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(54) A package arrangement

(57) The invention provides a package arrangement, comprising a plurality of walls (2, 3, 4, 5) fitted to each other, including a first wall (2), in turn comprising at its periphery a protruding portion (9, 91). A second wall (3, 4, 5) presents a slot (11, 111), which is oriented essen-

tially parallel to a first edge (12) of the second wall (3, 4, 5) and is located at a distance (D) from the first edge (12), and at least a part of the protruding portion (9, 91) of the first wall (2), in the assembled condition of the package arrangement, extends at least partly through the slot (11, 111).

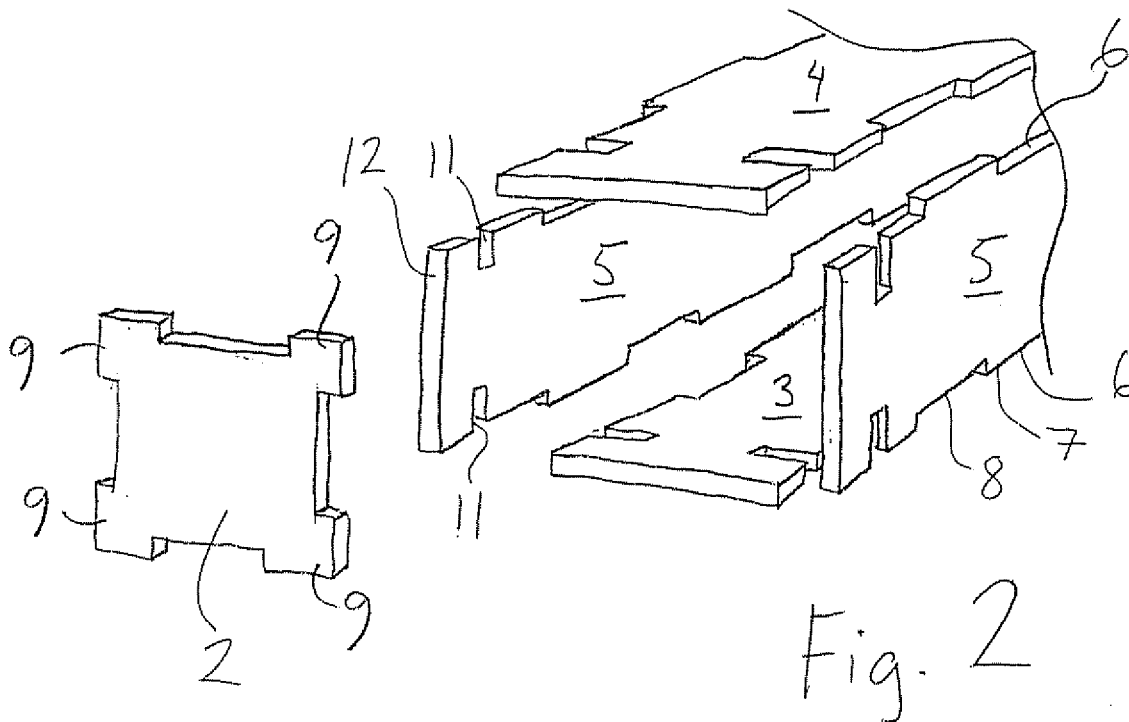


Fig. 2

EP 1 710 164 A1

Description

TECHNICAL FIELD

[0001] The invention relates to a package arrangement, comprising a plurality of walls fitted to each other.

BACKGROUND

[0002] For packaging, for example in boxes, and especially in industry, there is a desire to provide solutions that are easy to use and whereby the packaging procedure can be carried out within a small time frame. Nevertheless, the structural integrity of the package has to meet the needs of the application.

[0003] GB885051 describes a packing case with end walls provided with an ear at each of its four corners. Adjacent walls are provided with a recess at each of their respective corners. At the assembled condition of the case, each ear is fitted into two adjacent recesses of two adjacent walls. However, this arrangement does not in itself secure the end walls to the adjacent walls, and for this purpose, screws or similar fastening means have to be used.

SUMMARY

[0004] It is an object of the present invention to provide a package arrangement which is easy to assemble, and which presents a good stability.

[0005] This object is reached with a package arrangement comprising a plurality of walls fitted to each other, including a first wall, in turn comprising at its periphery a protruding portion, wherein a second wall presents a slot, which is oriented essentially parallel to a first edge of the second wall and is located at a distance from the first edge, and at least a part of the protruding portion of the first wall, in the assembled condition of the package arrangement, extends at least partly through the slot.

[0006] The inventive arrangement of a slot, which is located at a distance from the edge, has the result that the first wall will be secured in both directions perpendicular to its plane.

[0007] Preferably, the first wall presents a recessed edge that face, in the assembled condition of the package assembly, an inner side of a second wall, and the protruding portion is provided with an edge that is offset outwards from the recessed edge by a distance, corresponding approximately to the thickness of the second wall. Thereby, the protruding portion will effectively fill out essentially the entire slot of the second wall without protruding externally of the package assembly.

[0008] Preferably, the protruding portion is located at a corner of the first wall. In addition, the slot could extend all the way to an edge which is oriented in an angle to the first edge. This will increase the stability of the package assembly. Alternatively, the protruding portion is located at a distance from any corner of the first wall. In

addition, the slot could be provided at a distance from any edge of the second wall.

[0009] Also, any combination of positions of a plurality of protruding parts at corners or at a distance from any corner of the first wall is possible. In one embodiment, protruding portions are located at respective corners of the first wall, and additional protruding portions are located at a distance from any corner of the first wall. Thereby, the stability of the package assembly will be further increased.

[0010] Preferably, the second wall is provided at two opposite edges with alternating protrusions and recesses, whereby each protrusion on one of the edges is located opposite to a recess of the opposite edge. Thereby, the second wall can be fitted to identical walls along one or both of said edges that are provided with alternating protrusions and recesses. In other words, all second walls can be identical, which makes manufacturing of the package arrangement easier.

[0011] Preferably, the width of the slot and the thickness of the protruding portion are adapted so that, when the protruding portion is fitted into the slot, there is a small clearance between the protruding portion and an edge of the slot. This will make it easy to fit the walls of the package arrangement to each other. Alternatively, the width of the slot and the thickness of the protruding portion are adapted so that the protruding portion is held in the slot by friction. Thereby, in some applications where forces exerted on the package arrangement are relatively low, no additional fastening means are needed to hold the package arrangement together. In applications where larger forces are involved, the friction fitting of the walls of the package arrangement will still provide for an initial stability facilitating the use of it, for example when assembling it and during loading of goods into it.

[0012] Preferably, a second wall is provided with at least one notch to allow at least one stabilising strap to be fitted around three second walls when the latter are fitted to two first walls, whereby a stabilising strap is fitted in the vicinity of one of the first walls and passes through the notch so as to be positioned, in the fully assembled condition of the package assembly, just inside an inner side of a top wall.

DESCRIPTION OF THE FIGURES

[0013] Below, the invention will be described in detail with reference to the drawings, in which

- fig. 1 shows a perspective view of a part of a package arrangement according to one embodiment of the invention,
- fig. 2 shows an exploded view of the package arrangement in fig. 1,
- fig. 3 shows a plan view of a part of the package arrangement in fig 1,
- fig. 4 shows a partial plan view of a part of the package arrangement in fig 1,

- fig. 5 shows a perspective view of the part in fig. 1, with an external strap,
- fig. 6 shows a perspective view of a part of the package arrangement in fig. 1 in a semi-assembled condition,
- fig. 7 shows a perspective view of a part of a package arrangement according to a special embodiment of the invention,
- fig. 8 shows a plan view of a part of a package arrangement according to a further embodiment of the invention,
- fig. 9 shows a partial plan view of a part of a package arrangement according to the further embodiment of the invention, and
- fig. 10 shows a plan view of a part of a package arrangement according to yet a further embodiment of the invention.

DETAILED DESCRIPTION

[0014] Fig. 1 shows a part of a package arrangement 1 according to one embodiment of the invention. In this example, the package arrangement 1 has an elongated shape, and is suitable for packing steel tubing or other elongated objects. Only the part closest to the viewer is shown in fig. 1.

[0015] The package arrangement 1 comprises a plurality of walls 2, 3, 4, 5 fitted to each other. The walls include two first walls 2, only one of which is shown in fig. 1. In this embodiment the first walls 2 take the form of end walls 2. The walls also include four second walls 3, 4, 5, in this embodiment in the form of a bottom 3, top 4, and two side walls 5.

[0016] Fig. 2 shows that each second wall 3, 4, 5 is provided at two opposite edges 6 with alternating protrusions 7 and recesses 8. Each protrusion 7 on one of the edges 6 is located opposite to a recess 8 of the opposite edge 6.

[0017] As can be seen in fig. 2, each first wall 2 comprises at its periphery four protruding portions 9, each located at a corner of the generally rectangular first wall 2.

[0018] Referring to fig. 3, each first wall 2 presents four recessed edges 10 that face, in the assembled condition of the package assembly 1, the inner side of a respective second wall 3, 4, 5. Each protruding portion 9 is provided in the form of an ear 9 with two edges 9a that are offset outwards from respective recessed edges 10 by a distance d. The distance d corresponds approximately to the thickness of the second walls 3, 4, 5.

[0019] In alternative embodiments, a first wall 2 could present more or less than four protruding portions 9. Below an embodiment with more than four protruding portions is presented. Also, it is possible to provide a first wall with only one, two or three protruding portions.

[0020] As can be seen in fig. 2 and 4, each second wall 3, 4, 5 presents two slots 11, which are oriented essentially parallel to a first edge 12 of the second wall 3, 4, 5 and are located at a distance D from the first edge

12. Each slot 11 extends all the way to a respective of the opposite edges 6, which are perpendicular to the first edge 12. As can be seen in fig. 1, in the assembled condition of the package arrangement 1, one part of each protruding portion 9 of the first wall 2 extends through a slot 11 in a second wall 3, 4, 5, and another part of each protruding portion 9 extends through another slot 11 in an adjacent second walls 3, 4, 5. Since the slots 11 are located at a distance D from the edge, the first wall 2 will be secured in both directions perpendicular to its plane.

[0021] In the assembled condition of the package arrangement, for stability an external strap 14 can be stretched around the package arrangement 1, preferably, at the longitudinal position of the first wall 2, as is shown in fig. 5. Also, in the assembled condition of the package arrangement, reinforcement members can be fitted outside the first walls 2. This will protect the first walls 2 against excessive external forces, for example due to a fork lift truck pushing onto one of the first walls 2 when the assembled package arrangement is handled for shipping.

[0022] Fig. 6 shows a device that can be shown to stabilise the package assembly when loading, i.e. when partly assembled. Thereby, two first walls, or end walls 2 (only one of which is shown in fig. 6) are fitted to three second walls, i.e. a bottom wall 3 and two side walls 5. To stabilise these walls before a top wall 4 is fitted to the assembly, they are placed in a stabilising jig 61, which comprises a lower part 62, to which an upper part 63 is fitted on each side of the package arrangement. The upper parts 63 can be moved to and from the respective side walls 5, and be secured to the lower part 62 so as to support the side walls 5 when loading the package assembly.

[0023] Fig. 7 shows a special embodiment of the invention. When loading a package assembly two first walls, or end walls 2 (only one of which is shown in fig. 7) are fitted to three second walls, i.e. a bottom wall 3 and two side walls 5. To stabilise these walls before a top wall 4 is fitted to the assembly, two stabilising straps 131 (only one of which is shown in fig. 7) are fitted around the bottom wall 3 and the side walls 5. Each stabilising strap 131 is fitted outside and in the vicinity of the respective end wall 2. Thereby, one of the side walls 5 is provided with a notch 51, so that the stabilising strap will be positioned just below the lower side of the top wall 4 in the fully assembled condition of the package assembly.

[0024] Fig. 8 shows a second wall 2 of a package arrangement according to a further embodiment of the invention. The package arrangement is similar to the one shown in fig. 1. As in the embodiment described above, the first wall 2 comprises at its periphery four protruding portions 9, each located at a corner of the generally rectangular first wall 2, and the first wall 2 presents recessed edges 10 that face, in the assembled condition of the package assembly, the inner side of a respective second wall 3, 4, 5.

[0025] The first wall 2 also presents four additional pro-

truding portions 91, each located between two protruding portions 9 that are located at respective corners of the first wall 2. Each additional protruding portion 91 is provided with an edge 9a that is offset outwards from respective recessed edges 10 by a distance d. The distance d corresponds approximately to the thickness of the second walls 3, 4, 5.

[0026] Alternatively, it is possible to provide one or more protruding portion on each edge of the first wall, and have no protruding portions at the corners of the first wall.

[0027] As can be understood from fig. 9, each second wall 3, 4, 5 presents three slots 11, 111, which are oriented essentially parallel to a first edge 12 of the second wall 3, 4, 5 and are located at a distance D from the first edge 12. Two of the slots 11, are arranged as described above with reference to fig. 1, 2, and 4, i.e. each of them extends all the way to a respective of opposite edges 6, which are perpendicular to the first edge 12. Additionally, at a distance from the opposite edges 6, an additional slot 111 is provided. In the assembled condition of the package arrangement 1, each additional protruding portion 91 of the first wall 2 extends through an additional slot 111 in a second wall 3, 4, 5. The additional protruding portions 91 and additional slots 111 will further increase the stability of the package arrangement.

[0028] Fig. 10 shows a plan view of a first wall 2 of a package arrangement according to yet a further embodiment of the invention. The first wall presents a generally hexagonal shape, and is provided at each corner with a protruding portion 9. The first wall is intended to be fitted to six second walls, each similar to the one shown in fig. 4, in a manner similar to what has been described above with reference to fig. 1, 2, 3, and 4.

[0029] Alternatively, the package arrangement can be provided with three, five, seven, or more second walls, whereby the respective first walls are formed in a suitable manner, similar to what has been described above.

Claims

1. A package arrangement, comprising a plurality of walls (2, 3, 4, 5) fitted to each other, including a first wall (2), in turn comprising at its periphery a protruding portion (9, 91), **characterised in that** a second wall (3, 4, 5) presents a slot (11, 111), which is oriented essentially parallel to a first edge (12) of the second wall (3, 4, 5) and is located at a distance (D) from the first edge (12), and **in that** at least a part of the protruding portion (9, 91) of the first wall (2), in the assembled condition of the package arrangement, extends at least partly through the slot (11, 111).
2. A package arrangement according to any of the preceding claims, wherein the first wall (2) presents a recessed edge (10) that face, in the assembled con-

dition of the package assembly (1), an inner side of a second wall (3, 4, 5), and wherein the protruding portion (9, 91) is provided with an edge (9a) that is offset outwards from the recessed edge (10) by a distance (d), corresponding approximately to the thickness of the second wall (3, 4, 5).

3. A package arrangement according to any of the preceding claims, wherein the protruding portion (9) is located at a corner of the first wall (2),
4. A package arrangement according to claim 3, wherein the slot (11) extends all the way to an edge (6) which is oriented in an angle to the first edge (12).
5. A package arrangement according to claim 3 or 4, wherein a protruding portion (9) is located at each corner of the first wall (2).
6. A package arrangement according to any of the preceding claims, wherein the protruding portion (91) is located at a distance from any corner of the first wall (2).
7. A package arrangement according to claim 6, wherein the slot (111) is provided at a distance from any edge of the second wall (3, 4, 5).
8. A package arrangement according to any of the preceding claims, wherein the second wall (3, 4, 5) is provided at two opposite edges (6) with alternating protrusions (7) and recesses (8), whereby each protrusion (7) on one of the edges (6) is located opposite to a recess (8) of the opposite edge (6).
9. A package arrangement according to any of the preceding claims, wherein a second wall (5) is provided with at least one notch (51) to allow at least one stabilising strap (131) to be fitted around three second walls (3, 5) when the latter are fitted to two first walls (2), whereby a stabilising strap (131) is fitted in the vicinity of one of the first walls (2) and passes through the notch (51) so as to be positioned, in the fully assembled condition of the package assembly, just inside an inner side of a top wall (4).

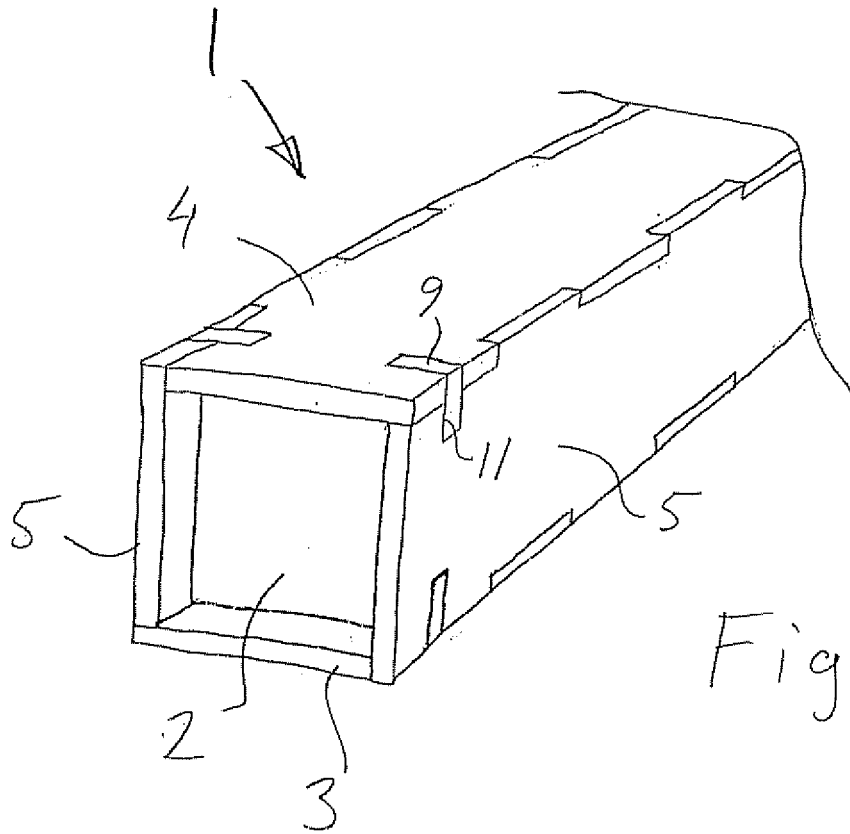


Fig. 1

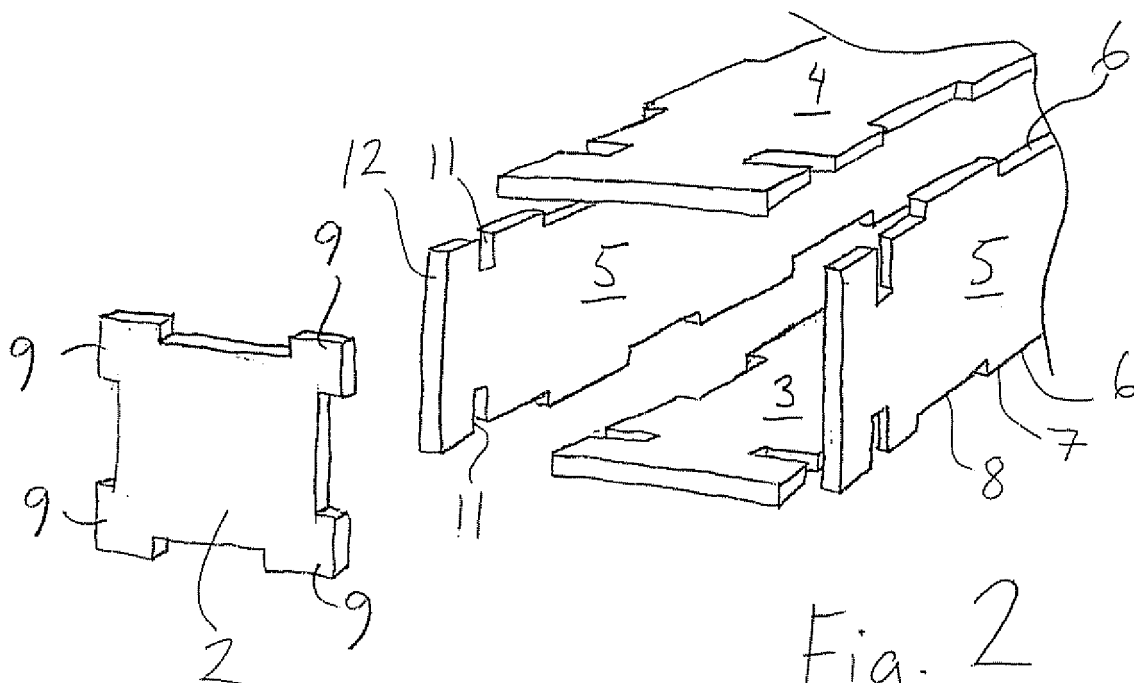


Fig. 2

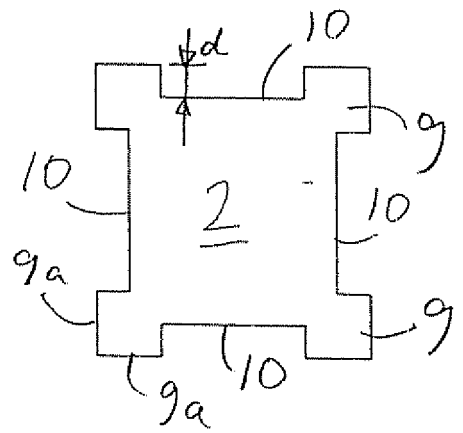


Fig. 3

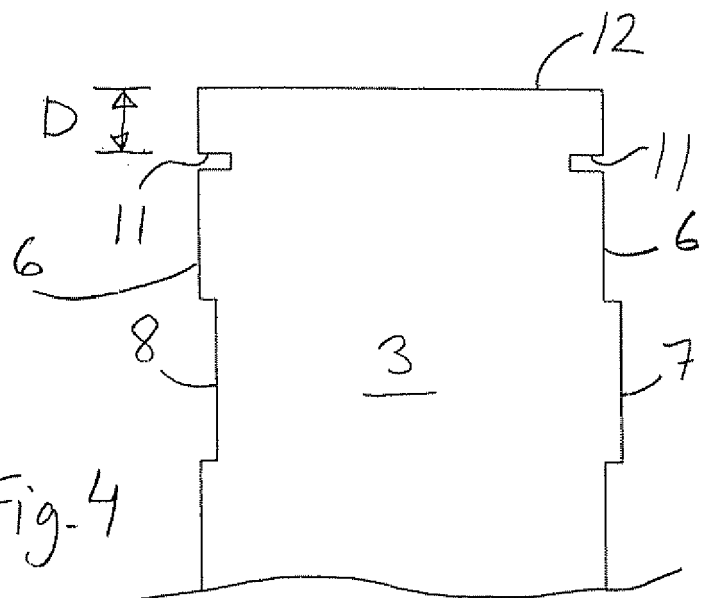


Fig. 4

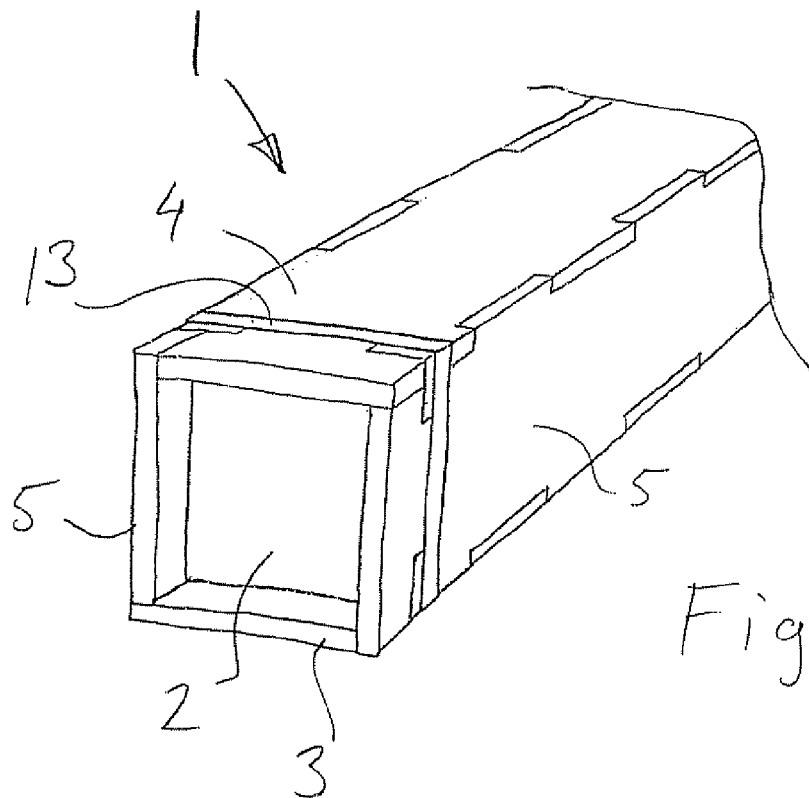


Fig. 5

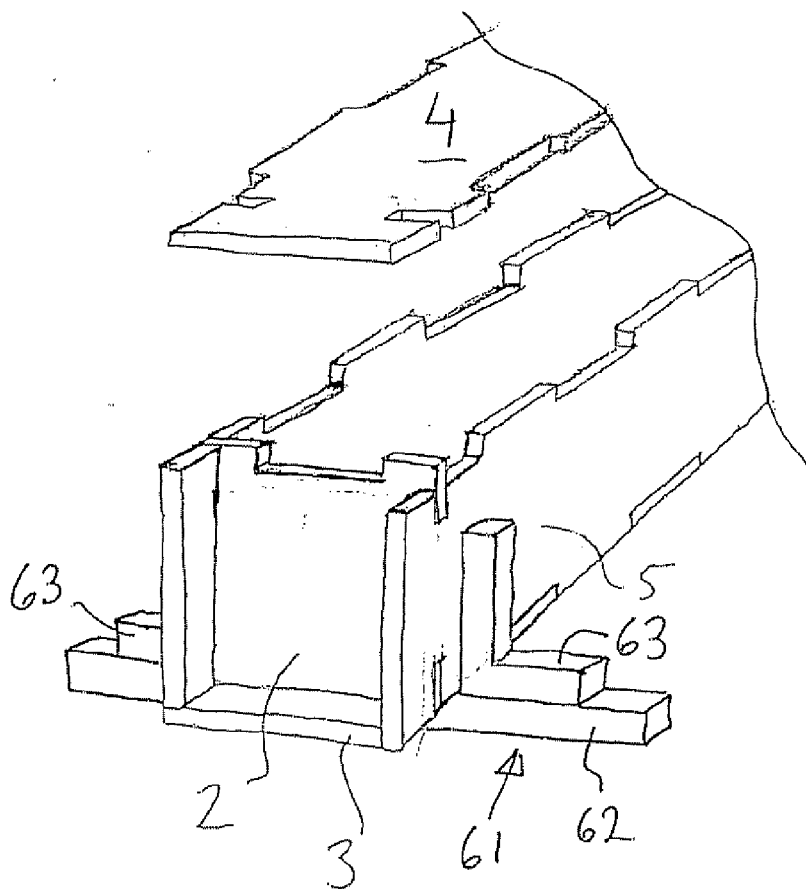
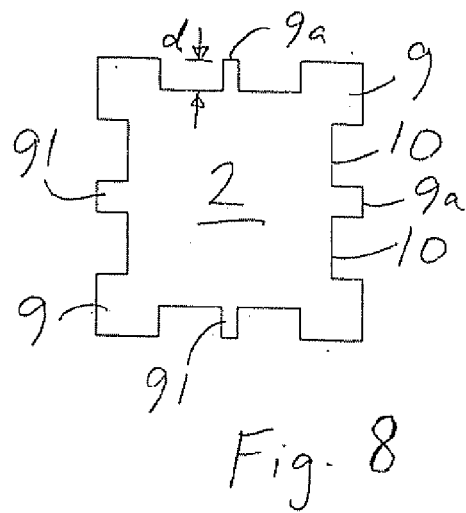
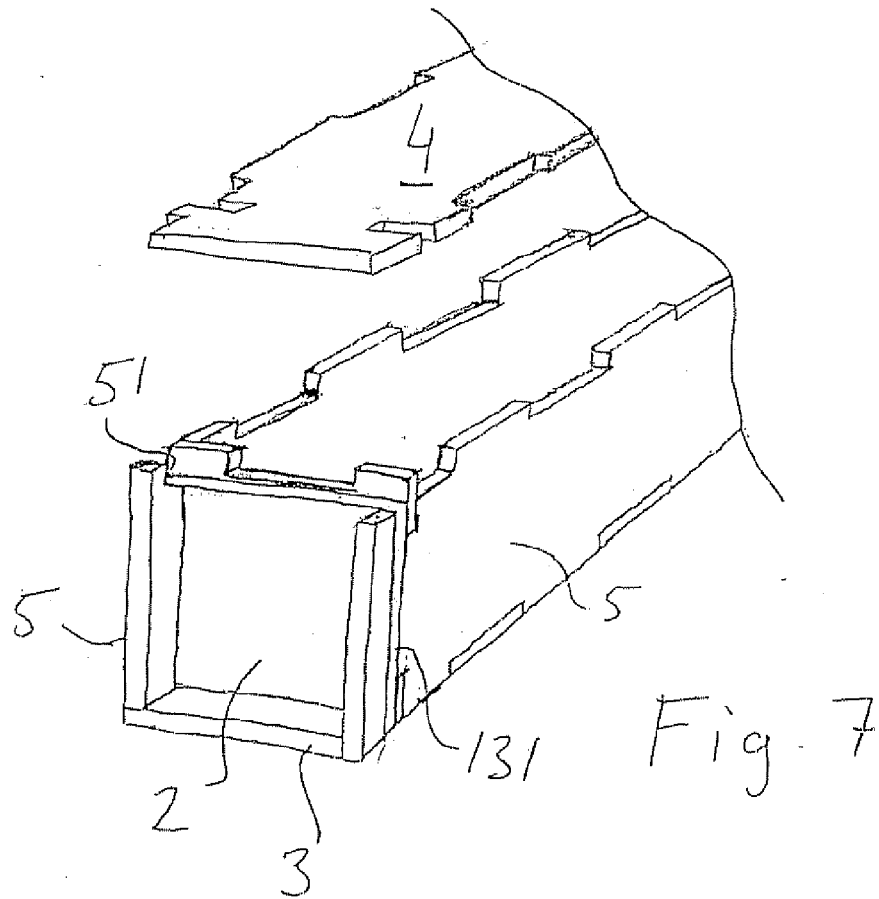


Fig. 6



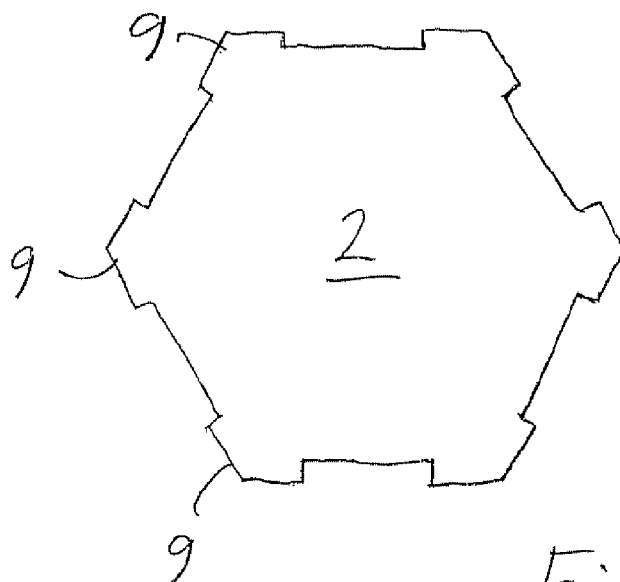
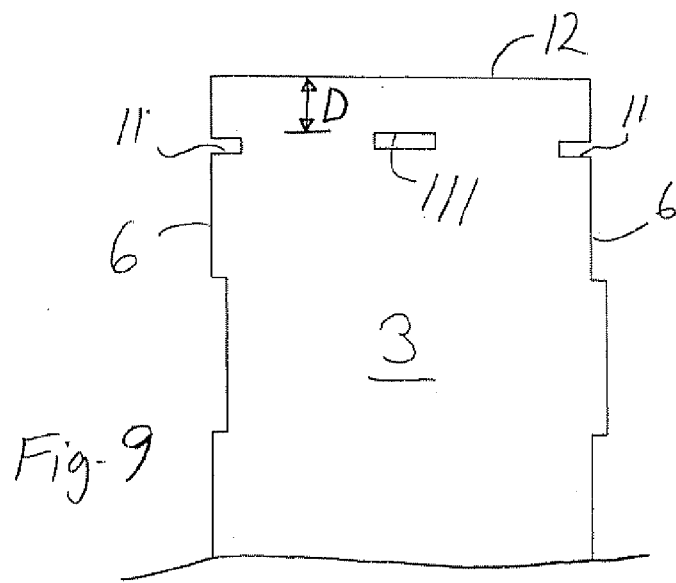


Fig. 10



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 05 10 2350

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.7)
X	GB 2 323 588 A (* IMPAQ LIMITED) 30 September 1998 (1998-09-30)	1,2,6-8	B65D9/22
Y	* page 7, line 25 - page 8, line 8; figure 7 *	3-5,9	
D,Y	----- GB 885 051 A (STARWOOD INDUSTRIES, INC) 20 December 1961 (1961-12-20) * page 3, line 65 - line 105; figures 9-11 *	3-5	
Y	----- GB 179 293 A (JOHN ROBINSON NESBITT; WILLIAM LATIMER GRAVES) 2 May 1922 (1922-05-02) * page 4, left-hand column, line 40 - line 54; figure 1 *	9	
X	----- WO 96/08415 A (BRODTRAGER, GUENTER) 21 March 1996 (1996-03-21) * page 3, line 22 - line 30; figure 2 *	1-4	
X	----- DE 42 07 515 A1 (REBO-PLASTIC GMBH & CO KG, 4925 KALLETEL, DE) 12 November 1992 (1992-11-12) * column 2, line 16 - line 43; figure 1 *	1,2,6,7	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 October 2005	Examiner Vesterholm, M
CATEGORY OF CITED DOCUMENTS 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 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 & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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26-10-2005

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