

(No Model.)

D. F. DOODY.
BOTTLE STOPPER.

No. 508,509.

Patented Nov. 14, 1893.

Fig. 1

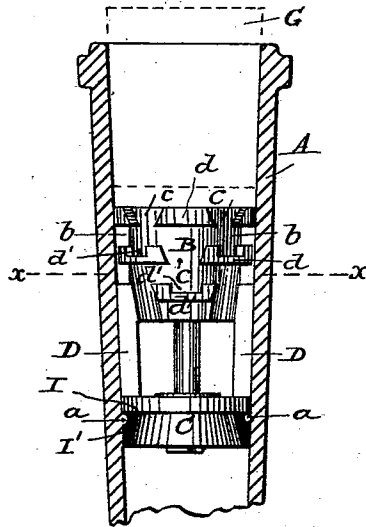


Fig. 3

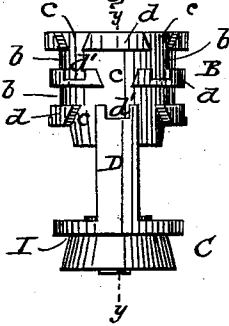


Fig. 2

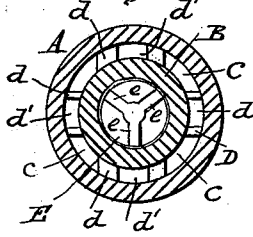


Fig. 4

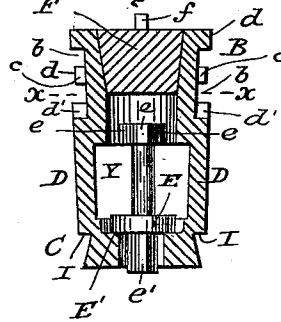
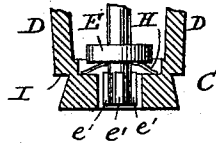


Fig. 5.



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UNITED STATES PATENT OFFICE.

DANIEL F. DOODY, OF BROOKLYN, NEW YORK.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 508,509, dated November 14, 1893.

Application filed March 23, 1893. Serial No. 467,314. (No model.)

To all whom it may concern:

Be it known that I, DANIEL F. DOODY, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a specification.

The object of my invention is to provide a plug or stopper for bottles, jugs, demijohns, &c., which while permitting the free discharge of their contents prevents the refilling thereof. To accomplish this I provide a plug or stopper to be placed in the neck of the bottle, sufficiently far below its mouth to allow room for an ordinary cork.

The details of construction and operation of my invention are set forth in the following description and in the accompanying drawings, of which—

Figure 1 is a detailed view of the neck of a bottle or other vessel in section, showing my improved device secured therein. Fig. 2 is a transverse section through my improved plug or stopper on the lines *x x* of Figs. 1 and 4. Fig. 3 is a detailed view of the plug at right angles to that of Fig. 1. Fig. 4 is a longitudinal section of the same on the line *yy* of Fig. 3, and Fig. 5 a detailed view of the valve with a washer.

A indicates the neck of the bottle or other vessel having at a suitable distance below or within its mouth, an annular rib *a* which serves to permanently secure the plug within the neck of the bottle as hereinafter described.

The plug, which may be made of one piece of glass or other suitable material, and is provided with a valve that permits the discharge of the contents of the bottle, but prevents its refilling, may be constructed substantially as shown and as follows:—It consists of two hollow cylindrical or tapering portions B C according as the interior of the neck of the bottle is straight or tapering. These two portions are connected at opposite sides by bars D whose outer surfaces also conform to the interior shape of the neck of the bottle. The exterior surface of the upper portion B is formed with horizontal channels *b*, and the ridges or projections between these channels are cut away at intervals as at *c*. In each instance, however, the openings *c* through the

horizontal ribs are each opposite a solid portion *d* of the adjoining rib. In other words, the openings are arranged in alternation. Irregularly shaped or tortuous passages are thus formed in the outer face of the part R. Each of the projections *d*, below the upper ones, is centrally recessed as at *d'*, opposite the opening between the portions *d* of the adjoining horizontal ridge next above. All the openings between the parts *d* of each horizontal ridge are preferably formed with inclined side walls, the openings being widest at the top. The upper ends of the bars D may, as shown, form the recessed projections in the lower row. The lower portion C of the stopper is formed with a valve seat E' on which is seated the valve E. The stem above the valve extends up between the two bars D and is provided with three radially projecting wings *e* that work in and are guided by the lower portion of the interior bore of the part B, while the stem below the valve is formed with similar projections *e'* that work in and are guided by the bore of the lower portion C.

It will now be obvious that if such a stopper be secured in the neck of a bottle, as indicated in Fig. 1, or otherwise, after the bottle has been filled, if the bottle is inverted the pressure of its contents will unseat the valve and the contents will enter the space Y from whence it will pass through the irregular or tortuous passages on the exterior of B and be discharged from the mouth of the bottle. Any attempt to refill the bottle, however, will fail because any liquid passing down through the passages in the exterior of B will at once seat the valve and be prevented from entering the bottle. When the plug has been inserted and secured as presently described or otherwise, the bore of the part B is closed by a stopper F, which may be cemented therein by liquid glass, or other suitable cement so that it may not be removed. To facilitate the insertion of this stopper, it may have a lug or projection *f* formed upon it so that it can be held by a pair of pliers and properly put in position. Instead of the lug *f*, it might of course have one or more recesses in its face for the same purpose. The mouth of the bottle may then be closed by an

ordinary shipping cork as indicated in dotted lines at G Fig. 1.

It is obvious that after the contents of the bottle have been discharged as already described, the bottle cannot be refilled because it is not possible to hold up the valve. To prevent any one from doing this is the purpose of the peculiar formation on the exterior of the part B. It will be noticed that any wire or instrument which one might attempt to insert through the openings *c* would be obstructed by the projections *d* and the end of the wire would be caught in the recess *d'* and in any event would be so deflected that it could not be brought into engagement with the valve. At the same time the contents of the bottle may be freely discharged.

If the valve E and its seat E' are properly faced, no washer will be necessary, but I prefer a washer and by further preference such a one as is indicated in the detailed view, Fig. 5. In this figure the flexible washer H which may be of rubber or any other suitable material, is of concavo-convex shape, its concave face being next the valve seat. Its edges are preferably free as shown, and its central portion is secured to the under face of the valve. Such construction insures a perfectly tight fit of the valve upon its seat and even if the valve did not descend properly upon its seat, should an effort be made to refill the bottle, the pressure of the fluid upon the loose edge of the washer would close it against the seat.

In order to secure the stopper within the neck of the bottle the following construction may be adopted, though of course it might be cemented in or secured in any other suitable manner. The exterior face of the part C is tapered from its lower end inwardly to a shoulder I. The annular space thus formed may be filled with a suitable cement and then when the stopper is forced into its place the annular rib *a* on the neck of the bottle, will force the cement I', which is indicated by the black shade in Fig. 1, around and below the rib *a* upon which the shoulder I then rests. As soon as the cement has set the stopper will be rigidly secured in the neck of the bottle and cannot be removed. Instead of cement an elastic ring of any suitable material may be used in connection either with the rib *a* or an annular channel within the neck of the bottle into which the elastic material would expand and lock the stopper.

I claim as my invention—

1. A stopper for preventing the refilling of bottles, consisting of upper and lower portions adapted to be seated in the neck of a bottle, the upper portion having horizontal channels connected by transverse openings alternately arranged, and a stopper for closing its bore and the lower portion being provided with an automatically acting valve that permits the

discharge of the contents of the bottle, but is closed when liquid is poured into the bottle.

2. A bottle stopper consisting of two tubular portions having between them a fluid space (Y), the upper portion having exterior tortuous passages formed by horizontal channels connected by alternately arranged openings, in combination with a plug or stopper for the bore of the upper portion and a valve seated in the lower portion, and the radial arms projecting from the valve stem on each side of the valve, and lying in and guided by the bores of the upper and lower portions, substantially as set forth.

3. A bottle stopper consisting of upper and lower portions, the upper portion being formed with tortuous passages on its exterior face, and having a stopper for closing its bore, in combination with a valve seated in the lower portion and having a washer secured upon its face, but free at its edges.

4. In a bottle stopper, the combination of the parts B C, part B having tortuous passages on its exterior face, and a plug for closing its central bore, a valve seated in the portion C and having its stem working in and guided by the bores of both portions B and C, and a concavo-convex flexible washer secured upon the face of the valve and free at its edges.

5. The combination of the bottle stopper, substantially such as herein described having its lower portion tapered, so as to form an annular shoulder and a consequent angular annular recess a filling of cement or binding material surrounding said tapered portions and filling said recess and a bottle or other vessel having within its neck an annular rib or locking surface with which the cement or binding material engages and against which said shoulder abuts when the stopper is in place.

6. A bottle stopper, substantially of the character herein described, having upon its exterior face a series of projections *d* formed by horizontal channels connected by transverse openings the face of each projection lying opposite one of said openings, being recessed for the purpose described.

7. A bottle stopper consisting of upper and lower portions, and an intermediate fluid space (Y), the upper portion having tortuous passages in its exterior face, and a plug for closing its bore having upon its outer end means by which it may be held while being inserted into place, and an automatically operating valve seated in the lower portion.

In testimony whereof I have hereunto subscribed my name.

DANIEL F. DOODY.

Witnesses:

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