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(54) Divisible palletized load

(57) The invention relates to a pallet (2) device (1) for providing stabilisation of goods (3) carried by a divisible pallet (2) also after its division.

According to the invention, a number of bolster sheets (4) comprising a number of weakenings (5), preferably consisting of perforations (7-7^4; 107-107^4; 207-207^4), in the transverse central part region of said sheets, are arranged to be positioned between layers (A-D) of cardboard boxes (3-3^n) or other goods (3), so that during desired division of the pallet (2) into smaller units (2^1, 2^2), the sheets (4) break along said weakening (5) jointly for all layers (A, B).

The transport security provided by the bolster sheet (4) design, among other enables a greater pallet loading height and is cost saving in several ways, e.g. ordering structure, storage, transport etc.

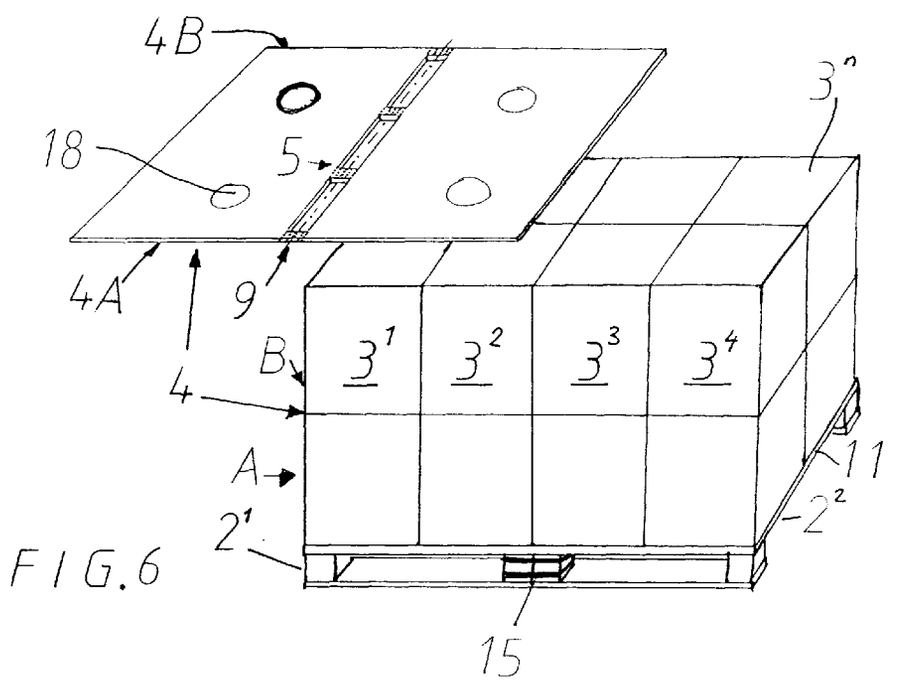


FIG.6

EP 0 850 845 A1

Description

The present invention relates to a pallet device for providing stabilisation of goods carried by a divisible pallet also after its division.

Within many fields of production there are fully automatic lines for manufacturing of goods and packaging of the goods. The majority of these lines are adapted for stacking the manufactured products on pallets presenting a large number of sizes, for example so called EUR-pallets in size 80 x 120 cm. After loading the pallet, it normally leaves the line shrink film wrapped.

The interest in trying to get better market adapted, smaller transporting and selling units are strongly increasing. This interest may normally be satisfied by changeover to smaller sizes of pallets that also must be able to be divided up into smaller, so called half pallets or even smaller so called part pallets. One of the problems that arises because of this, is that pallets that carry goods that has been packaged in carton boxes of small size, normally must have the same pattern of loading all through the pallet in the different layers that are formed by the cartons etc. This implies that shrink wrapped pallets get unsatisfactory stability and transport reliability, because each single stack of cartons will be high, narrow and thus cranky. When dividing the pallet into half size, this increases this problem because the base surface is reduced.

The main object of the present invention is therefore in the first hand to solve said problem with simple but also efficient functioning means so that satisfactory steadiness and reliability is achieved for pallets that are divisible into smaller pallets, and which carries cartons as load in the first hand.

Said object is achieved by means of a device according to the present invention which is principally characterized in that a number of bolster sheets comprising a number of weakenings, preferably consisting of perforations in the transverse central part region of said sheets, are arranged to be positioned between layers of cardboard boxes or other goods, so that during desired division of the pallet into smaller units, the sheets break along said weakening jointly for all layers.

The invention will in the following be further described as a number of preferred embodiments under reference to the accompanying drawings in which:

Fig. 1 shows a fully loaded pallet with enclosing shrink wrapping film which is ready for division,
Fig. 2 shows how an at the top located top protection is divided,
Fig. 3 shows how the pallet is divided at the middle,
Fig. 4 shows the pallet divided into two half pallets with one pallet having been moved by means of a pallet unloader,
Fig. 5 is a perspective view of a bolster sheet which functions as a load securing device,
Fig. 6 shows how the bolster sheet is placed upon a layer of stacked cartons on a pallet,
Fig. 7 shows the dividing of one pallet into two,
Fig. 8-9 shows in broken views how means of attachment of a bolster sheet are broken off,
Fig. 10 shows a part of the load of a half pallet with divided sheet, and
Fig. 11-11A shows alternative examples of weakenings of a bolster sheet.

A device 1 according to the present invention, which is intended for use at a pallet 2 for providing stabilisation of goods 3 that are carried by a divisible pallet 2 also after its division, comprising a bolster sheet 4 which consists of a number of weakenings 5 in the transverse central part region 6 of the sheet. Preferably, the weakenings consist of a number of perforations 7 which in its hand preferably is supplemented by a plurality of apertures 8.

The aforementioned bolster sheets 4 are intended to be located between layers A, B, C and D of adjacent each other stacked cartons 3^1, 3^2, 3^3, 3^4 ... 3^n or other goods, so that during desired division of the pallet 2 into smaller units 2^1, 2^2, the sheets 4 break along the weakenings 5 jointly for all layers A-D of goods 3.

A series of apertures 8 extending through the respective bolster sheets 4 are arranged displaced from each other, distributed along the bolster sheet 4.

In order to bring about that the bolster sheet 4 may easily break when the pallet 2 is desired to be divided, and without risking the goods 3 to fall of the pallet 2 and the formed half pallets 2^1, 2^2, there are more than one perforation 7, 7^1, 7^2, 7^3, 7^4 arranged to extend across the bolster sheet 4 at its centre between the apertures 8. A central perforation 7 is provided, which is provided with at least one further perforation 7^2, 7^3, located at the respective side of it. In the shown embodiment, five perforations 7-7^4 extend between each aperture 8 and between the long side edge 4A, 4B and the adjacent aperture 8 of the bolster sheet 4.

Preferably, the bolster sheet 4 consists of carton or other suitable material and it is provide with appropriate perforations 7-7^4 and apertures 8, which constitute weakenings in order to facilitate breaking the sheet 4 into two sheet sections 4^1, 4^2, when this is desirable, preferably by allowing one 4^1 or 4^2 of the sheet sections 4^1, 4^2 change its vertical position with reference to the other sheet section 4^2 or 4^1.

The apertures 8 may preferably be quadrangular and be distributed along a common line 9 at the central region 10 of the sheet. The shown embodiment exhibits apertures 8 with rectangular shape wherein its longitudinal extension is arranged along the transverse centre line 9 of the sheet 4.

In order to avoid that the bolster sheets 4 extend outside the edges 11 of the pallet 2 and the load 3 that it carries, the bolster sheet 4 is dimensioned so that it somewhat falls short of the used loading surface of the pallet 2.

Further, there are means 12, 13 for attachment consisting of tongues arranged along the edges 4A, 4B of the sheet and along the apertures 8, and the means 17 for attachment that are arranged along the edges 4A, 4B present a larger lateral 14 extension than means 13 for attachment that are distributed along the central region 10 of the sheet 4.

Fig. 11-11A show variants of sheet weakenings consisting of round holes 108 and perforations 107-107^4 which break along someone of the many perforations 107-107^4, respectively of only perforations 207-207^4.

More precisely, the invention may be described in such a way that between each layer of cartons 3 is put a specially designed sheet 4 of carton. The sheet 4 has a punching 8 of 10 cm in the middle and in the transverse direction up to 3 cm from the outer edges 4A, 4B. Two additional attachment points 17 of 1 cm are centred in the punching. Due to the fact that also the remaining attachment points 12, 13 as well has five perforations 7-7^4, the stabilising bolster sheet 4 breaks easily when division is desired along some perforation 7-7^n. The brilliant design of the bolster sheet 4 provides besides being divisible, stability and increased transport security in both full pallet 2 and half pallet 2^1'2^2. The design of the bolster sheet also enables fully automatic positioning onto the carton layers A-C in the production line, e.g. by means of suction cups 18.

The handling of carton packed shrink film wrapped pallets 2 is made in the following way:

The shrink film is cut up in the middle and is split up.

The bands etc. 15 on the double block are cut off at both sides.

A pallet loader 16 or truck is moved in below one of the half pallets 2^1. During the lift, the bolster sheet 4 breaks in the perforation 7-7^4. Two half pallets 2^1, 2^2, have been released from each other for internal transport or are ready for external transport after stretch film application.

The invention is not limited to the above described and in the drawings shown embodiments of the invention, but may be varied within the scope of the patent claims without departing from the inventive concept.

Claims

1. A pallet (2) device (1), for providing stabilisation of goods (3) carried by a divisible pallet (2) also after its division, **characterized in** that a number of bolster sheets (4) comprising a number of weakenings (5), preferably consisting of perforations (7-7^4; 107-107^4; 207-207^4), in the transverse central part region of said sheets, are arranged to be positioned between layers (A-D) of cardboard boxes (3-3^n) or other goods (3), so that during desired division of the pallet (2) into smaller units (2^1, 2^2), the sheets (4) break along said weakening (5) jointly for all layers (A-D).

2. A device according to claim 1, **characterized in** that a number of apertures (8) extending through said bolster sheets (4), are arranged displaced away from each other distributed along said bolster sheet (4).

3. A device according to claim 2, **characterized in** that more than one perforation (7-7^4; 107-107^4) extend between said notches (8).

4. A device according to claim 3, **characterized in** that a central perforation (7) presents at least one perforation (7^1, 7^2 and 7^3, 7^4, respectively) at the respective side of it.

5. A device according to claim 4, **characterized in** that five perforations (7-7^4) extend between each aperture (8) and between the edge (4A, 4B) and the adjacent aperture (8).

6. A device according to any of the above claims, **characterized in** that the bolster sheet (4) consists of carton with punched apertures (8).

7. A device according to claim 6, **characterized in** that quadrangular apertures (8) are distributed along a common line (9) at the central region (10) of the sheet.

8. A device according to claim 7, **characterized in** that the apertures (8) are rectangular with its longitudinal extension along the transverse centre line (9) of the sheet.

9. A device according to claim 8, **characterized in** that the sheet (4) is dimensioned so that it falls somewhat short of the loading surface of the pallet.

10. A device according to claim 9, **characterized in** that means of attachment (12, 13) which present a larger lateral extension (14) than means of attachment (17) along the edges (4A, 4B) of the sheet, are distributed along the central region (10) of the sheet.

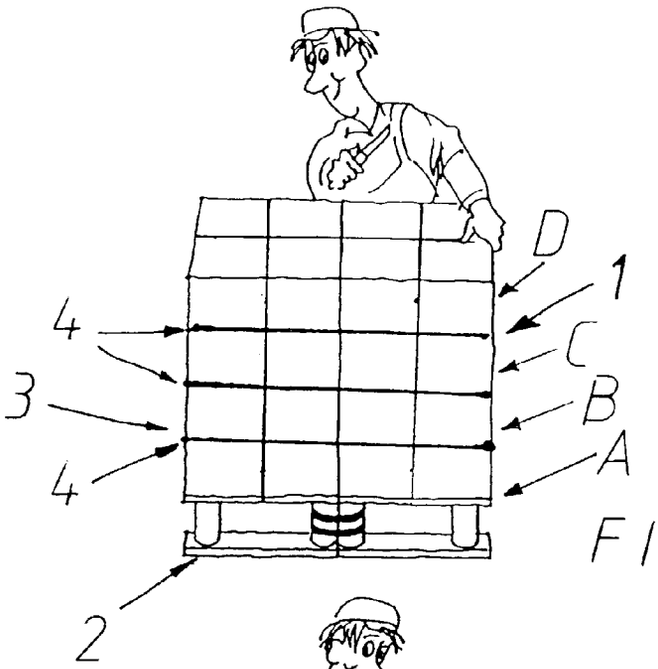


FIG.1

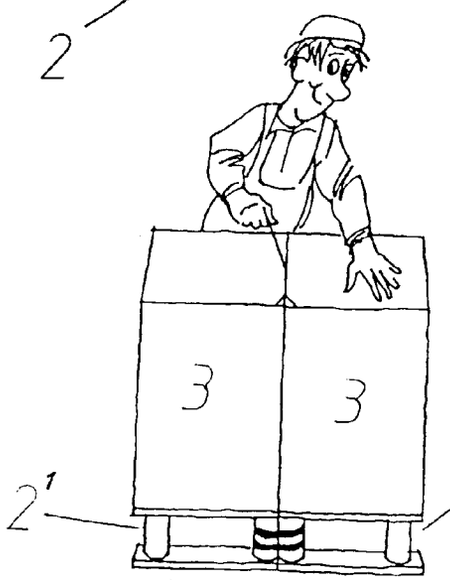


FIG.2

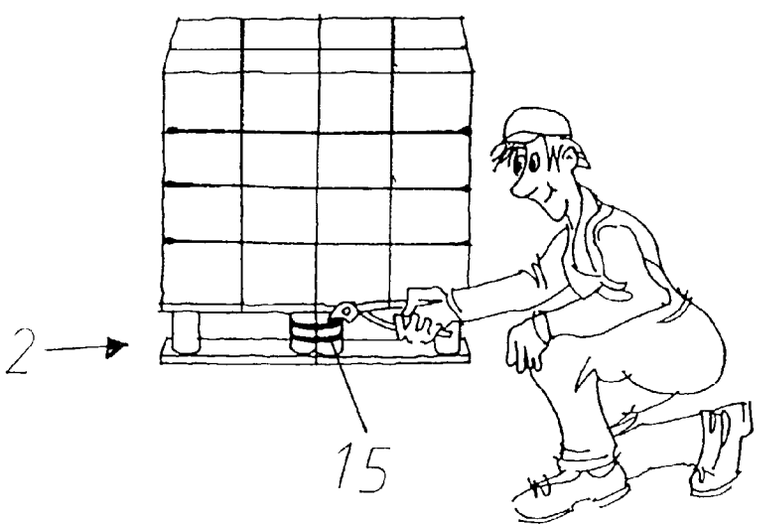


FIG.3

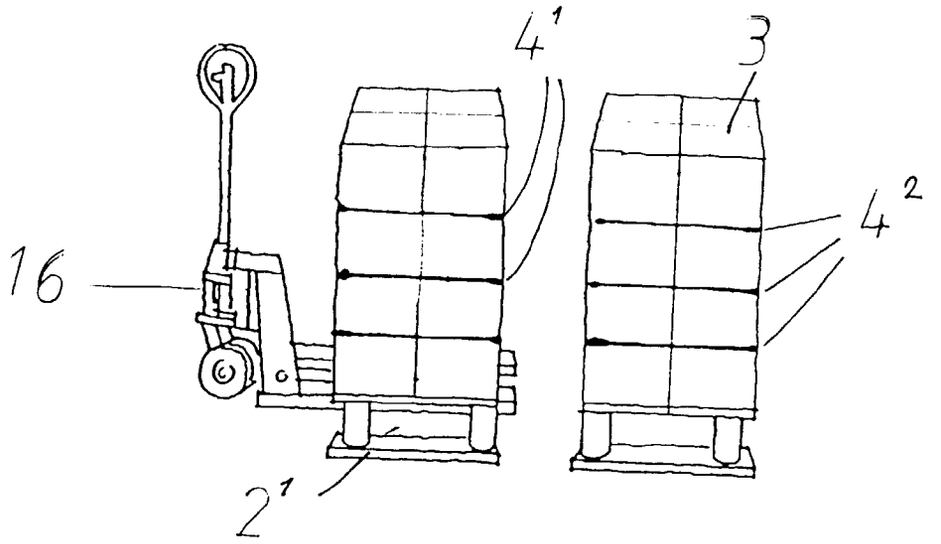


FIG. 4

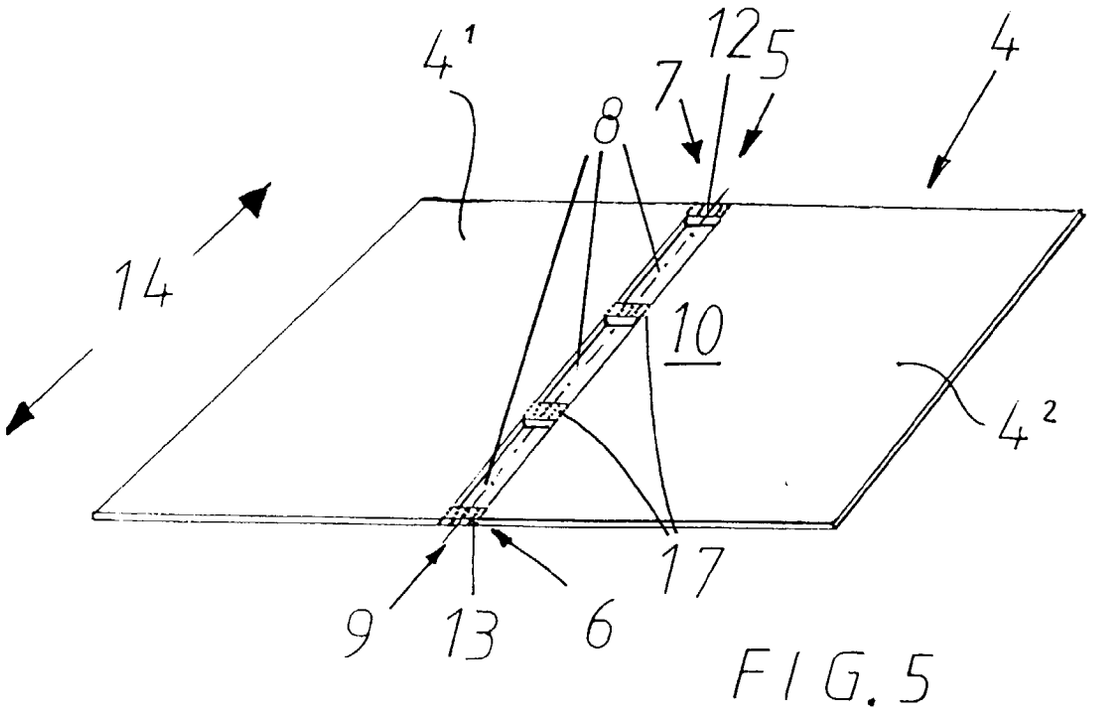


FIG. 5

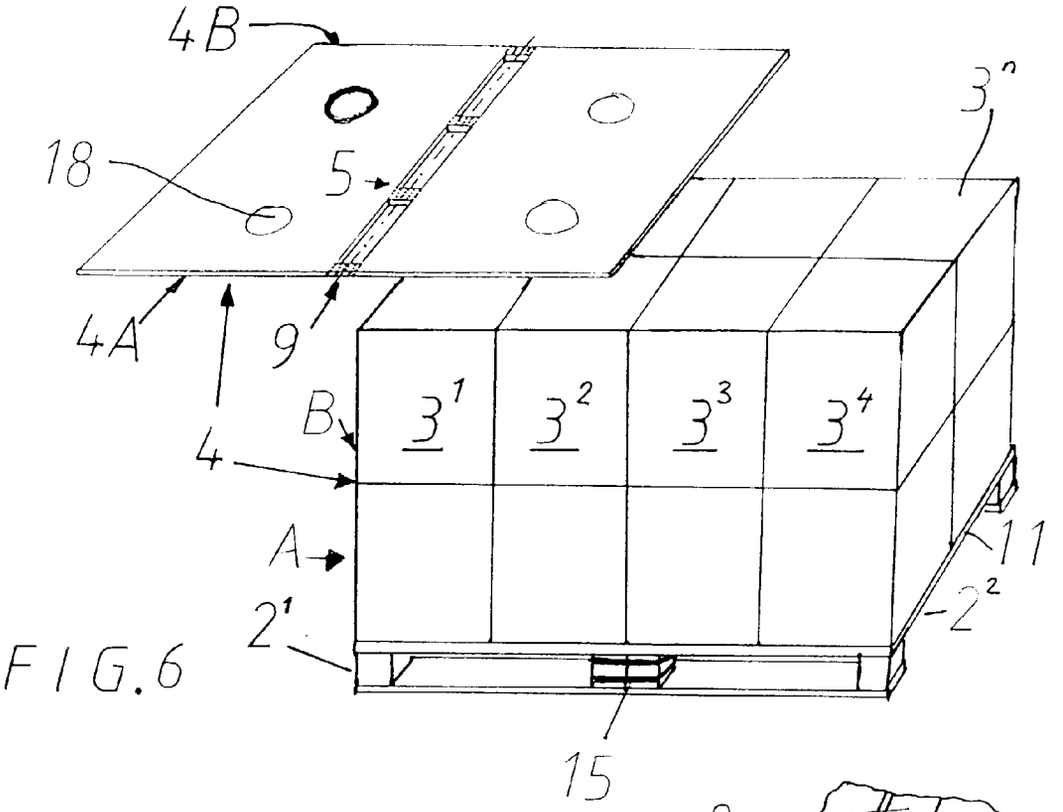


FIG.6

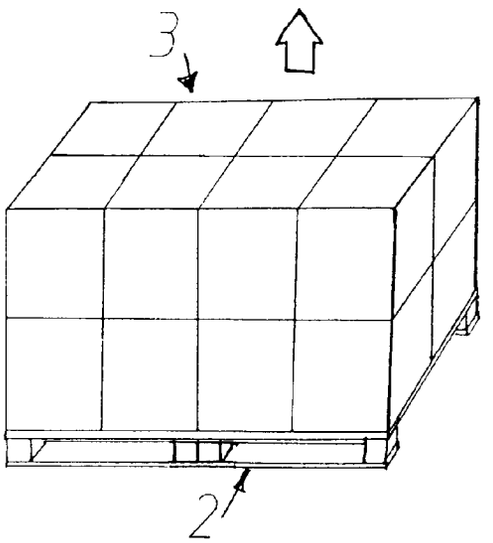


FIG 7

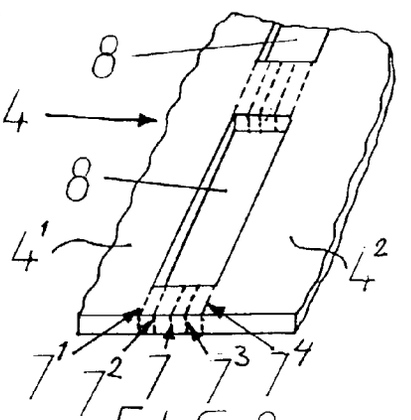


FIG 8

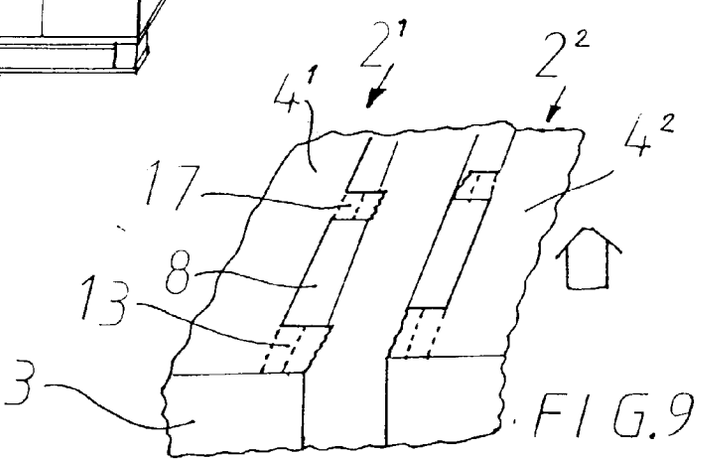


FIG.9

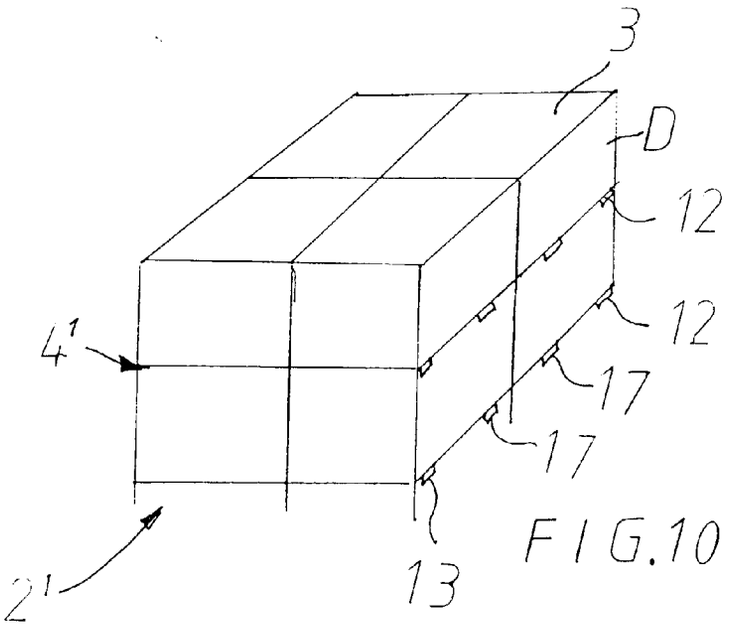


FIG.10

FIG.11

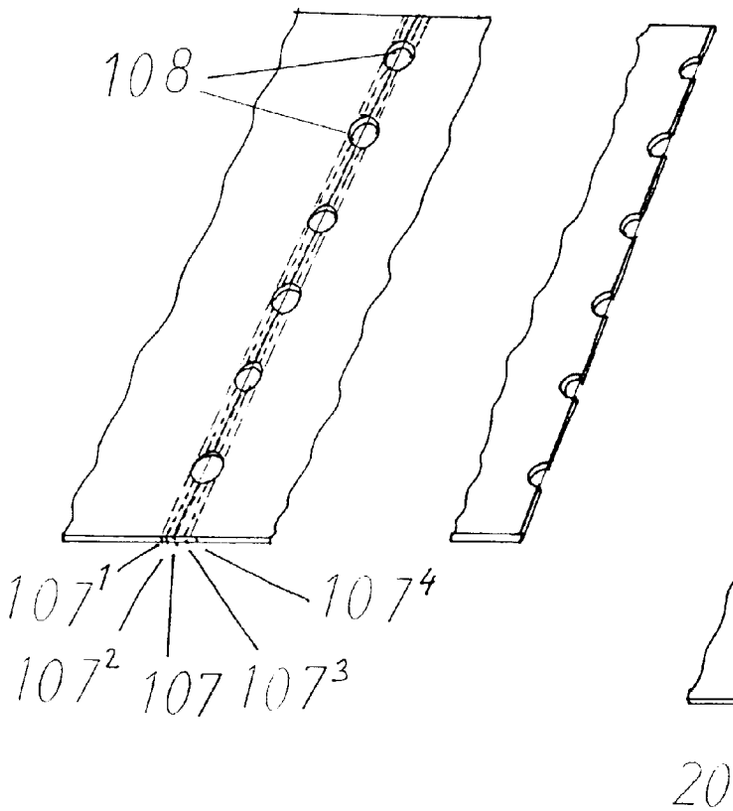
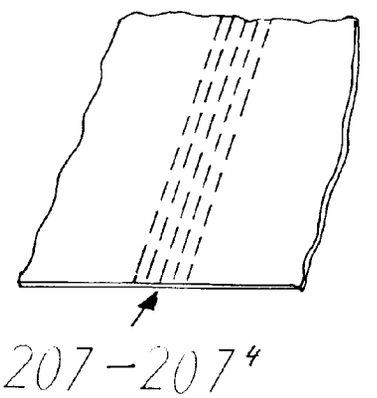


FIG.11A



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EUROPEAN SEARCH REPORT

Application Number
EP 97 85 0177

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	US 3 802 592 A (WHEATON, III) * column 4, line 48 - line 56; figure 3 *	1	B65D71/00
A	EP 0 465 815 A (CERIT SPA) * claim 1; figure 4 *	1	
A	FR 2 588 832 A (LACROIX MICHEL) * figures *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B65D
B65G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	31 March 1998	Bridault, A

CATEGORY OF CITED DOCUMENTS

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