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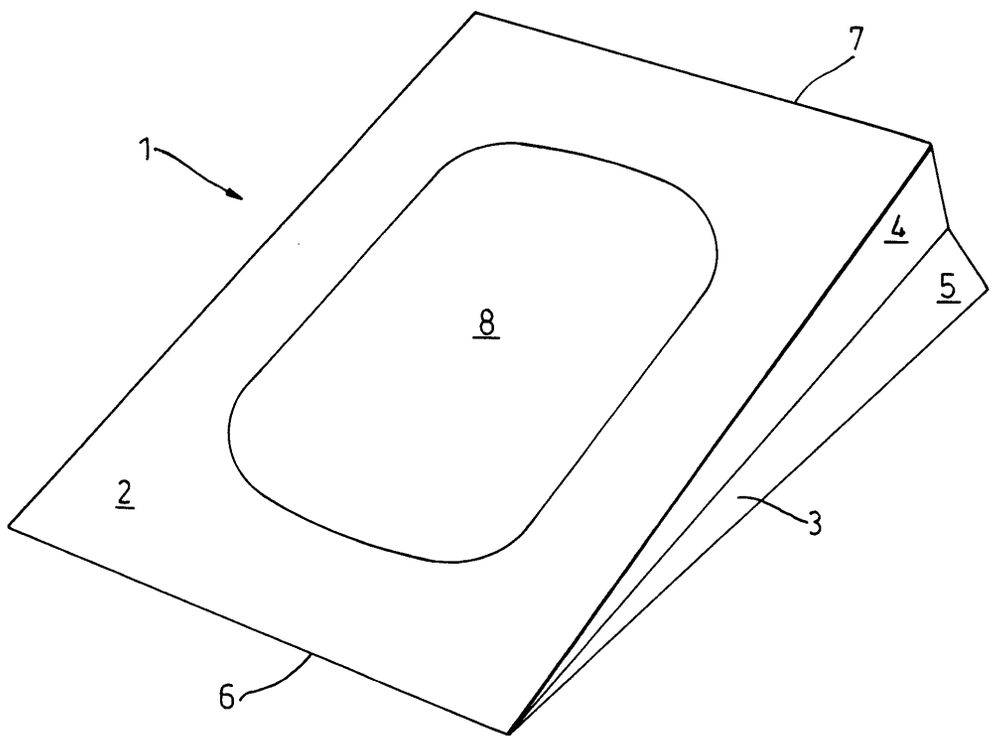
(71) Applicant: **Gala International Group**
Henley in Arden, Warwickshire B95 5BG (GB)

(72) Inventor: **Law, Timothy**
Cheadlehulme, Cheshire SK8 6FJ (GB)

(74) Representative: **Kinton, Colin David**
Barker Brettell
138 Hagley Road,
Edgbaston
Birmingham B16 9PW (GB)

(54) Window bags and a method of manufacture thereof

(57) A method of manufacturing a bag (1) with at least one window is provided. The method comprises the steps of firstly providing at least one window (8) in a sheet (2) of a first material. Secondly a second material is laminated to at least one surface of the sheet (2) of the first material such that the second material seals around the edges of the or each window (8). Lastly a bag (1) is formed from the laminated, windowed sheet of material such that one or more of the inner and/or outer surfaces of the bag (1) has the second material laminated thereto. The first material preferably comprises paper while the second material preferably comprises a plastics material. The lamination may be achieved by means of an adhesive or by heat-welding.



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Description

[0001] This invention relates to bags and a method of manufacture thereof, and particularly, but not exclusively, to laminar bags having at least one window therein.

[0002] Such bags, especially bags made of paper laminated to plastics material, have a number of applications, for example they can be used to carry foodstuffs. In particular, they can be used to carry foodstuffs such as roast chicken, the plastics material preventing juices or other liquids from the food leaking from the bag.

[0003] Conventional laminar bags are thermally-sealed, laminated, satchel-type bags and are optically opaque. They do not provide any means, such as a transparent window, by which the product within the bag may be viewed. It is, however, desirable to be able to inspect the condition of the product within the bag without opening it, by, for example, providing an aperture-type window in the bag.

[0004] Envelopes/bags with windows are known, and are typically manufactured by cutting a window in the envelopes/bags and attaching a layer of transparent material to the inner surface of the envelopes/bags to form a seal over the window. However, when the inner surface of the envelopes/bags has previously been laminated, difficulty has been encountered in attaching the transparent material to the laminated surface. Such products are also not thermally sealed and would not prevent fluids from leaking out of them.

[0005] According to a first aspect of the present invention there is provided a method of manufacturing a bag, comprising the steps of:

(i) forming a sheet of a first material;
(ii) forming at least one window in the sheet of the first material;
(iii) laminating a second material to at least one surface of the sheet of the first material, such that the second material seals around the edges of the or each window, and
(iv) forming a bag from the laminated, windowed sheet of material such that one or more of the inner and/or outer surfaces of the bag has the second material laminated thereto.

[0006] The first material may comprise a sheet of paper. The paper sheet may be coloured, for example brown or white, and/or may have printed matter provided thereon. The weight of the paper may be in the range 10 gm^{-2} to 180 gm^{-2}.

[0007] The or each window may be formed by cutting the sheet of material, preferably by rotary die cutting.

[0008] The second material may be a plastic material, for example polypropylene, low density polyethylene, high density polyethylene, or polyester or combinations of such materials. The second material may be attached to the first material by means of an adhesive, or by heat-welding.

[0009] The bag may be formed using heat sealing, or the like.

[0010] Preferably, the second material is attached in use to an inner surface of the bag. The second material may be laminated to the whole area of the inner surface of the bag, thereby providing a substantially leak-proof bag.

[0011] A continuous web of the first material may be formed, which may have windows formed therein at intervals there-along. The continuous web may then be laminated to a continuous web of the second material, and a number of bags may be formed from the continuous laminated web, each bag having at least one window therein.

[0012] The method may further comprise the steps of laminating a third material to the first material and/or the second material, and forming a bag from the laminated, windowed material thus formed.

[0013] The method may comprise another step of laminating a fourth material to the first material, or the second material or the third material or a combination of these materials, and forming a bag from the laminated, windowed material thus formed.

[0014] Subsequent materials may be added in still further steps, forming a multi-layered, laminated, windowed material.

[0015] The third, fourth and subsequent materials may be a plastic material, or paper, providing always that a transparent window is provided in the laminated, windowed material.

[0016] According to a second aspect of the present invention there is provided a bag manufactured by the method of the first aspect of the invention.

[0017] The bag may be provided with a seam and a base which may be heat-sealed. The bag may be provided with one or more gussets. The bag may be substantially rectangular in shape. The bag may conveniently have a width of 80 mm and a length of 170 mm, or a width of 300 mm and a length of 900 mm.

[0018] The present invention will now be described, by way of example only, with reference to the accompanying drawing the single figure of which shows a perspective view of a bag according to the present invention.

[0019] The figure shows a paper bag 1 of substantially rectangular shape, having a front surface 2, a back surface (not shown), a first side surface 3 and a second side surface (not shown). The back surface incorporates a seam. Each side surface has two folded portions 4 and 5, which form a gusset. The bottom of the bag is folded to form a base 6, and the top 7 of the bag is provided with an opening, to allow articles, for example food, to be placed in the bag. A window 8 is formed in the front surface 2. The inner surface of the bag is provided with a layer of polypropylene laminated thereto.

[0020] The bag is manufactured using the method according to the first aspect of the invention. A sheet of paper is formed, and die cut to form a window therein.

A sheet of polypropylene of the same size as the sheet of paper is then laminated to the inner surface of the paper sheet, such that the polypropylene sheet seals around the edges of the window. The laminated sheet is passed into a bag-forming machine which forms the laminated sheet into a bag as described above, heat sealing the bottom and back seam of the bag to form a substantially leak-proof bag.

[0021] It will be appreciated that many shapes of bag may be formed by the above method, and that the present invention is not limited to rectangular side-gusseted, satchel-type bags, but also includes, for example, block bottom-type bags.

[0022] It will be further appreciated that a number of such bags may be formed in the same process, by forming a web of paper, die cutting this to form windows therein at intervals there-along, laminating a web of polypropylene to one surface of the paper web such that the polypropylene seals around the edges of the windows, cutting the laminated web into lengths, and passing the lengths into a bag-forming machine which forms bags as described above.

Claims

1. A method of manufacturing a bag (1) with at least one window (8), the method being characterised by the steps of:

   providing a sheet of a first material containing at least one window (8);
   laminating a second material to at least one surface of the sheet of the first material, such that the second material seals around the edges of the or each window (8); and
   forming a bag (1) from the laminated, windowed sheet of material such that one or more of the inner and/or outer surfaces of the bag has the second material laminated thereto.

2. A method according to Claim 1 characterised in that the first material comprises a sheet of paper having a weight in the range 10 $g.m^{-2}$ to 180 $g.m^{-2}$.

3. A method according to Claim 1 or 2 characterised in that the or each window (8) is formed by rotary die cutting.

4. A method according to any one of Claims 1 to 3 characterised in that the second material comprises a plastics material.

5. A method according to any one of Claims 1 to 4 characterised in that the second material is laminated to the first material by means of an adhesive.

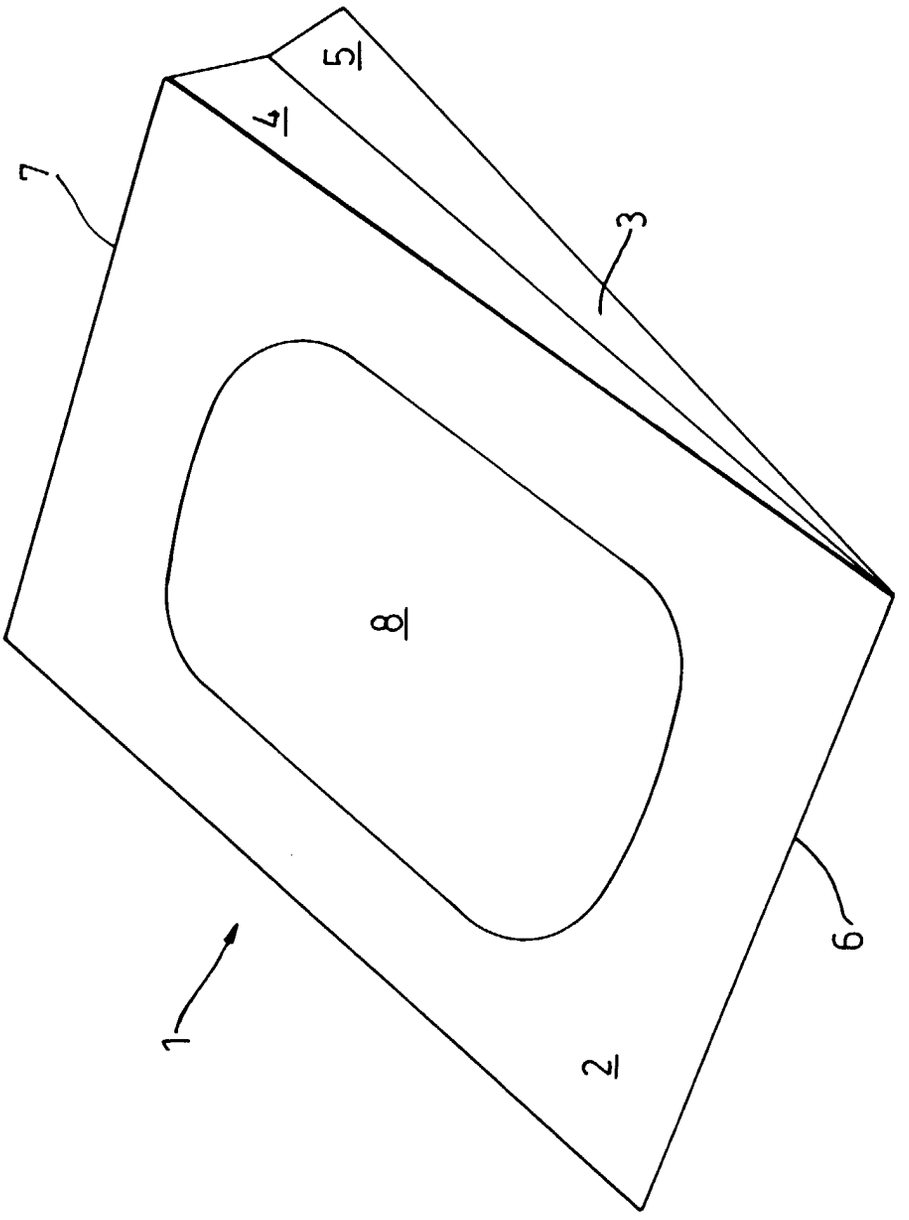
6. A method according to any one of Claims 1 to 5 characterised in that the bag (1) is formed by heat sealing.

7. A method according to any one of Claims 1 to 6 characterised in that the second material is laminated to substantially the whole area of the surface of the first material which forms, in use, the inner surface of the bag (1).

8. A method according to any one of Claims 1 to 7 characterised in that a continuous web of the first material is provided with a plurality of windows (8) formed therein, the continuous web of the first material is then laminated to a continuous web of the second material and a plurality of bags (1) is formed from the continuous laminate, each bag (1) having at least one window (8) therein.

9. A method according to any one of Claims 1 to 8, characterised in that the method further comprises the steps of laminating one or more further materials to the first and/or second materials and forming a bag (1) from the laminated windowed material thus formed.

10. A bag (1) with at least one window (8) obtainable by the method of any one of Claims 1 to 9.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