

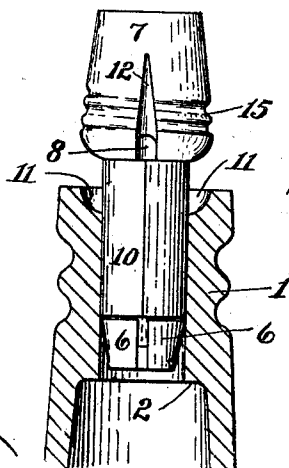
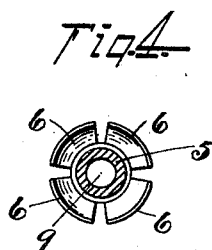
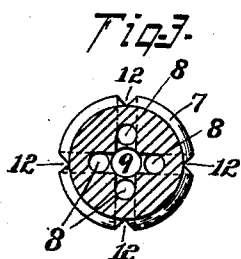
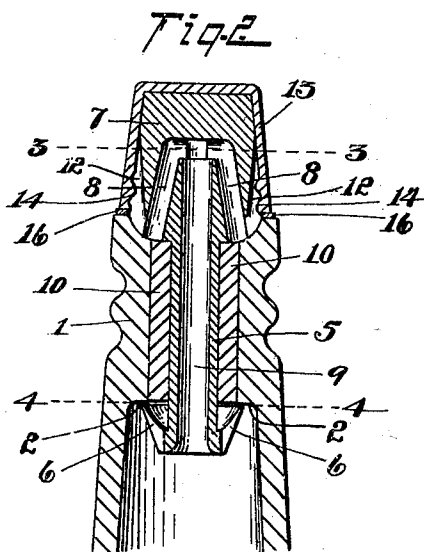
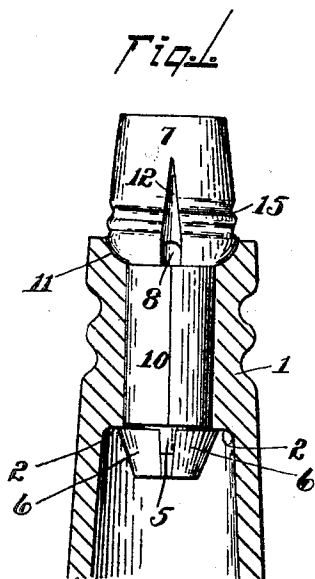
No. 697,798.

Patented Apr. 15, 1902.

A. J. BROOKS.
NON-REFILLABLE BOTTLE.

(Application filed Jan. 22, 1902.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALFRED J. BROOKS, OF PROSPECT PARK, PENNSYLVANIA, ASSIGNOR OF ONE-FIFTH TO GEORGE L. HUSBAND, OF PHILADELPHIA, PENNSYLVANIA.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 697,798, dated April 15, 1902.

Application filed January 22, 1902. Serial No. 90,800. (No model.)

To all whom it may concern:

Be it known that I, ALFRED J. BROOKS, a citizen of the United States, residing at Prospect Park, Delaware county, State of Pennsylvania, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1 is an elevation, the bottle being in section. Fig. 2 is a view similar to Fig. 1, but showing the stopper in section and the cap in place. Figs. 3 and 4 are respectively full horizontal sections on lines 3-3 and 4-4, Fig. 2. Fig. 5 is a view similar to Fig. 1, but showing the stopper partly inserted in the bottle-neck.

The object of my invention is to provide a stopper device for bottles which shall be of comparatively simple construction, and while permitting the liquid contents of the bottle to be readily poured out when desired will practically prevent the refilling of the bottle either by the removal of the stopper or by way of the openings thereof.

The leading feature of the invention comprises, in combination with a bottle having an internal shoulder or offset in or adjacent to the inner end of the neck thereof, a stopper having at one end one or more laterally contractible and expansible arms or prongs whose free ends are adapted to extend out a short distance beyond the inner wall of the bottle-neck, and having at the other end an enlargement whose base portion is of greater diameter than the opening in said neck, which enlargement is provided with two or more ducts or passage-ways that extend from a point in the interior of said enlargement where they communicate with each other toward the base portion of the latter, together with a longitudinal passage-way in the stopper that communicates between said ducts and the interior of the bottle, the construction being such, as hereinafter described, whereby when the stopper, which is also provided with a packing around the body portion, is suitably forced into the neck of the bottle the said arms will thereby be caused to contract, and when it (the stopper) has entered the said neck to the full extent the arms will automatically expand and engage

the said offset or shoulder of the bottle, thus preventing the extraction of the stopper, the construction being such, as hereinafter described, that the bottle being held at the proper angle the contents will readily flow out by way of the said longitudinal passage-way and one or more of the ducts of the stopper.

Another feature of the invention comprises the combination, with the stopper and bottle, of means for preventing the accidental escape of the liquid.

Other features of the invention relate to certain details of construction hereinafter pointed out.

Referring now to the accompanying drawings, 1 designates the neck portion of a bottle, which is provided with an internal offset or shoulder 2 adjacent to the inner end of the neck.

The stopper comprises a body portion 5, having at one end one or more laterally-resilient prongs or arms 6, whose free extremities are adapted to extend normally a short distance beyond the inner wall of the neck of the bottle to which the stopper is to be applied, also a head or enlargement 7 at the opposite end, which, or its base portion, is of somewhat greater diameter than that of the interior of the said neck. This enlargement is provided with two or more—in the present instance four—passage-ways or ducts 8, that extend from a point within the enlargement where they communicate with each other to or adjacent to the base of the latter, where they open out—that is, the said ducts extend downwardly at an acute angle to the major axis of the stopper. The stopper has also a longitudinal passage-way 9, that communicates with the ducts 8 where the latter join, as seen in Figs. 2 and 3. Encircling the body portion of the stopper is an annular packing 10, of cork or other suitable yielding or elastic material. The base of the enlargement 7 is adapted to seat upon the top of the bottle-neck when the stopper is applied to the bottle. Usually I prefer to make that part of the neck of dished form—that is, with an annular depression 11 below the top of the neck—and the base of the said enlargement of corresponding form, as shown. The distance

from the said seat and the shoulder 2 must be somewhat less than the distance from the base of the stopper to the free end of the arms 6. I generally prefer to have four of these arms 6 equidistant and to make the same tapering and backwardly projecting, as shown, in order to facilitate the insertion of the stopper into the bottle-neck.

Having described the construction of the more important features of my invention, I shall now explain the mode of operation thereof, as follows: The bottle having been charged with the desired liquid, the end of the stopper having the arms 6 is applied to and forced into the neck, thereby pressing the free ends of said arms inwardly until the latter are brought below the shoulder 2 of the bottle, when they immediately expand, and so project beyond the edge of the shoulder. At about the same time the base of the enlargement 7 will have stopped against the top of the bottle-neck, as seen in Figs. 1 and 2. It is of course to be understood that the arms 6 and their connection with the stopper shall be capable of resisting any force that may be applied to the stopper in the attempt to withdraw it. In other words, the strength should be such that the application of such force would fracture the bottle before these arms would give way or yield, except to spread outwardly to a certain extent.

The purpose of the packing 10 is to form a tight joint to prevent the escape of the contents of the bottle between the body of the stopper and the side of the bottle-neck; but other means may be employed for securing such joint.

In the present instance, the spring-arms 6 being integral with the stopper, the packing 10 is made in longitudinal halves fitted over the body of the stopper, as shown. The said arms may, however, be made separately from the stopper and securely fastened to the end of the latter, in which case the packing may be an integral annulus or sleeve slipped onto the stopper before the arms are attached thereto.

In order to draw the liquid from a bottle equipped with my improved stopper, the bottle is tipped over at a suitable angle with one or more of the ducts 8 on the lower side, unless there be but two, in which case there would be one only on that side, whereupon the liquid will flow out by way of the passage-way 9 and the duct or ducts on the under side, the air necessary to permit the flow of the liquid entering by way of the other duct or ducts, as the case may be. When there are more than two of the said ducts 8, it is preferred to arrange them equidistantly; but if there be but two I prefer to arrange them in planes at right angles to each other.

I usually make in the side of the head or enlargement 7 of the stopper longitudinal grooves or channels 12, one for each of said ducts, that communicate with the latter near the base of the enlargement. The object of

these grooves or channels 12 is to direct the liquid flowing out of a duct or ducts toward the end of the stopper, so that it will pour in a narrow stream instead of spreading over the end of the stopper, as would be the case if the said grooves or channels were dispensed with. The lateral openings of the ducts being in this instance adjacent to the base of the enlargement 7, which latter seats in the depression 11 in the bottle-neck, the liquid from the ducts 8 will be better deflected into the grooves 12 by the side wall of said depression. Also by having the outer ends of said ducts covered by the seat of the base of the enlargement 7, leaving a lateral exit-opening only, the refilling of the bottle by the insertion of a tube by way of one of the said ducts into the passage-way 9 is rendered practically impossible.

In order to prevent the accidental escape of the liquid contained in the bottle, I employ suitable means—such, for example, as a cap 13, Fig. 2, that is provided with internal screw-threads 14, which are adapted to engage corresponding threads 15, Figs. 1, 2, and 5, of the periphery of the enlargement 7. When the cap is screwed down on the latter, its annular end bears against the top edge of the bottle-neck, or rather against an interposed packing or gasket 16, as seen in Fig. 2.

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

1. In combination with the bottle having the internal shoulder or offset, the stopper having one or more laterally expandible and contractible arms at its inner end adapted to engage said shoulder, and having at its outer end the enlargement whose base is adapted to seat upon the top portion of the neck of the bottle, which enlargement is provided with two or more communicating ducts extending from a point in the interior of the latter toward the base thereof, and the longitudinal passage-way communicating with said ducts and with the interior of the bottle, together with means for preventing the escape of the contents of the bottle between the body of the stopper and the neck of the bottle, substantially as and for the purpose set forth.

2. In a stopper for bottles of the character described, the combination of one or more laterally contractible and expandible arms on one end of the stopper, an enlargement on the other end thereof whose base is adapted to seat on the neck of the bottle, two or more communicating ducts extending from a point in the interior of said enlargement toward the base thereof, and a longitudinal passage-way in the stopper communicating with said ducts, together with the packing around the portion of the stopper between said arms and said enlargement, substantially as and for the purpose set forth.

3. In combination with the bottle having the internal shoulder or offset, the stopper having one or more laterally contractible and

expansible arms on its inner end adapted to engage said shoulder, and having at its outer end the enlargement whose base is adapted to seat upon the top of the neck of the bottle, and having also the communicating ducts extending from a point in the interior of said enlargement toward the base thereof, the longitudinal passage-way leading from said ducts to the interior of the bottle and the packing encircling the body portion of the stopper; together with the cap for preventing the escape of the contents of the bottle, substantially as and for the purpose set forth.

4. In a stopper for bottles of the character described, the combination of one or more laterally contractible and expansible arms on one end of the stopper, an enlargement on the other end thereof adapted to seat upon the top of the neck of the bottle, two or more communicating ducts extending from a point in the interior of said enlargement toward the base thereof, a longitudinal passage-way of the stopper communicating with said ducts, a suitable packing encircling the body portion of the stopper, together with the longitudinal grooves or channels of the said enlargement communicating with said ducts respectively substantially as and for the purpose set forth.

5. In a stopper for bottles of the character recited, the combination of the elastic contractible and expansible backwardly-projecting and tapering arms on one end of the stopper, the enlargement on the other end

thereof, the ducts extending backwardly and outwardly from a point in the interior of said enlargement where they communicate, the longitudinal passage-way leading from the said ducts where they communicate, and the packing around the body portion of the stopper, substantially as and for the purpose set forth.

6. In combination with the bottle having the internal shoulder or offset, and the depression in the top of the neck thereof, the stopper having one or more laterally expansible and contractible arms at its inner end adapted to engage said shoulder, and having at its outer end the enlargement whose base portion is adapted to seat in the said depression of the bottle-neck, which enlargement is provided with two or more communicating ducts extending from a point in the interior of the latter to the base thereof, the longitudinal passage-way leading from said ducts to the interior of the bottle and the packing or the like for preventing the escape of the contents of the bottle between the body of the stopper and the neck of the bottle, substantially as and for the purpose described.

In testimony whereof I have hereunto affixed my signature this 31st day of December, A. D. 1901.

ALFRED J. BROOKS.

Witnesses:

ANDREW V. GROUPE,
WALTER C. PUSEY.