March 27, 1945. S. J. GENEI 2,372,482

CLOSURE

Filed April 28, 1944

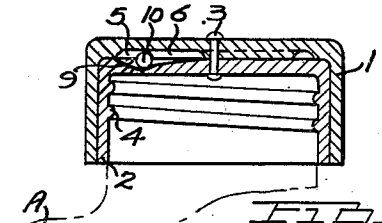

Fig. 2.

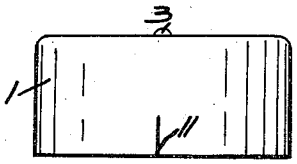

Fig. 1

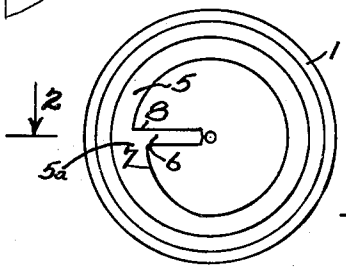

Fig. 3

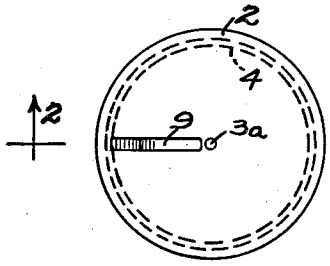

Fig. 4

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2,372,482

CLOSURE

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Application April 28, 1944, Serial No. 533,213

2 Claims. (Cl. 215—9)

This invention relates to closures and is an improvement over the closure shown in my Patent No. 2,179,147 issued on November 7, 1939. In that invention the closure included an inner and an outer cap each slotted to receive a portion of a locking member, and the slots were so arranged that it was necessary to rotarily adjust the caps to one another and also to tilt the closure so that particular portions of the peripheries of both the inner and outer caps were elevated to so locate the locking member in the slots that rotation of the outer cap would impart rotation to the inner one in either direction. Thus it was as difficult to screw that closure onto a bottle as to remove it, and it also necessitated holding a bottle in a tilted or inclined position when the closure was being applied, and this I have found is a drawback because in many bottling works closures are mechanically applied to filled bottles which are moved in an upright position past their filling and closure applying stations.

This invention therefore aims to provide a closure again including an inner and an outer cap rotatable one within the other and a locking member extending partly into a slot in each cap, but wherein the slots are so formed and arranged that rotation of the outer cap in one direction when the closure is upright applies rotation to the inner cap to screw the latter onto a bottle, and wherein rotation of the outer cap in the opposite direction imparts no rotation to the inner cap unless the closure and the bottle to which it is applied are first tilted with particular peripheral portions of both caps on the high side. Thus my improved closure may be applied to a bottle as readily as any ordinary closure, but it cannot be removed until certain particular conditions are met; namely the tilting of the bottle and closure, and the initial positioning of particular portions of the peripheries of both caps on the elevated side of the tilted closure. Consequently it is still as difficult for a child, or a sick or inebriated person, to remove the closure and drink or use potentially harmful medicines or other ingredients by mistake.

Having thus briefly stated some of the objects and advantages of the invention I will now describe the construction in detail with the aid of the accompanying drawing, in which:

Figure 1 illustrates a side elevation thereof,

Figure 2 is a vertical section of the assembly showing the inner and outer caps on the lines 2—2 of Figures 3 and 4.

Figure 3 is an inverted plan of the outer cap, and

Figure 4 is a plan view of the inner cap.

Referring to the drawing, 1 and 2 designate an outer and an inner cap respectively. The bore of the outer cap 1 is such that the inner cap 2 may rotate freely therein, and the two caps are secured to one another by a rivet 3 which extends through them in alignment with their axes, or in any other preferred manner. Provided in the bore of the inner cap 2 are threads 4 for securing it to the threaded neck of a bottle indicated at A.

Formed in the under side of the closed head of the outer cap 1 is an annular groove 5 of uniform depth the outer side of which is circular, and extending from its inner side is a radial groove 6 of the same depth. The inner side of the annular groove 5 is circular from one side of the radial groove 6 around the major portion of its circumference and terminates at the other side of the radial groove in a portion of decreasing radius so that an outwardly projecting shoulder 8 is formed by one side of the said radial groove.

Formed in the upper side of the closed head of the inner cap 2 is a radial slot 9 which commences adjacent the cap periphery and terminates adjacent an axial opening 3a formed therethrough for the passage of the rivet 3. This radial slot 9 is of increasing depth for a short distance from its outer extremity and then becomes gradually shallower towards its inner end. Provided partly in the slot 9 and partly in either the radial groove 6 or the annular groove 5 is a locking member 10 herein shown in the form of a circular disc. The curvature of the base of the slot 9 is such as to retain the locking member 10 in position to engage the shoulder 8 when the closure is substantially horizontal. Consequently if the outer cap 1 is turned in such direction as to screw the closure onto the neck of a bottle A rotation is also imparted to the inner cap 2, however if the outer cap is turned in the opposite direction the portion 5a of increased width of the annular groove 5 allows the disc to enter the said groove 5 so that the outer cap turns freely while the inner one remains stationary. 11 denotes an indicating mark on the outer cap in alignment with the center line of the radial groove 6 and is usually provided on the side of the cap towards which the said radial slot extends.

In order to remove the closure it is necessary to tilt it with the outer extremity of the slot 9 on the elevated side over and in alignment with the radial groove 6, the locking member 10 then travels inwardly in the radial groove 6. Then the

two caps are so held that rotation of the outer one imparts rotation to the inner one when it is turned in either direction so that under these conditions the two caps function substantially as a single unit.

In order to locate the radial groove 6 over the slot 9 I find it easiest to first turn the outer cap 1 in the direction to tighten the closure onto a bottle, when the locking member 10 contacts the shoulder 8 and further rotation of the outer cap tends to turn the inner one the groove 6 and the slot 9 must be in alignment. By inspection the indicating mark 11 may be easily found and the side of the cap on which that mark appears is then elevated to tilt the closure. The locking member then travels toward the center of the closure in the radial groove 6 and the slot 9, then the two caps are held against independent rotation in either direction. Obviously other means may be employed for accomplishing the same purpose.

While in the foregoing the preferred embodiment of the invention has been described and shown, it is understood that alterations and modifications may be made thereto provided they fall within the scope of the appended claims.

What I claim is:

1. A bottle closure including an inner and an outer cap, means holding the former within the latter for independent rotation, means on the inner cap for engaging the neck of a bottle, one cap having a radial slot formed in the head thereof, the other cap having an annular groove formed in its head and a radial groove extending inwardly from the annular groove, the inner periphery of the annular groove being of greater radius at its junction with one side of the radial groove than at its junction with the other whereby an outwardly projecting shoulder is formed by one side of the radial groove at its outer extremity, a locking member extending partly into the radial slot and partly into either the radial or the annular groove, means tending to retain the locking member so positioned as to engage said shoulder, the latter being adapted to engage the locking member when the outer cap is turned in one direction thereby imparting rotation to the inner cap, the member being adapted to travel around the annular groove when the outer cap is turned in the opposite direction thereby permitting the inner cap to remain stationary, and the outer cap being adapted to impart rotation to the inner cap when the locking member extends partly into the radial slot and partly into the radial groove and said outer cap is turned in either direction.

2. The combination set forth in claim 1 wherein the radial slot is formed in the outer side of the head of the inner cap and the radial and the annular grooves are formed in the inner side of the outer cap, and the means tending to retain the locking member positioned to engage said shoulder consisting of the form of the slot the depth of which increases for a short distance from its outer extremity and then gradually diminishes towards its inner extremity.

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