United States Patent [19]

Hazard

[11] **3,863,818**

[45] **Feb. 4, 1975**

[54] **DISPENSING CLOSURES WITH INTEGRAL SPOUT LATCHES**

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[22] Filed: **Dec. 17, 1973**

[21] Appl. No.: **425,227**

[52] **U.S. Cl.** **222/531**

[51] **Int. Cl.** **B67b 7/12**

[58] **Field of Search** 222/531-536, 222/556; 239/587, 538

[56] **References Cited**

UNITED STATES PATENTS

3,477,618	11/1969	Hazard	272/534
3,495,745	2/1970	Akers	222/534
3,653,546	4/1972	Hazard	222/534 X

Primary Examiner—Stanley H. Tollberg
Assistant Examiner—Norman L. Stack, Jr.
Attorney, Agent, or Firm—Edward D. O'Brian

[57] **ABSTRACT**

A dispensing closure having a cap and a spout rotatably mounted on the cap can be formed so as to include at least one latch structure which is integral with the cap. The cap and the latch structure are manufactured from a resilient material such as polyethylene. The latch structure extends above the top of the cap and overlays a part of the spout so that only by moving and holding the latch structure is the spout released so that it can be rotated from a closed to an open position. The latch structure preferably includes an enlarged, lever type extension. Several of such latch structures are preferably used. Such a closure is considered to be of a relatively child resistant character.

7 Claims, 8 Drawing Figures

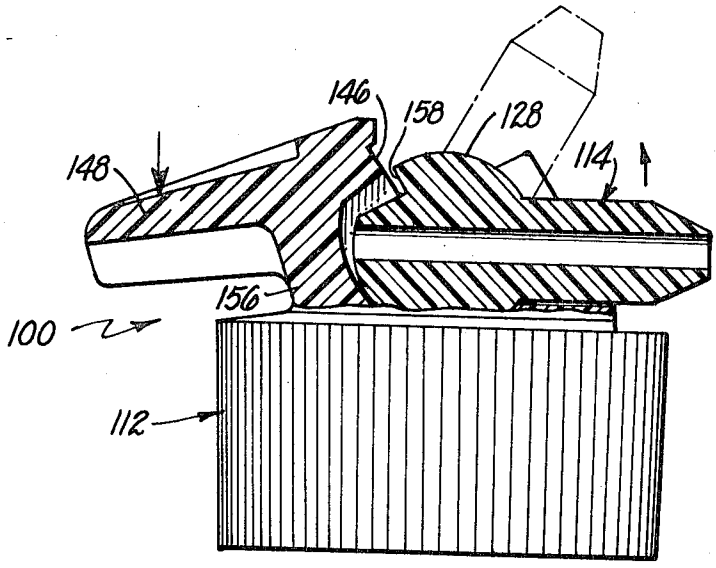


FIG. 1.

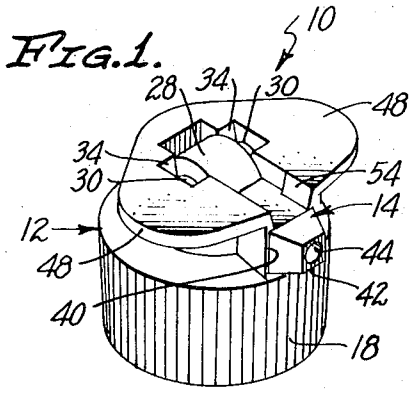


FIG. 2.

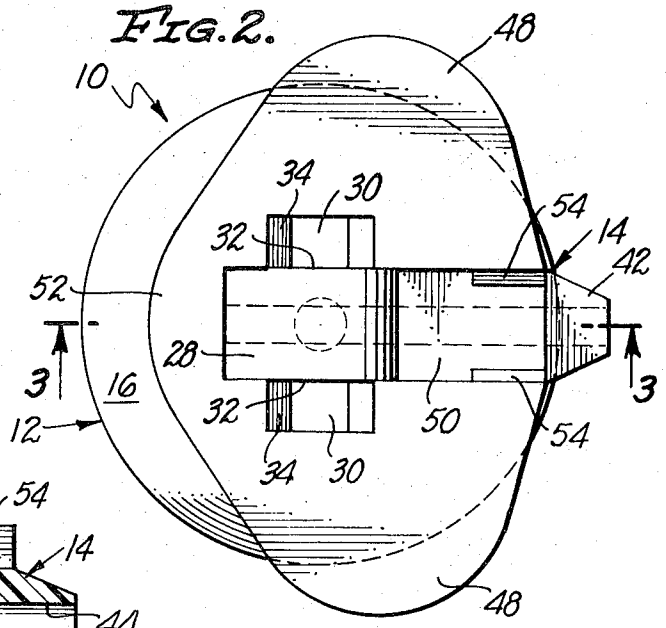


FIG. 3.

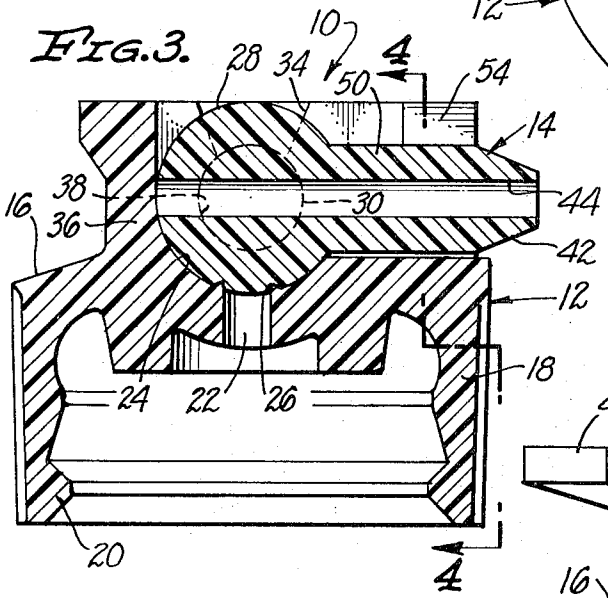


FIG. 4.

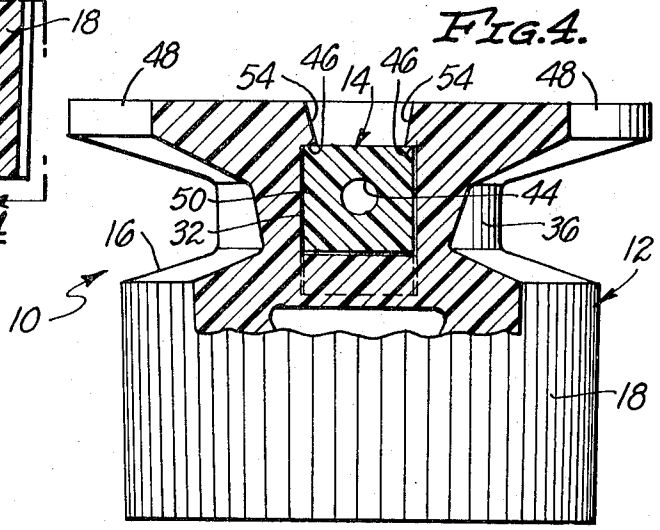


FIG. 5.

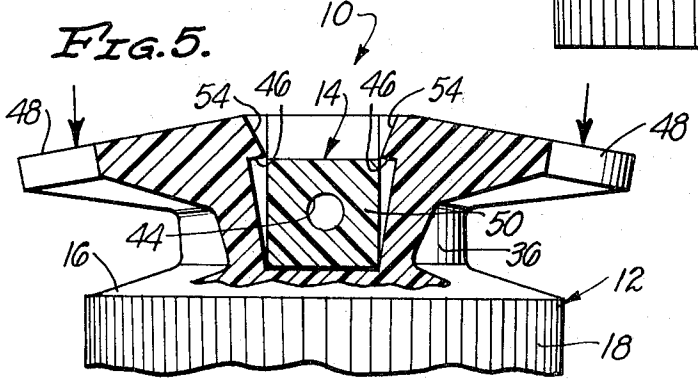


FIG. 6.

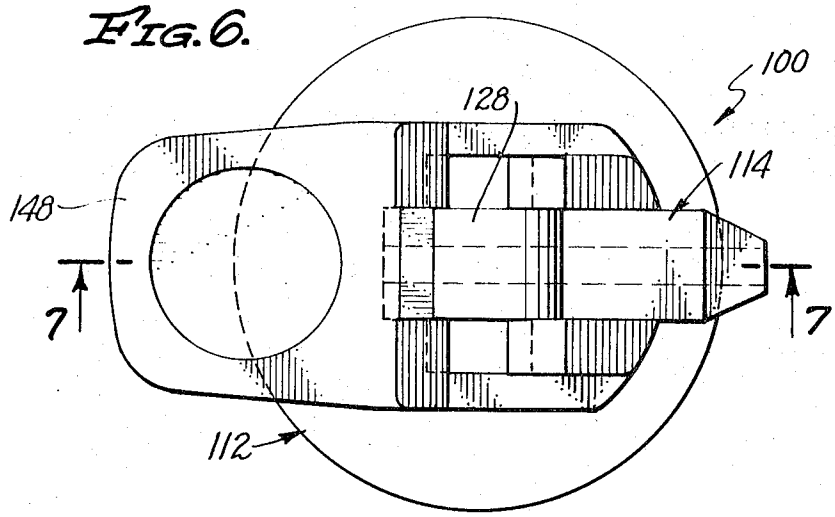


FIG. 7.

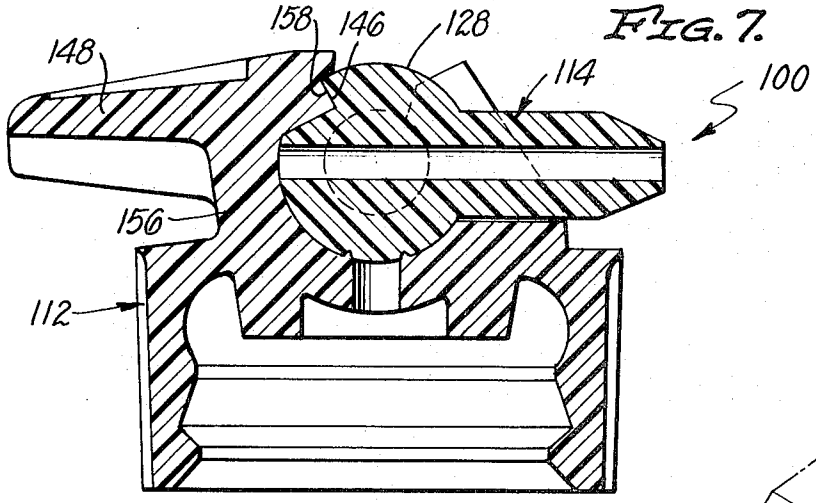
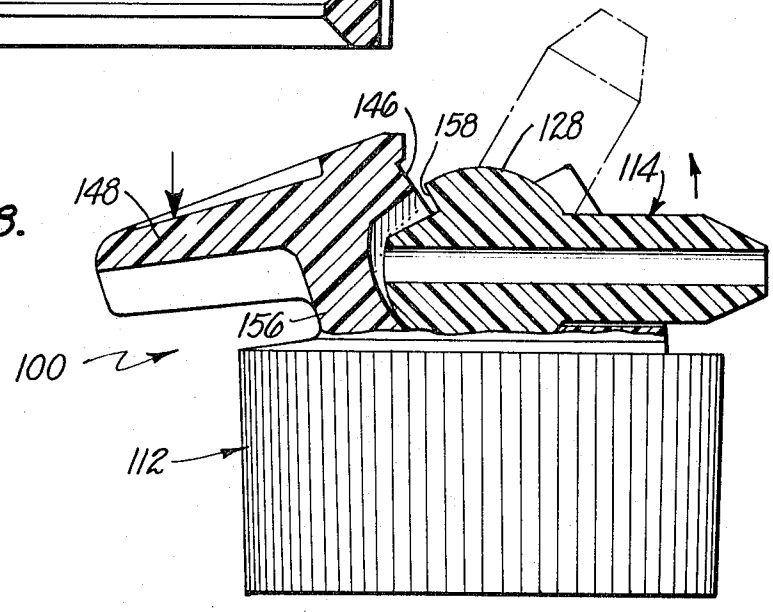


FIG. 8.



DISPENSING CLOSURES WITH INTEGRAL SPOUT LATCHES

REFERENCE TO RELATED PATENTS

The subject matter of this specification is related to subject matter disclosed in the Hazard U.S. Pat. No. 3,655,099 issued Apr. 11, 1972 entitled, "Rotatable Spout Closures with Latch Structures" and to subject matter disclosed in the Hazard U.S. Pat. No. 3,655,103 issued Apr. 11, 1972 entitled, "Safety Dispensing Closures." The entire disclosures of these two patents are incorporated herein by reference.

BACKGROUND OF THE INVENTION

The invention set forth in this specification pertains to new and improved dispensing closures and more specifically to dispensing closures of the rotatable spout character in which a rotatable spout is adapted to be moved between opened and closed positions.

It will be realized that many such closures are both known and utilized commercially. Normally such closures are comparatively inexpensive devices formed out of a resilient material such as a common commercial grade of polyethylene so as to include a cap or base part and a spout which are adapted to be snapped or popped together. Such closures may differ in a number of different constructional manners. The basic principals of one particularly suitable type of dispensing closure of this category are indicated in the Wilson et al. U.S. Pat. No. 2,793,795 issued May 28, 1957 entitled, "Dispensing Closures."

Although dispensing closures of the rotatable spout type indicated in the preceding discussion are highly utilitarian and desirable at times it is undesirable to utilize them in packaging potentially toxic or harmful products because of the ease with which they can be opened. As a consequence of this quite a number of so-called child resistant rotary spout dispensing closures have been developed. The objective of the development of such closures has been to make it relatively difficult to rotate the spout in such a closure from a closed position to an open position without making it so difficult to open such a closure as to preclude the utilization of the closure by a relatively aged or infirm person.

Quite a number of different factors govern the commercial acceptability of a child resistant closure as indicated. Costs are of course important in this regard. Also, for some applications it is critical as to whether or not a closure will pass a standardized testing procedure or protocol. This, however, is not considered to be all important since it is believed that in certain cases relatively hard to open characteristics may be desired where a closure acceptable under such a testing procedure or protocol is not legally required. The acceptability of a relatively hard to open or child resistant closure is further complicated by the fact that frequently a specific manufacturer or packager will desire to utilize a closure which is different and distinctive from a closure used by any other manufacturers for commercial reasons. Also specific customers for dispensing closures frequently put aesthetic considerations and an eye-catching appearance above other factors in determining whether or not to use a specific closure.

SUMMARY OF THE INVENTION

A need for new and improved dispensing closures of a child resistant or relatively hard to open category is considered to be evidenced by these considerations. The invention set forth in this specification is intended to provide another new dispensing closure to fulfill this need. Related objectives of the invention are directed towards providing closures as indicated which are relatively inexpensive to manufacture and assemble, which are capable of giving prolonged, reliable performance and which are acceptably difficult to open so as to be capable of being utilized in various applications where the undesired opening of such closures by children is to be prevented or minimized.

The invention accomplishes these generalized objectives in a dispensing closure having a cap and a spout, said cap being adapted to be attached to a container and having an opening leading therethrough, said spout having a passage extending therethrough and being rotatably mounted on said cap so as to be capable of being rotated between a closed position in which said spout closes off said opening and an opened position in which said passage is aligned with said opening by utilizing the improvement which comprises: said cap having at least one latch means formed integrally therewith, said cap and said latch means being formed of a resilient material, said latch means including a resilient wall which extends from the top of said cap and a lever means and a latch surface means both of which are carried by the extremity of said wall remote from the top of said cap, said latch surface means overlying a part of said spout when said spout is in said closed position, said lever means being spaced from the top of said cap and said wall member so as to be capable of being manually engaged so as to rotate said latch surface means to a sufficient extent so that said spout may be rotated to said opened position.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is best more fully explained with reference to, and further advantages of a dispensing closure in accordance with this invention will be apparent from a consideration of the accompanying drawings in which:

FIG. 1 is an isometric view of a presently preferred embodiment or form of a dispensing closure in accordance with this invention;

FIG. 2 is a top plan view thereof;

FIG. 3 is a cross-sectional view taken at line 3—3 of FIG. 2;

FIG. 4 is a partial cross-sectional view showing parts of the closure in elevation taken at line 4—4 of FIG. 3;

FIG. 5 is a partial cross-sectional view corresponding to FIG. 4 illustrating a manner of use of the closure indicated in the preceding figures;

FIG. 6 is a top-plan view of amodified dispensing closure in accordance with this invention;

FIG. 7 is a cross-sectional view taken at line 7—7 of FIG. 6; and

FIG. 8 is a partial cross-sectional view corresponding to FIG. 7 inwhich a part of the closure is shown in elevation, this view illustrating a manner of use of the closure indicated in FIGS. 6 and 7.

The illustrated closures are specific embodiments or structures utilizing the principals or concepts of this invention summarized and defined in the appended claims. These principals or concepts may be readily utilized in differently appearing and differently constructed dispensing closures through the use of routine

skill in the dispensing closure art on the basis of the disclosure embodied in this specification.

DETAILED DESCRIPTION

In FIGS. 1 to 5 of the drawing there is shown a dispensing closure 10 in accordance with this invention which includes a cap 12 and a spout 14. Preferably both of these parts are made of a somewhat resilient material such as a common commercial grade of polyethylene or a similar polyolefin so that these parts may be snapped together during assembly of the closure 10. It will be recognized that such materials can be temporarily deformed through the application or pressure and that they will tend to resume their former configuration after such pressure is relieved. This is important to the operation of the closure 10.

The cap 12 includes a top 16 from which there depends a peripheral skirt 18 of a known or conventional design which is adapted to fit around the neck of the container (not shown) so as to mount the dispensing closure 10 on such a container. If desired one or more internal flanges 20 may be used in the interior of the skirt in accordance with conventional practice so as to firmly secure the cap 12 in place. Other conventional expedients such as a conventional cylindrical plug (not shown) may depend from the top 16 for the same purpose.

This top 16 includes a centrally located opening 22 extending through the top 16 into the bottom of a small cavity 24. Preferably a known sealing ring 26 is located around this opening 22 so as to fit against a cylindrical end 28 of the spout 14 in such a manner that a seal is formed between this end 28 and the top 16 in all positions of the spout 14. This spout 14 carries axially aligned trunnions 30 which project from the sides 32 of the spout 14 in alignment with the axis of the end 28. These trunnions 30 are inserted through restricted entrances 34 in a generally U-shaped wall 36 into bearing openings 38 which are also located in this wall 36.

The shape of this wall 36 and the thickness of it are both important in the present invention. This wall 36 is an upstanding wall which projects from the top 16 in a U-shaped manner around the sides 32 and the end 28 of the spout 14. Thus, the wall 36 has an opened end 40. The spout 14 when in a closed position as shown in all figures of the drawings has a pointed end 42 which extends a short distance past the open end 40 so that it is capable of being engaged manually to be rotated from a closed position as shown in which a passage 44 in the spout 14 extends horizontally between the ends 28 and 41 to an opened position in which the passage 44 is aligned with the opening 22.

The invention utilizes what may be referred to as a "latch means" to prevent such rotation unless and until the latch means are actuated. In the structure of the dispensing closure 10 such a latch means includes the wall 36 and two inwardly extending latch surfaces 46 formed in the wall 36 and in addition two lever members 48. In the closed position the spout 14 lies entirely within the confines of the wall 36 and the latch surfaces 46 fit over a shank portion 50 of the spout 14 so as to hold the spout 14 against rotation. Normally the lever member 48 extend from the wall 36 on opposite sides of the spout 14 generally parallel to the top 16 and above this top 16. If desired a web of material 52 may connect the lever members 48 on opposite sides of the spout 14.

The utilization of the dispensing closure 10 is essentially comparatively easy. When this closure 10 is to be opened pressure must be applied to both of the lever members 48 as indicated by the arrows in FIG. 5. As such pressure is applied the wall 36 adjacent to the sides 32 is dimensioned to deform or flex slightly, resulting in the latch surfaces 46 being withdrawn from immediately above the shank portion 50. As the lever members 48 are held as indicated in FIG. 5 the end 42 of the spout 14 may be separately engaged so as to be manually rotated so that the spout 14 can be rotated to a vertically extending opened position.

When the spout 14 is to be returned to a closed position it may be rotated in the reverse direction. As this occurs the shank portion 50 of the spout 14 will engage sloping surfaces 54 immediately above the latch surfaces 46 so as to spring the wall 36 outwardly so that the spout 14 may be moved fully to a closed position. When the spout 14 reaches this closed position the inherent resiliency of the wall 36 will cause the latch surfaces 46 to again overlie the shank portion 50 of the spout 14, locking it into a closed position.

This structure of the dispensing closure 10 is considered quite desirable in that to open it normally pressure will have to be applied by two different digits of the hand to the two lever members 48 and then as such pressure is applied the spout 14 will have to be separately engaged and rotated. This is considered to make it comparatively difficult to operate the dispensing closure 10 and to result in the closure 10 being of a child resistant character. In FIGS. 6 to 8 of the drawings there is shown a modified dispensing closure 100 of the present invention which is considered to be slightly less difficult to open than the dispensing closure 10.

This modified dispensing closure 100 utilizes many parts which are identical to or substantially identical to many parts of the closure 10. In the interest of brevity such parts are not separately designated herein and are indicated in the drawings and where necessary for explanatory purposes in the remainder of this specification by the numerals previously used to designate such parts preceded by the numeral 1.

In the closure 100 the base or bottom 156 of the wall 136 carries a single lever member 148 corresponding to the lever member 48 previously described. Also, in this closure 100 the cylindrical end 128 is provided with a notch 158 which extends completely across this end 128. In the closure 100 the latch surface 146 is located on the base 156 and is dimensioned so as to fit closely within the notch 158 so as to lock the spout 114 against rotation

By pressing down on the single lever member 148 as indicated in FIG. 8 of the drawings it is possible to release the spout 114 so that it can be separately rotated with the passage 144 extending vertically so that the spout 114 is in an opened position. The entire time that the spout 114 is in such an opened position the latch surface 146 will bear against the end 128, holding the base 156 of the wall 136 in a distended manner. Because of the resiliency of the material used when the spout 114 is rotated to a closed position, the latch surface 146 will automatically snap into place in the notch 158, locking the spout 114 against further rotation.

I claim:

1. In a dispensing closure having a cap and a spout, said cap being adapted to be attached to a container and having an opening leading therethrough, said spout

having a passage extending therethrough and being capable of being rotatably mounted on said cap so as to be capable of being rotated between a closed position in which said spout closes off said opening and an opened position in which said passage is aligned with said opening, the improvement which comprises:

said cap having latch means formed integrally therewith,

said cap and said latch means being formed of a resilient material,

said latch means including a resilient wall means which extends from the top of said cap and a lever means and a latch surface means both of which are carried by the extremity of said wall means remote from the top of said cap,

said latch surface means overlying a part of said spout when said spout is in said closed position so as to lock said spout against rotation from said closed position,

said lever means being spaced from the top of said cap and said wall so as to be capable of being manually engaged so as to rotate said latch surface means to a sufficient extent so that said spout may be rotated to said opened position,

said latch means being sufficiently resilient so that when said spout is rotated from said opened position to said closed position said latch surface means automatically engages said spout so as to hold said spout in said closed position.

2. A dispensing closure as claimed in claim **1** wherein:

there are two of said latch means, said latch means being located on opposite sides of said spout.

3. A dispensing closure as claimed in claim **1** wherein:

there is one of said latch means.

4. A dispensing closure as claimed in claim **1** including:

a wall extending in a U-shaped path along the sides of said spout and around an end of said spout when said spout is in said closed position, said wall being resilient and being formed integrally with said top.

there is a single latch means, a portion of said wall constituting said resilient wall means of said single latch means, said lever means in said single latch means comprising a single lever, said latch surface means in said single latch means comprising a single latch surface,

said lever and said latch surface being located on the portion of said wall extending around said one end of said spout when said spout is in said closed position.

5. A dispensing closure as claimed in claim **4** wherein:

said one end of said spout has a notch formed therein, and

said latch surface fits within said notch when said spout is in said closed position and resiliently bears against said one end of said spout when said spout is not in said closed position.

6. A dispensing closure as claimed in claim **1** including:

a wall extending in a U-shaped path along the sides of said spout and around the end of said spout when said spout is in said closed position, said wall being resilient and being formed integrally with said top,

there are two of said latch means, a portion of said wall on one side of said spout when said spout is in a closed position constituting said resilient wall means of one of said latch means, a portion of said wall on the other side of said spout when said spout is in said closed position constituting said resilient wall means of the other of said latch means, said lever means of each of said latch means comprises a single lever, said levers extending from opposite sides of said spout when said spout is in said closed position, said latch surface means of each of said latch means comprising a latch surface which overlays a portion of said spout when said spout is in said closed position.

7. A dispensing closure as claimed in claim **6** including:

sloping surfaces formed on said wall above said latch surfaces for engagement by said spout when said spout is rotated to said closed position so as to distend said wall so that said spout may be rotated to a closed position beneath said latch surface.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,863,818 Dated FEBRUARY 4, 1975

Inventor(s) ROBERT E. HAZARD

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 3, line 13, "or pressure" should read --of pressure--.

Column 3, line 52, "ends 28 and 41" should read --ends 28 and 42--.

Column 5, line 1, "being capable of" should be omitted.

Column 2, line 54, "amodified" should read --a modified--.

Signed and sealed this 8th day of April 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks

FORM PO-1050 (10-69)

USCOMM-DC 60376-P69
* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334.