PUSH-OUT-BLISTER PACKAGE

Filed April 6, 1961

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

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This invention relates generally to packaging, and is especially concerned with packaging means for medicinal tablets, capsules, and the like, all of which are intended to be comprehended hereinafter within the term "pills."

While the instant invention has been primarily developed and employed for use in the packaging of medicinal pills, and will be illustrated and described hereinafter with particular reference thereto, it is appreciated that the invention is capable of many varied applications, all of which are intended to be comprehended herein.

In the packaging of capsules, tablets, and medicinal pills in general, it has heretofore been customary to employ blisters of relatively rigid material, such as vinyl sheeting receiving the pills, and closed or covered on their concave side by a rupturable vapor barrier, such as metal foil. The blisters were necessarily stiff or rigid to effectively protect the contained pills from damage in handling, as during shipping and the like. Further, in order to effectively prevent penetration through the blister of moisture and vapor and to insure long shelf life, certain desirable blister materials were necessarily of a minimum thickness of .0075 inch, which resulted in a relatively stiff blister. A difficulty arising in the use of relatively stiff blisters, was that of withdrawing the contents, which usually required complete removal of the closing barrier and often probing into the blister to dislodge the contained pill. Of course, to busy physicians and other users of such pill packages, this difficulty was annoying, at best, and possibly productive of serious consequences.

Accordingly, it is an object of the present invention to provide a blister-type pill package having the necessary moisture-vapor-proof characteristics, which is sufficiently stiff to effectively protect the contents from damage in handling, and which enables a user to quickly, easily and positively remove or discharge pills from the package as required for use.

It is a further object of the present invention to provide a pill package of the type described wherein a relatively stiff blister having sufficient rigidity for its protective function is configured to define a diaphragm effectively restraining the contents against undesired movement and consequent damage, and which is easily manually deflectable to entirely free a contained pill from the package by a single, substantially instantaneous operation.

It is a further object of the present invention to provide a pill package having the advantageous characteristics mentioned in the preceding paragraphs which is neat and attractive in appearance, and relatively inexpensive to produce, requiring no extra materials and being capable of high-speed manufacture and assembly.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope will be indicated by the appended claims.

In the drawings:

FIGURE 1 is a top perspective view showing a pill package constructed in accordance with the teachings of the present invention;

FIGURE 2 is an exploded perspective view showing the elements of the package of FIGURE 1;

FIGURE 3 is a sectional view taken substantially along the line 3—3 of FIGURE 1;

FIGURE 4 is a top perspective view showing a slightly modified form of pill package constructed in accordance with the teachings of the present invention;

FIGURE 5 is a sectional view taken substantially along the line 5—5 of FIGURE 4;

FIGURE 6 is a top perspective view showing another modified embodiment of pill package constructed in accordance with the teachings of the present invention; and

FIGURE 7 is a sectional view taken substantially along the line 7—7 of FIGURE 6.

Referring now more particularly to the drawings, and specifically to FIGURES 1—3 thereof, a pill package is there generally designated 10 and includes a generally flat, board-like carrier 11, a blister 12 upstanding from the carrier, and a vapor barrier 13 closing the underside of the blister and also carried by the carrier. A pressed tablet or pill 14 is shown in FIGURE 3 interposed between the blister 13 and barrier 13.

The carrier 11 may be composed of a pair of plies or sheets 16 and 17, any of card stock or other suitably stiff sheet material, the upper carrier sheet or ply 16 having a generally circular central aperture, opening or hole 18 and secured in superposed, facing engagement with the undersheet or ply 17, which latter sheet may also have a generally circular, central hole or opening 19 in alignment with the opening 18.

The blister 12, which is advantageously fabricated of moisture-vapor-proof sheet material, such as vinyl having a thickness between .0075 and .010 inch, includes a generally flat peripheral margin 21, and has its central region upset out of the plane of the margin to define a central opening 22. The blister 12 includes a peripheral or circumferential wall 23 extending about and bounding the central opening 22, upstanding outward from the flange or margin 21. Extending entirely along the upper or outer region of the upstanding circumferential wall 23 is an inner wall 24, which depends obliquely downward away from the circumferential wall and terminates short of the margin 21. A central, downwardly facing cup-shaped portion or button 25 extends entirely across the region bounded by the inner wall 24, being integrally connected to the lower region of the inner wall. The cupped portion or button 25 may include a side wall 26 extending entirely along and upward from the lower region of the inner wall 24, and a generally flat top wall 27 extending across the upper region of the side wall 26 and closing the region bounded thereby. Of course, the entire blister 12 may be integrally fabricated of a single sheet of clear plastic, as by vacuum-molding, or otherwise formed, if desired. The inverted cupped portion 25 is specifically configured to conformably receive a generally flatly pressed tablet or pill 14; and, the height of side wall 26 approximates one-half the height of the tablet so that the latter depends beyond the cupped portion 25.

The vapor barrier 13 may consist of a rupturable sheet of metal foil, say aluminum, and may be vinyl-coated, if desired. The barrier sheet 13 is of sufficient size to extend entirely across and close the blister opening 22.

In assembly, see FIGURE 3, the blister 12 is superposed on the barrier sheet 13, with the blister margin 21 in facing engagement with the barrier sheet and the upset central blister portion spaced from and facing toward the barrier sheet. The facing blisters 12 and barrier sheet 13 are located in the opening 18, 19 of the carrier 11, the marginal peripheries of the blister and barrier sheet being sandwiched between the plies 16 and 17 of the carrier and the upset central region of the blister.
projecting upward through the upper-carrier-sheet opening 18. In this assembled condition, the upper and lower carrier sheets 16 and 17 and the intermediate marginal regions of blister 12 and barrier sheet 13 are adhesively secured in facing engagement, by any suitable adhesive means, such as heat-sealed thermoplastic, or otherwise. It will thus be appreciated that the pill 14 interposed between the button 25 and barrier 13 is effectively maintained in position within a moisture-vapor-proof chamber.

Further, the substantial stiffness or relative rigidity of the blister 10 and its specifically configured button 25 effectively protects the contained pill 14 from being powdered or otherwise damaged, even under abusive handling conditions. However, when it is desired to remove the pill 14 from the package 10, it is only necessary to depress the button 25 downward, as with a finger or thumb. Enabling this downward movement of the button 25 is resilient outward deflectibility of the circumferential wall 24, inner wall 25, and side wall 26. That is, sufficient downward movement of the button 25 is enabled to cause rupture of the barrier sheet 13 by the pill 14 and movement of the latter through the lower-carrier-sheet opening 19. In practice, it is presently preferred that the diameter of the outer or circumferential wall 24 be at least approximately 1.6 times the diameter of the button or cupped portion 25, the diameter of opening 19 of ¼ inch greater than the diameter of the button having been found satisfactory. The size of the opening 18 in the upper carrier sheet 16 need only be sufficient to freely receive the upper central portion of the blister 12.

In the embodiment of FIGURES 4 and 5 is shown a package 10a which is similar to the package 10 but more particularly adapted for packaging a coated tablet or pill 14a, such as are usually of somewhat flattened or oblate spherical configuration. The package 10a includes a boardlike carrier 11a and barrier sheet 13a, all of which may be substantially identical to that described in connection with the embodiment of FIGURES 1–3.

The blister 12a of FIGURES 4 and 5 is similar to the blister 12, including a generally flat peripheral margin or flange 21a having a central opening 22a also of elongate or ovaloid configuration. The blister includes an upstanding circumferential wall 23a surrounding 22a and provided with an inner wall 24a extending entirely about the upper edge of the circumferential wall and depending therefrom obliquely away from the circumferential wall, terminating short of the plane of margin 21a. A central, inverted cup-shaped portion or button 25a includes a side wall 26a extending entirely about and integrally connected to the lower region of inner wall 24b, upwardly therefrom, and a top or outer wall 27b extending entirely across the upper region of side wall 26b. The elongate pill or capsule 14b is conformably received in the cupped portion or button 25b, the height of side wall 26b approximating one-half the height of the pill. It has also been found satisfactory in this embodiment to form the circumferential or outer wall 23b of a diameter at least approximately 1.6 times that of the button or cupped portion 25b, on each axis of the ovaloid configuration. Also, the dimension of opening 19b formed in the lower carrier sheet 17b is preferably ¼ inch greater than that of the central button 25b, on each axis of the ovaloid configuration. Of course, the ovaloid configurations of the lower-sheet opening 19b, upper-sheet opening 18b, and the opening 22b defined within the blister margin 21b are conformably arranged with respect to each other.

The blister 12b of FIGURES 6 and 7 is associated with a barrier sheet 13b in the same manner as the previously described embodiments, and the marginal regions of the blister and barrier sheet secured in sandwiched relation between the carrier sheet 16b and blister 12b. The blister 12b is preferably constructed of a generally flat sheet material, including a generally flat peripheral margin or flange 21b having a central opening 22b also of elongate or ovaloid configuration. The blister includes an upstanding circumferential wall 23b surrounding 22b and provided with an inner wall 24b extending entirely about the upper edge of the circumferential wall and depending therefrom obliquely away from the circumferential wall, terminating short of the plane of margin 21b. A central, inverted cup-shaped portion or button 25b includes a side wall 26b extending entirely about and integrally connected to the lower region of inner wall 24b, upwardly therefrom, and a top or outer wall 27b extending entirely across the upper region of side wall 26b. The elongate pill or capsule 14b is conformably received in the cupped portion or button 25b, the height of side wall 26b approximating one-half the height of the pill. It has also been found satisfactory in this embodiment to form the circumferential or outer wall 23b of a diameter at least approximately 1.6 times that of the button or cupped portion 25b, on each axis of the ovaloid configuration. Also, the dimension of opening 19b formed in the lower carrier sheet 17b is preferably ¼ inch greater than that of the central button 25b, on each axis of the ovaloid configuration. Of course, the ovaloid configurations of the lower-sheet opening 19b, upper-sheet opening 18b, and the opening 22b defined within the blister margin 21b are conformably arranged with respect to each other.

In manufacture, assembly and use, the embodiment 10b of FIGURES 6 and 7 is substantially the same as that of FIGURES 1–3, and FIGURES 4 and 5.

From the foregoing, it is seen that a packaging device for pills and the like has been provided by the instant invention which fully accomplishes its objects and is well-adapted to meet practical conditions of manufacture, handling and use.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention and scope of the appended claims.

What is claimed is:

1. In a pill package, the combination comprising a resilient flexible moisture-proof blister sheet or blister carrier extending entirely across the upper or outer region of the outer wall and depending obliquely therefrom. However, the central, downwardly facing cupped portion or button 25a may be of a smoothly concave internal- or nether-surface configuration to conformably receive approximately the upper half of pill 14a, with the button 25a extending entirely across the region bounded by the inner wall 24a and integrally connected to the lower edge of the inner wall.

Operationally the embodiment of FIGURES 4 and 5 is substantially the same as that of FIGURES 1–3, it also being preferable that the diameter of circumferential wall 23a be at least approximately 1.6 times the diameter of button 25a, and that the diameter of central opening or hole 19a in lower carrier sheet 17a be greater than that of the button, ¼ inch greater having been found satisfactory.

A further embodiment is shown in FIGURES 6 and 7, which is especially adapted for packaging an elongate pill or capsule 14b. The package 10b of FIGURES 6 and 7 includes a carrier 11b composed of superposed cards or sheets 16b and 17b respectively formed with central openings or apertures 18b and 19b, which in this embodiment are of elongate or ovaloid configuration.

A blister 12b, which may be integrally formed of stiff, resiliently flexible sheet material, includes a generally flat peripheral margin or flange 21b having a central opening 22b also of elongate or ovaloid configuration. The blister includes an upstanding circumferential wall 23b surrounding 22b and provided with an inner wall 24b extending entirely about the upper edge of the circumferential wall and depending therefrom obliquely away from the circumferential wall, terminating short of the plane of margin 21b. A central, inverted cup-shaped portion or button 25b includes a side wall 26b extending entirely about and integrally connected to the lower region of inner wall 24b, upwardly therefrom, and a top or outer wall 27b extending entirely across the upper region of side wall 26b. The elongate pill or capsule 14b is conformably received in the cupped portion or button 25b, the height of side wall 26b approximating one-half the height of the pill. It has also been found satisfactory in this embodiment to form the circumferential or outer wall 23b of a diameter at least approximately 1.6 times that of the button or cupped portion 25b, on each axis of the ovaloid configuration. Also, the dimension of opening 19b formed in the lower carrier sheet 17b is preferably ¼ inch greater than that of the central button 25b, on each axis of the ovaloid configuration. Of course, the ovaloid configurations of the lower-sheet opening 19b, upper-sheet opening 18b, and the opening 22b defined within the blister margin 21b are conformably arranged with respect to each other.

2. A pill package according to claim 1, said carrier comprising a plurality of pills having sandwiched therebetween the margins of said blister and blister carrier.

3. A pill package according to claim 1, said barrier comprising a foil sheet.

4. A pill package according to claim 1, said blister being integrally fabricated of plastic material.

5. A pill package according to claim 1, said blister being integrally fabricated of stiff vinyl sheet material having a thickness between .0075 and .010 inch.
6. A pill package according to claim 1, said outstanding peripheral wall extending entirely about said opening, said inner wall extending entirely along the outer region of said peripheral wall, and said cupped portion comprising a top wall in facing spaced relation with said barrier, and a side wall extending between and entirely about said top wall and the inner region of said inner wall.

7. A pill package according to claim 6, said peripheral wall being of entirely convex external configuration, and said inner, side and top walls being configured conformably to said peripheral wall.

8. A blister for a pill package, said blister being integrally fabricated of resiliently flexible moisture-vapor-proof sheet material and comprising a generally flat peripheral margin having a central opening, an upstanding circumferential wall extending about the bounding edge of said opening, an inner wall extending along the upper region of said circumferential wall and downward toward and terminating short of said opening, and a cupped portion extending across the lower edge of said inner wall and having its concave side facing toward said opening.

9. A blister according to claim 8, said blister being fabricated of plastic material.

10. A blister according to claim 8, the minimum diameter of said circumferential wall being approximately 1.6 times the diameter of said cupped portion.

11. A blister according to claim 8, said upstanding circumferential wall extending entirely about said opening, said inner wall extending entirely along the upper region of said circumferential wall, and said cupped portion comprising a side wall extending entirely about and upstanding from the lower edge of said inner wall, and a top wall extending entirely across the upper edge of said side wall.

12. A blister according to claim 11, said circumferential wall being of entirely convex external configuration, and said inner, side and top walls being configured conformably to said circumferential wall.

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