



(12)

## EUROPEAN PATENT APPLICATION

(21) Application number : **94500166.7**

(51) Int. Cl.<sup>6</sup> : **B31B 17/00**

(22) Date of filing : **26.10.94**

(30) Priority : **26.10.93 ES 9302232**

(43) Date of publication of application :  
**26.04.95 Bulletin 95/17**

(84) Designated Contracting States :  
**AT BE DE DK FR GB GR IE IT NL PT**

(71) Applicant : **PAPER, S.A.**  
**Pol. Can Roca, parcela 2**  
**E-08292 Esparraguera Barcelona (ES)**

(72) Inventor : **Teixidor Casanovas, Pedro**  
**Poligon Can Roca, Parcel·la 2**  
**08292 Esparraguera (Barcelona) (ES)**

(74) Representative : **Ponti Sales, Adelaida Oficina**  
**Ponti et al**  
**Passeig de Gracia, 33**  
**E-08007 Barcelona (ES)**

(54) **Method for manufacturing cardboard boxes, and box obtained with this method.**

(57) The method consists in applying lugs (6,7) extending from the sides of sheets (1,2) onto chamfered edges (4) of a moulding core (3), along which the different steps of the method are carried out. Optionally, the lugs present corresponding prolongations (6a,7a). The lugs, previously glued, are joined together in order to form chamfered edges (8) limited by cant edges (8a) between every two adjacent sides (9) of the box. Optionally, beside the chamfered edges (8) the lugs (6a/7a) are glued to the sides (9) of the box.

This chamfered edges and the corresponding cant edges lend the box a great stiffness and resistance to withstand the compression stresses to which it may be subjected.

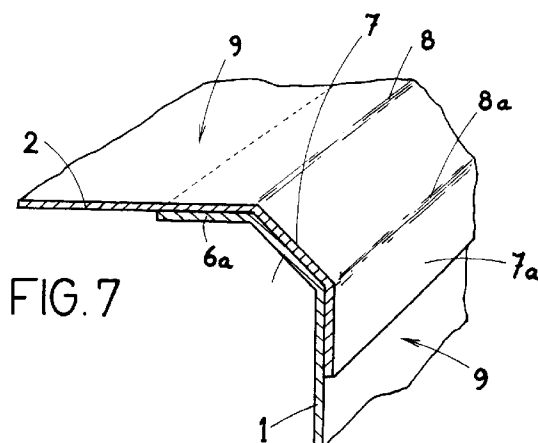


FIG. 7

The present invention refers to a method for manufacturing cardboard boxes, and to a box obtained with this method.

## BACKGROUND OF THE INVENTION

A method for manufacturing cardboard boxes, which is described in Spanish Patent application no. 9306188 (PAPER, S.A.), starts from separate sheets, with lugs on the sides and flaps at the ends facing each other two by two. These sheets are applied onto the external faces of a mandrel, along which the various steps of the method are carried out to provide a rectangular prismatic body whose bases are provided with open flaps and whose edges are reinforced by folded lugs glued to the sides of the body, beside the edges.

In addition to achieving reinforced boxes capable of withstanding the stresses to which they will be subjected during utilization, the method object of the aforesaid patent provides other advantages which are, in summary: the possibility of some sides of the box being of different quality and thickness than the others, or presenting fibres running in different directions in order to withstand stresses in any direction.

Despite these advantages, various tests carried out with this type of box have shown that it is possible to increase their strength and thus extend their field of utilization.

## DESCRIPTION OF THE INVENTION

Thus, in order to increase the strength of the boxes manufactured using the method described, the new method constituting the object of the present invention has been developed.

The method of the invention is characterized in that the lugs which project from the sides of the sheets are applied and joined together over chamfered edges provided on the mandrel. These chamfered edges are situated between two adjacent sides of the mandrel.

At least one of the pairs of sheets from which the box is obtained presents prolongations from the respective lugs. These prolongations are applied and joined to an adjacent zone of the sheet, immediately beside the chamfered edges upon which the lugs in question are applied.

In one possible embodiment, all the sheets from which the box is obtained present prolongations from their respective lugs. These prolongations are applied and joined to a zone of the sheet immediately adjacent to the chamfered edges upon which the lugs in question are applied.

The box obtained with the method described is provided with chamfered edges which alternate with its sides and on which are superimposed and glued the folded lugs of the adjacent sheets, forming two

cant edges between each pair of sheets.

At least one of the superimposed lugs forming the chamfered edges of the box presents a prolongation folded and glued onto the adjacent side, beside the chamfered edges.

It is further envisaged that each of the superimposed lugs which form the chamfered edges of the box present corresponding prolongations folded and glued onto the adjacent side, beside the chamfered edges.

## BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of all that has been set forth in this specification, there are attached some drawings in which, solely by way of example, a practical case of embodiment of the method and the corresponding box is shown.

In said drawings Figure 1 is a schematic cross-section showing the moulding core and a pair of sheets with their lugs prior to application against the chamfered edges of the moulding core; Figure 2 is a similar view showing another pair of sheets with their lugs extended, on the point of being applied and glued to the lugs of the first two sheets; Figure 3 is a view similar to the previous two, showing the lugs which form each chamfered edge glued together; Figure 4 is a view similar to that of Figure 3, but in this example two of the sheets have their corresponding prolongations folded and glued to the adjacent sheets; Figure 5 is a view very similar to that of Figure 4, but in this case it is the other two sheets which present the corresponding prolongations to their lugs; Figure 6 is a view similar to those of Figures 4 and 5, showing a version in which all the sheets present lugs with prolongations folded and glued to the adjacent sides; Figure 7 is a perspective view showing one of the chamfered edges of the box obtained according to the method of the invention.

## DESCRIPTION OF A PREFERRED EMBODIMENT

The method for manufacturing of boxes consists, according to the representation shown in the drawings, in applying successively two pairs of sheets -1- and -2- against the sides of a moulding core -3- provided with chamfered edges -4- situated between sides -5- of the moulding core. The sheets -1- have some lugs -6- on both sides, while the sheets -2- have similar lugs -7-. Optionally, the lugs -6- and -7- have prolongations -6a- and -7a-, respectively.

It is envisaged that at least the lugs -6, 7- and, optionally, their prolongations -6a, 7a-, together with the zones of the sheets -1, 2- immediately adjacent to the respective lugs, be glued. Then the application of these lugs and, optionally, their prolongations, against the chamfered edges -4- of the moulding core -1- and against the sides -5- of same is carried out,

using countermoulds, rollers or any other similar mechanism (not shown). Finally the body obtained is removed from the moulding core -1-, and constitutes the box, whose particular feature consists in it being provided with reinforced chamfered edges -8-, formed by the lugs -6, 7- glued together, which alternate with sides -9- (Figure 7).

If the lugs -6, 7- have prolongations -6a, 7a-, the sides -9- will also be reinforced by said prolongations glued beside the chamfered edges -8-.

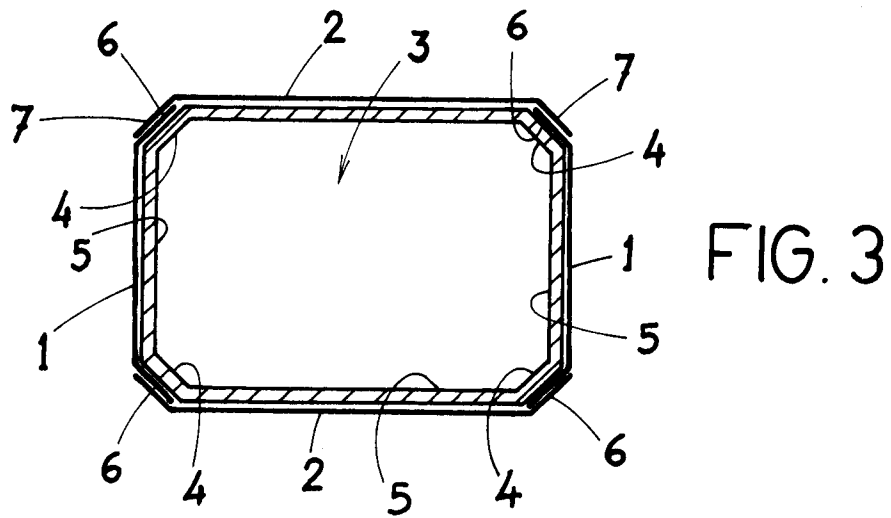
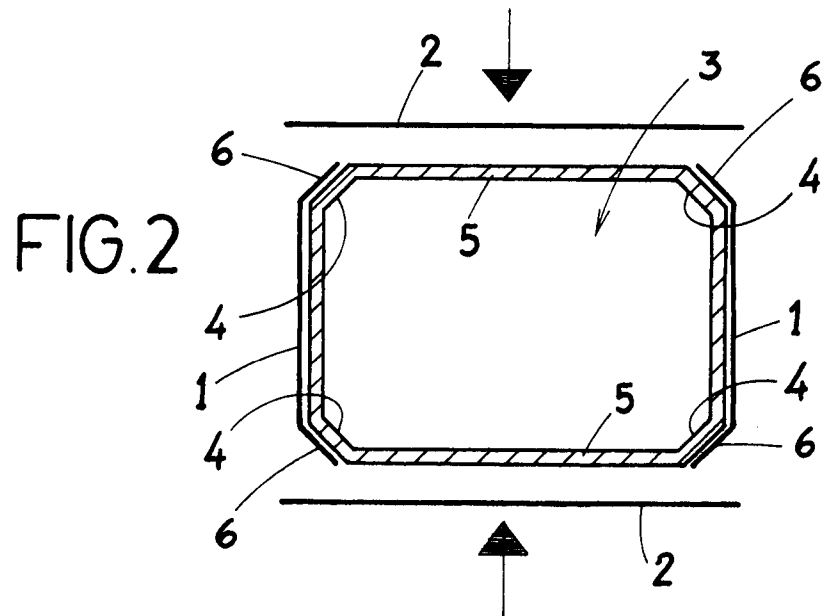
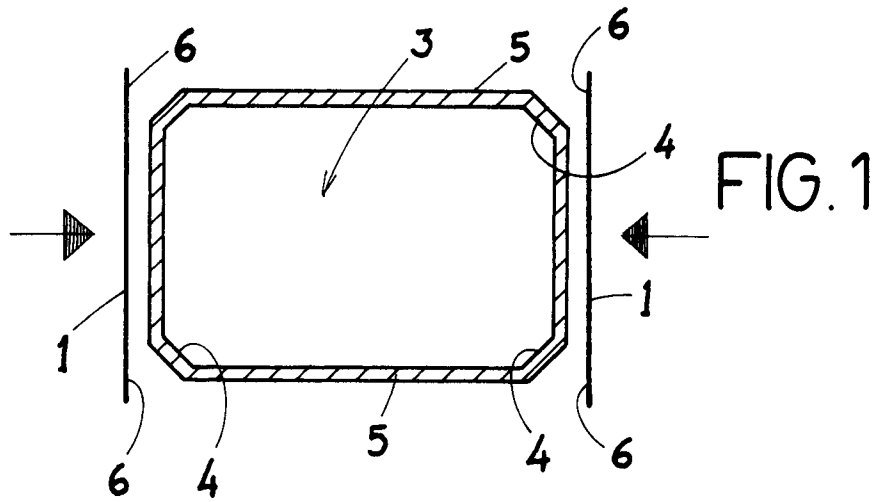
In any case, between the chamfered edges -8- of the box are formed pairs of cant edges -8a- which lend the box a great stiffness, so that it withstands the compression stresses to which it will be subjected during utilization.

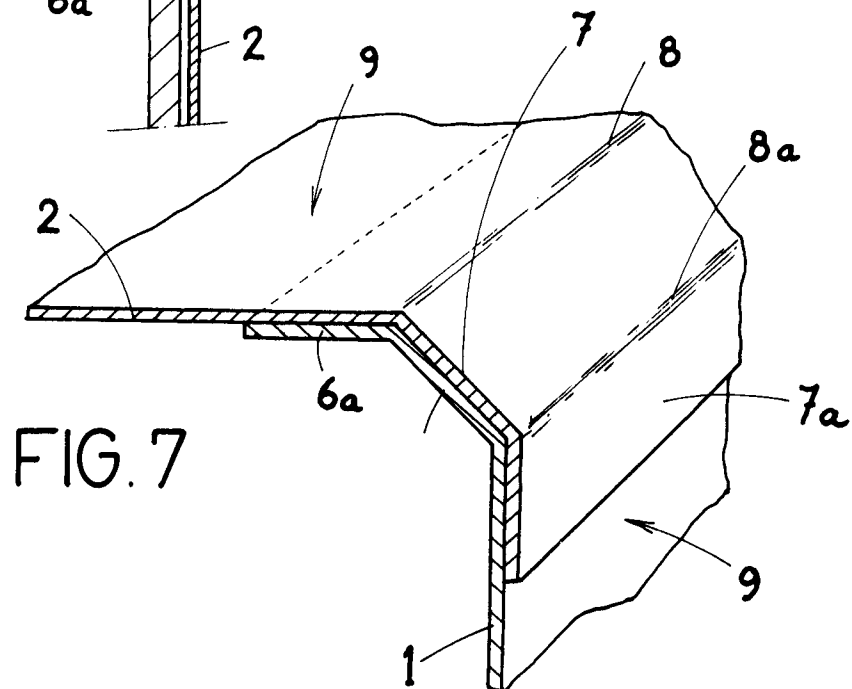
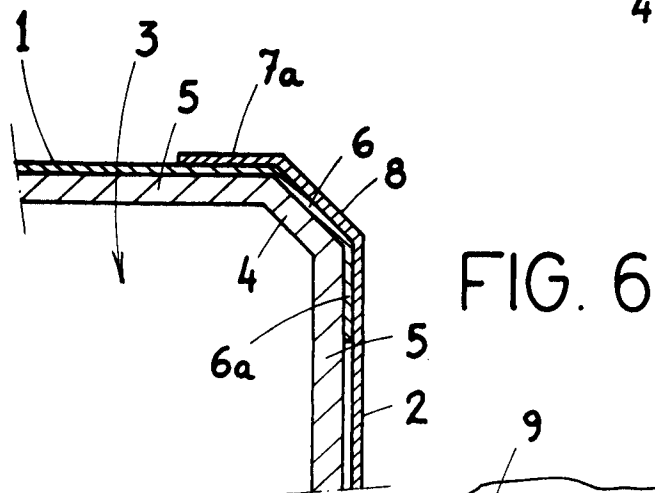
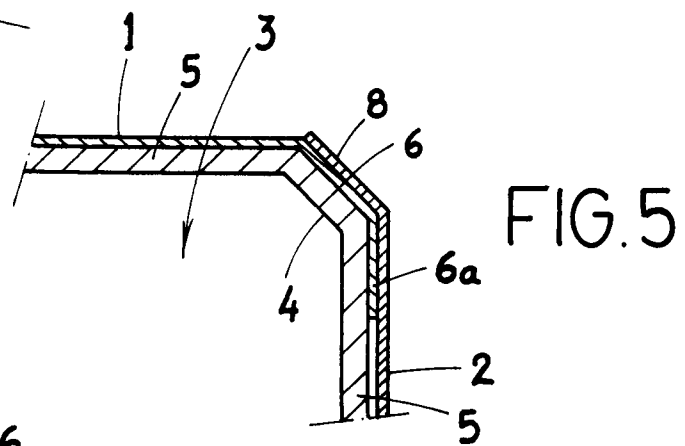
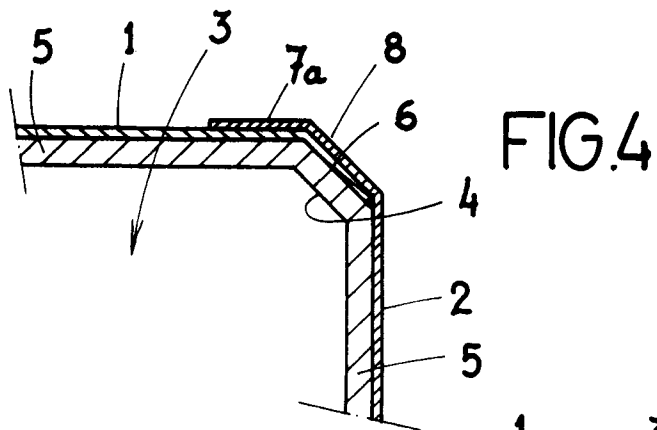
### Claims

1. A method for manufacturing cardboard boxes, which consists in starting from separate sheets (1, 2) with lugs (6, 7) on the sides and flaps at the ends, facing each other two by two; these sheets are applied onto the external faces of a long mandrel (3) having a cross-section equivalent to that of the boxes to be obtained and along which the various steps of the method are carried out to provide a prismatic body whose bases are provided with open flaps and whose edges are reinforced by folded lugs glued to the cant edges of the sides of the body, characterized in that the lugs (6, 7) which project from the sides of the sheets (1, 2) are applied and joined together over chamfered edges (4) provided on the mandrel (3); these chamfered edges are situated between two adjacent sides (5) of the mandrel (3).
2. A method as claimed in claim 1, characterized in that at least one of the pairs of sheets (1, 2) from which the box is obtained presents prolongations (6a) from the respective lugs (6), said prolongations being applied and joined to a zone of the adjacent sheet, immediately beside the chamfered edges (4) upon which the lugs in question are applied.
3. A method as claimed in claim 1, characterized in that all the sheets (1, 2) from which the box is obtained present prolongations (6a, 7a) from their respective lugs (6, 7), said prolongations being applied and joined to a zone of the adjacent sheet, immediately beside the chamfered edges (4) upon which the lugs in question are applied.
4. A box obtained with the method of claim 1, characterized in that it is provided with chamfered edges (8) which alternate with the sides (9) of the box, on which are superimposed and glued the

folded lugs (6, 7) of the adjacent sheets, forming two cant edges (8a) between each pair of sheets.

5. A box obtained with the method of claims 1, 2 and 4, characterized in that at least one of the superimposed lugs (6) forming the chamfered edges (8) of the box presents a prolongation (6a) folded and glued onto the adjacent side, beside the chamfered edges (8).
6. A box obtained with the method of claims 1, 3 and 4, characterized in that all the superimposed lugs (6, 7) which form the chamfered edges (8) of the box present corresponding prolongations (6a, 7a) folded and glued onto the adjacent side, beside the chamfered edges.







European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 94 50 0166

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.6)
A	EP-A-0 387 171 (EBERLE) * claim 1; figures 7-9C *	1-5	B31B17/00
A	EP-A-0 160 929 (HERZBERGER PAPIERFABRIK LUDWIG OSTHUSHENRICH GMBH & CO KG) * figure 1 *	1,4	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B31B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 30 January 1995	Examiner Pipping, L
<p><b>CATEGORY OF CITED DOCUMENTS</b></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>&amp; : member of the same patent family, corresponding document</p>			

EPO FORM 150 03.92 (P04001)