Feb. 11, 1969 R. P. JENSEN 3,426,931

SAFETY CLOSURE FOR MEDICINE BOTTLE AND THE LIKE

Filed June 7, 1967

FIG. 1

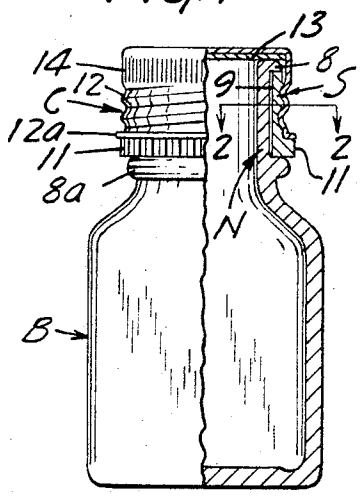


FIG. 2

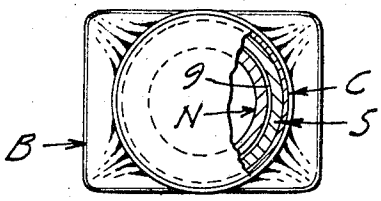


FIG. 3

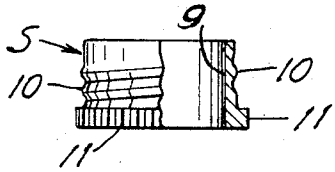


FIG. 4

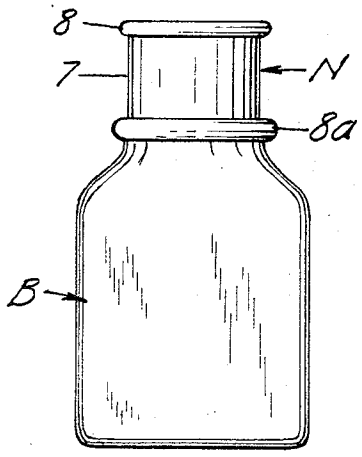
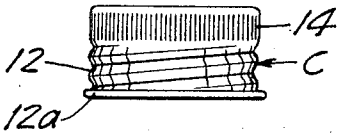


FIG. 5



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SAFETY CLOSURE FOR MEDICINE BOTTLE AND THE LIKE

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Int. Cl. B65j 55/02; A61j 1/00

ABSTRACT OF THE DISCLOSURE

A safety closure for medicine bottles and the like adapted to prevent access to the contents thereof without, on the part of the user, knowledge of an essential secret operation or function.

My improvements in combination with a conventional container for medicines, drugs, chemicals and the like, of the type having an outlet neck of cylindrical external contour, consist in an outwardly projecting element disposed adjacent the upper extremity of the container neck in combination with a novel slip ring having a smooth interior contour for loosely and rotatably surrounding the exterior, substantially cylindrical neck of the container. The slip ring is of a material and dimensioned to slightly stretch and be forced over the protruding retaining flange near the upper end of the container neck and is further characterized by an external helical or spiral thread or the equivalent which is adapted to be engaged and tightly locked with the internal thread of a closure cap member which may be of conventional type. When the closure cap member is tightly threaded upon the slip ring and endeavor is made to turn the cap to release the same, the two united lock parts will freely slip upon the cylindrical neck of the bottle or container and the outer cap will reinforce and cover the upper portion of the slip ring so that the slip ring may not then be pried off the neck of the container, by exertion of an upward force.

The final essential element is a gripping element which may be in the form of a ribbed or otherwise frictionally engageable skirt integrally formed, preferably with the slip ring and extending downwardly a short distance below the lower extremity of the conventional cap.

The informed user of the device, to remove the closure, merely grips the gripping area of the slip ring with the fingers of one hand, and then applies pressure or torque rotatively with the other hand to threadedly release the cap from the slip ring.

This invention relates to safety closures for containers filled with medicine, drugs and chemicals and the like, which may be dangerous to small children or incompetent persons if consumed or applied in quantity.

The prior art, as known to me, includes a number of patents wherein three to six cooperating parts combine with the neck of a bottle or other closure including always a final closure cap, to be interlocked together in operation so that certain functional movements or secret operations must be carried out to release the container cap proper and give access to the contents thereof. Most of these devices require at least two or three specially manufactured and constructed parts of complex nature, and do not permit use of conventional bottle closure caps constructed of metal or plastic.

The closest prior art, to my knowledge, may be found

in the United States Letters Patent to Christian, No. 3,027,034 and Hale, No. 2,710,701. Both of these patents show a slip ring principle to give freedom of turning by an incompetent person or a small child, in an attempt to normally open the container to get at the contents thereof.

However, in both forms of the structures disclosed in the Christian patent, one of the members of the three cooperating parts must be forced over another portion to telescope therewith and may be readily removed by a child or incompetent person, by a natural prying-off action such as would be readily employed to remove some closure from the neck of the container.

The Hale patent discloses a slip ring member having a rather complex relation with a specially manufactured closure cap wherein alignment of certain projecting legs or elements with certain grooves of one of the cooperating members and inclusion of an essential spring ring is requisite to produce the results. This works on the general principle of many of the prior art patents which require knowledge of a combination or relative rotative posion of one interlocking element with another.

It is an important object of my present invention to provide a very simplified and efficient safety closure for bottles and other receptacles containing drugs, medicine, inflammables and other ingredients which are usually dangerous when accessible to small children, incompetents and other uninformed persons. In carrying out such objects economy of manufacture, simplicity of parts, and use of conventional closure caps and containers have been carried out as far as possible.

A further object is the provision of a safety closure of the class described wherein two elements including a conventional threaded or other conventional container cap are combined and readily interlocked to form a slip ring structure loosely related to the neck of a container such as a bottle, so that a small child, incompetent or unskilled person would be unable to remove the closure by turning action of the assembled cap, or by forceful attempt to uplift the cap from the container neck.

The foregoing and other objects will be more apparent from the following description made in connection with the accompanying drawings wherein:

FIG. 1 is a view partly in side elevation and partly broken away, to show in vertical section an embodiment of my invention operatively applied upon the neck of a bottle or other container;

FIG. 2 is a top plan view of the same, with a portion of the closure being broken away to show interrelation of the essential parts;

FIG. 3 is a view partly in side elevation and partly in vertical section, showing the slip ring of my invention detached;

FIG. 4 is a side elevation of a bottle having a somewhat reformed neck structure for constituting an important component of my structure; and

FIG. 5 is a side elevation of a suitable cap for the outer closure cap of my device, which may and is preferably constructed of conventional form.

Referring now in detail to the embodiment illustrated, a container in the form of a bottle B is employed, having a smooth, generally cylindrical dispensing neck N having its upper end of course in open position, and as shown having a very smooth, external cylindrical surface 7. The container may be constructed of glass, plastic, metal or any other suitable material which is substan-

of the container have near its upper extremity, outwardly tially rigid in nature. It is essential that the neck end protruding retaining means such as a bead or flange **8** which protrudes some distance outwardly from the cylindrical neck surface **7**. It is desirable, although not essential to provide the lower portion of the exterior neck surface **7** with a slightly protruding abutment collar or flange **8***a*.

A slip ring indicated as an entirety by the letter S, constitutes an essential element of my invention combination, and as shown, has a smooth interior cylindrical periphery **9**, a coarsely threaded exterior **10**, and a thickened lower bead or skirt **11**, preferably integrally formed and acting as a continuation on its inner surface of the smooth cylindrical surface **9**. Slip ring S is open at both upper and lower ends and is adapted to be forcibly expanded or slightly stretched to be forced over the protruding retaining element or bead **8** at the upper extreme portion of the bottle neck N. It may be constructed of plastic, metal, or other composition which has sufficient flexibility or expansion to enable the ring S, when not reinforced, to be forcibly slipped over the retaining element **8** of the bottle.

A closure cap identified as an entirety by the letter C which may be and preferably is of conventional construction made from metal, plastic or other suitable material, constitutes the final component of my inventive combination. This cap, as shown, is screw threaded on at least its inner periphery to interlock with the external threads **10** of the slip ring. Of course it will be understood that screw segments rather than a continuous screw thread may be substituted for the structure shown.

It is preferable that the external threads **10** on slip ring S be tapered slightly upwardly, the lower threads enlarging in circumference to assure a tight interlocking of cap C and slip ring S when the cap is forcibly screw connected with the ring.

The cap C as shown, includes an external upper gripping circumference **14** and a lower annular bead and edge **12***a*.

To, as far as possible, prevent detection of the removal operation of my closure, it is desirable that the exposed and exterior portions of the slip ring S and cap **6** when interlocked as shown in FIG. 1, appear as one integral or continuous part. To this end it is desirable that the bottom edge of closure cap C as the edge defined by the bead **12***a*, fit flush against the upper shoulder of the thickened bead or skirt **11** of the slip ring S. It is also desirable that the external circumference of the bead **11** of the slip ring be substantially of the dimension of the part **12***a* of the conventional closure cap C. Further similarity of these parts could be enhanced if the bead **12***a* of the closure cap were ribbed or contoured in conformity with the bead or skirt **11** on the slip ring (not shown).

Operation

In use after the bottle or other container B has been filled to the desired level, the slip ring S is forced downwardly, generally longitudinally of neck N over the retaining medium or bead **8** at the upper end of the neck. Only a slight stretching and flexing of the slip ring **9** is requisite for such action and the result of course is that the slip ring S becomes revolubly mounted upon the smooth exterior surface **7** of the neck. The lower bead **8***a* of the neck end, while not essential to the combination, facilitates the later threaded interlocking of the closure cap C with the slip ring.

Next, closure cap C usually containing a slightly compressible sealing disc **13**, is aligned with the slip ring and threadedly engaged with the external thread medium **10** thereof, cap C being very tightly screwed upon the slip ring to effect a lock relation between parts S and C.

When an uninformed person, such as a child or an incompetent person, attempts to remove the safety closure, one or both of two attempted procedures are usually employed. First, the uninformed person would in all probability seek to loosen the closure by turning the conventional cap C. Such effort would result in freely revolving the interlocked slip ring and cap upon the smooth neck surface **7** of the container.

Secondly, an effort would likely be made to pull or pry the closure structure longitudinally from the neck of the container. This is positively prevented with my improved construction since the locked cap C reinforces the slightly expansible slip ring S and positively prevents stretching or expansion of the interior slip ring to be forced outwardly above and over the retaining bead or flange **8**.

The combinative structure which positively prevents longitudinal forced removal of the safety cap is well illustrated in FIG. 1. Here, it will be noted that the upper annular edge of slip ring S is comparatively flat and abuts flush against the complementary flat surface of the outwardly projecting retaining bead **8**. The periphery of cap C tightly and threadedly engages the exterior of slip ring S, preventing any flexing or stretching outwardly of the annular configuration of slip ring S. It is to be assumed that cap C is constructed of relatively rigid material and if not a metal cap, should be sufficiently thick if made of plastic or other composition, to prevent stretching or substantial flexing thereof.

From the foregoing description it will be seen that I have provided a very simplified and efficient safety closure for bottles and other recpetacles containing drugs, medicines, inflammables or other ingredients which are usually dangerous when accessible to small children, incompetents and other uninformed persons.

It will further be seen that with my important cooperating components, the locking relation is set up between a closure cap (preferably of conventional form) and a simple slip ring member which not only prevents revoluble or torque-applied removal of the closure structure, but which positively prevents longitudinal removal by force or prying action.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What is claimed is:

1. In a safety closure for receptacles containing dangerous ingredients, the combination with a container having an externally smooth, substantially cylindrical outlet neck provided with an outwardly projecting ring-retaining medium adjacent the upper extremity thereof and with an annular flange disposed some distance below said upper retaining medium,

those improvements which comprise,

a slip ring having a smooth interior disposed upon said neck below said upper retaining medium and said annular flange for free rotation upon said neck,

said slip ring having external screw threaded means extending in configuration slightly outwardly of the confines of said upper retaining medium,

a screw closure cap internally threaded to engage and lock with the external thread means of said slip ring to thereby reinforce and prevent slidable, longitudinal remvoal of said slip ring from said container neck, and

said slip ring having a lower external grip annulus disposed immediately below the lower extremity of said closure cap when the device is assembled, the entire cap and said grip annulus uniting just above said lowermost flange of said receptacle neck to simulate in appearance an integral or unitary closure piece.

2. The improvements and structure set forth in preceding claim **1** further characterized by the lower external grip annulus of said slip ring, being substantially equal in external diameter to the lower edge of said closure cap.

3. The structure set forth in preceding claim 1 further characterized by the external screw thread means of said slip ring being tapered in circumference upwardly from the lower end of said ring to provide a tight interlocking relationship between said ring and cap when said cap is tightly screwed upon said tapered thread.

4. The structure set forth in preceding claim 1 further characterized by said slip ring being constructed of a material which will slightly stretch to enable the same to be forced over said upper retaining medium thereby surrounding said neck in rotatable relation.

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U.S. Cl. X.R.

215—43