CONTAINER WITH CUTTING APPARATUS

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ABSTRACT
A container includes a base portion having a compartment for storing an encased item and an opening to the compartment. The container also includes a cover and a cutting apparatus. The cutting apparatus includes a channel, a cutting member having a cutting edge positioned in the channel, and a displaceable structure that is positioned in the channel proximate the cutting member. The cutting apparatus can be concealed when the cover and the base portion are positioned proximate to one another.
CONTAINER WITH CUTTING APPARATUS

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a Continuation-in-Part of U.S. Non-Provisional application Ser. No. 11/619,540, filed Jan. 3, 2007, the entirety of which is incorporated herein by reference.

TECHNICAL FIELD

[0002] The present invention relates generally to containers, and more specifically to a container including a cutting apparatus.

BACKGROUND

[0003] Items, such as medicaments, are packaged in child-resistant or particularly durable encasements such as pouches, blister packs, blisters, and the like. These encasements are useful for providing child resistance and maintaining the freshness of the item therein, but can also make the encasement difficult for the intended user to open. Thus, there is a need for storing encased items and for safely and efficiently opening encased items.

SUMMARY

[0004] The various embodiments of the present invention depart from the current packaging industry environments and the known prior art through the creative manner the inventors identified present and future needs, and then developed flexible solutions that addressed both isolated and overlapping failures in the present art to satisfy those needs. Through the present invention, as taught and illustrated through exemplary embodiments, obstacles including structural integrity, child-resistance, ease of access, consistent operation through repeated use, and price-point economics are simultaneously solved.

[0005] A first exemplary embodiment of a container includes a base portion having a compartment for storing an encased item and an opening to the compartment. The container also includes a cover and a cutting apparatus. The cutting apparatus includes a channel, a cutting member having a cutting edge positioned in the channel, and a displaceable structure that is positioned in the channel proximate the cutting member. The cutting apparatus can be concealed when the cover and the base portion are positioned proximate to one another. In certain embodiments, the cover at least partially closes the opening when the base portion and cover are positioned with respect to one another.

[0006] In the first exemplary embodiment, the base portion includes the cutting apparatus. In alternative embodiments, the cover includes the cutting apparatus.

[0007] In the first embodiment, the cutting member is acutely angled with respect to a vertical plane defined by the channel. By angling the cutting member, the container is allowed a more compact design. In alternative embodiments, the cutting member can be substantially perpendicular to a vertical plane defined by the channel.

[0008] The cutting apparatus also includes means for biasing the displaceable structure. In the exemplary embodiment, means for biasing includes a flexible arm that is defined from a wall of the channel. In alternative embodiments, means for biasing can include a leaf spring, a coil spring, a foam element, a rubber element, combinations thereof, and the like.

[0009] The container also includes means for facilitating removal of an encased item from the compartment. In the first exemplary embodiment, means for facilitating removal includes a flap that is displaceable into the compartment and that is opposite the opening. In alternative embodiments, means for facilitating removal can include a wheel or a plunger.

[0010] The foregoing has broadly outlined some of the aspects and features of the present invention, which should be construed to be merely illustrative of various potential applications of the invention. Other beneficial results can be obtained by applying the disclosed information in a different manner or by combining various aspects of the disclosed embodiments. Accordingly, other aspects and a more comprehensive understanding of the invention may be obtained by referring to the detailed description of the exemplary embodiments taken in conjunction with the accompanying drawings, in addition to the scope of the invention defined by the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a perspective view of a container, according to a first exemplary embodiment of the present invention.

[0012] FIG. 2 is a plan view of the container of FIG. 1.

[0013] FIG. 3 is a partial perspective view of the container of FIG. 1.

[0014] FIG. 4 is a partial plan view of the container of FIG. 1.

[0015] FIG. 5 is a partial cross-sectional side elevation view of the container of FIG. 1.

[0016] FIG. 6 is a partial end elevation view of the container of FIG. 1.

[0017] FIG. 7 is a perspective view of the container of FIG. 1 illustrating an exemplary method of opening a pouch.

DETAILED DESCRIPTION

[0018] As required, detailed embodiments of the present invention are disclosed herein. It must be understood that the disclosed embodiments are merely exemplary examples of the invention that may be embodied in various and alternative forms, and combinations thereof. As used herein, the word “exemplary” is used expansively to refer to embodiments that serve as illustrations, specimens, models, or patterns. The figures are not necessarily to scale and some features may be exaggerated or minimized to show details of particular components. In other instances, well-known components, systems, materials, or methods have not been described in detail in order to avoid obscuring the present invention. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the present invention.

[0019] For purposes of teaching, the illustrated embodiment is shown and described in the context of a container 10 that is configured to store and dispense pouches P, which encase pharmaceutical-related goods or medicaments (not shown). Referring momentarily to FIG. 7, the pouch P is a protective encasement that is child-resistant or otherwise tear resistant. The pouches P are made to be particularly durable for child-resistance or for purposes of freshness. The illustrated pouch P includes substrates that are sealed together at the periphery to define a flanged portion F.
The illustrated embodiment of the packaging system, which is provided by the container 10 and pouches P, can be utilized to store and dispense items other than medications and is specifically useful for small, delicate, sensitive, or portable items. Examples of such items include all manner of consumable products such as candy, food, vitamins, and the like; and all manner of personal care products such as contact lens, birth control devices, smoking cessation patches, hearing aid batteries, and the like.

In alternative embodiments of the packaging system, the pouches P can be substituted with other primary packaging such as a blister cards, trays, cards, racks, packs, flexible or semi-flexible protective coverings, blister wraps, shrink wraps, combinations thereof, and the like. In general, the teachings provided herein are applicable to any primary packaging that provides protective encaement of an item. In such alternative embodiments, the container 10 can be alternatively configured to accommodate the primary packaging.

Referring now to the drawings, wherein like numerals represent like features throughout, a first exemplary embodiment of the present invention is illustrated in FIGS. 1-7. Referring to FIGS. 1 and 2, the container 10 includes a plurality of walls that define a compartment C, which is dimensioned to store one or more pouches P (shown in FIG. 1). The container 10 also includes an end structure 12 through which the pouches P can be removed from the compartment C.

A cover 14 is connected to the base portion B by a hinge 16 and can be positioned to open and close the opening 12. In alternative embodiments, it is contemplated that the cover 14 can be connected to the container 10 by alternative means for connecting such elements that provide a seamless connection, elements that provide a sliding connection, mechanical fasteners, elements that can be press fit, glue or other adhesive, combinations thereof, and the like.

The compartment C is defined by a compartment top wall 20, a compartment base wall 22, opposing compartment side walls 24a, 24b, and opposing compartment end walls 26a, 26b. In the exemplary embodiment, the compartment end wall 26b is defined by an end structure 28 of the base portion B to which the cover 14 is connected. The opening 12 is defined in the compartment top wall 20 and disposed adjacent to the compartment side walls, 24a, 24b and the compartment end wall 26b.

Referring to FIGS. 3-6, the end structure 28 includes an integral cutting apparatus 30. In alternative embodiments, the container 10 can be alternatively configured such that the cutting apparatus 30 is differently positioned or formed in a different part or portion of the container 10. In one such embodiment, the configuration of the first exemplary embodiment is altered such that the end structure 28 and the cutting apparatus 30 are integrally formed in an area X of the cover 14. Thus, when the cover 14 is closed, the end structure 28 fills a space or void that is adjacent to the compartment C and the cutting apparatus 30 is concealed. Similar to the first embodiment, when the cover 14 is opened, the cutting apparatus 30 is revealed and operable.

In still other alternative embodiments, the cutting apparatus and the container can be independently formed before being attached to one another to form a container that includes a cutting apparatus.

The illustrated cutting apparatus 30 includes a channel 32 that extends between end structure side walls 34a, 34b (best shown in FIGS. 1 and 2). The end structure side walls 34a, 34b and the compartment side walls 24a, 24b provide substantially continuous side walls of the container 10. The channel 32 defines channel side walls 36, 38 that are substantially parallel to one another, a channel base wall 40 that connects the channel side walls 36, 38, and open ends 42a, 42b in the end structure side walls 34a, 34b. In the exemplary embodiment, the channel 32 is dimensioned to guide and support the flanged portion F of the pouch P therethrough (best shown in FIG. 7). However, the dimensions of the channel 32, including the length, width, and depth, can be alternatively selected to accommodate other primary packaging or to select the location of a cut formed in primary packaging by the cutting apparatus 30, as described in further detail below.

In the illustrated embodiment, the walls of the channel are configured to support the flanged portion of the pouch. However, for alternative primary packaging, the channel 32 can have a profile with any shape. In other words, the channel walls can have any shape or configuration so as to accommodate alternative primary packaging.

In the illustrated embodiment, the channel 32 is substantially perpendicular to the compartment base wall 22. However, the channel 32 can be alternatively disposed in the container 10. For example, the channel 32 can be disposed in the end structure 28 so as to be at an angle with respect to the compartment base wall 22 or so as to be substantially perpendicular to the compartment end wall 26b.

In the exemplary embodiment, the channel 32 is curved along its length. However, in alternative embodiments, the channel may be substantially straight.

The cutting apparatus additionally includes a cutting member, such as a blade 44, having a distal end 46 and a cutting edge 48 positioned in the channel 32. The body of the blade 44 is housed in the end structure 28 and the distal end 46 extends from the channel side wall 38 into the channel 32 so as to be spaced apart from the channel side wall 36. In other words, the blade 44 is cantilevered in the channel 32. In alternative embodiments, opposite ends of the blade 44 are supported by each of the channel side walls 36, 38 and a medial portion thereof provides the cutting edge.

Turning momentarily to FIG. 5, in the illustrated embodiment, the blade 44 is at an acute angle A with respect to the channel side walls 36, 38. By positioning the blade 44 at an acute angle A, the length of the end structure 28 can be reduced, thereby reducing the overall length of the base portion B of the container 10. In alternative embodiments, the blade 44 is positioned so as to be substantially perpendicular with respect to the channel side walls 36, 38. Also, in still other alternative embodiments, the blade can have a curved or alternatively shaped body to reduce the length of the container.

In the illustrated embodiment, the blade 44 has a single cutting edge 48 to cut a pouch P translated through the channel 32 in a selected direction, as described in further detail below. However, in alternative embodiments, the blade 44 includes opposing cutting edges such that a pouch P is cut when translated through the channel 32 in either direction.

The cutting apparatus 30 includes a placeable protrusion 50 that extends into the channel 32 and cooperates with the blade 44 to cut open the pouch P. The placeable protrusion 50 extends from the channel side wall 36 into the channel 32 and is dimensioned and positioned to project and/or hide the blade 44. The illustrated placeable protrusion 50 has a rounded shape, but any shape that facilitates the displacement thereof when the pouch P is translated along the
length of the channel 32 is contemplated. The displaceable protrusion 50 is positioned above the blade 44 in the channel 32 and obstructs a pouch P or other object that is lowered into the channel 32 rather than translated therethrough.

In the illustrated embodiment, the displaceable protrusion 50 is made displaceable as it is integral to a flexible arm 52. The illustrated flexible arm 52 is defined from the channel side wall 36 by slots 54a, 54b and can be displaced transversely with respect to the channel 32. Thus, the displaceable protrusion 50 can be displaced toward and away from the channel side wall 38. The flexible arm 52 provides resistance to the displacement of the displaceable protrusion 50, which facilitates the operation of the cutting apparatus 30, as described in further detail below.

In alternative embodiments, the displaceable protrusion 50 can be made displaceable by other means for biasing including leaf springs, coil springs, flexible walls, foam elements, rubber elements, gel elements, any compressible element that returns to its initial shape, combinations thereof, and the like. In such embodiments, the displaceable protrusion 50 may be configured to slide transversely with respect to the channel and be attached to or in contact with means for biasing.

Referring again to FIGS. 1 and 2, in the illustrated embodiment, when the cover 14 is positioned to close the opening 12, a cover top wall 70 and cover side walls 74a, 74b, along with the compartment top wall 20 and the compartment side walls 24a, 24b, provide substantially continuous top and side walls 20/70, 24a/74a, 24b/74b of the container 10. In the illustrated embodiment, the cover 14 overlaps an inset portion of each of the compartment top wall 20 and the compartment side walls 24a, 24b as well as the end structure 28. When the cover 14 is closed, the cutting apparatus 30 is concealed, protected, and prevented from being used. In alternative embodiments, the cover 14 conceals one of the cutting apparatus 30 and the opening 12. In still other embodiments, the cutting apparatus 30 and the opening 12 have separate covers.

The container 10 includes elements to releasably hold the cover 14 in a position to close the opening 12. Specifically, when the cover 14 is closed, recesses 82a, 82b in the cover 14 releasably engage detents 80a, 80b on the side walls 24a, 24b to maintain the cover 14 in a closed position. In alternative embodiments, the container 10 can include locking elements that lock the cover 14 in a closed position to provide a child-resistant feature.

The container 10 further includes means for facilitating removal of pouches P therefrom. In the illustrated embodiment, means for facilitating removal is a flap 84 that is defined in the compartment base wall 22 and opposite the opening 12. Specifically, the flap 84 is defined by a U-shaped slot 86 and is displaceable into the compartment. Operation of the flap 84 is described in further detail below.

In alternative embodiments, other means for facilitating removal include wheels or plungers that advance or feed an item from the compartment, and the like.

Referring to FIGS. 1, 2, and 7, a method of operating the container 10 to open the pouch P is now described in further detail. The cover 14 is opened and the pouch P is removed from the compartment. Specifically, the flap 84 is displaced into the compartment which in turn displaces an end of the pouch P toward or through the opening 12. The end of the pouch P can then easily be grasped to remove the pouch P from the compartment.

Thereafter, referring specifically to FIG. 7, the flanged portion F of the pouch P is inserted into the open end 42b and translated through the channel 32 towards the other open end 42a. The leading edge of the pouch P then comes into contact with the displaceable protrusion 50 and displaces the displaceable protrusion 50 outwardly. Thereafter, the pouch P moves against the cutting edge 48 and in between the distal end 46 of the blade 44 and the displaceable protrusion 50. The resistance of the flexible arm 52 to deflection is such that the protrusion 50 forces the pouch P against the blade 44 and the blade 44 punctures or initiates a cut in the flanged portion F. As the pouch P continues through the channel 32, the cutting edge 48 forms a cut in the pouch P through which items in the pouch P can be accessed once the pouch P exits the channel 32 through the open end 42a.

The distal end 46 or cutting edge 48 of the blade 44 can be positioned relative to the channel base wall 40 of the channel 32 to control the location of the cut that is formed by the cutting apparatus 30 in the pouch P.

The law does not require and it is economically prohibitive to illustrate and teach every possible embodiment of the present claims. Hence, the above-described embodiments are merely exemplary illustrations of implementations set forth for a clear understanding of the principles of the invention. Variations, modifications, and combinations may be made to the above-described embodiments without departing from the scope of the claims. All such variations, modifications, and combinations are included herein by the scope of this disclosure and the following claims.

What is claimed is:

1. A container comprising:
   a base portion comprising a compartment for storing an encased item and an opening to said compartment;
   a cover; and
   a cutting apparatus comprising:
   a channel;
   a cutting member having a cutting edge disposed in said channel; and
   a displaceable structure disposed in said channel proximate said cutting member;
   wherein said cutting apparatus can be concealed when said cover and said base portion are positioned proximate to one another.

2. The container of claim 1, wherein said base portion includes said cutting apparatus.

3. The container of claim 1, wherein said cover includes said cutting apparatus.

4. The container of claim 1, wherein said cover at least partially closes said opening when said cover and said base portion are positioned proximate to one another.

5. The container of claim 1, wherein said cutting member is acutely angled with respect to a vertical plane defined by said channel.

6. The container of claim 1, further comprising means for biasing said displaceable portion.

7. The container of claim 6, where said means for biasing is one of a flexible arm, a leaf spring, a coil spring, a foam element, and a rubber element.

8. The container of claim 1, wherein said container further includes means for facilitating removal of an encased item from said compartment.

9. The container of claim 8, wherein said means for facilitating removal includes a flap that is displaceable into said compartment.
10. The container of claim 9, wherein said flap is opposite said opening.

11. The container of claim 8, wherein said means for facilitating removal includes one of a wheel and a plunger.

12. A method for providing a container, comprising:
   forming a container with a plurality of walls that define a compartment;
   forming an opening to said compartment in at least one of said walls;
   forming a cover that can attach to said compartment to at least partially close said opening; and
   forming a cutting apparatus in a portion of said container, forming a cutting apparatus comprising:
   forming a channel in said portion;
   attaching a cutting member having a cutting edge to said portion such that said cutting edge is disposed in said channel; and
   forming a displaceable structure that extends into said channel.

13. The method of claim 12, wherein said portion is integral to said cover.

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