

H. M. BROWN.

STOPPER.

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1,022,060.

Patented Apr. 2, 1912.

Fig. 1.

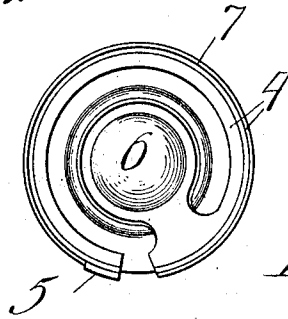


Fig. 2.

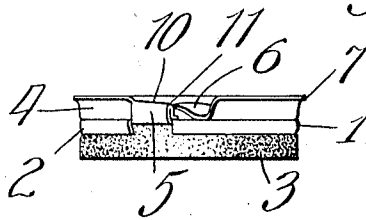


Fig. 3.

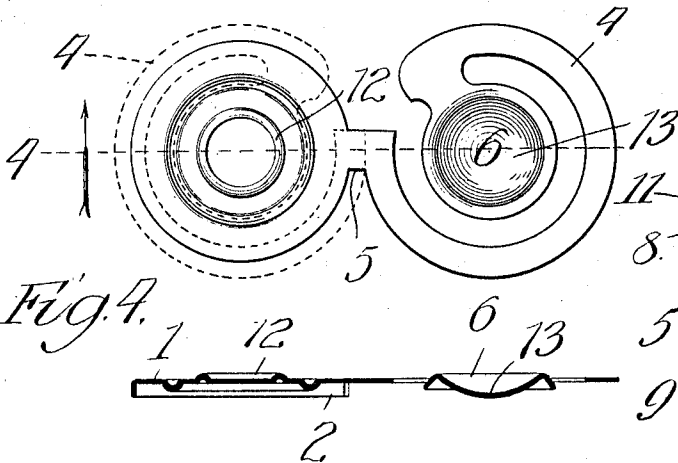


Fig. 7.

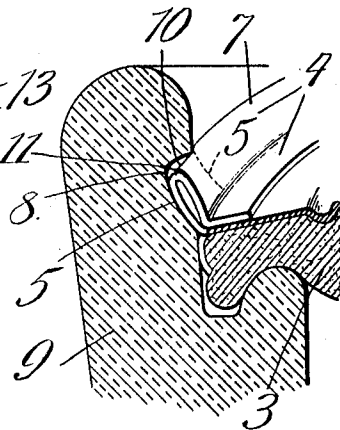


Fig. 4.

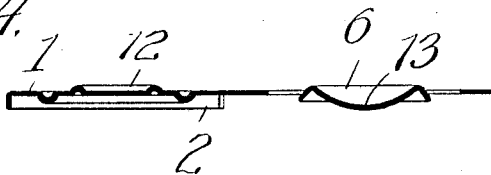


Fig. 5.

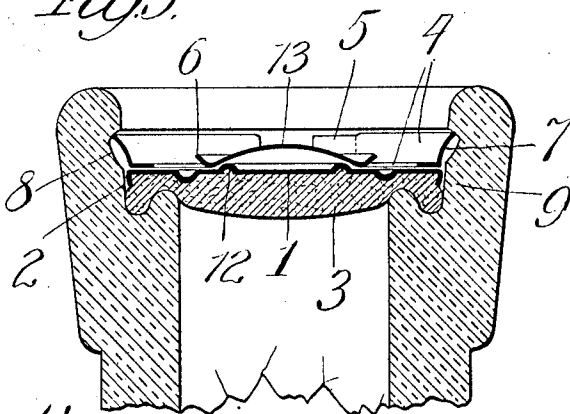
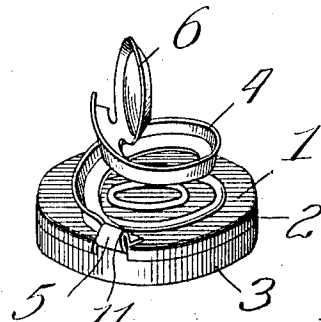


Fig. 6.



Witnesses:
Ed. C. Gaylord.
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UNITED STATES PATENT OFFICE.

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STOPPER.

1,022,060.

Specification of Letters Patent.

Patented Apr. 2, 1912.

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To all whom it may concern:

Be it known that I, HARRY M. BROWN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Stoppers, of which the following is a specification.

This invention relates particularly to stoppers of the Dorman type, such as shown, for instance, in United States Patent No. 881,780, granted March 10, 1908, in which the stopper comprises a metal cap carrying a cork disk or sealing medium, and a surmounting split locking-ring, or retainer, having an up-turned, outcurved locking-flange adapted to engage an internal annular groove in the mouth of a bottle. The known manner of producing such a stopper is to form the cap and a locking-ring of larger diameter integral with each other, with a narrow web connecting the base end of the locking-ring to the periphery of the cap, fold the web upon itself at its junction with the locking-ring, thus causing the locking-ring to overlie the cap with its outer edge projecting beyond the periphery of the cap, and then up-flange the locking-ring, the web being, in the same operation, bent to an upstanding position. Stoppers, or seals, of this type have the locking-ring equipped with a central tab which is connected with the free end of the locking-ring and serves as a means for dislodging the locking-ring from engagement with the bottle-mouth locking-groove. In removing such a stopper, the user raises the tab and seeks, by a twisting action, to dislodge the locking-ring. Heretofore, great difficulty has been experienced, owing to the fact that the necessary operation of twisting the tab to dislodge the locking-ring resulted inevitably in twisting or distorting the web connecting the locking-ring with the cap, thus thrusting the corner outwardly beyond the periphery of the cap and causing it to stick or catch in the groove, this being intensified by the pressure of the gases in the bottle. The result was to disconcert the user and sometimes cause mishaps of an annoying character, seriously affecting the utility of an otherwise highly meritorious device.

The present invention overcomes the defect noted, and enables the stopper to be removed with the utmost facility.

The invention is illustrated in its preferred embodiment in the accompanying drawing, in which—

Figure 1 represents a plan view of the improved stopper; Fig. 2, an elevational view; Fig. 3, a view of the metal blank prior to folding the locking-ring on the cap; Fig. 4, a section taken as indicated at line 4 of Fig. 3; Fig. 5, a broken sectional view of a bottle fitted with the improved stopper; Fig. 6, a perspective view, illustrative of the manner in which the locking-ring is deformed and the web distorted in removal; and Fig. 7, a broken sectional perspective view showing the manner in which the corner of the attached end of the locking-ring may free itself from the locking-groove.

The stopper comprises a cap 1 having a down-turned flange 2 which is clenched on the upper portion of the cork disk or sealing medium 3; and a split locking-ring 4, which has its base end attached, by a web 5, to the peripheral portion of the cap-disk. The locking-ring has a central tab, or lobe, 6, connected to the free end of the locking-ring.

The blank shown in Fig. 3 is folded so that the locking-ring will lie on the cap, as indicated by dotted lines. The ring is then subjected to the action of dies which produce the upturned, outcurved locking-flange 7, which is adapted to engage the internal annular groove 8 in the bottle-mouth 9. In this operation, the web 5 is bent up. The web, however, is purposely made so short that the locking-flange will be depressed at its base end, as indicated at 10 in Figs. 2 and 7; and, in the finished article the flange at its junction with the web tapers or is beveled slightly to the corner 11. This relief or lowering of the locking-flange at its base-end, *i. e.*, at the junction with the web 5, serves the important function of enabling the corner 11 to slip out of the groove 8 without sticking, when the stopper is removed, an operation which is performed by bending the tab 6 upwardly and then turning or twisting it so as to spring the locking-ring out of the groove, this action being coupled with a slight lifting action, if desired.

It may be stated that the stoppers are inserted under heavy pressure; and it is noted that the pressure on the locking-flange in

use is somewhat relieved at the point where the web is attached. This, coupled with the slight bevel mentioned is sufficient to wholly overcome the tendency for the corner 11 to stick in the groove during removal, and, this, in turn lessens the distortion of the web 5, since less twisting is required. Thus it will be seen that a new effect is gained by the expedient described, which is of the highest advantage in the use of the stopper.

As shown, it is preferred to provide the disk of cap 1 with a raised annular centering-bead 12, and to dish or concave the tab 6 as indicated at 13 to fit over said bead, thus centering the tab on the cap. The convexity of the tab is adapted to engage the concaved end of a central plunger of the stoppering-tool (not shown), in the stoppering operation, thus aiding in properly inserting the stopper. The tab-centering feature not only tends to guide the locking-ring into uniform engagement with the groove 8, but also to prevent accidental dislodgment.

The described manner of producing the depression in the locking-flange at its base portion is preferred, but the invention is not to be understood as limited in detail.

What I regard as new, and desire to secure by Letters Patent, is—

1. A stopper comprising a cap and sealing medium carried thereby, and a locking-ring surmounting the cap and having web-connection at one end therewith, said locking-ring having an upstanding locking-

flange with the corner at its attached end relieved, for the purpose set forth.

2. A stopper comprising a cap and sealing medium carried thereby, and a tab-equipped locking-ring surmounting the cap and having an upstanding locking-flange with a web joining its upper edge at one end to the periphery of the cap, said locking-flange and web being depressed at their junction below the general level of the upper edge of the upstanding flange of the locking-ring.

3. A stopper comprising a cap fitted with a cork disk, and a surmounting locking-ring having an upstanding locking-flange with a web connecting its upper edge at one end to the periphery of the cap, the junction of the web and flange being depressed and slightly inclined, said locking-ring having a central tab attached to its free end.

4. A stopper comprising a cap fitted with a cork disk and provided with a centering embossment, an upflanged locking-ring surmounting said cap and having one end attached to the periphery of the cap said locking-ring adapted to engage an internal groove in the mouth of a bottle, and a central tab attached to the free end of the locking-ring and having a centering embossment co-acting with said first-named embossment.

HARRY M. BROWN.

In presence of—

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