

[54] **OPENING AND RE-SEALING DEVICE FOR BAG CONTAINERS**

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[51] Int. Cl. **B65d 33/24**

[58] Field of Search 229/62, 65, 66, 51 TC,
229/51 ST

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Attorney, Agent, or Firm—Dawson, Tilton, Fallon & Lungmus

[57] **ABSTRACT**

A device for opening and re-sealing a flexible container includes an anchor or base portion attached to the main body of the bag, a tear-away part attached to a section of the bag desired to be torn away when the tear-away part is separated from the base portion of the device along a predetermined shear line, and a locking or clipping appendage attached to the base portion along a first fold line. The base portion is provided with a second fold line. The bag is opened by tearing the tear-away part of the device to remove it together with a portion of the bag to form a dispensing aperture. Re-sealing is effected by folding the base portion along the second fold line, releasably engaging the folded section of the base portion with the remaining section, and then folding the appendage over the folded section of the base portion and clipping it to hold the doubled-over base portion in a locked or re-closed position.

9 Claims, 20 Drawing Figures

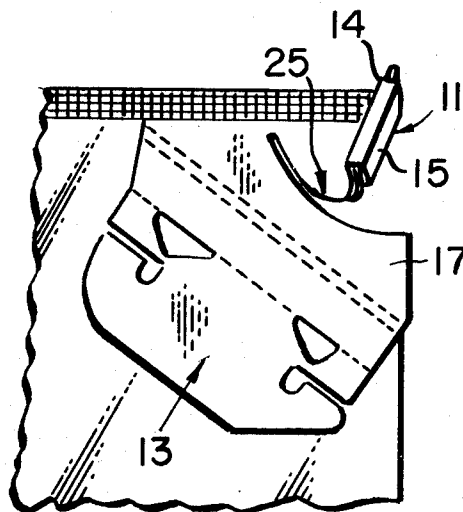


Fig. 1

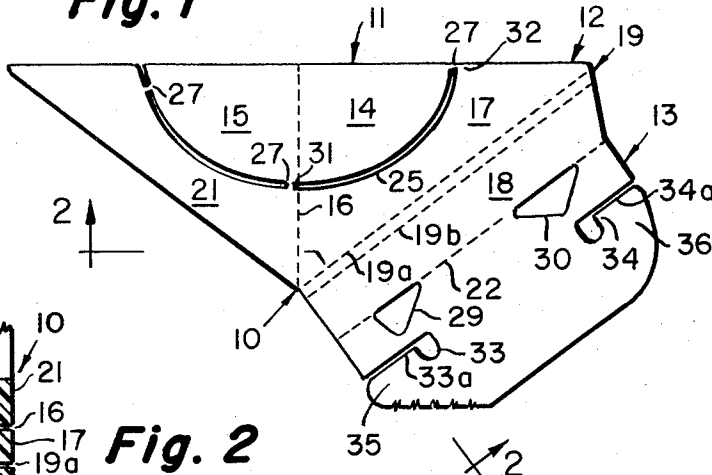


Fig. 3

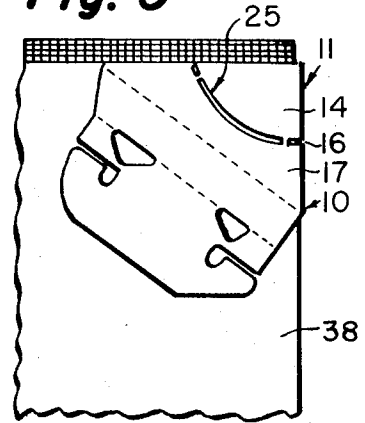


Fig. 2

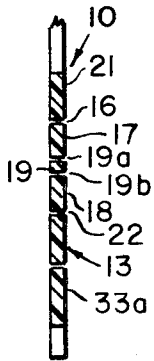


Fig. 4

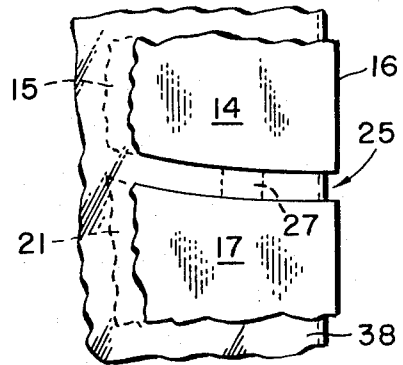


Fig. 5

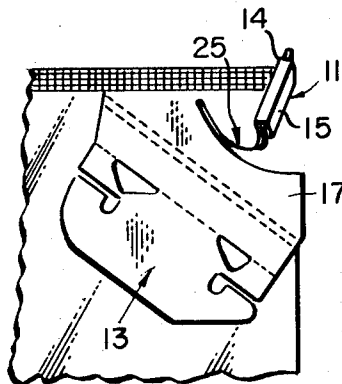


Fig. 6

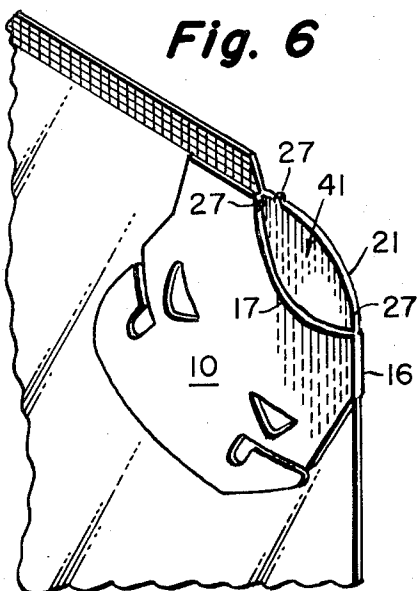
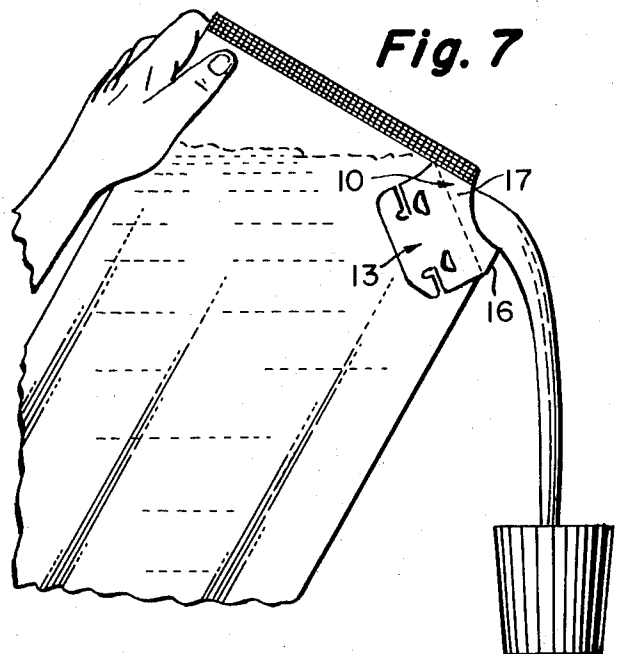


Fig. 7



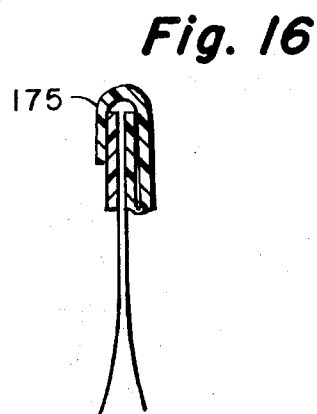
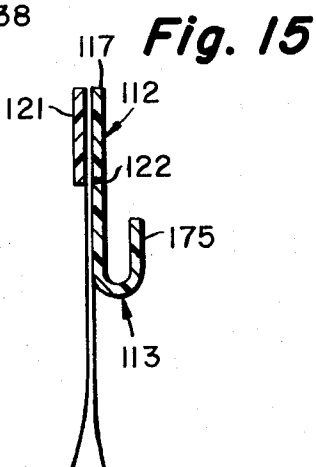
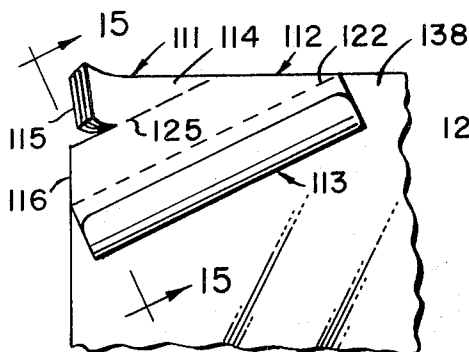
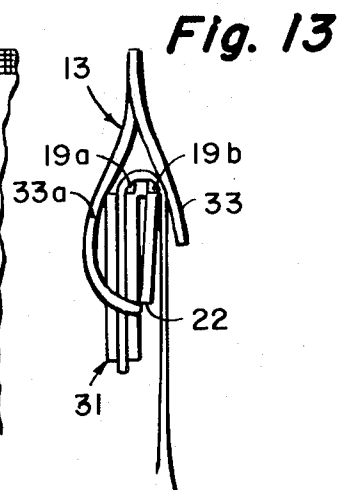
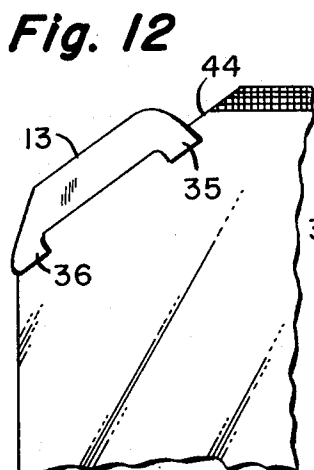
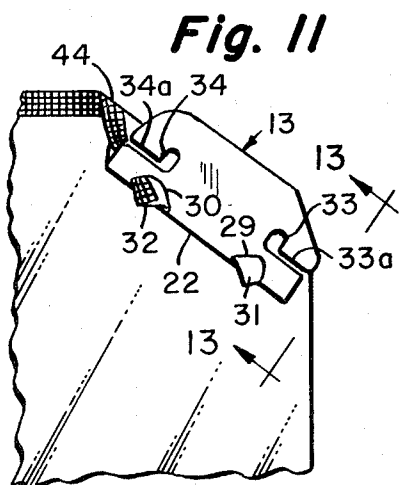
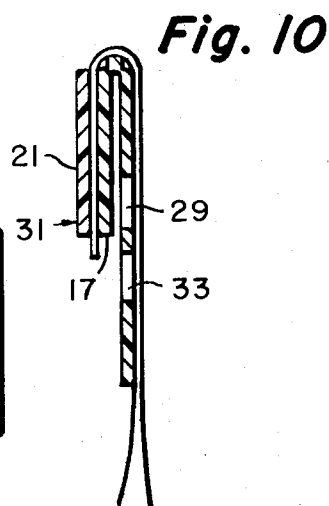
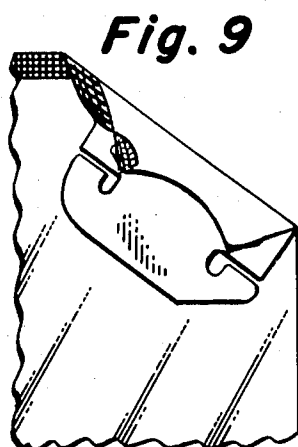
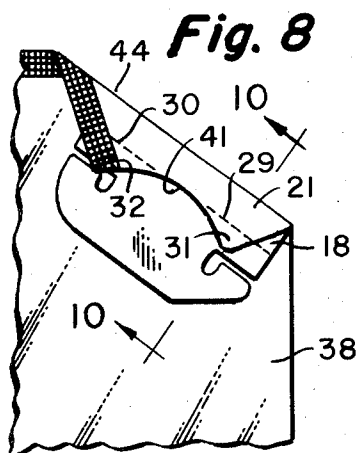


Fig. 17

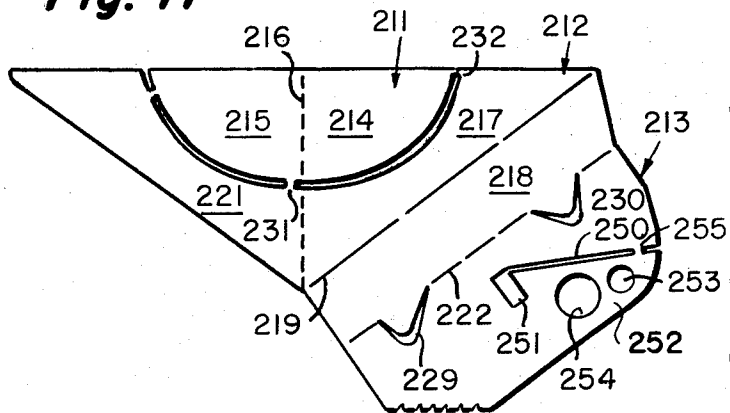


Fig. 18

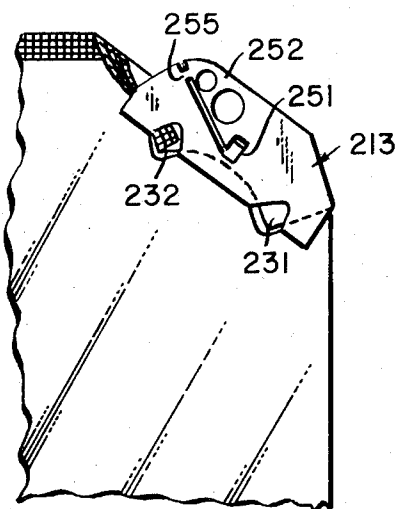
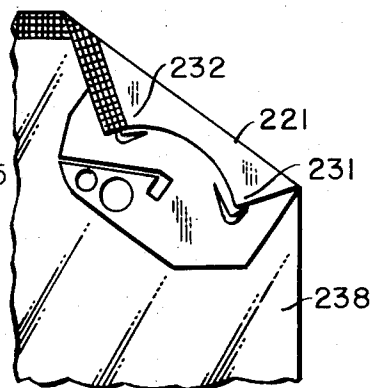


Fig. 19

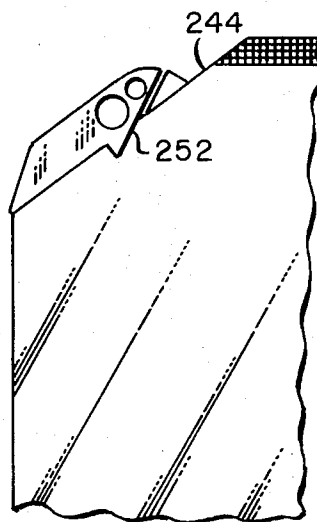


Fig. 20

OPENING AND RE-SEALING DEVICE FOR BAG CONTAINERS

BACKGROUND AND SUMMARY

The present invention relates to a device for opening and re-closing a bag or flexible container. Such a container may be used to store fluent products, and it is intended that the present invention be applicable to a broad class of such stored products, including liquids, pastes, gases, particulate matter, lumps, flakes or any combination of these. The device of the present invention performs the functions of opening a sealed package along a predetermined locus or shear line to form an aperture suitable for dispensing the goods within the container by pouring or forcing them through the aperture thus formed, and, if desired, re-closing or re-sealing the opening.

Many containers are, of course, known and commercially available for storing, shipping and dispensing fluent goods. Included among these are the conventional milk carton, the cylindrical container with a metallic spout for table salt, and so on. However, most such containers wherein the container material is flexible plastic or thin metal foil or paper-covered foil normally require some additional implement to open them, such as a pair of scissors or a knife. Further, once opened, this type of container is normally not well suited for re-closing and further storage of the remaining contents of the container.

Among the principal objects and advantages of the present invention are the reduction in packaging cost and the reduction of bulk of the disposable portion of the package. The latter factor has assumed increasing significance recently, with the prevailing concern over pollution and the amount of waste material that must be disposed of with such containers.

The present invention includes a device for opening and re-sealing a flexible container which includes an anchor or base portion attached to the main body of the bag. A tear-away part is attached to the base portion of the device as well as to a section of the bag desired to be sheared away when the tear-away part is separated from the base portion along a predetermined shear line. Preferably, the device is associated with a corner of a bag or flexible container so that when the tear-away part is pulled away, a corner portion of the container is removed to form a dispensing aperture. The remaining portion of the device reinforces this aperture.

This device has an advantage in that it requires a person opening the bag to grasp the device with the thumb and forefinger of one hand placed on either side of the base portion of the device (thereby holding the bag and its contents in an upright position without exerting pressure on the contents of the bag) while using the thumb and forefinger of the other hand to twist away the tear-away part in a shearing motion. The tear-away part of the device is separated a slight distance along a shear line from the base portion of the device to facilitate the shearing action, and the bag is backed on both sides both by the tear-away part and an extension of the base portion to facilitate the shearing in the case of tough or stretchable materials used as the container, and to reinforce the pouring aperture.

The device may consist of a single piece of thin but fairly rigid material, such as polypropylene, polysty-

rene, ABS, PBC or metal, and since it is located on the outside of the bag, it need not necessarily be compatible with the contents of the bag.

The device also includes a locking or gripping appendage attached along a first fold line to the base portion of the device and which may easily be folded over. The base portion is provided with a second fold line so that it may be doubled over.

The bag is opened, as mentioned, by pulling the tear-away part in a shearing motion to remove it together with a portion of the bag to form a dispensing aperture. Resealing is effected by folding the base portion along the second fold line to double over the base portion. After the tear-away part has been removed along a curved shear line, two corners are left in the preferred embodiment for releasably engaging the folded section of the base portion with the remaining section of it. Then, the appendage is folded over the doubled-over sections of the base portion and clipped to the base portion to hold it in a locked or re-closed position.

Thus, with the present invention, a convenient, economical container is provided for fluent goods wherein the container is equipped with an integral tool or device for forming a dispensing aperture in the container and which serves further to re-close the container, if desired. If a container with the device is self-contained to obviate the need for additional cutting or severing implements and the container need not have formed in it any particular lines of weakness. This makes for a stronger bag in manufacture, shipping, storage, cooking or freezing, or the like. Further, as mentioned, the manner in which the bag is opened does not require an inadvertent increase in the internal pressure on the contents of the bag, as has sometimes been required in prior plastic or foil bags in order to open them. The flat configuration and wafer thin, light mass of the device preclude its becoming a focus of abrasive action.

The bag may be printed or marked externally, to direct a user in the proper method of opening or re-closing the bag; and the container may be manufactured economically since attachment of the flat opening device will not interfere with the handling of the bag material in web form, as is commonly encountered in manufacturing or printing operations.

The present invention also minimizes accidental opening. Other features and advantages of the present invention will be apparent to persons skilled in the art from the following detailed description of a number of embodiments, accompanied by the attached drawing.

THE DRAWING

FIG. 1 is a side view of a first embodiment of a device constructed according to the present invention prior to attachment to a container;

FIG. 2 is an end cross sectional view taken along the line 2—2 of FIG. 1;

FIG. 3 is a side view of the device of FIG. 1 attached to a container;

FIG. 4 is a close-up view of the beginning of the shear line;

FIG. 5 illustrates the opening of a container with a device of FIG. 1;

FIGS. 6 and 7 illustrate respectively the opening thus formed and dispensing of the liquid through the opening;

FIGS. 8, 9, 11 and 12 illustrate re-closing of the container after opening;

FIG. 10 is a cross sectional end view taken through the sight line 10—10 of FIG. 8;

FIG. 13 is an end view taken through the sight line 13—13 of FIG. 11;

FIGS. 14—16 illustrate a second embodiment of a device for opening and re-sealing a flexible container;

FIG. 17 is a view, similar to FIG. 1, of a third embodiment incorporating the present invention; and

FIGS. 18—20 illustrate the sequence in re-sealing a bag after opening with the device of the embodiment of FIG. 17.

DETAILED DESCRIPTION

Referring first to the embodiment of FIGS. 1—13, and particularly to FIG. 1, reference numeral 10 generally designates a device for opening and re-sealing or reclosing a flexible container for storing fluent goods. The device 10 is formed preferably from a single thin sheet of relatively rigid or stiff material, such as polypropylene, other suitable plastic material, paper or even sheet metal.

It includes generally a tear-away part 11, a central base or anchor portion 12, and a locking or clipping appendage 13.

Prior to attaching the device 10 to a bag, the tear-away part 11 has a generally semi-circular shape, including a first quadrant 14 and a second quadrant 15 separated by a fold line 16.

The base portion 12 includes an upper section 17, a lower section 18 (defined relative to the upper section 17 by means of a folding intermediate section generally designated by reference numeral 19), and a side extension 21 of the upper section 17 (which is defined relative to the upper section 17 by a continuation of the previously referred to fold line 16). The appendage 13 is defined relative to the base section 19 by means of a fold line 22. The fold line 22 is sometimes herein referred to as the "first" fold line; the folding section 19 is sometimes herein referred to as the "second" fold line; and the fold line 16 is sometimes referred to as the "third" fold line, as will be made clear subsequently.

A shearing path or locus is defined by a slit 25 which separates the quadrant 14 of the tear-away part 11 from the upper portion 17 of the base 12, and in its continuation, also separates the quadrant 15 of the tear-away part 11 from the extension 21 of the base 12. When the device is folded about the fold line 16, the quadrants 14, 15 of the tear-away part 11 become registered, the upper section 17 and the extension 21 of the base portion 12 also become registered, and the folded sections of the shearing interrupted slit 25 also become registered, as indicated in FIGS. 3 and 5. The quadrants 14, 15 are temporarily held to the associated parts 17, 21 of the base 12 by means of links 27 which are of a thickness such as to make them easily torn by the hand.

Turning now to the appendage 13 of the device, there are formed first and second side apertures 29 and 30, each of generally triangular shape and having a base line along the fold line 22. The apertures 29 and 30 are aligned respectively with the points or corners of the upper section 17 of the base 12. Such corners are formed when the tear line is curved. These corners are designated respectively 31 and 32 in FIG. 1, and they are formed after the tear-away part 11 is removed from

the device. The points 31, 32 are received respectively in the apertures 29, 30 in this embodiment, of the appendage 13 when the upper section 17 is folded downwardly about the fold section 19 in reclosing the container, as will be explained in more detail below.

First and second apertures 33 and 34 are also formed in the appendage 13 with associated slits 33a and 34a, the slits being generally parallel to the fold line 22 and fold line 19 so as to partially define, in combination with the apertures 33 and 34 first and second side locking tabs 35 and 36 respectively which may be pulled into the plane of the fold, see FIG. 1 (or upwardly of the illustration of FIG. 3) to provide a locking mechanism which also will be discussed in more detail below.

Turning now to FIG. 2, the fold line 16 may be seen to be an irregular slit perforation, although other processes are known that will perform equally well. The perforation thus forms a hinge in attaching the device to a bag by folding the quadrant 15 and extension 21 thereabout to register respectively with the quadrant 14 and upper section 17 of the base 12. In attaching the device to a bag, the quadrant 15 and extension 21 are folded out of the plane of the page and over to the right. Similarly, the fold section 19 includes two perforation lines 19a and 19b as seen in FIG. 2. Finally, the fold line 22 is also a perforation.

Turning now to FIG. 3, a bag is generally designated by reference numeral 38, and it may be of any flexible tearable material of the types mentioned above; one suitable material currently enjoying commercial acceptance is a laminate formed of surface layers of thin polyethylene bonded to a central core layer of nylon or vinyl, etc. to provide strength.

The device 10 is attached to a corner of the bag 38 by folding the extension 21 and quadrant 15 about the fold line 16 to engage the surface of the bag which cannot be seen in FIG. 3.

The device 10 is secured to the bag 38 by heat sealing, or adhesive along the inner or bag-engaging surfaces of the quadrants 14, 15, the upper section 17 of the base 12 and the extension 21 of the base 12. Heat sealing is readily accomplished when the device is made of high-density polyethylene, as is preferred. Alternatively, attachment could be by means of a suitable adhesive or bonding agent.

Turning now to FIGS. 4 and 5, when the device 10 is attached to the bag 38, removal of the tear-away part 11 is accomplished by holding the device with one hand along the base section 12, gripping the tear-away device 11 with the other hand, and tearing along the shearing line 25, severing the links 27 with this action, and shearing the bag material along the shearing line 25 with a true shearing action, rather than a stretching or ragged tearing action, thereby providing a relatively well-defined aperture formed with the prepared removal of a quarter-circle section or corner of the bag, as best seen in FIG. 6 wherein the opening thus formed is denoted by reference numeral 41. It is considered an important advantage of the present invention that during the opening of the bag, both hands of the person are required to hold the device 10, the weight of the container and its contents and drape below. Thus, there is no tendency to exert internal pressure on the contents of the container. After the tear-away part is removed, the remaining portion of the device 10 forms a pouring device, as illustrated in FIG. 7. That is, the sides of the

aperture 41 formed in the corner of the bag are reinforced by the upper section 17 of the base 12, the extension 21 thereof, and the fold line 16 connecting the two sections of the device 10.

Turning now to FIGS. 8-13, when it is desired to re-close the aperture 41 in the bag, the upper section 17 and the extension 21 of the base 12 of the device are folded downward about the hinge or second fold line 19, thereby providing a folded seal in the corner of the bag indicated by the line 44 in FIG. 8, this line completely traversing the corner of the bag at a location inwardly of the aperture 41 formed in the bag. This folding action in this embodiment also brings the corners 31, 32, formed by removal of the tear-away part into alignment with the corresponding apertures 29, 30 in the appendage 13. These corners are engaged by their associated apertures, as illustrated in FIG. 9, the pre-tucked relationship being illustrated in FIG. 10 from the side. With the corners 31, 32 trapped by the apertures 29, 30, as seen in FIGS. 9 and 11, the appendage 13 is then folded upwardly about the first fold line 22 and over the doubled-over upper section 17 of the base 12. As best seen in FIG. 11, the lead-in slits 33a, 34a are parallel to the fold 44 and spaced beneath it so that the lower ends of the tabs 33, 34 may be lifted over the fold 44 and locked in place, as illustrated in FIG. 12, thereby trapping the doubled-over upper section of the base 12 and locking or latching it in place. An end view of the completed re-closure is shown in FIG. 13. The seal is re-opened by forcing a thumb against the exposed tab portion of the appendage 13 into the plane of the page of FIG. 12, thereby releasing the tabs 34 and 33. The container may be resealed a number of times, of course.

A second embodiment of the inventive device is shown in FIGS. 14-16 wherein the tear-away part is generally designated by reference numeral 111, and it has a triangular shape, including first and second sides 114, 115 located on either side of a corner of the bag 138.

In this embodiment, the intermediate section is generally designated 112, and the appendage 113. A fold line 122 is located between the base 112 and appendage 113. The base 112 includes first and second side sections 117 and 121 located on either side of the bag 138 and joined along a hinge line 116. The tear-away part 111 may be connected to the base 112 by means of links similar to the previously described links 27, but the are separated by a straight shear locus 125, as contrasted to the previously described curved shear locus 25.

As best seen in FIGS. 15 and 16, the appendage 113 has a cross sectional shape in the form of a hook 175.

In operation of this embodiment, first the tear-away part 111 is removed along the shear locus 125, and if re-closing is desired, the appendage 113 is folded upwardly about the fold line 122, and the hook 175 is placed over the exposed aperture to clamp the two sections 117, 121 of the base 112 together to effect a re-closure as seen in FIG. 16.

Turning now to the embodiment of FIGS. 17-20, reference numeral 211 denotes a tear-away part, 212 signifies a base, and 213 indicates an appendage. The tear-away part 211 includes quadrants 214 and 215 separated by a fold line 216. The base 212 includes an upper section 217, a lower section 218 separated from

the upper section 217 by means of a transverse fold line 219, and an extension 221 defined relative to the upper section 217 by an extension of the fold line 216.

The appendage 213 is separated from the lower section 218 of the base 212 by means of a first fold line 222. Generally, V-shaped apertures 229 and 230 are formed in the appendage 213 and adapted to receive respectively the corners 231 and 232 of the upper section 217 and extension 221 of the base 212 formed when the tear-away part 211 is removed to form an aperture in the bag 238.

The appendage 213 also includes an inclined slot 250 leading into a generally rectangular aperture 251 to partially define a tab 252. First and second apertures 253 and 254 are formed in the tab 252 to facilitate gripping of the tab and severing a link 255 holding the distal end of the tab 252 to the main body of the appendage 213 at the outboard end of the lead-in slot 250.

The operation of the device illustrated in FIGS. 17-20 is similar to the operation of the first device. First, the tear-away part is removed to form an aperture in the bag and to provide a pouring spout. Again, only the elements of the tear away part and the base portion are heat-sealed to the bag, the appendage 213 being free to be folded away from the bag.

When it is desired to re-seal the aperture, the upper section 217 and the extension 221 of the device are folded downwardly as seen in FIG. 18 by means of the fold line 219, and the corners 232 and 231 are tucked into their associated V-shaped apertures 229 and 230, as seen in FIG. 19. Next, the appendage 213 is folded upwardly over the doubled-over base portion 212 to trap it. With one hand thus holding the device as shown in FIG. 19, the second hand is free to sever the link 255, thereby freeing the tab 252 to extend partially over the bag fold 244, as seen in FIG. 20 to complete the re-closure.

In those cases in which the re-closing feature is not desired (for example, in the case of motor oil) the appendages 13, 133 and 213 may be omitted; and the device still retains all of the other features and advantages mentioned above.

Having thus described in detail a number of embodiments of the present invention, persons skilled in the art will be able to modify certain of the structure which has been described and to substitute equivalent elements or materials for those which have been disclosed while continuing to practice the principal of the invention; and it is, therefore, intended that all such modifications and substitutions be covered as they are embraced within the spirit and scope of the appended claims.

I claim:

1. In combination with a flexible sealed container storing fluent material, a device for opening and re-closing said container, said device being formed of flat, semi-rigid or rigid material and including a tear-away part engaging a corner of the container desired to be removed, a base portion attached to both sides of said container and extending about one edge thereof to support said container and said edge adjacent to the portion of the container desired to be removed, said tear-away part and said base portion being separable along a predetermined shear path extending about a corner of said container from said one edge and an appendage attached to said base portion along a fold line and in-

cluding a locking mechanism, whereby said container may be opened by removing said tear-away part to shear a portion of said bag from said edge along said predetermined shear path and the aperture thus formed may be re-closed by application of said locking mechanism on said appendage.

2. The device of claim 1 wherein said appendage is attached to the base portion of said device along the first fold line and wherein said base portion is divided into first and second sections along a second fold line spaced between said shear path and said first fold line, whereby after said tear-away part is removed to form an aperture in said bag, the upper part of said base portion adjacent the aperture thus formed may be folded downwardly along said second fold line and said appendage may be folded upwardly along said first fold line, said appendage further defining tab means for placement over the doubled-over base portion to lock the same in place.

3. The device of claim 2 wherein said shear locus is a curved line thereby to provide at least one corner when said tear-away part is removed, and wherein said appendage includes a corresponding aperture to receive said corner in tucking relation when said base portion is folded along said second fold line.

4. The device of claim 1 wherein said tear-away part includes first and second quadrants located respectively on either side of said bag adjacent a corner thereof and wherein said base portion includes an upper section partially defining one of said quadrants and an extension partially defining the other of said quadrants, said upper section and said extension being bonded to the outer surface of said bag, said quadrants also being bonded to the outer surface of said bag, said base further including a lower section extending beneath the upper section thereof, whereby when said tear-away part is removed, said upper section of said base portion and said extension thereof may be folded about a second fold line partially defining the upper and lower sections of said base portion to bring said upper and lower sections thereof into contacting relation, whereupon said appendage may be folded over the doubled-over base portion and clipped along the outer edge of the fold in said base portion.

5. A device for opening and re-closing a flexible container for dispensing the contents thereof, said device being formed of flat material and including a tear-away part attached to said bag adjacent a corner thereof, a base portion attached to said bag and separable from said tear-away part along a predetermined shear line defining the portion of said bag desired to be removed, and an appendage connected to said base portion along a first fold line, said appendage including locking means and being movable away from said container, said base portion including a second fold line generally parallel to said first fold line, whereby when said tear-

away part is removed from said device, said base portion may be folded along said second fold line and said appendage may be folded along said first fold line and said locking means attachable to said bag and to said device along said second fold line to retain said base portion in its folded position to thereby effect a re-closing of said aperture.

6. The device of claim 5 wherein said tear-away part includes first and second quarter-circle sections engaging and bonded to said bag on either sides of a corner thereof, said shear line being the portion of a circle, said base portion further including an extension attached to said bag opposite the side on which the upper section of said base portion is attached to said bag and foldable therewith when said tear-away part is removed from said device.

7. The device of claim 5 wherein said locking means of said appendage includes a tab foldable outwardly relative to said appendage and located to couple over said doubled-over base portion when the same is folded along said second fold line.

8. The device of claim 5 wherein said locking means of said appendage includes a tab partially defined by an inclined lead-in slot and a hinged aperture and adapted to be placed over the fold line in said bag formed when said base portion is doubled over to maintain said doubled-over base portion in its folded position until said tab is released.

9. A package comprising a sealed flexible plastic container for storing fluent goods; a device formed of flat material attached to said container about a corner thereof, and comprising a semi-rigid member folded about an edge of said container adjacent said corner and including a tear-away part secured to a portion of opposite exterior surfaces of said container about a segment desired to be removed, a base portion attached to opposite exterior surfaces of said container to support the same adjacent the segment of the container desired to be removed, said tear-away part and said base portion being separated along a predetermined shear path; an appendage attached to one side of said base portion along a first fold line and including an aperture for receiving a tip of said container and base portion in tucked relation after said segment has been removed and said base has been folded along said first fold line, said appendage further including a locking portion partially defined by a second fold line and including a bendable tab for fitting over the doubled-over portion of said base portion, after folding about said second fold line, whereby said bag may be opened by removing said tear-away part to shear a portion of said bag along said predetermined shear path and the aperture thus formed is reinforced by said base portion for dispensing.

* * * * *