March 15, 1966 G. J. BRINA 3,240,327

PACKAGE FOR FLOWABLE PRODUCTS

Filed July 5, 1963

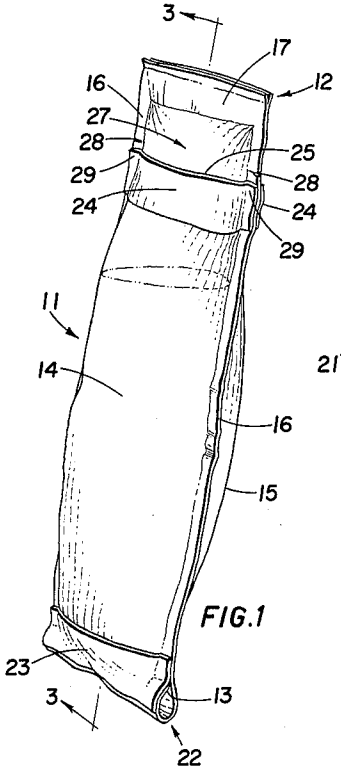


FIG. 1

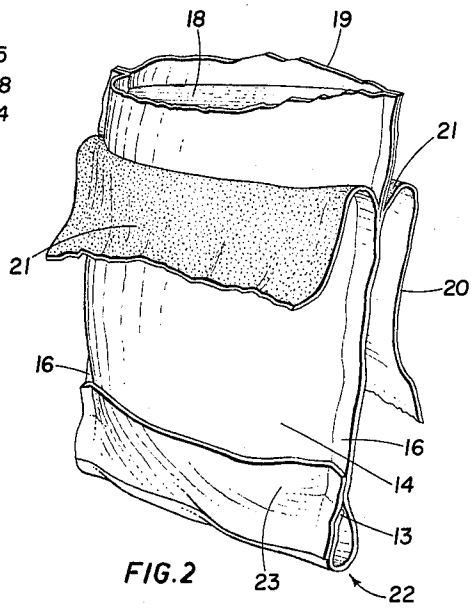


FIG. 2

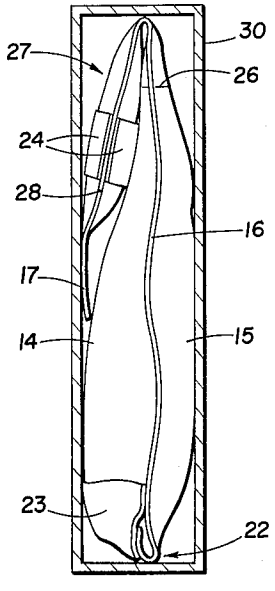


FIG. 4

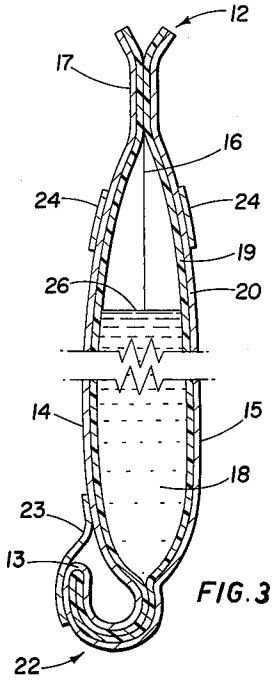


FIG. 3

Inventor

GUIDO J. BRINA

by: Cavanagh & Norman

United States Patent Office 3,240,327
Patented Mar. 15, 1966

3,240,327

PACKAGE FOR FLOWABLE PRODUCTS

Guido J. Brina, Teaneck, N.J., assignor to Superpack Vending (Curacao), Curacao, Netherlands Antilles

Filed July 5, 1963, Ser. No. 293,111
9 Claims. (Cl. 206—46)

This invention relates to improvements in plastic bags for sealed retention of flowable vendible products therein, such as, for example, plastic bags of the type described in United States Patent No. 2,946,434.

Recent developments in the packaging industry have given rise to the use of sealed plastic or plastic coated bags or envelopes for the packaging of liquid, semi-liquid and powdered material. One such bag, described in detail in the aforesaid United States patent, comprises, generally, two rectangular panels of polyethylene film heat sealed together around the top, bottom and side edges thereof to provide a sealed container for the vendible products therein. While this bag is inexpensive and easy to manufacture and is satisfactory for many purposes it may, upon prolonged storage or rough handling, permit leakage of the contents thereof. Failure usually occurs in the lower corner areas near the heat seal and is throught to result from the combined effect of a weakening of the plastic film immediately adjacent the inner edge of the seal, particularly at the corners where the bottom edge seal merges with the side seals, due to the heat sealing operation and the tendency of the user of the bag to grasp the same near the top during handling thereof whereby the liquid in the bag is forced to the bottom causing the plastic to make a sharp 90° bend thereat and considerable stress is exerted in the bottom corners of the bag. Occasionally, due to indiscreet handling, the stresses set up in the bottom corners will cause the bag to burst at these points with consequent loss of the commodity therein. This undesirable result is compounded where the bag contains a chemical reagent, as for example, a bleaching or cleaning compound which comes in contact with the exposed parts of the used body or his clothing. A further disadvantage of this bag resides in the inherent difficulty in printing upon plastic material and the consequent expense in providing the same with sufficient advertising matter.

An alternative embodiment of the bag, an example of which is described in the same United States patent comprises two rectangular paper panels, one surface of each being coated with a thin layer of plastic material, such as polyethylene, to condition the paper and provide a medium for heat sealing the two panels together as previously described to provide a sealed container for the ingredients therein. While this bag is satisfactory for many purposes and in particular overcomes the aforesaid printing problem by the provision of an outer paper surface, it too may permit leakage of the contents of the bag upon prolonged storage and rough handling. Failure may occur in the same manner as with the bag type first referred to. Furthermore, the side walls of this bag have, on occasion, shown a tendency to split open upon sudden impact, as for example, when the bag is dropped on the floor. Whereas the inherent flexibility and resilience of the walls of the plastic bag enable the same to dissipate and consequently withstand sudden localized stress build-up it is thought that the greater degree of inflexibility imparted to the plastic coated bag by the paper layer results in these circumstances in internal forces which split the paper and stress the plastic layer beyond its tensile limit.

While various other attempts have been made in the past to provide a strong, sealable plastic or plastic coated bag for sealed retention of flowable products placed therein such bags have been relatively complex in construction and therefore expensive or alternatively simple but unsuited for the task for which they have been intended.

Accordingly, it is the main object of this invention to provide a sealed plastic bag for containing liquid, semi-liquid and powdered products which will overcome the aforesaid disadvantages.

It is another object of this invention to provide a plastic bag for the purposes aforesaid having a lower end construction adapted to lessen the possibility of failure in the lower end corners of the bag.

It is another object of this invention to provide a plastic bag for the purposes aforesaid having a wall construction adapted to lessen the possibility of failure of the walls upon sharp impact with other objects.

It is another object of this invention to provide a plastic bag for the purposes aforesaid having bag opening means thereon to facilitate the opening and emptying of the bag without spillage.

With the foregoing and other objects in view, the invention generally concerns a partially filled flexible sealed bag for the sealed retention of a flowable vendible product therein comprising a strip of plastic material folded together to form front and back walls, the edges of said walls being joined to provide a sealed bag for a product therein; said bag being only partially filled to define an empty space between the surface level thereof and the top of the bag; and at least one end portion of said bag being folded over against a side wall thereof to reduce the load stress on the end corners of said folded over portion due to the weight of said product within said bag.

These and other objects and advantages of the invention will become apparent upon consideration of the following detailed description of a preferred embodiment thereof in conjunction with the accompanying drawings wherein like numerals represent like parts and wherein:

FIGURE 1 is a view in perspective of the bag according to the invention,

FIGURE 2 is an enlarged perspective view of the lower end portion of the bag with the outer and intermediate layer of the side walls separated from the inner layer thereof to show details of construction,

FIGURE 3 is a section of the bag on the line 3—3 of FIGURE 1, and,

FIGURE 4 is a cutaway view in perspective of a carton showing a number of the bags packed therein.

Referring now to the drawings, the bag **11** is preferably made from an elongate strip **12** of pliable laminate material folded transversly along a median line **13** thereof and brought together to form walls **14** and **15** integrally connected along fold line **13** and heat sealed together along the side and top edges **16** and **17** respectively thereof to provide a sealed pillow-shaped container for the liquid, semi-liquid or powdered commodity **18** therein. The laminate strip **12** comprises a layer of thermoplastic sheet material forming the inner ply **19** of the side walls of the bag and a layer of treated paper forming the external surface ply **20** thereof, the said two layers being laminated together by a suitable bonding agent **21**. The thermoplastic sheet material forming the inner ply **19** of the bag may be of various kinds such as, for example, polyethylene, polypropylene, cellulose acetate, polyvinylidene chloride and vinyl resin.

Polyethylene has been found to make an excellent packaging medium as it is tough, pliable and chemically inert and lends itself to bag information through heat sealing.

Polyethylene too, applied in liquid form to one of the aforesaid layers and allowed to dry thereon in contact with the other layer makes a good bonding agent for laminating the two layers together.

In the present embodiment of the invention, a paper layer approximately 0.002 inch in thickness is coated in the usual manner with liquid polyethylene to a thickness of approximately 0.001 inch some of which soaks in and is absorbed by the paper, while the polyethylene material approximately 0.003 inch in thickness is pressed thereon to form the lamination. The resultant bond between the paper and the preformed polyethylene sheet material is relatively weak permitting easy separation thereof if desired. Bonding of the two layers in this manner achieves sufficient adhesion of the paper to the preformed plastic while permitting flexing and stretching of the plastic layer to adsorb shock.

It is to be appreciated however, that various other adhesives or bonding agents may be used for this purpose with good results. The external paper ply **20** of the bag should have good strength and abrasion resistance and should be easily printable to permit placing of advertising matter thereon.

A bag constructed in this manner eliminates the necessity of a heat seal along the lower end portion **22** thereof which substantially overcomes leakage of the bag in this region upon prolonged storage or rough handling. Further, it has been found that by folding the lower end portion **22** of the bag over against the wall **14** or **15** as shown and securing the apex of the same thereto by a suitable adhesive such as, for example, the tape **23** to leave such fold free to adopt a continuous curve without producing sharp corners at any part the stress on the corners of the lower end portion **22** of the bag, due to the weight of the product therein, is substantially reduced with the result that leakage is less likely to occur at these particular points.

To facilitate easy opening of the bag a strip **24** of strong, stiff material having a relatively sharp edge **25** such as, for example, heavy gauge paper is secured to one or both of the walls **14** and **15** with the upper edge **25** thereof above the surface level **26** of the product in the bag and a sufficient distance below the top edge **17** of the bag to permit the folding over of the upper end portion **27** thereof as shown in FIGURE 4. The side edges **16** of the bag are slit as at **28** adjacent the upper end corners **29** of the strips **24** to provide tear-starts for opening the bag, the slits extending only part of the way across the heat seal to maintain the same fully effective. To open the bag, the user would grasp the empty upper end portion **27** thereof firmly in one hand and the strips **24** in the other and, while maintaining the bag upright with the level of the ingredients therein below the edge **25** to avoid spillage, sever the bag, commencing from one tear-start, along an edge **25** to provide a pouring spout for the contents thereof.

For purposes of storage, shipment, or sale, particularly from vending machines a filled bag may be packed upright, as shown in FIGURE 4 within a cardboard, plastic or like box **30** so that when the packed box is properly oriented the weight of the contents of the bag is borne on the folded over lower end portion **22** thereof and with the upper end portion **27** folded over so that in the event the packed boxes are maintained up-side down for a time the heat seal along the upper edge **17** of the bags will not be adversely affected by the full weight of the bag contents bearing thereon.

It is to be understood that the foregoing description pertains to a presently preferred embodiment of the invention and that various changes and modifications can be made therein without departing from the spirit of the invention and which fall within the scope of the appended claims.

What I claim is:

1. A partially filled flexible sealed bag for sealed retention of a flowable vendible product therein comprising: an elongate strip of tough pliable thermoplastic material folded transversely along substantially a median line thereof to provide a lower edge of said bag and brought together to form front and back walls; liquid tight seals formed by heat sealing opposed complementary surfaces of the edges of said front and back walls together along a common marginal strip around the top and side edges of said bag; a flowable product within said bag, said product only partially filling same so that when the bag is held upright an empty space is defined between the surface level of the product and the top of the bag; portions of said bag adjacent the top and bottom edge seals being folded over along fold lines spaced from the respective top and bottom edge seals thereby to reduce the load stress on the corners and lateral edges of said folded over portions due to the weight of said product in said bag; and, means securing one said folded over bottom portion to said bag; and a box completely enclosing said bag and maintaining said folded portions in said folded over position.

2. A partially filled flexible sealed bag for sealed retention of a flowable vendible product therein comprising: an elongate strip of tough pliable thermoplastic material folded transversely along substantially a median line thereof to provide a lower edge of said bag and brought together to form front and back walls; liquid tight seals formed by heat sealed opposed complementary surfaces of the edges of said front and back walls together along a common marginal strip around the top and side edges of said bag; a flowable product within said bag, said product only partially filling same so that when the bag is held upright an empty space is defined between the surface level of the product and the top edge of the bag; portions of said bag adjacent the top and bottom edge seals being folded over along fold lines spaced from the respective top and bottom edge seals thereby and secured to said wall to reduce the load stress on the corners and lateral edges of said folded over portions due to the weight of said product in said bag; and, bag opening means on the external surface of said bag overlying a portion of the empty upper end thereof above the level of said flowable material and a box completely enclosing said bag and maintaining said folded portions in said folded over position.

3. A partially filled flexible sealed bag for sealed retention of a flowable vendible product therein comprising: an elongate strip of tough pliable thermoplastic material folded transversely along substantially a median line thereof to provide a lower edge of said bag and brought together to form front and back walls; liquid tight seals joining the edges of said front and back walls together to provide a sealed bag; a flowable product within said bag, said product only partially filling same so that when the bag is held upright an empty space is defined above the surface level of the product in the bag; a portion of said bag adjacent the lower edge seal being empty and folded over along a fold line spaced from said lower edge seal to reduce the load stress on the end corners and lateral edges of said folded portion due to the weight of said product in said bag; means securing said lower folded portion to said bag; and, at least one strip of material more rigid than said plastic material secured to the external surface of at least one of said front and back walls of said bag between the side edges thereof and overlying a portion of said empty space in said bag to provide a cutting edge for severing the walls thereof above the level of said flowable material and a portion of said bag adjacent said top edge seal being empty and folded over along a fold line spaced from said top edge seal and said strip of rigid material and a box completely enclosing said bag and maintaining said folded portions in said folded over position.

4. A bag as claimed in claim **3** wherein said means securing said folded over portion to said wall comprises a strip of paper coated with an adhesive.

5. A bag as claimed in claim **3** wherein said tough pliable thermoplastic material is ployethylene.

6. A partially filled flexible sealed bag for sealed retention of a flowable vendible product therein comprising: an elongate strip of tough pliable thermoplastic ma-

terial secured by a bonding agent to a like strip of paper material to form a laminate strip, said laminate strip being folded transversely along substantially a median line thereof and brought together to form front and back walls; liquid tight seals joining the edges of said front and back walls together to provide a sealed bag having an inside thermoplastic surface; a flowable product within said bag, said product only partially filling same so that when the bag is held upright an empty space is defined above the surface level of the product in the bag; portions of said bag adjacent the top and bottom edge seals being folded over along fold lines spaced from the respective top and bottom edge seals thereby to reduce the load stress on the corners and lateral edges of said folded over portions due to the weight of said product in said bag; and means securing at least one said folded over portion to said bag; and a box completely enclosing said bag and maintaining said folded positions in said folded over position.

7. A bag as claimed in claim 6 wherein said means securing said folded over portion to said wall comprises a strip of paper coated with an adhesive.

8. A bag as claimed in claim 6 wherein said tough pliable thermoplastic material and said bonding agent are polyethylene.

9. A partially filled flexible sealed bag for sealed retention of a flowable vendible product therein comprising: an elongate strip of tough pliable thermoplastic material secured by a bonding agent to a like strip of paper material to form a laminate strip, said laminate strip being folded transversely along substantially a median line thereof and brought together to form front and back walls; liquid tight seals joining the edges of said front and back walls together to provide a sealed

bag having an inside thermoplastic surface, a flowable product within said bag, said product only partially filling same so that when the bag is held upright an empty space is defined above the surface level of the product in the bag; portions of said bag adjacent the top and bottom edge seals being folded over along fold lines spaced from the respective top and bottom edge seals thereby to reduce the load stress on the corners and lateral edges of said folded over portions due to the weight of said product in said bag; means securing at least one said folded over portion to said bag; at least one strip of material more rigid than said plastic material secured to the external surface of at least one of said front and back walls of said bag between the side edges thereof and overlying a portion of said empty space in said bag to provide a cutting edge for severing the walls thereof above the level of said flowable material and a box completely enclosing said bag and maintaining said folded portions in said folded over position.

References Cited by the Examiner

UNITED STATES PATENTS

Re. 21,714	2/1941	Rambold	229—57 X
2,004,486	6/1935	Cooper	206—0.5
2,099,425	11/1937	Goodman.	
2,134,636	10/1938	Lewis et al.	
2,543,229	2/1951	Chapman.	
2,682,465	6/1954	Wiitala et al.	206—84
2,863,305	12/1958	Shepherd	206—84 X
3,123,254	3/1964	Rabby et al.	229—14 X

THERON E. CONDON, *Primary Examiner.*

J. M. CASKIE, *Assistant Examiner.*