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54 **Pallet base assembly for a shipping container.**

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**US-A-4 015 710
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Description

This invention relates generally to shipping containers and more particularly concerns a pallet base assembly for a shipping container (known from US—A—4 015 710).

Shipping containers employing pallet base assemblies are used for shipping various types of cargo such as furniture, appliances and types of commercial equipment. Such shipping containers generally include a pallet base upon which the cargo is mounted and suitable packing material for the cargo, with the cargo and the packing material secured within a box attached to the pallet base. Upon arrival at a destination, in some shipping container configurations, the cargo may be released from the pallet base, the top of the box opened, and the cargo lifted out. The various components of the shipping container and packing material may then be discarded.

In some cases, the box and packing material may be removed from the cargo while the cargo remains on the pallet base. In this case, the cargo is subsequently removed from the pallet base. If the cargo is heavy, as is often the case, several persons may be required to lift the cargo from the pallet base to gently place the cargo on the floor to avoid damage to the cargo. Alternatively, some type of mechanical assistance such as a hoist may be used.

A reusable shipping container assembly is known from US—A—4 015 710. This assembly comprises a slotted base upon which a shipping item is placed, a plurality of removable straps with fasteners, passing through any two of the slots, for strapping the item to the base, a plurality of bracing blocks, movable on the base and releasably lockable in the slots, to abut and brace the item, and a floor, removably positioned under, and also cushioned under, the base.

The present invention is directed to the field of shipping containers in which the cargo is moved off of the pallet base, typically without mechanical assistance, rather than being mechanically hoisted or lifted from the base. In an illustrative application, to be discussed more particularly hereinafter with regard to a specific example, a shipping container is provided for a printing equipment console weighing approximately 500 pounds. The shipping container assembly for the printer includes a shipping box and a number of support posts and other packing material which are removed from around the printer before it is removed from the pallet base. In the particular system described, the packing material, including the pallet base assembly, is reusable and is saved after the printer has been unpacked.

Once the packing material and shipping box are removed from the printer, the printer remains supported upon the pallet base assembly, a number of inches above the floor. Since the packing material is removed prior to removal of the printer from the pallet base assembly, no hoist or other mechanical assistance is required to move the printer upwardly out of the shipping

box. However, due to the weight of the printer, several persons would normally be required to lift the printer from the pallet base to set it gently upon the floor. Usually, when such a printer is delivered for use by a customer, one person sets up the printer once it has been unpacked. Therefore, it is inconvenient to require the assistance of several persons for unpacking the printer and removing it from the pallet base.

It is the general aim of the present invention, for shipping container assemblies and pallet base assemblies of the foregoing type, to provide a pallet base assembly which readily permits the unloading of cargo from a pallet base by a single individual without damage to the cargo. It is an objective of the invention to permit such unloading in situations when the cargo is too heavy and/or bulky to be lifted from the pallet base by a single person.

This objective has been accomplished in accordance with certain principles of the invention by providing first and second cargo supports on the pallet base which are removable from the pallet base and positionable to form ramps adjacent to the pallet base. The cargo is moved down the ramps to unload the cargo from the pallet base.

In the form of the invention disclosed, once the supports have been positioned as ramps, the cargo remains supported upon the pallet base. In accordance with a further aspect of the invention, after removal of the ramp/supports the cargo is supported upon deformable cushioning elements, each of which contains strengthening inserts. The strengthening inserts are removed from the deformable cushioning elements, permitting the cargo to settle onto the pallet base surface, and the cargo is then moved down the ramps.

Other objects and advantages of the invention, and the manner of their implementation will become apparent upon reading the following detailed description and upon reference to the drawings, in which:

Fig. 1 is a perspective view of a shipping container in accordance with the present invention, with a portion broken away showing the interior of the container and the cargo therein;

Fig. 2 is an exploded view of the elements of the shipping container of Fig. 1;

Fig. 3 is an exploded view of the pallet base assembly elements of the shipping container of Fig. 2; and

Fig. 4 is a perspective view of the pallet base assembly in its ramp configuration.

Detailed description

While the invention is susceptible to various modifications and alternative forms, a specific embodiment thereof has been shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that it is not intended to limit the invention to the particular form disclosed, but, on the contrary, the intention is to cover all modifi-

cations, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims.

Turning now to the Figures, a shipping container 11 for a large printing equipment console includes an outer box 12 surrounding the printer attached to a pallet base assembly 13, upon which the printer rests in shipment. Four corner posts 14, 16, 17 and 18 are held in place at the corners of the printer by an inner box 19 which surrounds the printer and the corner posts. The inner box 19 is made up of four sidewalls which are received inside, and adjacent to, the inner surfaces of the sidewalls of the outer box 12. The bottom of the inner box 19 rests upon the pallet base assembly 13.

An upper plate 21 rests on top of the corner posts within the upper opening of the inner box 19. The outer box 12, the inner box 19, and the upper plate 21 are preferably of a corrugated cardboard construction. In shipment, the flaps 22 of the outer box 12 are closed over the upper plate 21 and secured by metal or plastic bands 23, 24 which encircle the outer box 12 and the pallet base assembly 13. In one form of the shipping container, a high strength fiberboard rectangular tube (not shown) is positioned around the underside perimeter of the upper plate 21 to displace weight (such as from stacking of containers) onto the corner posts 14—18. In the disclosed shipping container, vertical spacer blocks 26, 27 are provided on the posts 17, 18, respectively, to provide additional space for a paper loader unit which extends beyond an end of the printer.

The outer box 12 is secured to the pallet base assembly 13 by four releasable plastic fasteners 28 which pass through openings 29 in the outer box 12 and are secured within openings 31 in the pallet base assembly 13.

The pallet base assembly 13 includes a pallet base made up of a base platform 32 secured upon three parallel feet 33, 34 and 36 extending the length of the pallet base platform 32. The feet 33 and 36 are suitably hollowed out, at least in the vicinity of the openings 31, to receive a portion of each of the fasteners 28 which secure the outer box 12 to the pallet base assembly 13.

The pallet base assembly 13 further includes four cargo support assemblies 37, 38, 39 and 41 which, during shipment, are interposed between the pallet base and the printer. The support assembly 37 is made up of a support element 42 to which is bonded a deformable cushioning element 43. The support assembly 41 is substantially the same as the support assembly 37 and includes a support element 44 and deformable cushioning element 46. The support assemblies 37, 41 are secured to the pallet base by threaded fasteners such as 47 which are received in suitable apertures 48 (in the support element) and 49 (in the pallet base). Preferably, the apertures 49 in the pallet base include threaded inserts (not shown) for receiving the fasteners 47.

The support assembly 38 is made up of a flat support element 51 and a pair of cushioning

elements 52, 53 bonded thereto. The support assembly 39 is made up of a flat support element 54 and a pair of cushioning elements 56, 57, bonded thereto. Each support assembly 38, 39 is secured to the pallet base 32 by a pair of threaded fasteners such as fastener 47 passing through holes in the support elements and the pallet base. In the illustrated pallet base assembly, the cushioning elements 52, 53 and 56, 57 are polystyrene, and the support elements 51, 54 are plywood. When the printer is packed in the shipping container for shipment, and the support assemblies are mounted on the pallet base, the printer rests primarily upon the deformable cushioning elements 43, 46 (of the support assemblies 37, 41) and also upon the cushioning elements 52 and 56 (of the support assemblies 38, 39).

In order to unpack the printing apparatus, and to convert the pallet base assembly and shipping container from its shipping configuration to an unloading configuration, first the outer box 12 is removed from the pallet base. To free the outer box from the base, the releasable clips 28 are removed, and the outer box is lifted from the printer. Subsequently, the upper plate 21 is removed. Then the corner posts 14, 16, 17 and 18 are removed and the inner box 19 lifted from the printer. Preferably, the printer is also wrapped in plastic (not shown) to prevent water damage. Any such plastic wrap is removed after the inner box 19 has been lifted from the printer.

With the shipping boxes removed, and the printer still on the pallet base assembly, the printer and pallet base may be moved together, such as by a forklift, to be positioned for testing or "burn in". Subsequent to testing, the printer may be repacked in the shipping materials and shipped, for example, to a customer location. The printer may be installed at a customer location despite the unavailability of material handling equipment, as shall be described.

To install the printer at a customer location, the shipping boxes, corner posts, and upper plate are removed as before. The printer is then removed from the pallet base assembly for use, in the following manner.

First, the threaded fasteners securing the support assemblies 38 and 39 are removed. These assemblies are then removed from beneath the printer, with the printer remaining supported upon the front and rear support assemblies 37 and 41.

In order to facilitate removal of the printer from the pallet base, the support assemblies 38, 39 are now inverted and attached to the pallet base 32 to serve as ramps for the removal of the printer. In order to do this, a precut portion 56a of the cushioning element 56 is removed, and a precut portion 52a of the cushioning element 52 is also removed. The cushioning elements 53 and 57 on the support assemblies 38, 39 are precut at an angle, generally matching the angle of the cushioning elements 52, 56 after the portions 52a, 56a have been removed. These angled surfaces are placed upon the floor, with the support assemb-

lies 38, 39 inverted, so that the planar surfaces of the support elements 51, 54 are angled to serve as ramp surfaces for the printer.

To attach the support assembly 39 to the pallet base 32, a hinge 61 is attached to the ramp surface of the support element 54. Similarly, a hinge 62 is attached to the ramp surface of the support element 51 of the support assembly 38.

The free plate of each hinge 61, 62 carries a pin, with each pin being received in a suitable hole 63, 64 in the pallet base 32 to hold the ramp surfaces in place adjacent the pallet base.

In order to prevent shifting of the support assemblies 38, 39 when they are in the ramp position, the support assemblies also carry metal angles 66, 67, respectively. The angles provide additional rigidity to the support assemblies 38, 39 in the ramp configuration.

Once the ramps are secured to the pallet base, the printer is lowered onto the pallet base and moved down the ramps onto the floor. Preferably, the printer includes four supporting wheels thereunder, which in the shipping configuration of the shipping container are suspended above the pallet base 32.

To lower the printer onto the pallet base, the deformable cushioning elements 43, 46 are collapsed. After first removing the threaded fasteners 47 securing the support assembly 41 to the pallet base, a pair of polystyrene inserts 68, 69 are removed from the cushioning element 46 of the support assembly 41. With the removal of the inserts, the cushioning element 46 collapses, lowering two of the wheels of the printer onto the pallet base. A pair of inserts 71, 72 are then removed from the cushioning element 43 of the support assembly 37, and the cushioning element 43 collapses to lower the other two wheels of the printer onto the pallet base. To facilitate the removal of the inserts, a pair of nylon straps such as 73 are secured to each insert.

Once the printer is resting on the pallet base 32, supported by its wheels, the support assembly 41 is removed. The support assembly 37 is preferably left attached to the pallet base at this time. Once the wheels of the printer are resting upon the pallet base, the printer is then wheeled down the ramps formed by the inverted support assemblies 38, 39 onto the floor.

After the printer is removed from the pallet base, the support assembly 37 is removed, and the ramps 51, 54 are detached from the base. The shipping container components, including the boxes and pallet base assembly, are then stored for subsequent reuse if the printer is repacked for shipment.

While the invention has been described herein in connection with a shipping container for a printer console, it is also useful for the shipment of other types of cargo such as appliances or different types of office equipment.

Claims

1. A pallet base assembly for supporting cargo

which facilitates unloading the cargo, comprising:

a pallet base (13); characterized by

a first cargo support (38) having a first position in which it is removably mounted on the pallet base (13) between the pallet base and the cargo, and having a second position in which it is secured adjacent an edge of the pallet base (13), the first cargo support (38) including a surface serving as a ramp when the first cargo support (38) is in the second position; and

a second cargo support (39) having a first position in which it is removably mounted on the pallet base (13) between the pallet base and the cargo, and having a second position in which it is secured adjacent an edge of the pallet base (13), the second cargo support (39) including a surface serving as a ramp when the second cargo support (39) is in the second position.

2. The pallet base assembly of claim 1 in which the first and second cargo supports (38; 39) each comprise (a) a support element (51; 54) having a first surface which serves as a ramp when the support (38; 39) is in its second position and which rests upon the pallet base (13) when the support (38; 39) is in its first position, and (b) a cushioning element (52, 53; 56, 57) attached to a second surface of the support element (51; 54), the cushioning element being positioned beneath the support element when the support is in its second position and being positioned adjacent the cargo when the support is in its first position.

3. A pallet base assembly of claim 1 or 2 further comprising:

a box (12), sized to surround the cargo, having a top portion and having a bottom portion releasably secured to the pallet base (13) when the first and second cargo supports (38; 39) are mounted in the first position; and

a plurality of support posts (14; 16; 17, 18) in the box (12) extending between the top portion of the box and the pallet base (13) when the first and second cargo supports (38; 39) are mounted in the first position, the box and support posts being removable from the pallet base so that the first and second cargo supports may be placed in the second position.

4. A pallet base assembly for supporting cargo comprising (a) a pallet base (13) and (b) means (41; 42) for supporting the cargo on the pallet base (13) so that the cargo is spaced apart from the pallet base, characterized in that the means (41; 42) for supporting the cargo include at least one deformable cushioning assembly having (i) a deformable cushioning element (46; 43) with an opening therein, and (ii) a removable strengthening element (68, 69; 71, 72) received in the opening, the deformable cushioning assembly being of sufficient strength to support the cargo when the strengthening element is within the opening in the cushioning element and the deformable cushioning element being deformed by the cargo when the strengthening element is removed, so that the cargo is lowered onto the pallet base when the strengthening element is

removed from the deformable cushioning element.

Patentansprüche

1. Lagerbock-Basisanordnung zum Tragen von Frachtgut, bei der das Abladen des Frachtguts erleichtert ist, mit:

einer Lagerbock-Basis (13), gekennzeichnet durch

eine erste Frachtgut-Stütze (38), die in einer ersten Position abnehmbar an der Lagerbock-Basis (13) zwischen der Lagerbock-Basis und dem Frachtgut befestigt ist und in einer zweiten Position benachbart zu einer Kante der Lagerbock-Basis (13) gesichert ist, wobei die erste Frachtgut-Stütze (38) eine Fläche aufweist, die als Rampe dient, wenn die erste Frachtgut-Stütze (38) in der zweiten Position ist, und

eine zweite Frachtgut-Stütze (39), die in einer ersten Position abnehmbar an der Lagerbock-Basis (13) zwischen der Lagerbock-Basis und dem Frachtgut befestigt ist und in einer zweiten Position benachbart zu einer Kante der Lagerbock-Basis (13) gesichert ist, wobei die zweite Frachtgut-Stütze (39) eine Fläche aufweist, die als Rampe dient, wenn die zweite Frachtgut-Stütze (39) in der zweiten Position ist.

2. Lagerbock-Basisanordnung nach Anspruch 1, wobei die erste und zweite Frachtgut-Stütze (38; 39) jeweils (a) ein Stützelement (51; 54) aufweist, das eine erste Fläche hat, die als Rampe dient, wenn die Stütze (38; 39) in ihrer zweiten Position ist, und die auf der Lagerbock-Basis (13) liegt, wenn die Stütze (38; 39) in ihrer ersten Position ist, und (b) ein Pufferelement (52, 53; 56, 57) aufweist, das an einer zweiten Fläche des Stützelements (51; 54) angebracht ist, wobei das Pufferelement unter dem Stützelement angeordnet ist, wenn die Stütze in ihrer zweiten Position ist, und benachbart zu dem Frachtgut ist, wenn die Stütze in ihrer ersten Position ist.

3. Lagerbock-Basisanordnung nach Anspruch 1 oder 2, ferner mit:

einer Kiste (12), die so groß ist, daß sie das Frachtgut umgibt, mit einem oberen Abschnitt und einem unteren Abschnitt, die lösbar an der Lagerbock-Basis (14) gesichert sind, wenn die erste und zweite Frachtgut-Stütze (38, 39) in ihrer ersten Position befestigt sind, und

mehrere Stützpfeiler (14; 16; 17, 18) in der Kiste (12), die sich zwischen den oberen Abschnitt der Kiste und der Lagerbock-Basis (13) erstrecken, wenn die erste und zweite Frachtgut-Stütze (38; 39) in der ersten Position befestigt sind, wobei die Kiste und die Stützpfeiler von der Lagerbock-Basis abnehmbar sind, so daß die erste und zweite Frachtgut-Stütze in die zweite Position bringbar sind.

4. Lagerbock-Basisanordnung zum Tragen von Frachtgut mit (a) einer Lagerbock-Basis (13) und (b) Einrichtungen (41; 42) zum Tragen des Frachtguts auf der Lagerbock-Basis (13), so daß das Frachtgut von der Lagerbock-Basis beabstandet ist, dadurch gekennzeichnet, daß die Einrichtun-

gen (41; 42) zum Tragen des Frachtguts mindestens eine deformierbare Pufferanordnung aufweisen, mit (i) einem deformierbaren Pufferelement (46; 43) mit einer darin angeordneten Öffnung, und (ii) einem abnehmbaren Verstärkungselement (68, 69; 71, 72), das in der Öffnung aufgenommen wird, wobei die deformierbare Pufferanordnung einer zum Tragen des Frachtguts ausreichende Stärke aufweist, wenn das Verstärkungselement innerhalb der Öffnung des Pufferelements ist, und das deformierbare Pufferelement durch das Frachtgut verformt wird, wenn das Verstärkungselement entfernt ist, so daß das Frachtgut auf die Lagerbock-Basis abgesenkt ist, wenn das Verstärkungselement aus dem deformierbaren Pufferelement entfernt ist.

Revendications

1. Ensemble de support sous forme de palette pour soutenir la marchandise et en faciliter le déchargement, comprenant:

un support sous forme de palette (13) caractérisé par

un premier support de marchandise (38) ayant une première position dans laquelle il est monté de façon amovible sur le support sous forme de palette (13) entre le support sous forme de palette et la marchandise, et une seconde position dans laquelle il est fixé contre un bord du support sous forme de palette (13), le premier support de marchandise (38) comprenant une surface servant de rampe lorsque le premier support de marchandise (38) est dans la seconde position; et

un deuxième support de marchandise (39) ayant une première position dans laquelle il est monté de façon amovible sur le support sous forme de palette (13) entre le support sous forme de palette et la marchandise, et une seconde position dans laquelle il est fixé contre un bord du support sous forme de palette (13), le deuxième support de marchandise (39) comprenant une surface servant de rampe lorsque le deuxième support de marchandise (39) est dans la seconde position.

2. Ensemble de support sous forme de palette selon la revendication 1 dans lequel le premier et le deuxième support de marchandise (38, 39) comprennent chacun (a) un élément support (51, 54) ayant une première surface qui sert de rampe lorsque le support (38, 39) est dans sa seconde position et qui repose sur le support sous forme de palette (13) lorsque le support (38, 39) est dans sa première position, et (b) un élément amortisseur (52, 53, 56, 57) fixé sur une deuxième surface de l'élément support (51, 54), l'élément amortisseur étant positionné sous l'élément support lorsque le support est dans sa seconde position et étant positionné contre la marchandise lorsque le support est dans sa première position.

3. Ensemble de support sous forme de palette selon les revendications 1 ou 2, comprenant en outre:

une boîte (12) dimensionnée de façon à entourer la marchandise, avec une partie supérieure et

une partie inférieure fixées de façon amovible au support sous forme de palette (13) lorsque le premier et le deuxième supports de marchandise (38, 39) sont montés dans la première position; et une multitude de montants de support (14, 16, 17, 18) dans la boîte (12), allant de la partie supérieure de la boîte au support sous forme de palette (13) lorsque le premier et le deuxième supports de marchandise (38, 39) sont montés dans la première position, la boîte et les montants de support étant détachables du support sous forme de palette afin que le premier et le deuxième supports de marchandise puissent être placés dans la seconde position.

4. Ensemble de support de palette pour soutenir la marchandise comprenant (a) un support sous forme de palette (13) et (b) des moyens (41, 42) permettant de maintenir la marchandise sur le

support sous forme de palette (13) de sorte que la marchandise soit séparée du support sous forme de palette caractérisée en ce que les moyens (41, 42) de support de la marchandise comprennent au moins un ensemble amortisseur déformable ayant (i) un élément amortisseur déformable (46, 43) comportant une ouverture, et (ii) un élément de renfort amovible (68, 69, 71, 72) entrant dans l'ouverture, l'ensemble amortisseur déformable étant de résistance suffisante pour supporter la marchandise lorsque l'élément de renfort est à l'intérieur de l'ouverture dans l'élément amortisseur et l'élément amortisseur déformable comprimé par la marchandise lorsque l'élément de renfort est retiré, en sorte que la marchandise descende sur un support sous forme de palette lorsque l'élément de renfort est retiré de l'élément amortisseur déformable.

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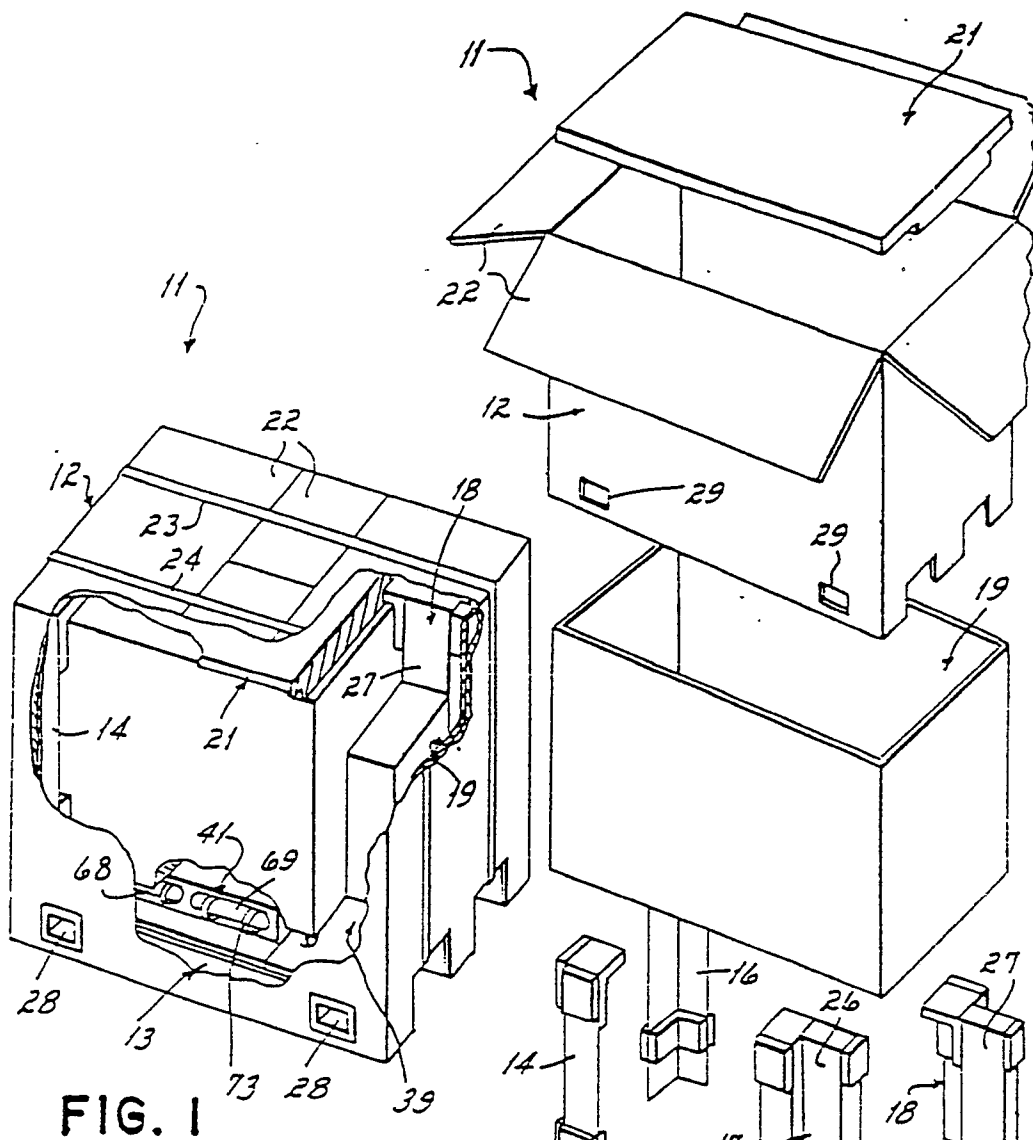


FIG. 1

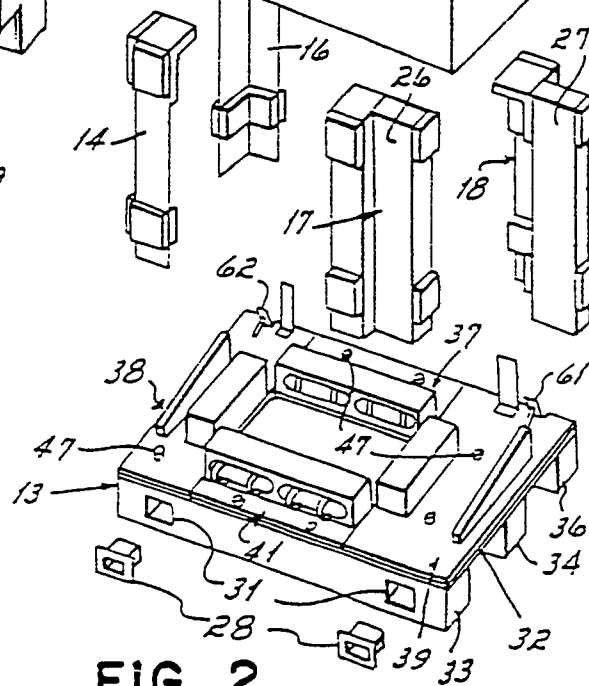


FIG. 2

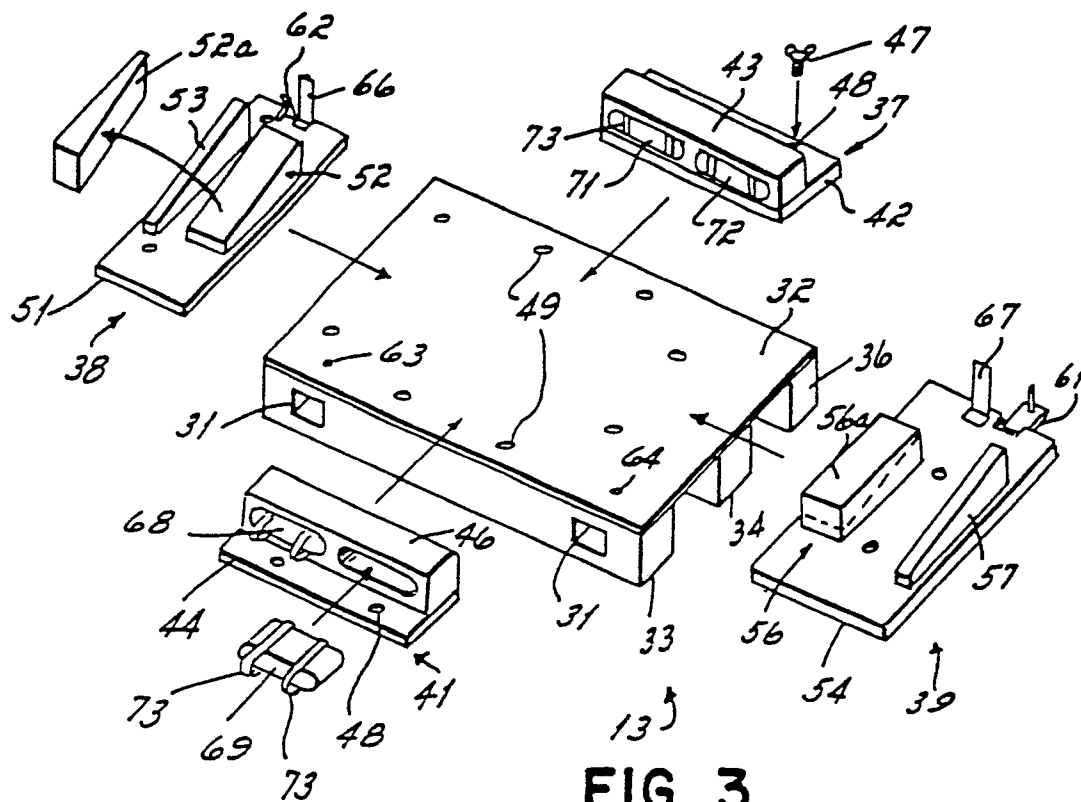


FIG. 3

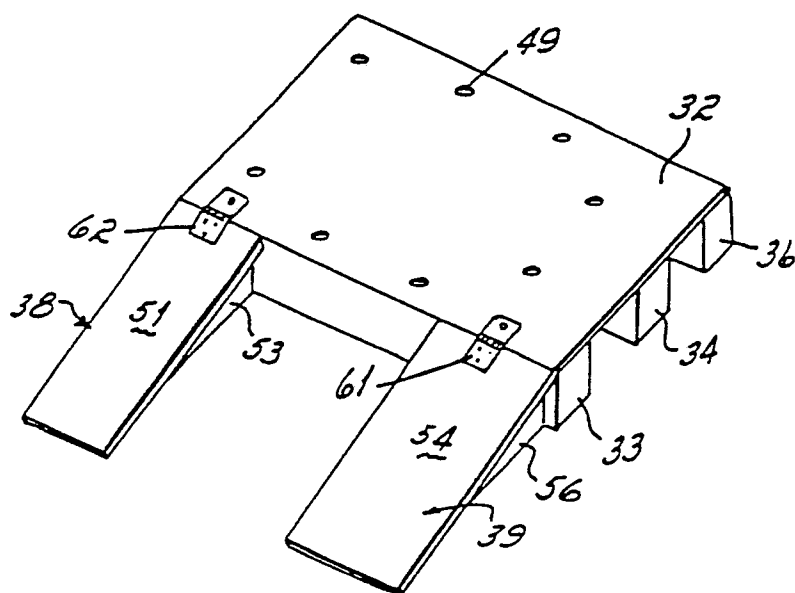


FIG. 4