

1

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TAMPERPROOF CLOSURE MEANS FOR PILFERPROOF PACKAGE

Eugene J. Meierhoefer, West Chester, Pa., assignor to
American Home Products Corporation, New York, N.Y.,
a corporation of Delaware

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ABSTRACT OF THE DISCLOSURE

The disclosure is directed to a pilferproof package for hypodermic syringes made up of a rigid, dished receptacle and a frangible locking cover. The receptacle has a rigid rim at one end and a foraminous, mechanically yieldable rim at the other end. The cover has a J-shaped lip at one adapted to engage the rigid rim of the receptacle and a wedge-shaped closure at the other end adapted to engage the yieldable rim of the receptacle. One or more indented walls are disposed between the first and second rim in the cover.

This invention relates generally to sealed containers for materials, and more particularly to tamperproof packages for a plurality of disposable hypodermic syringes.

Disposable hypodermic syringes for injecting drugs of various kinds have found wide-spread use in the medical and related professions. It has been found useful to the ultimate user and economical to the supplier to package the plurality of such units in a single container. The containers for such syringes desirably are economical in construction and so made as to prevent pilferage of the disposable syringes without evidence of the pilferage having taken place.

In the packaging of narcotics and similar items for disposable, or one-time use, containers, it is particularly desirable to prevent undetected access to the packaged drugs, including, for example, the removal of the narcotics and substitution of a visually similar placebo.

It is desirable that the packages be quickly opened and preferable that their contents be visually observable during storing. It is also desirable that the packages be so shaped that a number of them may be stacked either on their side or flat in a limited space.

One problem that has remained unsolved up to the present invention is that of securely and positively closing a multiple-syringe package that meets the above requirements.

Accordingly, it is an object of the present invention to provide an improved means of securely and positively closing a rigid tray-type package.

It is another object of this invention to provide a closure for a rigid package which has a frangible removable entry means.

It is another object of this invention to provide a rigid package having a frangible, removable closure device which is destroyed by opening the package.

It is still a further object of this invention to provide a cover for a rigid package which is easily and securely closed, which is easily frangible and which gives evidence of having been opened.

Other objects and features of the invention will be apparent to those skilled in the art from a reading of the following description taken in conjunction with the drawings in which:

FIGURE 1 is an exploded perspective view of a preferred embodiment of the novel package of the present invention;

FIGURE 2 is a sectional view through a package of the type of FIGURE 1 shown in the closed position; and

2

FIGURE 3 is a partial sectional view of an alternate embodiment of the closure means shown in FIGURE 2.

The objects of the present invention may be achieved in a tamperproof package 10 for a plurality of disposable hypodermic syringes 12 in which the package 10 is made up of a rigid, dished receptacle 14 and a frangible locking cover 16. The receptacle 14 has a rigid rim 18 at one end and a foraminous, mechanically yieldable rim 20 at the opposite end. The receptacle has at least one septum 27, or wall, between the two rims, which contains indentations 29, or recesses adapted to engage the syringes 12 firmly and restrain them from lateral motion. The frangible locking cover 16 has a J-shaped lip 22 at one end which is adapted to engage the rigid rim 18 on the receptacle 14 and a plurality of yieldable wedge-shaped closures 24 at the opposite end which is adaptable to engage the yieldable rim 20 of the receptacle 14. The locking cover 16 also has at least one septum 26, or wall, between the two ends which contains indentations 28 or recesses adapted to engage the syringes 12 firmly. The dished receptacle 14 is of such length that the syringes 12 fit snugly between its end walls 36, 38 and are restrained from substantial longitudinal motion by them.

Turning now to the drawings, in FIGURE 1 is shown an exploded view of a tamperproof package 10 incorporating the features of the present invention. As may be seen in the figure, the package 10 is made up of a rigid, dished receptacle 14 having a bottom 30, side walls 32, 34 and end walls 36, 38. End wall 36 has a rigid rim 18 connected to it and extending away from the other end wall 38. End wall 38 has a rim or shelf 40 extending toward the other end wall 36 and connected to side walls 32, 34. The rim 20 has a plurality of openings 42 through it. The openings 42 are substantially rectangular having long sides 44 and narrow sides 46.

The frangible locking cover 16 is comprised of a substantially planar rigid, preferably clear plastic sheet, such as methyl methacrylate. At one end the cover 16 has a J-shaped lip 22 formed by wall 48 extending downwardly at right angles from it and wall 50 extending inwardly at right angles from wall 48 and being substantially parallel to the main portion 52 of the cover. Walls 49, 51, 53 depend from the main portion 52 at substantially right angles thereto. At the other end the cover has a plurality of locking devices 24 extending downwardly from it. Each locking device is made up of a first portion 54 being substantially planar extending transversely across the cover connected to the cover at one side 56 and at the other side 58 supporting a wedge-shaped member 60. The length of the sides 62 of the closure 24 is substantially equal to the thickness of the rim 20 in the receptacle 14 as may be seen in FIGURE 2. The septum 27 is supported by the bottom 30, and side walls 32, 34, and is preferably disposed adjacent the end wall 36. The septum 27 is comprised of a substantially planar sheet 75 which is coextensive with the width of the receptacle and has defined within it a number of arcuate recesses 29 having ribs 77 disposed between them.

The wedge-shaped member is comprised of a first surface 64 and a second surface 66 extending in a substantially planar direction and substantially parallel to the plane of the cover 16. The closure 24 has sides 68 and 70 extending downwardly from surfaces 64, 66 and meeting at a line 72. The wedge-shaped member 60 is substantially coextensive with the planar supporting member 54.

The septum 26 is supported from the cover 16, is suspended downwardly from it towards the receptacle 14, and cooperates with the septum 27 to restrain the syringes 12. The septum 26 is preferably disposed opposite the septum 27 and adjacent to the J-shaped lip 22 as may be best seen in FIGURE 2. However, the septa 26, 27 may

3

be located at any desired position in the cover. The septum 26 is comprised of a substantially planar sheet 74 which is coextensive with the width of the cover and has defined within it a number of arcuate recesses 28 having ribs 76 disposed between them. The recesses 28 are substantially similar to the external diameter of the hypodermic syringes 12 which are to be contained in the package. A typical hypodermic syringe 12 is shown in its relative position in FIGURE 1 and FIGURE 2.

An alternative embodiment of the invention is shown in FIGURE 3 in which a wedge-shaped closure 78 is connected to the bottom of a receptacle 80 and a plurality of bosses 82 are disposed in the cover 84. Each boss 82 has a depression 86 within it defined by outer portions 88, 90, diverging portions 92, 94, flat portions 96, 98 which are substantially parallel to the cover 84 and slanted walls 100, 102 which meet at apices 104, 106.

The closure 78 is substantially similar to the closure 24 in FIGURES 1 and 2 and is comprised of a first planar portion 108 having side walls 110, 112 and is connected to the receptacle 80 and extends upwardly from it, substantially perpendicular to it.

A wedge-shaped member 114 is connected to the substantially planar member 78 and is comprised of substantially planar walls 116, 118 substantially parallel to the base of the receptacle 80, and slanted walls 120, 122 which extend from planar walls 116, 118 and meet at a common apex 124 thus defining the wedge-shaped closure 78.

In utilizing the invention, the syringes 12 may be placed into the receptacle 14 manually or by automatic machine and the cover 16 applied. The J-shaped lip 22 is first slipped over the rigid rim 18 and with a substantially arcuate motion the cover 16 is brought adjacent to the receptacle 14. The wedge-shaped closures 24 are pressed mechanically into the openings 42. The openings 42 flex sufficiently to receive the wedge-shaped members 60, which also flex, and resiliently return to their original position, or snap back, after the wedge-shaped member 60 has passed through the thickness of the rim 20, locking the closure into position behind the rim as may be seen in FIGURE 2. The closures 24 are of such size that they firmly hold the cover to the receptacle. However, the material of construction is frangible and the closures may be broken loose by applying a mechanical force to the cover 16 and the receptacle 14. As an alternative, a small thin blade may be slipped between the cover and the receptacle. Force being applied, the closures are broken off during the opening operation, the cover may not be replaced in its closed position without the fact of its earlier removal being apparent.

The alternative embodiment of the closure shown in FIGURE 3 may be utilized in a similar fashion. The wedge-shaped member 114 engages the opening in the boss 82 as the cover is pressed toward the receptacle. The material of the boss 82 is sufficiently flexible so that the wedge-shaped member 114 penetrates into the boss 82 sliding along slanted walls 100, 102 until the planar walls 116, 118 of the wedge-shaped member 114 are in engagement with the flat portions 96, 98 of the boss 82. The embodiment of FIGURE 3 may be opened in similar fashion to that of FIGURE 2 and the wedge closures 78 are easily broken to facilitate opening but may not be reclosed without giving evidence of having been opened.

The terms and expressions which have been employed are used as terms of description and not of limitation, and there is no intention in the use of such terms and expressions of excluding any equivalents of the features shown and described or portions thereof, but it is recognized that various modifications are possible within the scope of the invention. For example, other configurations

4

of the closures 24 and cooperating opening 42 employing the concept of the present invention will be apparent to those skilled in the art.

What is claimed is:

1. A tamperproof package containing hypodermic syringes comprising:

(A) A first member further comprising a rigid receptacle;

(B) A second member further comprising a frangible cover; and

(C) A frangible means further comprising a wedge-shaped closure connected to one of said first and second members, and a wedge-receiving means connected to the other of said first and second members, connecting said first member to said second member;

said first member comprises:

(D) A rigid dished receptacle having

(1) A rigid rim at a first end;

said second member comprises:

(E) A frangible locking cover having

(1) A J-shaped lip at a first end adapted to engage said rigid rim on said receptacle;

(2) A septum disposed in spaced relation to said lip;

(3) At least one recessed boss adapted to receive a wedge-shaped closure connected to said cover adjacent a second end opposite said first end; and

said frangible connecting means comprises:

(F) At least one wedge-shaped closure at a second end of said dished receptacle opposite said first end and adapted to engage said wedge-receiving recessed boss of said cover.

2. A tamperproof package containing hypodermic syringes comprising:

(A) A first member comprising a rigid dished receptacle having

(1) A rigid rim at a first end; and

(2) A foraminous, mechanically yieldable rim adjacent a second end opposite said first end; and

(B) A second member comprising a frangible locking cover having

(1) A J-shaped lip at a first end adapted to engage said rigid rim on said receptacle;

(2) A septum disposed in spaced relation to said lip; and

(C) A frangible connecting means comprising at least one wedge-shaped closure at a second end of said cover opposite said first end adapted to engage said yieldable rim of said receptacle.

3. A package as defined in claim 2 wherein said wedge-shaped closure is also yieldable.

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MARTHA L. RICE, Primary Examiner

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