1, with its attachments, is inserted in place. To prevent withdrawal of the tube or tampering with the valve mechanism, a locking-stopper is inserted in the mouth of the bottle. Such a stopper is shown in my former patent, granted November 19, 1903, and numbered 746,551. To pour liquid from the bottle, the latter is tilted to an inverted position, as shown in Fig. 2, or one that is almost inverted. When the bottle is so tilted, the

ball 17 falls away and frees the gate 13 and the collar 14 by reason of the weight 15, and the weight in the free end of the gate turns on the tube 1, so that its side to which the gate is hung is uppermost and the gate hangs pendent. The liquid passes from the body part of the bottle through the openings 7 into the liquid-duct 4. The pressure of the liquid unseats the float-valve 10 and escapes through the mouth of the bottle. As the gate hangs pendent, it will not interfere with the movement of the valve. When the bottle is in an inverted position, or nearly so, the weight 21 in the chamber 18 drops away from the float-valve 20, and the latter leaves its seat, and thereby opens the lower end of the tube 1. As the liquid escapes from the mouth of the bottle air enters the openings 8 into the air-duct 5 and passes to the lower part of the tube, from which it passes through the openings 25 into the body of the bottle and fills the space previously occupied by the liquid. The channels 24 in the under side of the partition 22 form outlets for the passage 23 and prevents the weight 21 from closing said passage. When the bottle is in an upright position, as shown in Fig. 1, or in one that is not inverted, the upper end of the tube 1 is closed by the gate 13 pressing the valve 10 onto its seat. This action of the gate is facilitated by the weight 17. The closing of the valve will prevent the introduction of liquid into the duct 4, so that it can pass through the openings 7 into the body of the bottle. Should an attempt be made to force the liquid into the bottle by pressure while it is in an inverted position, the liquid impinging on the gate 13 would move the latter to close the valve 10. Also the valve would float into position against its seat. When the bottle is not inverted, the lower end of the tube 1 is closed by the float-valve 20, which is pressed onto its seat by the weight 21. This would prevent the passage into the main body of the bottle of any liquid that might be introduced into the air-duct 5 through the openings 8. Through the inclination of the sides of the chamber 18 the weight 21 would press the valve 20 against its seat until the mouth of the bottle is turned very much below the horizontal. Should an attempt be made to force liquid through the openings 8 while the bottle is inverted, when the liquid filled the air-duct 5 and the chamber 18 the valve 20 would float against its seat and close the opening through the lower end of the tube, and thereby prevent the liquid from going any farther.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In valve mechanism for bottles, a bottle, a closure separating the body of the bottle from the neck, a tube passing through said closure and opening at its upper end above the closure into the neck of the bottle and opening at its lower end below the closure into the body of the bottle, valves operating to close the ends of the tube when the bottle is in an upright position and to open the ends when the bottle is in an inverted position, and a partition dividing said tube into a liquid-duct in its upper part communicating with the body of the bottle below said closure and an air-duct in its lower part communicating with the neck of the bottle above said closure.

2. In valve mechanism for bottles, a bottle provided with a recess in its base, a tube forming an air-duct leading from the exterior of the bottle and having its lower end corrugated and seated in said recess and provided with openings at said end to form communications between the air-duct and the interior of the bottle, and a valve controlling the passage through said air-duct.

3. In valve mechanism for bottles, a tube forming an air-duct leading from the exterior of the bottle and opening into the interior of the same, a valve-seat in said tube, a float-valve adapted to register with said valve-seat, a weight for forcing said valve onto its seat, and a conical-shaped chamber inclosing said valve and said weight.

4. In valve mechanism for bottles, a bottle, a tube forming a liquid-duct leading from the interior of the bottle to the neck of the same, a valve for controlling the passage through the outer end of the tube, a collar rotatable on the outer end of the tube, and a gate hinged to said collar for closing said valve.

5. In valve mechanism for bottles, a bottle, a tube forming a liquid-duct leading from the interior of the bottle to the neck of the same, a valve controlling the passage through the outlet of said tube, a collar having a weighted side rotatable on the outer end of the tube, and a gate hinged to said collar on the side opposite to that which is weighted and operating to close said valve.

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

DANIEL H. MONKS.

Witnesses:

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