April 7, 1964 D. D. DAVIES 3,128,030

PACKAGE

Filed Oct. 5, 1961

FIG. 1

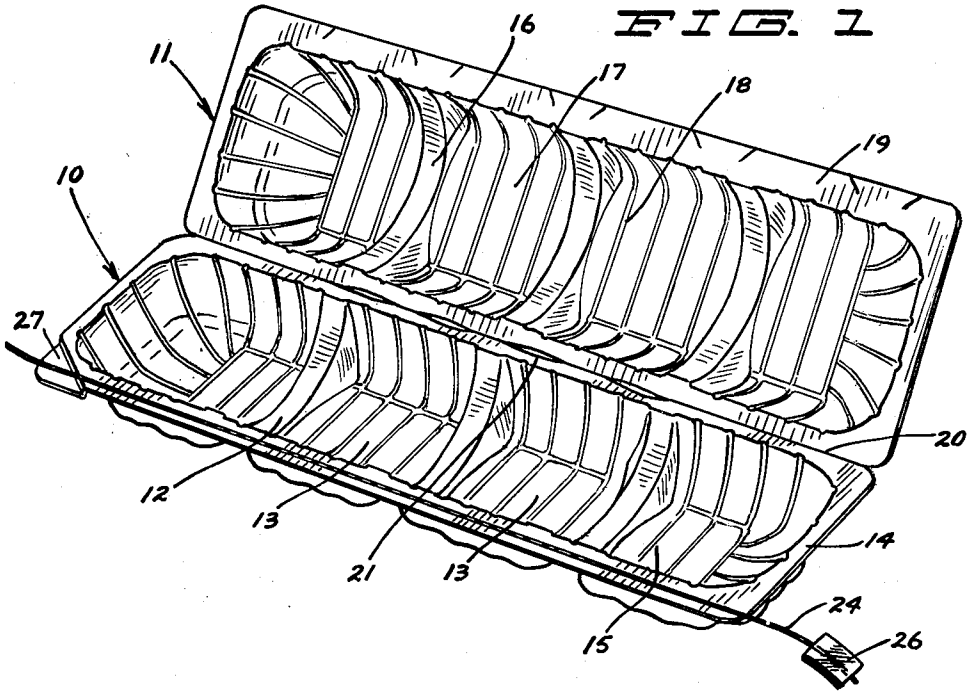


FIG. 2

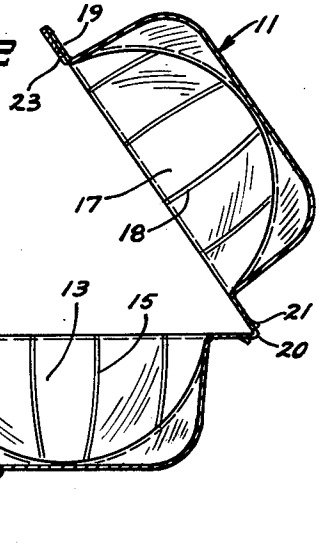
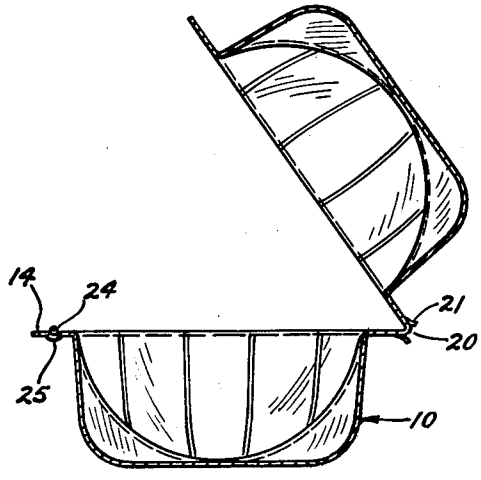


FIG. 3



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United States Patent Office 3,128,030 Patented Apr. 7, 1964

3,128,030

PACKAGE

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Filed Oct. 5, 1961, Ser. No. 143,230
4 Claims. (Cl. 229—2.5)

This invention relates to a protective plastic package adapted for the merchandising of perishable foodstuffs and other commodities. More particularly this invention pertains to a package comprising a molded plastic tray and a molded reclosable plastic cover.

In the merchandising of a packaged product under present day marketing conditions, it is desirable in order for a product to be competitive in the market, that the package possess features of attractiveness, good eye-catching display, protection and convenience. One element of the attractiveness and display of the package is its transparency. At the same time protection is afforded by permitting visual inspectioin without actual handling. In the case of commodities which are usually consumed periodically or intermittently over a period of time it is a convenience to be able to easily open and reclose the package. In the instance of perishables, such as foodstuffs, it is desirable that the package be capable of resealing to protect the contents from exposure to the atmosphere. The desire and need to meet these requirements has given rise to this invention.

It is the principal object of this invention to provide a protective package comprising a plastic tray for containing foodstuffs or other commodities and having a cover adapted to be sealed by pressure or heat sensitive means.

Another object of this invention is to provide a package comprising a protective plastic tray and cover for foodstuffs or other commodities that may be sealed by pressure sensitive means and conveniently opened by stripping a flexible cord or string, wherein the stripping element carries pressure sensitive material and can be used repeatedly to open and seal the tray and cover.

Other objects of the invention will become apparent as the description proceeds.

To the accomplishment of the foregoing and related ends, this invention then comprises the features hereinafter fully described and particularly pointed out in the claims, the following description setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principles of the invention may be employed.

The invention is illustrated by the drawings in which the same numerals refer to corresponding parts and in which:

FIGURE 1 is a perspective view of a preferred embodiment of the package of this invention wherein the molded cover cavity is structurally similar to the molded tray cavity and the sealing is by a pressure sensitive adhesive coated string or cord;

FIGURE 2 is a vertical sectional view of a package generally similar to that of FIGURE 1 but showing another form of the package of this invention wherein the cover and tray are sealed by a bonding material on opposite facing surfaces of the tray and cover and;

FIGURE 3 is a similar cross sectional view showing a modification of the preferred embodiment as shown in FIGURE 1.

Referring to the drawings and particularly to FIGURE 1, the package of the present invention comprises essentially a tray indicated generally at **10**, a cover indicated generally at **11**, and a closing and opening means. The tray **10** and the cover **11** are desirably transparent and molded of a thin semi-rigid to rigid synthetic resinous material such as polystyrene, polyethylene, or other commercially available thermoformable plastics made in relatively thin sheet form. The tray **10** is shown molded in a compartmented form preferred for packaging a plurality of articles. The tray **10** consists generally of a central hollow portion **12** including one or more deeper molded cavities **13**, and a flat peripheral flange **14** which extends around all of the cavities of the hollow section. The number of compartments varies and particular forms of these cavities vary in size and shape to accommodate various goods such as bakery goods, including cookies, rolls and doughnuts; dairy products; fruits and vegetables; and other perishable foodstuffs; fishing lures; balls of yarn; spools of thread; etc., almost without limit.

Compartmentation adds strength and rigidity to the package in addition to protecting the packaged contents by separation and limited movement. The compartmented sections **13** are desirably further strengthened by the provision of molded-in corrugations or ribs **15** which may also aid in preventing excessive movement of the packaged product.

The flat flange **14** of the tray is molded as an integral part of the tray adjacent to the hollow cavity sections described. The flange is formed to extend entirely around the hollow cavity sections.

In the particular form of the invention shown in FIGURE 1, the cover **11** is substantially identical to the tray and molded integral with it from the same sheet of resinous material. Cover **11** has a central hollow portion **16** and is also compartmented as at **17** and corrugated as at **18**. A flat flange **19** is formed around the entire hollow section **16** and thus forms a mating facing surface for flange **14** when the cover is placed over the tray. That is, the flat flange surface of the cover abuts the flat flange surface of the tray. When the cover **11** is placed over the tray **10** the corresponding compartments **13** and **17** of the tray and cover form larger complete enclosed compartments adapted for containing and supporting the packaged product.

Depending upon the product to be packaged, the hollow section **16** and cavities **17** of the cover may also vary in design. In some instances the cover **11** may be simply a flat sheet adapted to be sealed to the flange surfaces of the tray. The cover is desirably molded integrally with the tray and joined to it along a fold line **20** which functions as a hinge for the cover. The cover may also be formed separately of either the same or different sheet material.

In the preferred embodiment of the package the cover and tray are molded together from a single resinous sheet in closely adjacent side by side relationship along a common fold line **20** forming a hinge. The tray and cover are of substantially the same size and shape so that corresponding flange surfaces abut.

The closing and opening of the package is accomplished by means of a pressure sensitive or heat seal between the tray and cover. Desirably a pressure sensitive bonding material adapted to be reused is interposed between the flat flange surface of the tray and the abutting flat flange surface of the cover.

The package may be sealed along one or more of the

edges depending upon the nature of the goods enclosed. Where a tight package is desired the hinge at the fold line **20** is unbroken along its length. To facilitate folding a narrow shallow elongated trough is desirably molded along the fold line. Where it is desired that the package be ventilated, as for the packaging of fresh fruits or vegetables, elongated depressions or "dimples" **21** are molded along the fold line. When the cover is folded down onto the tray these depressed areas are subjected to greater stress and tend to crack or split to provide a vent between spaced hinge areas.

The package may be heat sealed along one or more edges. Where the tray or cover are formed from heat sensitive resinous sheet material the edges may be sealed by clamping the flanges between heating elements for a time sufficient to at least partially fuse the abutting flange surfaces. In other instances the flange surfaces are first coated with a heat sealable material.

A heat sealed package cannot readily be reclosed. For this reason it is preferred to use a pressure sensitive material interposed between the abutting flange surfaces. As shown in the modification of FIGURE 2, either or both flange edge surfaces **14** and **19** of the tray and cover may be coated with a layer pressure sensitive adhesive or cohesive material as indicated at **22** and **23**. All or part of the flange surfaces may be coated depending on which edges of the package are to be sealed. However, according to the preferred form of package according to this invention, sealing of the package is accomplished by means of a tape or string or cord **24** coated or impregnated with a pressure sensitive adhesive and laid between abutting flange surfaces **14** and **19** along one or more edges of the package.

This sealing means functions not only to hold the package closed but also to facilitate opening of the package. A free end of the sealing element extending beyond the package need only be grasped and pulled to separate the flanges and open the package. Then, when it is desired to reclose the package, the adhesive element need merely be relaid on one of the flanges and the flange surfaces pressed together. To facilitate locating of the tear string sealing member a shallow trough or groove **25** is desirably molded into one of the flanges, as shown in FIGURE 3.

The tear string element may be formed from strong string or cord or tape formed from the common natural or synthetic textile fibers, or strong extruded filaments or film tapes, such as "Mylar", or the like. It must be strong enough to separate the sealed-together flanges without breaking. To provide a means for gripping the tear string, and applying a price tag or trademark or other indicia, a tab **26** is desirably folded over one free end of the adhesive coated element.

When the package is closed by pressure sensitive means, particularly when cohesive or adhesive sealing material is applied directly to the flanges, one cover or tray flange is desirably modified as shown in FIGURE 1 to provide a grasping means. One corner of the tray is shown offset or recessed from the plane of the flange at **27** in order to provide a shallow space at that corner to facilitate grasping the cover and separation of the cover from the tray.

Numerous sealing materials are available commercially which may be utilized in the manufacture and use of the packages according to the present invention. The invention is obviously not limited to the use of any particular sealing material. The following examples are illustrative of adhesive compositions adapted to the practice of this invention. All parts are given by weight.

Example I

An adhesive material is prepared from:

	Parts
Natural rubber (or synthetic butadiene polymer)	20
Elastic polyisobutylene	7
Ester gum	3

Dissolved in 20 parts benzene and 80 parts gasoline.

Example II

Another pressure sealing cement is composed of:

	Parts
Latex (60%)	100
Castor oil	50
Rosin	5

And suitable solvent to give workable viscosities.

Example III

A further adhesive composition is composed of:

	Parts
Hydrogenated methyl ester of rosin	40
Hydrogenated rosin	50
Rubber	10

And suitable solvents to give workable viscosities.

Example IV

Still another adhesive composition is composed of

	Parts
Hydrogenated methyl ester of rosin	40
Rosin	52
Eethyl cellulose	8

And suitable solvents to give workable viscosities.

Example V

Another useful adhesive composition is composed of

	Parts
Hydrogenated methyl ester of rosin	38
Dammar gum	50
Tornesit	12

And suitable solvents to give workable viscosities.

It is apparent that many modifications and variations of this invention as hereinbefore set forth may be made without departing from the spirit and scope thereof. The specific embodiments described are given by way of example only and the invention is limited only by the terms of the appended claims.

What is claimed is:

1. A reclosable container for protecting foodstuffs and other commodities which comprises a molded tray, said tray consisting of at least one hollow article supporting cavity portion and a surrounding flat flange portion, a cover for said tray including a flat flange surface adapted to abut the flange of said tray, and pressure sensitive adhesive sealing means interposed between at least a portion of said abuttable flange surfaces of said tray and cover, said pressure sensitive adhesive means being a tear string element interposed between the abuttable flange surfaces of said cover and tray and carrying a pressure sensitive adhesive material thereon.

2. The container according to claim 1 further characterized in that at least one of said flange surfaces is provided with a centrally disposed shallow groove to seat and position said tear string element.

3. A semi-rigid protective plastic reclosable container for foodstuffs and other commodities which comprises a thin molded resinous plastic tray, said tray consisting of at least one hollow article containing cavity portion and a surrounding flat flange surface; a thin resinous plastic molded cover, said cover consisting of at least one hollow cavity portion and a surrounding flat flange surface, said hollow cavity portions of said tray and cover being proportioned to form an article containing enclosure, the flange of said cover adapted to abut the flange of said tray; said tray and cover being integral, molded together and joined along a common hinge fold line; and presure sensitive adhesive sealing means disposed between a portion of said flange of said cover and the abuttable portion of said flange surface of said tray, said pressure sensitive adhesive means being a tear string element interposed between the abuttable flange surfaces of said cover and tray and carrying a pressure sensitive adhesive material thereon.

4. The container according to claim 3 further characterized in that at least one of said flange surface is provided

with a centrally disposed shallow groove to seat and position said tear string element.

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