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(54) **Frame for pallets**

Rahmen für Paletten

Cadre pour palettes

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Description

[0001] This invention relates to a frame for supporting a second pallet above a first pallet in stacked or tiered relationship.

[0002] Pallets are used for the transportation and storage of goods to enable bulky goods to be handled, for example by a forklift truck. The most commonly used pallets comprise an upper load table and a lower support table, both made from wooden planks, with spacer blocks arranged between said tables, the planks being attached to the spacer blocks by means of nails. The spacer blocks are arranged so that the tines of a forklift truck can be inserted between the tables to enable the pallet, and any goods carried thereon, to be lifted and moved from place to place.

[0003] Whilst pallets have become the standard way of handling bulky goods during transportation and storage, in particular when goods are carried on a flat bed or curtain sided trailer, the use of such pallets to transport relatively bulky goods can result in wasted space on the trailer due to an inability for the pallets to be stacked without crushing the goods carried thereon.

[0004] Previous attempts to devise spacers or frames for supporting pallets one above the other in tiered relationship have encountered limited success due to the complexity of the frames and the problem of transporting such frames when the pallets are empty. An example of such known pallet support frames is shown in WO 2010/084375. A similar pallet support frame is disclosed in US 6,371,299.

[0005] An object of the present invention is to obviate such problems.

[0006] According to the present invention there is provided a frame for supporting a second pallet above a first pallet in tiered relationship, as claimed in claim 1.

[0007] Preferably each corner post includes a support seat adjacent an upper end thereof for supporting a respective corner of said support deck. In one embodiment each corner post comprises an elongate angle section member comprising side flanges arranged at right angles to one another. Preferably a plate extends between the side flanges of each support post at a lower end thereof to be located, in use, beneath a respective corner of the first pallet.

[0008] The ends of each tie member may comprise an L-section mounting portion adapted to detachably engage an outer corner of a respective corner post. Preferably the mounting portion on each end of each tie member is shaped to be received between an outer corner of a respective corner post and a respective retaining member mounted on an outer side of each corner post to detachably retain the tie members in engagement with the corner posts. Each retaining member may comprise an angle section plate secured to the respective corner post at a lower end thereof to define an upwardly open receiving slot for receiving respective mounting portions of the tie members.

[0009] In a preferred embodiment the support deck comprises a pair of rectangular leaves hingedly connected together along a centreline of the support deck via said hinge so that the support deck can be folded in half. Preferably the hinge is located on a lower side of the support deck such that opposing edges of the leaves abut one another when the leaves of the support deck are in a flat unfolded configuration.

[0010] A plurality of restraining straps may be attachable to the corner posts to extend between adjacent pairs of corner post, preferably extending diagonally between respective corner posts.

[0011] An embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of a collapsible pallet support frame in accordance with an embodiment of the present invention;

Figure 2 is an exploded view of the support frame of Figure 1;

Figure 3 is a detailed perspective view of the tie members of the support frame of Figure 1;

Figure 4 is a detailed perspective view of the support straps of the support frame of Figure 1;

Figures 5 to 9 comprise perspective view of the support frame of Figure 1 during assembly;

Figure 10 is a front view of the pallet frame of Figure 1; and

Figure 11 is a perspective view of the support frame of Figure 1 in use.

[0012] As shown in Figures 1 and 2, a collapsible pallet support frame in accordance with an embodiment of the present invention comprises four corner posts 2,4,6,8, each arranged to extend upwardly from a respective corner region of a first pallet 10, adjacent pairs of corner posts being interconnected by horizontally extending tie members 12,14,16,18. A support deck 20 is detachably supported on the corner posts 2,4,6,8 via support seats 22 provided thereon whereby a second pallet may be supported on the support deck above the first pallet. The corner posts 2,4,6,8 are further linked by diagonally extending restraining straps 24,26,28,30.

[0013] Each corner post 2,4,6,8 is defined by an elongate angle section member comprising side flanges arranged at right angles to one another. The lower end of each support post includes a base plate 32 extending between the side flanges of the respective post whereby the base plate 32 may be received beneath a respective corner region of the first pallet 10 when the respective corner post 2,4,6,8 is fitted against the respective corner

of the first pallet 10.

[0014] Each support seat 22 extends between the side flanges of the respective corner post 2,4,6,8 adjacent an upper end thereof.

[0015] Each tie member 12,14,16,18 comprises an elongate flat bar having L section mounting portions 34,36 provided at opposite ends thereof, preferably attached thereto by welding, each mounting portion 34,36 being arranged to abut an outer side of a respective corner post.

[0016] As best seen from Figure 3, a plate like mounting member 38 is provided on an outer face of each corner post 2,4,6,8, approximately midway between the ends thereof, to define an upwardly open receiving slot or seat within which the mounting portions 34,36 of the ends of respective tie members 12,14,16,18 are received to secure the tie members 12,14,16,18 to the corner posts 2,4,6,8.

[0017] As shown in Figure 4, mounting loops 40,42 are provided at upper and lower ends of each corner post 2,4,6,8 on the side flanges thereof for receiving respective mounting hooks 44 provided on the ends of respective restraining straps 24,26,28,30, such that the restraining straps extend diagonally between adjacent pairs of corner posts, as shown in Figure 1.

[0018] The support deck 20 comprises a latticework of elongate rods or bars defining a pair of rectangular leaves 46,48 hingedly connected together along a centreline of the support deck 20 via a hinge 50 so that the support deck 20 can be folded in half. The hinge 50 is provided on a lower side of the support deck 20 such that opposing edges of the leaves 46,48 abut one another when the leaves 46,48 of the support deck 20 are in a flat unfolded configuration. The hinge 50 may extend the full width of the support deck 20.

[0019] Assembly of the support frame will now be described, with reference to Figure 5 to 9.

[0020] Firstly, as shown in Figure 5, the four corner posts 2,4,6,8 are located vertically at each corner of a first pallet 10, with the base plate 32 of each corner post 2,4,6,8 located beneath the respective corner region of the pallet 10.

[0021] Next the tie members 12,14,16,18 are attached to the corner posts 2,4,6,8, the mounting portions 34,36 of each tie member 12,14,16,18 being slotted into the respective receiving slots defined by the mounting members 38 on the outer sides of the corner posts 2,4,6,8, to interconnect the corner posts 2,4,6,8 as shown in Figure 6.

[0022] Once all of the tie members 12,14,16,18 have been attached to the corner posts 2,4,6,8, the restraining straps 24,26,28,30 are attached to the corner posts 2,4,6,8 via the mounting loops 40,42 to extend diagonally between the corner posts 2,4,6,8, as shown in Figure 7.

[0023] The support deck 20 is then positioned over the corner posts 2,4,6,8 in a partly folded, raised configuration, the hinge 50 of the support deck 20 defining a raised ridge, as shown in Figure 8, and placed in contact with

the support seats 22 of the corner posts 2,4,6,8.

[0024] The support deck 20 is then pushed down to its flat unfolded configuration, supported on the corner posts 2,4,6,8, as shown in Figure 9. The action of pushing the support deck 20 down into its flat unfolded configuration causes opposite sides of the support deck 20 to push outwardly on the corner posts 2,4,6,8, as shown in Figure 10, tensioning the restraining straps 24,26,28,30 and causing the lower ends of the corner posts 2,4,6,8 to firmly grip the corners of the first pallet 10. The action of pushing down on the support deck 20 to move it to its flat unfolded configuration causes the support deck 20 to engage the support posts with a snap fit action. The position of the hinge 50 beneath the support deck 20 and the weight of the support deck 20 cause the support deck 20 to be retained in its flat unfolded configuration under the compressive force applied thereto by the corner posts.

[0025] A second pallet 60 may then be placed onto the support deck 20, as shown in Figure 11 to be supported by the support frame above the first pallet 10.

[0026] The components of the support frame may be formed from galvanised steel or any other suitable material, such as plastic.

[0027] The invention is not limited to the embodiment(s) described herein but can be amended or modified without departing from the scope of the present invention.

Claims

1. A frame for supporting a second pallet (60) above a first pallet (10) in tiered relationship, said frame comprising an assembly of corner posts (2,4,6,8), each capable of extending upwardly from corner regions of the first pallet (10), and a plurality of tie members (12,14,16,18), each arranged to extend between two adjacent corner posts (2,4,6,8) to interconnect the corner posts, a support deck (20) being detachably supported on the corner posts (2,4,6,8) at or adjacent upper ends thereof for supporting the second pallet (60) thereon, **characterised in that** the support deck (20) comprises two or more leaves (46,48) hingedly connected together via a hinge (50) to be foldable between a substantially flat operative configuration and a folded configuration, such that the support deck (20) can be positioned over the corner posts (2,4,6,8) in its folded configuration, the hinge (50) of the support deck (20) defining a raised ridge, and pushed down to its substantially flat unfolded configuration, causing opposite sides of the support deck (20) to push outwardly on the corner posts (2,4,6,8) such that the support deck (20) applies an outwardly directed biasing force on the corner posts (2,4,6,8) when supported thereon whereby, in use, the first pallet (10) is firmly gripped by the lower ends of the corner posts (2,4,6,8).

2. A frame as claimed in claim 1, wherein each corner post (2,4,6,8) includes a support seat (22) adjacent an upper end thereof for supporting a respective corner of said support deck (20).
3. A frame as claimed in claim 2, wherein each corner post (2,4,6,8) comprises an elongate angle section member comprising side flanges arranged at right angles to one another.
4. A frame as claimed in claim 3, wherein a plate (32) extends between the side flanges of each support post at a lower end thereof to be located, in use, beneath a respective corner of the first pallet (10).
5. A frame as claimed in any preceding claim, wherein the ends of each tie member (12,14,16,18) comprise an L section mounting portion (34,36) adapted to detachably engage an outer corner of a respective corner post (2,4,6,8).
6. A frame as claimed in claim 5, wherein the mounting portion (34,36) on each end of each tie member (12,14,16,18) is shaped to be received between an outer corner of a respective corner post (2,4,6,8) and a respective retaining member (38) mounted on an outer side of each corner post (2,4,6,8) to detachably retain the tie members (12,14,16,18) in engagement with the corner posts (2,4,6,8).
7. A frame as claimed in claim 5, wherein each retaining member (38) comprises an angle section plate secured to the respective corner post (2,4,6,8) at a lower end thereof to define an upwardly open receiving slot for receiving respective mounting portions (34,36) of the tie members (12,14,16,18).
8. A frame as claimed in any preceding claim, wherein the support deck (20) comprises a pair of rectangular leaves (46,48) hingedly connected together along a centreline of the support deck (20) via said hinge (50) so that the support deck (20) can be folded in half.
9. A frame as claimed in claim 8, wherein said hinge (50) is located on a lower side of the support deck (20) such that opposing edges of the leaves (46,48) abut one another when the leaves (46,48) of the support deck (20) are in a flat unfolded configuration.
10. A frame as claimed in any preceding claim, further comprising a plurality of restraining straps (24,26,28,30) attachable to the corner posts (2,4,6,8) to extend diagonally between adjacent pairs of corner post.
11. A frame as claimed in claim 10, wherein mounting loops (40,42) are provided at upper and lower ends

of each corner post (2,4,6,8) for receiving mounting hooks (44) provided on the ends of the respective restraining straps (24,26,28,30).

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Patentansprüche

1. Gestell zum Tragen einer zweiten Palette (60) über einer ersten Palette (10) in gestufter Beziehung, wobei das Gestell eine Anordnung von Eckpfosten (2, 4, 6, 8), die jeweils in der Lage sind, sich von Eckbereichen der ersten Palette (10) nach oben zu erstrecken, und eine Vielzahl von Verbindungselementen (12, 14, 16, 18), die jeweils dazu angeordnet sind, sich zwischen zwei benachbarten Eckpfosten (2, 4, 6, 8) zu erstrecken, um die Eckpfosten miteinander zu verbinden, umfasst, wobei eine Tragauflage (20) an oder benachbart oberen Enden davon abtrennbar auf den Eckpfosten (2, 4, 6, 8) getragen wird, um die zweite Palette (60) darauf zu tragen, **dadurch gekennzeichnet, dass** die Tragauflage (20) zwei oder mehr Flügel (46, 48) umfasst, die über ein Scharnier (50) gelenkig miteinander verbunden sind, um zwischen einer im Wesentlichen flachen wirksamen Konfiguration und einer zusammengeklappten Konfiguration klappbar zu sein, sodass die Tragauflage (20) in ihrer zusammengeklappten Konfiguration über den Eckpfosten (2, 4, 6, 8) positioniert werden kann, wobei das Scharnier (50) der Tragauflage (20) einen erhobenen Wulst definiert und in ihre im Wesentlichen flache aufgeklappte Konfiguration heruntergedrückt werden kann, was bewirkt, dass gegenüberliegende Seiten der Tragauflage (20) derart nach außen gegen die Eckpfosten (2, 4, 6, 8) drücken, dass die Tragauflage (20) eine nach außen gerichtete Vorspannkraft auf die Eckpfosten (2, 4, 6, 8) ausübt, wenn sie darauf getragen wird, wodurch im Gebrauch die erste Palette (10) fest von den unteren Enden der Eckpfosten (2, 4, 6, 8) gegriffen wird.
2. Gestell nach Anspruch 1, wobei jeder Eckpfosten (2, 4, 6, 8) einen Tragsitz (22) benachbart einem oberen Ende davon umfasst, um eine jeweilige Ecke der Tragauflage (20) zu tragen.
3. Gestell nach Anspruch 2, wobei jeder Eckpfosten (2, 4, 6, 8) ein langgestrecktes Winkelprofilelement umfasst, das unter rechten Winkeln zueinander angeordnete Seitenflansche umfasst.
4. Gestell nach Anspruch 3, wobei sich zwischen den Seitenflanschen jedes Tragpfostens an einem unteren Ende davon eine Platte (32) erstreckt, um im Gebrauch unter einer jeweiligen Ecke der ersten Palette (10) zu liegen.
5. Gestell nach einem der vorangehenden Ansprüche, wobei die Enden jedes Verbindungselements (12,

14, 16, 18) einen Befestigungsabschnitt mit L-Profil (34, 36) umfassen, der dazu angepasst ist, abtrennbar mit einer äußeren Ecke eines jeweiligen Eckpfostens (2, 4, 6, 8) in Eingriff zu treten.

6. Gestell nach Anspruch 5, wobei der Befestigungsabschnitt (34, 36) an jedem Ende jedes Verbindungselements (12, 14, 16, 18) dazu geformt ist, zwischen einer äußeren Ecke eines jeweiligen Eckpfostens (2, 4, 6, 8) und einem an einer Außenseite jedes Eckpfostens (2, 4, 6, 8) befestigten jeweiligen Halteelement (38) aufgenommen zu werden, um die Verbindungselemente (12, 14, 16, 18) abtrennbar im Eingriff mit den Eckpfosten (2, 4, 6, 8) zu halten.
7. Gestell nach Anspruch 5, wobei jedes Halteelement (38) eine Platte mit Winkelprofil umfasst, die an einem unteren Ende davon an dem jeweiligen Eckpfosten (2, 4, 6, 8) fixiert ist, um einen nach oben offenen Aufnahmeschlitz zum Aufnehmen jeweiliger Befestigungsabschnitte (34, 36) der Verbindungselemente (12, 14, 16, 18) zu definieren.
8. Gestell nach einem der vorangehenden Ansprüche, wobei die Tragauflage (20) ein Paar rechteckiger Flügel (46, 48) umfasst, die über das Scharnier (50) gelenkig entlang einer Mittellinie der Tragauflage (20) miteinander verbunden sind, sodass die Tragauflage (20) auf die Hälfte zusammengeklappt werden kann.
9. Gestell nach Anspruch 8, wobei das Scharnier (50) auf einer unteren Seite der Tragauflage (20) liegt, sodass gegenüberliegende Ränder der Flügel (46, 48) aneinander anliegen, wenn sich die Flügel (46, 48) der Tragauflage (20) in einer flachen, aufgeklappten Konfiguration befinden.
10. Gestell nach einem der vorangehenden Ansprüche, weiter umfassend eine Vielzahl von Festhaltegurten (24, 26, 28, 30), die an den Eckpfosten (2, 4, 6, 8) angebracht werden können, um sich diagonal zwischen benachbarten Paaren von Eckpfosten zu erstrecken.
11. Gestell nach Anspruch 10, wobei Befestigungsösen (40, 42) am oberen und unteren Ende jedes Eckpfostens (2, 4, 6, 8) vorgesehen sind, um an den Enden der jeweiligen Festhaltegurte (24, 26, 28, 30) vorgesehene Befestigungshaken (44) aufzunehmen.

Revendications

1. Cadre permettant de supporter une deuxième palette (60) au-dessus d'une première palette (10) en une relation étagée, ledit cadre comportant un ensemble

de montants d'angle (2, 4, 6, 8), chacun en mesure de s'étendre vers le haut depuis des régions d'angle de la première palette (10), et une pluralité d'éléments de liaison (12, 14, 16, 18), chacun agencé pour s'étendre entre deux montants d'angle adjacents (2, 4, 6, 8) à des fins d'interconnexion des montants d'angle, un plateau de support (20) étant supporté de manière détachable sur les montants d'angle (2, 4, 6, 8) au niveau de, ou de manière adjacente par rapport à des, extrémités supérieures de ceux-ci à des fins de support de la deuxième palette (60) sur celui-ci, **caractérisé en ce que** le plateau de support (20) comporte deux ou plusieurs lames (46, 48) connectées ensemble de manière articulée par le biais d'une charnière (50) à des fins de pliage entre une configuration fonctionnelle sensiblement plate et une configuration pliée, de telle sorte que le plateau de support (20) peut être positionné sur les montants d'angle (2, 4, 6, 8) dans sa configuration pliée, la charnière (50) du plateau de support (20) définissant une nervure surélevée, et peut être poussé vers le bas jusque sur sa configuration dépliée sensiblement plate, ceci amenant les côtés opposés du plateau de support (20) à venir pousser vers l'extérieur sur les montants d'angle (2, 4, 6, 8) de telle sorte que le plateau de support (20) exerce une force de sollicitation dirigée vers l'extérieur sur les montants d'angle (2, 4, 6, 8) quand il est supporté sur ceux-ci ce par quoi, lors de l'utilisation, la première palette (10) est fermement saisie par les extrémités inférieures des montants d'angle (2, 4, 6, 8).

2. Cadre selon la revendication 1, dans lequel chaque montant d'angle (2, 4, 6, 8) comprend un siège de support (22) adjacent par rapport à une extrémité supérieure de celui-ci à des fins de support d'un angle respectif dudit plateau de support (20).
3. Cadre selon la revendication 2, dans lequel chaque montant d'angle (2, 4, 6, 8) comporte un élément de section d'angle allongé comportant des brides latérales agencées selon des angles droits les unes par rapport aux autres.
4. Cadre selon la revendication 3, dans lequel une plaque (32) s'étend entre les brides latérales de chaque montant de support au niveau d'une extrémité inférieure de celui-ci à des fins de positionnement, lors de l'utilisation, sous un angle respectif de la première palette (10).
5. Cadre selon l'une quelconque des revendications précédentes, dans lequel les extrémités de chaque élément de liaison (12, 14, 16, 18) comportent une partie de montage à section en L (34, 36) adaptée à des fins de mise en prise détachable d'un angle extérieur d'un montant d'angle respectif (2, 4, 6, 8).

6. Cadre selon la revendication 5, dans lequel la partie de montage (34, 36) sur chaque extrémité de chaque élément de liaison (12, 14, 16, 18) est formée à des fins de réception entre un angle extérieur d'un montant d'angle respectif (2, 4, 6, 8) et un élément de retenue respectif (38) monté sur un côté extérieur de chaque montant d'angle (2, 4, 6, 8) à des fins de retenue détachable des éléments de liaison (12, 14, 16, 18) mis en prise avec les montants d'angle (2, 4, 6, 8). 5 10
7. Cadre selon la revendication 5, dans lequel chaque élément de retenue (38) comporte une plaque à section d'angle assujettie sur le montant d'angle respectif (2, 4, 6, 8) au niveau d'une extrémité inférieure de celui-ci pour définir une fente de réception ouverte vers le haut à des fins de réception de parties de montage respectives (34, 36) des éléments de liaison (12, 14, 16, 18). 15 20
8. Cadre selon l'une quelconque des revendications précédentes, dans lequel le plateau de support (20) comporte une paire de lames rectangulaires (46, 48) connectées ensemble de manière articulée le long d'une ligne centrale du plateau de support (20) par le biais de ladite charnière (50) de telle sorte que le plateau de support (20) peut être plié en deux. 25
9. Cadre selon la revendication 8, dans lequel ladite charnière (50) est située sur un côté inférieur du plateau de support (20) de telle sorte que les bords opposés des lames (46, 48) viennent se mettre en butée l'un par rapport à l'autre quand les lames (46, 48) du plateau de support (20) sont dans une configuration dépliée plate. 30 35
10. Cadre selon l'une quelconque des revendications précédentes, comportant par ailleurs une pluralité de sangles de retenue (24, 26, 28, 30) en mesure d'être attachées aux montants d'angle (2, 4, 6, 8) pour s'étendre dans le sens de la diagonale entre des paires adjacentes de montants d'angle. 40
11. Cadre selon la revendication 10, dans lequel des boucles de montage (40, 42) sont mises en oeuvre au niveau des extrémités supérieure et inférieure de chaque montant d'angle (2, 4, 6, 8) à des fins de réception de crochets de montage (44) mis en oeuvre sur les extrémités des sangles de retenue respectives (24, 26, 28, 30). 45 50

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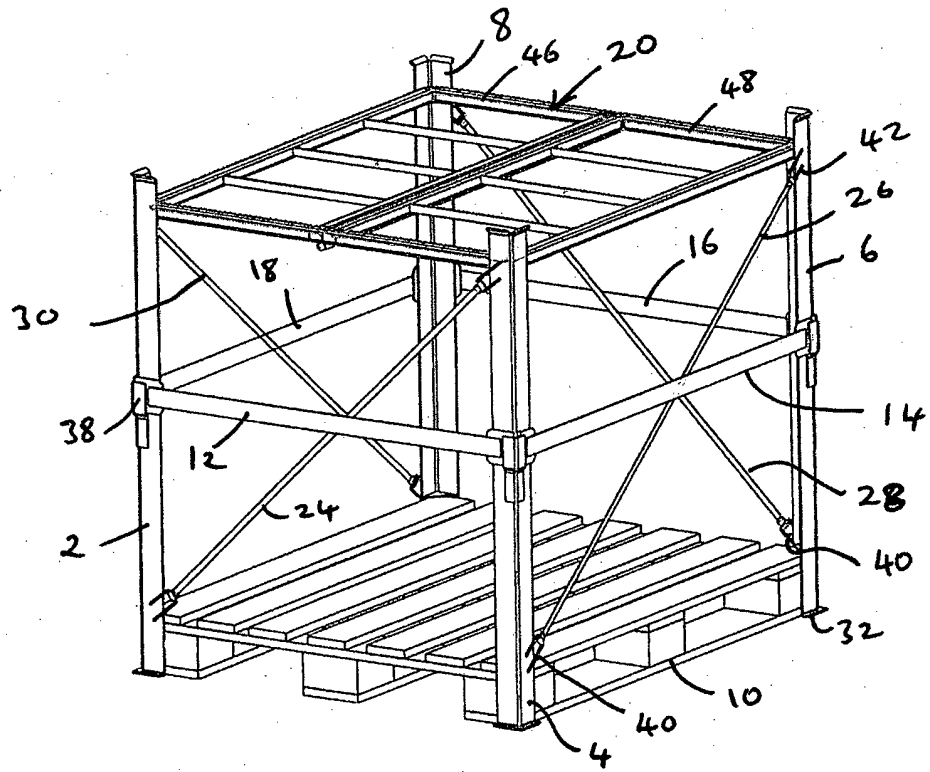


Figure 1

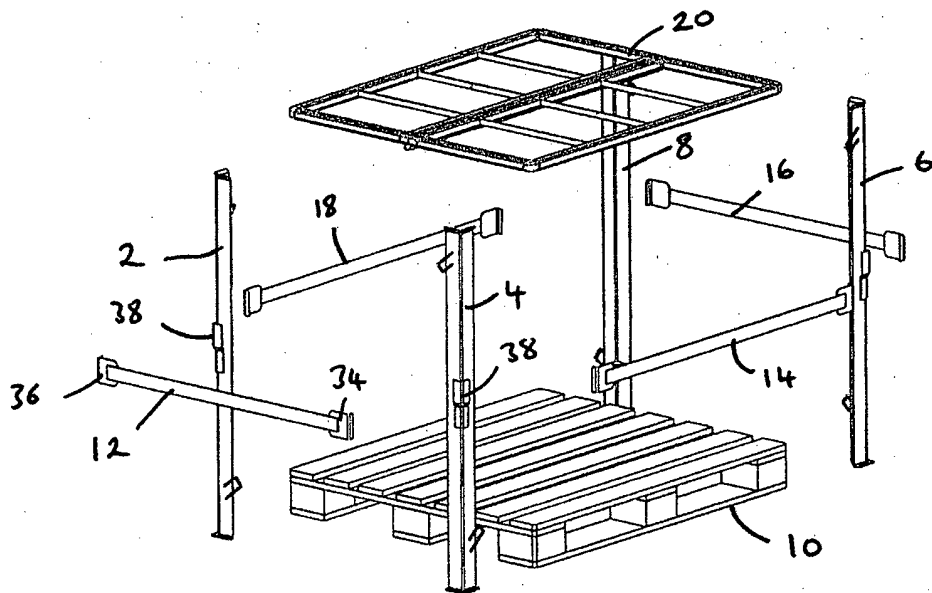


Figure 2

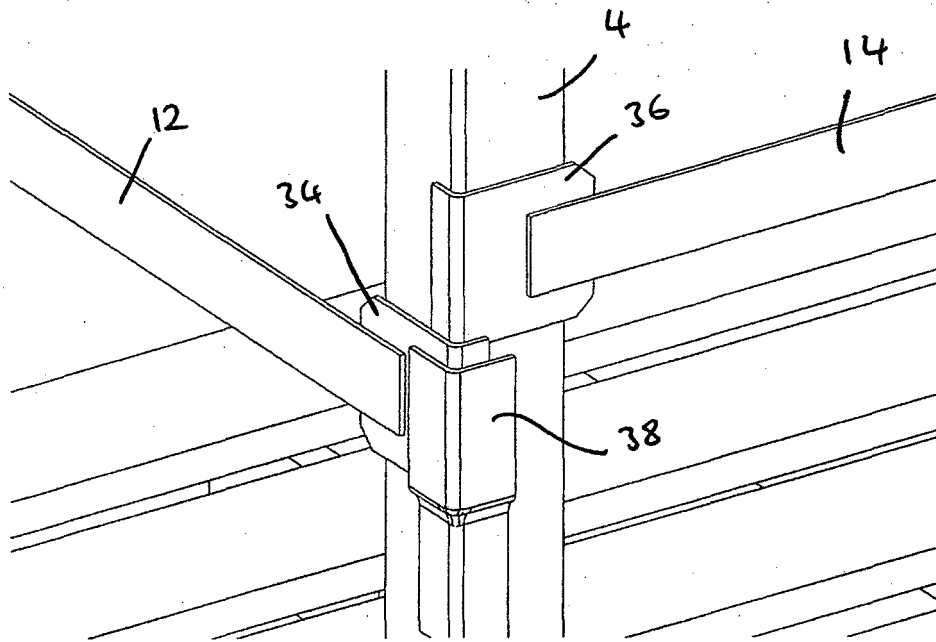


Figure 3

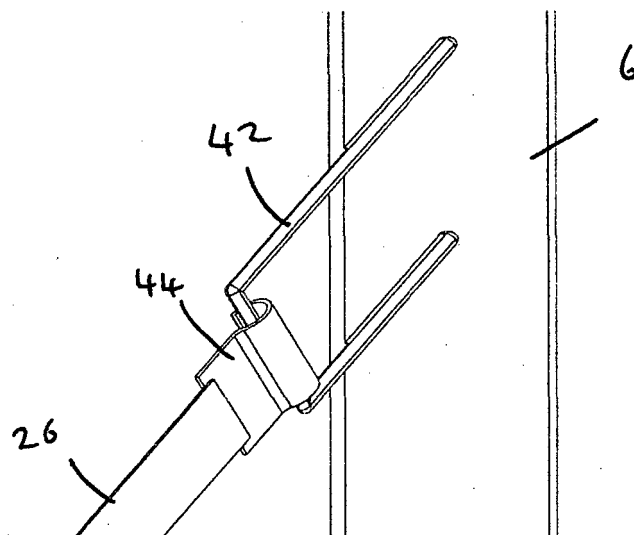


Figure 4

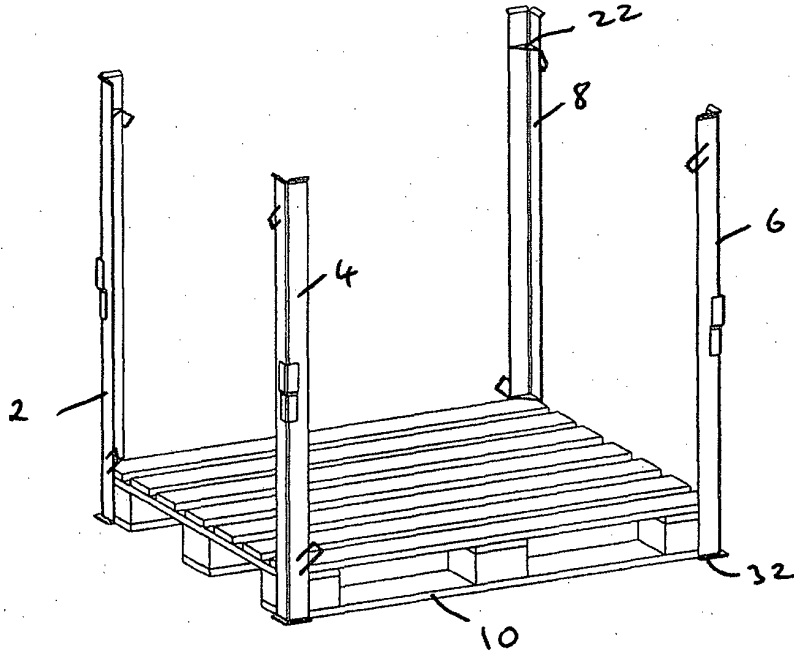


Figure 5

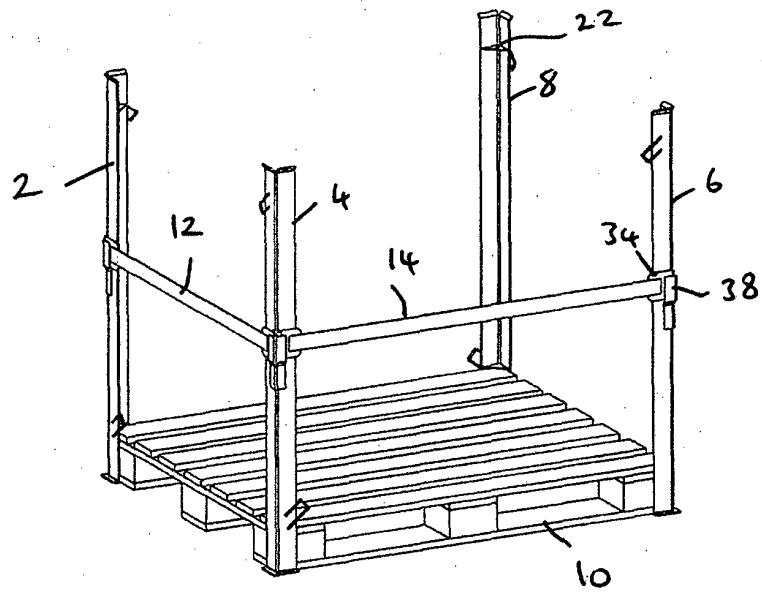


Figure 6

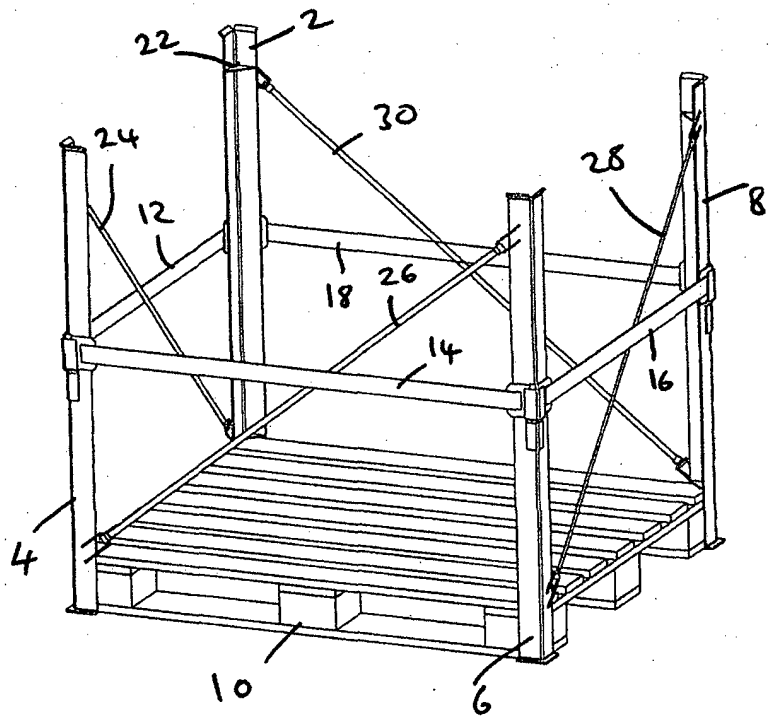


Figure 7

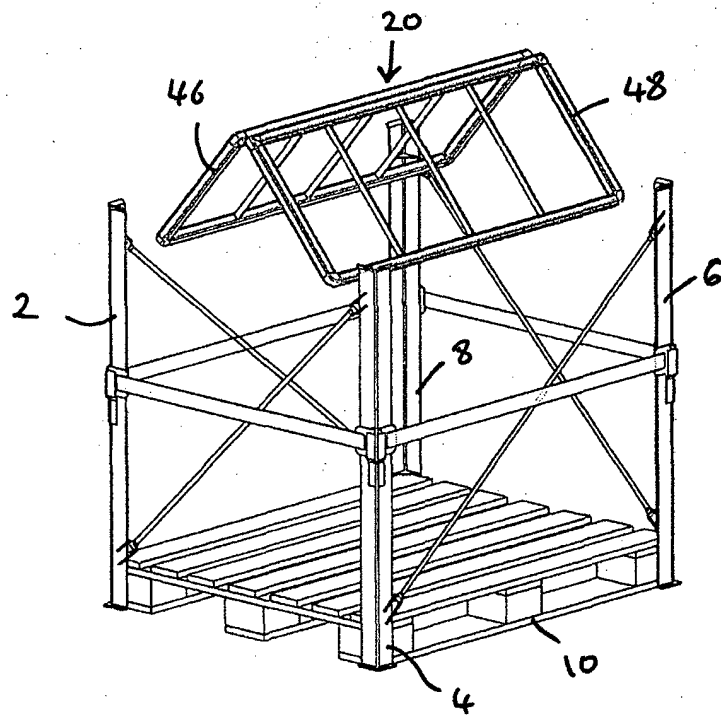


Figure 8

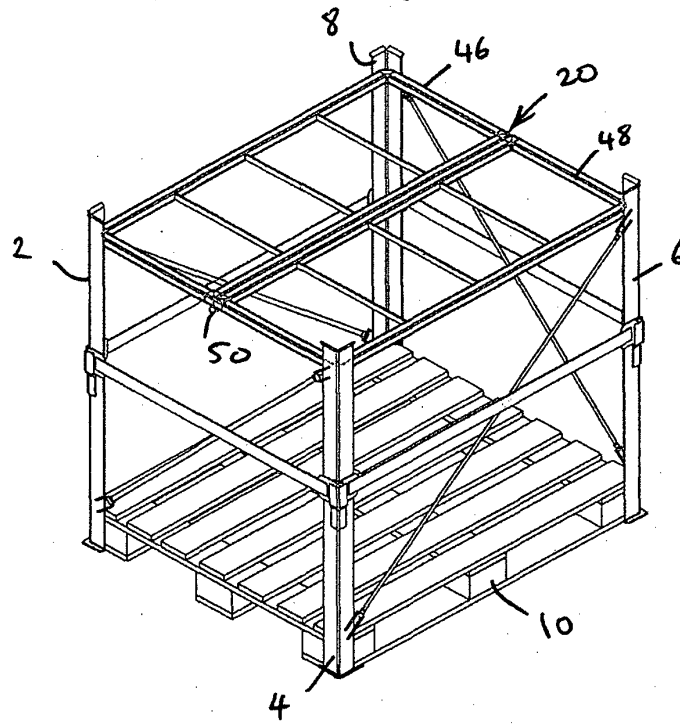


Figure 9

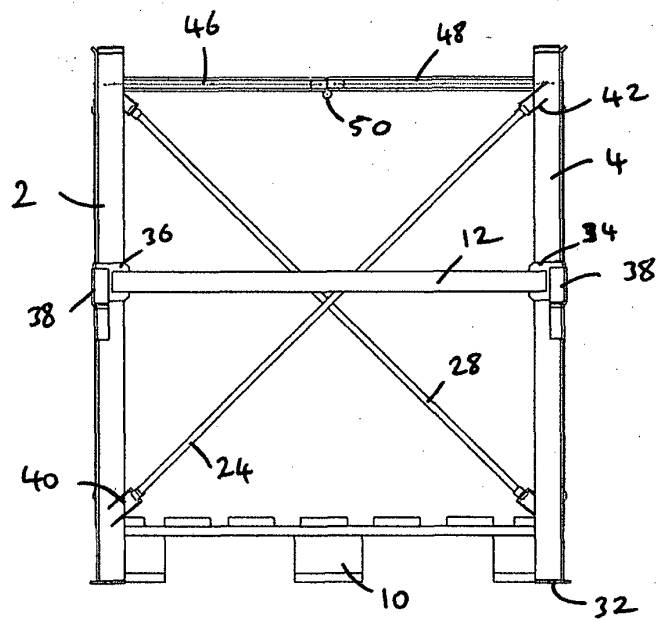


Figure 10

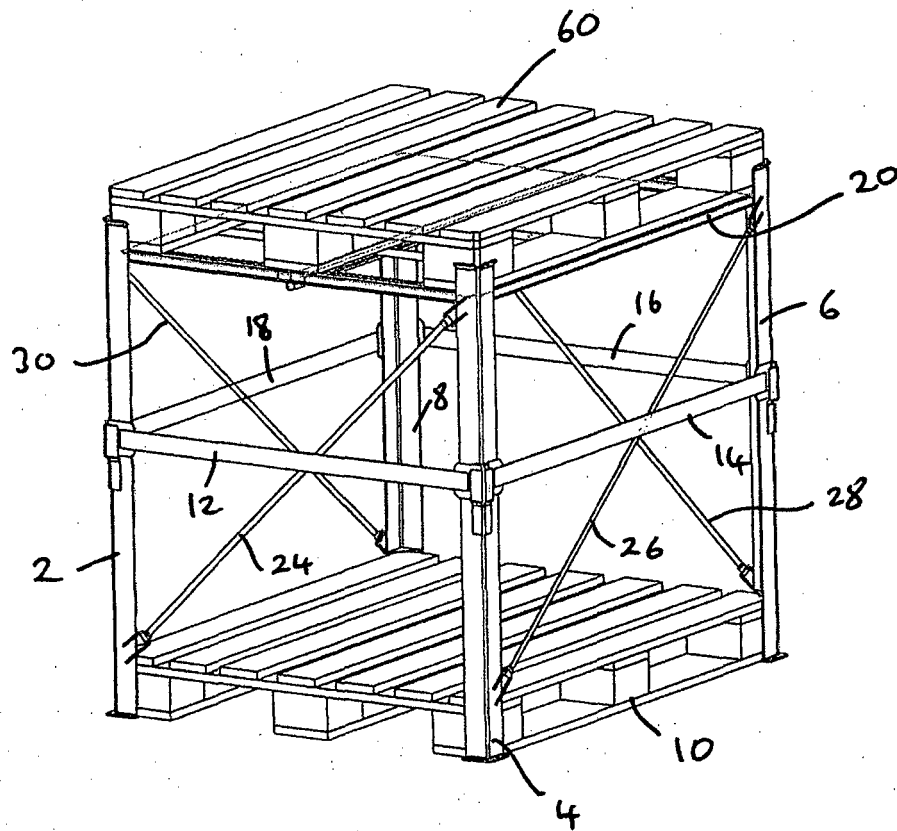


Figure 11

REFERENCES CITED IN THE DESCRIPTION

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