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(54) Refuse bags.

(57) Bags (38,40) used for storing and/or transporting material (48) such as garbage or refuse prior to collection or transport to disposal. The bags (38,40) are all made by extruding a tube (10) of plastic material. The tube (10) is folded so that it comprises eight panels (12,20a,20b,21a,22b,22a,14;62a,57,56,64a,64b,55,54,62b;75a,76a,77a,78a, 78b,77b,76b,75b) one above the other, in one case by a number of gussets (20,21,22) at one side, in another by gussets (53a,53b) at each side and then folding over the tube (52) and in a third by folding the tube (71) over twice. The panels are welded together. A knife makes a cut in the form of a quarter of sine wave to form an open end for the bags (38,40; 64,66;86) when in use. In another embodiment, the tube is folded over once and the knife makes a cut in the form of half a sine wave. The bag thus has a reduced width for storage and display and in use has four (or in the fourth embodiment, two) tie parts (T) which are capable of being readily tied together by hand.

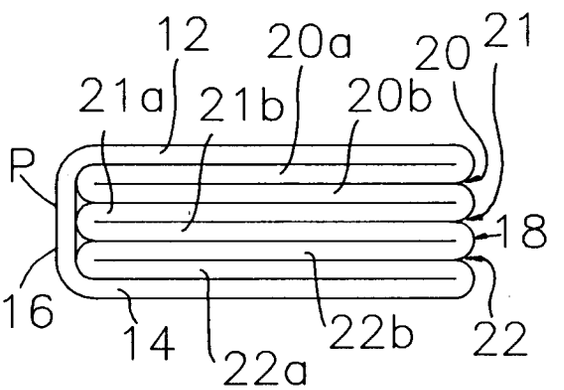


FIG 2

EP 0 541 028 A1

FIELD OF THE INVENTION

This invention relates to refuse bags used for storing and/or transporting material such as garbage or refuse prior to collection or transport to disposal.

Typical of such a bag is that which is described in the specification of my South African Patent No 87/5411 and corresponding patents and patent applications (e.g. European Patent Specification No 0 254 256).

In those specifications, there is described a bag of the kind formed from extruded lay flat plastics tube comprising front and rear panels having an open end formed by a separating cut that is so shaped that cut-outs are formed in the said open end to leave four projecting tie parts which are capable of being readily tied together by hand. The bag may in another embodiment comprise one pair of such tie parts.

In such a bag, the front and rear panels are joined together along three straight sides and the bag is open on the fourth side.

SUMMARY OF THE INVENTION

According to an aspect of the invention there is provided a bag used for storing and/or transporting material such as garbage or refuse prior to collection or transport to disposal, the bag comprising, in the lay flat condition, at least four panels lying one over the other, the four panels being welded together at one end along a straight transverse weld, to form the bottom of the bag, and having an intermediate cut at the other end, which cut has at least a portion inclined to the direction of the weld, the said intermediate cut forming the other end into an open end and being such that the bag in the open condition is provided with at least two tie parts which are capable of being readily tied by hand.

According to another aspect of the invention there is provided a method of making a bag to be used for storing and/or transporting material such as garbage or refuse prior to collection or transport to disposal, the method comprising extruding a tube of plastics material, folding the tube to form at least four panels of substantially the same size lying one upon the other, welding the panels together at spaced locations along the tube with a pair of spaced straight welds extending transversely to the direction of extrusion of the tube, providing end cuts between the pairs of welds, and cutting through the panels of the tube between each of the said spaced locations with an intermediate cut having at least part which is inclined to the end roll, the said intermediate cut forming the other end into an open end and being such that the bag in the open condition is provided with at least two tie parts which are capable of being readily tied by hand.

This can be arranged by folding the lay flat tube about its longitudinal axis. Alternatively the tube may comprise a pair of main panels joined along one side adjacent to the open end and to have three gussets, each comprising two gusset panels, formed between the main panels and being joined to the main panels at the other side adjacent to the said open end. Yet again the tube may be folded to form front and rear main panels joined along both sides adjacent to the said open end by gussets, each comprising two gusset panels formed between and being joined to the main panel.

Embodiments of the invention will now be described by way of example with reference to the accompanying drawings.

In the drawings:-

SHORT DESCRIPTION OF DRAWINGS

Figure 1 shows a pair of bags of the invention in the lay flat condition prior to parting,

Figure 2 is a section on line 2 - 2 of Figure 1,

Figure 3 is a plan view of one of the bags of Figure 1 when filled and closed,

Figure 4 is an underplan view of the bag of Figure 3,

Figure 5 is a view similar to Figure 1 of a modified arrangement of the invention,

Figure 6 is a section on line 6 - 6 of Figure 5,

Figure 7 is a view similar to Figure 5 showing the tube after the first folding operation to make the bag of Figure 5,

Figure 8 is a section on line 8 - 8 of Figure 7,

Figure 9 is a view similar to Figure 1 of a further modified arrangement of the invention,

Figure 10 is a section on line 10 - 10 of Figure 9,

Figure 11 is a view similar to Figure 10 of a further embodiment of the invention.

Figures 12 and 13 are views of bags with four and two tie parts filled and about to be tied,

Figure 14 is a view of a roll of bags.

It is to be pointed out that the drawings are not to scale. In particular the various sections are grossly out of scale because it is necessary to show the plastic panels clearly in the drawings. In fact the plastic sheets can be of the order of 0,0175mm in thickness and this fact should be borne in mind when considering the drawings and in particular the sections. In the latter for example, the connecting part P between the outermost panels is shown as a long part. In fact these are merely bends but for the purpose of illustration of the embodiments are shown in the drawings.

DESCRIPTION OF A FIRST EMBODIMENT

Referring now to Figures 1 to 4, there is shown an extruded plastics (polymeric) tube arranged in lay-flat form. The tube 10 is folded to have front and rear main panels 12 and 14 that are joined along one side edge 16 and that have between the other side edge 18, three gussets 20, 21 and 22 as will be described. The tube 10 is processed in a welding and cutting apparatus (not shown) which provides the welds and cuts that will be described.

Each gusset 20 and 22 comprises an inner and an outer gusset panel 20a, 20b, 22a and 22b respectively. Gusset 21 has gusset panels 21a and 21b. The gusset panels are all the same width and only slightly (about 0,5mm) less wide than the main panels 12 and 14. The inner gusset panels 20a and 22a are joined respectively to the edges 18 of the front and rear main panels 12 and 14.

Straight transverse end welds 24 weld together all the panels at right angles to the side edges 16 and 18 (which lie in the direction of extrusion of the tube 10). These end welds 24 are provided at regular spaced locations. The end weld comprises a pair of spaced parallel welds 28 and 30. A transverse end cut 32 is made between the two welds 28 and 30 to permit the bags to be separated from the tube 10.

An intermediate, or separating, cut 34 is provided and is as described in European Patent Specification No 0 341 739. It, the cut 34, is made by the above-mentioned apparatus to form open ends 36 for two bags 38 and 40 located midway between a pair of end welds 24. The cut 34 is generally in the shape of a quarter of a sine wave from crest 42 to valley 44 having flattened portions 42a and 44a at the crest and valley respectively.

It will be seen that the two bags 38 and 40 have open ends which when the bag is open have the same shape each with four cut-outs C and four tie parts T. When the bag is filled with e.g. garden refuse, the tie parts 48, the tie parts T can be readily tied by hand to close the bag as is shown in Figure 3. The closed bottom end 50 of each bag comprises a pointed star-shaped section formed by the straight welds 24 and with radial folds 52.

When stored for sale, the bags are conveniently formed into a roll R on the end welds 24 (see Figure 14).

DESCRIPTION OF A SECOND EMBODIMENT

Reference is now made to Figures 5 and 6 in which there is shown an arrangement comprising eight panels of approximately the same width one above the other. The arrangement is achieved as follows:- A tube 52 is folded to have single gussets 53a and 53b on each side (see Figure 7). The gusset panels 54, 55, 56 and 57 are connected together and to the main front and rear panels 58 and 60 (as shown in Figure 8).

The tube is now folded about an axis 66 running in the direction of extrusion of the tube 50 to take up the condition as shown in Figures 5 and 6. There are now eight panels (as mentioned above) lying one upon the other, being panels 54, 55, 56, 57 and the halves of the main panels 62a, 62b, 64a and 64b.

An intermediate, or separating, cut 68 is made through the eight panels. It is in the form of one quarter of a sine wave from the centre of the valley to the centre of a crest. The cut 68, like the cut 34, is as described in European Patent Specification No 0 341 739. The cut 68 will form four tie parts in each bag when separated from the roll and the open end formed by the cut 68 is opened.

Straight end welds 70 with perforating cuts 72 therebetween are provided running at right angles to the edges of the tubes to form the bases of the bags in the same manner as mentioned above. These welds and cuts can be provided when the tube is in the gusseted position as shown in Figure 7 or when in the folded position as shown in Figure 5. In the latter arrangement, the welds can be folded over with the remainder of the tube.

When the bags 64 and 66 of this second embodiment are separated from the tube and are filled with garden refuse, they take the same appearance as the bags shown in Figure 12. The tie parts T can be readily tied together by hand so that they will take up a shape substantially similar in plan and in side view to the bags 38 and 40 (and shown in Figures 3 and 4). The base will be somewhat different and will take a shape that will be apparent to those skilled in the art.

DESCRIPTION OF A THIRD EMBODIMENT

Reference is now made to Figures 9 and 10. In this embodiment, the lay flat tube 71 is folded over on its longitudinal axis (i.e. its axis in the direction of extrusion of the tube). This forms four panels of approximately the same width 75, 76, 77 and 78 lying one above the other. The ends of the panels are welded together at a double weld 80 which extends at right angles to the direction of extrusion of the tube - and hence the side edges of the lay flat tube - and between which is a parting cut 82. At the other end, there is a intermediate cut 84 which passes through all four panels. This cut 84, which is like the cuts 34 and 62, is in the form of a quarter of a sine wave from a crest to a valley. Thus when the bags 86 that are formed between the parting and separating cuts, are opened out, there will be two tie parts T and two cut-outs C

(see Figure 13). The two tie parts T can be readily tied together by hand to close the open end of the bag 86 when it is filled with refuse.

The end welds 80 can be made on the lie flat tube prior to the tube being folded about its longitudinal axis, which will provide a more convenient base in the open bag 86, or the weld can take place when the four panels lie one above the other.

DESCRIPTION OF A FOURTH EMBODIMENT

A fourth embodiment as shown in Figure 11 is formed by folding the embodiment of Figures 9 and 10 once more about an central axis (88 in Figure 9) to form a unit that comprises eight panels. These panels are identified in Figure 11 by the same numbers as in Figure 10 but with the suffixes "a" and "b" to indicate the panels. These panels are preferably all welded together once the folding operation is completed. However, the weld can take place (a) before any folding takes place or (b) after the first fold has taken place.

The separating cut (which is not shown) is the same as the cut 84 i.e a cut in the shape of a quarter of a sine wave. The resulting bags will be provided with four ties parts that can be readily tied by hand to close the bags in the same manner as has been described above.

The shape of the bottom of the bag when opened, will depend upon at which stage the end weld has been formed.

GENERAL

The bags are of an appropriate size for their purpose. A typical bag has a length (in the lay flat condition) from the closed end weld 24 to the crest of the separating cut of 890mm and from the closed end weld 24 to the base of the valley 44 of 760mm. Thus the amplitude of the sine wave is 130mm. The diameter of the bag is 930mm, i.e. its width in the lay flat condition is 700mm. Thus the bag has an effective capacity of about 56 litres. Other convenient or typical capacities for the bags may be twenty seven, forty five and sixty litres although of course the bags can be of such capacity as is desired commensurate with the task that a refuse bag must perform.

Because the bags are folded or gusseted as described above, when the bags are rolled for sale or storage, and more importantly for display on the shelves of a supermarket, the axial length of the roll is relatively small as compared to the diameter of the opened bag. In the case of the first, second and fourth embodiments, this is about 175mm. In the third embodiment, the axial length will be about double this amount. Thus the shelf width taken up even for a very large bag is relatively small. Furthermore the knife for making the intermediate cut is short and in the shape of a half or a quarter of a sine wave. This knife, and in particular the knife in the form of a quarter of a sine wave, is easier to make than those of a full sine wave. In addition the cutting machine can work more simply and significantly more quickly.

The size of the bag can of course vary substantially but within the context of the size required for its purpose, i.e. to receive and to store garden or kitchen refuse or garbage. In the latter context, the bag can be used as a liner for a garbage container with the tie parts folded over at the open end. The bag when full or for any other reason will be removed from the container and then tied closed by means of the tie parts.

As is apparent, the term "cut" is used in the broad sense herein to cover both a parting cut which parts one item from another and a perforation cut which provides a line of weakness that permits the items to be parted from one another by tearing or pulling.

The invention is not limited to the precise constructional details hereinbefore described and illustrated in the drawings. Instead of the tie parts and cut outs being in the form of a sine wave, these could be triangular or could be formed by vertical and horizontal cuts so that the tie parts are generally rectangular. They could be of any other suitable shape.

Instead of the bags being on a roll for sale, they may be separated and packed in a container from which they can be individually dispensed.

Claims

1. A bag used for storing and/or transporting material such as garbage or refuse prior to collection or transport to disposal, the bag comprising, in the lay flat condition, panels lying one over the other, the panels being welded together at one end along a straight transverse weld, to form the bottom of the bag, and having an intermediate cut at the other end, which cut has at least a portion inclined to the direction of the weld, the said intermediate cut forming the other end into an open end and being such that the bag in the open condition is provided with at least two tie parts which are capable of being readily tied together by hand, characterised in that the bag comprises at least four panels lieing one over the other.

2. A bag as claimed in claim 1 characterised in that the bag comprises eight panels lieing one over the other.

3. A bag as claimed in claim 1 characterised in that the intermediate cut is in the form of a part of a sine wave.

4. A bag as claimed in claims 2 and 3 characterised in that wherein the intermediate cut is in the form of a quarter of a sine wave.

5. A bag as claimed in claim 2 or claim 3 or 4 when dependant on claim 2 characterised in that wherein the tube is folded to comprise a pair of main panels joined along one side adjacent to the open end and to have three gussets, each comprising two gusset panels, formed between the main panels and being joined to the main panels at the other sides adjacent to the said open end.

6. A bag as claimed in claim 2 and claim 3 or 4 when dependant upon claim 2 characterised in that the tube is folded to form front and rear main panels joined along both sides adjacent to the said open end by gussets, each comprising two gusset panels, formed between the main panels, and is thereafter folded a second time about an axis in the direction of the extrusion of the tube.

7. A method of making a bag to be used for storing and/or transporting material such as garbage or refuse prior to collection or transport to disposal, the method comprising,

extruding a tube of plastics material,

folding a tube to form panels of substantially the same size lying one upon the other,

welding the panels together at spaced locations along the tube with a pair of spaced straight welds extending transversely to the direction of extrusion of the tube,

providing end cuts between the pairs of welds, and cutting through the panels of the tube between each of the said spaced locations with an intermediate cut having at least part which is inclined to the end weld, the said intermediate cut forming the other end into an open end and being such that the bag in the open condition is provided with at least two tie parts which are capable of being readily tied together by hand, characterised in that the tube is folded to provide at least four panels and in that all the panels are cut by the intermediate cut.

8. A method as claimed in claim 7 characterised in that the tube is folded to provide eight panels and in that all the panels are cut by the intermediate cut.

9. A method as claimed in claim 8 characterised in that the tube is folded to have folding three gussets at one side of the tube to provide the panels and in that the intermediate cut through all eight panels is in the form of a quarter of a sine wave.

10. A method as claimed in claim 8 characterised in that the tube is folded to have a gusset at each side of the tubne and is then folded lengthwise in half folding three gussets at one side of the tube to provide the panels and in that the intermediate cut through all eight panels is in the form of a quarter of a sine wave.

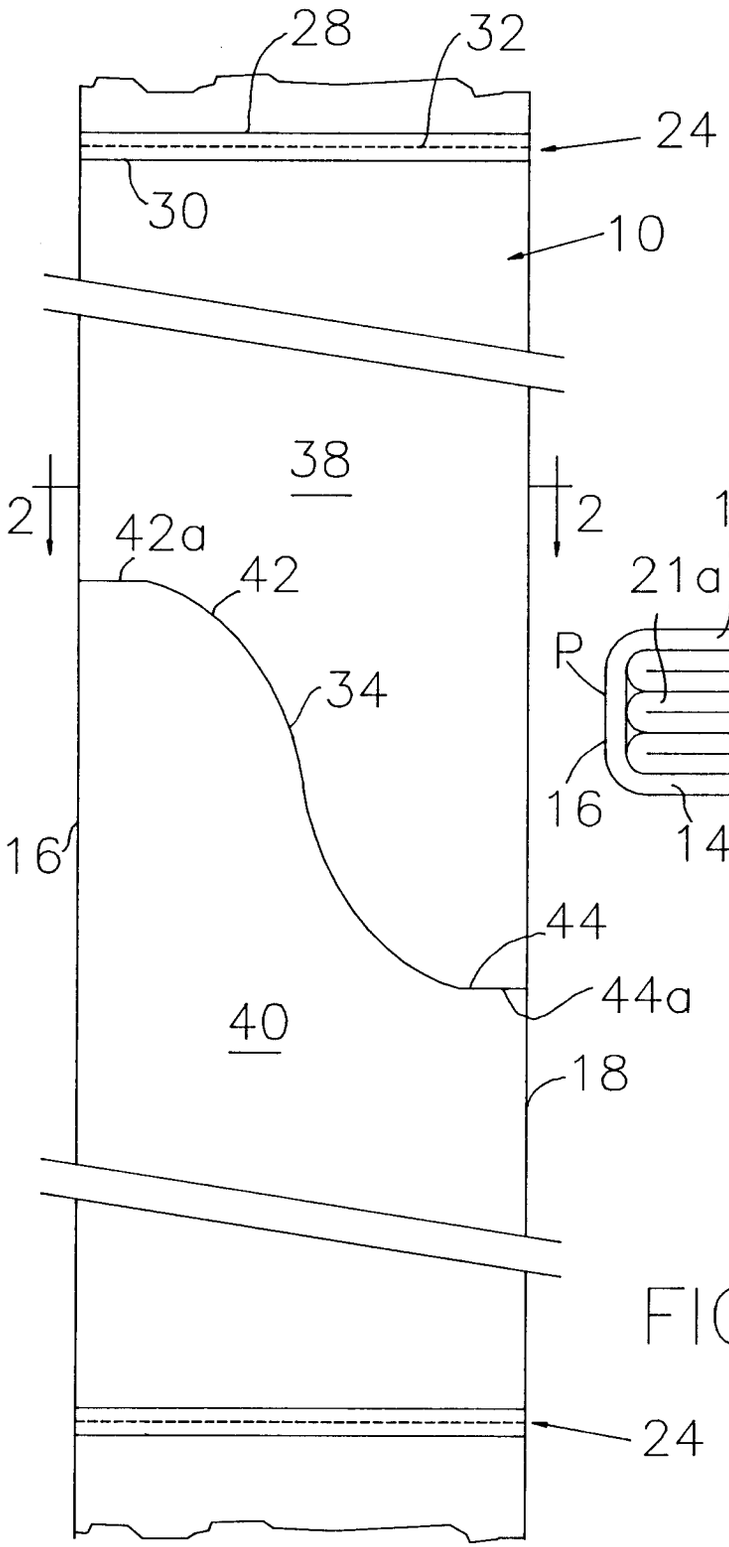

28
32
24
30
10
38
2
2
42a
42
34
16
44
44a
40
18
24

FIG 1

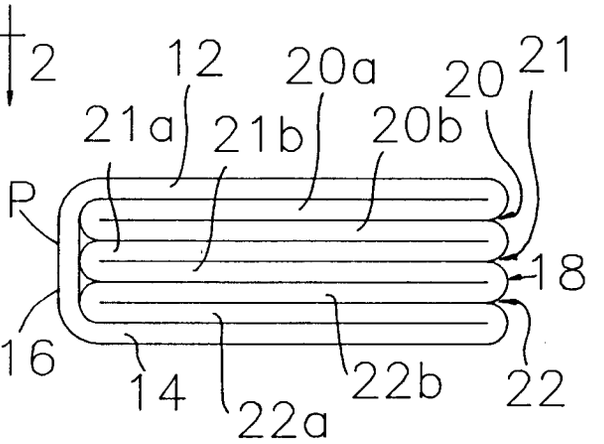

12
20a
20
21
21a
21b
20b
P
18
16
14
22a
22b
22

FIG 2

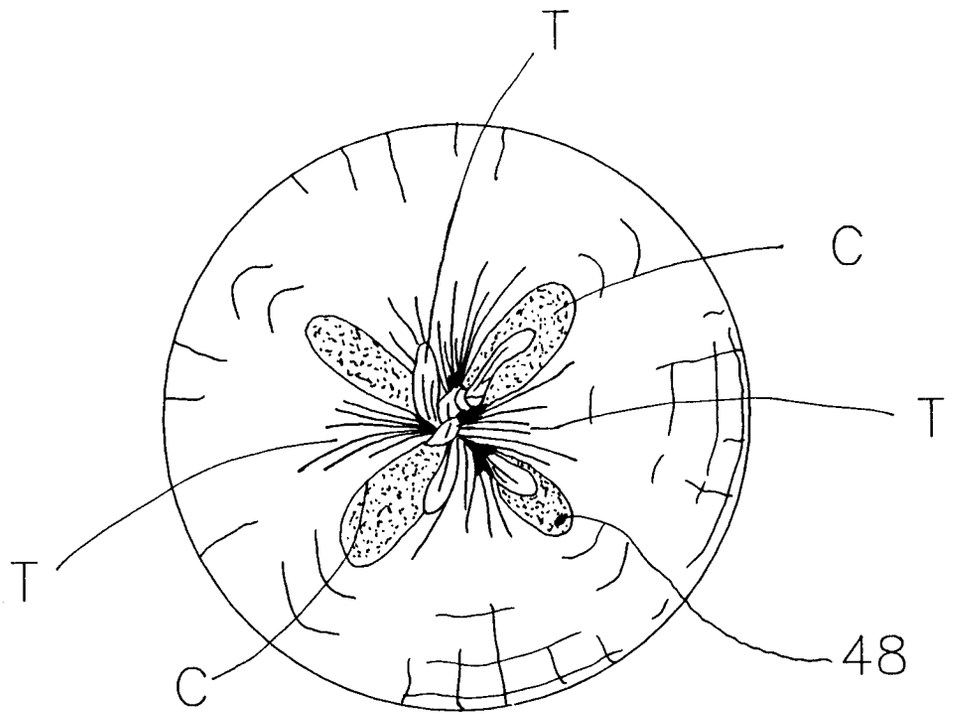


FIG 3

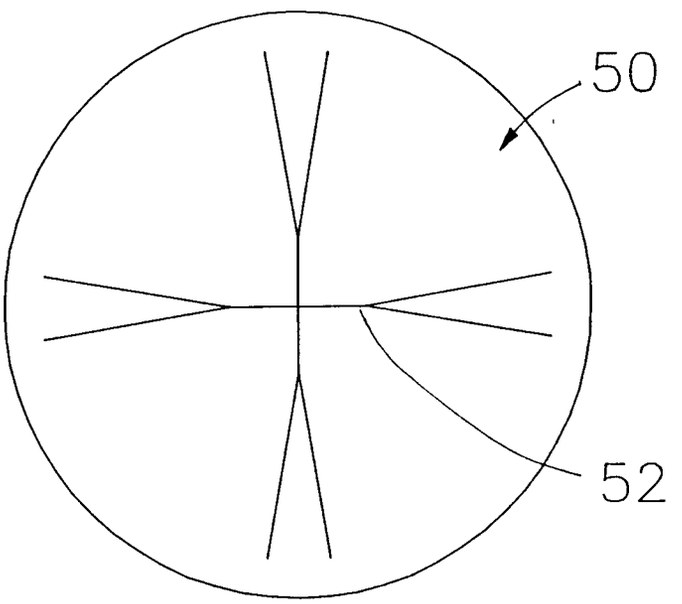


FIG 4

FIG 5

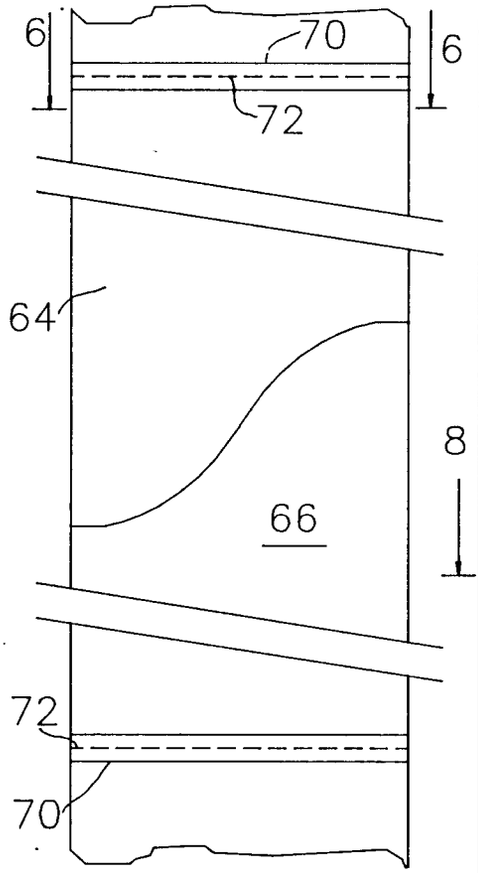
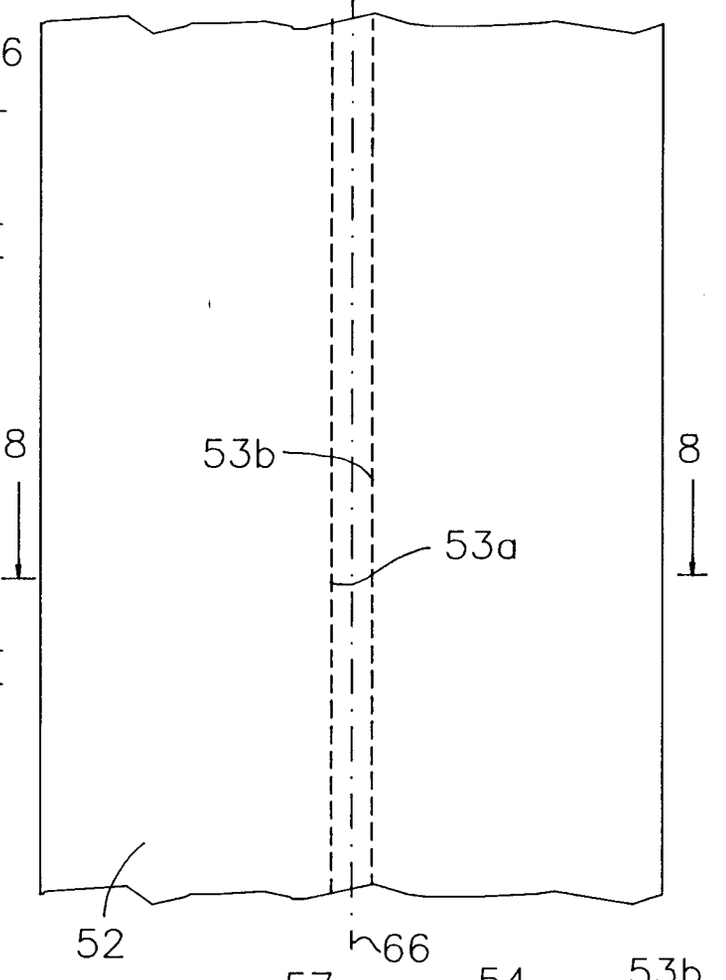


FIG 7



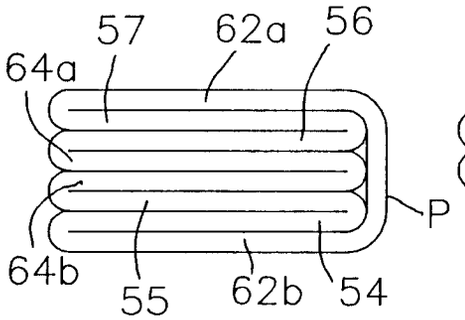


FIG 6

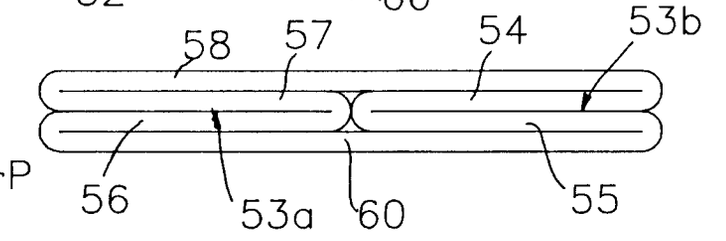


FIG 8

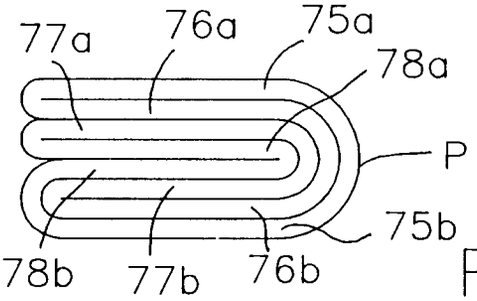


FIG 11

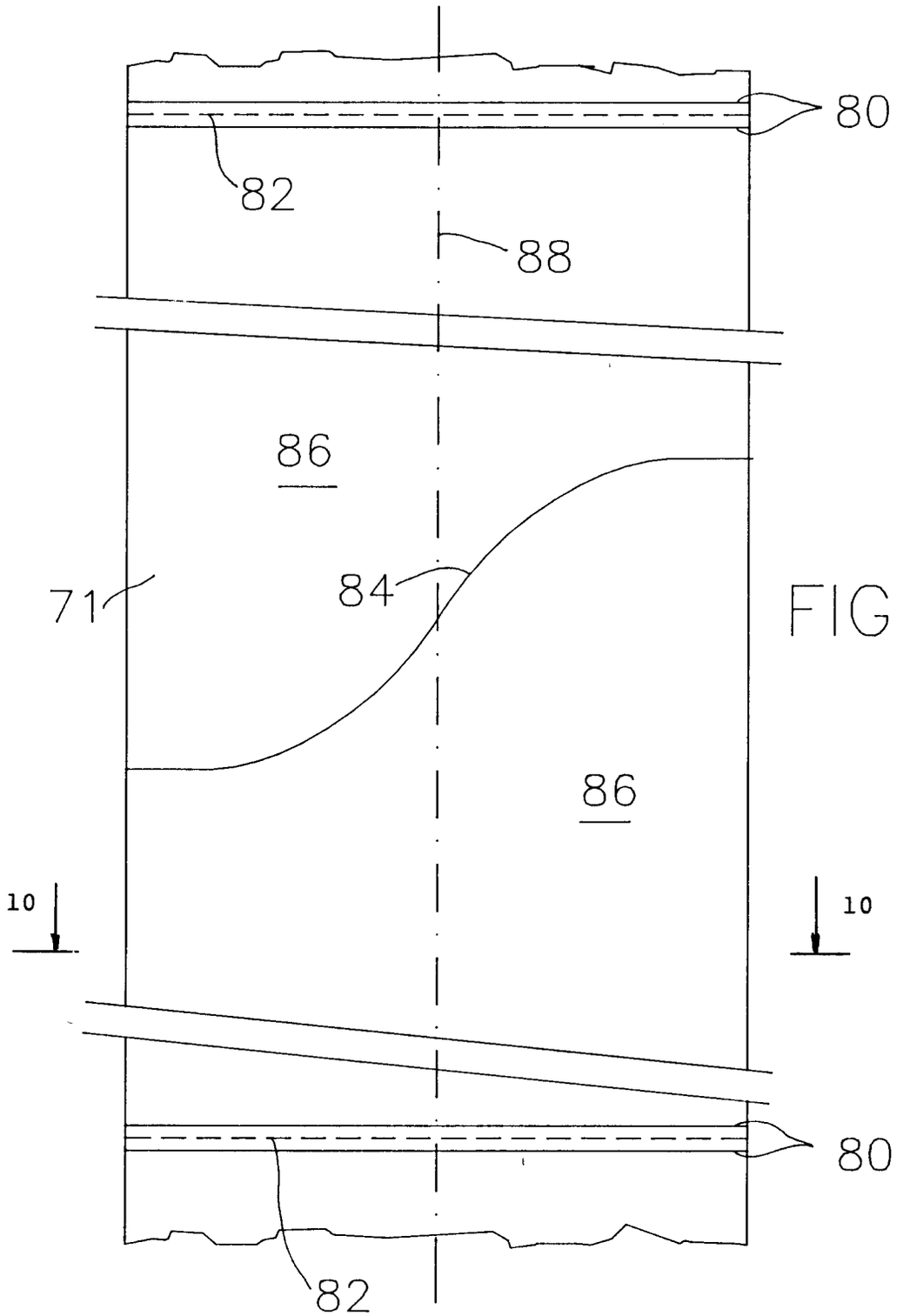


FIG 9

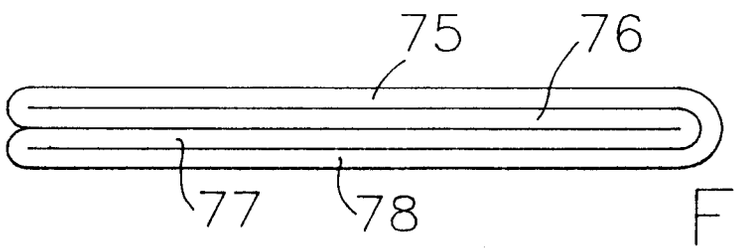


FIG 10

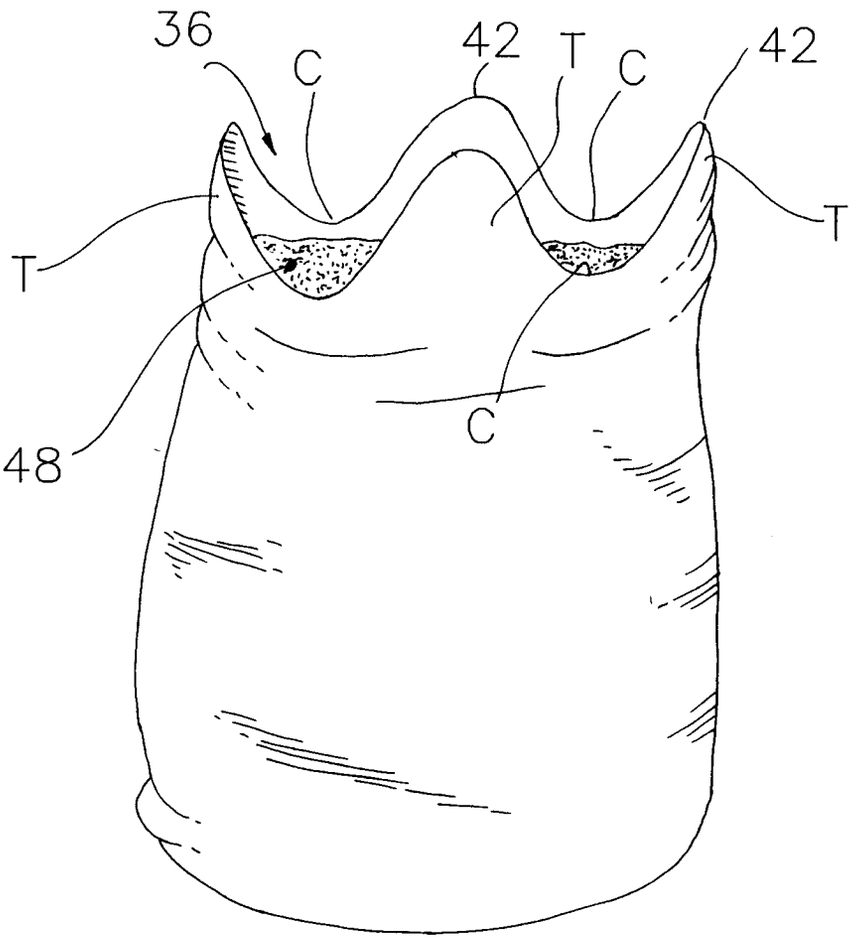


FIG 12

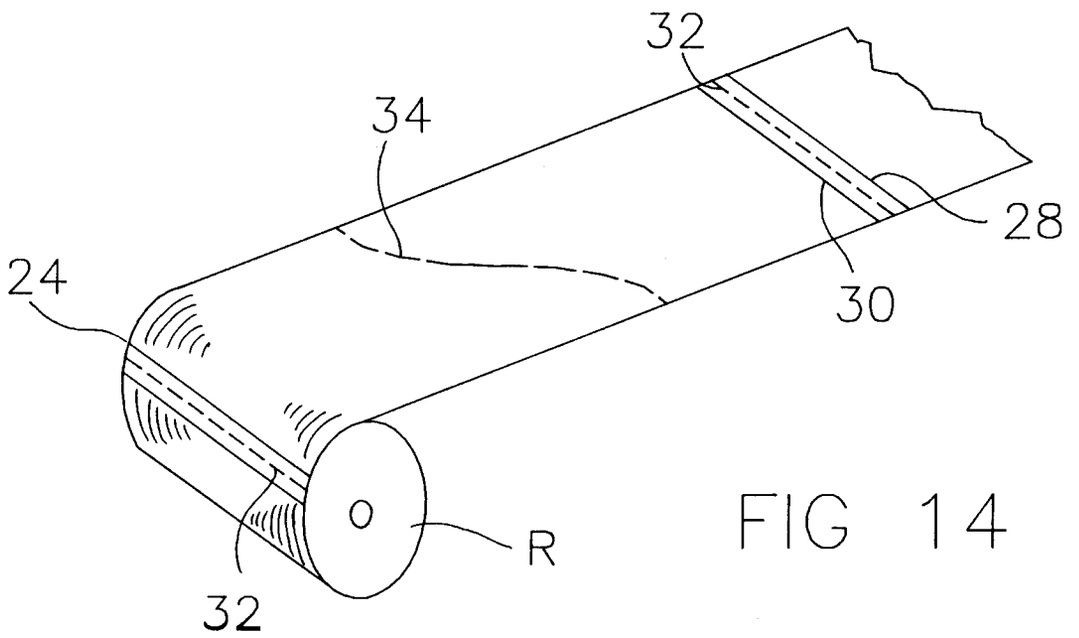


FIG 14

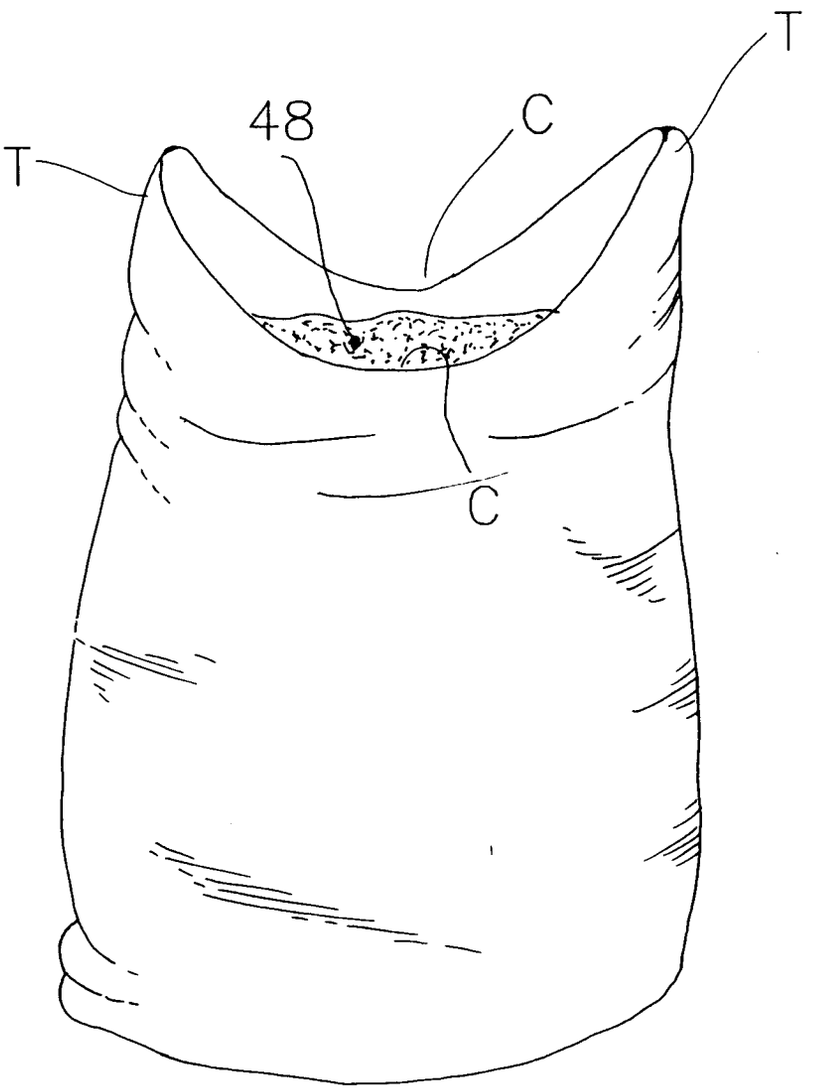


FIG 13

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 11 8733

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.5)
D,X	EP-A-0 341 739 (GREYVENSTEIN) * column 3, line 23 - line 27 * * column 4, line 32 - line 35 * * column 5, line 20 - line 27 * * column 6, line 37 - line 39 * * column 6, line 53 - line 55 * * abstract; figures 5,6 *	1-6	B65D33/16
D,Y	---	7-10	
D,Y	EP-A-0 254 256 (GREYVENSTEIN) * claims; figure 1 *	1,3,7-10	
Y	---	1,3	
	GB-A-2 203 127 (BALL) * abstract; figure 2 *		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)
B65D B31B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	05 JANUARY 1993	SPETTEL J.D.M.L.

CATEGORY OF CITED DOCUMENTS

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

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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

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