

(No Model.)

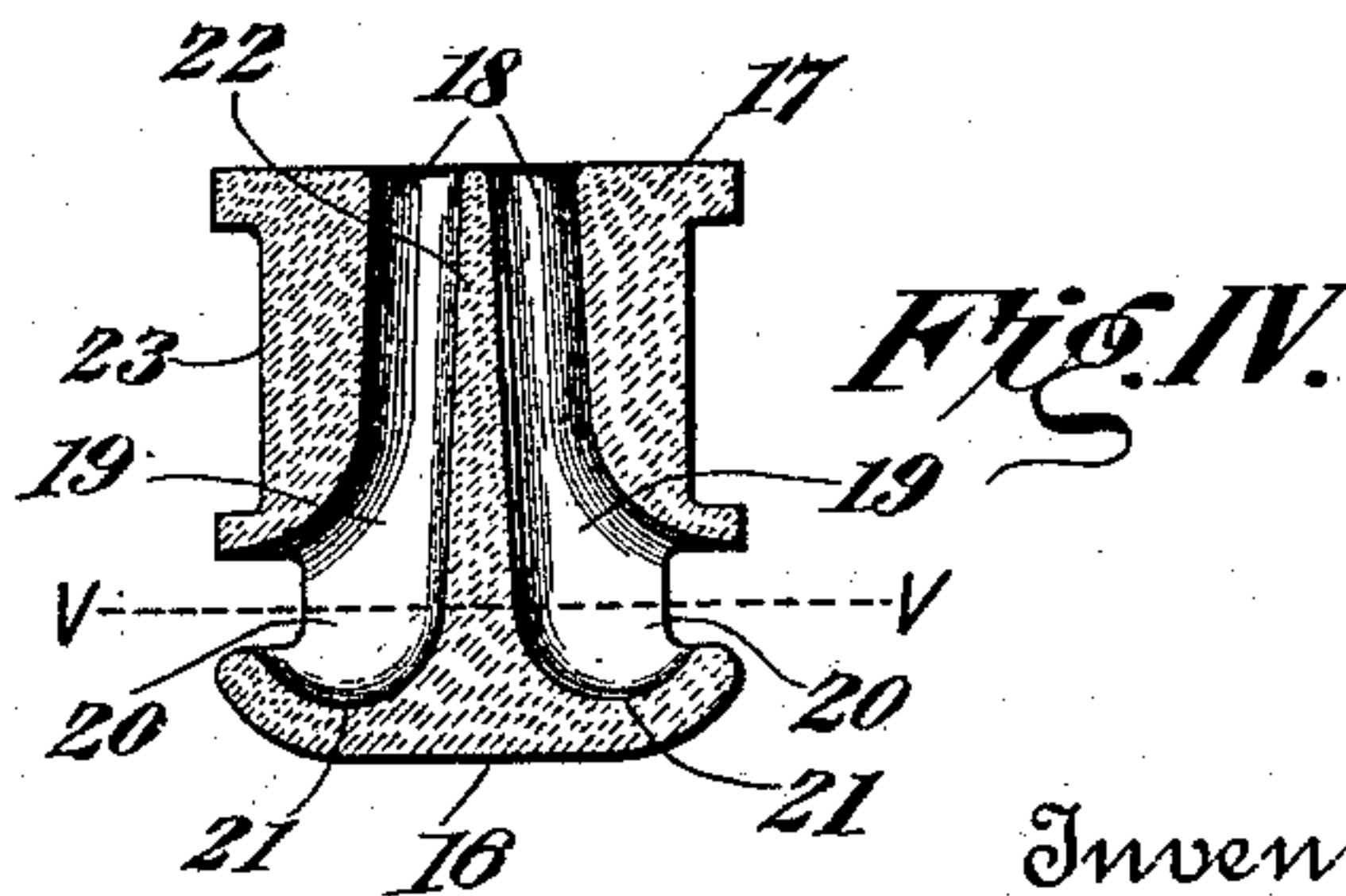
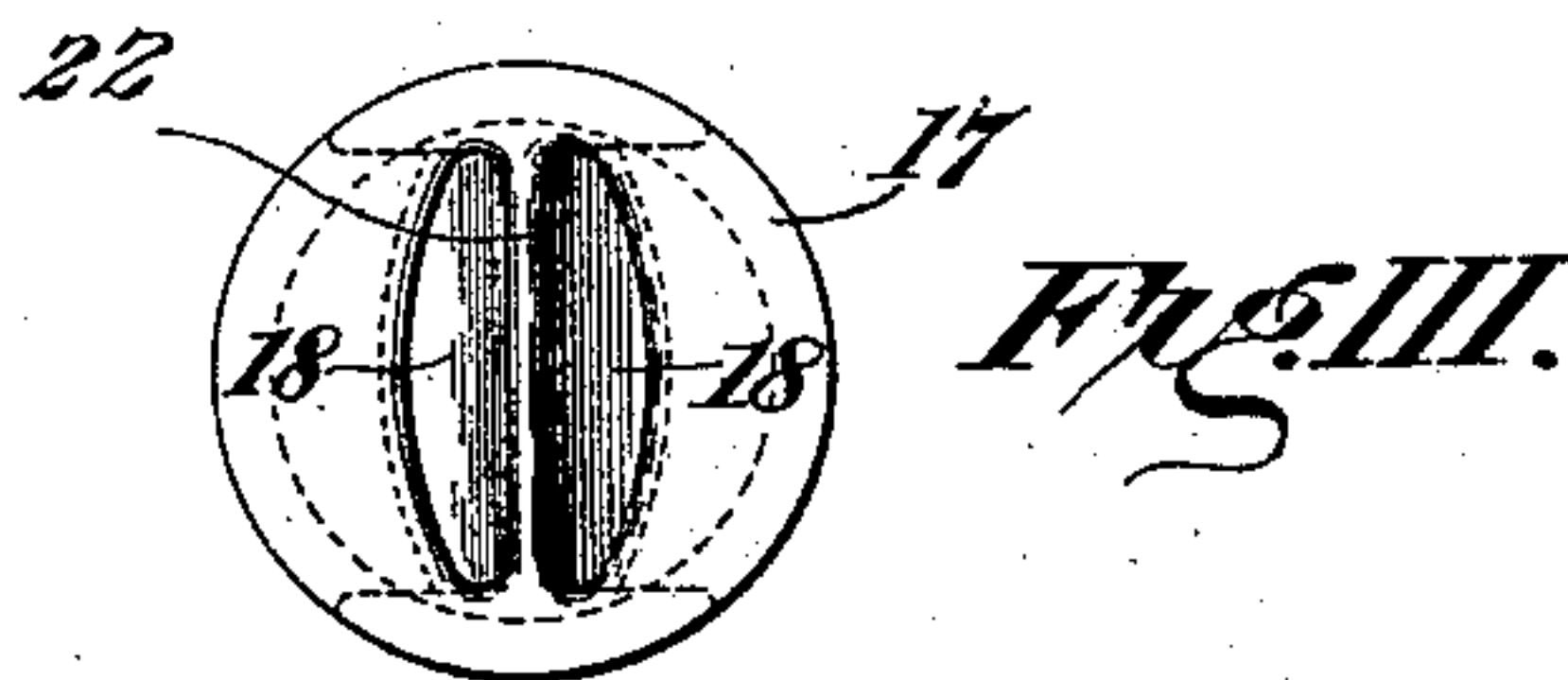
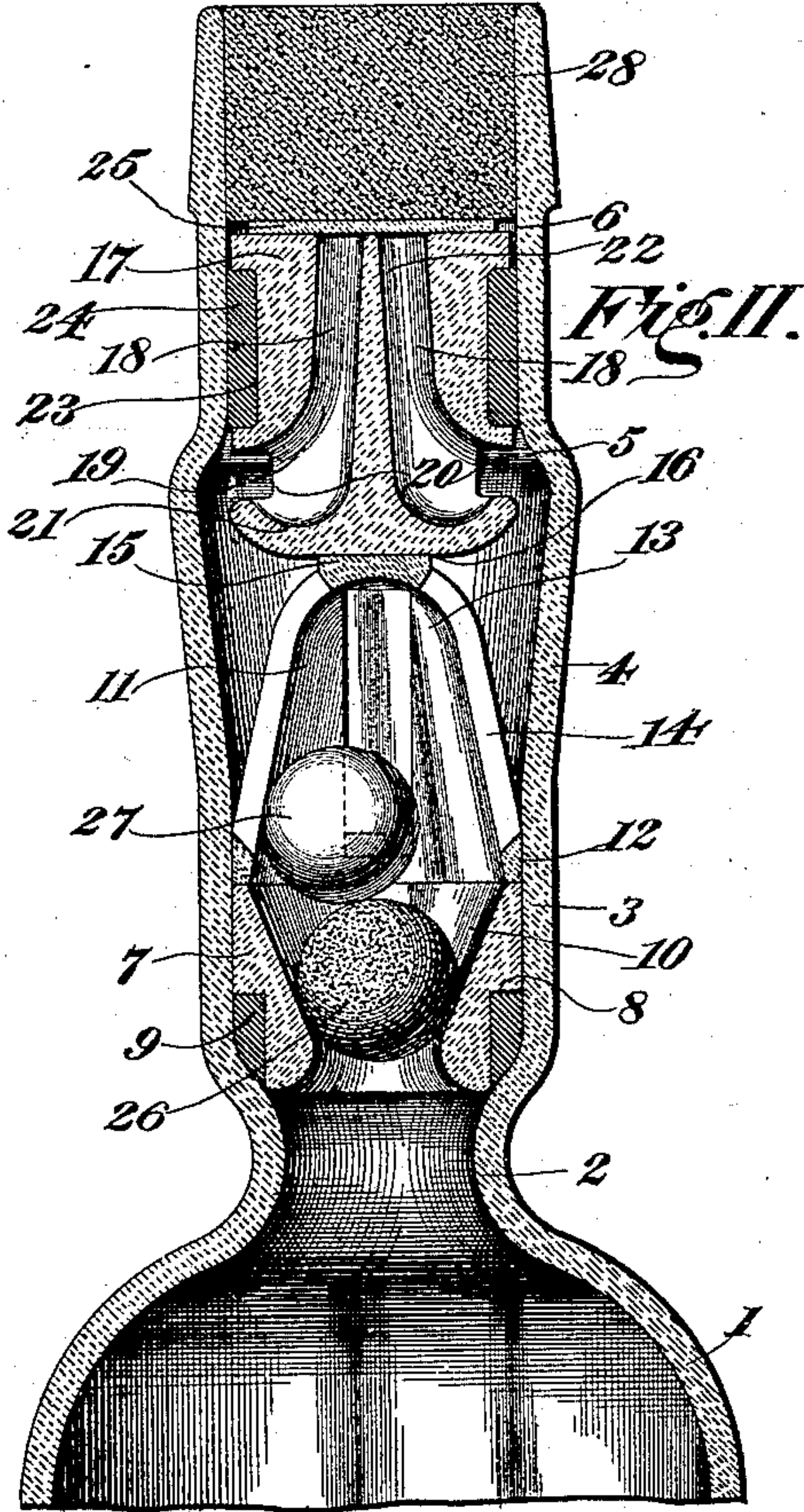
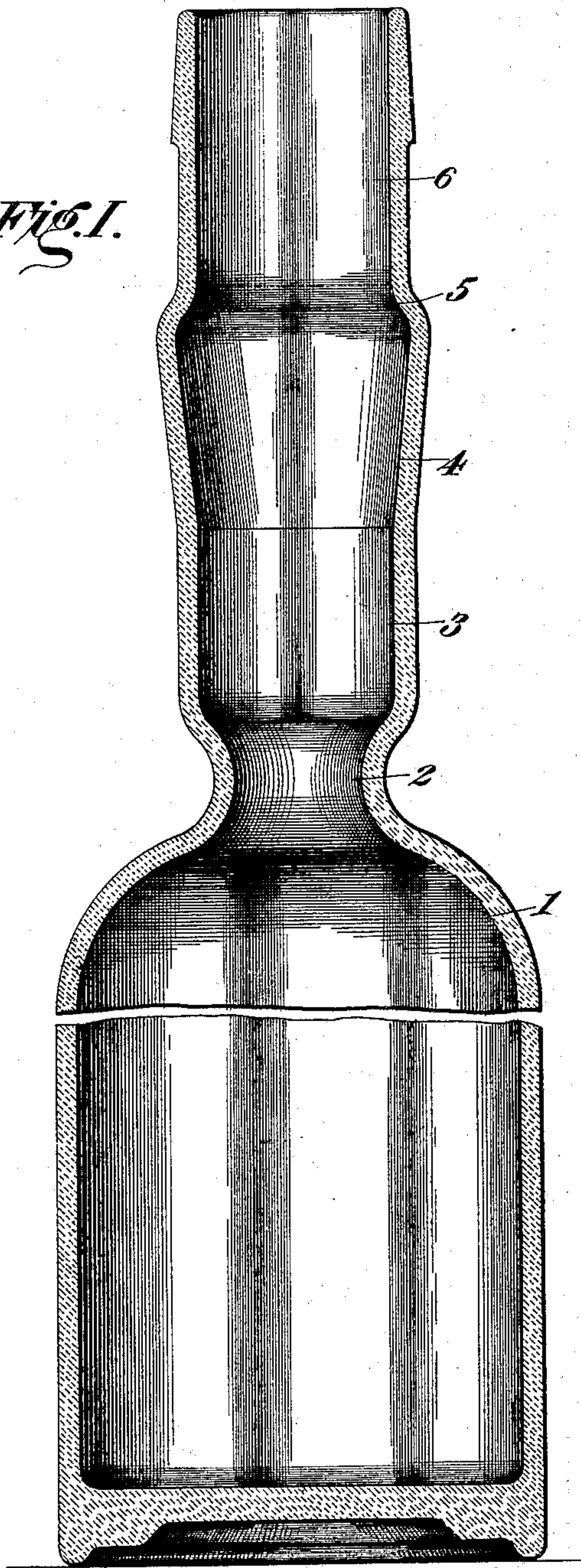
2 Sheets—Sheet 1.

J. H. McDONALD.  
NON-REFILLABLE BOTTLE.

No. 604,497.

Patented May 24, 1898.

Fig. I.



Witnesses

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(No Model.)

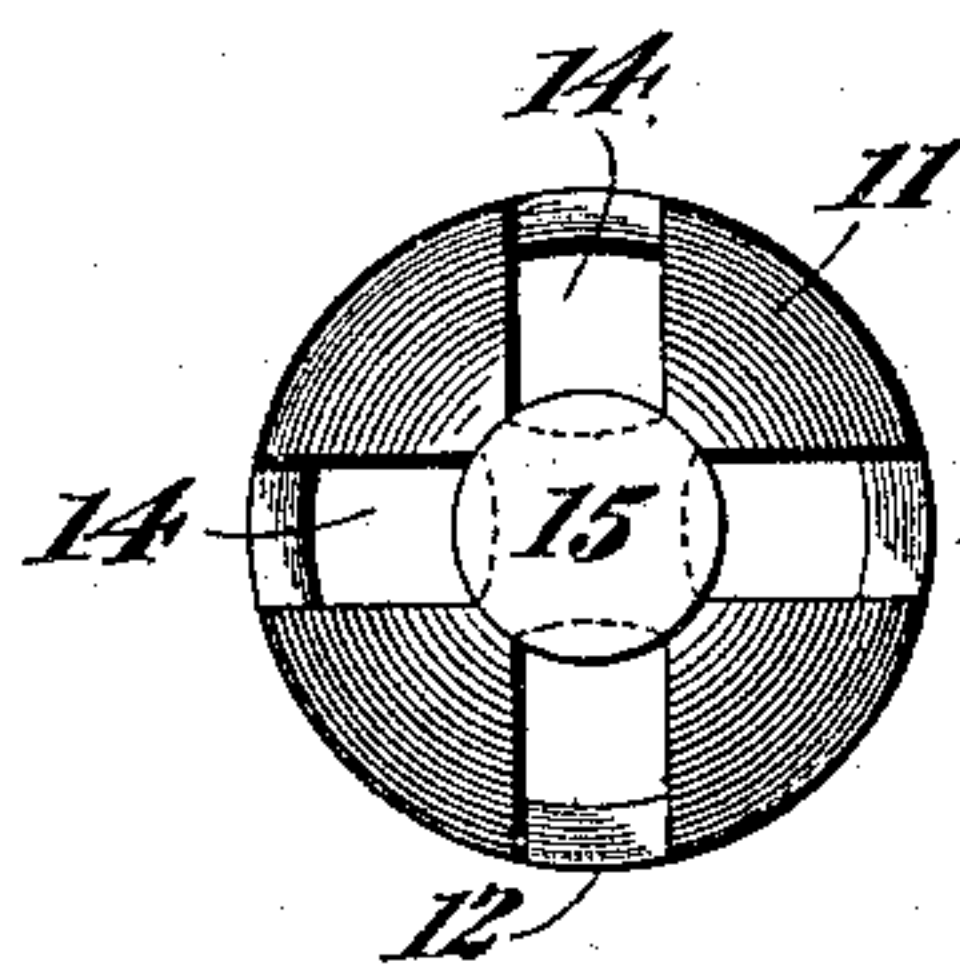
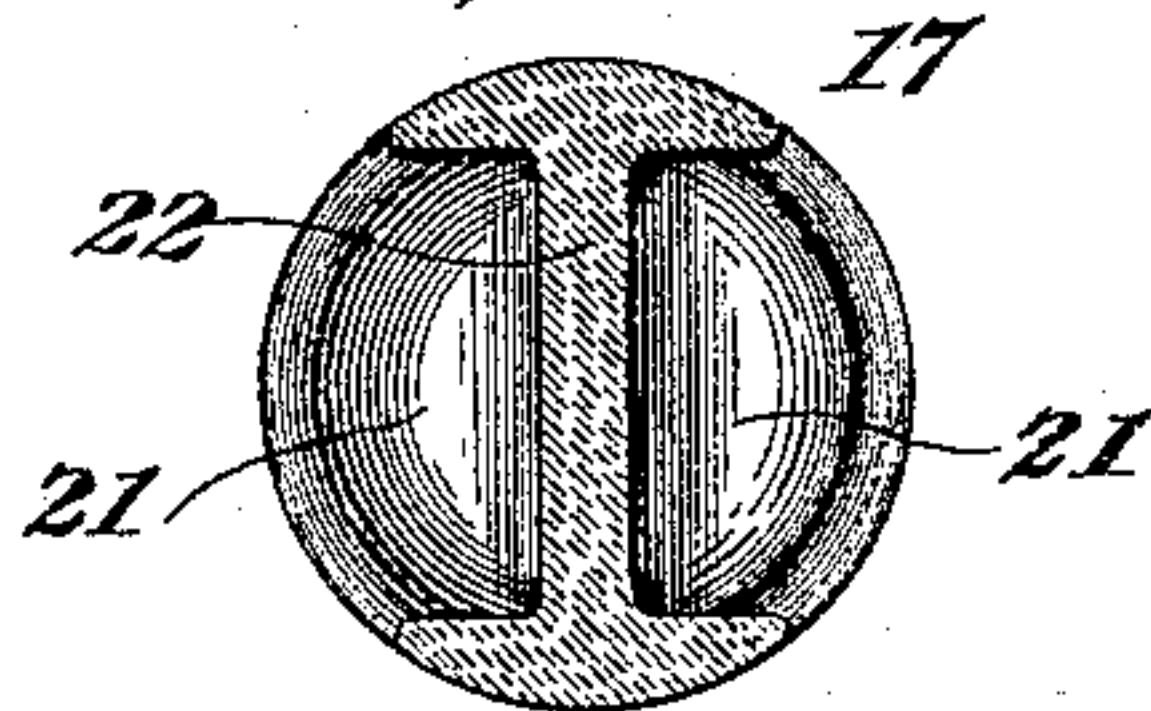
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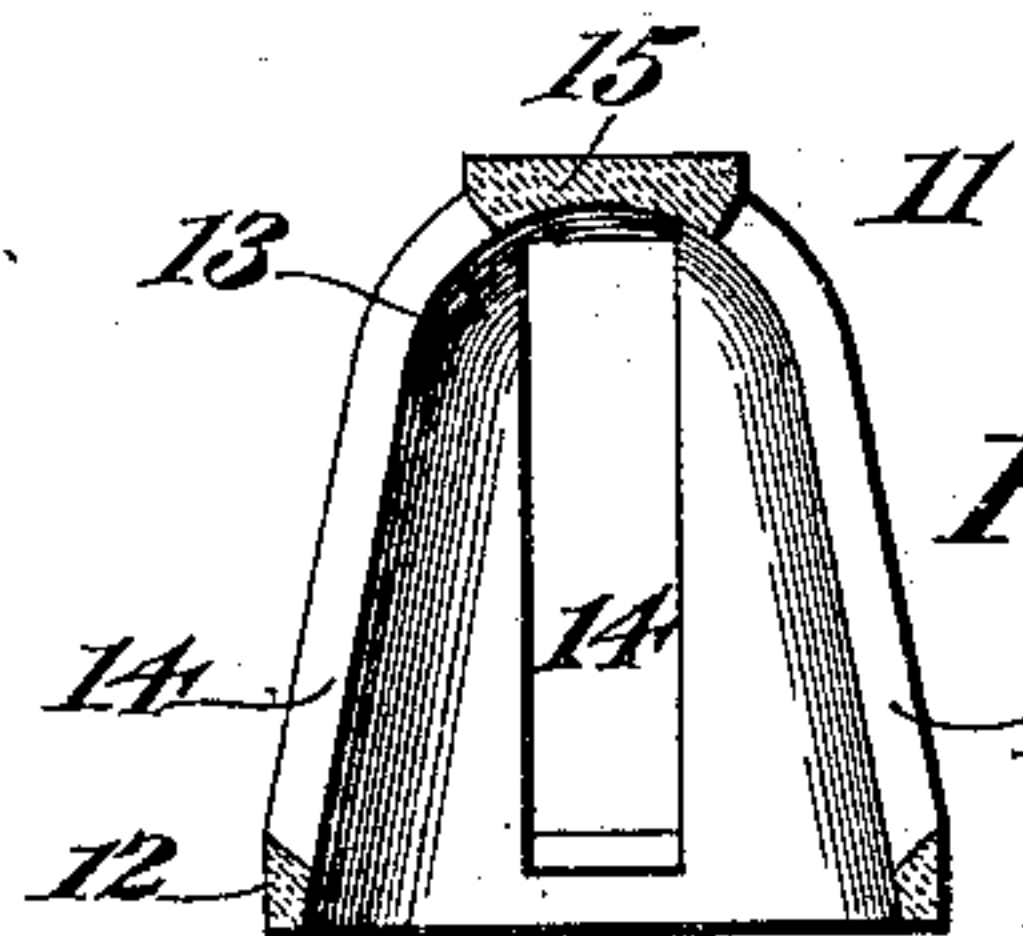
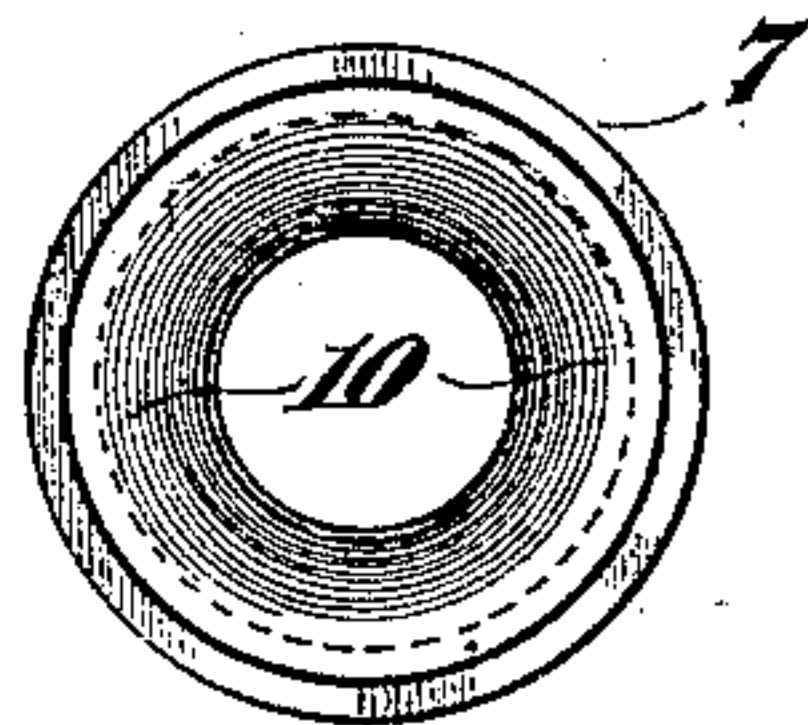
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*Fig. V.*



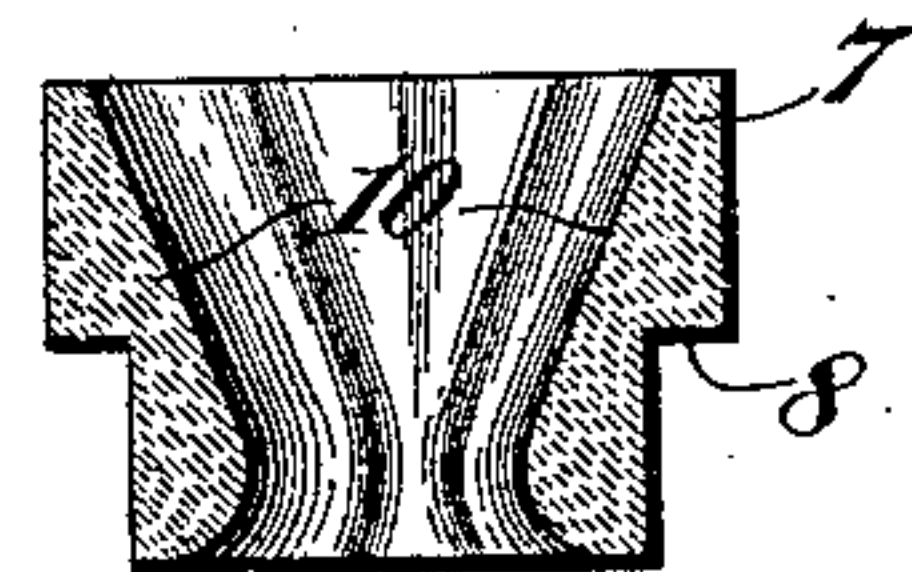
*Fig. VI.*

*Fig. VIII.*



*Fig. VII.*

*Fig. IX.*



Witnesses

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# UNITED STATES PATENT OFFICE.

JOSEPH H. McDONALD, OF NEW YORK, N. Y.

## NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 604,497, dated May 24, 1898.

Application filed February 8, 1897. Serial No. 622,422. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH H. McDONALD, of New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a complete specification, reference being had to the accompanying drawings.

The object of my invention is to produce a simple, efficient, durable, and cleanly bottle of that class known as "non-refillable" bottles, which cannot be filled by unauthorized persons or which having been once filled cannot be refilled without detection.

In the accompanying drawings, Figure I is a central longitudinal section of a bottle as made to contain my mechanism for preventing its being refilled. Fig. II is a similar view showing the mechanism in place. Fig. III is a top plan view of the tortuous-passage-defining plug. Fig. IV is a sectional longitudinal section of the same. Fig. V is a section on the line V V of Fig. IV. Fig. VI is a top plan view of the upper cone. Fig. VII is a longitudinal section thereof. Fig. VIII is a top plan view of the lower cone. Fig. IX is a longitudinal section thereof.

Referring to the figures on the drawings, 1 indicates the body of a bottle, of any preferred shape, size, and proportions.

2 is a constricted neck that defines a passage between the neck proper and the body of the bottle.

3 indicates a cylindrical portion of the neck surmounting the constricted portion 2.

4 indicates a downwardly-converging section of the neck, which is bounded in its upper part by a constricted shoulder 5, from which extends upwardly a terminal cylindrical section 6.

The parts above described constitute a preferable form of embodiment of my bottle and is clearly illustrated in Fig. I of the drawings.

A bottle of the shape described may be manufactured by any of the methods in ordinary use—as, for example, by blowing. Within the cylindrical portion 3 of the neck is first introduced the lower cone 7, which is preferably made of glass and which, being snugly fitted to the interior portion 3 of the neck, is rabbeted, as indicated at 8, to receive a compressible annular gasket 9. When the

cone 7 is inserted in place and urged down against the constricted wall 2 of the bottle-neck, the lower edge of the rabbet 8 is brought into contact with the walls of the neck, as shown in Fig. II, so as to protect the gasket from the liquid contained in the bottle.

The member 7 is called the "lower cone" on account of the shape of its interior bore, which is inversely conical.

Surmounting the lower cone 7 is an upper cone 11, whose lower outer cylindrical contour 12 fits within the upper portion of the cylindrical section 3 of the neck, its remaining contour within and without being substantially that of a cone, except that its upper part 13 is curved, as illustrated.

Apertures 14 are provided in its side walls for the egress of the liquid confined in the bottle. It is surmounted by a plane-face cap 15, against which abuts the flat bottom 16 of the tortuous-passage-defining member 17.

The upper and lower cones 7 and 11, with the balls hereinafter specified, constitute a preferred form of valve mechanism.

The member 17 is provided with longitudinal transversely-oblong passages 18, preferably two in number and of the form specially illustrated in Figs. III and IV. The lower ends 19 of the passages 18 open outwardly, as clearly shown in Figs. II and IV, and, being somewhat enlarged, are defined by constricted openings 20, which enter the neck of the bottle directly opposite the shoulder 5, formed therein. The preferred shape may be imparted to the openings 20 by the annular curved lower wall 21 of the member 17 and by rendering, as through the employment of a tapered septum 22, the axes of the respective passages downwardly divergent.

The body part of the member 17 is provided with an external annular groove or depression 23, designed to accommodate an annular gasket 24, which, fitting within the groove 23, serves, through compression against the wall of the section 6 of the bottle-neck, to confine the member 17 in place.

25 indicates a plate that surmounts and closes the upper ends of the passages 18.

All the parts above specified, except the gaskets 9 and 24, are preferably made of glass, so as to resist the attack of liquids designed to be inclosed in the bottle.



Within the space defined by the opposing cones 7 and 11 I provide two globes or balls 26 and 27. The former, which is designed to work exclusively in the conical chamber 5 10, is preferably made of cork, as it is both yielding and buoyant. The ball 27 is made of material of suitable ponderosity, preferably glass.

As illustrated in Fig. II, an ordinary cork 10 stopper 28 is shown as closing the upper end of the bottle-neck and confining the plate 25 in place, that representing the usual method of closing any bottle for transportation. The interposition of the glass plate 25 is preferred 15 to exclude the contents of the bottle from contact with the cork 28.

In practice the operation of my bottle is as follows: The bottle having been filled with liquid and the parts having been assembled, 20 as shown in Fig. II, the lower cone 7 in place against the constricted wall 2 of the neck, the cork ball 26 within the same, the glass ball 27 surmounting the ball 26 and both confined by the upper cone 11, and the upper 25 cone confined by the member 17, the contents of the bottle may be readily withdrawn by tilting the bottle to a required angle. An effort to refill the bottle when the parts are assembled, as illustrated, is prevented by the 30 seating of the ball 26 within the conical bore 10 of the lower cone 7. The ball 26 acting as a valve and the bore 10 as a valve-seat it effectually excludes the entrance of a liquid.

The conical shape of the upper cone 11 tends 35 to throw the weight of the ball 27 against the ball 26 and to force it in the bore 10 in any position, from the perpendicular to the horizontal, in which the bottle may be closed. If the bottle be tilted farther than the horizon- 40 tal position, liquid can be forced into it only by submersion, in which attempt the buoyancy of the ball 26 will interpose to prevent the entrance of the liquid.

To prevent the insertion of a picking instrument, the tortuous passages 18 are con- 45 trived.

The peculiar structure of the passages in the member 17 prohibits access to the valve mechanism of the bottle through the aid of a 50 picking-tool. Those passages are described as being enlarged at their lower ends 19, and the openings from them out of the lower ends

19 as being constricted. In consequence of the structural formation described the lower ends of the passages 18 curve upwardly to 55 reach the constricted openings 20. Consequently if a picking-tool be inserted, as it must be inserted, through a passage 18 it will in striking the bottom of the passage—that is to say, against the curved lower wall 21, 60 which defines the bottom of the passage—be guided upwardly, and any force exerted against the picking-tool will tend to drive it away from the valve mechanism instead of to- 65 ward it.

What I claim is—

1. The combination with a bottle, of a valve device comprising a lower conical section se- 70 cured within the neck of the bottle by engagement with its inner walls, a separate upper conical section also supported within the neck by engagement with its inner walls, and hav- 75 ing at its upper end a flat cap 15, and a buoyant and a ponderable ball within such sections, and a separate retaining element con- 80 fined within the bottle-neck by engagement with the inner walls thereof, and having a flat bottom which rests upon the cap of the upper section of the valve device, substan- 85 tially as set forth.

2. The combination with a bottle, its neck and valve mechanism, of a member confined within the neck above the valve mechanism, 90 passages through said member, enlarged portions in the lower end thereof, and constricted 85 openings from the enlarged portions into the neck, substantially as set forth.

3. The combination with a bottle, its neck, and the valve mechanism, of a tortuous-pas- 90 sage-defining member 17 confined within the neck of the bottle above the valve mechanism, and provided with two passages through it, such passages being separated by a septum 22, and enlarging toward their lower ends, 95 and constricted openings from the said en- larged portions of the passages into the neck of the bottle, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

JOSEPH H. McDONALD.

Witnesses:

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CHAS. A. WEBB.