May 11, 1965 D. A. POLZIN 3,182,840

SAFETY BOTTLE CLOSURE

Filed Nov. 5, 1963

FIG. 1

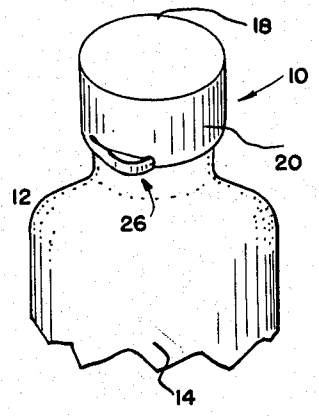


FIG. 2

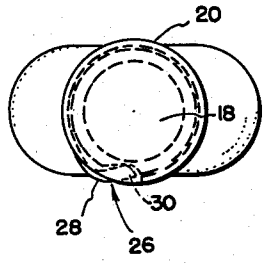


FIG. 3

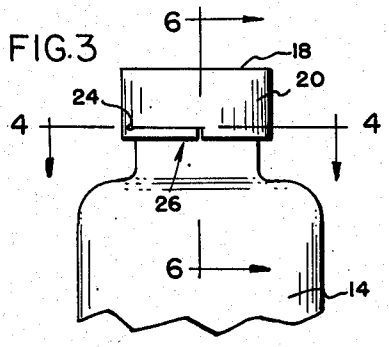
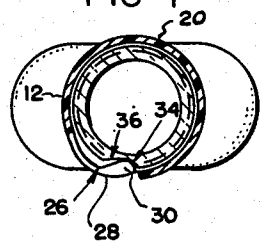


FIG. 4



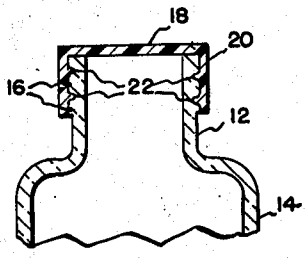


FIG. 6

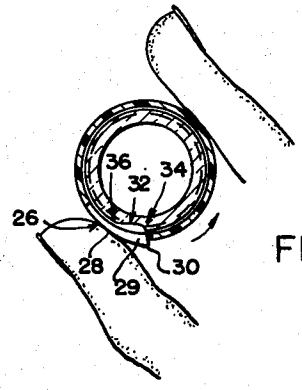


FIG. 5

INVENTOR.

DEAN A. POLZIN

BY

ATTORNEY

United States Patent Office 3,182,84(
Patented May 11, 196

3,182,840

SAFETY BOTTLE CLOSURE

Dean A. Polzin, Warren, Mich.
(12055 Elm St., Birch Run, Mich.)

Filed Nov. 5, 1963, Ser. No. 321,483
5 Claims. (Cl. 215—9)

This invention relates to bottle closures and more particularly to a safety closure for containers which prevents removal of the cap by children or through accidental means.

Safety closures of this kind are useful in preventing dangerous or poisonous substances from being removed from their containers other than by an intentional act on the part of an adult. Many substances dangerous to children are stored in containers in the home and are accessible to children. As a result, various safety closures have been suggested in the past, each intended to provide a container with a closure which could not be removed by children or through inadvertence.

One such bottle closure employs a series of teeth projecting inwardly from the inner surface of a resilient cap. These teeth are adapted to engage projections on the surface of the bottle neck and prevent rotation when the cap is moved in a counterclockwise direction. If the cap is to be removed, the user squeezes the resilient cap intermediate the teeth; this causes the portion of the cap adjacent to the teeth to flex outwardly so that the teeth no longer engage the projections on the bottle and the cap is free to rotate and be removed.

The disadvantage of such a closure is that the cap must be sufficiently resilient to allow the cap to be squeezed and thereby flex outwardly. As a result, the effectiveness of the seal is reduced, thus creating a serious leakage problem and thereby increasing, rather than decreasing, the possibility that the contents of the container will cause harm to children or others.

A further disadvantage of such a structure lies in the likelihood that the projections on the container will be damaged or broken off. The container, during its life, may undergo substantial abusive handling and be repetitively moved into contact with other containers or objects. As a result, the projections may be severely damaged or broken off so as to prevent the closure from being operative.

It is therefore the principal object of the present invention to provide a safety bottle closure of the general type described above, wherein the cap is constructed of a rigid material, and the bottle is constructed without projecting surfaces.

In a preferred embodiment of the invention which will be subsequently described in detail, the invention takes the form of a cap of substantially rigid material threaded along its interior walls so as to be normally mounted on the threaded neck of a container. At the lower edge of the cap, a springlike raised member is provided having a pointed end adapted to fit within a matching recess in the adjacent container neck. Rotation of the cap in the clockwise direction tightening it about the neck, allows the pointed end to pass over the recess. When the cap is then rotated in the counter-clockwise direction, the pointed end of the spring-like member engages the inner wall of the recess in the container neck and the cap is thus prevented from further rotation.

An advantage of the present invention is that the cap may be constructed of rigid material such as plastic or thin steel rather than the resilient poor-sealing material disclosed in the prior art. This permits the cap to seal tightly on the bottle and assures that the contents of the container will not inadvertently leak out and cause harm to children or others.

A further advantage of the invention is that it provide a safety closure which cannot be opened or removed b children or other accidental means.

Another advantage is that the bottle is provided with recess along its neck rather than projecting surfaces whic might be subject to damage in handling.

An additional advantage of the present invention that it is extremely simple to manufacture, and provide a secure lock which is easy to actuate.

Other objects and advantages will be more readily ap parent from the following detailed description of a pr ferred embodiment of the invention. The descriptio makes reference to the accompanying drawing in which

FIGURE 1 is a perspective view of the upper portio of a container with a safety closure according to the pre ent invention;

FIGURE 2 is a plan view of the closure and containe shown in FIGURE 1;

FIGURE 3 is a side view of the closure and containe of FIGURE 1;

FIGURE 4 is a top section view of the present closur mounted on the container neck in locking position, take along the lines 4—4 in FIG. 3;

FIGURE 5 shows the closure of FIGURE 4 with th spring-like section depressed by the user's fingers so as t release the cap for removal; and

FIGURE 6 is a section view taken along the lines 6— in FIGURE 3.

Referring to the drawing in detail, FIGURE 1 show a cap, generally indicated at **10**, mounted on the neck **1** of a bottle **14**.

As shown in FIGURE 6, the upper portion of the nec **12** includes threads **16**. The cap **10** has a flat top 1 and an annular wall **20** projecting downwardly there from. The wall **20** is threaded as shown at **22** and adapted to fit along the threads **16** of the bottle neck 1

Adjacent the lower edge of the wall **20** a small stres relief hole **24** is formed. A retaining section **26** extend horizontally from the wall **20** below the hole **24**. The re taining section **26** is curved in the horizontal plane suc that its midportion **28** projects outwardly beyond the ci cumference of the cap **10**. The free end **29** of the re taining section is wider than the rest of the retainin section and has a pointed tip **30** which normally extend within the circumference of the cap.

The neck **12** of the bottle **14** includes a recess **32** be low the threads **16**. The recess has a sharp angle or li portion **34** at one end and a flattened portion **36** at th opposite end.

As a result of its configuration and of the location o the stress relief hole **24**, the retaining section **26** form a spring-like extension of the wall **20** with its midportio **28** projecting outwardly and its tip **30** projecting inwardl of the circumference of the remainder of the cap **10**.

When the cap **10** is to be mounted on the bottle nec **12**, it is rotated clockwise until it descends into sealin position. As it is rotated, the free end **29** of the retainin section **26** passes over the flattened portion **36** of th recess **32** without engagement; since the tip **30** trails th wider portion of the free end in this movement, it cannc engage any portion of the recess **32**.

When the cap is rotated counterclockwise, the tip **3** engages the lip **34** of the recess **32** and prevents furthe rotation of the cap. To release the cap for removal, th user presses against the midportion **28** of the retainin section **26** as shown in FIG. 5. As the retaining sectio bends under this pressure, the inner face of the free en **29** is forced to slide along the recess **32** towards the li **34** and the tip **30** to move outwardly away from engage ment with the lip **34**. The cap **10** is then free to rotat and may be removed from the bottle.

nce the cap may not be removed from the bottle with-
applying pressure to the retaining section, the cap
ıot be removed by children nor can it be removed by
lent. In constructing the cap, the tension in the re-
ng section can be increased as desired so as to increase
ımount of pressure needed to remove the cap; this will
ıer reduce the likelihood of removal of the cap by
vertence or by children.

ıe cap is preferably constructed of plastic, thin steel
ther rigid material which permits flexing of the re-
ng section. If desirable, the cap could be constructed
ny suitable rigid or flexible material while the retain-
section could be constructed separately of a suitable
ble material and fixed to the lower portion of the
so as to project in the manner decribed above.

further alternative embodiment (not shown) employs
ınner annular member in which the recess is located,
er than in the bottle neck. This inner member is fixed
ly about the neck of a conventional bottle, leaving
ıpper open end of the bottle exposed. The cap, con-
:ted as described above, is then screwed on to the
ılar member and locked in place as already described.

embodiment of the invention permits the closure to
:mployed on a conventional bottle rather than one
tructed with the recess provided in its neck surface.
aving thus described my invention, I claim:

Container closure means, comprising:
container having a substantially cylindrical portion
open at one extremity thereof, said portion having a
recess along its outer surface;
cap adapted to be mounted in sealing engagement
over said open end of said cylindrical portion on
said container;
ıd rigid flexible retaining means integral with said
cap adapted to engage said recess and thereby pre-
vent rotation of said cap in a first direction required
for removal of the cap and permit rotation in the
opposite direction, said retaining means flexing with
respect to said recess in response to external pressure
applied to said retaining means on said cap so as to
permit rotational motion of said cap in said first
direction.

Container closure means, comprising:
container having a substantially cylindrical portion
open at one extremity thereof, said portion having a
recess along its outer surface;
cap of non-resilient material having an annular por-
tion adapted to threadably engage said cylindrical
portion and a top portion adapted to seal said cylin-
drical portion when said cap is threadably mounted
thereon;
ıd rigid flexible retaining means integral with said
cap adapted to engage said recess and thereby pre-
vent rotation of said cap in a first direction required
for removal of the cap and permit rotation in the
opposite direction, said retaining means flexing with
respect to said recess in response to external pressure
applied to said retaining means on said cap so as to
permit rotational motion of said cap in said first
direction.

Container closure means, comprising:
container having a substantially cylindrical portion
open at one extremity thereof, said portion having a
recess along its outer surface;
cap of non-resilient material having an annular por-
tion adapted to threadably engage said cylindrical
portion and a top portion adapted to seal said cylin-
drical portion when said cap is threadably mounted
thereon;
ıd a flexible rigid retaining member fixed to said

annular portion and integral with said cap, said
member having its free end normally disposed with-
in the circumference of the inner surface of said
cap such that it is received within said recess when
it is rotated into a position adjacent thereto, said
recess then resisting rotational movement of said
retaining member in a first direction required to
remove the cap and permitting rotational movement
of said retaining member in the opposite direction,
said retaining member having a midportion which,
when depressed, causes said free end to move to a
position along said recess permitting it to be rotated
in said first direction.

4. Container closure means, comprising:
a container having a substantially cylindrical portion
open at one extremity thereof, said portion having a
recess along its outer surface;
a cap of non-resilient material having an annular por-
tion adapted to threadably engage said cylindrical
portion and a top portion adapted to seal said cy-
lindrical portion when said cap is threadably mounted
thereon;
and a flexible rigid retaining member integral with
said cap and fixed to said annular portion at one
end and having its free end normally disposed with-
in the circumference of the inner surface of said
cap such that it is received within said recess when
it is rotated into a position adjacent thereto, said
recess then abutting the tip of said free end and
thereby resisting rotational movement of said re-
taining member in a first direction required to re-
move the cap, and permitting rotational movement
of said retaining member in the opposite direction,
said retaining member having a midportion which,
when depressed, induces a flexing movement of said
free end as to free said tip from said recess and
permit rotation of said cap in said first direction.

5. Container closure means, comprising:
a container having a substantially cylindrical portion
open at one extremity thereof, said portion having
a recess along its outer periphery, said recess having
a sharp-angle portion at one edge thereof;
a cap of non-resilient material having an annular por-
tion adapted to threadably engage said cylindrical
portion and a top portion adapted to seal said cylin-
drical portion when said cap is threadably mounted
thereon;
and a flexible rigid retaining member integral with
said cap fixed to said annular portion at one end
and having its free end normally disposed within
the circumference of the inner surface of said cap
such that it is received within said recess when it
is rotated into a position adjacent thereto, the sharp-
angle portion of the recess then abutting the tip
of said free end and thereby resisting rotational
movement of said retaining member in a first direc-
tion required to remove the cap, and permitting
rotational movement of said retaining member in
the opposite direction, said retaining member being
adapted to flex under external pressure and thereby
to remove said tip from said recess and permit ro-
tation of said cap in said first direction.

References Cited by the Examiner

UNITED STATES PATENTS

2,752,060	6/56	Martin	215—9
2,827,193	3/58	Martin	215—9
3,019,931	2/62	Thornton	215—9

FRANKLIN T. GARRETT, *Primary Examiner.*