

- [54] **PLASTICS-FILM BAGS**
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- [22] Filed: **Apr. 28, 1972**
- [21] Appl. No.: **248,488**

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- [30] **Foreign Application Priority Data**
Apr. 30, 1971 Great Britain 12341/71

- [52] U.S. Cl. **229/55, 229/58, 229/61**
[51] Int. Cl. **B65d 33/02**
[58] Field of Search 229/57, 58, 61, 55, 53

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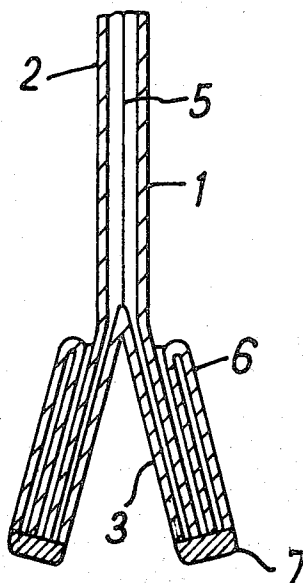
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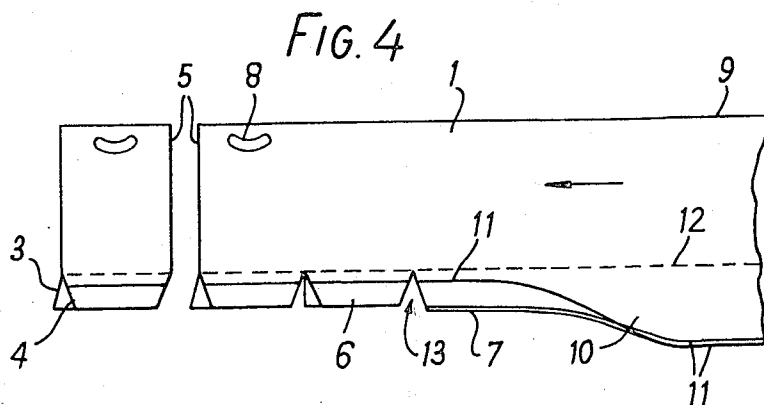
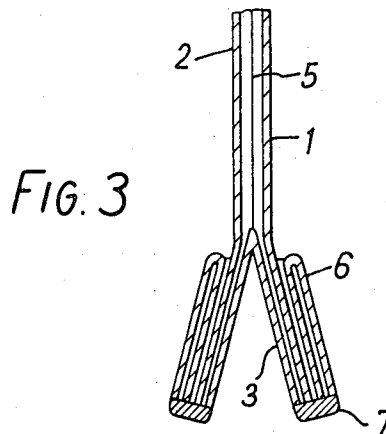
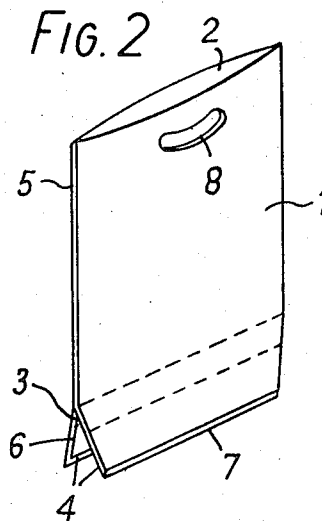
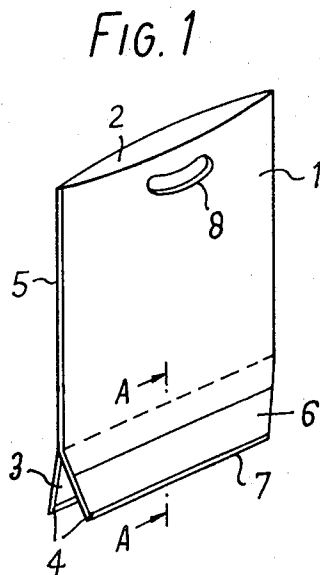
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[57] **ABSTRACT**

Carrier or other bag of plastics, e.g. high density polyethylene, bottom-gusseted and block-ended, in which strips, preferably of the same plastics, are sealed along the base in specified manner, rendering the opened bag substantially free-standing.

9 Claims, 4 Drawing Figures





PLASTICS-FILM BAGS

This invention relates to plastics-film bags, more particularly, but not exclusively, to plastics-film carrier-bags.

There is a rapidly growing market for carrier-bags formed of plastics films, and such bags have a number of known advantages over conventional paper bags. Plastics carrier-bags may be made from thin films of plastics materials, such as polyethylene. However, such bags have the disadvantage, compared with paper bags, of being insufficiently stiff to be free-standing when empty; in some circumstances this makes it more difficult to pack articles into the bags.

It is an object of the present invention to provide a plastics-film bag having improved free-standing ability when in the opened, empty condition.

The present invention accordingly provides a plastics-film bag of the type comprising a front panel, a back panel, and a bottom gusset panel, seams joining edges of the bottom gusset panel to the adjacent side edges of the lower portions of the front and back panels, and seams joining together the adjacent side edges of the remaining portions of the front and back panels, in which an additional strip of material is joined to the bag, internally or externally, substantially along each of the lines at which a bottom edge of the front panel or of the back panel joins the bottom gusset panel, the strips extending a finite distance from said lines to lie symmetrically each against a panel adjacent to one of said lines, and each strip having its ends joined to the sides of the bag.

The seams are preferably formed by heat-sealing. The said strips preferably lie against the lower parts of the front and back panels, since this arrangement is usually more effective in stiffening the bag. However, a useful improvement in the stand-up stiffness of the bag is also provided when the strips lie against the bottom gusset panel. For ease of manufacture, the strips are preferably positioned externally on the bag. The front and back panels are preferably integral with the bottom gusset panel, but the bottom gusset panel may be sealed to the lower edges of the front and back panels if desired. The seams joining the edges of the bottom gusset panel to the side edges of the front and back panels are preferably mitred, so that the bag when opened out assumes a neatly rectangular, block-ended shape. The strips may consist of one or more layers of material, which is preferably of the same plastics film as the panels of the bag. Their ends are preferably joined to the sides of the bag by being included in the seams joining the side edges of the bottom gusset panel to the adjacent side edges of the lower portions of the front and back panels.

Bags of the type with which the invention is concerned may be made from a web of plastics film folded substantially in half, and with a pleat folded inwards at the folded edge of the web, by sealing and severing the web transversely at intervals of one bag width in such manner that the web is sealed on each side of the line of severance. Sealing between the opposed faces of the in-folded pleat, which forms the bottom gusset panels of the bags, is prevented, generally by treating the outer surface thereof with a substance that inhibits sealing, or by inserting a blade to separate the faces of the pleat during the sealing operation. Preferably the transverse seals each comprise a substantially V-shaped seal, of

the same depth as the gusset pleat, joining the gusset pleat by mitred seals to the front and back panels of adjacent bag units (the waste material from within the V being removed), and a transverse seal across the remainder of the web, at right angles to the sides of the web, and passing through the apex of the V. Such a method of manufacture is well known in the art. This method may be modified to provide bags of this invention, by folding over, or in, the edges of the folds at the pleated side of the web, at not more than half the depth of the pleat, so that the folded-over portions lie either against the outer faces of the web (to form strips lying against the front and back panels of the bags), or between the faces of the pleat (to form strips lying against the bottom gusset panel), and including the folded-over portions in the seams between the gusset pleat and the two outer panels of the folded web.

This preferred method, and the bags so produced will now be more particularly described by way of example with reference to the accompanying drawings, of which:

FIG. 1 illustrates one form of the bag, in this case a carrier-bag;

FIG. 2 shows an alternative form of the bag, again a carrier-bag;

FIG. 3 is a section through A—A of FIG. 1; and

FIG. 4 shows, diagrammatically, stages in the manufacture of bags as shown in FIG. 1.

In the drawings: 1 is the front panel, 2 the back panel, and 3 the bottom gusset panel of a bag; 4 represents a seam joining the side edges of a bottom gusset panel to the adjacent side edges of a front or back panel; 5 is a seam joining together the adjacent side edges of the remaining portions of the front and back panels; and at 6 are shown strips, formed as double folds from extensions of the front or back panels and the bottom gusset panels, these folds lying against the front and back panels in the bag shown in FIG. 1, and against the gusset panel in the bag shown in FIG. 2. 7 is a seal through the four thicknesses of the gusset panel, front panel, and doubled strip 6, this seal joining the doubled strip to the bag along the line at which the front panel joins the bottom gusset panel. 8 indicates a handle formed by apertures cut through the front and back panels of the bag.

In FIG. 4 is shown an advancing web of plastics film, initially folded in half with free edges at 9 and an inwardly folded pleat, 10, at the folded side of the web, the two outer folds of the pleat being indicated at 11, and the inner fold (which later becomes a centre fold in the bottom gusset panels of the bags) at 12. As the web advances, the two outer folds 11 are turned over upon the outer surfaces of the web, at a depth less than half the depth of the pleat, 10, to provide the strips 6, the rest of the original pleat remaining to form the bottom gusset panels, 3, of the bags. The four thicknesses of the edges of the double folds are then continuously heat-sealed together, to form the seals 7. V-shaped heat-seals, 13, are then formed through the four thicknesses of the folds at each side of the gusset pleat, the apex of the V's being at the fold, 12, of the gusset. Sealing between the faces of the folded gusset panel 3 is prevented by pre-treatment of the outer surface of the gusset pleat with a seal-inhibiting substance, suitably a printing ink or a lacquer. Excess material is removed from within the V-shaped seals; this is preferably done by simultaneously sealing and severing the web by

means of a hot, V-shaped knife. Finally, the transverse seals, 5, are formed, each passing through the apex of a V-shaped seal, and the bags are severed one from the next. Preferably, these transverse seals are also formed simultaneously with the severance of the web, by using a hot knife. At any suitable stage during the advancement of the plastics film web, the hand-holds, 8, are cut in the web, towards its free edges.

The method illustrated by FIG. 4 may be carried out by means of conventional bag-making machines, such as one of the type well known for the manufacture of block-bottom bags for bread loaves. A simple modification is required to provide for the folds 11 to be turned over upon the web, or inwardly into the pleat 10, and sealed into position.

Various modifications may be made in the bags and method particularly described. For example, the folds 11 may be turned on to the outer faces of the web at more than half of their depth, and the deeper strips (6) thus formed then joined, at their edges above the mitred seals 4, into the side seals 5. Instead of the bag gusset and the strips being formed from folds of a pleat in an integral web deeper than the pleat required for forming the gusset alone, the web itself may form only the front, back and bottom gusset panels of the bags, and the strips (consisting of one or more layers of film) may be supplied separately and seamed to the web along the fold lines between the front and back panels and the bottom gusset panels. Or the gusset panel, the front panel and the back panel may all be formed from separate webs of film, suitably assembled together with the addition of the two further strips, and sealed together to provide a construction similar to that shown in FIG. 1 or FIG. 2, but with a seam instead of a fold joining the front panel and the back panel to the bottom gusset panel. This method may be used for making the bags with the strips, 6, lying against the internal surface of the bag.

As well as being useful in the manufacture of carrier bags, the invention may be used in making ordinary block-bottom bags, particularly where an advantage is obtained from the fact that the empty bag is free-standing when opened out. Such bags are useful, for example, for packaging a number of small articles in the same bag for retail sale.

The bags are preferably formed from relatively stiff plastics film; the stiffness required in relation to the size of the bag, to allow the bag to be substantially free-standing when opened out, may be found by experiment. Particularly suitable films are those formed of substantially linear polymers of olefines, for example high density polyethylene, polypropylene, copolymers of ethylene and propylene, or copolymers of ethylene or propylene with other olefines. High density polyethylene, for example as film 38 to 50 m μ thick, gives particularly good results; films of this material are generally paper-like in handle and appearance, and this gives an additional attraction to the bags.

When the bags of the invention are formed as carrier bags, handles of forms other than that shown in the drawings may of course be provided.

The bags of the present invention have substantially

improved free-standing ability when in the opened, empty condition, compared with bags made of the same plastics films, but without the additional strips sealed to the bottom part of the bag in the manner described. The bags, whether they are carrier-bags or bags of other open-out type, may thus be more easily loaded with the articles or substances to be packed. As previously shown, the bags may be manufactured with simple modification of well-known bag-making machines, and they can be made at very high production rates. They are particularly easily made by the method hereinbefore described, from plastics film in the gusseted tubular form. Thus, the web of gusseted tubular film in its lay-flat form may be slit longitudinally through the centre part to provide two webs each with a folded pleat along one side and free edges along the other, and so used to supply two bag-making lines in parallel. Alternatively, flat films may readily be folded or assembled by conventional methods to provide a web suitable for making the bags in the manner described.

I claim:

1. An open-mouthed plastics-film bag of the type comprising a front panel, a back panel, and a bottom gusset panel, seams joining edges of the bottom gusset panel to the adjacent side edges of the lower portions of the front and back panels, and seams joining together the adjacent side edges of the remaining portions of the front and back panels, in which an additional strip of material is joined to the bag substantially along each of the lines at which the bottom edge of the front panel and the bottom edge of the back panel join the bottom gusset panel, the strips extending a finite distance from said lines to lie against the lower parts of the front and back panels, and each strip having its ends joined to the sides of the bag.

2. A bag as claimed in claim 1 in which the front, back and gusset panels and the strips are all of the same plastics film.

3. A bag as claimed in claim 1 in which the strips lie against the bottom gusset panel, and each is of a width not exceeding half the width of the bottom gusset panel.

4. A bag as claimed in claim 1 in which the strips are positioned externally on the bag.

5. A bag as claimed in claim 1 in which the front and back panels are integral with the bottom gusset panel.

6. A bag as claimed in claim 1 in which the ends of the strips are included in the seams joining the side edges of the bottom gusset panel to the adjacent side edges of the lower portions of the front and back panels.

7. A bag as claimed in claim 6 in which each strip has two layers and is formed as a folded-over extension of the bottom gusset panel and one of the front and back panel.

8. A bag as claimed in claim 1, in the form of a carrier-bag.

9. A bag as claimed in claim 1, formed of film of high density polyethylene.

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