

Feb. 11, 1969

J. H. LEMELSON  
PACKAGING ASSEMBLY

3,426,959

Filed Jan. 16, 1967

Sheet 1 of 2

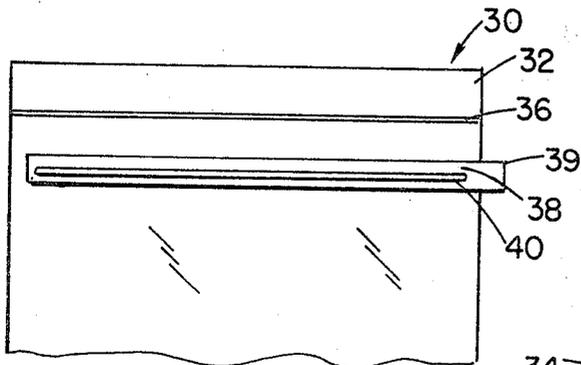


Fig. 1

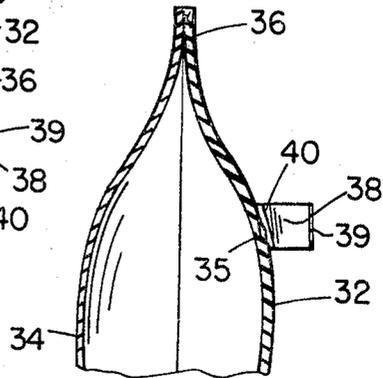


Fig. 2

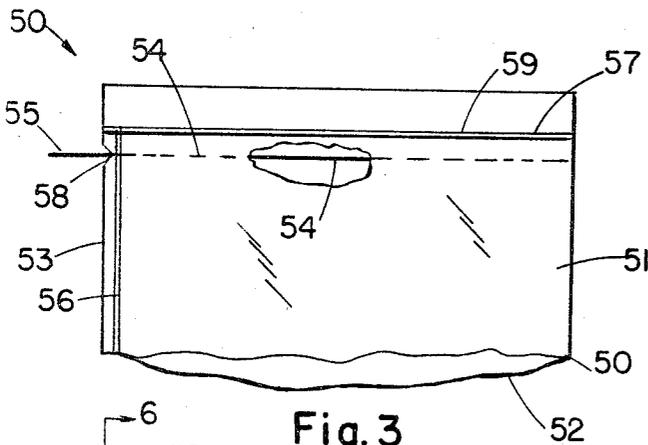


Fig. 3

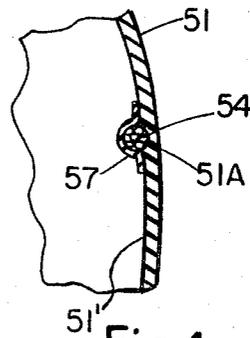


Fig. 4

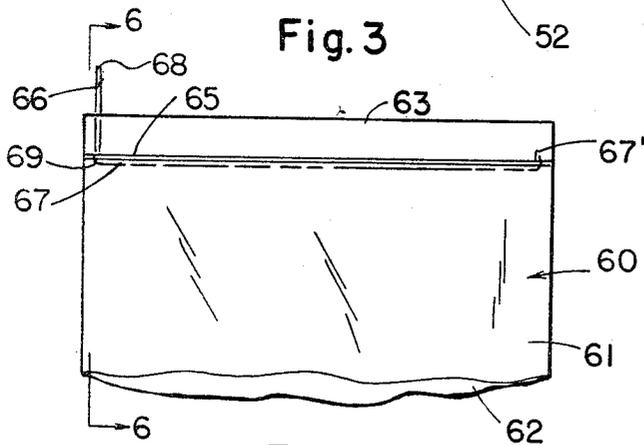


Fig. 5

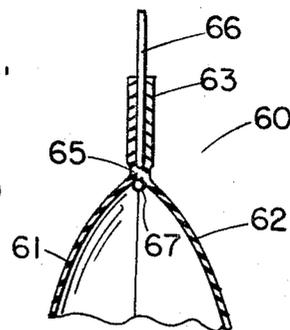


Fig. 6

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Sheet 2 of 2

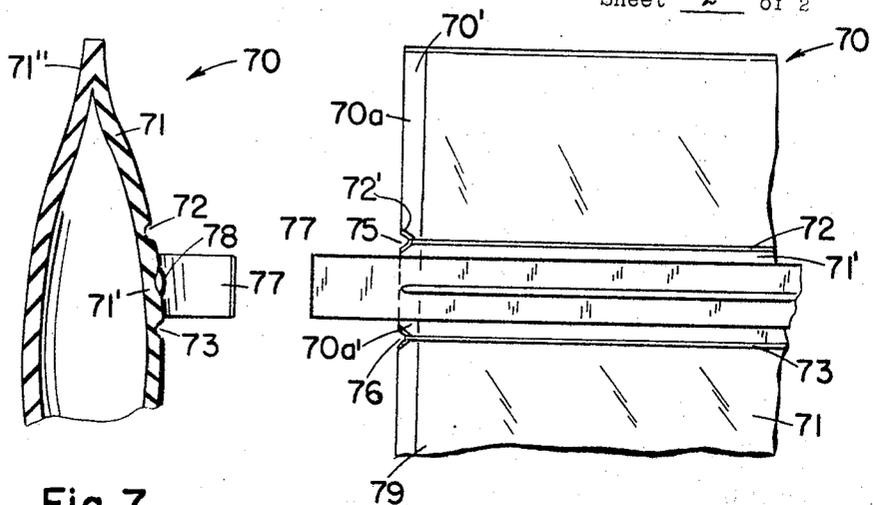


Fig. 7

Fig. 8

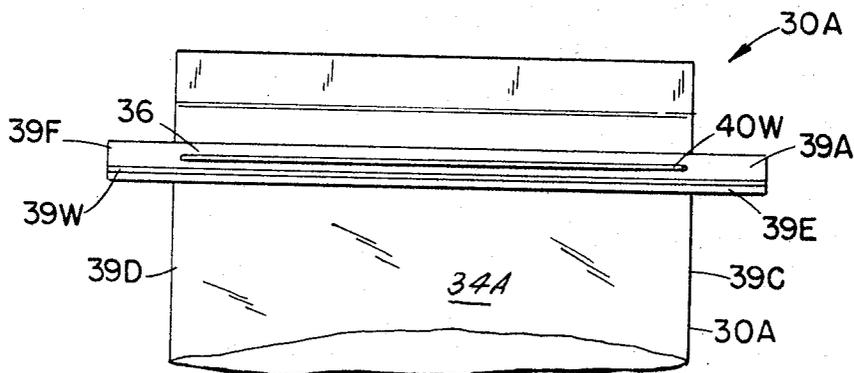


Fig. 2A

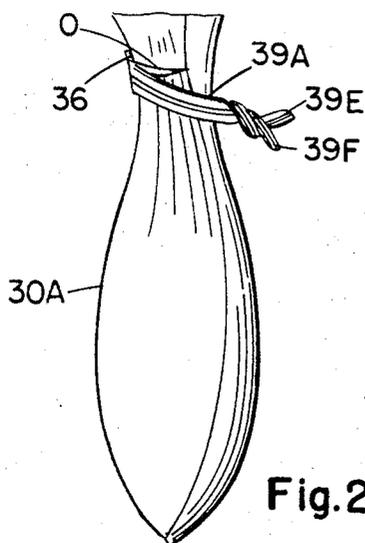


Fig. 2B

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3,426,959  
**PACKAGING ASSEMBLY**  
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Continuation-in-part of application Ser. No. 362,868,  
Apr. 27, 1964, which is a continuation-in-part of  
application Ser. No. 519,014, June 28, 1955. This  
application Jan. 16, 1967, Ser. No. 609,397  
U.S. Cl. 229—65  
Int. Cl. B65d 17/20

12 Claims

## ABSTRACT OF THE DISCLOSURE

This invention relates to a package or container formed of thin sheet material, e.g. metal foil, plastic sheeting or film, from which the contents thereof can be readily dispensed through a tear opening formed in a wall portion. The tear opening is defined by forming a line portion of the wall of the container of reduced thickness with means disposed along such line portion for effecting a controlled separation of the adjacent wall portion of the container along such line portion.

This invention relates to a packaging assembly and method for producing same and is a continuation-in-part of my copending application Ser. No. 362,868 filed Apr. 27, 1964, now Patent 3,111,288, entitled Envelope Assembly and having a parent application Ser. No. 519,014 filed June 28, 1955, and entitled Welding Techniques, now abandoned.

It is a primary object of this invention to provide a new and improved package made, at least in part, of thin sheet material.

Another object is to provide an improved flexible walled package which may be easily opened.

Another object is to provide an improved packaging assembly including a bag for retaining a fluent product to be selectively removed therefrom with means for selectively opening and closing the bag attached to the bag in a manner permitting its rapid operation without loss.

Another object is to provide a bag for retaining a plurality of articles or solid fluent material, only part of which is generally dispensed the first time said bag is opened, and simple means for effecting a tear opening in a wall of said bag of a desired length for dispensing said material whereby the ability of said bag to retain the remainder of the material is not destroyed.

Still another object is to provide a means for substantially reducing the thickness of a line portion of a wall of a bag or envelope whereby it may be easily severed along said line when a tear member is pulled transversely thereto; yet whereby the wall of said container is not substantially weakened thereby, and its ability to retain material is not decreased.

With the above and such other objects in view as may hereafter more fully appear, the invention consists of the novel constructions, combinations and arrangements of parts as will be more fully described and illustrated in the accompanying drawings, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

FIG. 1 is a partial side view showing a container having a tear-strip extending across a wall portion thereof.

FIG. 2 is a side cross section of FIG. 1.

FIGS. 2A and 2B illustrate a modified form of the invention.

FIG. 3 is a partial side view of a container of the type illustrated in FIG. 1 having a modified form of tear opening device.

FIG. 4 is an enlarged fragmentary view taken in cross section of a wall portion only of FIG. 3.

FIG. 5 is a partial side view of a container showing still another tear opening device.

FIG. 6 is a sectional side view in cross section taken along line 6—6 on FIG. 5.

FIG. 7 is a side view in cross section of a portion of a container showing still another form of tear opening means.

FIG. 8 is a side view of FIG. 7.

There is shown in FIGS. 1 and 2 a packaging assembly 30 in the shape of a bag, envelope or overwrap for a product which is made of a flexible plastic, or thermoplastic sheeting or film, metallic foil, e.g. aluminum foil or laminates of these materials. Known methods of heat sealing or bonding, folding and die cutting or slitting may be employed in the formation of the envelope 30. The walls 32 and 34 of the envelope may, for example, be made of a single sheet of material which is folded and sealed along a side edge or may be extruded as a tube which is closed at both ends by adhesive means or heat sealing, after filling, using a conventional packaging machinery to effect for example, a seal 36 along the upper border of the envelope and a similar seal, not shown, along the lower border thereof.

Ordinarily, a bag container 30 of this type employing polyethylene, acetate, polypropylene or other suitable plastic film, is difficult to tear open in a predetermined and controlled manner along a predetermined tear line. For this reason such bags or containers are frequently destroyed or damaged to a degree where the contents thereof may not be completely retained when such bags or containers are opened due to the irregular or extended tear line along which the wall of the bag is torn.

In accordance with this invention means are provided in the form of a tear strip 38 made of plastic or metallic foil or laminates thereof depending on the material of which the bag wall is made, for effecting an opening in a wall portion of the bag, and which opening extends along a prescribed tear line along a predetermined portion of said wall portion. The tear strip 38 may be made of the same material from which the wall 32 of the bag is made, or from a plastic film or metallic foil having a greater tensile strength than that of the plastic film of which the envelope or bag is made, and is shown sealed to the wall 32 along a fuse or thin sealing or welding line 40. If conventional pressure or heat sealing machinery is employed to effect the line weld or bond 40, a line pressure or heat sealing die may be employed to substantially reduce the thickness of the material of wall 32 adjacent said weld line. Accordingly, the thickness and strength of the tear strip member 38 is preferably sufficient to prevent tearing or destruction of the strip 38 itself when pulled away from the bag, and which action causes the wall 32 to develop a tear or separation along the portion of reduced thickness adjacent the weld line 40. The notation 35 refers to the reduced portion of the wall 32 of the container adjacent the weld 40 which portion is shown reduced in thickness with respect to the thickness, as illustrated in FIG. 2, of the adjacent wall portions for the purpose described.

One end 39 of the strip 38 has a length thereof which is not welded to the wall 32. The end portion 39 of 38 may thus be grasped between the forefinger and thumb of the hand and utilized in effecting removal of the strip, separation of the weld and the resulting line tear in the wall 32 described.

As stated, the material of which bag 30 is made may comprise metallic foil, e.g. aluminum foil, whereupon the line weld in tear strip 38 may comprise a pressure or ultrasonically effected weld with its resulting reduction 35 in cross section at the weld along which a tear will develop when the heavier strip 38 is pulled.

FIG. 2A illustrates a modified form of the invention

wherein a tear strip 39A is operative to provide a tear opening 0 in an envelope or bag 30A as described and is also constructed to permit it to be used to reseal the bag as noted in FIG. 2B. The container assembly 30A is shown similar in construction to the bag 30 of FIGS. 1 and 2 with the exception that the plastic or foil tear strip 39A is provided with the ends 39E and 39F thereof extending beyond the lateral borders 30C and 30D of the flat envelope 30A sufficient degrees to provide the strip long enough to permit it to be wrapped completely around the neck of the bag after tear opening 0 has been made therein. The end portions of strip 39A which protrude beyond the borders of the envelope may be folded against the opposite face of the envelope after its application thereto or after filling the envelope to improve appearance of the container and facilitate its stacking or cartoning. Strip 39A which is shown provided with a bendable soft wire 39W bonded thereto or sealed therein to permit the end portions thereof to be twisted on each other for simplified closing of the envelope.

The strip 39A is sealed to wall 34A of the envelope 30A along a weld line 40W provided along the portion of the strip between the wire W and the upper border thereof. The weld line 40W is provided, as in FIGS. 1 and 2, to effect a tear line in the wall 34A when the strip is pulled away therefrom. Notation 36 refers to a spot seal between the plastic or foil of strip 39A which may be used to hold the strip against the bag after tear opening is effected although said latter seal may be omitted, if, for example, it is desired to close the bag well below the tear line. In FIG. 2B, the still attached strip 39A is shown angled downwardly to close the bag below the tear opening 0 formed in the wall of the bag when the tear strip 39A is initially pulled.

In FIGS. 3 and 4 is shown another structure in a bag or envelope 50 having a flexible tear member 54 in the form of a thread, string or wire and the like secured to a wall 51 of the bag for providing a line tear in said bag wall when the free end 55 of tear member 54 is pulled. The bag 50 is fabricated as described of flexible plastic film or the like and has side walls 51 and 52 joined by border seals such as end seal 59 illustrated. The flexible string or thread 54 is shown secured to inside surface 51' of wall 51 with the free length 55 thereof extending beyond one longitudinal border or edge 53 of the envelope. The thread or string 54 may be held against the inside surface 51' of wall 51 with an adhesive or may be heat sealed thereto under a string 57 of thermoplastic film. Said string 54 may also be embedded within the thickness of the film comprising wall 51. The bag may be also formed by the lamination of two sheets of film with tear member 54 disposed between the two lamination or other wall forming means. The free end 55 of tear member 54 is shown extending beyond the border 53 of the envelope after passing through the border sealing or weld line 56 which longitudinally joins walls 51 and 52 together. The border portion 53 of the envelope exterior of the weld line preferably contains a V-shaped slit 58 extending a short distance in from the edge 53 adjacent string 54 so as to define a separation from which the tear may be started when end 55 of tear member 54 is pulled.

When string 54 is pulled outward from wall 51 a tear develops along the line defined by reduced portion 54 providing a lateral opening in side wall 51. Tear member 54 may comprise a bendable wire as described whereupon it may be subsequently used as a closure means when wrapped around the neck of the envelope. Similarly, member 38 of FIGS. 5 and 6 may also contain a bendable wire as described and may be twisted around the neck of the envelope to serve as a closure upon its removal by tearing the wall of the bag. The thickness of portion 51A of wall 51 immediately adjacent filament or string 54 may also be substantially reduced as the result of compressing or embedding the string 54 therein when assembled there-

with so as to offer little resistance to tearing when the string is outwardly pulled.

Assembly of the tear string 54 with the wall 51 of the envelope 50 may be accomplished by compressively engaging string 54 and side wall 51 while the latter is in sheet form, between two rollers one of which is heated to soften the material adjacent the string and permit it to be compressively penetrated a predetermined degree into the film wall to reduce the thickness thereof sufficiently to permit severance of the wall along the line defined by the string when it is pulled away from the envelope. String or filament 54 may also be extruded in situ on or within the material, and is preferably formed of a material having a greater tensile strength than the material comprising wall portion 51.

FIGS. 5 and 6 illustrate an envelope or bag assembly 60 having thin sheet or film sidewalls 61 and 62 which are heat sealed, adhesively bonded or integrally joined together by extrusion. The upper end 63 of the envelope is shown closed by means of a lateral weld or heat seal 65 extending completely across the envelope and means in the form of a tear member or flexible filament, wire or string 66 is provided for effecting rapid opening of the envelope by tearing or separating the weld or seal 65. The flexible member 66 extends at one end 68 beyond the wall of the envelope and the remaining portion thereof is secured to the inside walls of the envelope 60 by bonding or heat sealing just beneath and immediately adjacent the weld line 65 and is shown extending laterally across most of said weld line although its extension may be limited to any length thereof.

A portion 68 of the end of 66 projects from the end portion 63 of the envelope a sufficient amount to permit it to be readily grasped between the thumb and forefinger of the hand so that it may be pulled while the remaining portion 67 of 66 extends beneath the weld line 65 inside the envelope and is peripherally bonded or otherwise retained thereagainst. Notation 69 refers to the area of the weld line 65 across which the string 66 extends, and the string is preferably heat sealed therebetween so as not to interrupt the weld line and to provide a hermetic seal completely across line 65. The other end 67' of string 66 may be retained in place by also extending upwardly and across the weld line 65 near the other border of the envelope or may be heat sealed in place by an inward extension of the heat seal line 65 extending across the end of 67'.

Thus, as free end portion 68 of pull string 66 is tensionally drawn upward, it effects a separation in the weld line 65 across the width of the envelope providing an opening therein through which the contents may be dispensed.

FIGS. 7 and 8 illustrate another structure in an envelope or bag 70 and tear strip opening means therefor. A bi-walled flat bag of plastic film or metallic foil, e.g., aluminum, has a wall 71 thereof scored or otherwise reduced in thickness along two parallel lines 72 and 73 adjacent each other and preferably near and parallel to an edge of the bag 70. Score lines or indentations 72 and 73 are shown extending from one edge 70a of the bag 70 and may extend completely across the wall 71 to the other edge thereof. At the edge 70a, the bag wall or walls 71 are notched or slitted at 75 and 76 in line with the score lines 72 and 73 permitting the material between the notchings or slits 75, 76 to be pulled and in so doing to cause tearing or severing said material from the rest of the bag wall 71 along score lines or channels 72, 73. So as not to present openings in the walls of the bag at or between the notched or slitted areas defined by 75 and 76, said die-cut portions 75 and 76, provided along a border strip 70a' of the bag, defined by portions of both walls of the bag, are band-heat sealed together or otherwise joined; or the edging 72', 73' of the notched or slitted portions 75, 76 of the bag 70 may be heat sealed

together or otherwise joined to maintain the envelope or bag sealed.

In FIGS. 7 and 8 notation 77 refers to a tear strip heat sealed or otherwise welded along a line weld 78 to wall 71 between the score lines 72, 73 which strip 77 may be applied to facilitate tearing the strip portion 71' along score lines 72, 73 from the rest of the bag. However, strip 77 may not be necessary for certain applications, in which case the user merely grasps the edge 71a' of strip 71' and pulls to sever it from wall 71.

Strip 71' may also be provided along that portion of the bag 70 which is defined by both front and rear walls thereof which are welded together as along the upper portion 71' of the bag assembly 70 shown in FIG. 7.

It is noted that the container opening means and part of the structure illustrated in FIGS. 7 and 8 may be applicable to a container produced by molding thermoplastic plastic materials. For example, the container 70 may be fabricated by blow molding or vacuum drawing a thin polymeric plastic such as polyethylene, polypropylene, polystyrene, or the like into a mold. Score lines such as 72 and 73 may be formed as extending around the neck of the bottle during blow molding or vacuum drawing the bottle by the provision of blades or sharp portions of the mold wall, of such a shape and depth as to cause a reduction in the wall thickness thereof to a degree such that the wall portion between said two reduced thickness or score lines may be easily removed from the molding, to effect an opening therein by means of a pulling action as described. That portion of the bottle or container along the score lines may be molded into a shape of an edge or V-shaped to permit the material between the score lines to be grasped between the thumb and forefinger of the hand and torn along the score lines as described by either a pulling or twisting action. Notches or slits such as 75 and 76 may be provided along said edge portion by molding, post machining, or pinching the molding to permit the tearing action to be easily started. For most structures, it will not be necessary to provide the pull strip 78 to start or simplify the tearing action, although said strip may be used or replaced by another formation integrally molded to the portion of the wall 71 between the parallel score lines 72, 73. Other devices operative to effect a tear or severance in a wall of a thin walled molded container may include wire, filaments or metal strips embedded in the wall or secured to the inside surface thereof as described.

In another form of the invention described in the paragraph above, the portion of the wall of the molded or vacuum-formed container or bottle formed between score lines 72 and 73 may have a projection, neck or indentation molded therein to facilitate obtaining a grip between the fingers of the hand and effecting the start of tearing or shearing the wall along the lines 72 and 73. Or a hole or cut-out may be molded or otherwise provided in the strip 71' between lines 72 and 73 into which the forefinger may be inserted, after removal of a pressure-sensitive adhesive bonded or welded on covering strip or film therefrom, and manipulated by pulling 71' so as to start its removal from the wall of the container by tearing along lines 72 and 73. The portions of the container severed by removal of strip 71' may be so formed or molded as to be assemblable thereafter along their rims and frictionally retained together. In other words, FIG. 8 may also represent the neck or side wall of a thin walled cylindrical container such as a bottle, can or the like produced by blow molding or vacuum forming thin sheet plastic material. If the container 70 is a metal can having thin aluminum foil sheet walls, strip 71' may be folded along the edge formation 70a therein and welded along band portion 71' after which said edge is slitted or notched in or exterior of the weld as shown to maintain sealing closure of the can interior. If the edge 70a' of 70'' is slitted or cut and a portion thereof lifted away from the other portion or otherwise provided as to be

liftable away from the wall of the can, the weld in border region 71' adjacent the notched or slitted cutouts 75 and 76 may be such as to be severable when said edge or strip 77 is pulled away from the wall of the can to start the tearing action along lines 72 and 73. In other words, strip 77 may or may not be necessary depending on how much free material is provided adjacent the end 70a' or 70''.

In another form of the invention, one of the score lines 73 and 72 may extend in the form of a loop outward from strip 70'' which loop may be pulled, pushed or otherwise severed along its borders to start the tearing action along the lines 72 and 73. In still another form of the invention, one or more thin channels or score lines such as 72 and 73 may be provided in the wall of a blow molded or pressure formed container to define guides for a bland or other cutting means used to cut the container into separate portions for opening thereof or other use.

The structure illustrated in FIGS. 7 and 8 or a modification thereof may also be applicable to a container having a thin sheet wall such as a blow molded bottle or the like in which it is desired to rapidly open said container by severing a portion of said thin sheet wall. In other words, the bag assembly 70 may be replaced by a blow molded bottle or box having substantially the same tear strip structure illustrated in which parallel strip-like or line portions of the wall of the bottle circumscribing, for example, a neck thereof are provided of substantially less wall thickness than the thickness of the remainder of the wall of the container and as illustrated at 72 and 73 in FIG. 7. The upper and lower portions of the wall of the bottle may be severed from each other by means of a pull strip such as 77 welded to the wall portion such as 71' between the two score lines 72 and 73 or channels. Opening of the container or severance of the two parts may also be effected by a twisting action accomplished by holding the base of the container in one hand and twisting the upper portion beyond the reduced cross section portion of the wall with the other hand. Such a thin channel or channels of reduced cross section in the wall of a blow molded container such as a plastic bottle may be produced in one of a number of ways including: (a) reducing the thickness of the wall of the parison used to form the blow molded container by rapid movement of a tapered mandrel with respect to the opening in the die through which the parison is extruded and in a manner to provide two circumscribing channels in the wall of the blown container which function similar to channels 72 and 73 permitting easy severance of the wall of said container; (b) one or more channels or scorelines 72, 73 may also be provided in a predetermined portion of the wall of a blow molded plastic container by properly shaping the wall of the cavity of the mold in which the container is formed. In other words, score channels 72 and/or 73 may be provided in a thin wall blow molded container by providing sharp, knife-like blades around the wall of the mold in which the plastic parison is blown to the shape of the container, which blades are operative to provide said indentations or channels in the wall of the molding to simplify cutting or severance of the container when the contents thereof are desired to be used or to separate portions of the container to provide two separate articles or at least one usable article therefrom after the contents thereof are used up. One or more channels or scorelines such as 72 and 73 may be provided circumscribing the wall of a bottle or in any predetermined path including a circular or closed loop path extending along one wall of a multi-walled blow molded container to define means for either opening the neck of the container or providing a hole opening in a wall thereof by twisting, pulling or pushing thereagainst. A pull strip member such as 77 may be attached to the blow molded container after it is molded, incorporated into the parison as it is formed or secured to the blow molded container as it is molded by first being secured to the wall of the mold and there-

after being bonded or otherwise retained against the wall of the molding during the molding operation wherein the tear strip is fused with said container wall as the result of the semi-molten condition of the molding material or the tear strip during molding.

Referring to FIGS. 1 and 2, a preferred method of applying tear strip 39 to a shrink film product container 30 is to roller heat seal or adhesively bond the strip 39 to the outside surface of the heat shrunk film preferably along a flat surface portion thereof disposed against a flat wall of a container or article while the packaged device is fed past the roller applicator for said strip. The tear strip may be predeterminedly cut to length from a roll of strip material as or after it is completely sealed across the surface of the shrunk film surrounding the article packaged thereby. The strip 39 may also be bonded or welded to the roll fed shrink film material and merely provided along a seam or adjacent an edge of the package to be pulled outwardly therefrom along a portion of the film which is cut or slitted during application of the strip to effect opening of the package by tearing the film with the strip, and extending the slit severance by hand.

A pull string such as member 54 of FIGS. 2 and 3 may also be bonded or sealed to the surface of the biaxially oriented plastic film after orienting same but before applying said film to the package or article to be enclosed thereby. The string may be disposed against the inside surface of the film abutting a surface of the article and/or portions of the film which are held off the article when shrunk. The application of a suitable slitting tool or cutting die to the shrunk film adjacent the string and preferably on both sides thereof may be operative to effect short slits therein through which the forefinger may be inserted to start the act of tear opening the package by pulling the string outwardly therefrom and effecting a predetermined severance or tear along the film. The pull string may also be extended to a corner of the package and the film on both sides of said string may be slitted at said border or corner as in FIG. 8 to define weakened points in the film which will initiate respective tear lines when the string is pulled. In other words, the film to which the string or strip is pre-attached may be oriented with respect to the article or container it is used to enclose so that the string extends across the sealing line sealing the two sections of film together at the border or edge of the article. During the sealing operation the string is die-cut from the portion thereof extending to the next section of film and the same die used to cut the string or strip may also effect the notched or edge slitted structure shown in FIG. 8 exteriorly or along a band seal welding portions of the border of the shrink film envelope together prior to heat shrinking same. If the slits or notches do not extend beyond the band seal, the film will not tear during shrinking provided that a sufficient portion of the band seal remains to support the film during shrinking thereof.

Still another means for effecting a simple tear opening in a shrunk film enclosing an article may be effected as follows: A tab or plastic film or sheet stronger than the shrunk film is sealed to a predetermined portion of the wall of the film by machine, preferably after, although possibly before shrinking same about the article or package being held therein. While the tab may suffice per se to initiate tearing the shrunk film, it may be disposed over a line of weakness expanding along the film. Said weakness line may be effected during the extrusion of the film by reducing the thickness of the film or at any time thereafter by scoring or running a heated wheel along the film prior to or after heat shrinking same, preferably while said film is disposed against a surface such as the article being enclosed thereby.

In other forms of the invention, the tear opening means hereinbefore described and illustrated in the drawings may be applied as described or in modified form to so-called

shrink-film packaging as an improved means for initiating the opening of said packaging. Such shrink-film packaging generally comprises an envelope of biaxially oriented plastic film which is formed in-situ about an article. The plastic may comprise polyethylene, polypropylene, polyvinyl-chloride or the like which is formed about the article or articles being packaged thereby by heat sealing one or more sections of plastic film so as to totally enclose the article and thereafter applying radiant heat to the film to cause same to shrink about the article. Modifications to the packaging assemblies described above may be effected as follows to provide suitable easy opening shrink film packaging means:

A tear strip such as strip 39 of FIGS. 1 and 2 may be bonded or welded to the inside or outside surface of a portion of plastic film applied to an article or package prior to or after the shrinking of said film about said article and may serve as a means for rapidly effecting a tear opening in the shrunk film when it is desired to open the package or remove the film from the article. Pulling on the end of the tear strip may effect a tear along the weld line or adjacent the strip without the need to use a sharp instrument or attempt to tear the film or punch a hole therein by hand. If the tear strip 39 is welded or bonded to the inside surface of the film shrunk about the article contained thereby, it may extend through the seam of the shrink film envelope where the edges of the film are welded together and project a sufficient degree beyond said seam to permit said strip to be grasped between the forefinger and thumb and pulled so as to effect severance of the seam and the wall of the shrunk film along or adjacent said strip.

Any of the bag construction illustrated and/or described may be formed also by blow molding and/or of flexible sheeting material molded and bonded or heat sealed along the edges thereof. The material from which the bags or containers are formed may vary in flexibility from a highly flexible valve to a semi-rigid valve, e.g. where the wall thickness varies in thickness from .001 to .005 inch, and up to a thickness of  $\frac{1}{32}$  of an inch. The material from which the bags or containers described may be formed includes any of the suitable flexible polymers such as low density polyethylene, ethylene vinyl-acetate, styrene-butadiene, copolymers, polymer-captan, or polypropylene.

While the invention has been described with respect to several embodiments thereof, it will be readily appreciated and understood that variations and modifications may be made without departing from the spirit or scope of the invention.

What is claimed is:

1. A package for containing a material sealed therein comprising:

a wall portion formed of thin sheet material, means for effecting a controlled tear opening in said wall portion of said package through which material may be removed,

said wall portion having a fragile line extending along said wall portion, and a tear means comprising a string element disposed adjacent said fragile area, means for securing said string element adjacent the fragile line whereby a pull on the string element severs said wall portion along the fragile line defined therein.

2. A package in accordance with claim 1, whereby the major portion of said string element extends inside the wall portion of said thin sheet material and a further portion of said string element extends outwardly of the wall of said package to permit the string to be grasped and pulled to effect the severance of said wall portion of said package.

3. A package in accordance with claim 1, said string element being at least partially embedded within said thin sheet material defining the wall portion of said package so as to cause a reduction in the thickness of the thin sheet material and to define said fragile area.

4. A package for containing a material sealed therein comprising:

a wall portion formed of thin sheet material, means for effecting a controlled tear opening in said wall portion of the package through which opening the material therein may be removed,  
 said wall portion having a fragile line extending therealong and  
 a tear means comprising a strip of material having a greater tensile strength than said thin sheet material defining the wall portion of said package,  
 means positively securing a portion of said package to said wall portion to prohibit separation therefrom after forming the opening therein, and  
 means formed integrally with said tear strip to effect resealing of said package after opening.  
 5. Package opening means comprising in combination:  
 a flexible bag having walls which are made of thin sheet material,  
 an elongated flexible tear member welded along part of the wall of said bag, said flexible member comprising an elongated strip of plastic containing a bendable metal wire sealed thereto,  
 said flexible member being adjacent and integrally bonded to a narrow strip area of said wall which has been reduced in cross section to a fraction of the thickness of the surrounding wall material during the welding of said flexible member thereto,  
 said flexible tear member having sufficient tensile strength in relation to the strength of the strip area portion of the bag wall to which it is welded that, when said flexible tear member is pulled, it will cause a tear in said bag wall along said strip area and,  
 said flexible tear member capable of being wrapped around said bag and twisted on itself for reclosing the bag after it is torn along said strip area.  
 6. A packaging assembly comprising in combination:  
 a bag made of thin sheet material and having flexible sidewalls,  
 said bag adapted to be opened at one end for dispensing material therefrom in selected amounts,  
 said bag having a weakened portion for defining the opening,  
 means for effecting the opening of said bag along said weakened portion in the form of a tie-strip comprising a thin, flexible, elongated member made at least in part of thermoplastic material, said thermoplastic material of said tie-strip being heat sealed along said weakened portion and to a portion of a wall of said bag whereby a pull on said tear strip effects a controlled tear along said weakened portion to form an opening through which material is to be dispensed,  
 said tie-strip having its ends free of sufficient length to permit it to be wrapped around the neck of said bag below said open end to effect a resealing of said bag by twisting the ends of the tear strip for tying the walls of the bag together.  
 7. A packaging assembly in accordance with claim 6, said tie-strip comprising a thin strip of heat sealable material having a soft, bendable wire secured therealong substantially its entire length permitting the ends of the strip to be twisted about each other for retentively closing the bag.  
 8. A container assembly comprising in combination:  
 a bag made of thin sheet walls,  
 a seal line extending across and bonding the walls of

said bag near one end thereof to define means for closing said bag,  
 and means for opening said bag comprising a thin, flexible elongated member extending along the inside of said seal line and through the seal to the exterior of said bag a sufficient degree to permit the end thereof to be pulled, said member adapted to sever said seal line upon being pulled outwardly from said bag.  
 9. The invention as defined in claim 1 wherein said package includes a notch formed in an edge portion thereof, and said notch being disposed in line with said frangible line.  
 10. A package for containing a product sealed therein, and comprising:  
 a pair of wall portions formed of thin sheets of polymeric flexible plastic film,  
 each of said wall portions having an edge disposed contiguous to one another,  
 means for effecting a bond between the contiguous edges of said wall portion to define a seal for said package, and tear means disposed adjacent said seal for effecting a controlled separation of said bonded edges along said seal to define an opening from which the sealed product may be removed therefrom.  
 11. The invention as defined in claim 10 whereby said tear means comprises:  
 a string element secured to the inside wall portion of said package immediately adjacent the bonded seal, to extend along a length of said seal, and  
 said string element having one end thereof extending through said bonded seal to project outwardly from between the bonded edges of said wall means whereby a pull on said extended end of said string elements causes said string element to effect a controlled separation of said bonded edge along said seal.  
 12. The invention as defined in claim 11 wherein said string element has its other end retained in place by extending across the seal adjacent a remote end of said seal.

References Cited

UNITED STATES PATENTS

2,549,039	4/1951	Adams	229-66
2,868,435	1/1959	Fischer	229-66
2,973,131	2/1961	Mead et al.	229-66
3,055,575	9/1962	Gerard	229-66
3,094,269	6/1963	Schneider	229-66
3,098,601	7/1963	Anderson et al.	229-51
3,140,815	7/1964	Majesky	229-66
3,184,149	5/1965	Repko	229-66
3,246,833	4/1966	Schlienz et al.	229-66
3,276,669	10/1966	Vitutus	229-66
2,322,594	6/1943	Russell	229-51
2,447,096	8/1948	Schneider	229-51
2,554,160	5/1951	Von Gunten.	
2,684,807	7/1954	Gerrish	229-66

FOREIGN PATENTS

521,830	5/1940	Great Britain.	
DAVID M. BOCKENEK, <i>Primary Examiner.</i>			
U.S. CI. X.R.			
229-62, 66			