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(54) CONTAINER FOR PACKAGING USE IN THE FORM OF A PARALLELEPIPED MADE FROM A FLAT SHEET

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(57) ABSTRACT

A container in the form of an open-topped parallelepiped defined by a flat base and perpendicular thereto, two side walls and two end walls, the container being formed by folding and fixing areas of a flat base that has previously been shaped and notched by blanking. Each end of a side wall is attached flat against an end wall by only a first part of its area that is superimposed on this end wall, an L-shaped cut allowing its unattached second part to rotate with respect to the first part about the axis that separates them and with respect to a fold line that joins it to the rest of the side wall, moving from a position of coplanarity with the first part, to a position in which it is parallel to and in contact with the first part.

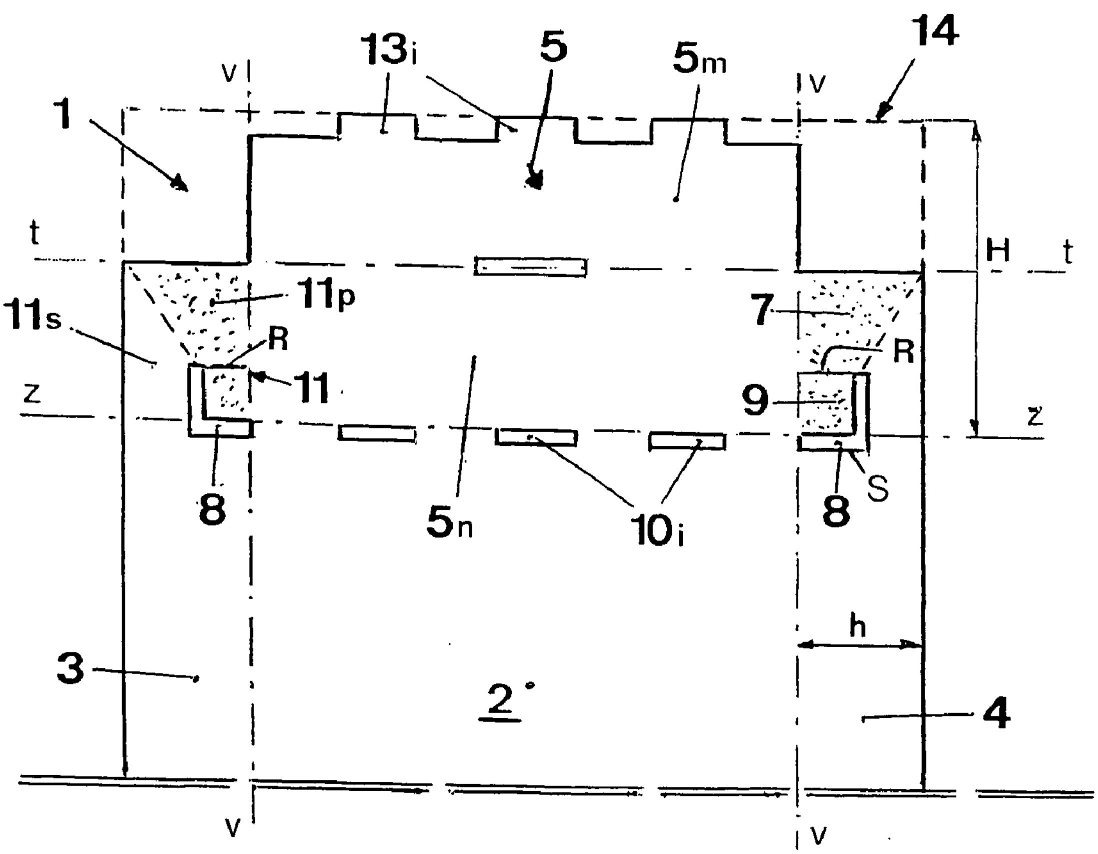
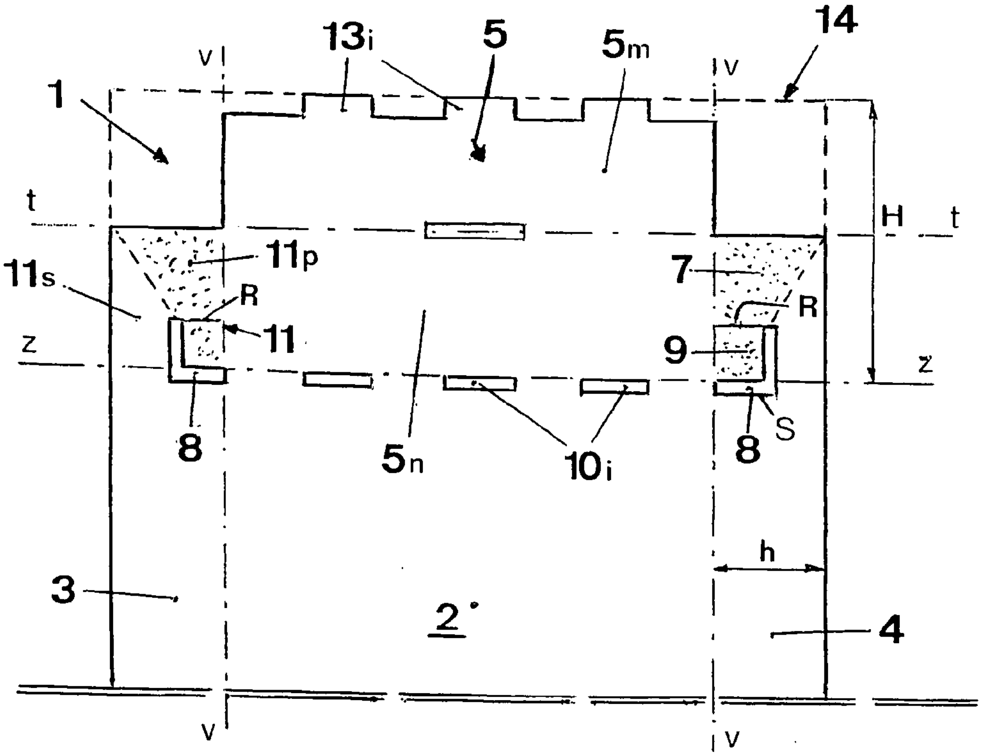


FIG. 1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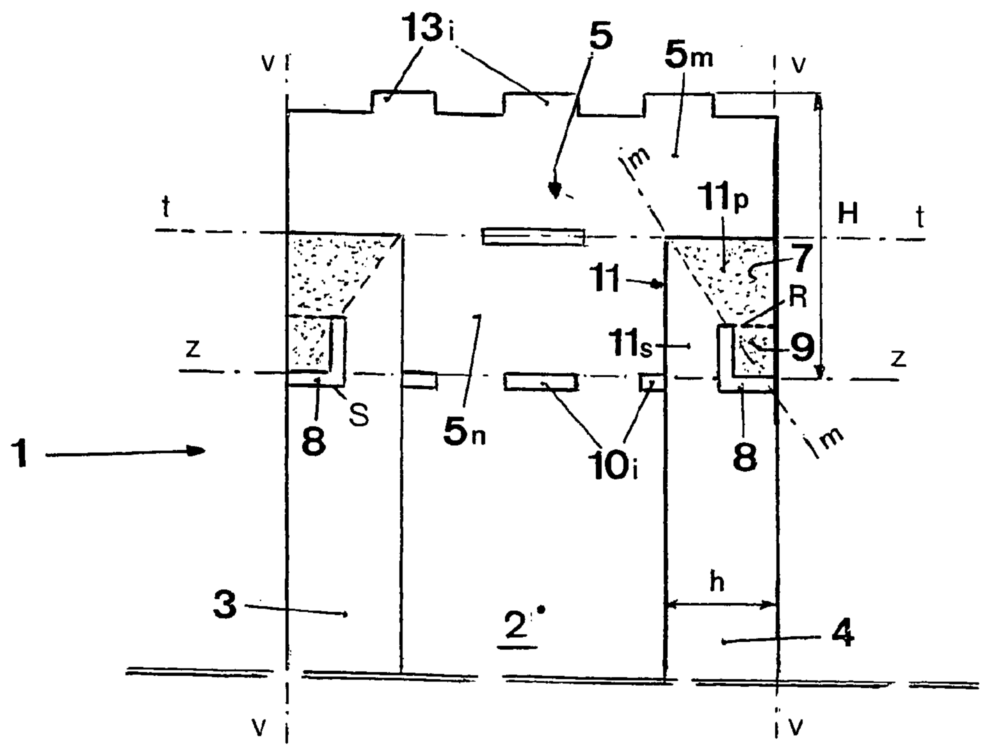
5
13_i
5_m
14
v
t
H
11_p
11_s
7
R
11
9
z
8
S
5_n
10_i
h
3
2
4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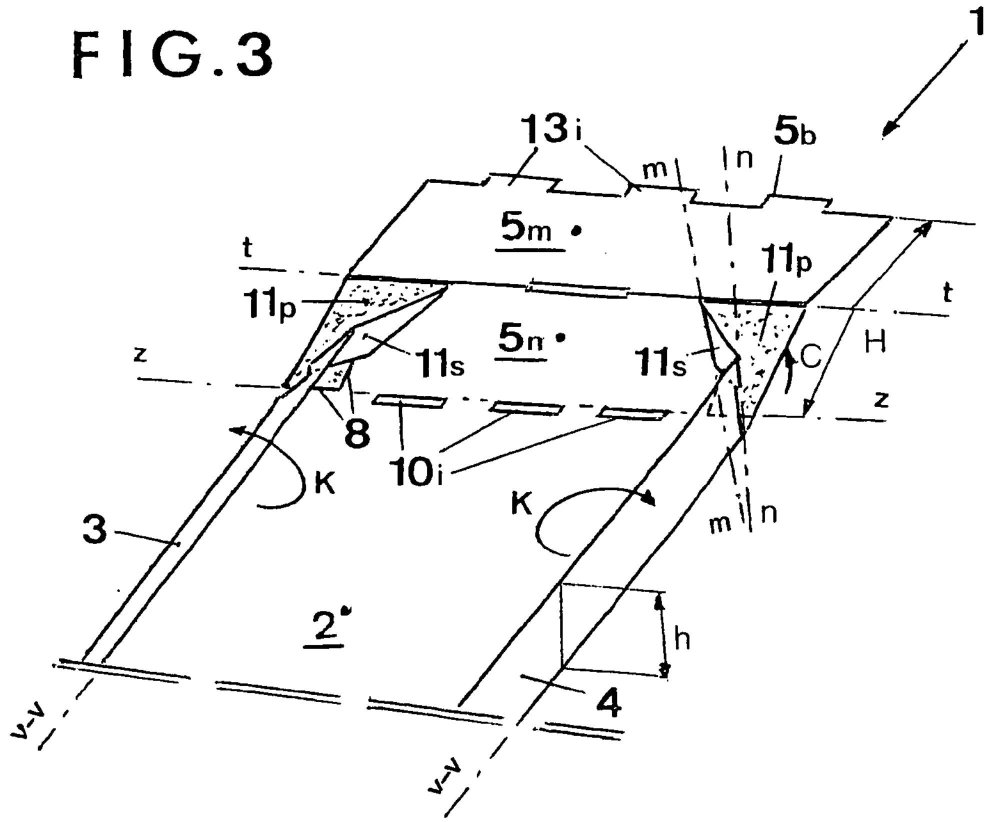
2
4

FIG. 2

FIG.3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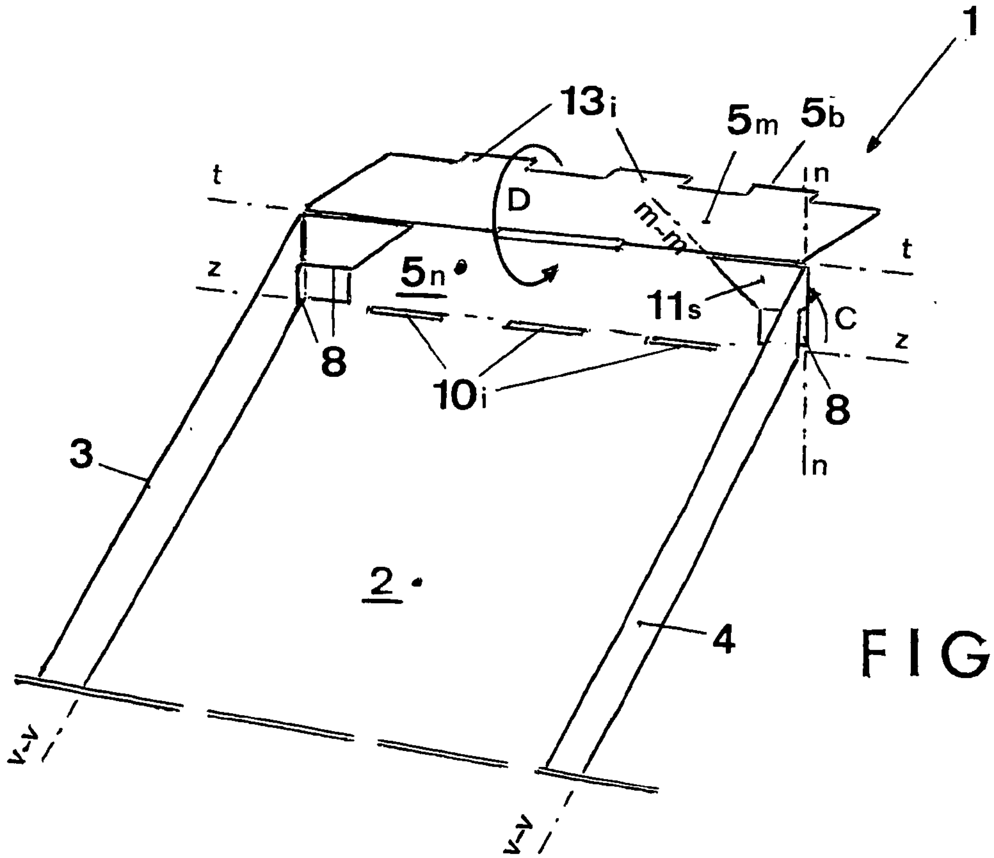
K
K
m
n
3
2
h
4
v-v
v-v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t
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11s
C
z
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10i
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2
4
v-v
v-v

FIG.4

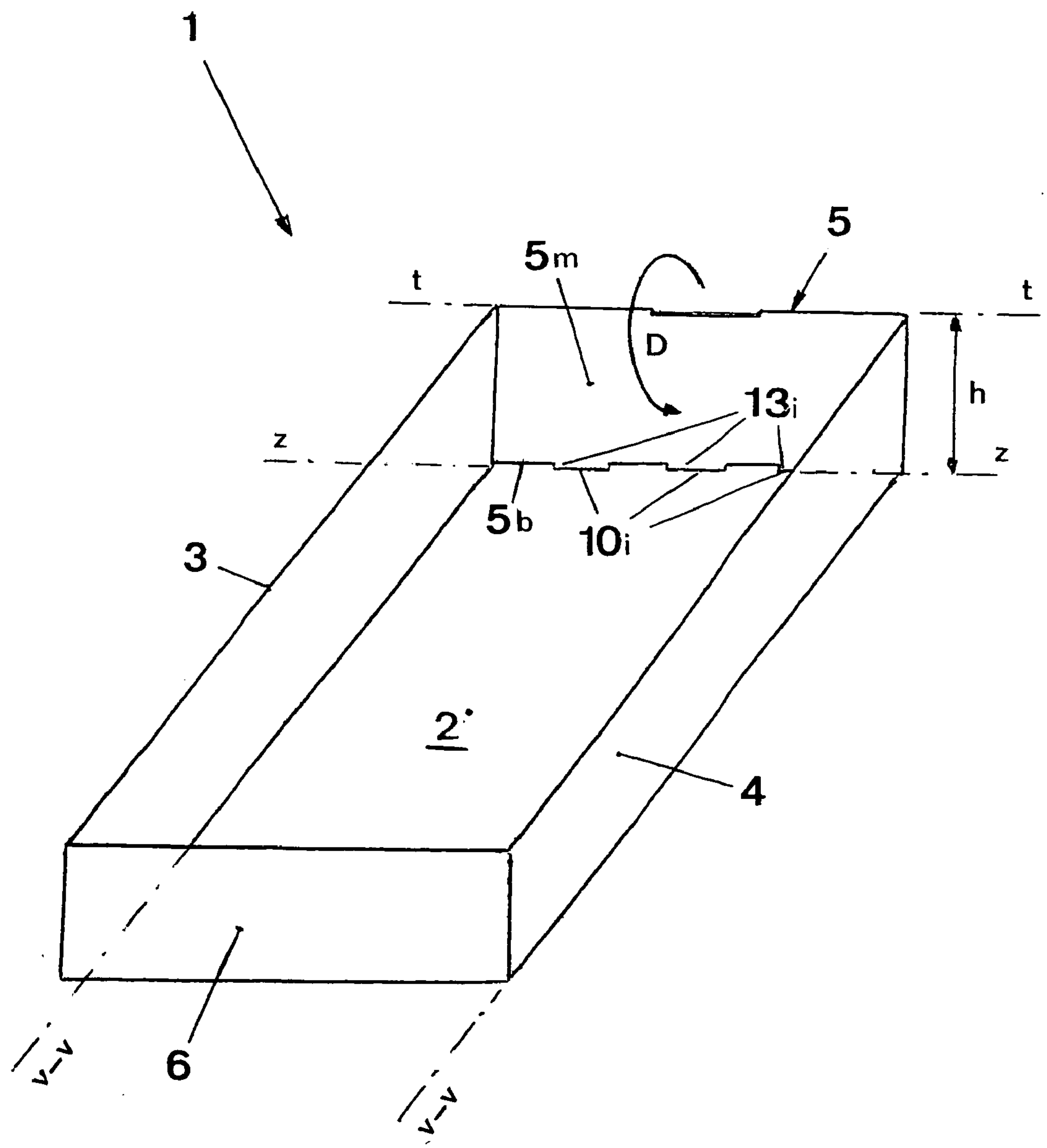

FIG. 5

CONTAINER FOR PACKAGING USE IN THE FORM OF A PARALLELEPIPED MADE FROM A FLAT SHEET

[0001] The present invention relates to containers for packaging use, especially suitable for holding fruit and vegetable products, the containers being in the form of an open-topped parallelepiped defined by a flat base and, perpendicular to this, two side walls and two end walls.

[0002] As is well known, these containers are produced by folding a single flat sheet of packaging material, such as board, corrugated board or the like, which has first been shaped and notched by blanking. The various parts of the packaging which are thus formed are then fixed together by staples, adhesive or other similar systems.

[0003] Despite its low weight, a single container occupies much more volume than the flat sheet prepared as explained, so the cost of transporting a batch of containers can be greatly reduced by supplying them, ready shaped and with their fold lines, in the form of stacked flat sheets. It is then the job of the purchaser to carry out all the operations necessary to give them the final desired shape, by folding and/or interlocking the various parts and securing them by the methods described earlier.

[0004] Very often therefore, in order to make such containers available for use, a purchaser must obtain appropriate equipment, consisting of machines designed to apply adhesives and/or perform stapling. Consequently the use of containers produced in accordance with the prior art involves the supplementary cost of the above-mentioned equipment, besides the further costs and loss of time necessary to use them.

[0005] By contrast, the inventor of the present innovation has devised a container for packaging use of the type described above which, in a novel way as far as he is aware, can similarly be supplied in the form of prepared flat sheets but which, for erecting and maintaining its final shape, does not necessitate the application of any fixing means and instead requires only appropriate manipulation of its various parts to obtain the desired result.

[0006] This is achieved, as more fully explained later, by folding the side walls down onto those parts of the abovementioned flat sheet that are intended to act as the base and end walls, and attaching to the end walls only one part of the ends of the said side walls, while the remaining part, not being attached, can then be rotated relative to the end wall to which it is applied and to the side wall itself, of which it is a part, thus performing the function of a "hinge". Then the end walls, being folded into two halves so as to grip the said "hinges" between themselves, lock the assembly and, being attached to the base by their free edge, give the container its final shape without the need for further fixing means.

[0007] The subject of the present invention is therefore a container for packaging use according to the appended claim **1**. A preferred illustrative embodiment of the container of the invention will now be described in more detail, with reference also to the appended drawings, which show, in FIGS. **1** to **5**, the various successive stages in the preparation of a container according to the invention, beginning with a preshaped flat sheet, indicated in broken lines in **FIG. 1**, and ending with the finished container in **FIG. 5**. In FIGS. **1** to **4** of the drawings, only half of the container is drawn, for obvious reasons of mirror symmetry.

[0008] Taking **FIG. 1** to begin with, this shows a flat sheet **14** of packaging material that has been blanked and notched to produce the planar development of the desired container **1**, and various prefolding lines z-z, t-t, v-v, n-n (also referred to hereinafter as fold lines) have been produced on this sheet. It can be observed that, in the vicinity of the fold lines z-z joining the area of the base **2** of the container to the areas which will form the end walls **5**, **6** (only one of which, indicated by the number **5**, is visible in FIGS. **1** to **4**), a through cut **8** has been formed. This cut **8**, the function of which will be described later, is L-shaped, one of its sides, marked S, being lined up with the said fold line z-z.

[0009] If the two side walls **3**, **4** are folded over onto the parts of the flat sheet **14** that are to form the base **2** and onto the end walls **5**, **6** (as already stated, that marked **6** is visible in **FIG. 5** only), the result will be the situation shown in **FIG. 2**, with the ends of each side wall **3**, **4** covering, by their area **11**, an equivalent underlying area of the end walls **5**, **6**. Adhesive (indicated by the shading) is applied to a first part **11***p* of this area **11** which comprises a right-angled trapezium **7**, on the minor base R of which lies a rectangle **9** defined with respect to the rest of the side wall by the L-shaped cut **8** described earlier. This first part **11***p* is therefore stuck to the corresponding end wall and the latter, if the two side walls **3**, **4** are rotated outwards as shown in **FIG. 3** (arrows K), abandons the horizontal position, rotating about the fold line z-z (arrow C). The second part **11***s* of the abovementioned area L of the side walls **3**, **4**, however, having no adhesive and being defined in part by the said L-shaped cut **8**, rotates simultaneously about an axis m-m (which is the line of demarcation between the first part with the adhesive and the second part **11***s* without the adhesive) and about a fold line n-n which was prepared earlier, and which connects it to the rest of the side wall at right angles to the flat base **2**.

[0010] In other words the said second part **11***s* rotates both with respect to the corresponding side wall and with respect to the end wall **5** to which the latter is stuck, performing the function of a "hinge" and folding flat against the end wall **5** when both the side wall and the end wall have rotated through 90° and become vertical, as shown in **FIG. 4**.

[0011] As can be seen in the various drawings, that area of the flat sheet **14** which, when rotated about the fold line z-z, forms an end wall **5**, has a height H at least twice (and twice in the present case) the height h of the side walls **3**, **4**. It can therefore be folded in two halves **5***m*, **5***n* along a specially made fold line T, as indicated by the arrow D in **FIG. 4**, until the two halves **5***m*, **5***n* are face to face, as shown in **FIG. 5**, and clamp the said second part **11***s* of the area **11** of the ends of the side walls **3**, **4** in a parallel position between themselves, thus containing it. Since this area **11***s*, which as stated acts as a hinge, is prevented from moving, the side walls **3**, **4** and end walls **5**, **6** are likewise prevented from moving, obviating the need for the user to apply further fixing means, and the invention depicted in **FIG. 5** has been produced.

[0012] To give reliable stability to the shape of the container **1** all that is required, according to the inventor is to use known methods for attaching the free edge **5***b* of the half **5***n* of the end wall **5** which is directed towards the base **2** of the container **1** to this base **2**. This can be done for example by forming a number of teeth **13***i* on the said free edge **5***b* which can be inserted into corresponding slots **10***i* of complementary shape formed in the flat base **2**, where they will remain locked.

[**0013**] The object set by the inventor has thus been achieved. Obviously, if the total height H of the said area intended to form an end wall **5**, **6** is greater than twice the height h of the side walls **3**, **4**, the resulting height of the end walls after folding their above-described parts will be greater than the height h of the side walls. This case is not illustrated in the drawings.

1. Container (**1**) for packaging use in the form of an open-topped parallelepiped defined by a flat base (**2**) and, perpendicular to this, two side walls (**3**, **4**) and two end walls (**5**, **6**), the container (**1**) being formed by folding and fixing areas of a flat base (**14**) that has previously been shaped and notched by blanking, the container being characterized in that when assembled each end of a side wall (**3**, **4**) is attached flat against an end wall (**5**, **6**) by only a first part (**11***p*) of its area (**11**) that is superimposed on this end wall, an L-shaped cut (**8**) allowing its unattached second part (**11***s*) to rotate with respect to the first part (**11***p*) about the axis (m-m) that separates them and with respect to a fold line (n-n) that joins it to the rest of the side wall (**3**, **4**), moving from a position of coplanarity with the said first part (**11***p*) when the side wall (**3**, **4**) is folded onto the flat base (**2**), to a position in which it is parallel to and in contact with the first part (**11***p*) when both the side wall and the end wall are perpendicular to the flat base (**2**) following rotation through 90°.

2. Container according to claim 1, characterized in that the ends of each side wall (**3**, **4**) are stuck to an end wall (**5**, **6**) via an area (**11***p*) placed against it and comprising a right-angled trapezium (**7**), against the minor base (R) of which lies a rectangle (**9**) separated from the rest of the side wall by an L-shaped cut (**8**) having one side (S) which, when the side wall is folded onto the flat base (**2**), is superimposed on the fold line (z-z) along which the latter is joined to an end wall (**5**).

3. Container according to claim 1, in which that area of the flat sheet (**14**) which forms an end wall (**5**, **6**) has a height (H) equal to at least twice the height (h) of the side walls (**3**, **4**), and can be folded in half along a fold line (t-t) in such a way that one (**5***m*) of its two halves (**5***m*, **5***n*), when rotated through 180° with respect to the said fold line (t-t), is superimposed on the other half (**5***n*) on the inside of the container (**1**), while contained between and parallel with the said two halves (**5***m*, **5***n*) is the said second part (**11***s*) of the area (**11**) of both ends of the side walls (**3**, **4**) which join the end wall when the second part (**11***s*) is placed in contact with and parallel to the said first part (**11***p*).

4. Container according to claim 3, characterized in that it is provided with means (**10***i*, **13***i*) capable of attaching the free edge (**5***b*) of that area of the flat sheet (**14**) which forms each end wall (**5**, **6**) to the flat base (**2**) of the container when this area is folded in half along the said fold line (t-t).

5. Container according to claim 4, in which the said means capable of attaching the said free edge (**5***b*) consist of a number of teeth (**13***i*) formed on this edge and an equivalent number of slots (**10***i*) complementary to these teeth and formed on the flat base (**2**), into which the said teeth (**13***i*) are inserted.

6. Container according to claim 2, in which that area of the flat sheet (**14**) which forms an end wall (**5**, **6**) has a height (H) equal to at least twice the height (h) of the side walls (**3**, **4**), and can be folded in half along a fold line (t-t) in such a way that one (**5***m*) of its two halves (**5***m*, **5***n*), when rotated through 180° with respect to the said fold line (t-t), is superimposed on the other half (**5***n*) on the inside of the container (**1**), while contained between and parallel with the said two halves (**5***m*, **5***n*) is the said second part (**11***s*) of the area (**11**) of both ends of the side walls (**3**, **4**) which join the end wall when the second part (**11***s*) is placed in contact with and parallel to the said first part (**11***p*).

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