United States Patent

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[15] 3,652,006

[45] Mar. 28, 1972

[54] TEAR OPEN PACKAGE AND TEAR SEAM THEREFOR

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[22] Filed: **Jan. 20, 1970**

[21] Appl. No.: **4,330**

[52] **U.S. Cl.** **229/55**, 229/66

[51] **Int. Cl.** **B65d 33/02**

[58] **Field of Search** 229/66, 85, 55

[56] **References Cited**

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[57] **ABSTRACT**

A tear-open package comprising a flexible packaging material, such as paper, sealed around its periphery but spaced apart near its center to provide a product-receiving cavity, the package having a pleat formed along one edge thereof to provide a pair of adjacent outwardly extending and readily graspable folds. The folds are reinforced by stiffening strips or by adhesive material, except along the fold line between folds, so that when the folds are grasped and pulled apart the package will tear open along the fold line between the reinforced folds.

2 Claims, 5 Drawing Figures

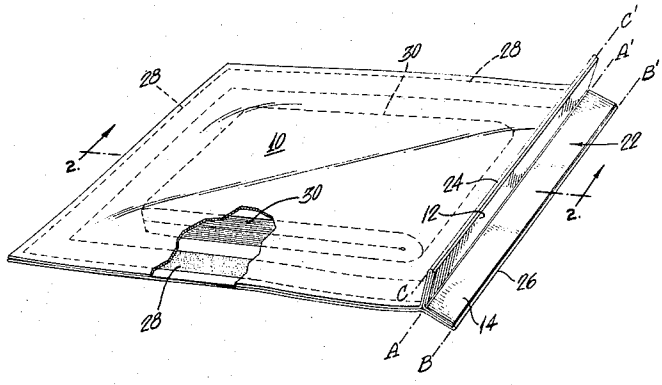


FIG. 1.

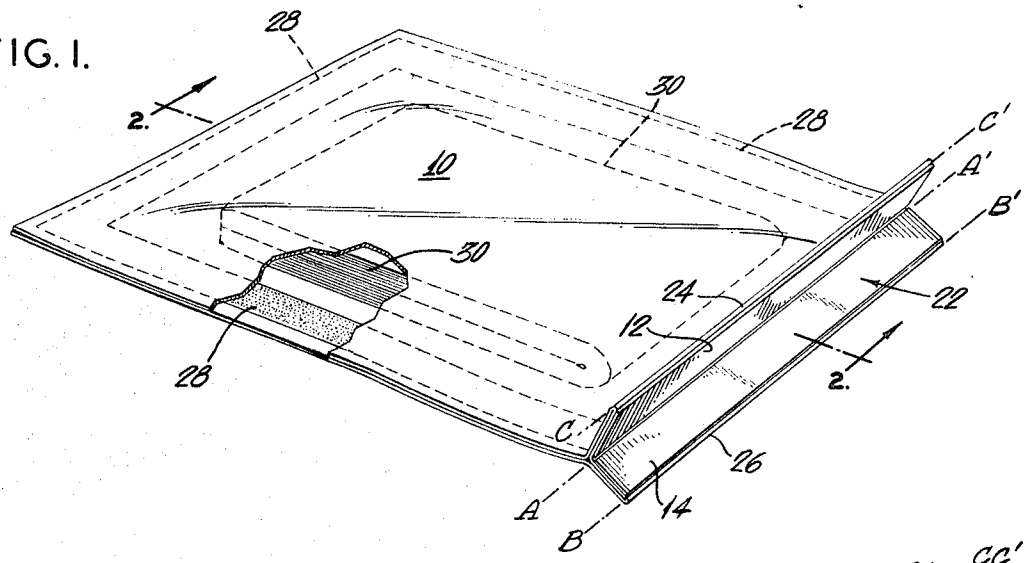


FIG. 2.

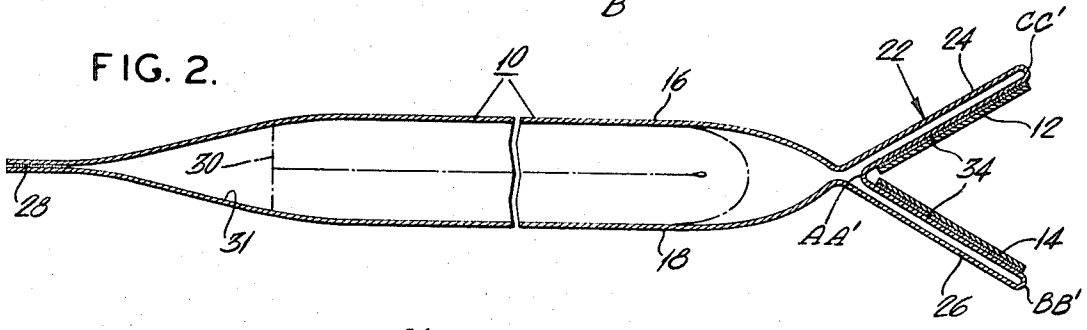


FIG. 3.

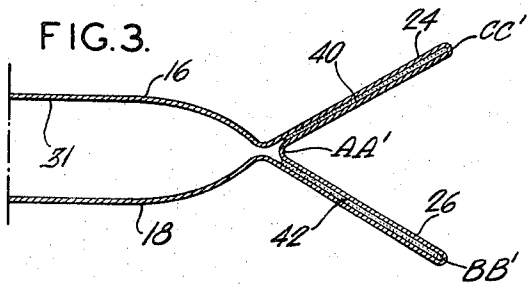


FIG. 4.

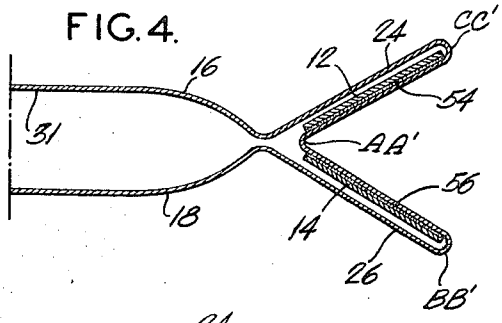
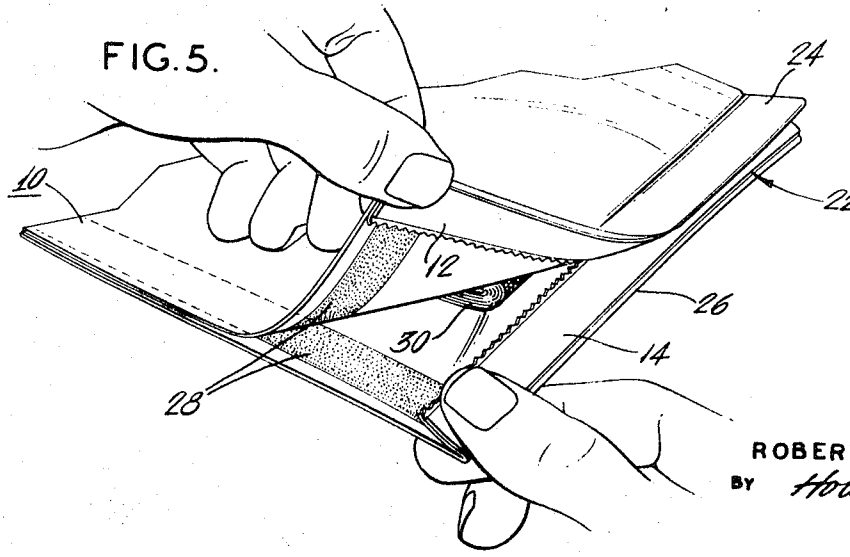


FIG. 5.



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TEAR OPEN PACKAGE AND TEAR SEAM THEREFOR

The present invention relates generally to packages formed of flexible packaging material and relates more specifically to a novel tear-open package and to a novel tear-open seam for use in such a package.

The type of package to which the invention relates may be used, for example, to package a sterile solid object such as a bandage, and constructions suitable for this application will be set forth hereinafter in detail by way of example only. Among many other applications, the package of this invention may be used as a container for flowable material such as liquids, particulate matter, and various forms of frozen foods, including those foods intended to be heated while still in the package.

Many types of packages of the tear open type are known in the art and have met varying degrees of success. In some, the bond which is torn open in opening the package is provided by an adhesive material which in some cases provides a non-uniform bonding so that when the tear-open flaps are pulled apart the tearing action is not uniform, and the flap itself may be ripped, for example. In my copending application, Ser. No. 838,881 entitled "Tear Open Package and Method of Making Same", filed July 3, 1969, now U.S. Pat. No. 3,570,751 and of common assignee herewith, there is described a tear-open package utilizing a special gusset or insert arranged so that, during tearing open of the package, the tearing will occur along a predetermined weakened line in the gusset. While the latter package has many advantages with respect to uniformity of opening force and in other respects even further simplifications in structure and method of fabrication are desirable.

It is an object of the present invention to provide a new and useful tear-open package and a tear-open seam arrangement suitable for use therein.

Another object is to provide such a package which may readily be opened by application of a moderate and substantially uniform opening force applied between a pair of readily graspable portions of the package.

It is also an object to provide such a package wherein the line along which the tearing occurs is accurately established, and the regions adjacent thereto are protected from inadvertent tearing thereof.

A further object of the invention is to provide a package which, with its contents, may readily be sterilized and which will not jeopardize the sterility of the contents during opening of the package and removal of the contents.

A further object is to provide such a package and tear-open seam arrangement which is of especially simple construction and can be fabricated readily.

In accordance with the invention these and other objects are achieved by the provision of a tear-open seam arrangement which comprises a pleat formed in a closed end of a tear-open package so as to provide a pair of adjacent outwardly extending and readily graspable folds, together with reinforcing means on each of said pleat folds positioned so as to leave an unreinforced, relatively weak and readily tearable portion of the pleat along the fold line between the pleat folds, whereby grasping and pulling apart of the pleat folds will tear open the package along said fold line.

The reinforcing means may comprise an adhesive material contained in and bonded to each of the folds, or in another embodiment it may comprise a pair of stiffening strips each bonded to one of the folds, either inside each fold or on the exterior thereof. For the purpose of packaging of sterile bandages, the material of the package is preferably paper.

In a complete tear-open package fabricated in accordance with the invention, an integral sheet of flexible material is folded along three adjacent parallel lines to form a pair of opposed main flaps and to form, along the folded edge thereof, an accordion pleat having the above-mentioned two adjacent outwardly extending and readily graspable folds; the main flaps are bonded together along their other edges, and the above-described reinforcing means are provided for each of the pleat folds so as to leave an unreinforced, relatively weak and readily tearable portion of the pleat along the fold line between the pleat folds. Preferably the interior portions of the main flaps are spaced apart to form the product-receiving cavity and, in application to packaging of such products as sterile bandages, the bonding of the other edges of the package may be by means of an adhesive material.

Other objects and features of the invention will be more readily understood from a consideration of the following detailed description, taken together with the accompanying drawings, in which:

FIG. 1 is a perspective view of one embodiment of a tear-open package constructed in accordance with the invention;

FIG. 2 is a sectional view taken along lines 2—2 of FIG. 1;

FIGS. 3 and 4 are fragmentary sectional views similar to FIG. 2, but illustrating two different species of the invention; and

FIG. 5 is a perspective view illustrating the manner in which the tear-open seam of the invention may be opened.

Referring now to the embodiment of the invention shown in the drawings by way of example only, FIGS. 1 and 2 show a tear-open package comprising only one continuous piece of flexible packaging material 10 plus a pair of reinforcing strips 12 and 14 and appropriate adhesive material.

More particularly, the package shown may be formed from a rectangle of paper by first folding the paper in half along the fold line AA' parallel to one end thereof to form two main flaps 16 and 18, which main flaps may then be folded back in the opposite direction from the first folding along two fold lines BB' and CC' equally spaced on opposite sides of, and parallel to, the original fold line AA'. When this has been done, the two main flaps 16 and 18 will lie in confronting relation to each other as shown, and the accordion pleat 22 will have been formed at the folded end of the paper, comprising the two adjacent, outwardly extending and readily graspable folds 24 and 26 on either side of the original fold line AA'. A suitable adhesive material 28 of a type to form a peel-open seal is applied along the other three edges of the two main flaps, and the two flaps pressed together along their edges to provide peel-open adhesion between the flaps along the three edges; before thus sealing the flaps together, a product such as a bandage 30 may be placed between the two main flaps, whereby after the edges of the flaps have been pressed together the bandage will be contained in a sealed cavity 31.

The reinforcing means comprising the two rectangular stiffening strips 12 and 14 may be cemented, by any appropriate adhesive 34, to the inner opposed faces of the two folds 24 and 26, in positions such as to leave the portion of the pleat lying along the original fold axis AA' in an unreinforced and hence relatively weak and readily tearable condition. Preferably each stiffening strip extends nearly to the fold line AA', extends sufficiently far outwardly to enable easy grasping thereof, and in this example is of paper.

As shown in FIG. 5, the package of FIGS. 1 and 2 is then readily torn open by grasping the two folds 24 and 26 and pulling these folds apart, whereby a well-defined, straight tear occurs along the fold line AA'; continued tearing also peels open the adhesive seal around the other three edges of the package, whereby the contents may be laid completely open, or partially opened if desired, for removal of the contents.

The reinforcing strips 12 and 14 may conveniently be cemented into position prior to the folding operations, and thereby utilized as convenient fold guides in the folding process; thus, the first fold (along AA') is conveniently made about a line extending along and between the adjacent edges of the two strips, and the second two folds are conveniently made in the opposite direction along lines positioned substantially at the outer sides of the reinforcing strips. It will be appreciated that the reinforcing strips not only provide thickening and body to the fold portions which permit them to be very readily separated and grasped, but also assure that the tear will not occur in the pleat other than along the fold line AA'.

FIG. 3 illustrates a modification of the invention, in which parts corresponding to those of FIGS. 1 and 2 are indicated by corresponding numerals. In this form of the invention the stiffening strips 12 and 14 are omitted and instead the reinforcing

means comprises bodies or layers of cement **40** and **42** inside each of the folds **24** and **26**, the opposite sides of each of the folds having been pressed together against the adhesive material to form a bond thereto with resultant stiffening and reinforcing of each fold; again, the fold line AA', defining the vertex of the dihedral angle formed by the two folds, is left free of adhesive material and therefore in a relatively weakened state so that grasping and pulling apart of the two folds **24** and **26** then provides the desired tearing along the fold line.

In FIG. 4 the reinforcing means for the two folds again comprises a supporting strip for each, but in this case the strips are positioned inside their corresponding folds and are cemented thereto by corresponding layers of cement **54** and **56** respectively.

Although the fold lines BB' and CC' are shown equally spaced from the fold line AA' in the illustrated embodiments, to facilitate opening of the package one of the fold lines BB' or CC' may be spaced further from fold line AA' than the other. The folds **24** and **26** may then be readily separated and grasped to open the seam.

It will be understood that other packaging materials and adhesives may be used where appropriate. For example, where the package is to be used for frozen foods the material may be of a plastic, bonded either with a suitable resinous cement or by thermal bonding. In other cases where the package is to be subjected to intense heat, either for sterilization or cooking, the material may in some cases be a thin foil, such as aluminum foil, sealed by adhesives or thermal bonding techniques.

The use of a foil such as aluminum foil for the package elements advantageously permits the reclosure of the package by folding. The reinforcing means, seam portion, or the entire package may be made of foil for this purpose.

It will, therefore, be appreciated that there has been provided a package of flexible packaging material having a tear-open seam arrangement which is readily fabricated, easy to grasp and both convenient and reliable in its opening characteristics.

While the invention has been described with particular reference to specific embodiments in the interest of complete definiteness, it will be understood that it may be embodied in a plurality of other forms diverse from those specifically described and shown, without departing from the scope of the invention.

What is claimed is:

1. In a tear-open package formed of flexible packaging material and having a closed end, the improvement which comprises a pleat formed in said end to provide a pair of adjacent outwardly extending and readily graspable folds, and reinforcing means on each of said pleat folds positioned so as to leave an unreinforced relatively weak and readily tearable portion of said pleat between said reinforcing means only along the fold line between said pleat folds, said reinforcing means comprising a pair of stiffening strips, each stiffening strip being bonded to the exterior of one of said folds, whereby a grasping and pulling apart of said folds will tear open said package along said fold line.

2. A tear open package of flexible material, comprising: an integral sheet of said material folded along three adjacent parallel lines to form a pair of opposed main flaps and to form, along the folded edge thereof, an accordian pleat having two adjacent outwardly extending and readily graspable folds; means bonding together said main flaps along the other edges thereof; and reinforcing means on each of said pleat folds positioned so as to leave an unreinforced relatively weak and readily tearable portion of said pleat between said reinforcing means only along the fold line between said pleat folds, said reinforcing means comprising a pair of stiffening strips, each stiffening strip being bonded to the exterior of one of said folds, whereby a grasping and pulling apart of said folds will tear said sheet along said last-named fold line.

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