

UNITED STATES PATENT OFFICE.

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BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 589,505, dated September 7, 1897.

Application filed May 5, 1897. Serial No. 635,109. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. JOHNSON, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a specification.

This invention relates to improvements in bottle-stoppers; and it has for its main object the provision of an improved closing device, by means of which the openings in the necks or bodies of bottles, flasks, jugs, and similar vessels may be sealed securely, but in such a manner that the stopper may be removed readily for the purpose of emptying or filling the vessel.

My improved stopper, which is simple in construction and may be manufactured at a very low cost, comprises as its essential features an externally-threaded body portion and a cap, the body portion of the stopper being intended to be screwed into the opening in the neck or other portion of the bottle or other receptacle and held firmly in place by internal threads formed in the inner side of such neck, a suitable packing being employed for closing the space between the stopper and the neck to make the closure air-tight.

In the drawings accompanying and forming part of this specification, Figure 1 is a sectional side elevation of a portion of a bottle and stopper embodying my invention. Fig. 2 is a similar view illustrating a modification of the device. Fig. 3 is a longitudinal section of the bottle-neck, illustrating another form of stopper which may be employed in conjunction therewith; and Fig. 4 is a view similar to Fig. 3, illustrating still another modification of the closing device.

Similar characters designate like parts in all the figures of the drawings.

B designates in a general way the body of a bottle to which in the present case my invention is applied; but I wish it to be understood that I do not limit myself to the use of a closing device in connection with a bottle or any other special form of receptacle, as it will be obvious that it is applicable as a closing device for all kinds of vessels. The neck of this bottle or vessel is designated by 2 and is of the usual form, but it will be appar-

ent that as to the exterior thereof the particular construction of this neck is immaterial. The principal features of the neck are the flared portion *t* and the internal threads 3, which extend substantially from the outer edge of the neck for a considerable distance thereinto, these threads being formed, when the containing vessel is of glass, by molding during the construction of the receptacle.

The stopper which I prefer to employ is illustrated at *s* and comprises a head 4, a neck 5, and a body portion 6, externally threaded and of such a size as to entirely fill the opening in the neck of the bottle when screwed thereinto to seal the opening.

For the purpose of making the joint airtight I have illustrated at *r* a flexible packing-ring, preferably of rubber, which, when placed between the under side of the head of the stopper and the outer end of the neck of the bottle and the stopper is screwed into place, will spread, extend into the flared portion *t*, and completely exclude the air from the opening in the neck.

In Fig. 2 is illustrated a modification of the invention, in which the neck of the bottle and the threads thereof are similar in construction to those shown in Fig. 1, the stopper and the packing-ring being somewhat modified in form. Here the stopper consists only of a head 4 and a body portion 6', threaded throughout its entire length and having an internally-threaded packing-ring *r'* screwed onto the body 6', instead of being merely inserted in place by sliding the same along the body of the stopper, as is the case in Fig. 1. Moreover, in Fig. 2 the packing-ring is so shaped as to have a depending portion 7', adapted to fill the space between the body of the stopper and the upper inner edge of the opening in the neck of the bottle, so as to form an air-tight joint.

In Fig. 3 I have illustrated another modification of the invention, in which the neck and the internal threads 3 of the bottle are similar to the construction shown in Figs. 1 and 2. The body of the stopper is somewhat similar to that shown in Fig. 1, but, as illustrated at 6'', is of smaller diameter for the same size of opening in the neck of the bottle and does not entirely fill such opening.

For the purpose of closing the space between the stopper-body and the inner wall of the opening in the bottle-neck I prefer to combine with a packing-ring r'' , which is adapted to close the space between the under side of the head of the stopper and the outer end of the bottle-neck in the same manner as has been described with reference to the preceding figures, an inclosing thimble $8''$, preferably integral with the ring r'' and extending around and completely inclosing the body portion $6''$ of the stopper. This packing-ring and thimble will usually be molded onto the stopper-body, so as to form therewith a unitary device, although, of course, it may be separate therefrom.

A packing-ring and a thimble or sleeve formed in the manner just mentioned are illustrated in Fig. 4, in which the neck of the bottle and the stopper are substantially similar to the corresponding parts represented in Fig. 3, the body of the stopper $6'''$ being of less diameter than the internal diameter of the opening in the bottle-neck. The packing-ring and the thimble (designated in this view by r''' and $8'''$, respectively) are formed in one piece and inserted into the neck of the bottle before the stopper is screwed into position. When the stopper is so operated, however, it will be apparent that the material of the sleeve $8'''$ will be forced into the grooves in the threaded portion of the neck and in the body of the stopper and the closure of the opening thereby effected.

Any suitable material may be employed to form the packing between the head of the stopper and the outer end of the neck of the bottle and for inclosing the body of the stopper; but I prefer to make use of some elastic material, such as soft rubber, which I deem suitable for this purpose. The stopper employed in connection therewith will, of course,

be of some suitable inelastic substance, such as glass or hard rubber.

Having described my invention, I claim— 45

1. The combination, with a bottle having an internally-threaded neck, with a flared extreme outer end, of an externally-threaded stopper adapted to be screwed into said neck; and a relatively thick flexible packing-ring encircling the stopper and normally filling the space between the under side of the head of the stopper and the outer end of the neck of the bottle and extending into the flare of the neck of said bottle. 50 55

2. The combination, with a bottle having an internally-threaded neck with a flared extreme outer end, of an externally-threaded stopper adapted to be screwed into said neck; and a combined relatively thick flexible packing-ring and relatively thin sleeve, the former encircling the stopper and normally filling the space between the under side of the head of the stopper and the outer end of the neck of the bottle and extending into the flare of the same, and the latter surrounding the threaded portion of the stopper. 60 65

3. The combination, with a bottle having an internally-threaded neck with a flared extreme outer end, of an externally-threaded stopper adapted to be screwed into said neck; and a combined relatively thick flexible packing-ring and relatively thin thimble, the former encircling the stopper and normally filling the space between the underside of the head of the stopper and the outer end of the neck of the bottle and extending into the flare of the same, and the latter completely inclosing the threaded portion of the stopper. 70 75

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(No Model.)

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BOTTLE STOPPER.

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Fig. 1.

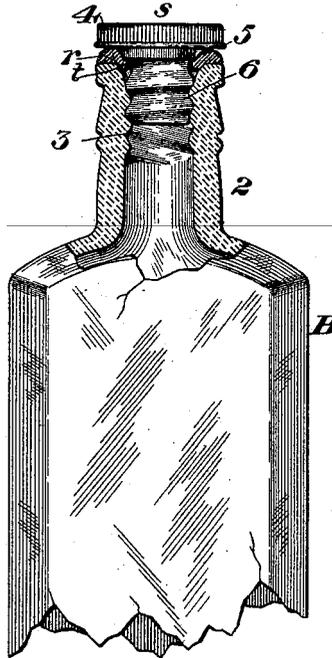


Fig. 3.

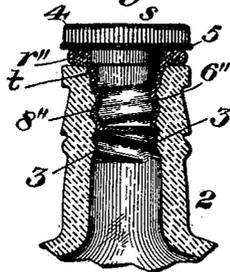


Fig. 4.

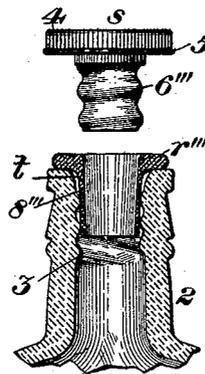
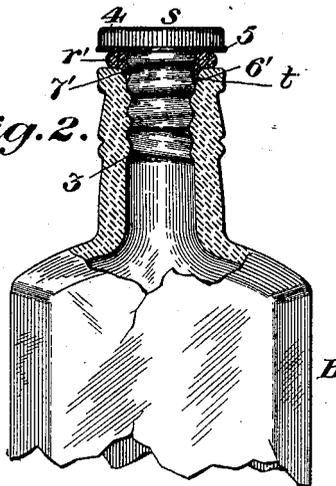


Fig. 2.



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