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Europäisches Patentamt
European Patent Office
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(11) Publication number:

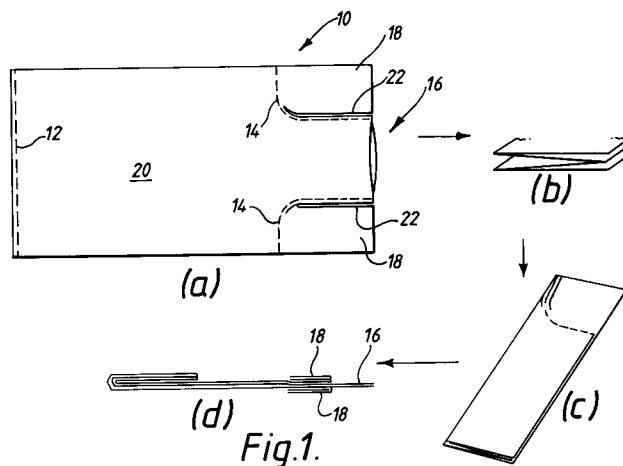
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EUROPEAN PATENT APPLICATION(21) Application number: **93203589.2**(51) Int. Cl.⁵: **B65D 88/16**(22) Date of filing: **21.12.93**(30) Priority: **23.12.92 GB 9226752**(43) Date of publication of application:
29.06.94 Bulletin 94/26(84) Designated Contracting States:
DK GB SE(71) Applicant: **BOWATER BULK PACKAGING
LIMITED**
Bowater House,
Knightsbridge
London SW1X(GB)(72) Inventor: **Hughes, James Francis John**
3 Church Farm Close
Rufforth, York YO2 3RL(GB)(74) Representative: **Wharton, Peter Robert**
Urquhart-Dykes & Lord
Inventions House
Valley Court, Canal Road
Bradford BD1 4SP (GB)(54) **Container bag.**

(57) A method of securing a liner within an IBC which comprises providing a liner separated into a content-receiving portion and one or more ear portions separated therefrom and attaching the or each ear portion at or near the top of the IBC. The attachment is carried out by gluing, heat sealing, stitching, tying, ultra-sonic welding or by means of plastic tags applied with a tag gun. A generally rectangular sheet of plastics material is provided, the sheet is heat sealed

or otherwise joined to form a flat rectangular "pillow" having one of its narrower sides open, the width of this open side is constricted to leave a narrower opening such that when the liner is filled it resembles a bottle in shape. The portions of the liner on either side of the bottle "neck" are separated from the main body by a heat seal and comprise the ear portions.

**Fig.1.****EP 0 603 963 A2**

This invention relates to flexible intermediate bulk container bags such as those used in the storage and transport of materials in granular, powder or other particulate forms and known as "IBC's".

Such containers are generally in the form of large bags or sacks which are often required to carry loads of half a tonne, one tonne or more, with a considerable safety margin above their rated working load. The containers are commonly made from woven fabric, particularly woven polyethylene or polypropylene, or of another synthetic material. Typically such a container comprises a base, a main body structure of front rear and side walls extending upwardly from the base and one or more lifting loops formed from upward extensions of the side walls. Especially where protection from moisture is required, it is not uncommon to provide such container bags with a waterproof liner usually formed from plastics material sheeting, for example polyethylene sheeting.

When filling and discharging such IBC's having liners it is desirable to avoid the liner and IBC becoming separated. In one proposal to this end, flaps formed from the liner body are sewn into the lifting loop during the manufacture of the IBC. While this securely attaches the liner to the IBC there are disadvantages in securing the liner during IBC manufacture in that it complicates the manufacturing process, and reduces the flexibility of the product: i.e., the liners cannot be added later at a separate location nor can bags manufactured with a given liner easily have the liner changed if the client changes his specification. Moreover, for recycling purposes, it is often desirable to separate the liner and bag (they are often of different materials) and this is not completely possible where substantial portions of the liner are securely held within the bag loops.

The invention seeks to provide a method of securing a liner to an IBC improved in the above respects.

According to the present invention there is provided a method of securing a liner within an IBC which, in its broadest form, comprises taking one or more portions of the liner separated from the content receiving portion and attaching the or each area at or near the top of the IBC.

The attachment may be carried out by any suitable method for example gluing, heat sealing, stitching, tying ultra-sonic welding or, preferably, by means of plastic tags applied with a tag gun.

A common form of liner configuration is the so called "bottle" liner. This comprises a generally rectangular sheet of plastics material heat sealed or otherwise joined to form a flat rectangular "pillow" having one of its narrower sides open. Again by heat sealing or other suitable means, the width of

this open side is constricted to leave a narrower opening such that when the liner is filled it resembles a bottle in shape. The portions of the liner on either side of the bottle "neck" are separated from the main body by a heat seal and may be cut off. However, in accordance with the invention, these supernumerary flaps of material or "ears" are used to secure the liner to the IBC. Being separated from the main body of the liner by a heat seal, any damage to the ears during fixing to the bag does not disturb the integrity of the main body portion which will therefore remain unpunctured and waterproof.

IBC's to which the method of the invention may be applied are not limited to any particular kind. Indeed any conventional IBC requiring a liner may be provided with one according to the method of the invention.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

Figure 1(a) to (d) illustrates a bottle shaped liner for use in the method of the invention;

Figure 2 is a similar view to figure 1 of a different form of liner;

Figure 3 is a similar view to figure 1 of another form of liner;

Figure 4 is a diagrammatic view of the liner inserted into the IBC; and

Figure 5 illustrates the method of the invention with corner aperture liners.

Referring to the drawings, and in particular figure 1, a liner generally designated 10 is formed from a length of tubular plastics sheet material, e.g. tubular polyethylene, which is laid flat and sealed at 12 to provide a generally pillow shaped object open at its right hand edge as viewed in figure 1. Further heat seals 14 are applied so as to define a filling neck area 16 leaving the flaps 18 or "ears" separated from the main body 20 by the heat seals 14. Slits 22 are cut to partially separate the ears 18 from the filling neck 16. As illustrated in figure 1, the bag is folded longitudinally into a W shape (figure 1(b)) and the ears 18 turned down on themselves as shown in figure 1(d). The liner bottom is also folded over on itself.

In this form the liner is inserted into an IBC 24 (figure 4) having a main body portion 26, a lifting loop 28, and a filling opening 30. The neck 16 of the liner is brought out of the filling opening 30 as illustrated. The ears 18 are attached to one surface of the bag body by any suitable means, but preferably by tagging using a plastic tag and tag gun.

Thus, if the bag is lifted to a filling nozzle, either by the loop 28 or by the neck 16, the bag and liner will not become separated. Furthermore, when the filled bag is discharged (often by cutting open the base of the IBC) the liner will not fall out

into the discharge hopper. However, if it is desired to separate the liner from the used bag (for example for recycling) then this is easily done as it is attached only by plastic tags which can be simply cut off.

Referring now to figure 2, and using like numerals for like parts, it can be seen here that the ears 18 have been cut down to approximately half their original height rather than folded as in the embodiment in figure 1. Fixing to the bag takes place as already described above. Moreover in this case a "Z" fold is employed rather than the "W" fold in figure 1.

Figure 3 illustrates another embodiment in which the liner 10 is folded in a "omega" shape which results in the ears 18 both being on top of the folded liner rather than one on top and one underneath as with the figure 1 and 2 embodiments. This is advantageous in certain instances since it means that both of the ears can be affixed to the bag 24 from the same side so that if, for instance, the bag is laid flat on the table or other work surface it does not need to be turned over to attach the second ear 18.

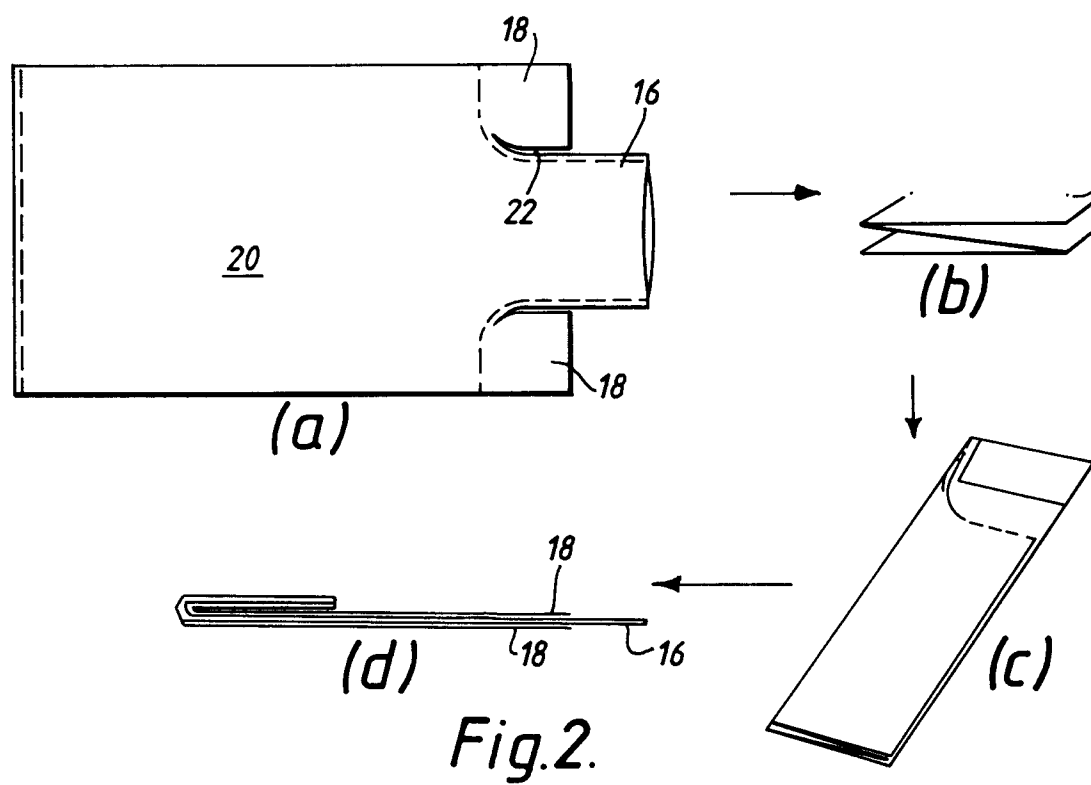
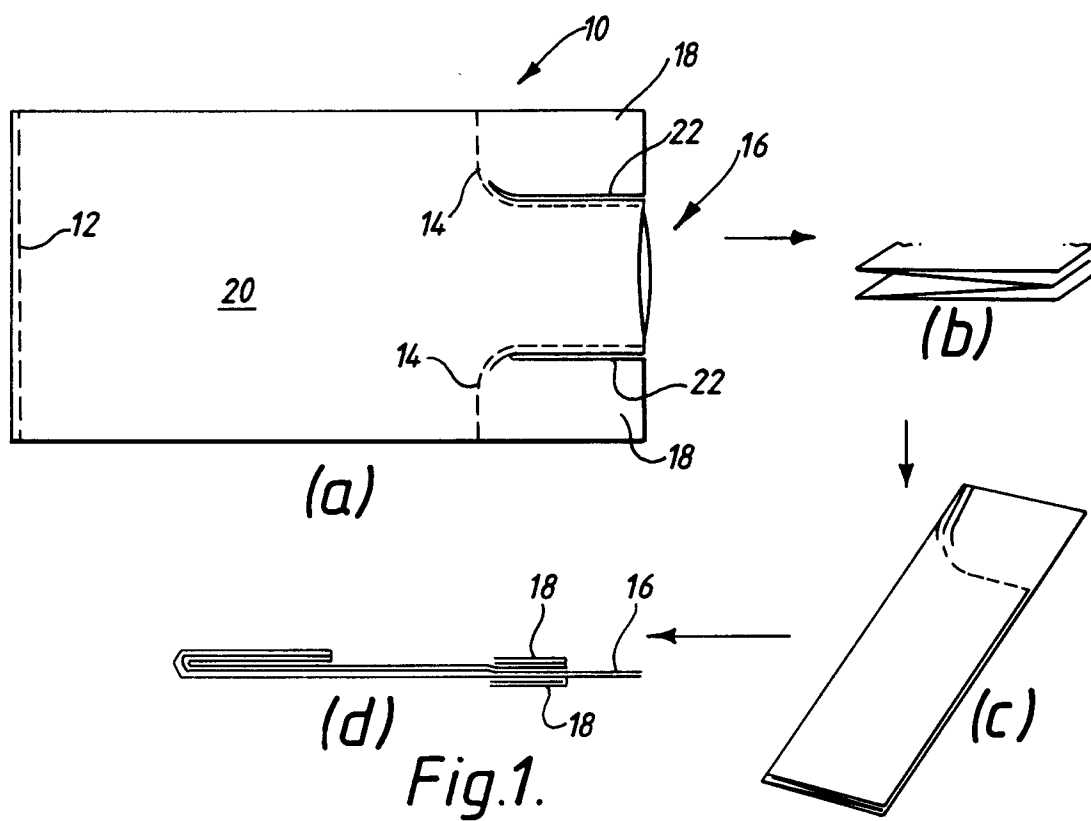
Turning now to figure 5, and using like numerals for like parts, a liner 10 has a corner aperture or neck 16 and a diagonal seal 32 leaving a single "ear" 34. The liner is inserted into the IBC 24 and secured at one side only by three or four plastic tags 36. Once again the ear 34 is separated from the liner main body 20 by a seal 32 so that any damage done to the ear in the tags will not affect the integrity of the liner contents.

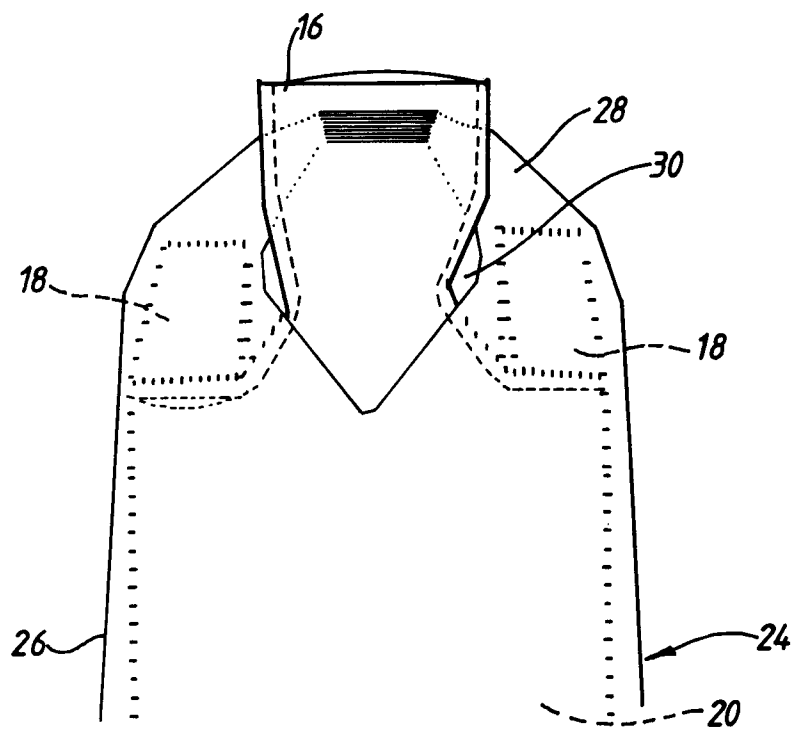
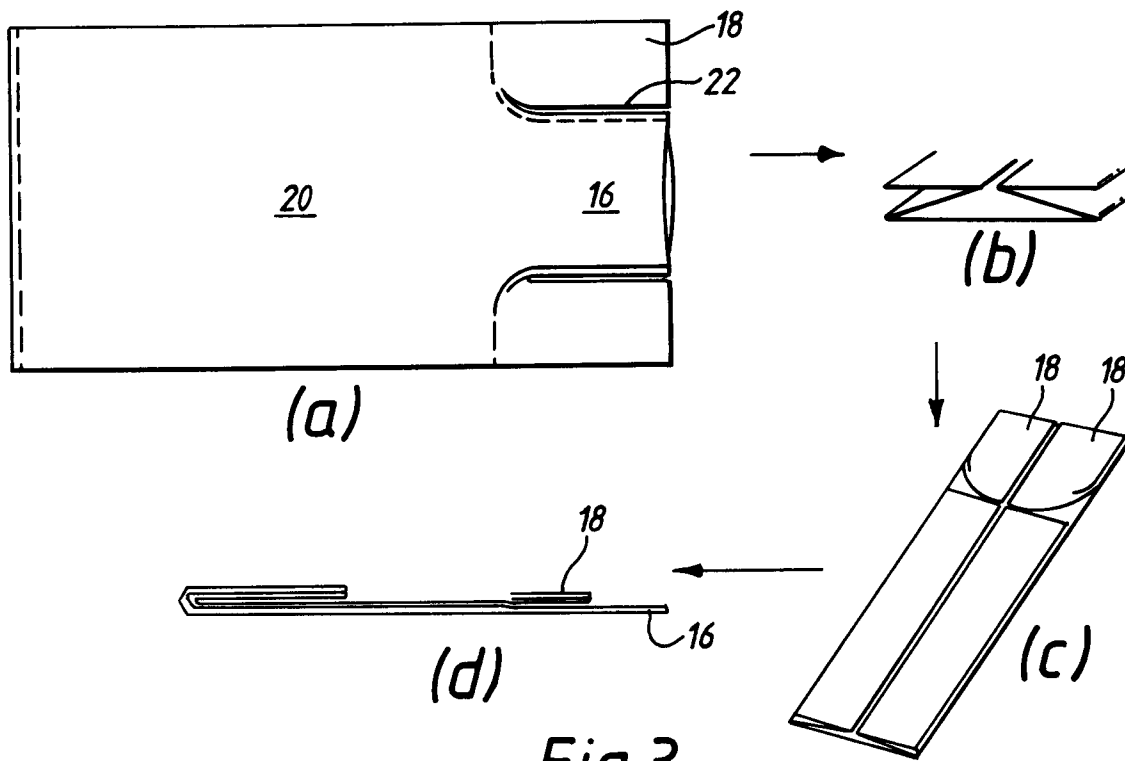
In each case the liner is attached to the bag utilising a portion 18 which is separated from the main body 20 e.g. by a heat seal line, so that any damage resulting in attachment of the portion 18 does not affect the integrity of the main body 20. Moreover the liner is easily attached to the completed IBC and does not need to be attached during manufacture thereof. This enables liners to be attached to ready made IBC's to meet user specifications at short notice, or indeed liners to be changed if user specifications change.

Claims

1. A method of securing a liner within an IBC which comprises providing a liner separated into a contents-receiving portion and one or more ear portions separated therefrom and attaching the or each ear portion to the IBC at or near the top thereof.
2. A method as claimed in claim 1 in which the attachment is carried out by gluing, heat sealing, stitching, tying, ultrasonic welding or by means of plastic tags applied with a tag gun.

3. A method as claimed in any of claims 1 or 2 in which a generally rectangular sheet of plastics material is provided, the sheet is heat sealed or otherwise joined to form a flat rectangular "pillow" having one of its narrower sides open, and the width of this open side is constricted to leave a narrower opening such that when the liner is filled it resembles a bottle in shape.
4. A method as claimed in claim 3 in which the portions of the liner on either side of the bottle "neck" are separated from the main body by a heat seal and comprise the ear portions.
5. A method as claimed in claim 4 in which the liner is folded longitudinally and inserted into the IBC, after which the neck is brought out of the IBC filling opening and the ear portions affixed to an adjacent area of the IBC top.
6. A method as claimed in any of claims 1 to 2 in which a generally rectangular sheet of plastics material is provided, the sheet is heat sealed or otherwise joined to form a flat rectangular "pillow" having one of its narrower sides open, the width of this open side is constricted at one side only to leave a narrower opening and a single ear portion.
7. A method as claimed in claim 6 in which the liner is inserted into the IBC and secured in one or more places on the single ear portion to the an area at or near the IBC top.





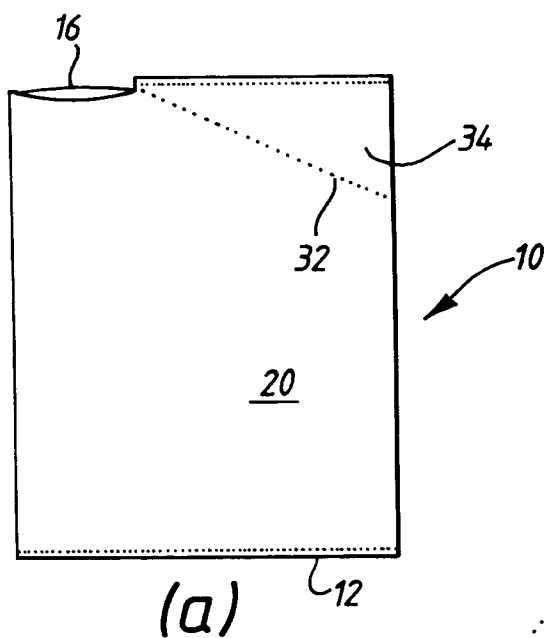


Fig. 5.

