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(54) **Packaging box**

(57) A packaging container (1) formed of a flat sheet (2) cut and folded so as to form a flat quadrangular bottom (3) surrounded by two parallel vertical side walls (4, 5) and two vertical end walls (6) perpendicular to the side walls (4, 5), the homologous end portions (8, 8') of the latter being folded and fixed to each of said end walls (6), is described. In the container (1) of the invention, the two end portions (8, 8') are composed of an outer part (8e, 8'e), which can be fixed to the end wall, and of an inner part (8i, 8'i), separated from the outer part (8e, 8'e) by a cut (10) with two perpendicular sides (A, B) and joined to it along an oblique fold line (C) about which it can pivot, said sides (A, B) of the cut (10) and said line (C) being arranged like the three sides of a rectangular trapezoid (T) whose base (D) is superimposed on or parallel to the fold line (Q) between an end wall (6) and the bottom (3).

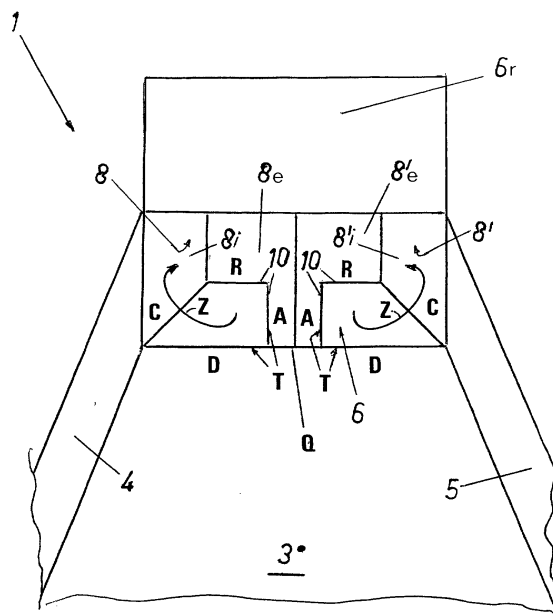


FIG. 5

Description

[0001] The present invention relates to packaging containers usually used to hold fruit, vegetables and other types of foodstuffs.

[0002] As is known, such containers are made by die-cutting, folding and fixing using adhesive or the like, so as to form a flat quadrangular bottom surrounded continuously, along its edges, by a pair of parallel vertical side walls and a pair of parallel vertical end walls, arranged perpendicularly, running on from one another.

[0003] To achieve this, the end portion of each side wall is folded to form two triangles arranged symmetrically with respect to an oblique fold line, the outer triangle is adhesively bonded or otherwise fixed to an end wall, and then the various parts are pivoted so that the two triangles end up face to face and superimposed when all the walls are vertical.

[0004] However, as will be seen more clearly below, such a method has a disadvantage, resulting from the fact that the end walls, partially covered by said two superimposed triangles of the side walls resting on them, have a central area where they are not covered by other layers of material (cardboard, corrugated cardboard, etc.) and are therefore rather weak and hence may deform during the transport and stacking of these containers.

[0005] To overcome this disadvantage, the inventor of the subject of the present application has designed a new packaging container in which the abovementioned end portions of the side walls are composed of an outer part, which can be fixed to an end wall, and of an inner part, separated from the outer part by a cut with two perpendicular sides and joined to it along an oblique fold line about which it can pivot. Said sides of the cut and said fold line form a rectangular trapezoid whose base, when the container is assembled, is superimposed on or at least parallel to the fold line separating an end wall from the bottom.

[0006] When the parts are folded to form the container, said outer parts of the end portions of the side walls occupy the abovementioned central area of the end walls, being superimposed on it, conferring on the whole greater rigidity and better mechanical strength.

[0007] The subject of the present invention therefore consists of a packaging container as described in the attached Claim 1.

[0008] A more detailed description of a preferred embodiment of the container of the invention will now be given, with reference to the attached drawings, in which:

- Fig. 1 is a partial perspective view of a packaging container made according to the current prior art;
- Fig. 2 is a plan view of a flat sheet with the cut and fold lines made so as to make it possible to form a container according to the invention;
- Fig. 3 is a partial plan view of the sheet of Fig. 2 with the side walls folded face down on the flat bottom;

- Fig. 4 is a partial perspective view of the container as it is being formed by folding and fixing its various parts;
- Fig. 5 is a partial perspective view of the container of Fig. 4 with all the walls in the vertical position, i.e. with the preparation work more or less finished.

[0009] It can be seen from Figure 1 that, in a packaging container 11 according to the prior art, the two side walls 14, 15 joined to the bottom 13 have two end portions 18, 18' which are folded along two fold lines, whose straight lines are marked s and t, which divide them into two triangles which are both only visible for the right hand side wall 15 and are marked 18'k and 18'h.

[0010] When the container 11 is assembled, the outer triangle 18'h is fixed, generally by adhesive bonding, to an end wall 16, having a fold-down flap 16r of known type, and folding is carried out (arrow A) along the line s so as to superimpose the other, inner triangle 18'k on it.

[0011] The join between a side wall and the end wall leads to the situation depicted by the left hand side wall 14, in which the abovementioned two triangles (of which only 18k, the inner triangle with respect to the side wall 14, is visible) are face to face and superimposed. The assembly is then immobilized in this position using known methods, folding down the abovementioned fold-down flap 16r which has projecting parts which engage in recesses made in the bottom 13 near the base of the end wall 16 (these projecting parts and recesses have not been shown in the drawing).

[0012] In a container 11 thus formed, the end wall 16 has a central area 16s over which no other layer or sheet of material is placed, giving rise to the disadvantages mentioned above relating to the relative weakness of the container 11 in this area.

[0013] By contrast, Figure 2 shows a plan view of a sheet 2 having cut lines (continuous) and fold lines (hatched) making it possible to use it to make a packaging container according to the invention. In this sheet 2 are made two side walls 4, 5 and two end walls 6, 7 having the abovementioned fold-down flaps 6r, 7r, said walls surrounding continuously, along its edges, a flat bottom 3. The side walls 4, 5 terminate at opposite ends in two end portions 8, 9 and 8' 9' each of which is formed by an inner part 8i, 9i, 8'i, 9' i, separated from an outer part 8e, 9e, 8'e, 9'e by a cut 10 with two perpendicular sides A, B and joined to the outer part (being an extension of it) along an oblique fold line C about which the inner part can pivot.

Said sides A, B of the cut 10 and said fold line C, running on from one another, thus define the shape of a rectangular trapezoid T whose base D is superimposed on (but may also be simply parallel to) the fold line Q between an end wall 6, 7 and the bottom 3.

[0014] To give a clearer picture, Figure 3 shows the sheet 2 with the two side walls 4, 5 folded in towards one another (arrow P) until they are face down on the flat bottom 3.

[0015] Figure 3 shows how, in the preferred embodiment described, the maximum height H of each side wall 4, 5 at said outer ends 8e, 8'e is substantially equal to half the width M of an end wall 6, such that, when the abovementioned parts are superimposed, they entirely cover the central area of the end wall 6, as can be seen in the drawing.

[0016] These outer portions 8e, 8'e are then fixed by adhesive bonding to the end wall 6 so that when the side walls 4, 5 and the end wall 6 are brought into the vertical position the abovementioned inner parts 8i, 8'i, delimited by the cuts 10, pivot (arrow N) along said fold lines C (see Figure 4) and end up face down on the outer parts 8e, 8'e, superimposed on the latter. This final position is shown in Figure 5, where it can be seen that the end wall 6 is entirely covered by another layer in its central area, i.e. where it is more at risk of deforming during handling of the container 1. As in the case described above, in the container of the invention 1 too the various parts are fixed in the abovementioned position by folding down the flap 6r (visible in Figures 2, 3 and 5) and fixing it in the known way so as to clamp the end portions of the side walls, keeping them face down on and pressed against the end wall.

[0017] In practical terms, as can be seen in Figure 5, in a container 1 according to the invention, only the inner parts of trapezoidal shape 8i, 8'i of the end portions 8, 8' of the side walls 4, 5 pivot by 180° about the fold lines C (arrow C), becoming superimposed on the outer parts 8e, 8'e, leaving only a relatively small trapezoidal area of the end wall 6 uncovered.

[0018] Thus is formed a packaging container which does not have the disadvantages of structural weakness mentioned several times. The inventor's object has thus been achieved.

[0019] Obviously, a container according to the invention may also be made using parts shaped and sized in a different way to that described above and illustrated in the drawings.

[0020] For example, the height of the outer parts of the end portions of the side walls, which are bonded to the end wall, may be other than half the width of the end wall, thus covering less of it, but in a way that is conducive to the desired result.

inner part (8i, 8'i, 9i, 9'i), separated from the outer part (8e, 9e) by a cut (10) with two perpendicular sides (A, B) and joined to it along an oblique fold line (C) about which it can pivot, said sides (A, B) of the cut (10) and said line (C) being arranged like the three sides of a rectangular trapezoid (T) whose base (D) is superimposed on or parallel to the fold line (Q) between an end wall and the bottom (3).

2. Packaging container according to Claim 1, in which the maximum height (H) of each of said outer end parts (8e, 8'e, 9e, 9'e) of the end portions (8, 8', 9, 9') of the side walls (4, 5) is substantially equal to half the width (M) of said end walls (6, 7), such that, when the box (1) is assembled, said outer end parts are bonded to the respective end wall (6, 7) in a coplanar position, one in the extension of the other.

Claims

1. Packaging container (1) formed of a flat sheet (2) cut and folded so as to form a flat quadrangular bottom (3) surrounded continuously by two parallel vertical side walls (4, 5) and two vertical end walls (6, 7) perpendicular to the side walls (4, 5), the homologous end portions (8, 8', 9, 9') of the latter being folded and fixed to each of said two end walls (6, 7), **characterized in that** said two end portions (8, 8', 9, 9') are composed of an outer part (8e, 8'e, 9e, 9'e), which can be fixed to the end wall, and of an

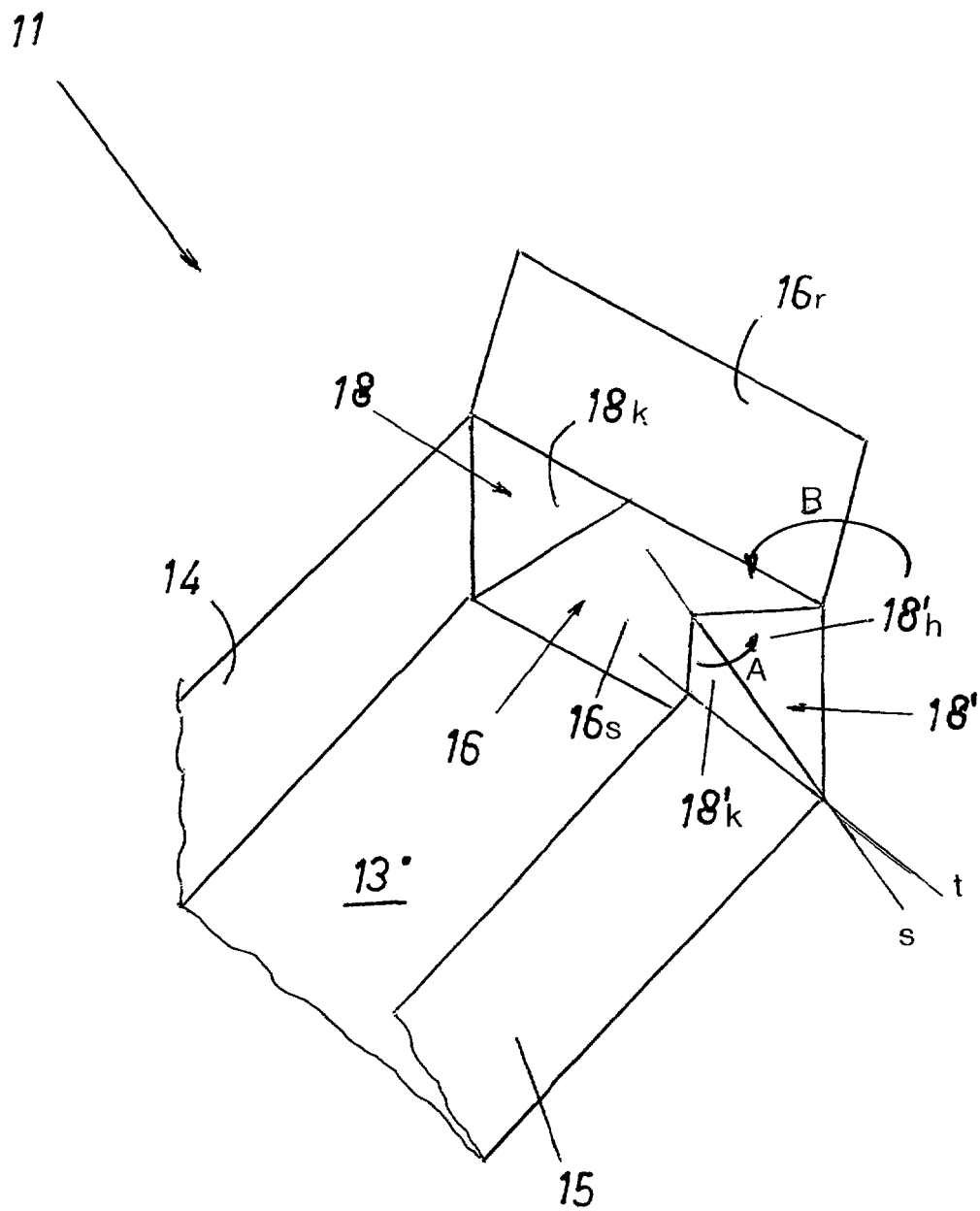


FIG.1

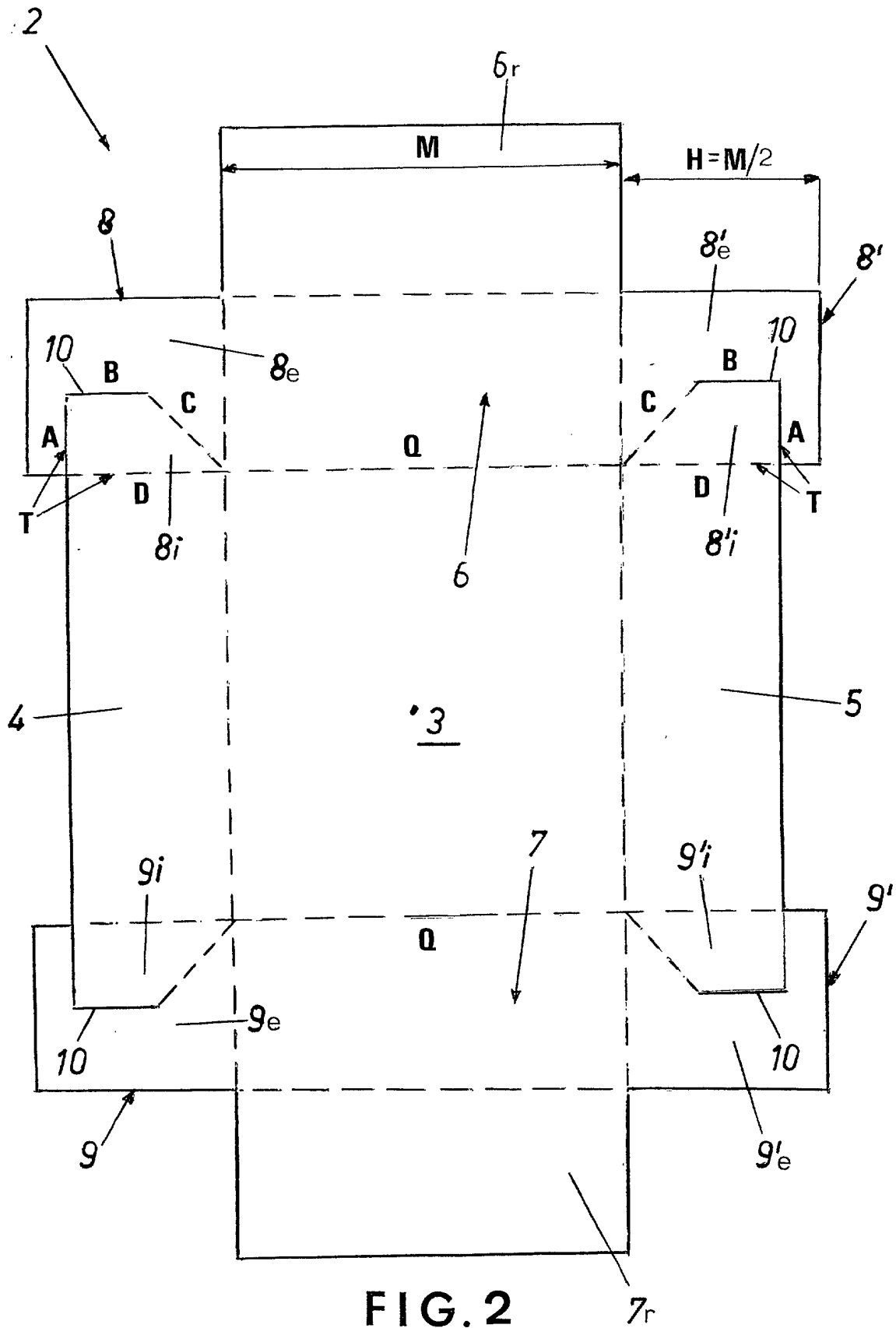


FIG. 2

FIG.3

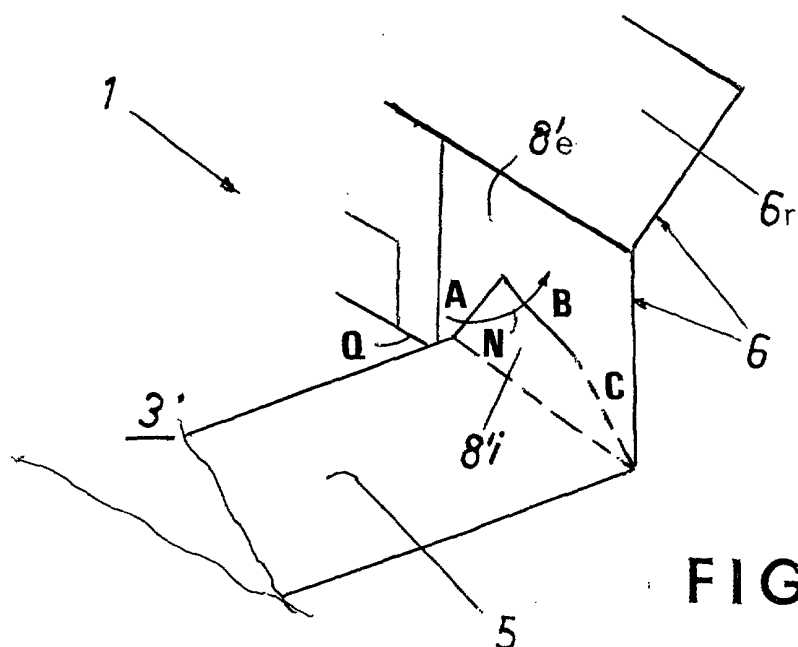
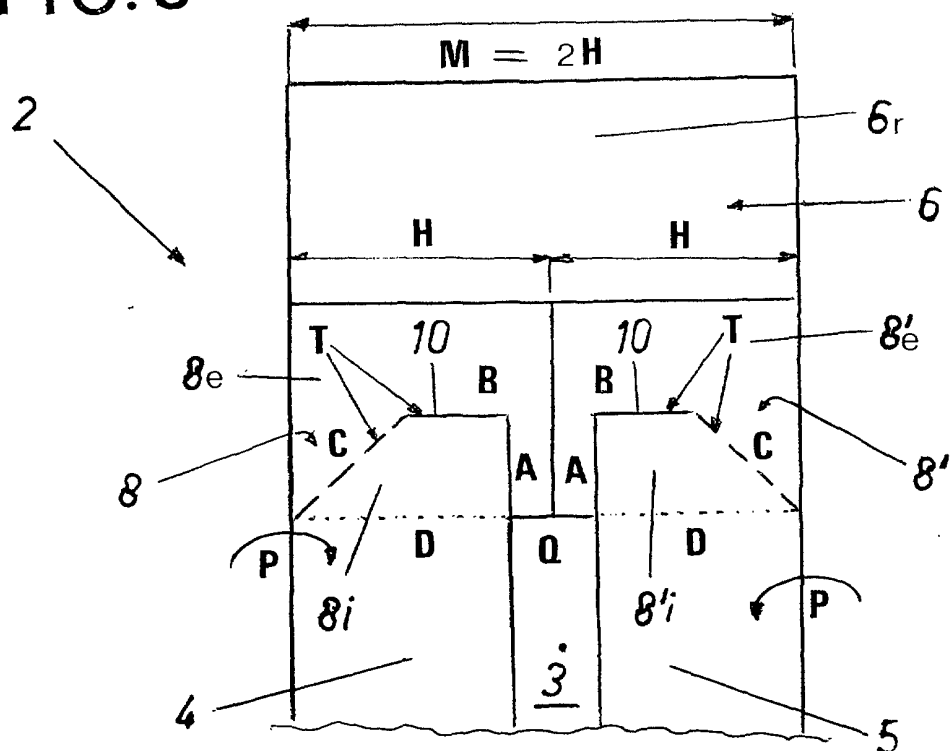


FIG.4

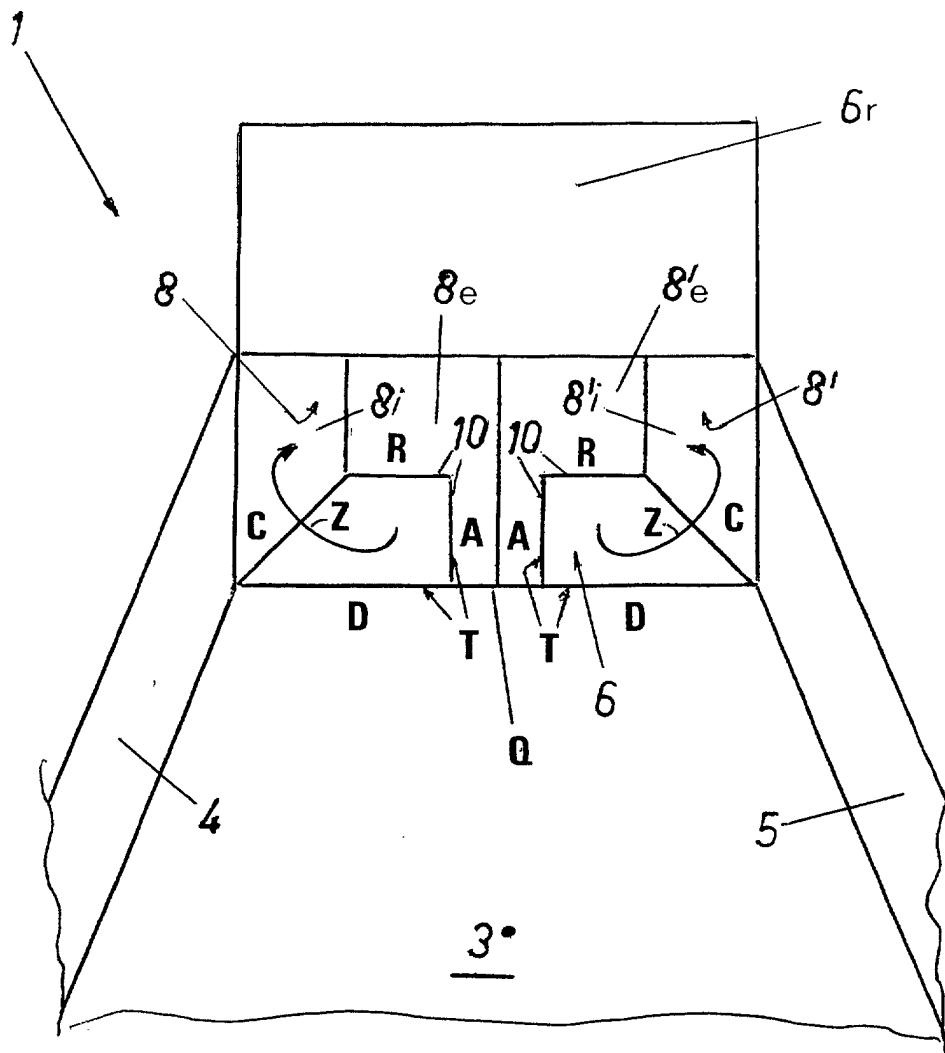


FIG. 5



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 05 40 5353

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 3 189 248 A (ROCCAFORTE HARRY I) 15 June 1965 (1965-06-15) * column 1, line 59 - column 2, line 64 * * figures 1-3 *	1,2	B65D5/24
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A	US 2 220 122 A (RINGLER WILLIAM A) 5 November 1940 (1940-11-05) * figures 1,3,4 *	1	
A	US 2 414 763 A (PALMER WILLIAM GLENELG) 21 January 1947 (1947-01-21) * figures 1,2 *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 8 September 2005	Examiner Piolat, O
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 40 5353

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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08-09-2005

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