

PATENT SPECIFICATION

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DRAWINGS ATTACHED.

Inventor:—KENNETH GEORGE GERBER.

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COMPLETE SPECIFICATION.

Improvements in or relating to Bags or Sacks.

We, THE METAL BOX COMPANY LIMITED, a Company incorporated under the laws of Great Britain, of 37 Baker Street, London, W.1, England, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to bags or sacks and in particular to a bag or sack made of synthetic thermoplastic material, for example polyethylene.

Thermoplastic sacks are often used to store and transport materials, for example polymers, and can be provided with a valve through which the contents are inserted into the bag or sack and which, following filling, prevents the contents from being inadvertently spilled from the bag or sack.

According to the invention there is provided a bag or sack made of synthetic thermoplastic material which includes two overlying generally rectangular portions of said material and is closed around all the outer edges thereof, one of said portions having a filling opening formed therein, and a flat closure element made of synthetic thermoplastic material covering the filling opening and secured to the inner face of said one portion to form with said one portion a filling channel which opens into the bag or sack at a position remote from the filling opening and which when the bag or sack is filled lies against said one portion to close the opening formed therein, said closure element being secured to said one portion completely along one edge of the closure element which is adjacent to the filling opening, and partly along two edges extending from said one edge, the remaining portions

of the two edges being unsealed to provide a free flap which acts as a valve to close the channel formed by said one overlying portion and the part of the closure element which is sealed thereto, and the sealed edges of the closure element being spaced from the edges of the bag or sack so that at no position are more than two thicknesses of thermoplastic material sealed one to the other.

In order that the invention may be clearly understood one embodiment thereof will now be described, by way of example, with reference to the diagrammatic drawings accompanying the Provisional Specification, in which:—

Figure 1 is a plan of a bag or sack according to the invention;

Figure 2 is a section on line II—II, Figure 1;

Figure 3 is also a section on line II—II, Figure 1, but illustrates the position of the elements of the bag or sack during filling thereof; and

Figure 4 is a section illustrating the manner in which the bag or sack is closed following filling thereof.

Referring to the drawings, the bag or sack, hereinafter referred to as a sack, is made of synthetic thermoplastic material, such as polyethylene, and as illustrated in the drawings consists of two sides or overlying portions 1 and 2 of generally oblong rectangular shape laid flat one against the other, the edges of the sides being heat-sealed one to the other as indicated by the hatching 3. Access to the interior of the sack is solely through a filling opening 4 formed by a hole cut in the side 1 at a position spaced from the edges of the sack. A flat closure element 5 made of a sheet of synthetic thermo-

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plastic material, such as polyethylene, covers the filling opening, as illustrated in Figure 1, and is secured to the inner face of the side 1 of the sack at positions spaced from the edges of the sack to form with the side 1 a filling channel 6, Figure 3, which opens into the sack at a position, indicated at 7, Figure 1, which is remote from the filling opening 4. When the sack is filled the element 5 lies against the inner face of the side 1 to close the filling channel 6.

The filling opening 4, as can be seen from Figure 1, is located adjacent to one corner of the sack and the closure element 5 is an oblong rectangular sheet the longer edges 8 of which extend lengthwise of the shorter edges 9 of the sack. The longer edge portions of the sheet 5 are in part heat-sealed to the side 1, as indicated by the reference 10 in Figure 1, and one shorter edge of the sheet 5 which is nearest to the filling opening 4 is heat-sealed, as indicated at 11, to the side 1 of the sack. The end portion 12 of the closure element 5 at the end of the filling channel which opens into the bag or sack is unsecured to the side 1 of the sack and forms a flap which is integral with the sheet 5 and which is freely movable into and out of engagement with the side 1.

When it is desired to effect filling of the sack, a filling tube, not shown, is inserted through the filling opening 4 along the channel 6 and the material to be contained in the sack is fed through the filling tube into the sack. Following the delivery of the desired amount of material into the sack the filling tube is removed from the sack and the sack is inverted from the position thereof illustrated in Figure 1 so that the material filling the sack presses the closure element, and in particular the flap portion 12 thereof, against the side 1 of the sack thereby securely closing the filling channel, as illustrated in Figure 4.

It is to be understood that a sack constructed as described above with reference to the drawings in no place has more than two overlying thicknesses of material to be heat-sealed together, and the sack has no seam which might be torn and so spoil the efficiency of the bag. It will be understood that the closure element 5 can be readily secured, by heat-sealing as described above, to the side 1 of the sack before the upper, as viewed in Figure 1, seal 3 is effected and there is no wastage of material, as sometimes occurs with previously known forms of sack, resulting from the necessity of the valve element having sufficient material to permit it to be manually turned in upon itself to effect closing of the valve following filling of the sack.

If desired, instead of the longitudinal edges of the bag being heat-sealed the bag may be made from gusseted tubular material. In

this case the heat seal 11 will be spaced from the inner edge of one of the gussets but otherwise the arrangement of the flap and the mode of operation thereof will be as described above.

In the foregoing description the opening 4 has been described as a hole cut in the side 1. If desired, however, the opening may consist of a slit formed in the side 1 and the slit may be straight or curved.

Further, the flap 12, and if desired the sheet 5, may be embossed, in known manner, to provide small passages through which air entrapped in the sack may escape.

WHAT WE CLAIM IS:—

1. A bag or sack made of synthetic thermoplastic material which includes two overlying generally rectangular portions of said material and is closed around all the outer edges thereof, one of said portions having a filling opening formed therein, and a flat closure element made of synthetic thermoplastic material covering the filling opening and secured to the inner face of said one portion to form with said one portion a filling channel which opens into the bag or sack at a position remote from the filling opening and which when the bag or sack is filled lies against said one portion to close the opening formed therein, said closure element being secured to said one portion completely along one edge of the closure element which is adjacent to the filling opening and partly along two edges extending from said one edge, the remaining portions of the two edges being unsealed to provide a free flap which acts as a valve to close the channel formed by said one overlying portion and the part of the closure element which is sealed thereto, and the sealed edges of the closure element being spaced from the edges of the bag or sack so that at no position are more than two thicknesses of thermoplastic material sealed one to the other.

2. A bag or sack according to Claim 1, wherein the bag or sack is of generally oblong shape, the filling opening is located adjacent to one corner of the bag or sack, and the closure element is an oblong sheet one shorter edge of which is located adjacent to the longer edge of the bag or sack which is nearest the filling opening and is heat-sealed to said one overlying portion, the two longer edges of the sheet being in part heat-sealed to said one overlying portion and in part unsealed to provide said free flap.

3. A bag or sack according to Claim 1 or Claim 2, wherein the filling opening is formed by a hole cut in said one overlying portion.

4. A bag or sack according to any one of Claims 1 to 3, wherein the closure element or the free flap formed therefrom is

plastic material, such as polyethylene, covers the filling opening, as illustrated in Figure 1, and is secured to the inner face of the side 1 of the sack at positions spaced from the edges of the sack to form with the side 1 a filling channel 6, Figure 3, which opens into the sack at a position, indicated at 7, Figure 1, which is remote from the filling opening 4. When the sack is filled the element 5 lies against the inner face of the side 1 to close the filling channel 6.

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When it is desired to effect filling of the sack, a filling tube, not shown, is inserted through the filling opening 4 along the channel 6 and the material to be contained in the sack is fed through the filling tube into the sack. Following the delivery of the desired amount of material into the sack the filling tube is removed from the sack and the sack is inverted from the position thereof illustrated in Figure 1 so that the material filling the sack presses the closure element, and in particular the flap portion 12 thereof, against the side 1 of the sack thereby securely closing the filling channel, as illustrated in Figure 4.

It is to be understood that a sack constructed as described above with reference to the drawings in no place has more than two overlying thicknesses of material to be heat-sealed together, and the sack has no seam which might be torn and so spoil the efficiency of the bag. It will be understood that the closure element 5 can be readily secured, by heat-sealing as described above, to the side 1 of the sack before the upper, as viewed in Figure 1, seal 3 is effected and there is no wastage of material, as sometimes occurs with previously known forms of sack, resulting from the necessity of the valve element having sufficient material to permit it to be manually turned in upon itself to effect closing of the valve following filling of the sack.

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Further, the flap 12, and if desired the sheet 5, may be embossed, in known manner, to provide small passages through which air entrapped in the sack may escape.

WHAT WE CLAIM IS:—

1. A bag or sack made of synthetic thermoplastic material which includes two overlying generally rectangular portions of said material and is closed around all the outer edges thereof, one of said portions having a filling opening formed therein, and a flat closure element made of synthetic thermoplastic material covering the filling opening and secured to the inner face of said one portion to form with said one portion a filling channel which opens into the bag or sack at a position remote from the filling opening and which when the bag or sack is filled lies against said one portion to close the opening formed therein, said closure element being secured to said one portion completely along one edge of the closure element which is adjacent to the filling opening and partly along two edges extending from said one edge, the remaining portions of the two edges being unsealed to provide a free flap which acts as a valve to close the channel formed by said one overlying portion and the part of the closure element which is sealed thereto, and the sealed edges of the closure element being spaced from the edges of the bag or sack so that at no position are more than two thicknesses of thermoplastic material sealed one to the other.

2. A bag or sack according to Claim 1, wherein the bag or sack is of generally oblong shape, the filling opening is located adjacent to one corner of the bag or sack, and the closure element is an oblong sheet one shorter edge of which is located adjacent to the longer edge of the bag or sack which is nearest the filling opening and is heat-sealed to said one overlying portion, the two longer edges of the sheet being in part heat-sealed to said one overlying portion and in part unsealed to provide said free flap.

3. A bag or sack according to Claim 1 or Claim 2, wherein the filling opening is formed by a hole cut in said one overlying portion.

4. A bag or sack according to any one of Claims 1 to 3, wherein the closure element or the free flap formed therefrom is



embossed to provide small passages through which air entrapped in the bag or sack may escape. trated in the drawings accompanying the Provisional Specification.

5. A bag or sack made of synthetic thermoplastic material substantially as herein described with reference to and as illus-

PAGE, WHITE & FARRER,
Chartered Patent Agents,
27 Chancery Lane, London, W.C.2,
Agents for the Applicants. *SC*

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