(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 119 743**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **84300993.7**

(22) Date of filing: **16.02.84**

(51) Int. Cl.³: **B 65 D 88/16**

(30) Priority: **18.03.83 GB 8307637**

(43) Date of publication of application: **26.09.84 Bulletin 84/39**

(84) Designated Contracting States: **AT BE CH DE FR GB IT LI LU NL SE**

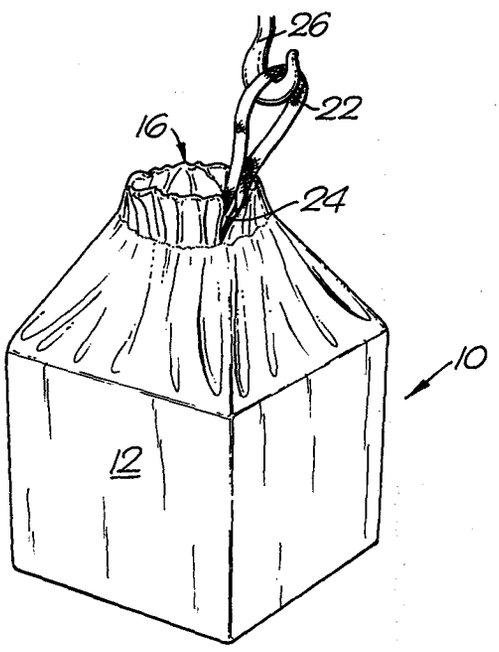
(71) Applicant: **MULOX IBC LIMITED, 14 Aylmer Parade, London N2 0PF (GB)**

(72) Inventor: **Futerman, Charles Sydney, 56 Gurney Drive, London N2 (GB)**

(74) Representative: **Wharton, Peter Robert et al, P.R. Wharton & Co. Beckett's Bank Chambers 19 Cheapside, Bradford West Yorkshire BD1 4HR (GB)**

(54) Container bag.

(57) A container bag (10) that comprises side walls 12 and a base 14, the side walls 12 being folded back upon themselves at their upper extremities 16 to from a hem portion 16 through which is passed a continuous loop of sebbing 22 whereby to form a lifting loop for the container bag 10.



EP 0 119 743 A1

CONTAINER BAG

This invention relates to container bags and in particular container bags for carrying loads in the range of ½ to 2 tonnes and known as Intermediate Bulk Containers ('IBC').

For many purposes it is desirable for an IBC to be capable of being lifted from one single point, for example from the hook of a crane, without a great deal of manipulation being required by operatives. This speeds up the handling process, particularly when loading and discharging at ports.

The invention seeks to provide an IBC which may be lifted from a single point, which has adequate strength, and which is easily constructed.

According to the present invention there is provided a container bag which comprises side walls and a base, the side walls being folded back upon themselves at their upper extremities to form a hem portion through which is passed a continuous loop of webbing whereby to form a lifting loop for the container bag.

Preferably, the hemmed portion extends completely round the periphery of the upper edges of the side walls of the bag, one or more cut out portions being formed in the hemmed portion to allow access to the loop of webbing carried therein.

The fabrics from which the IBC bags of the invention are formed are conventional fabrics for use in this type of container bag and may be woven from polyethylene or polypropylene tape yarns. Preferably however at least the side walls are made from a fabric having reinforced zones or areas of interwoven reinforcing yarn, for example as disclosed in our UK Patent No. 1591091. Where such reinforcing areas are provided, these may be as described in that patent and may be formed of interwoven threads of a higher tensile strength reinforcing yarns such as polyamide, polyester or twisted or fibrillated polypropylene. The bag base may or may not be provided with such reinforcing areas.

The webbing which forms the lifting loop may be a woven webbing of synthetic yarns, for example of the type used for car seat belts and IBC lifting loops or may be rope or hawser of suitable strength.

Where the IBC of the invention is formed from a plain fabric having no reinforcing zones or areas the hemmed portion is preferably formed by infolding a first edge of the fabric and then folding a second time whereby to produce a hem having three fabric layers and stitching through the three fabric layers with preferably at least two lines of stitching. However, where reinforcing areas are provided in accordance with our UK Patent No. 1591091, a single fold of fabric to form the hem is sufficient, and instead of continuous line of stitching around the hem the stitching can be confined to the reinforcing areas or zones. Where this is done, it is necessary to employ a suitable stitching pattern to provide the necessary strength of join. The 'box and cross' stitching pattern commonly used for attaching lifting loops to IBC's is an example of a suitable stitching pattern.

The IBC body can be made in a variety of ways. For example, it can be made from a circular woven fabric in which case there will be no side seams, and the base will be stitched to the tubular body fabric in the normal manner. Alternatively, it may be made from a full width fabric in which one side seam will be necessary; a half width fabric in which case two side seams will be necessary; or a quarter width fabric in which case there will be four side seams, one at each corner.

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

Figure 1 is a diagrammatic sectional view of an IBC constructed in accordance with the invention;

Figure 2 is a diagrammatic perspective view of the IBC of figure 1;

Figure 3 is a view of the IBC of figure 2 filled and being lifted;

Figure 4 is a diagrammatic representation of another way of threading the webbing;

Figure 5 is a partial view of an IBC in accordance with the invention showing a stitching pattern;

Figure 6 is a similar view to figure 5 illustrating another form of fabric;

Figure 7 is an alternative form of securing the hem; and

Figure 8 is a further alternative form of securing the hem.

Referring to the drawings, it can be seen from figures 1 and 2 that an IBC generally designated 10 comprises side walls 12 and base 14. The IBC 10 may be constructed according to conventional practice in this field, as for example discussed in our previously mentioned UK Patent. The upper extremities of the side walls 12 are folded back upon themselves as illustrated to form a hemmed portion 16 which is secured by sewing where indicated by arrows A through three layers of fabric. This is better illustrated in figure 5 where it can be seen that two lines of stitching 18 are employed through the three thicknesses of side wall fabric. The hem 16 includes a pocket 20 within which is a continuous length of webbing 22. As can be seen from figure 2 the hem portion extends substantially completely around the upper periphery of the side walls 12 except that a cut out portion 24 is left to give access to the webbing 22.

It will be appreciated that while the webbing 22 is described as being a continuous loop, this loop may be formed either previously or in situ by stitching or otherwise drawing together the ends of a single length of webbing to form a continuous loop.

Figure 3 illustrates a filled IBC constructed and described with reference to figures 1, 2 and 5 being lifted from a single point, in this case the hook of a crane 26. The bag is filled with material and the webbing 22 pulled out from the cut away portion 24 and placed on the hook 26. This causes the hem 16 to gather up as illustrated in figure 3 thus closing the top of the IBC. Thus, in IBCs constructed in this manner, no separate top need be provided.

Figure 4 illustrates an alternative form of threading the webbing 22 within the hem portion 16. A double layer of

webbing is passed through the hem 16 leaving two free folded ends 28 projecting from the cut out portion 24. One of the ends 28 can then be passed through the fold of the other whereby to interconnect the webbing in 'choker' fashion and the other free end may be passed over the hook 26 or other lifting means.

Where the side wall fabric is provided with reinforced areas 30, for example in accordance with our above mentioned UK Patent, then these may be sewn to one another in the hemmed portion 16 in addition to the stitching 18, for example by means of a single box and cross stitching pattern 32 (figure 6). However, where such reinforced body fabric is employed we have found that it is only necessary to form a single hem, as illustrated in figure 7, provided the overlying reinforcing areas 30 are stitched to one another, preferably by means of box and cross stitch patterns 32, and preferably using several patterns on each reinforcing area 30. When this is done, the lines of stitching 18 going parallel with the hem 16 about the periphery of the bag may be omitted since the stitch patterns 32 through the reinforced areas 30 are sufficiently strong to retain the webbing 22 even at the lifting stresses.

A further alternative form is shown is figure 8, where the bag fabric has been cut back between adjacent reinforced areas 30 to form 'flag' portions 34 which are folded over and stitched through at 32. This gives a 'hemmed' portion equivalent to the hem 16 is figures 5 to 7, but in which no separate cut out portion 24 is required since the loop of webbing 22 is accessible between each reinforced area 30. With an IBC of this construction, the webbing 22 may be pulled out at one point only between two adjacent flag portions 34, or may

be pulled at two or four or more points between adjacent flag portions 34 to provide multiple lifting loops all of which can of course be gathered together and lifted on a single point such as a crane hook 26.

In a particular example a bag was constructed from a twill woven polypropylene fabric having two reinforcing areas per side containing reinforcing yarns of polyamide or polyester. The fabric sides were 160 cm^2 and the base 90 cm^2. A 30 cm hem was formed as described with relation to figure 5 in which the triple overlap area was 10 cm in width. Heavy duty 'type 400' blue webbing was threaded within the hem. On testing to destruction the webbing broke at a force of 11 tonnes the hemmed portion 16 remaining intact.

In another example, made in accordance with figure 8, using four box and cross stitched portions 32 on each reinforced area 30 and the same webbing as above, testing to destruction resulted in the fabric giving way in the area of the folds at a force of 8.9 tonnes. This is well in excess of the 5 to 1 breakage to rated load ratio generally accepted in the IBC field.

CLAIMS

1. A container bag which comprises side walls and a base, the side walls being folded back upon themselves at their upper extremities to form a hem portion through which is passed a continuous loop of webbing whereby to form a lifting loop for the container bag.

2. A bag as claimed in claim 1 in which the hem portion extends completely round the periphery of the upper edges of the side walls, one or more cut out portions being formed in the hem portion to allow access to the loop of webbing carried therein.

3. A bag according to either of claims 1 or 2 formed from woven polyolefin yarns in which the hem portion is formed by infolding a first edge of the fabric and then folding a second time whereby to produce a hem having three layers of fabric and stitching through the three fabric layers with at least two lines of stitching.

4. A bag as claimed in either of claims 1 or 2 in which the side walls have reinforced zones or areas of interwoven reinforcing yarn and in which the hem is formed from a single fold of fabric, the stitching being confined to the reinforcing areas or zones.

5. A bag as claimed in any one of claims 1 to 4 in which the webbing which forms the lifting loop is a woven webbing of synthetic yarn or is a rope or hawser.

6. A bag as claimed in either of claims 4 or 5 in which the bag fabric is cut back between adjacent

reinforced areas to form flag portions which are folded over and stitched in the area of the reinforced areas, access to the webbing being obtained between any of the stitched areas.

0119743

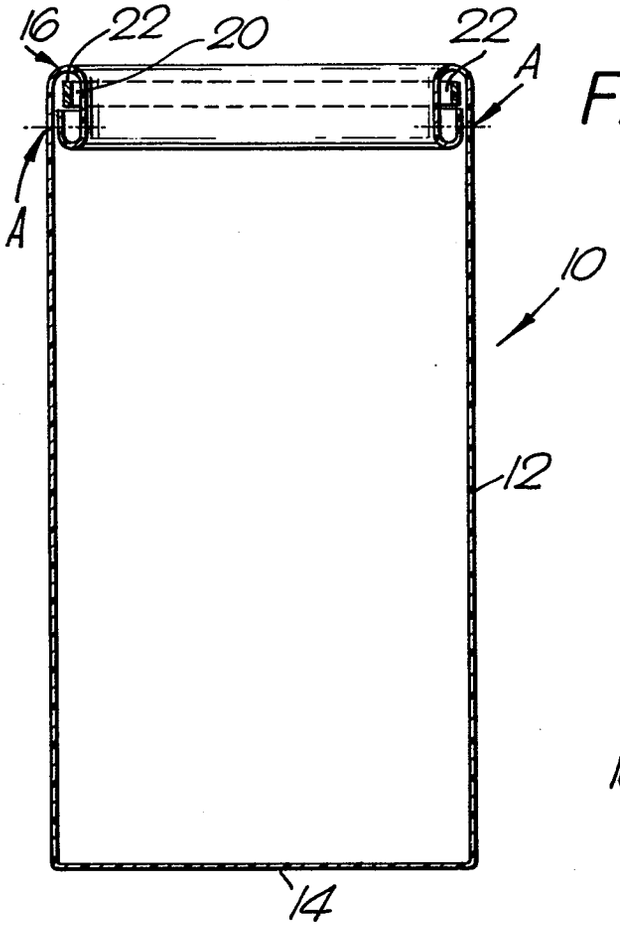


Fig.1.

Fig.2.

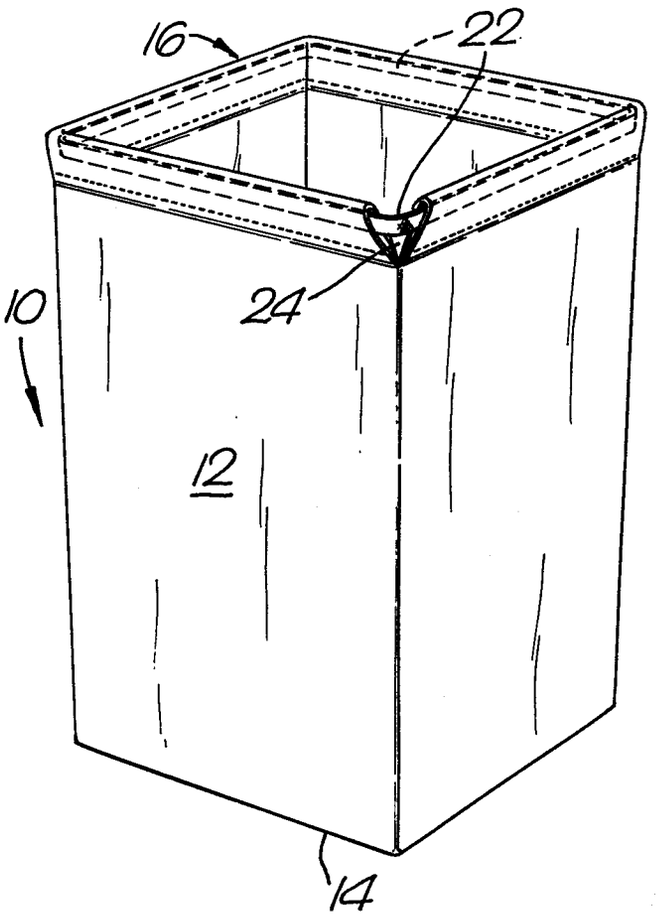
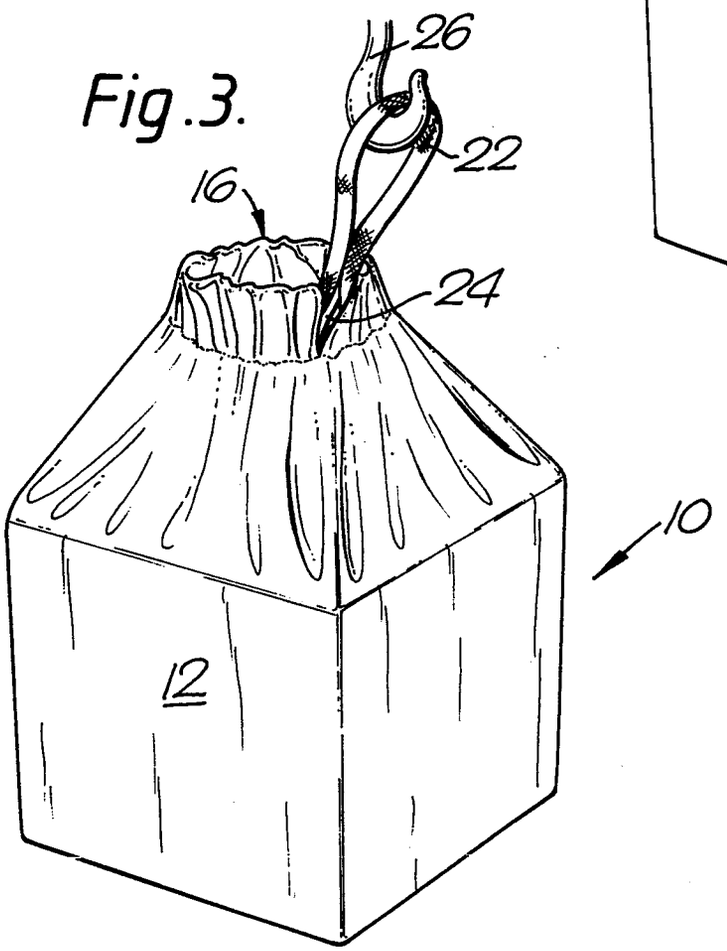


Fig.3.



0119743

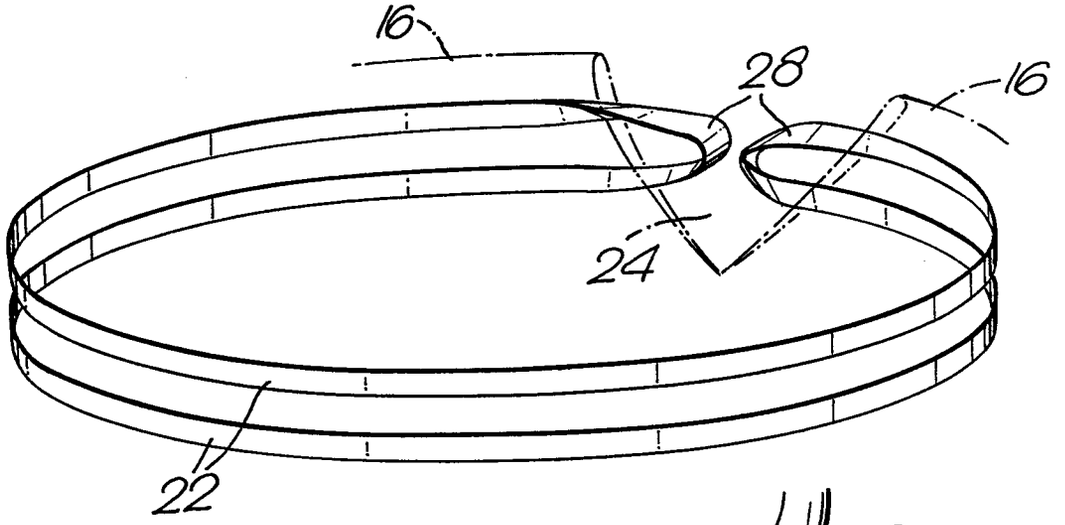


Fig.4.

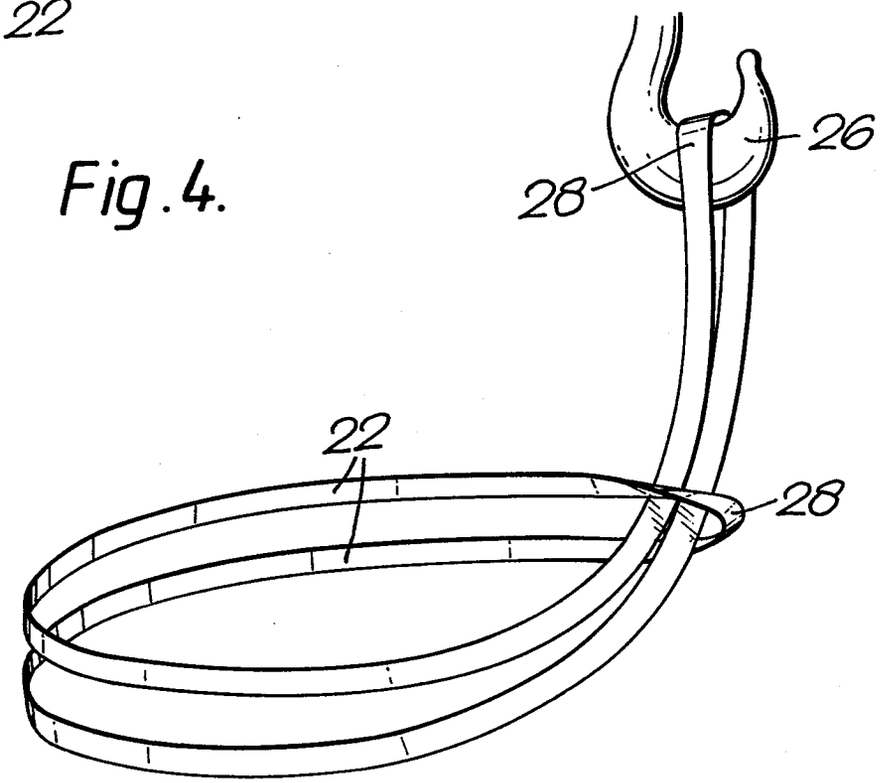
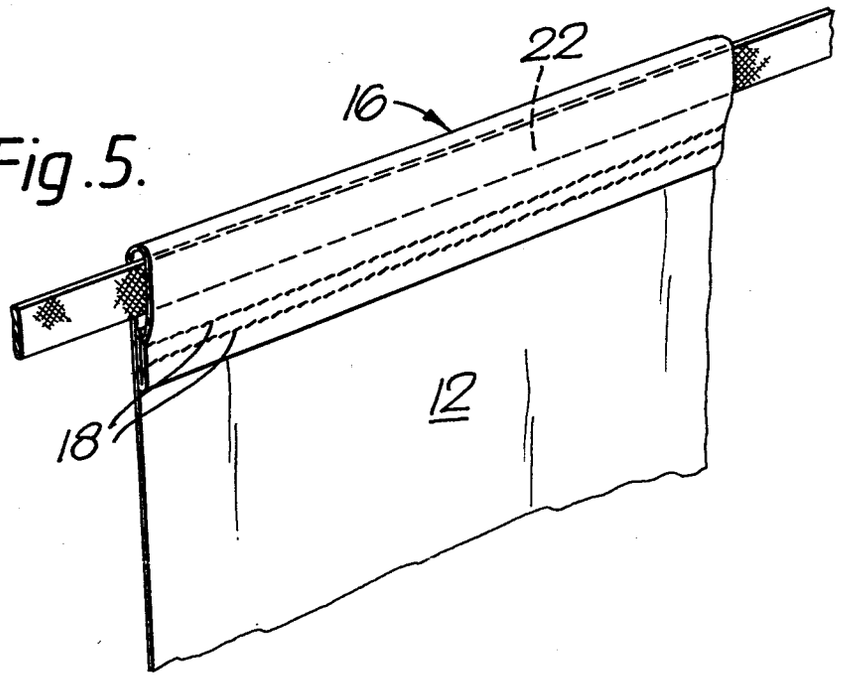


Fig.5.



0119743

Fig.6.

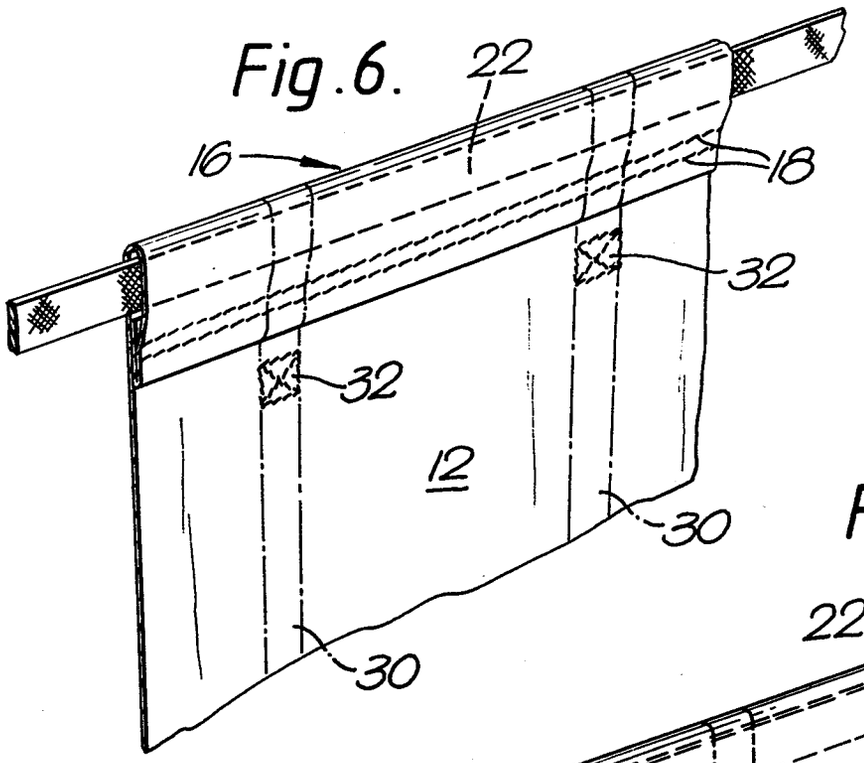


Fig.7.

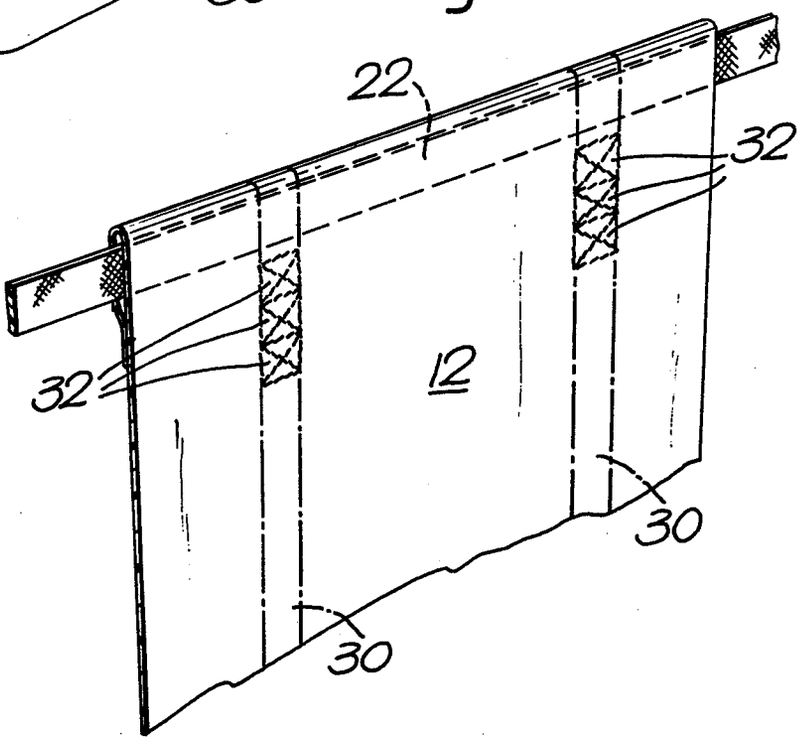
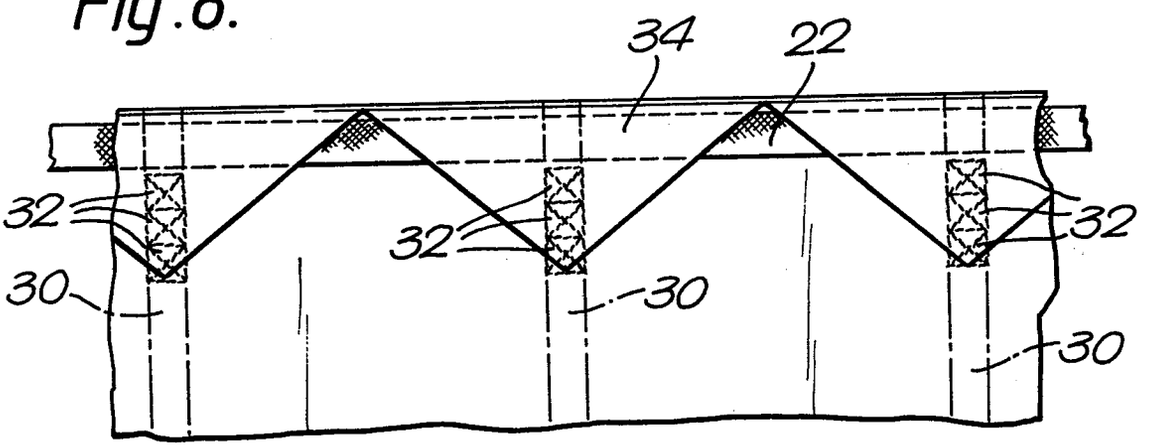


Fig.8.



European Patent Office

0119743

Application number

EP 84 30 0993

EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
X	DE-A-2 659 487 (NATTRASS) * Page 8, line 14 - page 9, line 16; figures 4,5 *	1,2	B 65 D 88/16
X	FR-E- 58 122 (VELA) * Page 1, column 2, line 4 - page 2, column 2, line 25; figure 2 *	1,2	
A	FR-A-2 339 538 (WINDMOLLER & HOLSCHER) * Page 3, line 28 - page 4, line 16; figure 8 *	3	
A	DE-A-2 607 065 (SPOHN KG) * Claims 5-14; page 8, lines 20-33; figures *	3,5	TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
A	GB-A-1 590 943 (MILLER WEBLIFT) * Page 2, line 92 - page 3, line 64; figures *	4,3	B 65 D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	07-06-1984	VAN ROLLEGHEM F.M.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO Form 1503. 03.82