W. M. GOODWIN AND L. E. PHILLIPS.

BOTTLE STOPPER.

APPLICATION FILED MAR. 31, 1921.

1,432,288. Patented Oct. 17, 1922.

Fig. 1.

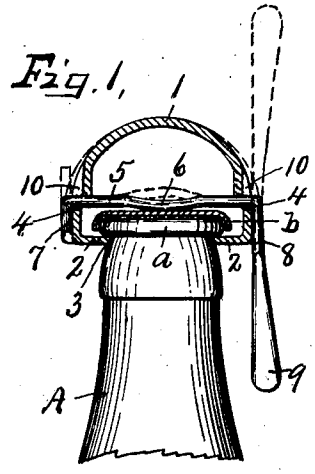


Fig. 2.

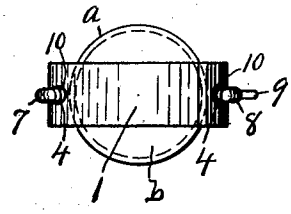


Fig. 3.

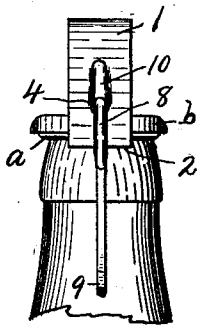


Fig. 5.

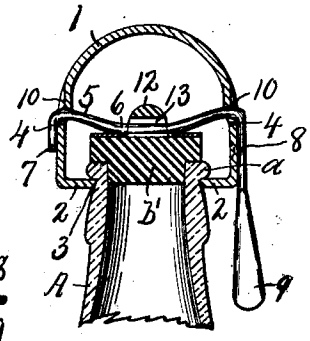


Fig. 4.

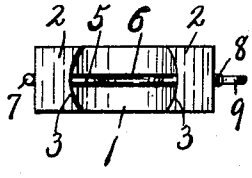
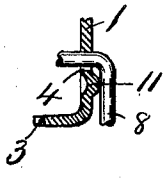


Fig. 6.



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Patented Oct. 17, 1922. 1,432,288

UNITED STATES PATENT OFFICE.

WILLIAM M. GOODWIN, OF CENTRAL SQUARE, AND LELAND E. PHILLIPS, OF BREWERTON, NEW YORK.

BOTTLE STOPPER.

Application filed March 31, 1921. Serial No. 457,552.

To all whom it may concern:

Be it known that we, WILLIAM M. GOODWIN and LELAND E. PHILLIPS, of Central Square and Brewerton, respectively, in the counties of Oswego and Onondaga, in the State of New York, have invented new and useful Improvements in Bottle Stoppers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to bottle stoppers and is particularly useful in connection with that type of bottle having an annular bead around the mouth thereof, the main object being to provide a simple and efficient device whereby a bottle cap or stopper may be easily and quickly clamped in place to form a liquid and air tight joint to remain on the bottle until such time as may be desired to release the stopper.

Another object is to utilize the same device for removing the stopper when desired.

Other objects and uses relating to specific parts of the device will be brought out in the following description.

In the drawings:

Fig. 1 is a longitudinal vertical sectional view of the bottle-top and my improved clamping device therefor, a portion of the bottle being shown in elevation.

Fig. 2 is a top plan of the same device and the adjacent end of the bottle.

Fig. 3 is a side elevation of the clamping device shown in Fig. 1.

Fig. 4 is an inverted plan of a detached clamping device omitting the top.

Fig. 5 is a sectional view of a slightly modified form of the clamping device as used in connection with a stopper or cork which enters the bottle, the latter being shown in section.

Fig. 6 is a detail sectional view of a portion of one side of the clamping device showing the cam projection thereon cooperating with the handle of the cam-shaft for tightening the jaws of the clamp on the cap of the bottle.

The bottle as —A— is provided with the usual annular bead —*a*— surrounding the mouth thereof for receiving and supporting a suitable cap —*b*—, as shown in Fig. 1 or, as shown in Fig. 5.

The clamping device for holding the stopper in place comprises a bow-shaped member —1— preferably of spring steel having its ends bent toward each other in substantially the same plane to form opposed jaws —2—, the inner faces of which are concaved at —3— to conform to the curvature of the neck of the bottle just below the bead —*a*— where the jaws are adapted to engage the bottle.

The bow or U-shaped member —1— is preferably made of comparatively thin flat bar of sheet metal as spring steel of less width than the diameter of the mouth of the bottle and intended to normally spring the jaws to move outwardly when said jaws are released from gripping engagement with the neck of the bottle, as for example in releasing the cork to facilitate the removal of the clamping device.

The opposite arms of the bow or U-shaped member —1— are provided with transversely alined apertures —4— to form suitable journal-bearings for a cam-shaft —5— which is journaled in and extends beyond the opposite arms of said member and has its central portion provided with a lateral arm-set —6— forming an eccentric for engaging the cap —*b*—, said shaft being extended diametrically across the top or mouth of the bottle —A— to cause its cam or extending portion —6— to engage the central portion of said cap, when the shaft is adjusted to its locking position, it being understood that the distance between the shoulders or jaws —2— and shaft —5— is approximately equal to or slightly greater than the distance between the under side of the feed —*a*— and upper faces of the cap —1— to cause the cam —6— to impinge tightly against the cap when the jaws —2— are engaged with the under side of the bead and the cam or extending portion —6— is adjusted to its locking position, as shown by full lines in Fig. 1.

The opposite ends of the cam-shaft —5— are offset in the same direction and substantially at right angles to the axis thereof, one of offset ends as —7— being relatively short to engage the outer face of the adjacent arm of the bow-shape member —1—, while the other offset end as —8— is considerably larger than the offset —7— to form a handle —9—, the offset —8— serving to engage the adjacent outer face of the corresponding arm of the bow-member —1—.

The portion of the opposite arms of the bow or U-shaped member —1— just above the opening —4— are pressed inwardly beyond the portions of the arms below the shaft —5— to form recesses —10— for receiving the adjacent portions of the offsets —7— and —8— when the cam-shaft is rocked to its releasing position, as shown by dotted lines in Fig. 1, and thereby permitting the jaws —2— to swing outwardly out of engagement with the underside of the bead —*a*—, whereupon the entire clamping device may be withdrawn upwardly from the bottle, the walls of said recesses being curved transversely or concaved to form cam-faces against which the offset portions —7— and —8— of the cam-shaft may rock when the cam-shaft is adjusted to its locking position for tightening jaws from the neck of the bottle directly beneath the bead —*a*—.

If desired, however, a portion of one or both of the opposite arms of the bow or U-shaped member —1— may be pressed outwardly, as shown in Fig. 6 to form a cam-member —11— projecting beyond the adjacent portions of the arms and against which one or both of the offsets —7— or —8— may ride to tightly clamp the jaws —2— against the mouth of the bottle, or rather against the periphery of the neck directly beneath the bead —*a*—.

In Fig. 5 is shown a stopper —*b'*— adapted to enter the mouth of the bottle and to engage the end face thereof and is provided with an outwardly projecting lug —12— having a transverse aperture —13— for receiving the cam portion —6— of the cam-shaft —5—, thereby attaching the stopper to the cam shaft so that when the latter is adjusted to its releasing position, it will withdraw the stopper from the bottle simultaneously with the release of the jaws —2— from engagement with the periphery of the neck of the bottle directly beneath the bead —*a*—, otherwise the construction is very similar to that previously described.

When the jaws —2— are released from engagement with the neck of the bottle, as shown in Fig. 1, they will spring outwardly beyond the bead —*a*— and directly under the adjacent edges of the cap —*b*— so that when the clamping member —1— is withdrawn, the jaws —2— will engage the lower edge of the cap and release the same from its closed position.

In clamping the cap in place upon the bottle, it is simply necessary to clamp the bow or U-shaped member downwardly over the mouth of the bottle, thereby causing the jaws —2— to ride against the periphery of the cap —*b*— until they spring over and around and beneath the bead —*a*—, whereupon the cam-shaft —5— may be rocked from the dotted position in Fig. 1 to the position shown by full lines to cause the cam —6— to impinge against the top of the cap —*b*— and thereby to firmly hold the latter in place during which operation the offset portions —7— and —8— ride against the outer faces of the adjacent portions of the arms of the bow-shaped member —1— to close the jaws inwardly and hold them against swinging apart when engaged with the neck of the bottle at the under side of the bead.

What I claim is:

1. A bottle stopper comprising a cap, a U-shaped clamping member having its ends free to move toward and from each other and provided with inturned jaws for gripping and releasing the neck of a bottle, the opposite arms of said member being provided with transversely alined apertures and outwardly projecting cams adjacent the apertures, a shaft journaled in said apertures and provided with a lateral offset for engaging the cap and having its ends offset for engaging the cams on said arms.

2. A bottle stopper comprising a cap, a U-shaped clamping member of flat spring-metal having its opposite arms provided with inturned jaws movable toward and from each other for gripping and releasing the periphery and releasing of a bottle, said arms being tensioned to open the jaws away from the bottle, and a cam-shaft journaled on said arms and having its cam engaging said cap to hold the latter in place.

3. A bottle stopper comprising a cap, a U-shaped clamping member of flat spring-metal having the ends of its opposite arms bent toward each other to form gripping jaws for engaging opposite sides of the neck of a bottle, a cam on the outer face of one of the arms near the adjacent jaw, a shaft journaled in the opposite arms of said member and provided with an offset portion at one side of its axis of movement for engaging the cap when the shaft is adjusted to one position and for releasing the cap when adjusted to another position, and a crank arm on the shaft for engaging said cam to tighten the jaws on the bottle.

4. A bottle stopper comprising a cap, a bow-shaped clamping member having its opposite arms provided with inturned jaws movable toward and from each other for gripping and releasing the neck of a bottle, and a shaft journaled in said arms and provided with means for closing and opening the cap when rotated, said clamping member and shaft having cooperative means for moving the jaws toward each other when closing the cap and for releasing said jaws when the cap is open.

5. A bottle stopper comprising a cap, a bow-shaped clamping member having opposite arms provided with inturned jaws movable toward and from each other for

gripping and releasing a bottle, a shaft journaled in the opposite arms of said member and having its ends offset in the same direction for engaging the outer faces of said arms, one of the offset portions being of greater length than the other to form a handle by which the shaft may be rotated, said shaft having its intermediate portion offset laterally for engaging the cap when the shaft is adjusted to one position, and a cam-face on one of said arms against which the adjacent offset portion of the shaft is adapted to ride for tightening and releasing the jaws of the arms upon and from the bottle.

In witness whereof we have hereunto set our hands this 28th day of March, 1921.

WILLIAM M. GOODWIN.
LELAND E. PHILLIPS.

Witnesses:
H. E. CHASE,
M. R. COOKE.