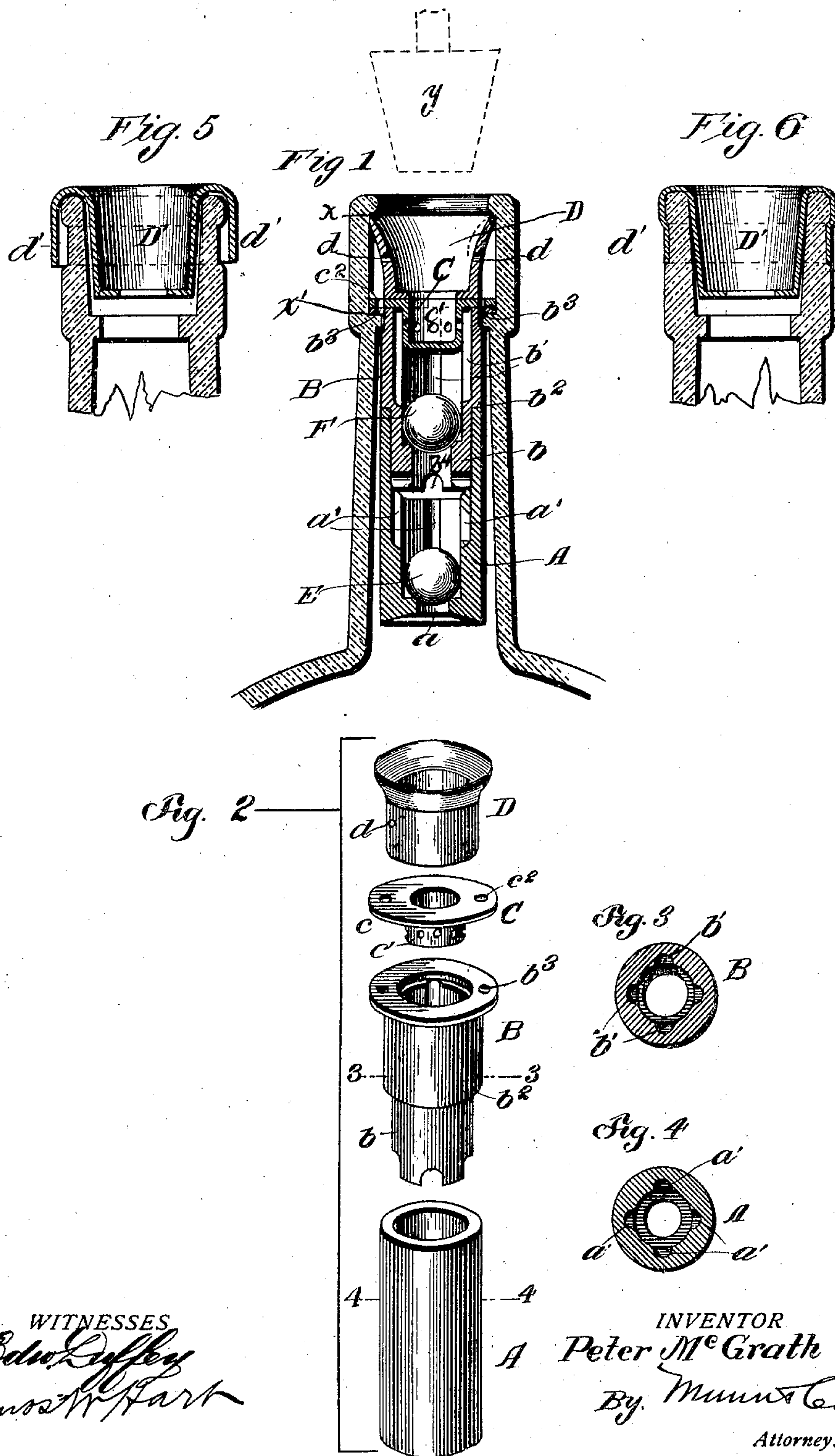


No. 770,095.

PATENTED SEPT. 13, 1904.

P. McGRATH.
NON-REFILLABLE BOTTLE.
APPLICATION FILED MAY 18, 1904.

NO MODEL.



WITNESSES
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PETER McGRATH, OF HIBBING, MINNESOTA.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 770,095, dated September 13, 1904.

Application filed May 18, 1904. Serial No. 208,545. (No model.)

To all whom it may concern:

Be it known that I, PETER McGRATH, a citizen of the United States, and a resident of Hibbing, in the county of St. Louis and State of Minnesota, have made certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

My invention is an improvement in that class of attachments for bottles adapted to render them non-refillable, the attachments including ball-valves which are adapted to assume different positions, according to the position in which the bottle is held, so as to allow or prevent escape of liquid.

A special feature of my invention is the employment, in connection with the valve attachment proper, of an expansible device by which such attachment is permanently secured in the neck of a bottle.

The details of construction, arrangement, and operation of parts are as hereinafter described, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal section of a bottle-neck having my improved attachment applied thereto. Fig. 2 is a perspective view of principal parts of the attachment disassociated or separated from each other, but arranged in the order or relation which they occupy to each other when duly adjusted in the bottle-neck. Figs. 3 and 4 are cross-sections on lines 3 3 and 4 4, respectively, of Fig. 2. Figs. 5 and 6 show a modification.

The several parts of the valve attachment proper are indicated by A B C and E and F. The part A is a cylinder whose lower end is provided with an opening *a* (see Fig. 1) and a seat for the lower ball or spherical valve E. In its lower half the cylinder has a series of internal longitudinal grooves *a'*. (See Figs. 1 and 4.) The upper portion of the cylinder A is chambered out to adapt it to receive and fit closely upon the reduced portion *b* of the cylinder B. The latter is provided, like the part A, with an opening *b'* and a seat for the ball-valve F. When the parts A B are placed together, as in Fig. 1, the upper end of the part A engages a shoulder *b''* of the part B. They may be secured together by solder or compression or other means. The upper por-

tion of the valve-holder B is enlarged interiorly and provided with a series of vertical grooves or passages *b'*, and its upper edge is constructed with a lateral flange which rests upon the shoulder *a'*, Fig. 1, formed in the bottle-neck. The said flange is provided with holes *b''*, as shown. A cap C, having a lateral flange *c*, is supported upon the flange of part B, and the central depressed portion *c'* of said cap is provided with a series of holes. The part D holds the valve attachment proper permanently in place, its upper flared end engaging the upper shoulder *a* of the bottle-neck, as will be presently explained. It is apparent that when the bottle is placed in vertical position, as indicated in Fig. 1, the valves E F will seat, as shown by full lines, and close the openings *a b'*, respectively, so that no liquid can enter. In this position also they exclude admission of air. If, however, the bottle be duly inclined, the balls E F will roll into the upper enlarged chambers of the cylinders A and B, so that the liquid contents of the bottle may run through the openings *a b'*, around the valves E F, and through the grooves *a' b'* and the openings in the cap C, and thus out through the holder D.

In order to refill the bottle, it must be held in such position that the valves E F will be unseated, admission of air being provided for by holes *d* in holder D and coincident holes *c''* and *b''* in the respective flanges of the parts C and B. It will be seen that the cap C is so constructed and located that it will effectually prevent the introduction of any form of instrument which could be employed to displace or interfere with the automatic action of the valves E F for the purpose of refilling the bottle surreptitiously. In brief, the bottle could only be refilled by entirely detaching the part D, which would permit a removal of the valve attachment proper.

The part D has practically the form of a tapered thimble, its lower end being provided with an opening to permit passage of liquid. The part D is constructed of sheet metal having due flexibility, so that when duly adjusted in the neck of the bottle between the shoulders *a* and *a'* thereof it may be expanded or widened laterally, so as to engage the upper shoulder

while its lower end bears upon the cap C. Before insertion of D in the bottle-neck its top diameter is necessarily less than that of the latter, as indicated by dotted lines, Fig. 1, and it is then expanded by a suitable device Y, which is practically a tapered former, so that its upper edge passes beneath and permanently engages the shoulder of the bottle-neck.

10 In Figs. 5 and 6 I show a modification in the form and attachment of the thimble or holder for the valve attachment proper. The bottle-neck has a circumferential exterior groove, and the thimble D' is provided with a flange d', which is extended and curved over the bottle-mouth and then crimped or spun into the groove, so that the thimble is held securely in place.

What I claim is—

20 1. The combination, with a bottle-neck, of a valve attachment comprising two cylinders secured together in alinement and provided with bottom openings, spherical valves held in the respective cylinders, a cap placed upon the upper cylinder and provided with open- 25 ings for passage of liquid, and a fastening device comprising a ferrule formed of flexible metal, substantially as described.

30 2. The combination, with a bottle-neck having an internal shoulder at its upper end, of a valve attachment comprising a valve-holder having a perforation in its lower end and an adjacent valve-seat, its upper portion being enlarged, and a spherical valve arranged in said holder and having less diameter than the 35 upper chamber of the holder, an apertured

cap arranged at the upper end of the valve-holder, and a device interposed between the said cap and the shoulder of the bottle-neck for holding the valve attachment in due position, substantially as described. 40

3. The combination, with a bottle-neck, a valve attachment and means for securing the same in the bottle-neck, of a cap which is provided with apertures for the passage of liquid 45 and is interposed between the said valve attachment and the means for securing it, substantially as described.

4. The combination, with a bottle-neck, of a valve attachment comprising cylinders arranged in alinement, and provided with bottom openings and valve-seats, and chambers in their upper portions, spherical valves arranged in said cylinders, a cap placed upon the upper cylinder and having a lateral flange and 55 a pendent body portion provided with perforations, and a device for holding the valve attachment in the bottle-neck, substantially as described.

5. The improved attachment for rendering 60 a bottle non-refillable, the same comprising a cylinder having an opening in its lower end and an adjacent valve-seat, a spherical valve arranged therein, a perforated cap adapted for application to the upper end of the cylinder, and a device adapted to bear upon the cap for holding the valve attachment proper in place, substantially as described. 65

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