

[54] **EASY-OPENING MEANS FOR PLASTIC PACKAGES**

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[58] Field of Search **220/54, 53, 27; 229/51 S, 229/51 TS**

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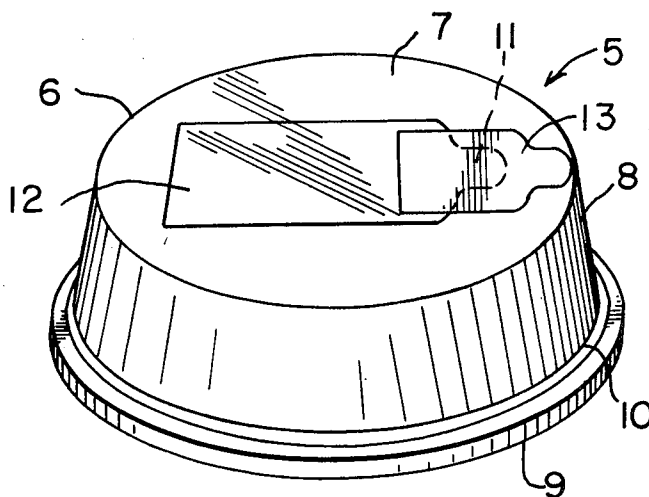
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[57] **ABSTRACT**

An easy-opening means is provided in rigid or semi-rigid plastic sheet material forming at least a substantial portion of one of the walls of a container component or package. The easy-opening means comprises a lift tab which is integrally formed from the plastic sheet material and is completely separated from the material except where it is integrally attached at one end or side of the tab. A score line or lines are formed on the interior only of the sheet material without appreciably disturbing the exterior surface in any way and with one end of each score line joining one end of the line along which the tab is completely severed from the sheet material. The tab is covered on the exterior with a patch of pressure sensitive tape so as to hermetically seal the easy-opening means where the tab is completely separated from the sheet material. On lifting the patch of tape the lift tab is or may be readily lifted and on further lifting thereof the plastic sheet material may be separated along each interior score line or lines.

10 Claims, 6 Drawing Figures

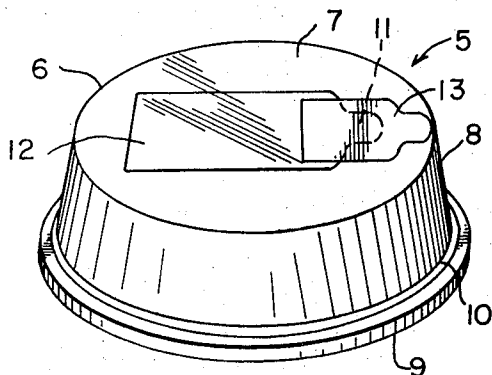


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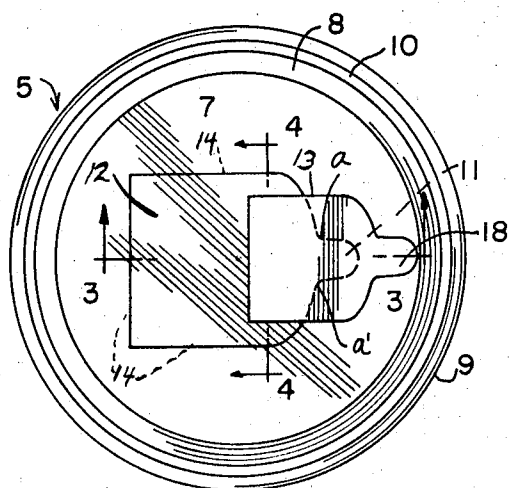
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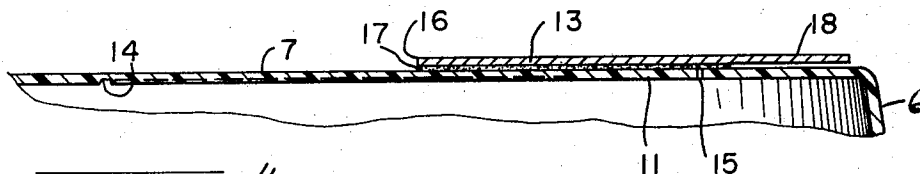
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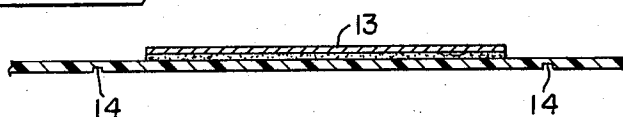
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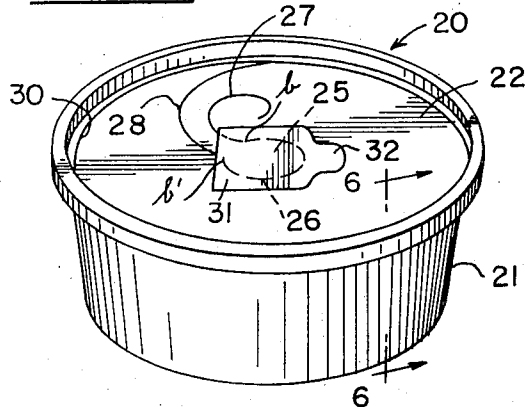
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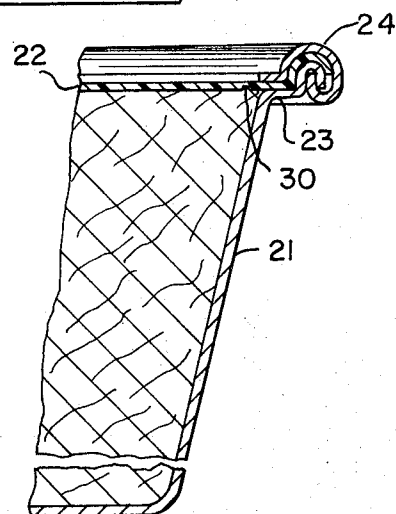
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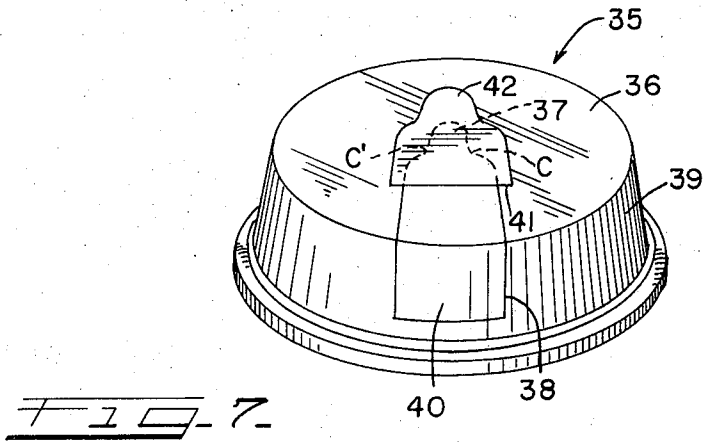
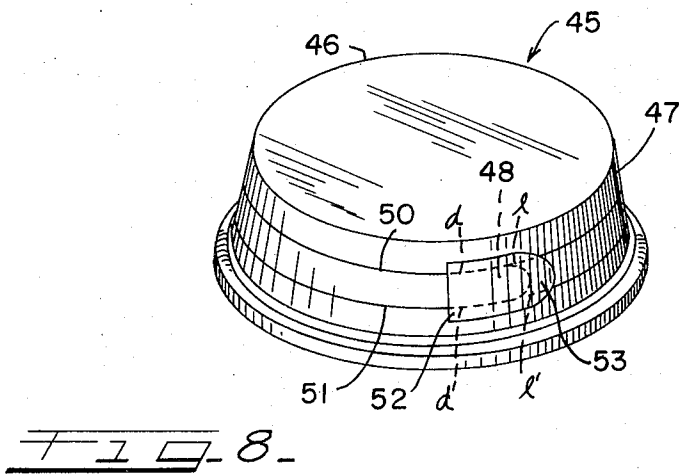


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EASY-OPENING MEANS FOR PLASTIC PACKAGES

This invention relates generally to innovations and improvements in easy-opening means for containers in which the easy-opening means is located in a portion of a wall surface of a container or package which is formed of rigid or semi-rigid plastic sheet material.

The easy-opening means of the present invention is characterized by having a lift tab which is integrally formed in and from the rigid or semi-rigid plastic sheet material so as to be substantially severed or separated therefrom except along one end or side where the tab remains integrally attached to the remainder of the sheet material. The easy-opening means is further characterized by having at least one, and usually two, score lines formed on the inner or interior surface only of the plastic sheet material without appreciably disturbing the exterior surface thereof and with one end of each score line being joined to one of the sides of the lift tab where it is completely separated from the sheet material. Further characterizing the easy-opening means of the present invention is a patch of pressure sensitive tape applied over the exterior surface of the tab so as to hermetically seal the line along which the tab is completely or substantially completely separated from the remainder of the sheet material. In order to manipulate the easy-opening means the tape is first lifted or pulled away from the wall of the container thereby lifting or exposing the lift tab which upon being further lifted produces a separation of the sheet material along each score line or lines.

Easy-opening means characterized by the above features may take a variety of forms and be used in a variety of ways in the top, bottom and/or sidewalls of rigid or semi-rigid plastic containers. They are particularly useful in pre-formed plastic receptacles or in plastic covers or lids since the score lines and lift tabs may be formed simultaneously with the formation with the receptacles, covers or lids without having to perform any separate operation and without entailing any additional expense.

The object of the invention, generally stated, is the provision of containers, packages or components thereof having easy-opening means of the type described above located in at least one wall surface which is formed of rigid or semi-rigid plastic sheet material.

Certain additional and more specific objects of the invention will in part be obvious and will in part appear hereinafter.

For a more complete understanding of the nature and scope of the invention reference may now be had to the following detailed description thereof taken in connection with the accompanying drawings, wherein:

FIG. 1 is a perspective view of a package having a dish-like receptacle formed of rigid or semi-rigid plastic sheet material and with an easy-opening means located in the horizontal flat wall surface thereof in accordance with and forming one embodiment of the present invention;

FIG. 2 is a top plan view of the package as shown in FIG. 1;

FIG. 3 is a fragmentary detailed sectional view on enlarged scale taken on line 3—3 of FIG. 2;

FIG. 4 is a fragmentary detailed sectional view on enlarged scale taken on line 4—4 of FIG. 2;

FIG. 5 is a top perspective view of a second form of container or package having an easy-opening means provided in the lid thereof and forming a second embodiment of the invention;

FIG. 6 is a fragmentary sectional view on enlarged scale taken on line 6—6 of FIG. 5;

FIG. 7 is a perspective view of a package similar to that shown in FIG. 1 with an easy-opening means located partly in one flat surface and partly in a curved sidewall surface; and,

FIG. 8 is a perspective view of a package similar to that shown in FIG. 1 with an easy-opening means forming another embodiment of this invention and located entirely in the curved sidewall of the package.

Referring to the embodiment of the invention shown in FIGS. 1-4, a package is indicated generally at 5 in FIG. 1 which includes a plastic receptacle or container component 6 formed of rigid or semi-rigid plastic sheet material such as by thermo-forming or injection molding. The open side or end of the container 6 (the bottom as shown in FIG. 1) is provided with a suitable cover or lid 9 which is suitably attached to the out-turned rim 10 of the container portion 6 in any desired known manner, preferably so as to form a hermetic seal therewith. The receptacle or container portion 6 may be formed of any suitable plastic material and may be either transparent, translucent or opaque as desired. Suitable materials which the container portion 6 may be formed include: polyvinyl chloride, cellulose acetate, nylon, polycarbonate, high impact polystyrene, high impact polypropylene, high density polyethylene, acrylate resins, polyacrylonitrile, butadiene, saran, polysulfone, polyester, ionomer and laminates formed of any desired combinations of the foregoing plastic materials.

The container or receptacle 6 has a flat wall portion 7 and a tapered sidewall portion 8 on which is integrally formed the laterally extending lip or rim 10 to which the lid or cover 9 is sealed. An easy-opening means is provided in the flat wall portion 7 in accordance with the present invention. This easy-opening means has three elements, a tab portion 11 integrally formed in the plastic sheet material, a potentially separable window or opening portion 12 integrally formed in the plastic sheet material of the wall 7, and a piece of tape 13 which desirably also includes a tab portion.

Referring particularly to FIG. 2, the lift tab 11 is completely separated from the plastic sheet material forming the wall 7 along a line 15 (FIG. 3) on all three sides up to the points designated *a* and *a'*. In between points *a* and *a'* the tab 11 remains integrally connected to the plastic sheet material. Starting at a point *a* a continuous score line 14 is formed on the interior surface of the wall 7 which extends around and defines the main opening portion 12 and terminates at point *a'*. It will be noted from FIGS. 3 and 4 that the score line 14 is formed in such a way as not to appreciably disturb the exterior surface of the rigid or semi-rigid plastic sheet material from which the wall 7 is formed. It will also be noted from FIG. 3 that the tab 11 is completely separated from the plastic material along three sides along the line 15.

The patch of tape 13 completely covers the plastic lift tab 11 and also extends past the points *a* and *a'* where the score line 14 joins the opposite ends of the completely severed line 15 that defines three sides of the tab 11. The tape patch 13 is formed of a pliable

layer 16 with the underside thereof coated with a pressure sensitive composition 17 of known type except underneath the tab portion 18. The tape portion 16 may be one ply or may be a laminate. The tape may be formed of known materials providing an excellent barrier to transmission of oxygen and/or moisture so as to provide a hermetic seal over the separation line 15 that defines the tab 11. The tape may be formed of metal foils coated with or laminated to plastic film forming materials.

The present invention is not directed to or concerned with the details of the materials from which the tape patch 13 may be formed such materials being well known to those skilled in the art and disclosed in various patents including U.S. Pat. Nos. 3,389,827 dated June 25, 1968; 3,251,515 dated May 17, 1966; and 2,870,935 dated Jan. 27, 1959.

As noted above, the container portion or receptacle 6 may be mass-produced economically either by thermo-forming or injection molding in accordance with known forming techniques and using known production machines. By providing appropriate formations in the die surfaces the score lines 14 as well as the line of separations 15 may be formed simultaneously with the production of each component or receptacle 6, thereby eliminating any additional step or operation and cost factor.

The patches of tape 13 may be die cut from adhesively coated sheet material in known manner and desirably may be supported on an inexpensive disposable carrier sheet, such as treated paper, from which the individual patches may be readily removed and applied in the proper position over the lift tabs 11 in the position shown in FIGS. 1 and 2.

It will be seen that since the score lines 14 are entirely confined to the interior surface of the wall 7 the patch of tape 13 can lie completely flat and still hermetically seal the full line of separation 15. Thus, there is no requirement that the tape 13 be deformed (i.e., depressed or raised) in any way in order to form a complete seal. Since the line of complete separation 15 will ordinarily be very narrow, there will ordinarily be no depression in the patch of tape 13 that will be noticeable and for all intents and purposes the tape will be fully supported by the plastic wall material so that the easy-opening means has adequate strength. It will be understood that the score lines 14 can be formed to any desired depth during the forming operation so that on the one hand they have adequate strength and on the other they will provide lines of easy separation on manipulating the easy-opening device. As will be apparent, the manipulation is readily performed by first slipping a thumb or finger nail underneath the tab portion 18 of the patch and lifting upwardly thereon. This will also lift up the tab portion 11 so that it can readily be grasped and on further lifting thereof it causes a separation to occur along the score line 14 to the point where the entire portion 12 may be removed along with the tab portion 11 from the wall 7 of the receptacle 6.

It will be apparent that if the score line 14 is not continued along the side opposite the tab 11, or if it is not completely separated along that line, the remaining connection between the portion 12 and the remainder of the wall portion 7 can serve as a hinge whereby the easy-opening feature can be re-closed on any remaining contents in the container 5 although the re-closure will not then be a hermetic one.

The package or container 5 with its easy-opening means in the top 7 (or bottom if inverted) is particularly suitable for fluent or liquid materials, e.g., syrup, cocktails, oil, sugar, salt, nuts, shot, etc.

Referring to FIGS. 5 and 6 a second embodiment of the invention is shown incorporated in a package or container indicated generally at 20 comprising a container portion 21 which may be formed of plastic or metal and a lid or cover 22 which is formed of a rigid or semi-rigid plastic sheet material of the type referred to above in connection with the receptacle 6. An easy-opening means is provided in the cover or lid 22 in accordance with the present invention.

As shown in FIG. 6 the container 21 has an out-turned shoulder or lip 23 and the margin or periphery 22 is the cover 22 is hermetically sealed in a double seam formation to the lip 23 by means of a separate rim member 24.

The easy-open feature in the lid or cover 22 takes the form of a lift tab 25 formed in the sheet material by a line of complete separation 26 which terminates at point *b* and *b'*. This line of complete separation 26 at point *b* joins a score line 27 and at *b'* joins a second score line 28. The score line 28 in turn joins a continuous circular score line 30 (FIGS. 5 and 6) which extends completely around the margin of the lid or cover 22. The score lines 27, 28 and 30 are formed entirely on the interior surface of the lid or cover 22 without appreciably disturbing the exterior surface thereof.

A patch of tape 31 of known commercial type is referred to above for the tape patch 13, is applied over the lift tab 25 and preferably has a free tab portion 32 for ready access. This patch of tape 31 may generally take the form of the patch 13 in FIG. 1.

It will be seen that upon lifting the tab 32 and in turn the patch 31 the lift tab 25 is lifted and separated from the cover and then on grasping and further lifting of this tab 25 the cover material separates along the score lines 27 and 28. The separation along score 27 terminates at the end of this score line but when separation along score line 28 reaches the score line 30 then separation can be continued therealong so as to permit complete removal of substantially all of the cover portion 22 from the package. The package or container 20 is particularly useful for non-flowable materials, e.g. food spreads, peanut butter, margarine, waxes, pastes, greases, etc.

In FIG. 7 a package and container is indicated at 35 which corresponds to container package 5 of FIGS. 1-4 except for the placement or location of the easy-opening means. There is formed in the flat wall 36 of the container or package 35 a lift tab 37 which is completely separated from the plastic sheet material on all three sides up to the points indicated at *c* and *c'*. At these points a continuous score line 38 commences and is located entirely on the interior of the package or container without appreciably disturbing the outer surface thereof. The inner score line 38 lies partly in the flat wall portion 36 and partly in the tapered sidewall portion 39 and defines a potentially removable segment 40 lying partially in the flat bottom or flat wall 36 and partially in the sidewall 39. A piece or patch of pressure sensitive tape 41 overlies the lift tab 37 and extends beyond the juncture points *c* and *c'* partly over each end of the score line 38. The patch 41 preferably has its own lift portion 42 which is not adhered to the plastic

sheet material of the wall so that it may be readily used for lifting purposes.

It will be seen that when the package 35 is to be opened the patch 41 is lifted by grasping of the end 42 and lifting until the lift tab proper 37 may be grasped and lifting force continued by application thereto so as to bring about a separation along the score line 38 thereby providing an opening which lies partially in the sidewall 39 and partially in the flat wall 36.

It will be understood that the lift tab 37 together with the score line 38 may be formed during the production or formation of the container or receptacle itself and as in incident thereto.

In FIG. 8 a package or container is indicated generally at 45 which has a receptacle or container component 46 formed of rigid or semi-rigid plastic sheet material. An easy-opening means is provided in the sidewall 47 whereby the upper portion of the container component or receptacle 46 may be completely removed from the remainder of the container or package 45.

The easy-opening feature comprises a lift tab portion 48 formed in the sidewall 47 which is completely separated from the sidewall along three sides up to the points indicated at *d* and *d'*. At these points the line of complete separation extending around the tab 48 and defining it join the ends of score lines 50 and 51 formed on the interior of the sidewall 47 and extending completely therearound so as to join the lift tab at points *e* and *e'*, respectively. A patch of pressure sensitive tape 52 covers the lift tab 48 and extends beyond the points *d* and *d'* as well as past the points *e* and *e'*. Preferably, the right hand end portion 53 of the lift tab or patch 52 is free so as to provide for the ready lifting of first the patch 52, thereafter the lift tab 48, and finally the continued separation of the plastic sheet material along the lines 50-51 thereby completely separating the upper portion of the container compound or receptacle 46 from the lower portion.

It will be apparent from the foregoing description including the description of four different specific embodiments in connection with the accompanying drawings, that the present invention may take a number of different forms in practical usage. The appended claims are intended to cover not only the embodiments of the invention that have been specifically illustrated and described but in addition other embodiments that come within the spirit of the invention and the scope of the claims.

We claim:

1. In a container component having at least a portion of a package enclosing wall surface thereof formed of rigid or semi-rigid plastic sheet material, easy-opening means comprising, a lift tab formed in said material and which is at least substantially completely separated from said material along a first line defining said tab which is integrally connected with said material, at least one score line formed on the interior surface of said material without appreciably disturbing its exterior surface and with said score line joining one of the oppo-

site ends of said first line, a patch of tape covering the exterior of said lift tab at least over said first line and extending at least over the place where said score line joins one end of said first line whereby on lifting said patch of tape said lift tab can first readily lift from said material along said first line and on further lifting of said lift tab said material separates along said score line.

2. The construction of claim 1 wherein said container component is a receptacle formed of said plastic sheet material.

3. The construction of claim 1 wherein said container component is a cover or lid formed of said plastic sheet material.

4. In a container having at least a portion of the top, bottom or sidewall thereof formed of rigid or semi-rigid plastic sheet material, easy-opening means in said material and comprising, a lift tab integrally formed in said material and which is at least substantially completely separated from said material along a first line extending on all but one side of said tab which side is integral with said material, a pair of score lines formed in said material on the interior surface thereof without appreciably disturbing the exterior surface thereof and with each of said score lines joining one of the opposite ends of said first line, and a patch of tape covering the exterior of said lift tab at least over said first line and extending at least over each place where one of said score lines joins one end of said first line whereby on lifting said patch of tape said lift tab can readily lift from said material along said first line and on further lifting of said tab said material separates along said score lines.

5. In the container of claim 4 said score lines being the end portions of a continuous score line whereby said lift tab together with the sheet material within said continuous score line may be completely removed on opening said container.

6. In the container of claim 4 a receptacle component formed of said rigid or semi-rigid plastic sheet material with said easy-opening means located therein.

7. In the container of claim 6 one of said score lines also connecting with a continuous score line enclosing a relatively large area of said receptacle.

8. In the container of claim 6 said lift tab and the adjoining ends of said score lines lying entirely within either the bottom or the sidewall of said receptacle with said score lines extending into a portion of said receptacle not having said lift tab whereby said patch of tape may be confined entirely to either said bottom or sidewall and when said opening means is opened the resultant opening lies partially in said bottom and partially in said sidewall.

9. In the container of claim 4 having a cover formed of said rigid or semi-rigid plastic sheet material with said easy-opening means therein.

10. In the container of claim 9 wherein one of said score lines connects with a continuous score line extending around the periphery of said cover.

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