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54 **Support structure for cardboard containers to be handled by fork lift trucks.**

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Description

The invention relates to a packaging unit according to the preamble of claim 1.

The most widespread technique for packing goods in palletized containers and/or boxes involves the use of preformed and sufficiently strong containers made of rigid cardboard, which are set up at the site of use by suitable folding a cardboard blank so as to form the walls and the bottom of the container. The thus obtained receptacle is sufficiently rigidified by means of adhesive tapes, staples or the like so as to stabilize it in its pre-determined shape. The thus finished box is then placed onto a pallet, usually made of wood, plastic or suitably reinforced cardboard, and filled to the desired level with the goods to be transported, whereupon it is closed at the top. The box and the pallet supporting it are then finally secured to one another by passing strips or tapes therearound, to result in a unitary and rigid body ready for transport. The characteristics of the pallet, which are generally known and need therefore not be described, renders this kind of package particularly suitable for being handled by means of fork lift trucks or any other mechanical lifting and conveying machinery.

EP-A-168 252 describes a packaging unit consisting of at least one cardboard container and a plurality of support elements fixed to the base portions of the containers. The support elements consist of two pieces to be slidably engaged with each other. One of the pieces is to be secured to the bottom wall of the container.

The invention aims to improve a packaging unit of the last-mentioned type (see characterizing portion of claim 1). The packaging unit defined in Claim 1 is easier to handle since no separate piece of the support element is to be secured to the container. Preferred embodiments are referred to in the subclaims.

The invention will now be further described by a preferable embodiment with reference to the accompanying drawings, wherein:

Fig. 1 shows a perspective view of a single support element;

Fig. 2 shows a diagrammatic view illustrating the operation of mounting a container on a support element; and

Fig. 3 shows a packaging unit comprising a container mounted on a suitable number of support elements jointly acting as a pallet.

With reference to the figures, the following elements are shown:

- 1) outer wall of upper containment support elements of a component of the packaging unit,
- 2) box-shaped container having bottom closure flaps,
- 3) lateral inner walls of support elements,
- 4) container support surface on support element,
- 5) ground-engaging foot portions of support element,
- 6) retaining barbs projecting from inner walls of support element,
- 7) locking teeth projecting from support surface of support element,
- 8) symmetric abutment disposed on centerline of support surface 4,
- 9) engagement undercuts between abutment 8 and surface 4,
- 10) top surface of abutment 8
- 11) bottom flaps of container 2,
- 12) lower edges of flaps 11,
- 13) laterally containment wall portions,
- 14) securing strips or tapes,
- 15, 16, 17) support elements incorporated in a unitary packing structure.

The packaging unit includes at least one container 2 and a plurality of support elements 15, 16, 17. The container 2 includes bottom flaps 11, which are releasably fixed to the support elements 15, 16, shown in Fig. 1.

For facilitating the description of these support elements, depicted in the most comprehensible manner in Fig. 1, it needs only be said that they resemble a short length of a conventional pallet, supplemented by a pair of small lateral containment walls 13, a central abutment 8, and a number of small projecting parts to be described in the following.

Abutment 8 is located on the centerline of the support surface 4 and is of a symmetric shape of a flat V-shaped cross-sectional configuration, so that two symmetrically disposed undercuts 9 are formed between abutment 8 and surface 4.

Surface 4 is further provided, preferably at locations adjacent the inner wall surfaces 3 of containment walls 13, with a number of upwards projecting teeth 7, wall surfaces 3 being similarly provided with downwards directed arcuate barbs 6.

The operation of assembling the packaging unit according to the invention proceeds in the following manner:

After placing a number of n support elements on the floor at parallel spacings equalling $1/(n-1)$ of the length of the container 2 to be transported, a cardboard blank is used for setting up container 2, without the use of

adhesive tapes or the like, so that bottom flaps 11 are free to project downward at an angle of about 45°.

Container 2 is then lowered onto the support elements, so that its bottom flaps 11 slide inwards on support surface 4 until their free edges enter the undercuts 9 of abutment 8 and the bottom of the container is thus closed.

As container 2 is being lowered, the lower rims of its lateral walls slide downwards on inner wall surfaces 3 of the containment walls 13 provided at the end of the support elements.

For facilitating the insertion of container 2, the inner wall surfaces 3 are preferably inclined inwards to thereby improve the retention of the container on the support surfaces 4 without hampering its introduction between containment walls 13.

In order to further improve the retention of the container, barbs 6 penetrate its walls to their full length so as to subsequently prevent the container from being lifted off the support element, the latter being positively locked against lateral displacement by teeth 7 on support surface 4 penetrating bottom flaps 11, and more effectively still by the engagement of the edges 12 of bottom flaps 11 in undercuts 9 of abutment 8 over a considerable part of their length.

It is in particular the engagement of flap edges 12 with the abutments 8 on all of the support elements which imparts the required stability and strength to the packaging unit composed of the container and support elements.

The assembly of the packaging unit is terminated by securing the above described components fixedly to one another by means of strips or tapes 14 which are wound around the assembled components in the known manner as shown in Fig. 3.

The result of this assembly operation is a packaging unit tainer of cubic configuration, capable of being handled by fork lift trucks and the like and offering, in addition to the advantages pointed out above, further significant advantages, such as:

- a low weight,
- easy handling,
- absence of nails and screws,
- reduced space requirement for stacking and storage,
- reduced expenditure for return transportation (the volume of each support element is only a fraction of that of a conventional pallet),
- reduced manufacturing cost.

After the packaging unit has arrived at its destination and been unpacked, the support elements can be readily detached from the actual container, which in its empty state is readily deformable and no longer held down on the support elements by the weight of the previously contained goods.

The support elements may then be stacked without difficulty and returned to the original shipper for renewed use, the space being occupied by the support elements being considerably smaller than that occupied by conventional pallets.

Claims

1. Packaging unit, including at least one box-shaped cardboard container (2) with two bottom flaps (11) folded to a center line and a plurality of support elements (15,16,17) secured to the base portion of the container (2) by locking means (8) being defined at a support surface (4) of the support element
characterized in that
the locking means of the support elements (15,16,17) includes an abutment (8) of V-shaped cross-section to define undercuts (9) between the abutment (8) and the support surface (4), the undercub receiving the ends (12) of the flaps (11) of the container (2).
2. A packaging unit according to Claim 1, **characterized in that** the support elements (15,16,17) are provided on their top surfaces (4) with a number of teeth (7) projecting upwards therefrom for engagement with said bottom flaps (11) of said container (2).
3. A packaging unit according to Claim 1 or 2, **characterized in that** the support elements (15,16,17) are provided at their lateral ends with wall elements to hold the side walls of the container (2).
4. A packaging unit according to Claim 3, **characterized in that** the inner surfaces (3) of the wall elements (13) are inclined.

5. A packaging unit according to Claim 3 or 4, **characterized in that** said inner surfaces (3) of the wall elements (13) are provided with a number of downwards directed barbs (6) adapted to come into locking engagement with the side walls of the container (2).

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Patentansprüche

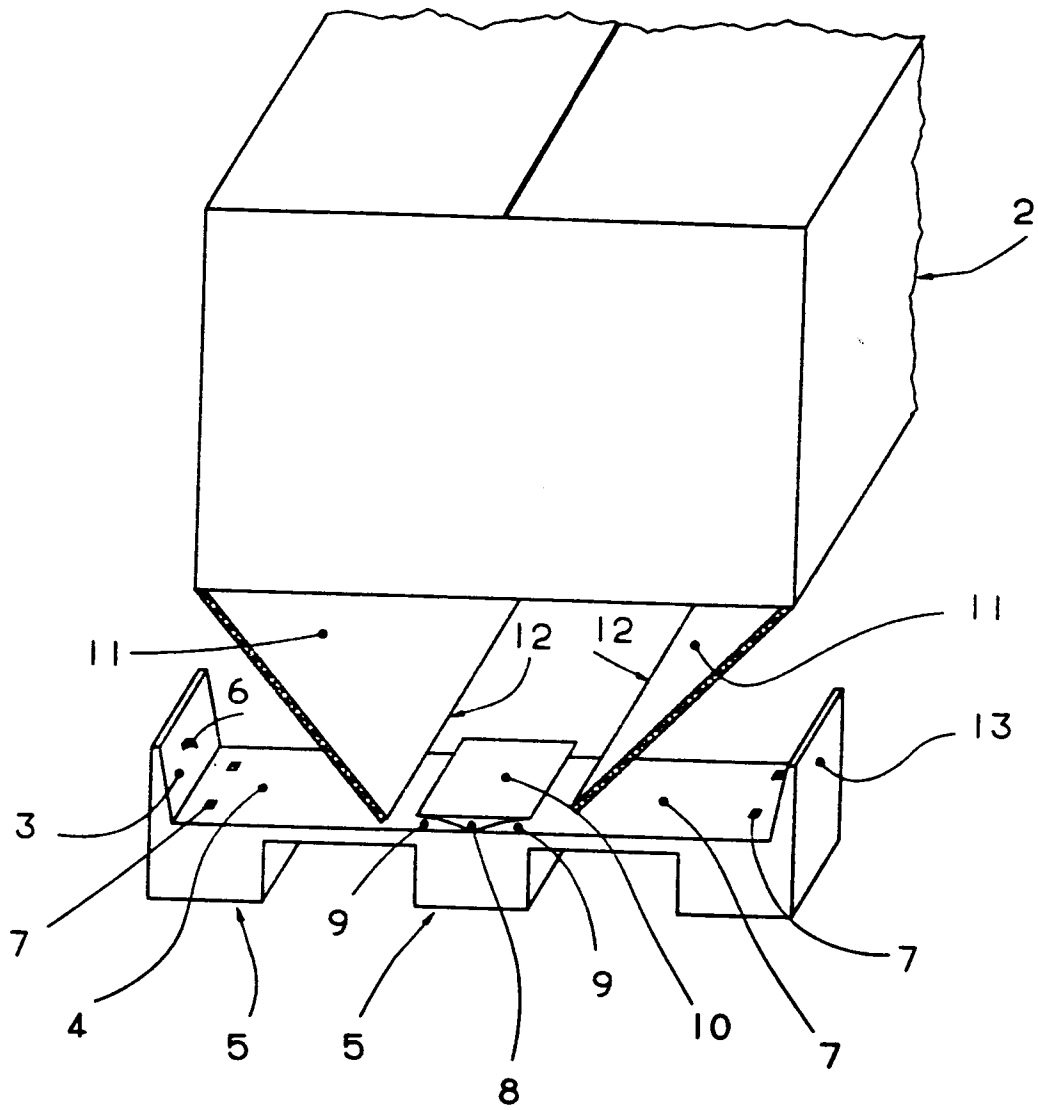
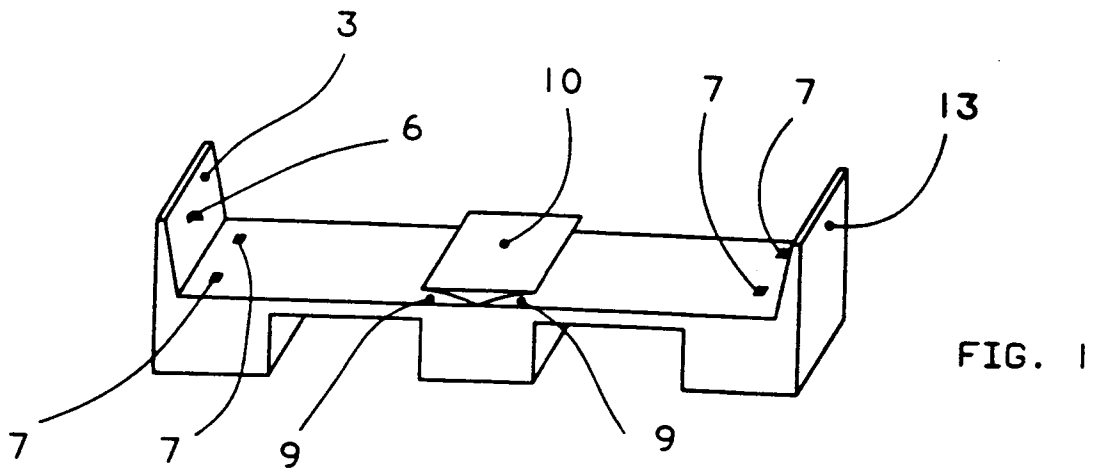
1. Verpackungseinheit aus wenigstens einem kastenförmigen Kartonbehälter (2) mit zwei Bodenklappen (11), die zu einer Mittellinie gefaltet sind, und mehreren Tragelementen (15, 16, 17), die am Basisabschnitt des Behälters (2) durch eine Verriegelungseinrichtung (8) gesichert sind, die an einer Tragfläche (4) des Tragelements ausgebildet ist, **dadurch gekennzeichnet**, daß die Verriegelungseinrichtung der Tragelemente (15, 16, 17) einen Anschlag (8) von V-förmigem Querschnitt umfaßt, um Hinterschneidungen (9) zwischen dem Anschlag (8) und der Tragfläche (4) zu bilden, die die Enden (12) der Klappen (11) des Behälters (2) aufnehmen.
2. Verpackungseinheit nach Anspruch 1, **dadurch gekennzeichnet**, daß die Tragelemente (15, 16, 17) an ihren Oberflächen (4) mit mehreren Zähnen (7) versehen sind, die davon nach oben vorstehen, um mit den Bodenklappen (11) des Behälters (2) in Eingriff zu gelangen.
3. Verpackungseinheit nach Anspruch 1 oder 2, **dadurch gekennzeichnet**, daß die Tragelemente (15, 16, 17) an ihren seitlichen Enden mit Wandelementen versehen sind, um die Seitenwände des Behälters (2) festzuhalten.
4. Verpackungseinheit nach Anspruch 3, **dadurch gekennzeichnet**, daß die Innenflächen (3) der Wandelemente (13) geneigt sind.
5. Verpackungseinheit nach Anspruch 3 oder 4, **dadurch gekennzeichnet**, daß die Innenflächen (3) der Wandelemente (13) mit mehreren nach unten gerichteten Nasen (6) versehen sind, die dazu dienen, in verriegelnden Eingriff mit den Seitenwänden des Behälters (2) zu gelangen.

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Revendications

1. Unité d'emballage, comprenant au moins un conteneur en carton en forme de caisse (2) avec deux rabats inférieurs (11) repliés sur une ligne centrale, et une multiplicité d'éléments supports (15,16,17) fixés sur la portion de base du conteneur (2) par des moyens de verrouillage (8) définis au niveau d'une surface support (4) de l'élément support, caractérisée en ce que les moyens de verrouillage des éléments supports (15,16,17) comportent une butée (8) ayant en section transversale la forme d'un V pour définir des évidements (9) entre la butée (8) et la surface support (4), ces évidements recevant les extrémités (12) des rabats (11) du conteneur (2).
2. Unité d'emballage selon la revendication 1, caractérisée en ce que les éléments supports (15,16,17) présentent sur leurs surfaces supérieures (4) un certain nombre de dents (7) se projetant vers le haut pour coopérer avec les rabats inférieurs (11) du conteneur (2).
3. Unité d'emballage selon la revendication 1 ou la revendication 2, caractérisée en ce que les éléments supports (15,16,17) comportent au niveau de leurs extrémités latérales des éléments de paroi pour tenir les parois latérales du conteneur (2).
4. Unité d'emballage selon la revendication 3, caractérisée en ce que les surfaces intérieures (3) des éléments de paroi (13) sont inclinées.
5. Unité d'emballage selon la revendication 3 ou la revendication 4, caractérisée en ce que les surfaces intérieures (3) des éléments de paroi (13) présentent un certain nombre de barbes dirigées vers le bas (6) adaptées pour venir coopérer en blocage avec les parois latérales du conteneur (2).

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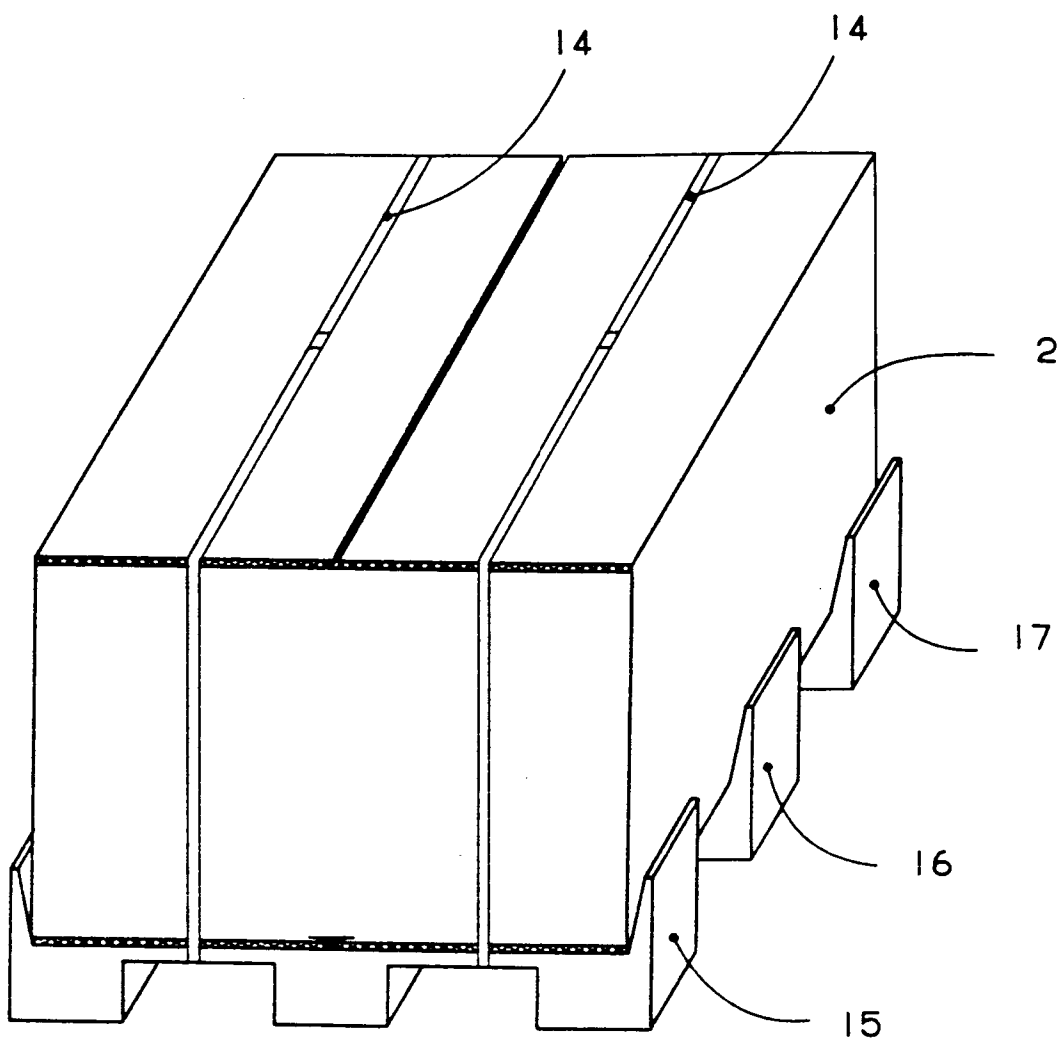


FIG. 3