RESEALABLE PACKAGING DEVICE

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ABSTRACT
A fluid-containing bag made of flexible heat sealable plastic material in which the internal cavity of bag is completely sealed and an openable and resealable spout. The spout may be opened by pulling up on a sealing tab which is permanently attached to the bag adjacent a pouring location and which is fixed to the wall material of the bag at the point where the pouring orifice is to be formed. The initial pulling of the tab tears open the bag at the point at which the orifice area is fixed to the bag thereby opening the orifice. The tab may be resealed against the outside face of the bag and may reseal the orifice by means of adhesive material between the tab and the bag wall.

9 Claims, 7 Drawing Figures
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RESEALABLE PACKAGING DEVICE

The present invention relates generally to resealable packaging devices and specifically to a plastic bag intended for use as a fluid or loose particle container in which there is a completely sealed internal compartment for shipment and storage and an openable and then resealable pouring spout to be used by the consumer once the bag and its contents are ready for use.

There are many of consumer fluid or fluid-like products which must be shipped, stored and sold in a condition where the products are packaged in a completely sealed container and wherein the container may then be conveniently opened by the consumer and thereafter resealed. The resealing function allows the consumer to use portions of the contents of the container and then resell the container for further storage. Such products range from true liquid products such as milk, juices and the like to granular products such as rice, cereals, flour, bird feed and the like.

Several proposals have been made over the years for means to package fluid or fluid-like materials in flexible plastic bags, but complete success and consumer acceptance has not been achieved. Although many of the pulverized or grain products have been and are now being packaged in plastic bags, the containers used have some significant drawbacks and to date there has been no truly commercially successful bag packaging device for true fluids for use by household consumers.

The basic requirements are that the package be easily filled by automatic or semi-automatic means at a packaging plant, that the packages comprise a sanitary and reliable container for the fluid products, that the container be easily transportable and handleable, that it occupy a minimum amount of space, that the container may be placed in a retail store in a commercially attractive and saleable manner, that the consumer may transport the container easily and safely to his home, that the container may be easily stored by the consumer, that the package can be easily opened for access to the contents, that the opening provided will act as convenient pouring spout, and that the opening can be resealed such that the integrity of the product inside the package is maintained from both the point of view of cleanliness and odor.

Accordingly, it is an object of this invention to provide a bag which fulfills one or more of these requirements.

It is generally the object of the present invention to provide an improved bag with an openable and resealable pouring spout. Specifically, it is an object of the present invention to provide such a container which eliminates one or more of the failings of the prior art devices and provides as well as possible the advantageous features desired for such a packaging device.

It is further within the contemplation of the present invention to provide a flexible plastic bag for easy packaging for fluid materials such as milk, which package is completely sealed at the point it is packed and which may be opened and resealed by the consumer.

It is a further object of the present invention to provide a new construction for a pouring spout for a liquid containing package.

In accordance with one illustrative embodiment of the present invention, there is provided a bag formed of flexible plastic heat sealable material, such as polyethylene, which bag has walls defining a completely sealed internal cavity. Adjacent of one corner of the bag there is provided a spout region defined by a sealing tab of strength greater than the material of which the wall of the bag is made. An orifice or pouring spout is defined by an area in which the wall of the bag is fixed to the sealing tab such that upon pulling the sealing tab, the material of the wall of the bag at the pouring spout, will be ripped from the wall bag opening the orifice. Resealable adhesive means are provided in operative arrangement between the outer face of the bag wall and the inner face of the sealing tab in the area immediately adjacent the orifice such that after the orifice is opened by pulling the tab away from the wall and breaking the seal, the package may be resealed by pressing the tab down against the wall again covering over the orifice. The sealing tab is more permanently attached along one of its edges to said bag thereby providing a hinge point for the tab.

The above brief description, as well as further objects, features and advantages of the present invention, will be more fully appreciated by reference to the following detailed description when taken in conjunction with the accompanying drawings wherein:

FIG. 1 is an elevational view of a bag constructed in accordance with the present invention;

FIG. 2 is a sectional view of a prior art construction;

FIG. 3 is a sectional view taken along the line 3—3 of FIG. 1 looking in the direction of the arrows showing the sealing tab in accordance with the present invention in its initial sealing condition;

FIG. 4 is a sectional view of the device shown in FIG. 3 with the device in its opened pouring condition;

FIG. 5 is an elevational view, partially in section, showing a further embodiment of the present invention;

FIG. 6 is an elevational view, partially in section, of a still further embodiment of the present invention; and

FIG. 7 is a sectional view of the device shown in FIG. 6 but with the elements shown in their opened pouring position.

There is shown in FIG. 1 a conventional polyethylene bag generally designated by the numeral 10 which, in accordance with the present invention, is provided with a pouring spout generally designated by the number 12 located adjacent one of its corners. The bag 10 is shown to have a front wall 14, a corresponding rear wall (not shown), and side gussets 16 and is formed with a top seal 18 and a bottom seal 20 to define a completely enclosed interior. The invention, however, can be realized in flexible bags of any type, with or without side, bottom or top, and with sealing means and general construction of any type since the invention is related not specifically to the construction of the bag per se, but to the construction of the resealable pouring spout for use in association with packaging devices.

Prior to a description of the resealable pouring spout 12 and in accordance with the present invention, reference is made to FIG. 2 for a description of one type of resealable pouring arrangement known in the prior art. In a bag B having a wall W and containing a
fluid $F$, there is formed an orifice $O$ through which fluid may pass. The orifice $O$ is covered over with a sealing tab $T$ which, in the area immediately surrounding the orifice $O$ is secured to the wall $W$ by means of adhesives $A$. By pulling on the tab $T$ and breaking the securement force of the adhesive $A$, the tab $T$ can be ripped away from the orifice $O$ thereby opening the pouring spout. The fluid will then flow out of the bag $B$. This type of arrangement is not capable of commercial use because any adhesive which is strong enough to withstand the pressures of the fluid inside the bag $B$ during packing, transport and storage is not of the resealable type. Conversely, there are resealable adhesives which are strong enough to hold a tab onto a bag $B$ in tight enough contact for normal household use, but they do not have a strong enough bond to withstand the stress to which they would be subjected in the typical packaging and shipping situations. The prior arts also includes structural arrangements exactly like that shown in FIG. 2 in which the tab $T$ is attached with a non-resealable adhesive. Specifically, tab $T$ was secured to the wall $W$ of the bag $B$ by means of a strong adhesive such that for all intents and purposes in packing, shipping and storage, it could be considered to be completely sealed. However, when the consumer wished to open the bag, rather than having to cut through a corner or tear a wall of the bag, he merely pulled up one of the corners of the tab $T$ breaking the adhesive seal and opening the orifice $O$. Of course, in this case, the tab $T$ could not be then resealed to the bag $B$. This type of construction has been utilized for small portions of fluids such as single doses of cream for use in connection with a serving of coffee. It was in the environment of this prior art and its failures to provide a fully sealed, openable and resealable liquid container that the present invention was conceived and developed.

Referring to FIG. 3 there is shown a partial sectional view of the bag 10 and the sealing tab and pouring spout arrangement 12 which is shown in overall illustration in FIG. 1. The wall 14 of the bag 10, in cooperation with the rest of the bag, encloses a supply of fluid $F$ and keeps that fluid in a completely sealed condition. The sealing tab, generally designated by the numeral 30, is hingedly attached to the bag wall 14 along a heat seal (or other permanent securement) line 32 adjacent to one of its edges. The material of the tab 30 is heat sealable sheet plastic material and is selected of a stock which is somewhat tougher and stronger than the stock of the wall 14 of the bag 10. This strength or toughness may be as a result of either thicker gauge material or a different type of material, or it may be due to some internal construction of the tab such as laminations, coatings, etc. The line of heat seal 32 forms a permanent attachment of the tab 30 to the bag wall 14 and the flexible character of both the tab material and the bag wall material allows for the movement of the tab from a sealing position flat against the wall to an open position at an angle acute to the wall to allow fluid to be poured from the bag.

The tab 30 is also permanently fixed to the wall 14 in the central area of the tab 30 and along a heat seal (or other permanent securement) line 34 which, in this case, is circular in configuration. The heat seal line 34 defines the extent of what will become a pouring orifice or a spout 36 when the tab 30 pulls away that portion (38) of the bag wall 14 within the heat seal line 34. As may be seen in the enlarged sectional view of FIG. 3, the heat sealing along line 34 causes a reducing of the thickness of the bag wall 14 immediately adjacent the heat seal line 34, and, therefore, an extreme weakening of the bag wall at that point. The orifice portion 38 of the bag wall 14 within the confines of the heat seal line 34 can therefore be torn away from the remainder of the bag wall. When a consumer lifts a corner of the tab 30, such as the corner 40 designated in FIG. 2, and pulls sharply on the tab, the weakened area immediately adjacent the heat seal line 34 will cause the surrounding area of the wall 14 to be torn away, thereby opening the orifice 36. Since the material of the tab 30 is stronger and tougher than that of the wall 14, it will always be the orifice portion 38 of the wall 14 that gives way and tears rather than the corresponding section of the tab itself. If an adhesive or other securement is used along the line 34 to obtain a permanent attachment of the tab 30 to the bag wall 14, a similar operation results; the weaker material of the wall 14 is torn open when the tab is pulled up. Upon removal of the orifice 36 in this manner, the tab will assume an open condition as shown in FIG. 4, and the housewife may then discharge the contents of the bag.

If the entire contents of the bag 10 are not used, the bag may be resealed by the means provided in accordance with this invention. In at least the area of the tab 30 immediately adjacent the line 34, there is provided a layer of pressure sensitive adhesives 42 in order to hold the tab 30 against the bag wall 14. In most commercial situations, pressure sensitive adhesive 42 would be applied across the entire or substantially the entire inside face of the tab 30 and thereafter the heat seal line 34 would be applied such that there would be adhesion between the wall section 38 and the central portion of the tab 30. Adhesive in this portion is not essential to the practice of the invention but will, in most instances, probably appear at that location. The primary function of the adhesive, however, is accomplished by its presence in the area outside of the area of the orifice 36 and the bag wall section 38. The application of simple finger pressure of the tab 30 against the wall 14, the orifice 36 will be sealed, preventing spillage of the remaining contents of the bag 10, preventing spillage, and preventing the odors of the materials in the bag from getting out to contaminate other things in the user's refrigerator and similarly preventing other odors from invading the materials in the bag.

A more complete understanding may be had in considering the following description of the manufacture, packaging, shipping and ultimate use of a bag having a pouring spout in accordance with the present invention. A bag is provided with one wall such as wall 14 having a resealable pouring spout such as spout 12 shown in FIGS. 1, 3 and 4, formed on the wall. For all intents and purposes of the packager, therefore, the bag wall 14 is a completely sealed wall. One of the heat seal lines of the bag, such as line 18 or 20, will not have been formed and the bag is filled with fluid material in automatic machines in a conventional manner. After filling, the final heat seal is made to form a completely sealed internal chamber for the fluid. The bag is then shipped, stored and merchandised in a conventional
manner, and the housewife then brings the bag with its contents to her kitchen. When she desires to use the fluid within the bag, she merely grips one of the free corners or edges of the tab 30, such as the corner 40, and pulls the same upwardly away from the facing wall 14 of the bag 10. Because of the fixing of the orifice section 38 of the wall 14 to the tab 30, the pulling action pulls away the orifice section from the wall thereby tearing open the orifice 36. She may then pour out a portion or all of the contents of the bag 10. Resealing of the tab 30 to the bag wall 14 is simply accomplished by bringing the tab 30 into a coextensive relationship with the wall 14 and lightly pressing same in order to engage the pressure sensitive adhesives 42 which are sandwiched between the two sheet members.

In FIGS. 5, 6, and 7, there are shown some of the many possible variations. In FIG. 5 there is shown a bag 110 having a resealable pouring spout arrangement 112 located on bag wall 114. The resealable pouring spout arrangement 112 includes a tab 130 which is fixed along line 132 to the bag wall 114 immediately adjacent to the bag orifice 135. The orifice section 138 is shown having previously been torn from the bag wall 114 and with the tab 130 moved back into its sealing position with the adhesive 142 holding the tab 130 in place. It is shown that the attachment of the tab 130 to bag 114 may be immediately adjacent the orifice 136. As a still further alternative, there need be no hinge line such as the heat seal line 132. The tab in accordance with the present invention may simply at attached by means of adhesive arranged in such a manner that when the tab is pulled, the orifice section is torn from the bag wall and the tab is held on the wall by the pressure sensitive adhesive. A further variation which is illustrated in FIG. 5, the tab 130 has upraised the finger portion 150 which is formed in tab 130 at the time of manufacture and which provides a simple expedient for ease and grasping the tab 130 to open it.

The embodiment of the invention illustrated in FIGS. 6 and 7 features a memory system which enables the sealing tab to positively stand out in its opened position. Specifically, there is illustrated a bag 210 having a resealable pouring spout arrangement 212 on the bag wall 214. The sealing tab 230 is secured to wall 214 along a securement line 232. Another securement line, in circular configuration, is formed at 236 defining an orifice section 238 of the wall 214. Section 238 may be torn from the wall 214 when the tab 230 is opened. Adhesive of the pressure sensitive type 242 is sandwiched between the tab 230 and the wall 214 to provide for resealing capabilities discussed above. A finger tab 250 is provided at the end of the tab 230 opposite from the heat seal line 232 in order to aid in the easy grasping of the tab 230 for opening. FIG. 6 depicts the device in its initial fully sealed configuration prior to the tearing out of the orifice section 238 to form the orifice 236. As described so far, the arrangement of the resealable pouring spout 212 is generally similar to the other units described above. In addition, however, tab 230 of the pouring spout 212 is formed with a groove 252 parallel to and immediately adjacent the heat seal 252 which groove creates a narrow hinge section 254 around which the moveable portion of the tab 230 may bend. Furthermore, tab 230 and the groove 252 are provided with a shape memory which keeps the tab in its open position. Thus, it will be closed only when the adhesive has been engaged thereby to make sure the tab does not interfere with easy pouring.

Each one of the tabs illustrated and described herein, tabs — T, 130 and 230, are shown to be rectangular. It is obvious that any desired shape tab can be used in the present invention. It is equally obvious that although the orifice is shown herein as circular, any desirable shape may be used. Other variations may also be made by those skilled in the art without departing from the basic teachings of the invention.

What I claim is:

1. A flexible bag formed of heat sealable plastic sheet material having walls sealed together to form a completely fluid tight internal chamber, an openable and resealable spout comprising a separate and distinct tab permanently secured to a wall of said bag in a first attachment area forming a hinge line, said tab being movable about said hinge line from a closed bag filling position to an open fluid dispensing position, said first attachment area resisting separation from said bag wall, said tab being permanently secured to said wall in a second attachment area which, when separated from said wall, defines a pouring orifice in said wall, the material of said bag being structurally weakened about said second attachment area so that the initial opening of said tab ruptures said wall and opens said pouring orifice with the material of said second attachment area being secured to said tab to augment the thickness of said tab in the area of said orifice, adhesive means for releasably and resealably securing said tab to said wall in an area immediately adjacent to said second attachment area so that said bag may be resealed by moving said tab into said closed position with said thickened tab area filling said orifice.

2. Apparatus in accordance with claim 1 wherein said first attachment area is an area of heat seal between said tab and said bag sufficiently broad to prevent tearing of said bag upon opening of said tab and said second attachment area is defined by a heat sealed line which weakens said wall about said second attachment area.

3. A flexible bag in accordance with claim 1 wherein said hinge line is spaced from said pouring orifice.

4. A flexible bag in accordance with claim 1 wherein said hinge line is immediately adjacent said pouring orifice.

5. A flexible bag in accordance with claim 1 having gripping means for lifting said bag upwardly from said wall.

6. A flexible bag in accordance with claim 1 wherein said adhesive means is a pressure-sensitive adhesive on said tab adjacent said pouring orifice to provide said releasable and resealable adhesive securement.

7. A flexible bag in accordance with claim 6 wherein said pressure-sensitive adhesive means on said tab completely surrounds said pouring orifice.

8. A flexible bag formed of heat sealable plastic sheet material having walls sealed together to form a completely fluid tight internal chamber and openable and resealable spout means comprising a tab mounted on said bag movable from a closed bag filling position to an open fluid dispensing position, said tab being permanently fixed to a portion of a wall of said bag in an area which, when separated from the remaining portion
of said wall, defines a pouring orifice in said wall, integral means for holding said tab in an open position and adhesive means releasably and resealably securing said tab to said wall in an area immediately adjacent to the location of said pouring orifice, said portion of said wall being torn from said wall upon an initial pulling of said tab to open said pouring orifice, said pouring orifice being closed upon movement of said tab flush against said wall and engagement of said adhesive means, said pouring orifice being reopened upon subsequent pulling of said tab and disengagement of said adhesive means.

9. A flexible bag in accordance with claim 8 wherein said tab is fixed to said bag wall in the area of said pouring orifice by being heat sealed thereto.