

[54] **FLEXIBLE PACKAGE WITH DOUBLE LAYERED WALLS**

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[58] Field of Search **229/53, 55; 206/DIG. 5; 150/1; 93/35 R**

[56] **References Cited**

UNITED STATES PATENTS

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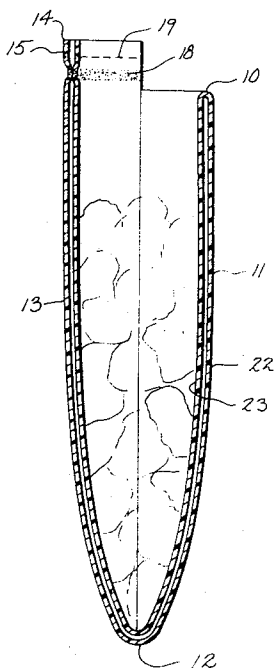
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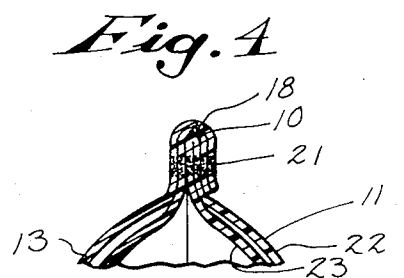
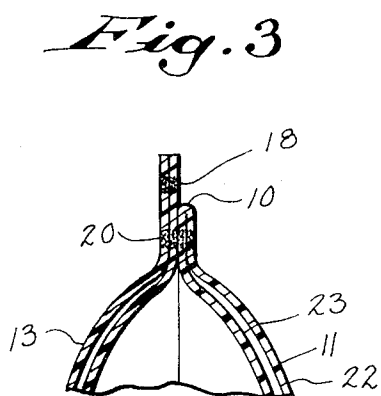
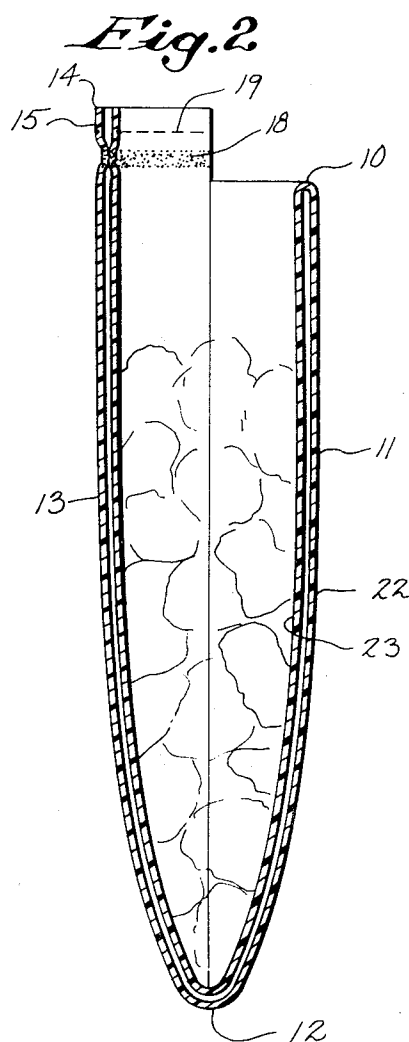
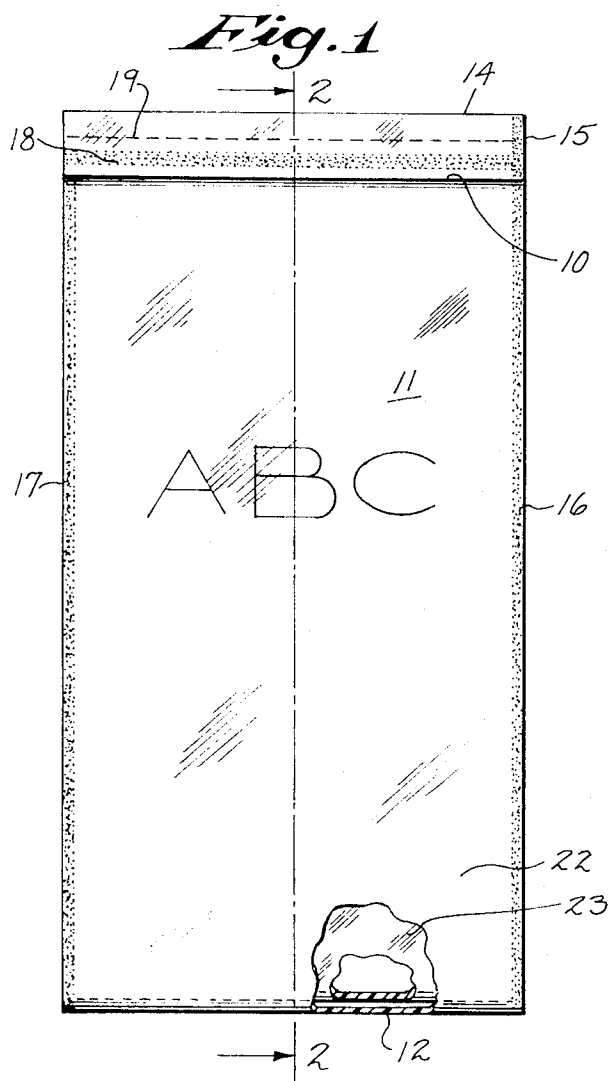
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[57] **ABSTRACT**

A package having front and back panels each formed of a double layer construction in which the space between the inner and outer layers of each panel is circumscribed by marginal seams so that material introduced into the package through an open end cannot be deposited in the space between the inner and outer layer of each panel.

1 Claim, 4 Drawing Figures





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FLEXIBLE PACKAGE WITH DOUBLE LAYERED WALLS

BACKGROUND OF THE INVENTION

1. Field

This invention relates to the field of flexible packages for containing edible commodities or other merchandise.

2. Prior Art

The typical package is formed by folding and bonding or heat sealing a sheet of single or multiple-ply flexible material into a bag. Clear plastic materials such as polyethylene are often used for this purpose first, because a hermetic seal can be made with such plastics to protect and preserve perishable commodities and second, because the transparency of such plastics provides an attractive visual display of the commodities contained within the package. The packages formed presently assume a variety of shapes and sizes with a particularly large variety of means for opening and dispensing the commodities contained in the package.

A longstanding problem encountered with packages made from flexible plastic materials is the printing of logos and other information directly on the plastic materials. Specifically, when the printed material is placed on the outside surface of the plastic material, it is abraded by objects during shipping and handling. On the other hand, when the ink is deposited on the inner surface of the plastic material, it may be abraded by the contents of the package, and as a result, flake off and contaminate those contents.

SUMMARY OF THE INVENTION

The present invention is a flexible package having front and back panels comprised of two separate layers which are marginally joined together in such fashion that material packaged therein cannot become lodged between the inner and outer layers. The package is advantageously constructed from a single sheet of flexible packaging material which is doubled by a transverse fold which is positioned to form a front top end; the double layers extend downward to form a front panel and are folded to form an enclosed bottom end; the double layers extend upward to form a back panel, the edges of which are fastened to the edges of the front panel by a pair of spaced longitudinal seams and the space between the two layers of packaging material is enclosed by a transverse seam across the top end of the back panel. The commodity to be packaged is then inserted through the opening defined along the top of the package, and the package is closed by a transverse seal.

A general object of the invention is to provide a package made of flexible materials in which printed matter is protected from abrasion. Information is printed on the inside surface of the outer layer, thus being protected from within by the inner layer, and protected from without by the outer layer. Alternately, the information can be printed on the outer surface of the inner layer.

Another object of the invention is to provide a double layered flexible package constructed from a single sheet of material. With a pair of folds and a pair of seams, all of which can be performed by commercially available packaging machines, a double layered package is formed. The configuration is particularly suited for construction with plastic materials which can be heat sealed.

Still another object of the invention is to provide a package having double layered wall panels in which the air space between layers is completely enclosed. When automatically filling bags made from flexible materials, air jets are used to spread, or open the bag for loading. With double layered packages, however, means must be provided to prevent the air jet from spreading the layers instead of the front and back panels of the bag. When this occurs, commodities loaded into the bag find their way into the air space between layers. The air space is completely enclosed on the invented package.

The foregoing and other objects and advantages of the invention will appear from the following description. In the description reference is made to the accompanying drawings, which form a part hereof, and in which there is shown by way of illustration and not of limitation a preferred embodiment. Such description does not represent the full scope of the invention, but rather the invention may be employed in different arrangements and yet be within the concept of my present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front plan view of a flexible package made according to the present invention,

FIG. 2 is a view in cross section along the plane 2-2 shown in FIG. 1,

FIG. 3 is a partial cross section of the top end of the flexible package after being closed, and

FIG. 4 is a view similar to FIG. 3 showing another means to form a closure in the package.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Materials useful in the manufacture of the flexible package described below are the flexible films typically used in the packaging of food and nonfood articles. Synthetic plastic films, such as polyethylene, polypropylene, vinyl homopolymers and copolymers, polystyrene films, polyester films, etc.; paper; and cellophane and various cellulosic ester film materials are examples of suitable materials for the manufacture of flexible packages. The material can be single layer monofilms, multiple layer laminated films, or coated films such as those having functional coatings. Preferably, the material is heat sealable, either being of a thermoplastic material that is inherently heat sealable without modification such as low density polyethylene, or of a material which has a heat sealable coating applied, such as heat seal coated cellophanes. For normal packaging uses of consumer goods such as food, clothing, etc., the sheet material is generally in the range of 1/2 to 10 mils thick.

As shown in FIGS. 1 and 2, the flexible package is formed by first doubling a sheet of material along a transverse fold 10. The fold 10 also forms the top end of the front panel of the opened bag and will be referred to as such hereinafter. The doubled material is extended downward to form a front panel 11 and is folded back, transversely, to form a closed bottom end 12. The doubled material is then extended upward to form a back panel 13 which is terminated by a top back end 14. The top back end 14 extends above the top front end 10 to form a flap 15 that is integral with the back panel 13.

The structure is then fed into a side weld machine such as that shown in U.S. Pat. No. 2,780,275 issued to K. A. Rusch et al. on Feb. 5, 1957 and entitled "Device

for Seaming Thermoplastic Bags." Longitudinal heat seals 16 and 17 are made along both sides to join the edges of the front panel 11 to the edges of the back panel 13. An enclosed bag is thus formed and has a mouth or opening defined by the top front and top back ends 10 and 14. The term "heat seal" as used herein is meant to refer to the process or property of softening or fusing to form a bond between contacting portions of material upon momentary application of heat and pressure. The temperatures employed are above softening temperatures of the material being heat sealed when the material is thermoplastic and inherently heat sealable, or above the softening temperature of the heat seal coating in the case of a coated material. The pressures generally vary between less than one pound to 50 pounds per square inch or more, and the "dwell time" during which the contacting material is subjected to the applied heat and pressure is normally from a fraction of a second to several seconds. Other forms of seams may be utilized to close the side edges of the package such as a glue seam, the particular method of closure used depending primarily upon the nature of the sheet material selected and the equipment available.

A transverse heat seal 18 is next formed across the flap portion 15 to completely enclose the air space between the layers of the packaging material. The two layers at the top front and top back ends 10 and 14 are thus fastened together, and when an air jet or other means is used to open the mouth of the bag for loading, these layers cannot be separated. Thus, when commodities such as powders are loaded, none can find its way between the layers of the bag to abrade the printed matter or detract from the appearance of the finished product.

A series of perforations 19 are cut transversely across the flap 15 immediately above the transverse heat seal 18. When being filmed by a loading machine, the bag is held by that portion of the flap 15 above these perforations 19. After loading the bag is easily removed from the machine by tearing the material along the perforations 19.

When removed from the loading machine the package is closed. This may be done as shown in FIG. 3 by heat sealing the front panel to the rear panel by a seam 20 positioned adjacent the fold 10. Alternatively, closure can be made as shown in FIG. 4 by folding the flap portion 15 forward to bear on the front face 11 of the package. A transverse heat seal 21 is then made across the flap 15, fastening it and the upper end of the front face 11 to the upper end of the back face 13. The contents of the package are thus hermetically sealed.

As shown best in FIG. 2, the bag formed according

to the above steps has an outer layer 22 of flexible packaging material and an identical inner layer 23. Polyethylene sheet material is used in the preferred embodiment and prior to assembly, the inside surface of the layer 22 is treated by corona discharge to become receptive to printing inks. A process such as that disclosed in U.S. Pat. No. 2,939,956 issued to G. J. Parks on June 7, 1960 and entitled "Method and Apparatus for Treating Plastic Materials" may be used. Logos and other information pertaining to the ingredients of the commodity being packaged is then printed on the inside surface of the outer layer 22. When assembled into a package as described above, the inked surface is located within the enclosed air space between the inner and outer layers 22 and 23 and is thereby protected from abrasive substances. The result is a strong package which retains its good appearance despite rough handling.

There has thus been described a new package of flexible film material having front and rear panels formed of two separate layers and in which marginal portions of each panel are defined in such manner that the interior space between the layers of the two panels is inaccessible to material contained in the package. A flat pouch is shown herein, but other types may be made in a similar manner, such as pouches with gusseted bottom and/or gusseted sides.

I claim:

1. A flexible package comprising:

a front panel made of two separate layers of flexible package material which form an air space between the layers, which air space is enclosed along both side edges and the top end of the front panel;

a rear panel made of two separate layers of flexible package material which form an air space between the layers, which air space is enclosed along both side edges and the top end of the back panel;

the side edges of said front and rear panels being fastened together by a pair of spaced seams which enclose the air spaces between the layers of said front and rear panels;

the air space between the layers of the front panel being enclosed by a transverse fold along the top end, the air space between the layers of the rear panel being enclosed by a transverse seam along the top end of the rear panel, and the bottom ends of the front and rear panels being joined to one another by a transverse fold; and

wherein the corresponding side edges and bottom ends of the front and rear panels are fastened together to form a package.

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