

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number:

**0 128 040
B1**

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: 28.01.87

(51) Int. Cl.⁴: B 65 D 19/12

(21) Application number: 84303742.5

(22) Date of filing: 04.06.84

(54) A corner column for a supporting frame for a loading pallet, a side member for said frame and a supporting frame.

(30) Priority: 06.06.83 DK 2565/83

(43) Date of publication of application:
12.12.84 Bulletin 84/50

(45) Publication of the grant of the patent:
28.01.87 Bulletin 87/05

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI NL SE

(50) References cited:
FR-A-1 340 100
FR-A-2 311 724

(73) Proprietor: VARIANTSYSTEMET A/S
Fynsvej 60
DK-5500 Middelfart (DK)

(72) Inventor: Jensen, Bent
Mollevej 21
DK-5500 Middelfart (DK)

(74) Representative: Westwood, Edgar Bruce et al
STEVENS, HEWLETT & PERKINS 5, Quality
Court Chancery Lane
London WC2A 1HZ (GB)

EP 0 128 040 B1

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Description

The invention relates generally to a supporting frame for mounting on a loading pallet, and more particularly to side members and corner columns for such a frame which are adapted at the top to support an overlying pallet and each of which has at the bottom a rotatable foot fitting to engage the top side of the corners of the loading pallet.

The invention concerns supporting frames with "free pallet measures", i.e. a supporting frame disposed outside the edge of the pallet so that the entire surface of the pallet can accommodate goods.

Known from FR—A—1 340 100 are corner columns for supporting frames having the features defining the pre-characterising part of claim 1. These corner columns have rotatable foot fittings which operate in the manner that in normal position they lock the side members of the supporting frame against vertical movement with respect to the pallet, but release the side member upon simple rotation. Such fittings involve the advantage that the supporting frame can easily be secured to and released from the pallet. The known fittings are however proposed in connection with such supporting frames as are disposed within the outer edge of the pallet, but when free pallet measures are desired, problems arise because the foot plate of the fitting must be rotatable and must also be capable of withstanding the eccentric load which occurs when the corner column is disposed outside the pallet.

The eccentric load is small when only the net weight of the supporting frame is involved; however, it is well-known to stack several pallets with supporting frames and goods on top of each other, and the problem therefore occurs when such a stack of pallets is to be lifted by a fork truck as the entire load, apart from that of the lowermost pallet, is to be supported by the foot fittings of the lowermost pallet.

The object of the invention is to provide a supporting frame with rotatable foot fittings so adapted that the foot fitting is both relatively thin and easy to manufacture and can simultaneously support the above-mentioned heavy load.

This object is achieved in that the corner column is journaled on the foot fitting in an area which, in the operative position, projects beyond the edges of the loading pallet, and in that at least one supporting means is provided which is adapted to transfer compressive forces from the supporting frame to the top side of the portion of the foot fitting projecting beyond the loading pallet at a distance from the corner column. In such a structure the supporting means distribute a substantial part of the load evenly over the portion of the foot fitting which is supported by the pallet.

The supporting means may be inclined braces which are secured to the corner columns and are flush with the sides of the supporting frame, and which extend down to the foot fitting; preferably, however, the supporting means is rigidly con-

nected to the corner column downwardly on the frame, or the supporting means is constituted by the transom. It will also be appreciated that the supporting means may be secured to the projecting portion of the foot fitting at a distance from the corner column and be adapted to engage the supporting frame in the operative position so that the eccentric load on the foot fitting is distributed over the portion of the foot fitting which is supported by the pallet.

As stated before, the rotatable foot fittings involve the advantage that they can be provided with lock fittings and thus be rotatable between a locking and an open position. However, for many uses the supporting frame will consist of a plurality of side members, typically four, where a pair of opposite side members, which are first mounted on the loading pallet, are provided with the rotatable lock fittings, while a pair of the other opposite transverse side members are adapted to be coupled to the first-mentioned side members. The invention also relates to a side member with at least one rotatable lock fitting, and more particularly the side member comprises a pair of interconnected corner columns which are adapted at the top to support an overlying loading pallet and each of which has at the bottom a foot fitting, at least one of which is rotatable, to engage the top side of the corners of the pallet, said foot fitting being provided with a locking hook which is positioned below a portion of the loading pallet in the normal position of the foot fitting and can clear the loading pallet in another position. The side member is characterized in that a corner column is journaled on the rotatable foot fitting in an area which, in the operative position, projects beyond the edges of the loading pallet and by the provision of at least one supporting means rigidly connected to the corner column, said supporting means being adapted to engage, in the operative position, the top side of the portion of the foot fitting projecting beyond the loading pallet at a distance from the corner column. This side member brings about the effect explained in connection with Claim 1.

As stated in Claim 5, it is particularly expedient to use the lower transom of the supporting frame for distributing the load on the foot fitting. When the supporting frame is disconnectible, it may be difficult also to utilize the transom of the adjoining side member as a supporting means, and instead a separate supporting means may be used, as stated in the foregoing. In connection with supporting frames where also the corner columns of the adjoining side members are adapted to support an overlying pallet, the features stated in claim 6 are particularly expedient, providing an even distribution of the load of the foot fitting over the pallet corner by very simple means.

Claim 7 defines a preferred feature whereby the substantially vertical wall causes additional bracing of the foot fitting, while the features stated in claim 8 provide additional bracing which does not prevent rotation of the foot fitting.

The invention will be explained more fully by

the following description of some embodiments with reference to the drawing, in which

fig. 1 shows an explanatory sketch of a corner of an embodiment of the supporting frame of the invention,

figs. 2 and 3 show a pallet with a supporting frame in the form of four side members, while

figs. 4 and 5 show details in the foot fittings of the supporting frame shown in figs. 2 and 3.

Fig. 1 shows a corner of a supporting frame to illustrate the invention. The entire supporting frame is not shown as, in its simplest form, it may consist of four corner columns which are rigidly interconnected by means of transoms. Preferably, however, the supporting frame consists of four side members, which will be explained in connection with figs. 2 and 3.

To obtain the free pallet measure previously mentioned the corner columns 1 of the supporting frame are journaled on a foot fitting 2 so that the corner column rests on a portion of the fitting which projects beyond the portion of the fitting which is supported by the pallet. As known in the art, the pallet comprises base boards 3, 4 interconnected through a transverse board 5, which is in turn connected to a transverse board 6 through a corner block 7. As appears from fig. 1 the supporting frame is so disposed that the entire loading face of the pallet can be used for the storage of goods, but on the other hand the foot fitting 2 is loaded eccentrically by the corner column 1. According to the invention, this load is distributed by supporting means so that the previously mentioned heavy load can be transferred from the foot fitting to the corner of the pallet, while allowing rotation of the foot fitting. The rotary movement is desirable because the fitting may in a known manner be provided with a hook 8, which in the position shown in fig. 1 locks the supporting frame to the pallet. Rotation of the foot fitting to the position in dash-and-dot lines permits removal of the supporting frame from the pallet. The foot fitting may be provided with additional locking and guide means which are known per se or appear from the embodiments described later.

In the embodiment shown in fig. 1 the supporting means consists of a pair of legs 9 and 10 which are secured to the transoms 11 and 12, respectively, of the supporting frame and extend downwardly toward the foot fitting 2 so as to engage the fitting 2; thus the vertical load from the corner column 1 is distributed to a pair of corners on the foot fitting so that the connecting line between the engagement of the legs with the foot fitting in the operative position extends over the pallet. It will be appreciated that the legs 9, 10 may extend obliquely upwards and be secured directly to the corner column if the transoms 11, 12 are to be placed at a greater height, and it will also be appreciated that the legs 9, 10 might be omitted if the transoms 11, 12 are secured at the bottom of the corner column 1. Finally, it is possible for the legs 9, 10 to be secured to the foot fitting and extend upwardly to engage below the transoms 11, 12.

As stated before, the supporting frame is preferably composed of four interconnectible side members, as appears from figs. 2 and 3. The side member 12 shown in fig. 2 comprises corner columns 13, 14 interconnected by means of transoms such as 15 and 16. The corner columns are at the top adapted to support an overlying pallet and may have separate carrier plates with this end in view. In the embodiment shown the carrier plates 17, 18 belong to a fitting (35, 36) on the adjoining side members which can be seen in fig. 3. The corner columns 13, 14 have at the bottom an embodiment of the foot fitting (19, 20 respectively) of the invention to mount the supporting frame on a pallet 21.

Fig. 3 shows the above-mentioned adjoining side member 22 comprising corner columns 23, 24 which have rotatable fittings 35, 36 at the top, the fitting 35 being shown in a locking position in which it interconnects the columns 14 and 23, while the fitting 36 is shown in an open position. The corner columns 23 and 24 are adapted at the bottom to engage a locking hook (25, fig. 4) on the foot fittings.

Figs. 4 and 5 show a preferred embodiment of the foot fitting of the invention, where fig. 4 shows the fitting in a closed position, while fig. 5 shows the fitting in an open position. The rotary position is provided in a manner known per se in that a pipe 26, which is secured to the foot fitting, extends upwardly inside the corner column 14 in which it is guided by some guide rings, which, in cooperation with a depression or a bolt (not shown) in the column 14, define extreme positions for a mutually vertical movement between the side member and the foot fitting. The foot fitting comprises a plate member 27 which can be compared with the plate 2 from fig. 1 and which is connected through a vertical plate member 28 to a plate member 29 projecting beyond the pallet. An end plate 30 is moreover provided, connecting the plate members 27 and 28 as it extends a distance upwardly above the plate member 27 so that the top edge of the end plate defines a stop for the rotary movement in the locking position shown in fig. 4. When the side member is lifted with respect to the foot fitting the plate 30 may be rotated below the transom 15 so that the hook 31 may be rotated out of engagement with the corner block of the pallet. It is observed that a portion of the plate member 27 facing the end plate 30 also projects a distance beyond the pallet so that the said rotary movement is possible in spite of the end plate 30.

As mentioned before, the lock fittings 35 and 36 are adapted to transfer the load of the overlying pallet to the adjacent corner columns 14 and 23 of two adjoining side members, and consequently an additional pipe 32 is placed in alignment with the hook 25, the pipes 26 and 32 being interconnected at the bottom by means of a fishplate 33 placed at such a great distance from the plate member 27 that the load from an overlying pallet can be transferred through the pipes 26, 32, i.e. by-pass the pallet. The load from a pallet in a stack is transferred in this manner directly to the underlying

supporting frame and through the underlying supporting frames to a loading area. The carrier plates 18 are so dimensioned as to support both part of the corner block of the overlying pallet and a fishplate 33.

It will then be explained how the parts described in the foregoing cooperate to distribute the load on the foot fitting. When the pallet is loaded, the foot fitting is in the position shown in fig. 4, where the transom 15 engages the plate member 27 outside the outer edge of the pallet so that the vertical load from the corner column 14 applied by an overlying pallet is distributed right out to the edge of the plate member 27 facing away from the corner column. The overlying pallet will, as mentioned, not only load the corner column 14, but also the corner column 23 and thus the plate member 29 in the area around the hook 25 so that an essential part of the load is effective in areas whose connecting line extends inwardly over the corners of the pallet. When a stack of pallets is lifted with a fork truck the load from the overlying pallets will thus be distributed inwardly over the corners of the lowermost pallet so that the foot fittings are not subjected to a great eccentric load. The plate member 28 and the end plate 30 involve additional bracing of the foot fitting, which can therefore be made in a relatively thin material and still be able to transfer great eccentric forces because of the structure described in the foregoing.

Claims

1. corner column (1) for a supporting frame form mounting on a loading pallet (3, 5), the corner column being adapted at the top to support an overlying pallet and having at the bottom a rotatable foot fitting to engage the top side of the corners of the loading pallet, said foot fitting being provided with a locking hook (8) which is positioned below a portion (3) of the loading pallet in the normal position of the foot fitting, and which can clear the loading pallet in another position, characterized in that the corner column (1) is journaled on the foot fitting (2, 27) in an area which, in the operative position, projects beyond the edges of the loading pallet (3, 5), and that at least one supporting means (9, 10) is provided which is adapted to transfer compressive forces from the supporting frame to the top side of the portion of the foot fitting projecting beyond the loading pallet at a distance from the corner column.

2. A corner column according to Claim 1, characterized in that the supporting means is rigidly connected to the corner column through a transom (11, 12) connecting the corner column (1) to another corner column at the bottom of the frame.

3. A corner column according to Claim 1, characterized in that the supporting means is constituted by a transom (15).

4. A side member for a supporting frame for mounting on a loading pallet and comprising a

pair of interconnected corner columns (13, 14) which are adapted at the top to support an overlying pallet and each of which has at the bottom a rotatable foot fitting (19, 20) to engage the top side of the corners of the loading pallet (21) and is provided with a locking hook (31) which is positioned below a portion of the pallet (21) in the normal position of the foot fitting and can clear the loading pallet in another position, characterized in that at least one of said corner columns (13, 14) is a corner column as defined in Claim 1 and is journaled on its associated rotatable foot fitting (19, 20) in an area which, in the operative position, projects beyond the edges of the loading pallet (21) and has at least one said supporting means (9, 10) rigidly connected thereto.

5. A side member according to Claim 4, characterized in that the supporting means is constituted by a transom (15) connecting said pair of corner columns (13, 14) of the side member in common at the bottom.

6. A supporting frame which comprises a pair of opposite side members (12) as defined in Claim 5 and a pair of transverse side members (22) detachably connected to the side members (12) and having corner columns (23, 24) which are likewise adapted to support an overlying pallet, characterized in that the foot fitting (27, 29) of the corner columns of said opposite side members (12) has coupling means (25) to cooperate with a corner column (23) in the adjoining transverse side member (22) in an area of the projecting portion wherein the connecting area between the said supporting means (15) and the coupling means (25) in the operative position extends within the side edges of the loading pallet.

7. A supporting frame according to Claim 6, characterized in that a portion (29) of the foot fitting, which in the operative position extends outside the edge of the loading pallet parallel with the adjacent transverse side member, is lower than an overlying portion (27) of the foot fitting and is connected to the overlying portion through a substantially vertical plate member (28).

8. A supporting frame according to Claim 7, characterized by a brace (30) which is rigidly connected between the low-lying portion (29) and the overlying portion (27) of the foot fitting and which is spaced from the outer edge of the loading pallet in the operative position.

Patentansprüche

1. Eckpfeiler (1) für einen Stützrahmen zur Befestigung an einer Ladepalette (3, 5), wobei der Eckpfeiler oben eine darüberliegende Palette stützen kann und am unteren Teil einem drehbaren Fußhalter zum Zusammengreifen mit der Oberseite der Ecken der Ladepalette besitzt, welcher einen Verschlusshaken (8) aufweist, der in der normalen Position des Fußhalters unterhalb eines Teiles (3) der Ladepalette angebracht ist, und der die Ladepalette in einer anderen Position freige-

ben kann, dadurch gekennzeichnet, daß der Eckpfeiler (1) auf dem Fußhalter (2, 27) in einem Bereich gelagert ist, der in der Benutzungsposition über die Kanten der Ladepalette (3, 5) hinausragt, und daß mindestens eine Stützvorrichtung (9, 10) vorgesehen ist, die in einem Abstand vom Eckpfeiler Druckkräfte vom Stützrahmen auf die Oberseite des über die Ladepalette hinausragenden Teiles des Fußhalters übertragen kann.

2. Eckpfeiler nach Anspruch 1, dadurch gekennzeichnet, daß die Stützvorrichtung mit dem Eckpfeiler durch einen Querträger (11, 12) fest verbunden ist, der den Eckpfeiler (1) am unteren Teil des Rahmens mit einem anderen Eckpfeiler verbindet.

3. Eckpfeiler nach Anspruch 1, dadurch gekennzeichnet, daß die Stützvorrichtung aus einem Querträger (15) besteht.

4. Seitenteil für einen Stützrahmen zum Befestigen an einer Ladepalette mit zwei miteinander verbundenen Eckpfeilern (13, 14), die oben eine darüberliegende Palette tragen können und von denen jeder unten einen drehbaren Fußhalter (19, 20) zum Zusammengreifen mit der Oberseite der Ecken der Ladepalette (21) besitzt und mit einem Verschlusshaken (31) versehen ist, der in der normalen Position des Fußhalters unter einem Teil der Palette (21) angeordnet ist und in einer anderen Position die Ladepalette freigeben kann, dadurch gekennzeichnet, daß mindestens einer der Eckpfeiler (13, 14) ein Eckpfeiler nach Anspruch 1 ist und auf dem ihm zugeordneten drehbaren Fußhalter (19, 20) in einem Bereich gelagert ist, der in der Benutzungsposition über die Kanten der Ladepalette (21) hinausragt und mit dem mindestens eine Stützvorrichtung (9, 10) fest verbunden ist.

5. Seitenteil nach Anspruch 4, dadurch gekennzeichnet, daß die Stützvorrichtung aus einem Querträger (15) besteht, der die beiden Eckpfeiler (13, 14) des Seitenteils unten gemeinsam verbindet.

6. Stützrahmen mit zwei gegenüberliegenden Seitenteilen (12) nach Anspruch 5 und zwei quer verlaufenden Seitenteilen (22), welche mit den Seitenteilen (12) abnehmbar verbunden sind und Eckpfeiler (23, 24) besitzen, die ebenso zum Abstützen einer darüberliegenden Palette geeignet sind, dadurch gekennzeichnet, daß der Fußhalter (27, 29) der Eckpfeiler der gegenüberliegenden Seitenteile (12) Verbindungsvorrichtungen (25) besitzt, die mit einem Eckpfeiler (23) an dem angrenzenden quer verlaufenden Seitenteil (22) in einem Bereich des vorstehenden Teils zusammenwirken, wobei sich die Verbindungsfläche zwischen den Stützvorrichtungen (15) und den Verbindungsvorrichtungen (25) in der Benutzungsposition innerhalb der Seitenkanten der Ladepalette erstreckt.

7. Stützrahmen nach Anspruch 6, dadurch gekennzeichnet, daß ein Teil (29) des Fußhalters, welcher sich in der Benutzungsposition parallel zum angrenzenden quer verlaufenden Seitenteil außerhalb der Kante der Ladepalette erstreckt,

niedriger ist als ein darüberliegender Teil (27) des Fußhalters und mit dem darüberliegenden Teil durch ein im wesentlichen senkrechtes Plattenteil (28) verbunden ist.

8. Stützrahmen nach Anspruch 7, gekennzeichnet durch eine Strebe (30), die starr zwischen dem tiefliegenden Teil (29) und dem darüberliegenden Teil (27); des Fußhalters befestigt ist und die in der Benutzungsposition einen Abstand von der äußeren Kante der Ladepalette hat.

Revendications

1. Une colonne d'angle (1) pour un châssis de support destiné à être monté sur une palette de manutention (3, 5), la colonne d'angle étant adaptée à sa partie supérieure à supporter une palette située au-dessus et comprenant à sa partie inférieure une garniture de pied rotative destinée à venir en engagement avec le côté supérieur des angles de la palette de manutention, ladite garniture de pied étant munie d'un crochet de blocage (8) qui est disposé au-dessous d'une partie (3) de la palette de manutention en position normale de la garniture de pied, et qui peut être dégagée de la palette de manutention dans une autre position, caractérisée en ce que la colonne d'angle (1) est montée à rotation sur la garniture de pied (2, 27) dans une région qui, en position de fonctionnement, fait saillie au-delà des bords de la palette de manutention (3, 5), et en ce qu'au moins un moyen de support (9, 10) est prévu, qui est adapté à transférer les forces de compression du châssis de support vers le côté supérieur de la partie de la garniture de pied qui fait saillie au-delà de la palette de manutention, à une certaine distance de la colonne d'angle.

2. Une colonne d'angle selon la revendication 1, caractérisée en ce que le moyen de support est rendu solidaire de la colonne d'angle par une traverse (11, 12) reliant la colonne d'angle (11) à une autre colonne d'angle à la partie inférieure du châssis.

3. Une colonne d'angle selon la revendication 1, caractérisée en ce que le moyen de support est constitué par une traverse (15).

4. Un élément latéral pour un châssis de support destiné à être monté sur une palette de manutention et comprenant une paire de colonnes d'angle interconnectées (13, 14) qui sont adaptées à leur partie supérieure à supporter une palette située au-dessus et dont chacune comprend à sa partie inférieure une garniture de pied rotative (19, 20) destinée à venir en engagement avec le côté supérieur des angles de la palette de manutention (21) et est munie d'un crochet de blocage (31) qui est disposé au-dessous d'une partie de la palette (21) en position normale de la garniture de pied et peut être dégagée de la palette de manutention dans une autre position, caractérisée en ce que au moins l'une desdites colonnes d'angle (13, 14) est une colonne d'angle telle qu'elle est définie à la revendication 1 et est montée à rotation sur sa garniture de pied rotative associée (19, 20) dans une région qui, en position de fonctionnement,

fait saillie au-delà des bords de la palette de manutention (21) et comprend au moins l'un desdits moyens de support qui est fixé rigidement sur elle.

5. Un élément latéral selon la revendication 4, caractérisé en ce que moyen de support est constitué par une tranverse (15) reliant ladite paire de colonnes d'angle (13, 14) de l'élément latéral en commun à la partie inférieure.

6. Un châssis de support qui comprend une paire d'éléments latéraux opposés (12) tels qu'ils sont définis à la revendication 5 et une paire d'éléments latéraux transversaux (22) reliés de façon amovible aux éléments latéraux (12) et comprenant des colonnes d'angle (24) qui sont de même adaptées à supporter une palette située au-dessus, caractérisé en ce qu la garniture de pied (27, 29) des colonnes d'angle desdits éléments latéraux opposés (12) comprend un moyen d'accouplement (25) pour coopérer avec une colonne d'angle (23) dans l'élément latéral transversal voisin (22) dans une région de la partie en

saillie où la région de connexion entre ledit moyen de support (15) et le moyen d'accouplement (25) en position de fonctionnement s'étend à l'intérieur des bords latéraux de la palette de manutention.

7. Un châssis de support selon la revendication 6, caractérisé en ce qu'une partie (29) de la garniture de pied, qui dans la position de fonctionnement s'étend à l'extérieur du bord de la palette de manutention parallèlement à l'élément latéral transversal adjacent, est plus basse qu'une partie (27) située au-dessus de la garniture de pied et est reliée à la partie située au-dessus par un élément en forme de plaque sensiblement vertical (28).

8. Un châssis de support selon la revendication 7, caractérisé par une entretoise (30) qui est reliée rigidement entre la partie située en bas (29) et la partie située en haut (27) de la garniture de pied et qui est espacée du bord extérieur de la palette de manutention en position de fonctionnement.

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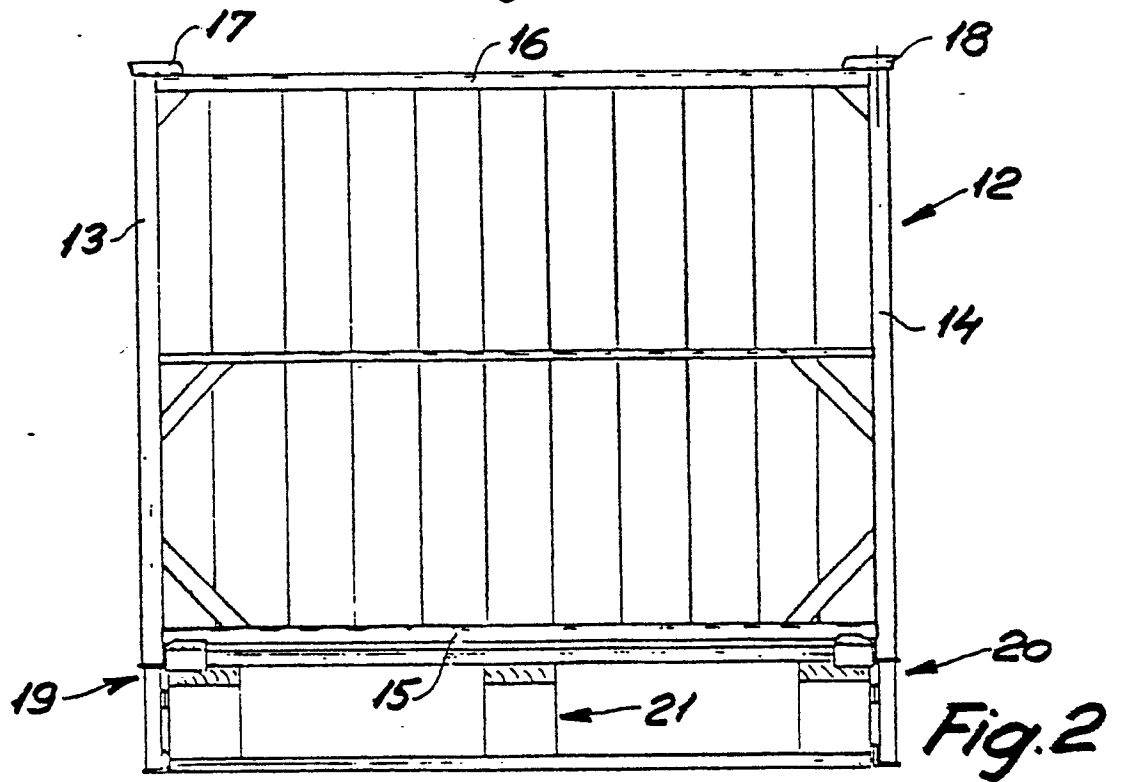
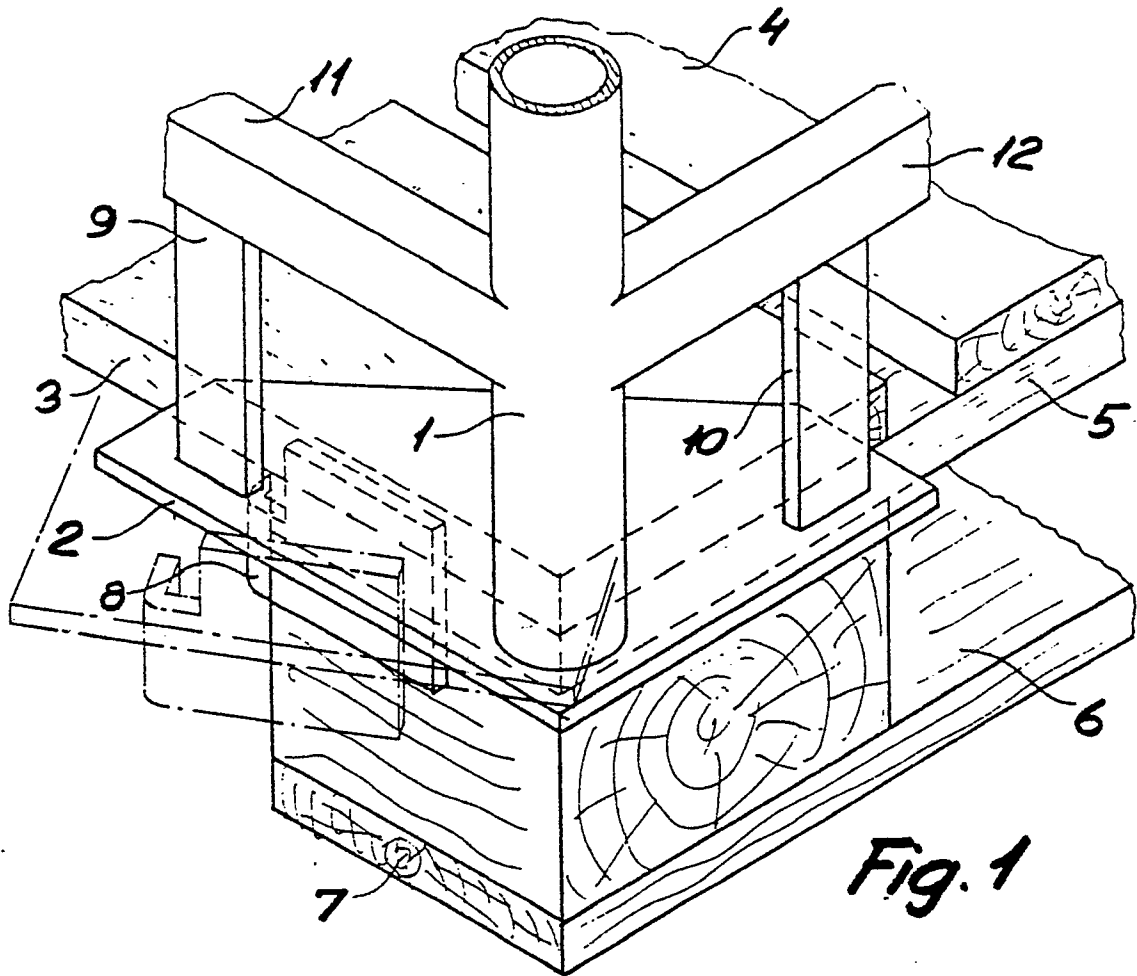
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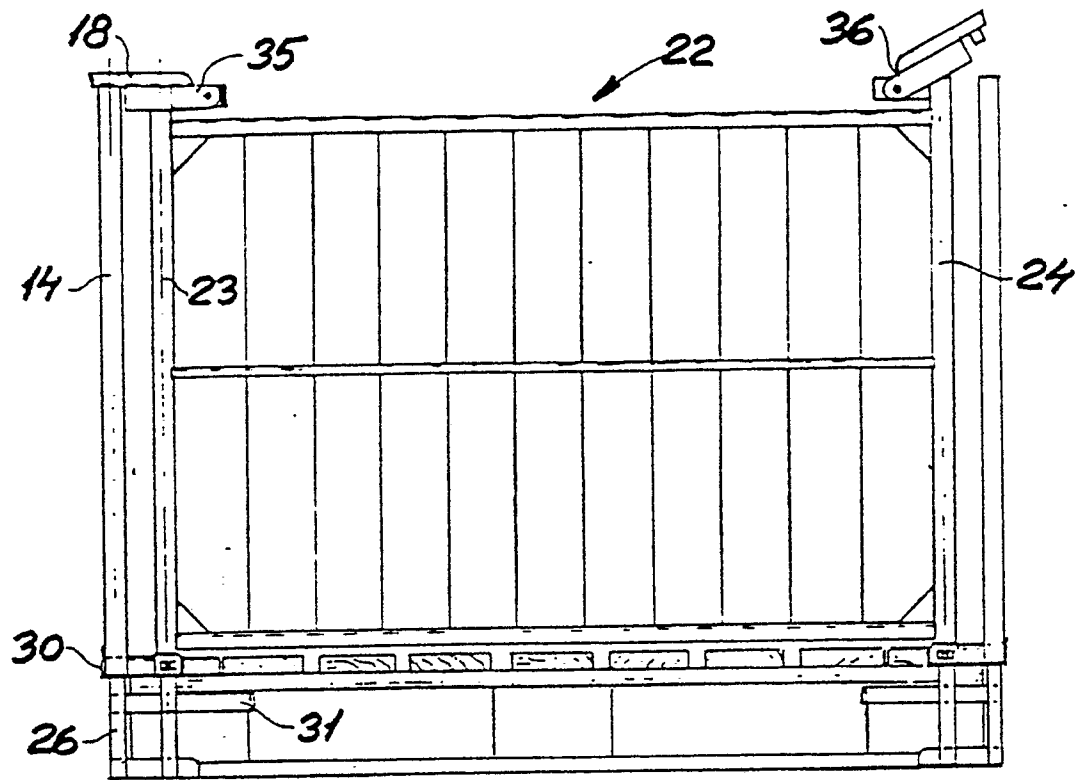


Fig. 3

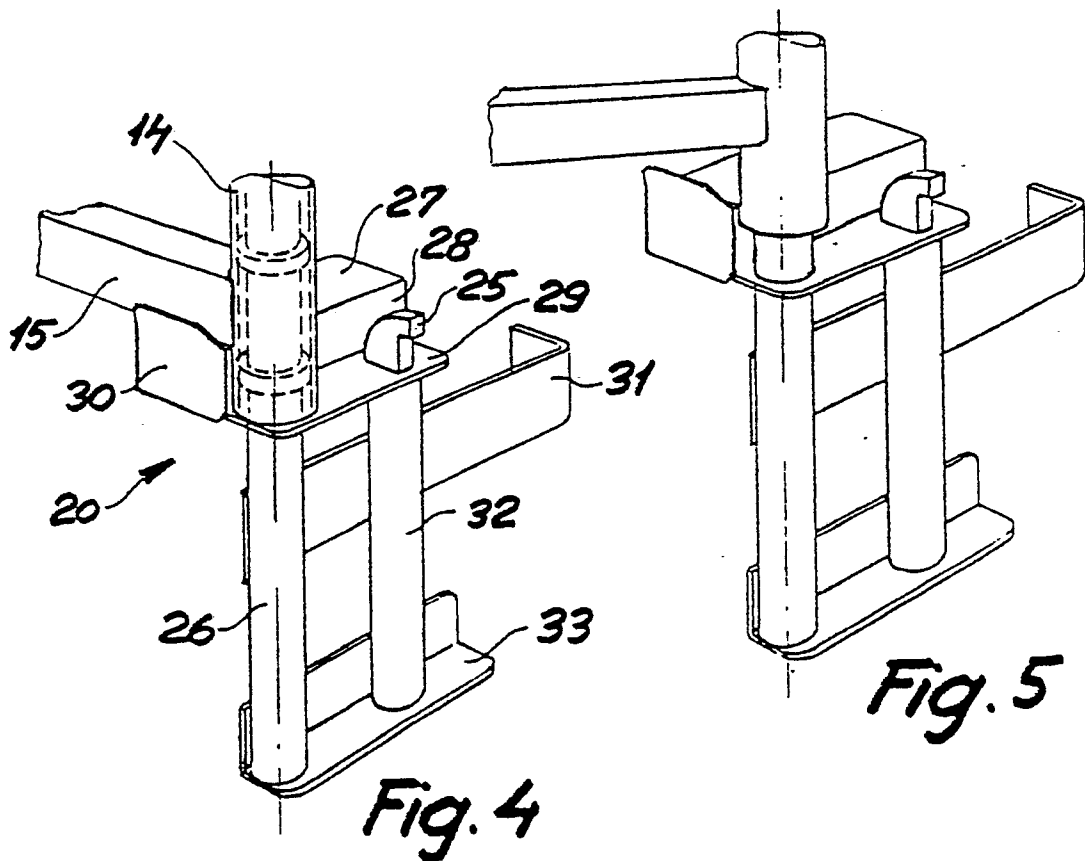


Fig. 4

Fig. 5