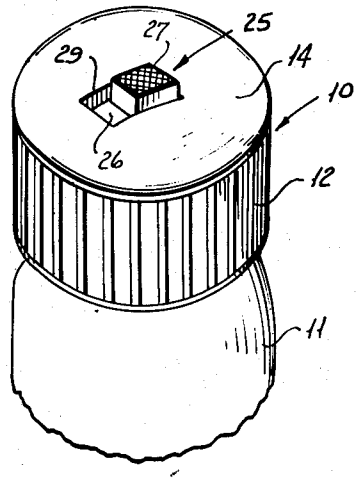
Dec. 4, 1956 J. PASQUARIELLO 2,772,803

SAFETY CONTAINER CLOSURE

Filed Dec. 27, 1954

Fig 1



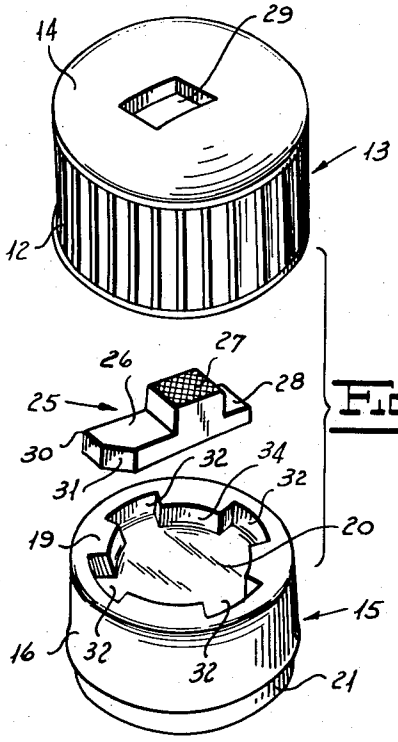
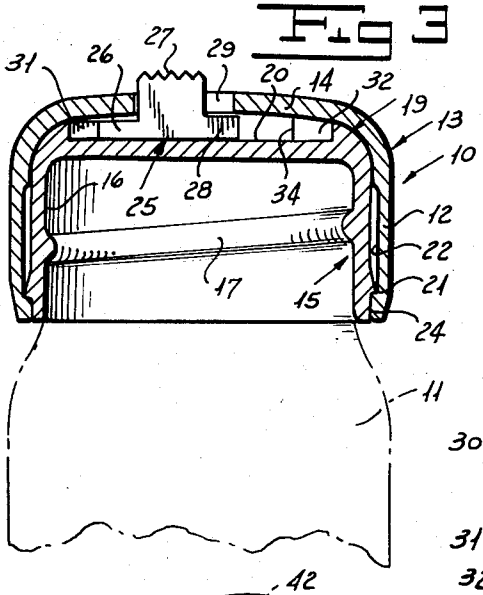


Fig 2

Fig 3



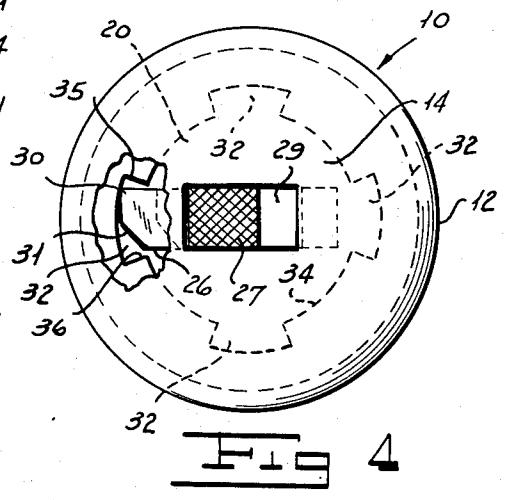


Fig 4

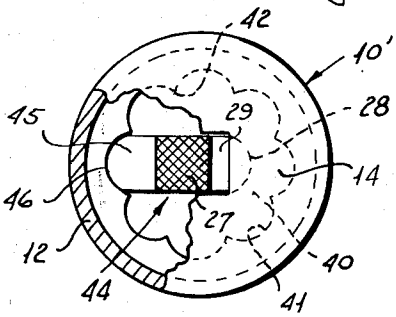


Fig 5

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SAFETY CONTAINER CLOSURE

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4 Claims. (Cl. 215—43)

This invention relates to a safety closure for containers such as bottles, cans, and the like. The closure is particularly of advantage for use with containers to which it is applied by motion having a circular component, and is removed by movement in the reverse direction. The closure of the invention is so made that it cannot be accidentally removed from the container to open the same, and the difficulty of removal of the closure is such that small children cannot accomplish it.

Almost every household contains substances such as drugs and the like to which children should not have free access. Further, adults when in a hurry or paying insufficient attention sometimes take drugs which are injurious or poisonous. It is, therefore, desirable that at least some of the containers around the house should have closures which are difficult to open, so much so that a small child cannot accomplish it and that an adult cannot open the container without taking extraordinary steps, thereby alerting him to the dangerous nature of the substance in the container.

It is among the objects of the present invention to provide a rugged, simply made, inexpensive safety closure for containers.

A further object of the invention resides in the provision of a compact safety closure which does not add unduly to the height of the capped container, and which is not unsightly or bulky. Yet another object of the invention, in one embodiment thereof, resides in the provision of a safety closure wherein the relatively movable parts may be positively locked together to apply the closure to a container but tend to become unlocked from each other upon removal of the closure from the container, and require conscious and substantial effort to manipulate the closure to remove it from the container. A still further object of the invention, in a second disclosed embodiment thereof, is to provide a container closure which requires substantial conscious effort on the part of the manipulator to secure the parts together against relative rotation during the steps of both applying the closure to and removing it from a container.

The above and further objects of the invention will more fully appear upon consideration of the following disclosure of preferred embodiments thereof.

My invention is clearly defined in the appended claims. In the claims, as well as in the description, parts are at times identified by specific names for clarity and convenience, but such nomenclature is to be understood as having the broadest meaning consistent with the context and with the concept of my invention as distinguished from the pertinent prior art. The best form in which I have contemplated applying my invention is illustrated in the accompanying drawings forming part of this specification, in which:

Fig. 1 is a perspective view of a first embodiment of the closure applied to the neck of a bottle, only a fragment of the bottle being shown.

Fig. 2 is an exploded perspective view of the container closure of Fig. 1.

Fig. 3 is a vertical axial section through the assembled closure of Fig. 1, the neck of the bottle being shown in dot and dash lines, the locking dog of the closure being shown in elevation.

Fig. 4 is a plan view of the first embodiment of the closure, a part of the top of the outer member of the closure being broken away.

Fig. 5 is a view similar to but on a smaller scale than that of Fig. 4 of a second embodiment of the closure of the invention.

The container closure of the invention is provided with an inner, container-engaging part which closes the opening in the container neck, the inner part of the closure being effectively hooded by an outer, finger and thumb manipulated part. The inner and outer parts of the closure selectively are freely rotatable with respect to each other, or they may be locked together for joint rotation when the closure is applied to and removed from the container. When the container parts are freely rotatable with respect to each other, the applied closure cannot be removed from the container, and it is only upon the exercise of conscious effort and considerable force that the closure parts can be locked together to allow removal of the closure from the container. The closure is thus useful with containers having screw threaded necks or containers employing bayonet type closures in which a component of the closure applying and removing motion is circular.

In the accompanying drawing, Figs. 1 through 4 depict a first embodiment of the closure, and Fig. 5 shows a second embodiment thereof. In Figs. 1 through 4, the closure is generally designated **10**. In Figs. 1 and 3, the closure is shown as applied to the threaded neck of a bottle generally designated **11**.

Closure **10** has an outer cup-like portion **13** having an externally vertically corrugated side wall **12** and a transverse top portion **14**. The closure has an inner cup-like portion **15** telescoped within portion **13** with the transverse end walls of the two portions in confronting relationship as shown in Fig. 3. The inner surface of side wall **16** of the inner part **15** is provided with a helical rib **17** to engage between the lands of the thread on the outside of the bottle neck. The outer part of the closure effectively hoods the inner part, and the two parts are rotatably held against separation by the external shoulder **21** on the bottom of wall **16** of the inner part which is in engagement with the shallow inwardly projecting flange **24** on the bottom of wall **12** of the outer part. Side wall **12** is radially enlarged at zone **22** above flange **24** to receive the shoulder **21**. The two parts **13** and **15**, which may be made of suitable materials such as metal or plastic material, may be assembled as shown in Fig. 3 by telescoping the parts together and momentarily deforming them at the lower edge of their side walls to allow shoulder **21** to snap past flange **24**.

The parts **13** and **15** of the closure may be selectively locked together for joint rotation by operation of the laterally reciprocable dog **25**, non-rotatably held with respect to part **13**, the dog cooperating with a clutch-like portion of part **15**. Closure part **15**, as clearly shown in Fig. 2, has a central recess **20** in its top **19**. The dog **25** rests upon the bottom of recess **20**. Such dog has a horizontal plate portion **26** from which there rises the thumb operated key or tab **27**, generally square in plan, which projects through the rectangular, diametrally disposed opening **29** in the top **14** of part **13**. A tail **28** projects rearwardly from plate portion **26** beyond key **27**. Opening **29** is disposed somewhat eccentrically of end wall **14**, so that when the key **27** abuts the more central end thereof the dog **25** is in central, inoperative position withdrawn from the clutch-like portion of part **15**, and that when the dog is posi-

tioned in its other terminal position, shown in Fig. 3, it is advanced into contact with such clutch-like portion to lock the two closure parts from relative rotation. The tail 28 lies beneath portion 14 of member 13 in both terminal positions of the dog to maintain the dog stably in position.

Portion 26 of dog 25 has a sharp corner 30 and an oblique corner 31. The nose of the dog, including corner 30 and surface 31, is receivable in one or more radial recesses 32 (four shown) in the side walls of the central recess 20 on the top of closure part 15. When it is desired to apply the closure to the threaded neck of a container, the user slides the dog into the position shown in Figs. 3 and 4 and then, grasping side wall 12 of the outer closure part, screws the closure onto the container neck. Because the surface 35 of the recess 32 receiving the nose of the dog lies generally radial, the sharp corner 30 of the dog when once engaged with wall 35 tends to remain in the position shown when the closure is turned clockwise in Fig. 4 to screw the closure onto the container.

The radially inner end of oblique surface 31 on the end of the dog lies somewhat inwardly of the radially inner edge of the then trailing side wall 36 of recess 32. Accordingly, assuming that the closure has been tightly screwed onto the container neck, rotation of the outer container part 13 in a counterclockwise direction, when it is attempted to unscrew the closure from the bottle, imposes a substantial thrust upon the dog 25 in the direction from left to right in Fig. 4. As a consequence, it requires substantial conscious effort on the part of the user to maintain the nose of the dog 25 within recess 32 and thus parts 13 and 15 connected for joint rotation when the outer closure part is being turned counterclockwise. This normally requires that the thumb shall engage and urge key 27 to the left and that the outer side wall of part 13 of the closure shall be engaged between the index and second fingers of the hand. Not only is the force required to maintain the dog 25 in its left-hand terminal position more than that of which a small child is capable, but the positioning of the fingers and thumb, being different from that used to unscrew the ordinary cap, presents a problem which he cannot solve. The removal of the cap also, being somewhat more complicated than that of the ordinary cap, also serves to warn an adult that the substance in the bottle is dangerous.

The safety closure of the second embodiment, shown in Fig. 5, is designated 10'. Such closure employs generally the same parts as those in the first described embodiment, such parts being designated by the same reference characters as those in Figs. 1 through 4. In Fig. 5, as shown, the central recess 40 on the top of the transverse end wall of the inner closure part has a series of similar scalloped recesses 41 around its border. Adjacent recesses 41 meet at points 42 which lie on a circle coaxial of the closure. The upper transverse wall 14 on the outer closure part is provided, as before, with an eccentrically disposed diametral slot 29 slidably and non-rotatably receiving the dog actuating key 27 which projects upwardly therethrough. The locking dog, generally designated 44, has a horizontal plate-like portion 45 provided with a nose 46 which is complementary to the recesses 41.

The closure of Fig. 5, because of the symmetry of the recesses 41 and of the nose 46 of the dog, operates in essentially the same manner upon screwing the closure onto the container neck as it does upon unscrewing of the closure therefrom. In both instances the interaction between the side walls of recesses 41 and the nose 46 of the dog is such that, upon the turning of the outer part of the closure when resistance to turning is imposed upon the inner part thereof, a marked force to thrust the dog to the right (Fig. 5) results. With such closure, therefore, a substantial conscious effort is required to hold the dog in the position of Fig. 5, in which it connects the inner and outer closure parts for joint rotation, both when applying it to the container and removing it therefrom.

I claim:

1. A safety cap for containers having an externally threaded neck comprising: a first, outer cup-like member having a transverse upper end, a second, inner cup-like container neck engaging member having a transverse upper end telescoped within the first member with the closed ends of each member confronting each other, said second member having a thread engaging means on its inner side wall, means rotatably connecting the two members against separation, the transverse upper end of the second member having a large central recess in its upper surface, a dog mounted in said recess for reciprocation radially thereof, means retaining the dog from rotation with respect to the first member, the wall of the recess having at least one dog receiving depression, and thumb-engageable operating means having a stem rectangular in section connected to the dog and projecting through an elongated opening in the transverse wall of the first member in which the stem fits slidably but non-rotatably to move the dog into and out of said depression.

2. In the combination set forth in claim 1, the depression having a curved wall which is generally symmetrical about a radius of the cap, the dog having a nose which is generally similarly curved and receivable in said depression.

3. A safety closure for containers comprising a first, outer cup-like member having a transverse upper end, a second, inner cup-like container-engaging member having a transverse upper end telescoped within the first member with the closed ends of each member confronting each other, means rotatably connecting the two members against separation, and manually operated means for selectively connecting the two members for joint rotation comprising a dog mounted between the transverse ends of the two members, means mounting the dog for lateral shifting with respect to the first member, the dog having a nose portion, the second member having at least one recess into which the nose of the dog may project, and thumb-engageable operating means having a stem rectangular in section connected to the dog and projecting through an elongated opening in the transverse wall of the first member in which the stem fits slidably but non-rotatably to move the nose of the dog into and out of said recess.

4. A safety closure for containers comprising a first, outer cup-like member having a transverse upper end, a second, inner cup-like container-engaging member having a transverse upper end telescoped within the first member with the closed ends of each member confronting each other, means rotatably connecting the two members against separation, and manually operated means for selectively connecting the two members for joint rotation comprising a dog mounted between the transverse ends of the two members, means mounting the dog for lateral shifting with respect to the first member, the dog having a nose portion, the second member having at least one depression into which the nose of the dog may project, and thumb-engageable operating means connected to the dog and projecting through an elongated opening in the transverse wall of the first member to move the nose of the dog into and out of said depression, the depression having walls disposed generally radially of the cap, the corner of the nose on the dog which leads when the cap is screwed onto the container being sharp and the side of the nose which leads when the cap is unscrewed from the container being oblique to the axis of the dog.

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