(No Model.)

S. H. RYDER.

BOTTLE STOPPER.

No. 453,666. Patented June 9, 1891.

FIG. 1.

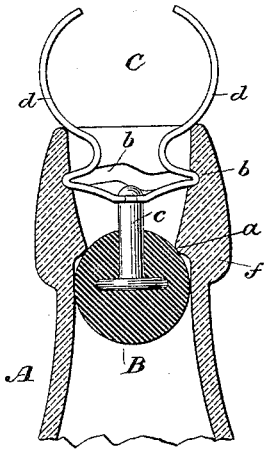


FIG. 3.

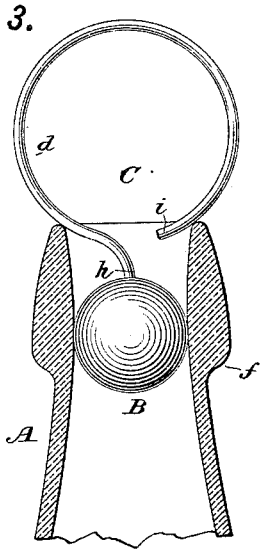


FIG. 5.

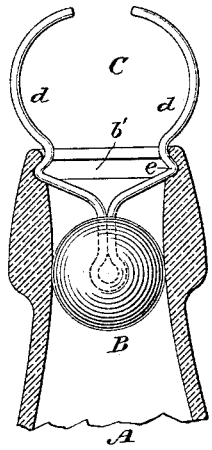


FIG. 2.

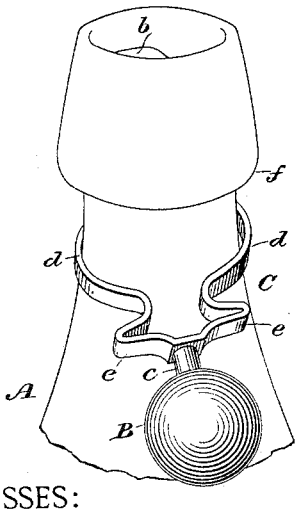
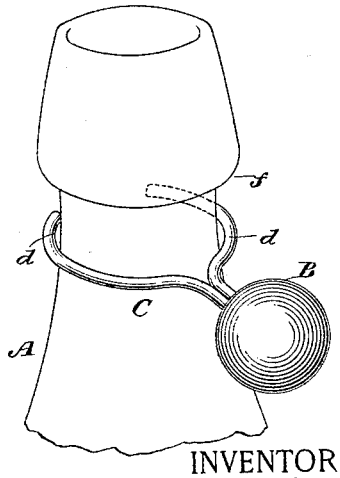


FIG. 4.



WITNESSES:
Charles C. Strang
Fred White

INVENTOR:
Samuel H. Ryder
By his Attorneys,
Arthur C. Fraser & Co.

UNITED STATES PATENT OFFICE.

SAMUEL H. RYDER, OF KENSICO, NEW YORK.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 453,666, dated June 9, 1891.

Application filed January 20, 1891. Serial No. 378,409. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL H. RYDER, a citizen of the United States, residing at Kensico, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a specification.

This invention relates most particularly to that class of bottle-stoppers in which a removable plug is inserted into the mouth of the bottle for closing the latter and withdrawn therefrom when the bottle is to be uncorked.

My invention aims to improve stoppers of this class in that they may be more readily manipulated than heretofore, and it also aims to avoid displacement of the plug when in the bottle and its loss when the bottle is uncorked.

To this end, in carrying out the preferred form of my invention, I provide the removable plug with an arm projecting above the bottle when the plug is in the latter, said arm being constructed to engage the mouth of the bottle when the latter is corked by the plug, and thereby prevent displacement of the plug, and said arm being adapted when the plug is removed to embrace the neck of the bottle and support the plug thereon. This arm serves as a handle for the plug during its manipulation.

In the accompanying drawings, which illustrate my invention, Figure 1 is a fragmentary axial section of the mouth and neck of a bottle provided with my improved stopper. Fig. 2 is a fragmentary perspective view thereof, the plug being removed and supported on the neck of the bottle. Fig. 3 is a sectional view similar to Fig. 1, showing a modified form of my invention; and Fig. 4 is a perspective view similar to Fig. 2, showing another modification; and Fig. 5 is a sectional view showing another modification.

Referring to the drawings, let A designate the bottle, B the removable plug, and C my improved attachment for the latter.

Referring particularly to Figs. 1 and 2, I will now describe the preferred form of my invention. In this form the bottle A is constructed with an internal annular shoulder *a* in its neck, and above this shoulder with a cam-groove *b*, constructed, preferably, of two inclined portions connected together at their extremes, whereby the groove constitutes a complete channel on the inner surface of the neck of the bottle. The plug B, which may be of any desired shape, but is preferably approximately spherical, is provided with a stud *c*, one end of which is suitably secured within the plug, and on the other end of this stud *c* is carried a fastening device C. The fastening device C consists, preferably, of a flat strip of metal rotatively secured to the end of the stud *c* by riveting or otherwise, and extending thence laterally and upwardly in the form of two arms *d d*, which project above the mouth of the bottle and preferably bear on the upper edge thereof. The arms *d* are preferably constructed to engage with the cam-groove *b*. This is best accomplished by folding the arms upon themselves, to form fingers *e e* for engagement with the cam-groove *b*. The attachment C is preferably elastic, so that its fingers *e e* may be sprung inwardly during the insertion of the plug, in order that they may pass within the neck of the bottle and snap into the cam-groove *b*. The upper and outer portion of the arms *d d* is bowed or swelled outwardly to a sufficient extent to permit the arms to be forced down over the outside of the neck of the bottle and to be sprung past the external shoulder *f* thereof when the stopper is removed in order that it may be thus secured to the bottle and supported thereon. The fingers *e e* are so located relatively to the plug B that when the latter has been passed below the shoulder *a* within the neck of the bottle the fingers will enter the lower portions of the cam-groove *b*, whereupon in case it is desired to draw the plug B tightly against the shoulder *a* this can be done by turning the attachment C relatively to the bottle, thereby causing its fingers *e e* to ride up the inclines of the cam-groove *b*, which will have the effect of drawing the plug B upwardly against the shoulder *a* and tightly closing the bottle. In order to prevent the insertion of the plug B too far into the neck of the bottle or to prevent the stopper from dropping entirely within the bottle, the arms *d d* at their curved outer portions are constructed to abut against the top of the mouth of the bottle when the stopper has been inserted far enough to bring the plug B below the shoulder *a* and the fingers *e e* opposite the

lowest portions of the cam-groove *b*. By constructing the arms in this manner it is insured that the stopper will not be inserted too far within the bottle. By pivoting the attachment C to the plug B the operation of drawing the plug upwardly against the shoulder *a* is facilitated, since the attachment can be rotated while the plug remains stationary, and thus the friction incident to rotating the plug is avoided.

In operation the attachment C is used as a handle for the stopper in applying it to or removing it from the bottle. In applying the stopper the arms *d d* are sprung inwardly as the plug B is forced into the neck of the bottle, and the stopper is depressed until the swell at the side of the arms strikes the mouth of the bottle, whereupon the arms are released and rotated until the fingers *e e* snap into the cam-groove *b*. Then the arms are rotated until the plug B is drawn upwardly against the shoulder *a* with sufficient force to tightly close the bottle. In this condition the bottle can be left as long as desired. When it is uncorked, this is accomplished by grasping the arms *d d* and springing them together until the fingers *e e* are free from the cam-groove *b*, whereupon by exerting sufficient upward strain the plug B can be drawn past the shoulder *a*, leaving the bottle uncorked. To prevent its loss, the stopper will then be attached to the neck of the bottle by springing the arms *d d* over the neck until they pass beneath the shoulder *f* and embrace the neck below the latter, whereupon the stopper will be supported on the neck, as shown in Fig. 2.

My invention provides an improved removable bottle-stopper which is simple, cheap, and effective in operation, and which can be conveniently kept on the bottle when removed, in order to avoid risk of loss.

My invention can be variously modified without departing from its essential features, and I do not limit myself to the particular construction above described, which is the preferred form of my invention.

When desired, my improved stopper can be used with ordinary constructions of bottles, and the attachment C can be modified or simplified as desired.

Fig. 3 shows a simple form of my invention, in which the stopper is used with an ordinary bottle. In this construction the attachment C consists of a single arm *d*, preferably of elastic wire bent into approximately circular form and fastened at its end *h* directly to the plug B, its other end *i* being free and terminating in proximity to its end *h*. In this instance when the plug B is forced into the neck of the bottle its inward movement is limited by the contact of the arm *d* with the top of the mouth of the bottle, and the plug is held in place by friction. The plug B may be removed by pulling upwardly on the arm *d* with sufficient force to withdraw the plug, whereupon the stopper can be supported on the neck of the bottle by forcing the arm *d* over the shoulder *f* of the bottle.

Fig. 4 shows another modification of my invention, in which the attachment C consists of a wire bent on itself at its center, where it is rigidly fastened to the plug B, and constructed with its free ends projecting outwardly and curved to form the arms *d d*. This constitutes one of the simplest forms of my invention, and one which may be used with any ordinary bottle.

Fig. 5 shows a form of my invention wherein the bottle A is constructed with a smooth neck, into which the plug B tightly fits, and with an annular groove *b'* near its mouth. The attachment C in this instance consists of a wire doubled on itself at the middle, where it is embedded in the plug B, and extending thence upwardly and bent to form fingers *e e* and arms *d d*. The fingers *e e* are sprung into the groove *b'* as the stopper is forced into the bottle, and, by reason of the elasticity of the wire, are retained in the groove, thus holding the plug in position.

What I claim is, in a bottle-stopper, the following defined novel features or combinations, substantially as hereinbefore specified, namely:

1. In a bottle-stopper, a removable plug, in combination with an elastic arm carried thereby and constructed when the plug is passed into the bottle to the closed position to project above the mouth of the bottle and engage therewith, and thereby prevent further inward movement of the plug, and when the plug is removed to elastically embrace the neck of the bottle and support the plug thereon.

2. A bottle having an internal groove in its neck, in combination with a removable plug, an arm carried thereby and constructed, when the plug is passed into the bottle to the closed position, to engage said groove, and thereby to prevent movement of the plug.

3. A bottle having an internal groove in its neck, in combination with a removable plug, an arm carried thereby and constructed, when the plug is passed into the bottle to the closed position, to engage said groove, and thereby to prevent movement of the plug, and when the plug is removed to embrace the neck of the bottle and support the plug thereon.

4. In a bottle-stopper, a removable plug, in combination with an arm swiveled thereto and constructed, when the plug is in the bottle, to engage the mouth of the bottle, and thereby to limit the inward movement of the plug, and when the plug is removed to embrace the neck of the bottle and support the plug thereon.

5. The combination, with a bottle having an internal shoulder in its neck and a groove above said shoulder, of a plug constructed to enter the neck of said bottle and pass beneath said shoulder, and an arm carried by said plug and constructed to engage said groove when

said plug is in the bottle, and thereby to hold the plug seated against said shoulder.

6. The combination, with a bottle having an internal shoulder in its neck and a cam-groove above said shoulder, of a plug constructed to enter the neck of said bottle and pass beneath said shoulder, and an arm swiveled to said plug and constructed to engage said cam-groove when said plug is in the bottle, and thereby to hold the plug seated against said shoulder.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

SAMUEL H. RYDER.

Witnesses:

FREDERICK W. RYDER,

WILSON BROWN, Jr.