

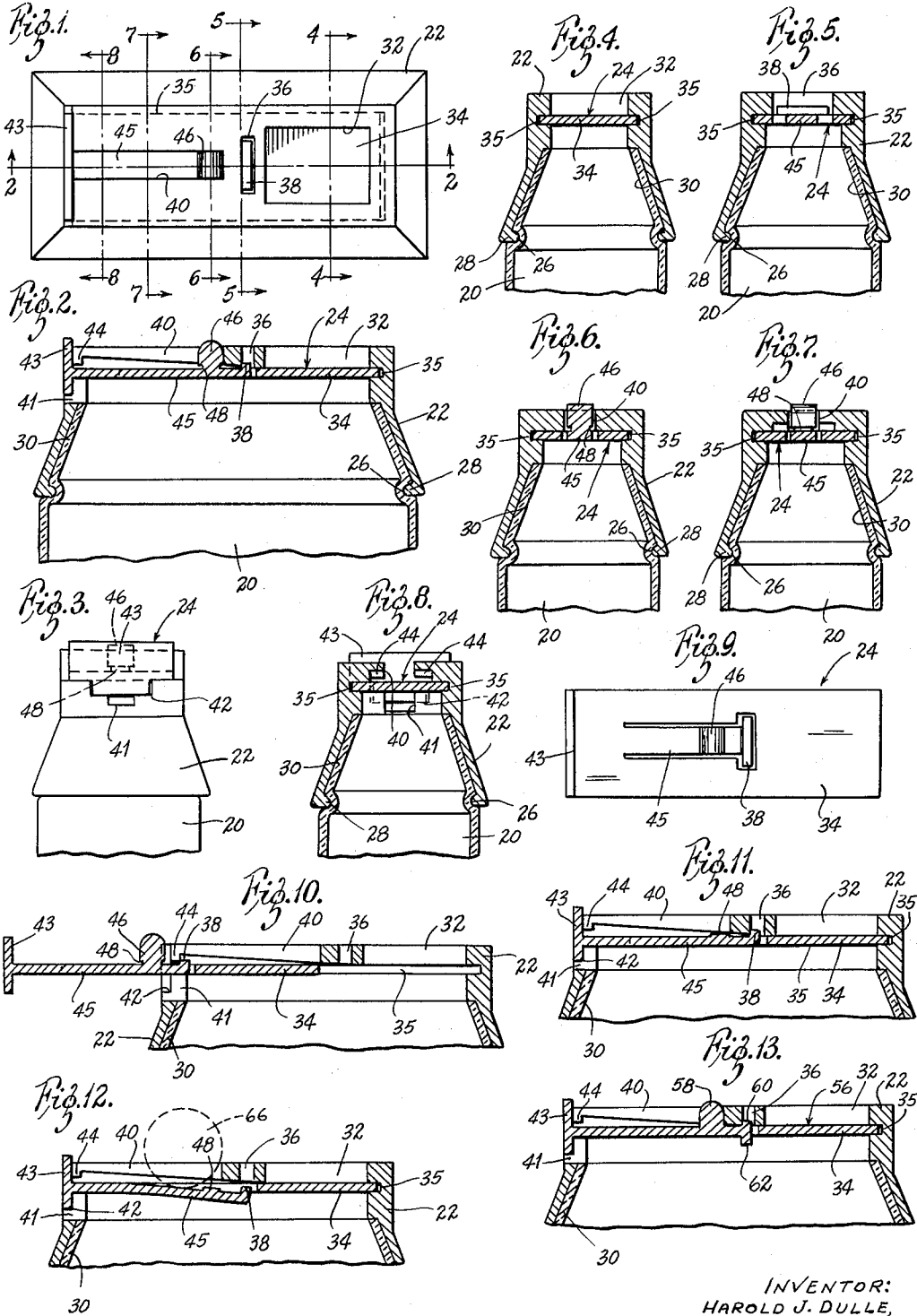
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SAFETY CLOSURE FOR BOTTLES

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SAFETY CLOSURE FOR BOTTLES

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This invention relates to improvements in closures for bottles and in particular is concerned with such closures that may be used either as a safety or as a regular sliding closure for bottles. The safety closure provides that children of tender years cannot readily open the bottle.

In the past there has been a problem in the field of packaging various types of medicines and drugs to prevent the accidental use by children of tender years of the contents. Such use in the swallowing of dangerous drugs by children has resulted in many tragic deaths. By means of this invention, there has been provided a safety closure for bottles providing a closure that cannot readily be opened by a child of tender years so that unauthorized access to the bottle is thereby prevented. The closure is of such a type that by simple modification by an adult user it can be employed as a conventional bottle type closure when the contents are not filled with dangerous drugs.

Basically the safety closure of this invention is of the slide type and it may be used as a simple type of open and close closure by operating a primary handle. This handle, for proper operation, requires depression of the sliding closure to release a lock tab after which the closure may be operated by sliding it in the usual fashion. To effect the safety operation, the handle may be rendered inoperative, such as by breaking it along a scored line. In this condition, the opening of the sliding closure requires the depression of the slide by a pencil, or other narrow object, coupled with a sliding action, which cannot be effected by a child of tender years, thereby providing a safety factor. The slide closure can be simply employed by simple modification of the top of a bottle, or it can be effected by making an integral top portion which can be readily placed upon the top of a bottle of standard construction.

The sliding closure is one that may be simply operated by adults, yet practicably impossible to operate by a child of tender years, thereby achieving the object of this invention. Further, the sliding closure can be operated in conventional fashion when the contents do not contain or are emptied of the dangerous drug.

The above features are objects of this invention and further objects will be apparent in the detailed description which follows and will be otherwise apparent to those skilled in the art.

For the purpose of illustration, there is shown in the accompanying drawings a preferred embodiment of this invention. It is to be understood that these drawings are for the purpose of example only and that the invention is not limited thereto.

In the drawings:

FIGURE 1 is a top plan view of the sliding closure;

FIGURE 2 is a view in section taken on the line 2-2 of FIGURE 1 showing the interfitting of the sliding closure with the bottle top;

FIGURE 3 is a fragmentary view in end elevation taken from the left end of FIGURE 1 showing the top of the bottle;

FIGURE 4 is a figure taken on the section of line 4-4 of FIGURE 1 showing the covering of the opening portion of the closure;

FIGURE 5 is a sectional view taken on the line 5-5 of FIGURE 1 showing the relationship of the locking tab of the slide with the bottle top;

FIGURE 6 is a sectional view taken on the line 6-6

of FIGURE 1 showing the relationship of the handle on the slide with the bottle top;

FIGURE 7 is a sectional view taken on the line 7-7 of FIGURE 1 further showing another portion of the slide and the bottle top;

FIGURE 8 is a sectional view taken on the line 8-8 of FIGURE 1 showing the construction of the left side of the bottle top and slide construction;

FIGURE 9 is a top plan view of the slide structure;

FIGURE 10 is a view in section taken similarly to FIGURE 2 but showing operation of the slide in a non-safety relationship;

FIGURE 11 is a view taken similarly to FIGURE 2 but showing the handle broken off and the slide in safe and locked position;

FIGURE 12 is a view taken similarly to FIGURE 11 but showing the start of the unlocking operation; and

FIGURE 13 is a view similar to FIGURE 2 illustrating a modified slide.

Referring now to the drawings in FIGURES 1 and 2, the bottle 20 is shown provided with the bottle top 22 and slide closure 24 of this invention. Although the bottle top 22 is shown separate from the bottle 20, it will be understood that these two parts may be made integral where desired.

The bottle 20 is provided with a groove 26, which receives a bead 28 of the bottle top. In this fashion the bottle top may be very simply clamped upon the bottle, since the bottle top may be made of slightly resilient plastic which can be spread apart due to the slanting configuration of the top wall 30 of the bottle, which acts as a cam to spread apart the walls of the bottle top.

The bottle top 22 is provided with an opening portion 32 which, as shown in FIGURES 1 and 2, is covered by the end 34 of the slide. The slide is received within guide grooves 35 cut into the bottle top. The bottle top is further provided with a slot 36 which receives a lock tab 38 of the slide valve. An additional slot 40 extends from the central portion of the bottle top to the left end as viewed in FIGURES 1 and 2. The left end of the bottle top has a slot 41 permitting passage of a handle of the slide valve and a cut out portion 42 which receives the stop end 43 of the slide.

The slide structure 24 is best shown in FIGURES 2, 10, 11 and 12. As there shown, it will be noted that a tongue portion 45 is cut out from the main body of the slide and supports the handle 46 and the locking tab 38. The slide may be made of semi-rigid plastic having a degree of resiliency and it will be understood that the tongue 45 may be depressed downwardly, but, due to its resiliency, will return to the place of the slide. The handle 46, as further shown in FIGURE 10, is grooved at the base, as indicated by the reference numeral 48. This makes possible an easy breakage of the handle so that the slide may then be altered and modified to the safe condition to prevent unauthorized opening.

A modified slide is shown in FIGURE 13 and is identified by reference numeral 56. This slide is generally similar to the slide 24 shown in FIGURE 9, but the locking tab has protuberances 60 and 62 both above and below the slide, respectively. This slide may be used in the normal fashion in the non-safe condition, in the position shown in FIGURE 13, where the handle is used in the operation, or it may be reversed by pulling it out of the bottle top and reinserting with the handle in the lowered position where it may then be employed in the safety condition.

Use

The safety bottle top shown in FIGURES 1 through 12 may be very simply employed. The bottle top may be used, as previously mentioned, with a separate bottle, or

it may be formed integrally with the bottle. The bottle can be used by druggists in selling of dangerous drugs, or it can be employed for the selling of any type of articles which are to be dispensed through an opening by operation of the slide closure. In the condition shown in FIGURES 1 through 10, the bottle may be operated by any user, including small children. This is very simply effected by merely pressing downwardly upon the handle 46 and moving it to the left, as shown in FIGURE 1. After being moved to a position where the opening 32 is opened, any contents may be simply dispensed. In this operation there is a relative degree of safety in that the locking tab 38 prevents the operation or opening of the slide, unless there is a combined downward movement coupled with the sliding movement to the left, which constitutes a two-fold or compound action. Thus, the slide is effectively locked against any forces that may tend to dislodge it, since these forces will normally be acting only along the direction of the place of the slide. The slide is, of course, controlled in its movement through the grooves 35 in the bottle top which act as guides for the slide. The flanges 44 act to stop the slide from removal from the bottle top through engagement by the locking tab 38.

The slide is very simply returned to the closed position by moving upon the stop piece 43.

The slide closure in the above-described condition may be the normal employment of the bottle top closure. Thus, some users will have no conditions existent where children of tender years are present and will want to use the closure in this normal operation. However, where children of tender years are present, unauthorized opening of the bottle will be desired and in this situation the handle 46 is broken off the slide by breaking it apart along the weakening groove 48. In this situation when the slide is closed it cannot be opened even by pressing against or pulling upon the stop 43, since the locking tab 38 locks the slide in place, and the locking tongue 44 cannot be disengaged due to the narrow width of the slot 40. To disengage the lock, a narrow tool, such as the coin shown in dotted lines in FIGURE 12, indicated by the reference numeral 66, is employed. The coin is used to depress the tongue and disengage the locking tab, which may be accomplished with one hand. The other hand is employed to pull the stop 43 away from the bottle top, thus exposing the opening 32. After this operation, the contents of the bottle may be simply dispensed.

The slide closure may be simply returned to the locked position by pushing upon the stop 43, as for the normal operation, and the locking tab may be reengaged by depressing the tongue with a coin, whereas the return is effected for the normal operation merely by depressing the handle to reengage the locking tab in the locked condition.

In the modification of FIGURE 13, it will be understood that the slide structure may be simply used in the position shown as previously described. Where the device is desired to be employed in the safe condition, so that children of tender years and the like cannot simply operate it, the slide 56 is withdrawn and the handle is placed downwardly and the slide is reinserted in the bottle top. In this condition the locking tab 62 will operate in the same fashion as the locking tab 38 previously described for the embodiment above. This modification makes it possible to use the slide either in normal operation or in the safe operation, and changes back and forth can be effected as desired, whereas in the embodiment of FIGURES 1 through 12, after the handle is broken off, it can only be used in the safe condition.

Various changes and modifications may be made in this invention as will be readily understood by those skilled in the art. Thus, the shape of the handle may be simply changed to accommodate the shape of the finger more readily, and other simple modifications may be employed as will be readily understood. Such changes and modifications are within the scope and teaching of this invention as defined by the claims appended hereto.

What is claimed is:

1. A safety closure for bottles adapted to be operated in a conventional fashion and a safe fashion, said closure comprising a top member fitting upon the top of said bottle in stationary relationship, a dispensing opening provided in said top member, a slide valve member slidably received by said top member and having a portion adapted to be moved into and out of registry with said opening to close and open it respectively, locking means for said slide valve member constituting a vertical lock element carried by a portion of said slide valve relatively movable with respect to the remainder of said valve, said lock element being engaged in the locked position in a lock slot in the top member, and a handle for said slide valve member mounted upon said movable portion operable to unlock said locking means for operating the slide valve in conventional fashion, and means for operating said slide valve in safe fashion, said means comprising means for rendering said handle inoperative and restricted means for unlocking said locking means requiring a compound movement to move said slide valve.

2. A safety closure for bottles adapted to be operated in a conventional fashion and a safe fashion, said closure comprising a top member fitting upon the top of said bottle, in stationary relationship a dispensing opening provided in said top member, a slide valve member slidably received by said top member and having a portion adapted to be moved into and out of registry with said opening to close and open it respectively, locking means for said slide valve member constituting a vertical lock element carried by a portion of said slide valve relatively movable with respect to the remainder of said valve, said lock element being engaged in the locked position in a lock slot in the top member, and a handle for said slide valve member mounted upon said movable portion operable to unlock said locking means for operating the slide valve in conventional fashion, and means for operating said slide valve in safe fashion, said means comprising a weak connection connecting said handle to said movable portion of the slide valve whereby it may be broken off and a protective member covering said slide valve having an opening only permitting insertion of a relatively narrow tool to manually operate said movable portion to unlock said locking means and move the slide valve.

3. A safety closure for bottles adapted to be operated in a conventional fashion and a safe fashion, said closure comprising a top member fitting upon the top of said bottle, a dispensing opening provided in said top member, a slide valve member slidably received by said top member and having a portion adapted to be moved into and out of registry with said opening to close and open it respectively, locking means for said slide valve member constituting a vertical lock element carried by a portion of said slide valve relatively movable with respect to the remainder of said valve, said lock element being engaged in the locked position in a lock slot in the top member, and a handle for said slide valve member mounted upon said movable portion operable to unlock said locking means for operating the slide valve in conventional fashion, and means for operating said slide valve in safe fashion, said means comprising means for reversing said slide valve in the top member to place the handle in a downward inaccessible position in the bottle, a weak connection connecting said handle to said movable portion of the slide valve whereby it may be broken off and a protective member covering said slide valve having an opening only permitting insertion of a relatively narrow tool to manually operate said movable portion to unlock said locking means and move the slide valve, said vertical lock element protruding on both sides to the slide valve member so that it may engage in the lock slot in both the conventional and safe position of the valve member.

4. A safety closure for bottles, said closure comprising a top member fitting upon the top of said bottle, a dispensing opening provided in said top member, a slide valve

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member slidably received by said top member and having a portion adapted to be moved into and out of registry with said opening to close and open it respectively, locking means for said slide valve member comprising a lock element engageable with a lock slot provided in said bottle top, said lock element being supported upon a relatively movable tongue portion of the slide valve, a handle mounted upon said tongue portion of the slide valve operable sequentially to disengage said locking element by a vertical movement and to move the slide valve away from the dispensing opening by a horizontal movement.

5. A safety closure for bottles adapted to be operated in a conventional fashion and a safe fashion, said closure comprising a top member fitting upon the top of said bottle, a dispensing opening provided in said top member, a slide valve member slidably received by said top member and having a portion adapted to be moved into and out of registry with said opening to close and open it respectively, locking means for said slide valve member comprising a lock element engageable with a lock slot provided in said bottle top, said lock element being supported upon a relatively movable tongue portion of the slide valve, a handle mounted upon said tongue portion of the slide valve operable sequentially to disengage said locking element by a vertical movement and to move the slide valve away from the dispensing opening by a horizontal movement and means for operating said slide valve in safe fashion, said means comprising means for rendering said handle inoperative and restricted means for unlocking said locking means requiring a compound movement to move said slide valve.

6. A safety closure for bottles adapted to be operated in a conventional fashion and a safe fashion, said closure comprising a top member fitting upon the top of said bottle, a dispensing opening provided in said top member, a slide valve member slidably received by said top member and having a portion adapted to be moved into and out of registry with said opening to close and open it respectively, locking means for said slide valve member comprising a lock element engageable with a lock slot provided in said bottle top, said lock element being supported upon a relatively movable tongue portion of the slide

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valve, a handle mounted upon said tongue portion of the slide valve operable sequentially to disengage said locking element by a vertical movement and to move the slide valve away from the dispensing opening by a horizontal movement, and means for operating said slide valve in safe fashion, said means comprising a weak connection connecting said handle to said movable portion of the slide valve whereby it may be broken off and a protective member covering said slide valve having an opening only permitting insertion of a relatively narrow tool to manually operate said movable portion to unlock said locking means and move the slide valve.

7. A safety closure for bottles adapted to be operated in a conventional fashion and a safe fashion, said closure comprising a top member fitting upon the top of said bottle, a dispensing opening provided in said top member, a slide valve member slidably received by said top member and having a portion adapted to be moved into and out of registry with said opening to close and open it respectively, locking means for said slide valve member comprising a lock element engageable with a lock slot provided in said bottle top, said lock element being supported upon a relatively movable tongue portion of the slide valve, a handle mounted upon said tongue portion of the slide valve operable sequentially to disengage said locking element by a vertical movement and to move the slide valve away from the dispensing opening by a horizontal movement and means for operating said slide valve in safe fashion, said means comprising means for reversing said slide valve in the top member to place the handle in an inaccessible downward position in the bottle and said lock element protruding on both sides to the slide valve member so that it may engage in the lock slot in both the normal and safe position of the valve member.

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