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(54) **Divisible palletized load**

Teilbare Palettenladung

Charge palettisée divisible

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(56) References cited:
**EP-A- 0 465 815**
**FR-A- 2 588 832**
**US-A- 3 802 592**



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## Description

**[0001]** The present invention relates to a pallet device including a divisible pallet carrying goods.

**[0002]** The present invention being intended for providing stabilisation of goods carried by a divisible pallet also after its division.

**[0003]** 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.

**[0004]** 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.

**[0005]** An example of a divisible pallet is described in FR-A-2 588 832. Said known pallet is divisible only at the area of the pallet. Goods in different layers will be stacked on each other without any bearer between the said different layers. The transport security will because of that not be so good with a great loading height.

**[0006]** EP-A-0 465 815 shows an example of a support sheet 17 for load and made of cardboard. Said cardboard sheet has the same strength along the whole sheet 17. It will not be possible to cut it off when carrying load on it in many layers on a divisible pallet.

**[0007]** 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.

**[0008]** 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 along a transverse median region of said sheets, are 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 weakenings jointly for all layers.

**[0009]** 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.

**[0010]** 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 along a transverse median region 6 of said sheet. Preferably, the weakenings consist of a number of perforations 7 which in its hand preferably is supplemented by a plurality of apertures 8.

**[0011]** 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.

**[0012]** A series of apertures 8 extending through the respective bolster sheets 4 are arranged displaced from each other, distributed along the bolster sheet 4.

**[0013]** 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.

**[0014]** 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 $4^1$.

**[0015]** The apertures 8 may preferably be quadrangular and be distributed along a common line 9 at a transverse median 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.

**[0016]** 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.

**[0017]** Fig. 11-11A show variants of sheet weakenings consisting of round holes 108 and perforations $107\text{-}107^4$ which break along someone of the many perforations $107\text{-}107^4$, respectively of only perforations $207\text{-}207^4$.

**[0018]** 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 $7\text{-}7^4$, the stabilising bolster sheet 4 breaks easily when division is desired along some perforation $7\text{-}7^n$. 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.

**[0019]** The handling of carton packed shrink film wrapped pallets 2 is made in the following way:

**[0020]** The shrink film is cut up in the middle and is split up.

**[0021]** The bands etc. 15 on the double block are cut off at both sides.

**[0022]** 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 $7\text{-}7^4$. 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.

**[0023]** 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), including a divisible pallet carrying goods (3), **characterized in** that a number of bolster sheets (4) comprising a number of weakenings (5), preferably consisting of perforations ($7\text{-}7^4$; $107\text{-}107^4$; $207\text{-}207^4$), along a transverse median (10) region of said sheets, are positioned between layers (A-D) of cardboard boxes ($3\text{-}3^n$) 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 weakenings (5) jointly for all layers (A-D).

2. A device according to claim 1, **characterized in** that the weakenings include a number of apertures (8) extending through said bolster sheets (4), arranged displaced away from each other and distributed along a said transverse median region of said bolster sheets (4).

3. A device according to claim 2 in which the weakenings consist of perforations, **characterized in** that more than one perforation ($7\text{-}7^4$; $107\text{-}107^4$) extends between said apertures (8).

4. A device according to claim 3, **characterized in** that the perforations consist of a central perforation (7) with at least one perforation ($7^1$, $7^2$ and $7^3$, $7^4$) at each side of it.

5. A device according to claim 4, **characterized in** that five perforations ($7\text{-}7^4$) extend between each aperture (8) and between the edges (4A, 4B) of the bolster sheet and the respective adjacent aperture (8).

6. A device according to the claims 2-5, **characterized in** that the bolster sheets (4) consist of a carton with punched apertures (8).

7. A device according to claim 6, **characterized in** that the apertures (8) are quadrangular and are transversally distributed along a said median region of the bolster sheets (4).

8. A device according to claim 7, **characterized in** that the apertures (8) are rectangular and aligned with its longitudinal extension along a said transverse median region (10) of the bolster sheets (4).

## Patentansprüche

1. Paletten-(2)-Vorrichtung (1), umfassend eine teilbare, mit Waren (3) beladene Palette, dadurch gekennzeichnet, dass eine Anzahl von Polsterplatten (4), umfassend mehrere Schwachstellen (5), vorzugsweise bestehend aus Perforierungen ($7\text{-}7^4$; $107\text{-}107^4$; $207\text{-}207^4$), entlang eines quer verlaufenden Mittelbereichs (10) der Platten zwischen den Schichten (A-D) der Kartonschachteln ($3\text{-}3^n$) oder anderer Waren (3) so positioniert sind, dass während der erwünschten Teilung der Palette (2) in kleinere Einheiten ($2^1$, $2^2$) die Platten (4) entlang der Schwachstellen (5) bei allen Schichten (A-D) ge-

meinsam brechen.

**2.** Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass die Schwachstellen eine Anzahl von Öffnungen (8) enthalten, die sich durch die Polsterplatten (4) erstrecken und voneinander versetzt und entlang des quer verlaufenden Mittelbereichs der Polsterplatten (4) angeordnet sind.

**3.** Vorrichtung nach Anspruch 2, bei der die Schwachstellen aus Perforierungen bestehen, dadurch gekennzeichnet, dass sich zwischen den Öffnungen (8) mehr als eine Perforation ($7-7^4$; $107-107^4$) erstrecken.

**4.** Vorrichtung nach Anspruch 3, dadurch gekennzeichnet, dass die Perforierungen aus einer Mittelperforierung (7) mit mindestens einer Perforierung ($7^1$, $7^2$ und $7^3$, $7^4$) an jeder Seite bestehen.

**5.** Vorrichtung nach Anspruch 4, dadurch gekennzeichnet, dass sich zwischen jeder Öffnung (8) und zwischen den Kanten (4A, 4B) der Polsterplatte und der jeweiligen angrenzenden Öffnung (8) fünf Perforierungen ($7-7^4$) erstrecken.

**6.** Vorrichtung nach Anspruch 2-5, dadurch gekennzeichnet, dass die Polsterplatten (4) aus einem Karton mit durchbrochenen Öffnungen (8) bestehen.

**7.** Vorrichtung nach Anspruch 6, dadurch gekennzeichnet, dass die Öffnungen (8) viereckig und quer verlaufend entlang dem Mittelbereich der Polsterplatten (4) verteilt sind.

**8.** Vorrichtung nach Anspruch 7, dadurch gekennzeichnet, dass die Öffnungen (8) rechteckig und mit ihren Längsdimensionen entlang dem quer verlaufenden Mittelbereich (10) der Polsterplatten (4) angeordnet sind.

## Revendications

**1.** Dispositif (1) de palette (2), comportant une palette divisible supportant des marchandises (3), caractérisé en ce que un certain nombre de plaques d'accouplement (4) comprenant un certain nombre d'affaiblissements (5), consistant préférentiellement en des perforations ($7-7^4$ ; $107-107^4$ ; $207-207^4$), le long d'une région médiane transversale (10) de ces plaques, sont positionnées entre des couches (A-D) de boîtes en carton ($3-3^n$) ou d'autres marchandises (3), de façon que durant la partition souhaitée de la palette (2) en unités plus petites ($2^1$, $2^2$) les plaques (4) cèdent conjointement pour toutes les couches (A-D) le long desdits affaiblissements (5).

**2.** Dispositif selon la revendication 1, caractérisé en ce que les affaiblissements présentent un certain nombre d'ouvertures (8) s'étendant à travers les plaques d'accouplement (4), agencées de façon espacée l'une de l'autre et réparties le long de la région médiane transversale des plaques d'accouplement (4).

**3.** Dispositif selon la revendication 2 dans lequel les affaiblissements consistent en des perforations, caractérisé en ce que plusieurs perforations ($7-7^4$ ; $107-107^4$) s'étendent entre les ouvertures (8) .

**4.** Dispositif selon la revendication 3, caractérisé en ce que les perforations consistent en une perforation centrale (7) présentant au moins une perforation ($7^1$, $7^2$ et $7^3$, $7^4$ ) de chaque côté de celle-ci.

**5.** Dispositif selon la revendication 4, caractérisé en ce que cinq perforations ($7-7^4$) s'étendent entre chacune des ouvertures (8) et entre les bords (4A, 4B) de la plaque d'accouplement et de l'ouverture adjacente respective (8).

**6.** Dispositif selon les revendications 2-5, caractérisé en ce que la plaque d'accouplement (4) consiste en un carton présentant des ouvertures perforées (8).

**7.** Dispositif selon la revendication 6, caractérisé en ce que les ouvertures (8) sont quadrangulaires et sont réparties transversalement le long de la région médiane des plaques d'accouplement (4).

**8.** Dispositif selon la revendication 7, caractérisé en ce que les ouvertures (8) sont rectangulaires et son alignées par leur direction de longueur le long de la région médiane transversale (10) des plaques d'accouplement (4).

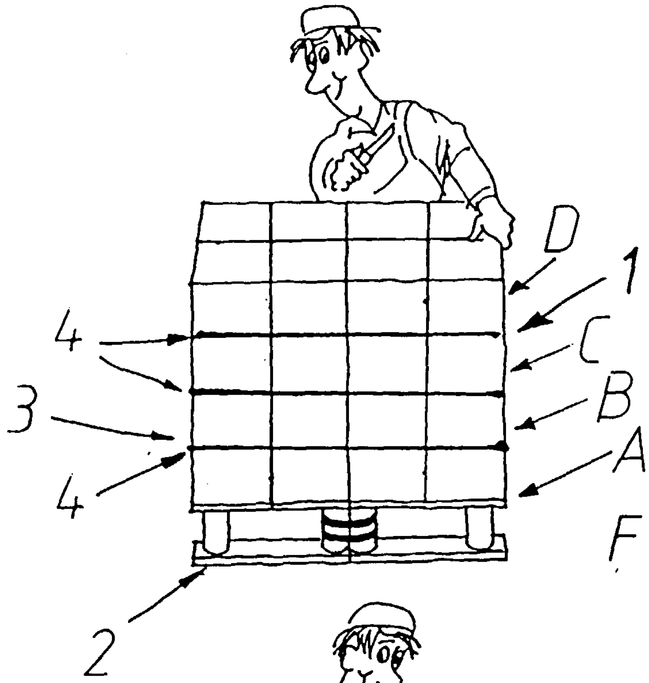


FIG.1

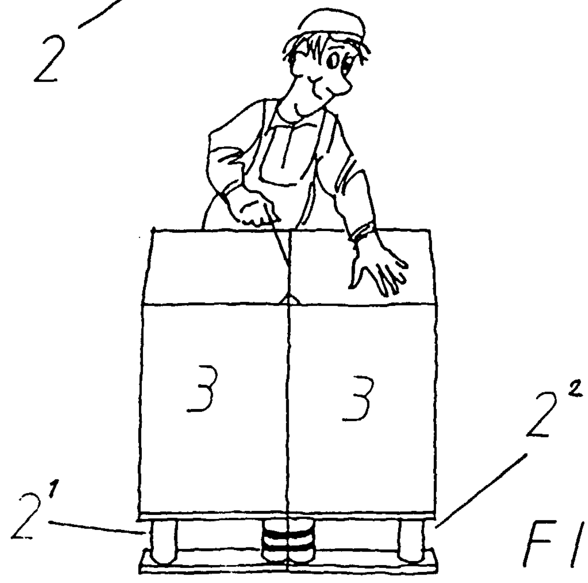


FIG.2

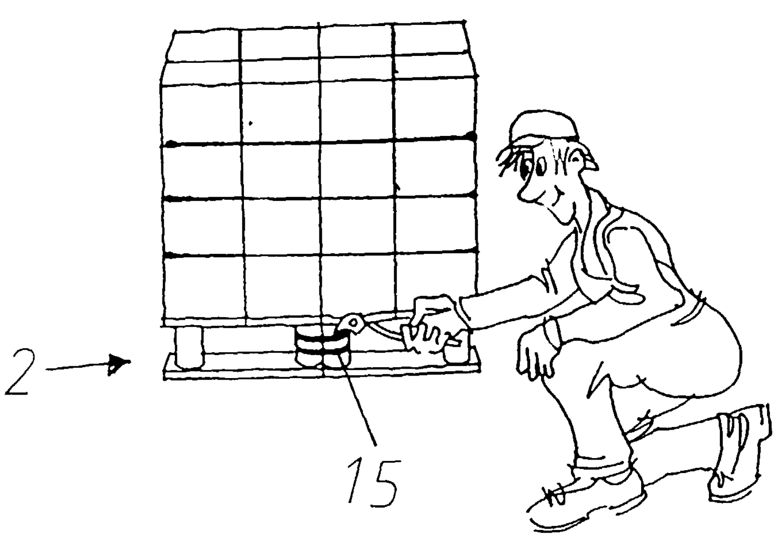


FIG.3

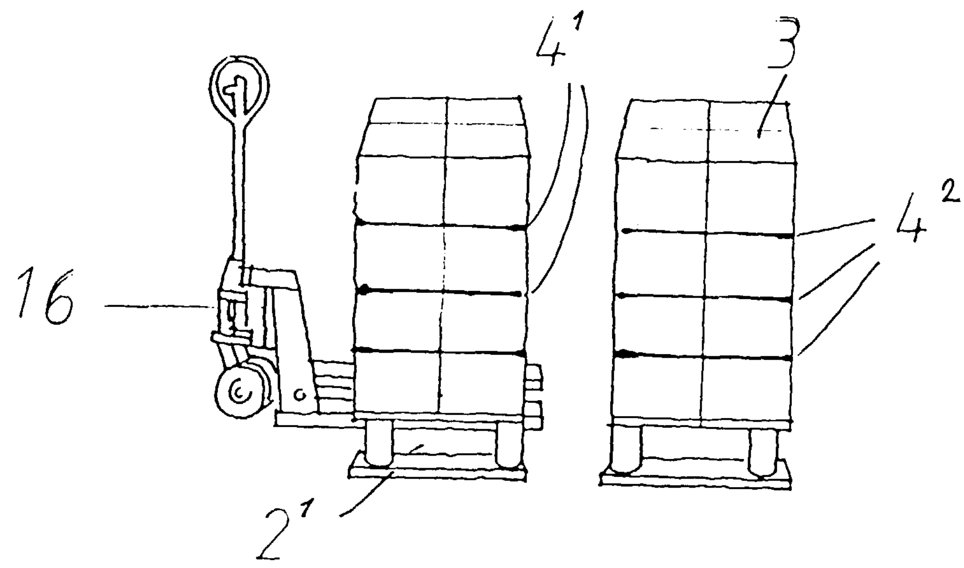


FIG. 4

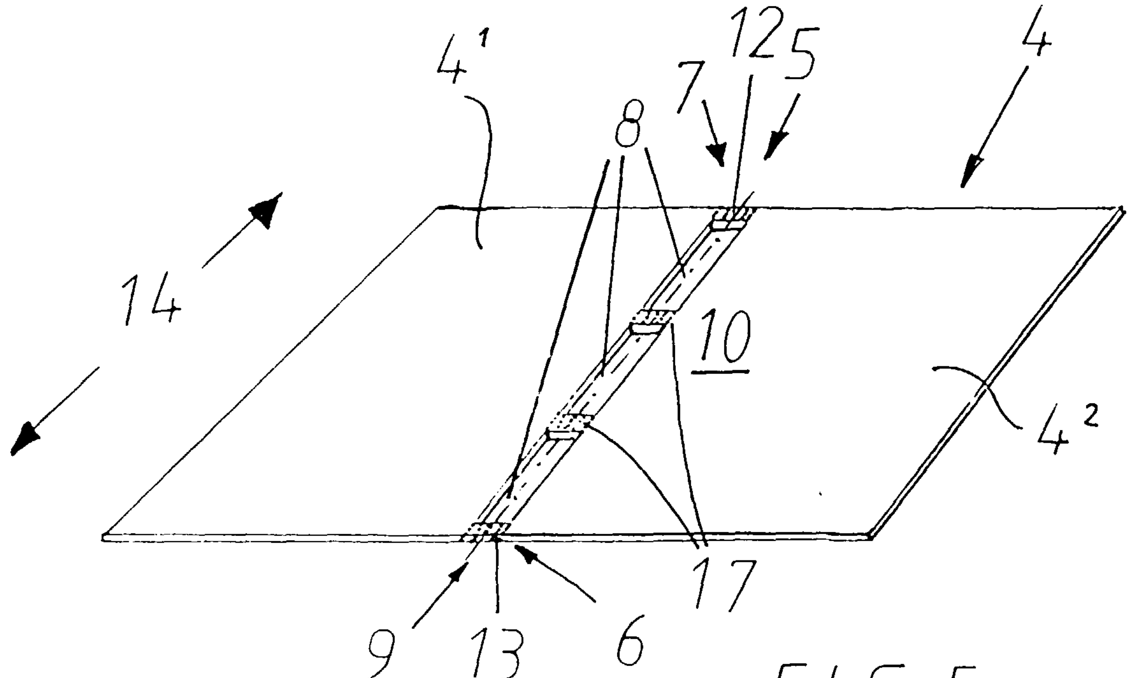


FIG. 5

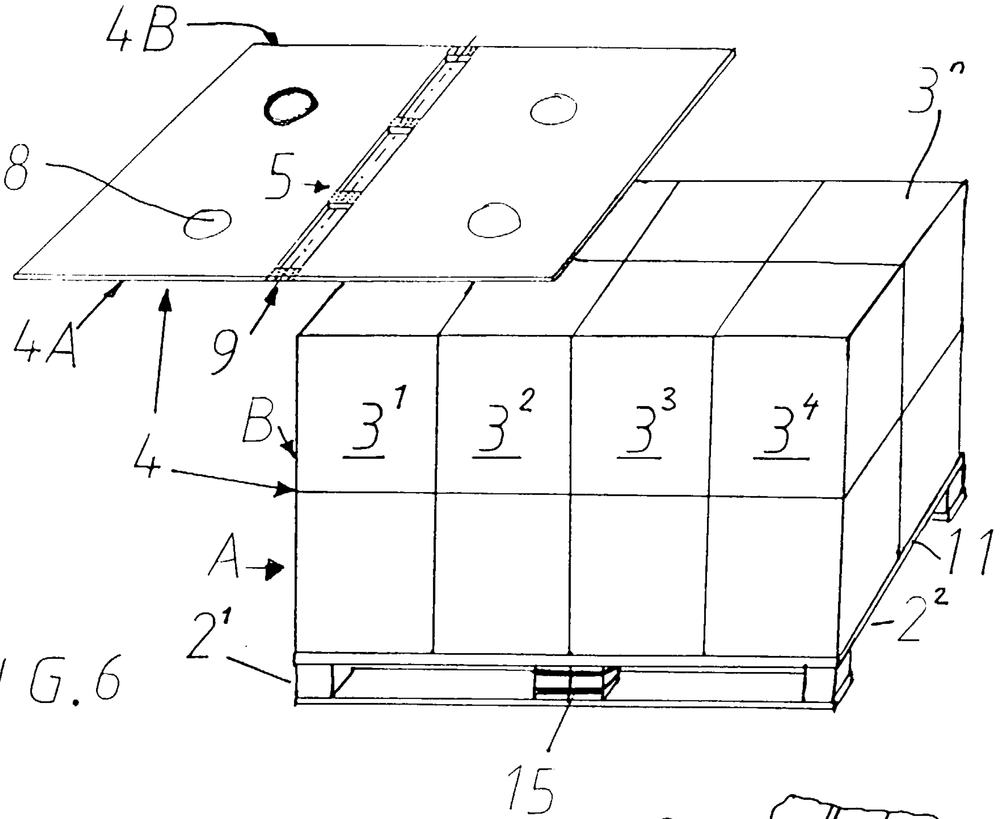


FIG.6

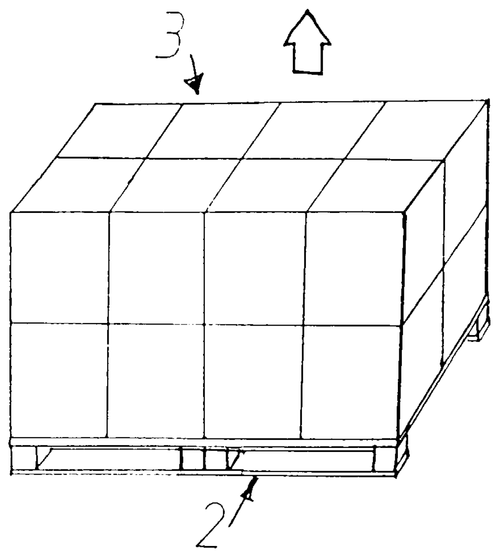


FIG 7

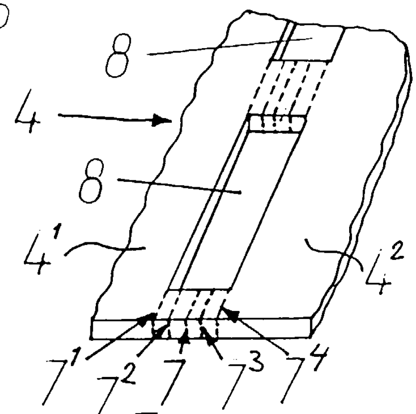


FIG 8

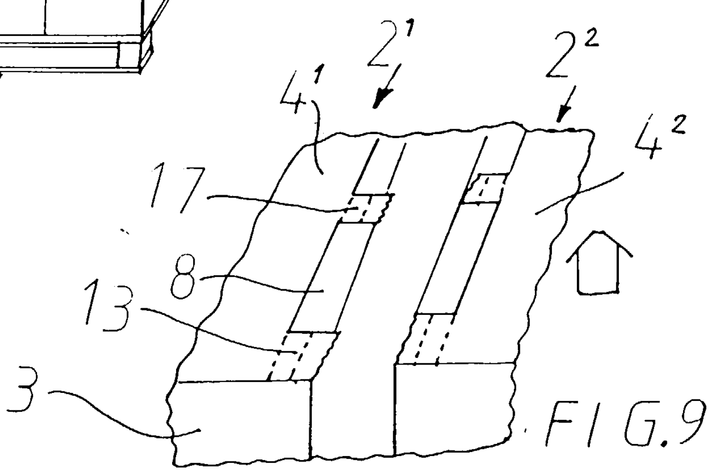


FIG.9

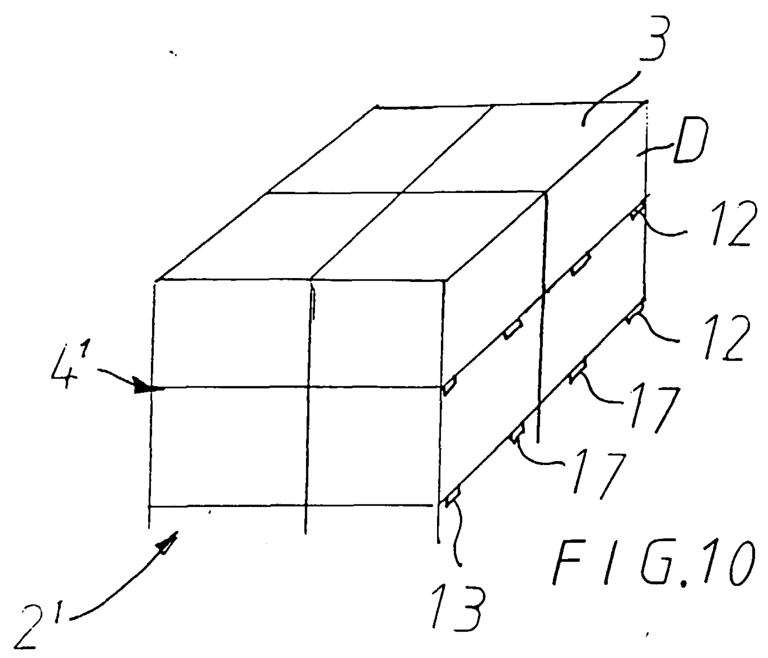


FIG.10

FIG.11

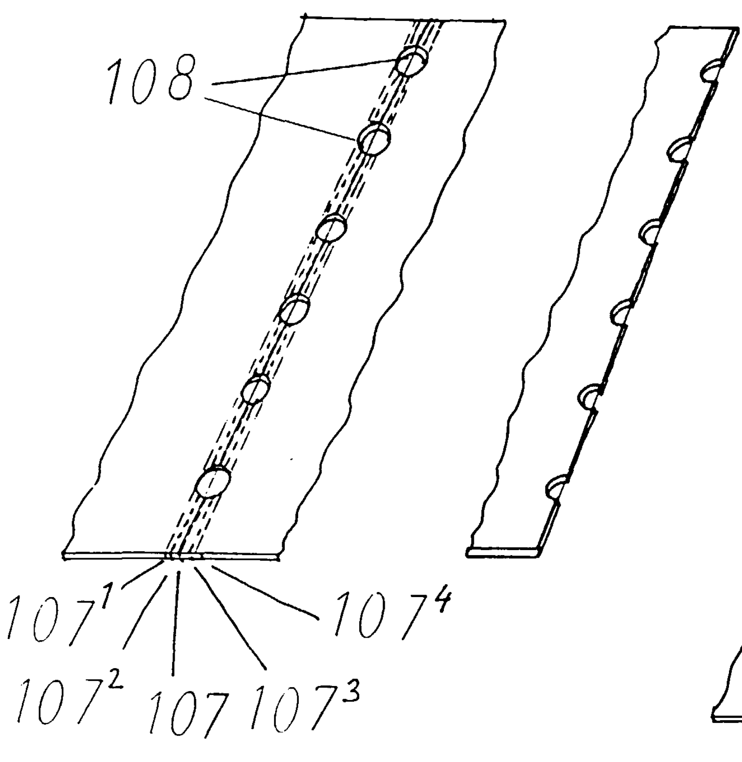


FIG.11A