



(11) **EP 2 093 152 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
26.08.2009 Bulletin 2009/35

(51) Int Cl.:
B65D 33/00 (2006.01)

(21) Application number: **09152806.7**

(22) Date of filing: **13.02.2009**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK TR**
Designated Extension States:
AL BA RS

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(30) Priority: **14.02.2008 IT VE20080012**

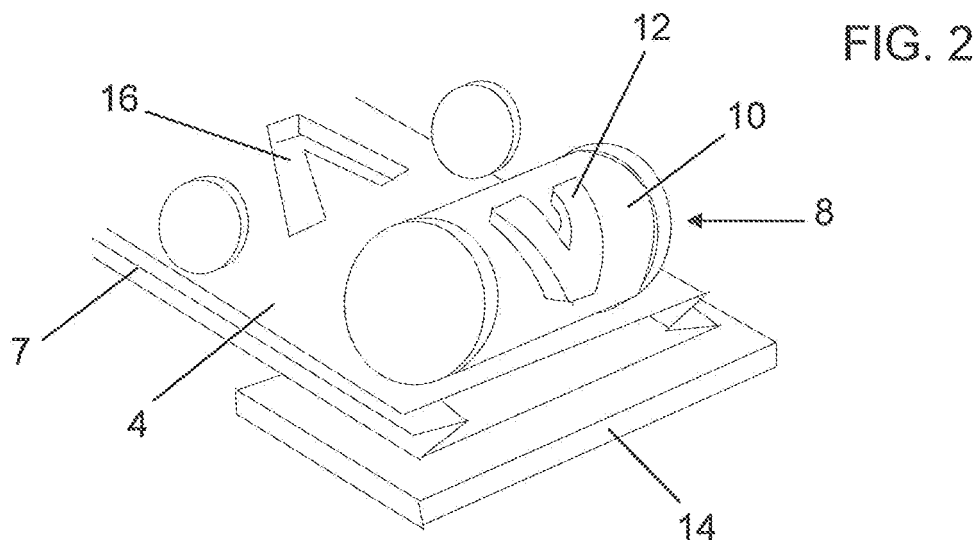
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(54) **Three-dimensional containers provided with relief decorations and a production method for such containers**

(57) A three-dimensional container characterised by consisting of papery material having a degree of plastic

yielding, in all directions, of not less than 5%, and comprising on at least one portion of its lateral surface at least one three-dimensional plastic deformation.



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Description

[0001] The present invention relates to three-dimensional containers provided with relief decorations, and a production method for such containers.

[0002] Shopping bags of paper or combined paper/plastic are known, produced manually or by machine and provided or not provided with handles. They are used both for low cost products and for luxury products, depending on the bag finish.

[0003] These shopping bags are normally produced from a sheet of preprinted material which is glued and folded to form the bag. Further paper or cardboard pieces can be disposed or glued on particular regions of the sheet, for example that intended to form the base or the upper edge where the handles are attached, to provide greater strength.

[0004] An object of the invention is to produce a container provided with relief decoration able to increase its visual effect on the consumer.

Another object of the invention is to utilize reliefs obtained on deformable material to vary the mechanical properties of the articles formed from said material.

[0005] Another object of the invention is an automatic production process for such articles starting from materials either in sheet, in punched-out pieces or in rolls which uses traditional machines possibly modified to obtain said reliefs on the articles.

[0006] This object is attained according to the invention by a container as described in claim 1.

[0007] According to the invention a method is provided as claimed in claim 4.

[0008] The present invention is further clarified hereinafter with reference to the accompanying drawings in which:

Figure 1 is a schematic view showing a block scheme of the method according to the invention,

Figure 2 is a perspective view of the forming station,

Figure 3 shows a shopping bag obtained by the method of the invention,

Figure 4 is a schematic view showing a manual production system, and

Figure 5 shows a further embodiment thereof.

[0009] As can be seen from the figures, the method for producing shopping bags of the invention consists of unwinding from a reel 2 a web of papery material having plastic yielding characteristics, in both the transverse and longitudinal direction, of not less than 5%, then subjecting it in a suitable station 6 to the traditional operations of punching, crease-lining, folding and gluing to form a flattened tubular web comprising a plurality of pleats 7 along its longitudinal edges.

[0010] The tubular web is then fed to a forming unit 8 consisting of a roller 10 comprising on its lateral surface one or more reliefs 12 corresponding to the design to be formed on the shopping bag, and a die 14 facing the roller

and made of soft material.

[0011] By passage through the forming station, the two outer surfaces of the flattened tubular web become provided respectively with a depression 16 and a projecting portion corresponding to the roller motif.

[0012] The web is then cut in a cutting station 20 to form individual pieces which at one end are subjected to application of the support handles 28 and at the other end are folded to form the bag base 26.

10 [0013] The shopping bag obtained in this manner is then fed to a storage station 22 where the bags can be easily stacked on each other by virtue of the co-penetration of the deformations 16, 18 of superimposed bags.

15 [0014] In a modified embodiment not shown in the drawings, the paper web can be advanced stepwise to enable a male/female deformation element to be used, with the male element consisting of a punch producing a positive of the three-dimensional form, or an elastic membrane extended and pressed onto the web and then subjected to an overpressure from the opposite side by a compressed fluid, for example air.

20 [0015] In a further embodiment of the method, the web leaving the roll is subjected, at least in a region which will later form the face of the shopping bag, to a deformation to create the desired motif.

25 [0016] In a further embodiment (see Figure 4), the method comprises firstly completing the shopping bag 24 by applying the base 26 and the handles 28, and then subjecting the bag while in the flat configuration to plastic deformation with a deforming element consisting of a punch 30 and a die 32.

30 [0017] Figure 5 shows a different method of producing the shopping bag, which comprises ornamental relief motifs on both the opposing vertical walls. The method consists of firstly making the bag 24 and then inserting it into the cavity 34 of a mould 36 having the same shape and dimensions as the bag when completely unfolded, in which the two walls corresponding to those walls of the bag to be decorated comprise a depression 38 corresponding to the relief motif. Compressed air is then fed into the shopping bag while inserted in the mould, to urge the wall portion of the shopping bag made of yieldable papery material into the mould depression to create the final relief motif 40 in the shopping bag by stretch-moulding.

Claims

- 50 1. A three-dimensional container **characterised by** consisting of papery material having a degree of plastic yielding, in all directions, of not less than 5%, and comprising on at least one portion of its lateral surface at least one three-dimensional plastic deformation.
- 55 2. A container as claimed in claim 1, **characterised by** being a shopping bag.

3. A container as claimed in claim 1, **characterised in that** the facing surfaces of the shopping bag comprise two mutually penetrating equal deformations (16, 18). 5
4. A method for producing the three-dimensional containers claimed in claims 1 to 3, **characterised by** using papery material having a degree of plastic yielding, in all directions, of not less than 5%, and subjecting to plastic deformation at least one portion of the container lateral surface to obtain a three-dimensional deformation. 10
5. A method as claimed in claim 4, **characterised by** subjecting said multilayer paper material, in sequence, to the steps of punching, crease-lining, folding and stabilization in the folded configuration, to form a three-dimensional container, the papery material being subjected, before or after any one of said steps, to said plastic deformation in the regions in which ornamental relief motifs are to be created. 15 20
6. A method as claimed in claim 5, **characterised by** subjecting the punched and crease-lined material to plastic deformation before folding it and stabilizing it in the form of a three-dimensional container. 25
7. A method as claimed in claim 5, **characterised by** subjecting the finished container to plastic deformation in a flat mould (30, 32) comprising reliefs/cavities corresponding to those which are to appear in the finished container (24). 30
8. A method as claimed in claim 7, **characterised by** subjecting the already formed container (28) to plastic deformation in a mould (32) having a cavity substantially corresponding to that of said container and presenting, in the walls corresponding to those of the finished container, cavities (34) corresponding to the ornamental relief motifs to be obtained on the container. 35 40

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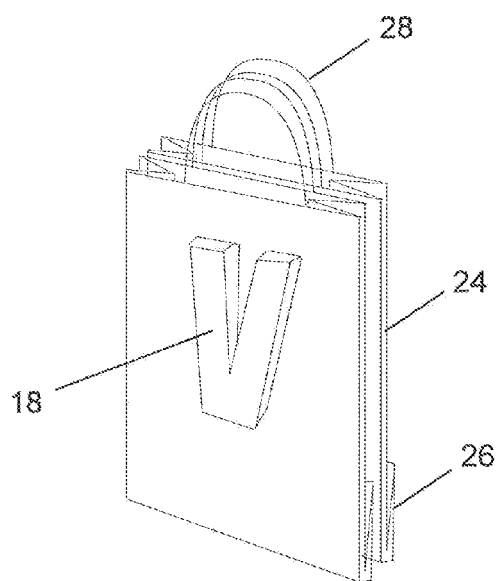
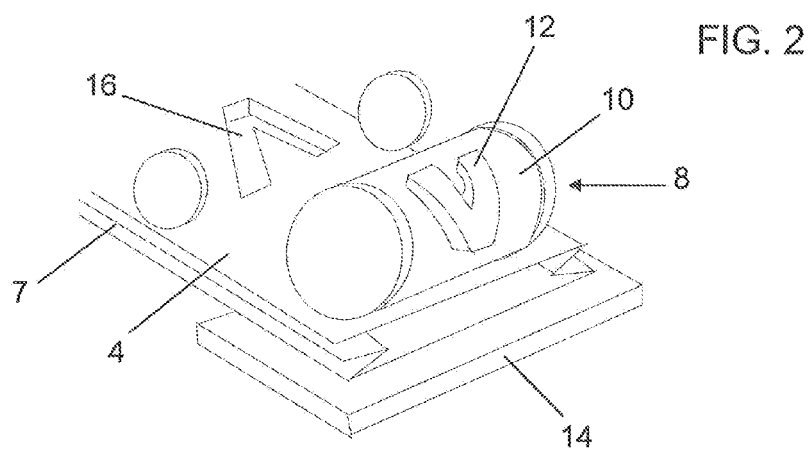
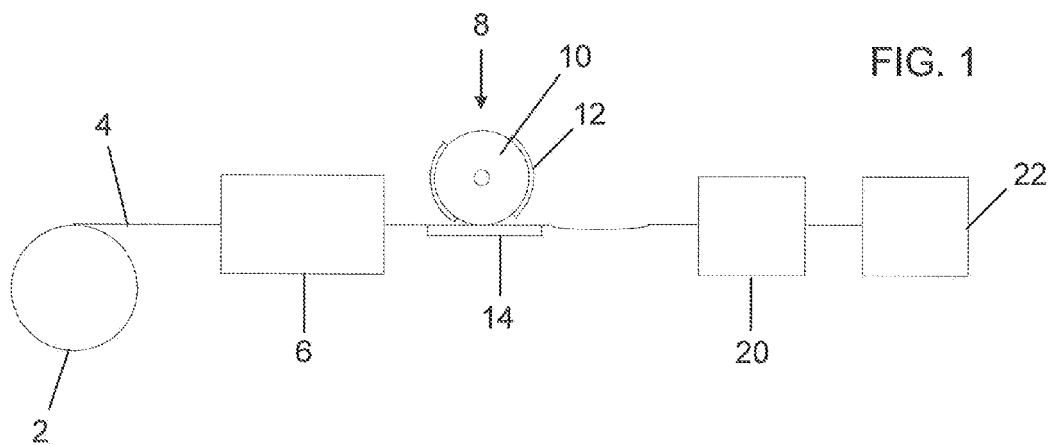


FIG. 4

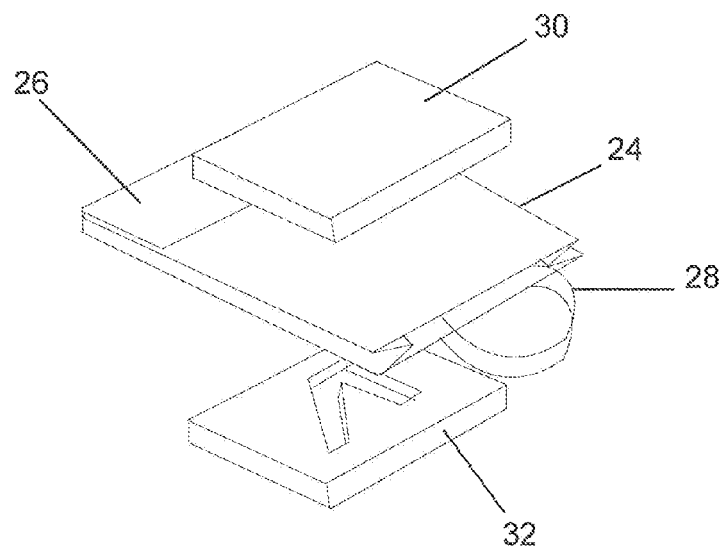
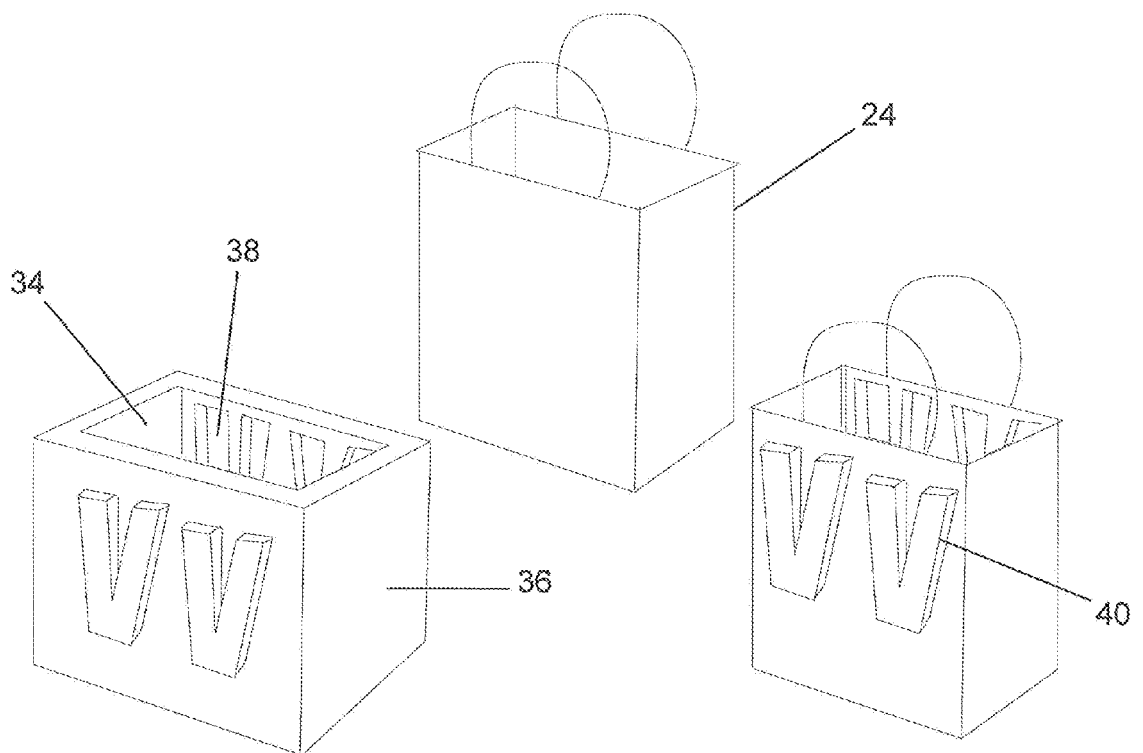


FIG. 5





EUROPEAN SEARCH REPORT

Application Number
EP 09 15 2806

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 1 793 163 A (DEUBENER WALTER H) 17 February 1931 (1931-02-17)	1-4	INV. B65D33/00
Y	* page 2, line 10 - line 35; figures 3,4,6 *	5-7	
Y	----- EP 1 798 025 A (IMP TOBACCO R Y O B V [NL]) 20 June 2007 (2007-06-20) * paragraph [0019] - paragraph [0020]; figures 7,8 *	5-7	
A	----- EP 1 785 363 A (AUTOBAR FLEXIBLE PACKAGING [FR]) 16 May 2007 (2007-05-16) * figures 1-3 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D B31B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 June 2009	Examiner Bevilacqua, Vincenzo
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p> <p>& : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 15 2806

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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22-06-2009

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