Nov. 5, 1929. R. A. GRAHAM 1,734,372

BOTTLE CAP

Filed Oct. 28, 1927

Fig. 1.

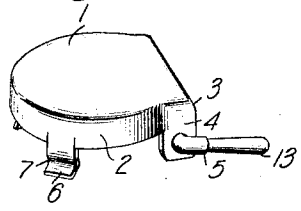


Fig. 2.

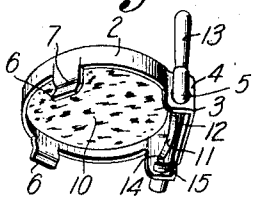


Fig. 3.

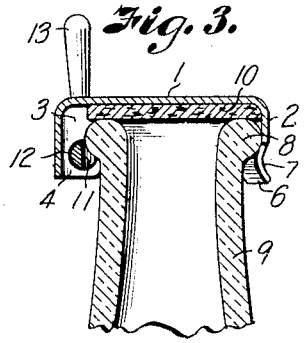


Fig. 4.

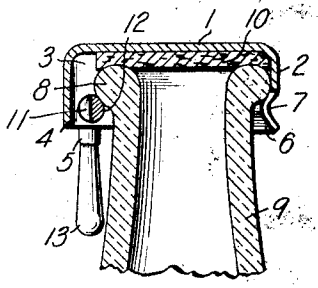


Fig. 5.

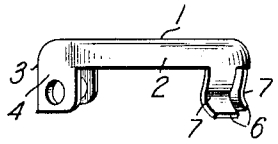


Fig. 6.

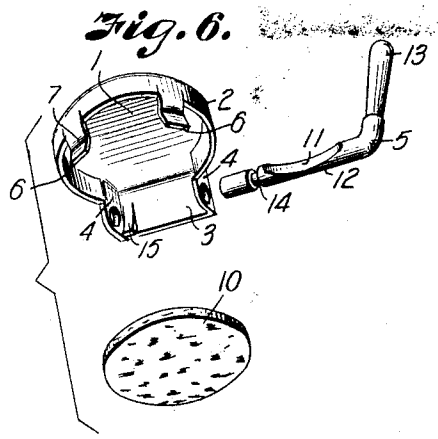
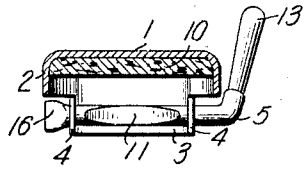


Fig. 7.



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UNITED STATES PATENT OFFICE

RALPH A. GRAHAM, OF KANSAS CITY, MISSOURI, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO GRAHAM METAL MANUFACTURING COMPANY, OF KANSAS CITY, MISSOURI, A CORPORATION OF MISSOURI

BOTTLE CAP

Application filed October 28, 1927. Serial No. 229,377.

My invention relates to bottle caps, the principal objects of the invention being to dispense with accessory cap-fastening appliances, to securely fasten a cap to a bottle by means associated with the cap, and to provide for reuse of a cap.

In accomplishing these and other objects of the invention I have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective top view of a bottle cap embodying my invention.

Fig. 2 is perspective bottom view of the same, illustrating particularly a cam lever positioned in a bearing portion of the cap.

Fig. 3 is a vertical central sectional view of the cap transversely of the bearing portion, illustrated as being applied to the neck of a bottle.

Fig. 4 is a similar view showing the cam lever in functioning position.

Fig. 5 is a detail perspective view of the body member of the cap.

Fig. 6 is a perspective view of the elements of the cap in separated relation.

Fig. 7 is a vertical central section of the cap illustrating a modified form of means for retaining the cam lever in the bearings of the cap.

Referring in detail to the drawings:

1 designates the disk-like covering or body member of a bottle cap, having a depending integral annular flange 2, the cover and flange, on one tangent, being extended both laterally and downwardly to provide a cam lever bar housing 3 having bearing end walls constituting brackets or lugs 4 adapted to support rotatably a bead-engaging cam lever or latch bar 5, presently described.

The annular flange is provided with resilient angular retaining ears or clips 6 integral with the cover, the sides of the clips preferably terminating in slits cut into the flange to provide for greater resiliency. The clips are provided with instruck portions 7 providing internal shoulders for engaging the bead 8 of a bottle 9 when the cap is placed on the bottle neck to assist in retaining the cap on the bottle. A cork disk 10 or similar sealing element of disk form is provided for positioning in the recess of the body member, the disk and the retaining clips being adapted for cooperation so that when the cap is installed on a bottle, the instruck portions of the clips will be substantially but not completely in overlying engagement with the bead. The flange of the body member is adapted to fit snugly over the head and the resilient clips extending slightly within a cylindrical plane erected on the periphery of the flange, are adapted to be forced towards bead-engaging position by slight pressure, but restrained, as just stated, by the cork gasket.

The lever bar 5 is so supported by the bearing brackets 4 of the housing 3 that its axis lies in a chord of the flange; and the bar is provided with a longitudinally concave recess 11 conforming to the curve of the flange whereby the bar, when suitably positioned as in Figs. 2 and 3, is permittted to pass the bead upon seating of the cap on the bottle neck. The production of the recess provides a cam-like cross section of the portion of the bar that lies adjacent the bead of the bottle, the unrecessed portion 12 comprising the long arm of the cam.

The bar 5 is provided with an operating lever 13 whereby it may be rotated into bead-passing position. The lever extends in such relation to the recess of the bar preferably radially opposite thereto, that when the cap is seated on the bottle, rotation of the bar by the lever will cause the unrecessed portion 12 to engage the under portion of the bead and, in cooperation with the resilient clips, latch the cap on the bottle.

The bar is preferably retained in engagement with the cap by providing it with an annular groove 14 adapted to receive a neck or finger 15 instruck from the bar housing.

Fig. 7 illustrates modified means for retaining the cam lever in the bearings of the cap, by flattening the end as at 16.

The cap and latching elements being provided and assembled as described, the cam is rotated by the lever to position the flat side thereof in registry with the flange periphery, and the cap is seated on the bottle mouth,

the spring clips engaging the bead, the sealing element overlying the edge of the bottle mouth. Depressional rotation of the crank handle of the cam lever causes one edge of the flat portion of the cam to engage the bead, the edge acting as a fulcrum for the lever operating transversely of the bar, so that continued rotation of the bar pulls the cap downward to impress the sealing element on the edge of the bottle mouth. The rolling engagement of the cam with the bead causes a contractile horizontal stress of the cap flange, whereby the arcuate instruck portions of the ears are forced to slide over the bead downwardly and impress the adjacent portions of the sealing element upon the edges of the bottle mouth.

The cap is easily removed, by reverse operation of the lever to release the cam from latching engagement with the bead, the release producing also a relaxation of the engagement of the clips with the bead so that the cap may easily be lifted from the bottle. After consummation of the purpose for which the cap was removed, the cap may be restored, to close the bottle securely.

When the bottle is empty, the sealing disk may be removed and a fresh one installed, and the cap may then immediately be installed on another bottle.

It is apparent therefore that I have provided a cap which may easily be fastened in position securely closing a bottle without mechanical aid, and may be removed and restored to position, or may be transferred to another bottle, with a minimum of effort.

What I claim and desire to secure by Letters Patent is:

1. A bottle cap including a cover body having a depending flange provided with integral clip and bearing members, and a cam rotatable in tangential contact with the bead of a bottle neck to lock the cap on the bottle.

2. A bottle cap including an inverted cup shaped cover member having clips engageable with a neck bead and having bearing member, and a cam rotatable in the bearing members having a recessed portion forming an enlarged space for receiving a bottle neck and a cam portion engageable with the neck bead to clamp the clips to the bead and compress the cover on the bottle neck.

3. In a bottle cap, an inverted cap-shaped cover member including a flange adapted for projecting over a neck bead, having clips extended from its free edge and provided with shaft bearings, and a transverse shaft rotatable in said bearings having a recess in one side curved to substantially the contour of a neck bead and forming a cam for engagement with the bead.

4. A bottle cap including a cover member having an edge flange provided with extended instruck clips and slit on extended lines of the clips to provide resiliency of the clips, and provided with extended parallel ears having bearing openings, and a shaft journaled in said openings having a cam recess and crank handle.

5. In a bottle cap, a cap shaped cover member, and a shaft journaled in the cover member having a recess in one side to receive the neck bead of a bottle forming a cam for engagement with the bead upon rotation of the shaft.

6. In a bottle cap, a cap shaped cover member, spaced bearing members at one side of the cap, a shaft journaled in the bearings having point contact with the bead of a bottle above the axis of the bearing members.

7. In a bottle cap, a cap-shaped cover, bearing members at one side of the cap, and a cylindrical shaft-like member rotatably mounted in the bearing members for engagement with the bead of a bottle neck.

In testimony whereof I affix my signature.

RALPH A. GRAHAM.