

Description

Background of the Invention

The present invention relates to a protective container according to the precharacterizing clause of claim 1. Often, glass vials are utilized to contain toxic drugs, or other medication. Usually, the vials are sealed at one end by a rubber stopper that can be penetrated by a hypodermic needle for access to the vial's contents.

A serious problem with the use of such glass vials is the great probability that the vial will be broken, and that the surrounding area will be contaminated by the drug. To date, no simple inexpensive solution to this problem has been devised. Although it has long been generally known to utilize safety containers to house and protect fragile or breakable receptacles, usually the receptacles have to be removed from the containers to gain access to their contents, and removal of the receptacle from the container is easily accomplished. In the case of toxic drug filled glass vials, this is highly undesirable, since the very act of removing the vial from the safety container presents a perfect opportunity to break the vial and discharge its toxic contents to the surrounding area.

FR-A-2 134 729 describes a plastic container for encasing fragile bottles comprising a bottom portion and a top portion. To gain access to the encased bottle the top portion of the container has to be removed from the bottom portion, thereby presenting an opportunity to break the bottle.

US-A-4 245 685 teaches a protective carrier for fragile containers according to the precharacterizing clause of claim 1. It comprises a cylindrically shaped body having an open top. Said open top can be closed in a snap fit manner by a top lid. Access to the encased container is provided either through the open top after removal of the top lid or through a central aperture in the top lid which is permanently open. Although this carrier can provide protection during access to the encased container, it does not provide optimal protection of the container during transport: The lid removable by the user may open itself during transport, and the bottle is not protected at the permanently open top aperture.

Summary of the Invention

It is therefore an object of the present invention to provide a simple inexpensive protective safety container for a glass vial which will protect the vial from breakage and tampering, and allow access to the contents of the vial without removing the vial from the container.

It is a further object of the invention to provide a protective safety container for a glass vial which is formed of a simple two piece molded construction, and will securely enclose a glass vial without the use of glue, or other sealing means.

These and other objects of the invention are attained through the provision of a protective container according to claim 1. A generally cylindrically shaped molded plastic body that is open at its bottom end, has a plurality of spaced longitudinal ribs molded on the inner surface thereof, and has a small aperture disposed in the center of the top thereof. The body is shaped to conform to a glass vial to be protected so that the longitudinal ribs will engage the outer surface of the vial, and a protective air space will be formed between the inner surface of the body and the outer surface of the vial.

A frangible disk shaped closure member is disposed in the aperture in the top of the body, and includes a vertically extending tab for easy removal of the frangible disk. The aperture is small enough that a rubber stopper disposed in the neck of the vial cannot be removed, however, access to the contents of the vial may be obtained with a needle that is inserted through the aperture and stopper after removal of the frangible closure.

Molded in the inner surface of the body near its bottom end is a horizontally inwardly extending circular groove. This groove cooperates with an outwardly extending rib disposed on the outer periphery of an annular base so that the base can be snap fitted into the open bottom end of the body. The interior of the base also includes a plurality of spaced vertically extending ribs for engaging the outer surface of the glass vial.

When a glass vial is inserted in the open bottom of the body, and the annular base is snapped into the bottom, a sealed container is formed which holds the vial snugly in position, and protects the same from breakage or tampering. Once the base is snapped into position, the vial acts to hold the cooperating surfaces of the body and base together, thus making it very difficult to remove the base, and obtain access to the vial. In this manner, the present invention acts as a semi-permanent tamper resistant protective container for glass vials which allows access to the vial's contents without removal of the vial from the container.

Brief Description of the Drawings

The foregoing objects, features and advantages of the invention will become apparent from a consideration of the following detailed description of a preferred embodiment thereof, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is an exploded perspective view of the present invention with a glass vial to be contained;

FIG. 2 is a top plan view of the present invention; and,

FIG. 3 is a cross sectional front view of the assembled present invention taken along line 3-3 of Fig. 2.

Description of the Preferred Embodiment

Turning now to a more detailed consideration of the present invention, there is illustrated in FIG 1 an exploded form, a protective safety container generally illustrated at 10 and including a generally cylindrical shaped body 12, and an annular base 14. The body 12 includes a top portion 15, and an open bottom 16 which is shown in position to receive a medication filled glass vial 18 having a rubber stopper 19 disposed in the top thereof.

As shown, the body 12 is generally shaped to conform to the shape of vial 18, and includes an inwardly tapered portion 20 which leads to a narrow cylindrical neck 22 at top portion 15 that extends inwardly to form a top wall 23 and is adapted to enclose a neck 24 and cap 25 of vial 18. Disposed in the center of the top wall 23, is an aperture 26 which is closed off by a frangible sealing disk 28 having a tab 29 for removal of the same. As best illustrated in FIG. 2, disk 28 is held in aperture 26 by a plurality of spaced legs 30.

An inner sealing flange 31 surrounds aperture 26 and engages the top of a vial disposed in the container such that a sealed air space is created between the vial and the container wall. As illustrated in FIG. 3, a plurality of longitudinal ribs 32 are molded on the interior surface 34 of body portion 12, and extend vertically for a substantial length of the same. These ribs are shaped to engage the outer surface of vial 18, and thereby serve to hold the vial snugly in position within body 12. In addition, the ribs, along with sealing flange 31 create an air space between the vial and body 12 that acts as a further cushioning means for vial 18.

As illustrated in FIG. 3, a horizontal annular groove 38 is molded into the inner surface 34 of body 12 near bottom 16. In addition, wall 34 includes a tapered portion 39 at bottom 16. Annular groove 38 and tapered portion 39 cooperate with a corresponding outwardly facing annular rib 40 and a tapered portion 41 that are formed along the exterior periphery of annular base 14, so that a snap fit is provided when body 12 and base 14 are connected together. The tapered portions 39 and 41 insure an easy insertion of base 14 into body 12, while groove 38 and rib 40 make removal of base 14 difficult once it is inserted into body 12.

As shown in FIGS. 1 and 3, base 14 includes an interior wall surface 42 having a plurality of spaced longitudinal ribs 44 formed thereon. These ribs, like ribs 32 of body 12, engage the exterior surface of a vial to further secure the vial in position when body 12 and base 14 are snapped together. The ribs include tapered ends 45 to help guide base 14 into position over the bottom of a vial. Base 14 also includes a concave bottom wall 46 that has a raised center area 48 which is shaped to engage the bottom surface of vial 18. This raised center area serves to further insure that vial 18 will be snugly held within container 10 when base 14 is snapped into body 12 by urging the vial toward the top of container 10.

In the use of the present invention, a glass vial is inserted into body 12, and base 14 is snapped into open bottom 16. The action of horizontal groove 38 and rib 40, combined with the presence of the glass vial inside container 10, will make it very difficult to remove base 14. This will discourage anyone from opening the safety container, exposing the vial to the open and risking not only breakage of the same, but possible contamination of the surrounding area by a toxic drug in the vial.

When it is necessary to remove the contents of the vial, frangible sealing disk 28 is removed from aperture 26 by tab 29, thus exposing stopper 19 in the mouth of the vial. Since aperture 26 is smaller in diameter than the stopper 19, the stopper cannot be removed; however, the contents of the vial may be withdrawn through use of a hypodermic needle inserted through the stopper. This feature of the present invention again serves to prevent the inadvertent spillage or discharge of the vial's contents to the surrounding area.

It may thus be seen that the present invention provides a simple inexpensive protective safety container that acts to prevent a medication filled glass vial from being broken or tampered with, yet allows access to the contents of the vial.

Claims

1. A protective container encasing a glass vial (18) for containing medication, said container (10) comprising:
 - a generally cylindrically shaped body (12) having an open end (16) for insertion of said vial (18), said open end being closeable by means of a snap fit means (38, 40),
 - a plurality of spaced longitudinal ribs (32) disposed on the interior (34) of said body (12), said ribs (32) serving as spacers for said vials (18), and
 - an aperture (26) disposed at the top (15) of said body (12) to permit access to the contents of said vial (18)

FIG. 1 is an exploded perspective view of the present invention with a glass vial to be contained;

FIG 2 is a top plan view of the present invention; and,

FIG 3 is a cross sectional front view of the assembled present invention taken along line 3-3 of Fig. 2.

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As shown, the body 12 is generally shaped to conform to the shape of vial 18, and includes an inwardly tapered portion 20 which leads to a narrow cylindrical neck 22 at top portion 15 that extends inwardly to form a top wall 23 and is adapted to enclose a neck 24 and cap 25 of vial 18. Disposed in the center of the top wall 23, is an aperture 26 which is closed off by a frangible sealing disk 28 having a tab 29 for removal of the same. As best illustrated in FIG. 2, disk 28 is held in aperture 26 by a plurality of spaced legs 30.

An inner sealing flange 31 surrounds aperture 26 and engages the top of a vial disposed in the container such that a sealed air space is created between the vial and the container wall. As illustrated in FIG. 3, a plurality of longitudinal ribs 32 are molded on the interior surface 34 of body portion 12, and extend vertically for a substantial length of the same. These ribs are shaped to engage the outer surface of vial 18, and thereby serve to hold the vial snugly in position within body 12. In addition, the ribs, along with sealing flange 31 create an air space between the vial and body 12 that acts as a further cushioning means for vial 18.

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As shown in FIGS. 1 and 3, base 14 includes an interior wall surface 42 having a plurality of spaced longitudinal ribs 44 formed thereon. These ribs, like ribs 32 of body 12, engage the exterior surface of a vial to further secure the vial in position when body 12 and base 14 are snapped together. The ribs include tapered ends 45 to help guide base 14 into position over the bottom of a vial. Base 14 also includes a concave bottom wall 46 that has a raised center area 48 which is shaped to engage the bottom surface of vial 18. This raised center area serves to further insure that vial 18 will be snugly held within container 10 when base 14 is snapped into body 12 by urging the vial toward the top of container 10.

In the use of the present invention, a glass vial is inserted into body 12, and base 14 is snapped into open bottom 16. The action of horizontal groove 38 and rib 40, combined with the presence of the glass vial inside container 10, will make it very difficult to remove base 14. This will discourage anyone from opening the safety container, exposing the vial to the open and risking not only breakage of the same, but possible contamination of the surrounding area by a toxic drug in the vial.

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 - a generally cylindrically shaped body (12) having an open end (16) for insertion of said vial (18), said open end being closeable by means of a snap fit means (38, 40),
 - a plurality of spaced longitudinal ribs (32) disposed on the interior (34) of said body (12), said ribs (32) serving as spacers for said vials (18), and
 - an aperture (26) disposed at the top (15) of said body (12) to permit access to the contents of said vial (18)



characterized in that

said open end is the bottom (16) of said body (12),

an annular base (14) for said bottom (16) being provided, said snap fit means (38, 40) being disposed near said bottom (16) of said body (12) and at said base (14), whereby said vial (18) acts to hold the cooperating surfaces of said body (2) and said base (14) together, and said aperture (26) having a frangible sealing means (28) disposed therein,

whereby, when said vial (18) is inserted in said body (12), and said annular base (14) is snapped into said body (12), the vial (18) will be protected from breakage or tampering, but the contents of the vial (18) may be accessed by removing said frangible sealing means (28) and inserting a syringe inserted through said aperture (26) and a stopper disposed in the top of the vial (18).

2. The protective container of claim 1 wherein said annular base (14) includes said plurality of spaced longitudinal ribs (44) disposed along an inner wall (42) thereof.

3. The protective container of claim 2 wherein said annular base (14) also includes a floor (46) having a raised center area (48) for engaging the bottom of said vial (18).

4. The protective container of claim 1 wherein said frangible means (28) includes a pull tab (29) for easy removal of the frangible means (28) from the top (15) of the container body (12).

5. The protective container of claim 4 wherein said aperture (26) is smaller in diameter than the diameter of a rubber stopper (19) in the top of said vial (18).

6. The protective container of claim 1 wherein said snap fit means comprises a horizontal annular groove (38) along an inner surface (34) of the body (12) near said open bottom (16), and a cooperating annular rib (40) disposed along an outer peripheral surface of said annular base (14).

Patentansprüche

1. Schutzbehälter, der ein Glasvial (18) zur Aufnahme eines Medikaments umgibt, wobei der Behälter (10) umfaßt:
einen im allgemeinen zylindrisch geformten Körper (12) mit einem offenen Ende (16) zur Einführung eines Vials (18), wobei das offene

Ende mit Hilfe von Schnapppaßmitteln (38, 40) verschließbar ist,

mehrere beabstandete Längsrippen (32) im Inneren (34) des Körpers (12), wobei die Rippen (32) als Abstandsstück für die Vials (18) dienen, und

eine Öffnung (26) am oberen Ende (15) des Körpers (12), die den Zugang zum Inhalt des Vials (18) ermöglicht,

dadurch gekennzeichnet, daß

das offene Ende sich am unteren Ende (16) des Körpers (12) befindet,

eine ringförmige Basis (14) für das untere Ende (16) vorgesehen ist, wobei die Schnapppaßmittel (38, 40) in der Nähe des unteren Endes (16) des Körpers (12) und der Basis (14) angeordnet sind, wobei das Vial (18) die zusammenwirkenden Flächen des Körpers (2) und der Basis (14) zusammenhält, und

wobei in der Öffnung (26) zerbrechliche Dichtungsmittel (28) angeordnet sind,

wobei, wenn das Vial (18) in den Körper (12) eingeführt und die ringförmige Basis (14) in den Körper (12) eingeschnappt ist, das Vial (18) vor Zerschneiden oder Zerquetschen geschützt ist, der Inhalt des Vials (18) aber zugänglich ist durch Entfernen der zerbrechlichen Dichtungsmittel (28) und Einführen einer Spritze durch die Öffnung (26) und durch einen Stopfen, der am oberen Ende des Vials (18) angeordnet ist.

2. Schutzbehälter nach Anspruch 1, wobei die ringförmige Basis (14) die mehreren beabstandeten Längsrippen (44) entlang ihrer Innenwand (42) angeordnet umfaßt.

3. Schutzbehälter nach Anspruch 2, wobei die ringförmige Basis (14) auch einen Boden (46) mit einem erhöhten Zentralbereich (48) umfaßt, um mit dem Boden des Vials (18) in Eingriff zu gelangen.

4. Schutzbehälter nach Anspruch 1, wobei die zerbrechlichen Mittel (28) einen Aufreißstreifen (29) zur leichten Entfernung der zerbrechlichen Mittel (28) vom oberen Ende (15) des Behälterkörpers (12) umfaßt.

5. Schutzbehälter nach Anspruch 4, wobei die Öffnung (26) einen geringeren Durchmesser besitzt, als der Durchmesser eines Gummistopfens (19) im oberen Ende des Vials (18).

6. Schutzbehälter nach Anspruch 1, wobei die Schnapppaßmittel eine horizontale ringförmige Nut (38) entlang einer Innenfläche (34) des Körpers (12) in der Nähe des offenen unteren



Endes (16) und eine damit zusammenwirkende ringförmige Rippe (40) entlang der äußeren Umfangsfläche der ringförmigen Basis (14) aufweisen.

Revendications

1. Conteneur protecteur enfermant une fiole en verre (18) pour contenir un médicament, ledit conteneur (10) comprenant :

un corps de forme généralement cylindrique (12) ayant une extrémité ouverte (16) pour insertion de ladite fiole (18), ladite extrémité ouverte pouvant être fermée par un moyen d'ajustement automatique (38, 40) ;

un certain nombre de nervures longitudinales espacées (32) disposées à l'intérieur (34) dudit corps (12), lesdites nervures (32) servant de pièces d'espacement pour lesdites fioles (18) ; et

une ouverture (26) disposée au sommet (15) dudit corps (12) pour permettre l'accès au contenu de ladite fiole (18) ;

caractérisé en ce que

ladite extrémité ouverte est le fond (16) dudit corps (12) ;

une base annulaire (14) étant prévue pour ledit fond (16), ledit moyen d'ajustement automatique (38, 40) étant disposé à proximité dudit fond (16) dudit corps (12) et sur ladite base (14), ainsi ladite fiole (18) sert à maintenir les surfaces coopérantes dudit corps (12) et de ladite base (14) et

ladite ouverture (26) ayant un moyen fragile d'obturation (28) qui y est disposé,

ainsi, quand ladite fiole (18) est insérée dans ledit corps (12) et que ladite base annulaire (14) s'adapte dans ledit corps (12), la fiole en verre (18) se trouve protégée d'une rupture ou d'une fracture mais on peut avoir accès au contenu de la fiole (18) en enlevant ledit moyen fragile d'obturation (28) et en insérant une seringue à travers ladite ouverture (26) et un bouchon disposé au sommet de la fiole (18).

2. Conteneur protecteur de la revendication 1, où ladite base annulaire (14) comprend lesdites nervures longitudinales espacées (44) qui sont disposées le long de sa paroi interne (42).

3. Conteneur protecteur de la revendication 2, où ladite base annulaire (14) comporte également un fond (46) ayant une zone centrale surélevée (48) pour engager le fond de ladite fiole (18).

4. Conteneur protecteur de la revendication 1, où ledit moyen fragile (28) comporte une patte de

traction (29) pour l'enlèvement facile du moyen fragile (28) du sommet (15) du corps (12) du conteneur.

5. Conteneur protecteur de la revendication 4, où ladite ouverture (26) est d'un plus petit diamètre que le diamètre d'un bouchon en caoutchouc (19) au sommet de ladite fiole (18).

6. Conteneur protecteur de la revendication 1, où ledit moyen d'ajustement automatique comprend une gorge annulaire horizontale (38) le long d'une surface interne (34) du corps (12) à proximité dudit fond ouvert (16) et une nervure annulaire coopérante (40) disposée le long d'une surface périphérique externe de ladite base annulaire (14).

