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(54) **Lifting apparatus**

Hebevorrichtung

Appareil de levage

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Description

[0001] The invention to which this application relates is apparatus which can be used for lifting goods between different levels, particularly, although not necessarily exclusively, apparatus for use in the transfer of goods between first and second good storage areas such as, for example, a first goods storage area in the form of a warehouse and a second goods storage area in the form of a trailer with two or more spaced floors thereon.

[0002] Typically, when moving goods between vehicle trailers having a plurality of floors, referred to as multi-deck or double deck trailers, there is a need to provide civil engineering works in which a loading deck is installed at the opening into a goods warehouse and up to which, the rear of the vehicle trailer is moved and opened. The lifting apparatus conventionally will comprise a scissor lift fixed to a support surface such as a concrete ground base. Once the scissor lift has been installed, an external housing can be formed around the same to protect it from the weather. Typically this installation process can take a considerable period of time, such as 2-3 weeks, due to the extent of construction work which is required to be performed to prepare the site, secure the scissor lift apparatus to the ground surface. The base and fixings for the scissor lift is required to be sufficiently robust so that the apparatus can act against the ground surface when moving the platform connected to the top of the scissor lift between raised and lowered positions. Further construction time is then required to form the housing around the scissor lift so as to protect the scissor lift apparatus, goods held on the platform and employees working on the same in often inclement weather conditions.

[0003] A further problem with this form of apparatus is that if there is a problem with the scissor lift which renders the same inoperable, it is often required to at least partially dismantle the surrounding construction to be able to remove the scissor lift to allow repairs to be performed off site and, during this time, the lifting apparatus is out of use.

[0004] WO9711023 discloses lifting apparatus which includes a scissor lift arrangement in certain embodiments. The apparatus is provided with wheels or rollers to allow the apparatus to be transportable across a support surface to be moved into a temporary position for use. EP1775246 discloses apparatus which can be formed modularly and the platform is supported by chains or ropes and guided in its movement by columnar guide means which lie to the side of the platform.

[0005] The aim of the present invention is therefore to provide lifting apparatus which incorporates a scissor lift means and to provide the same so it can be used externally, with the lifting apparatus being protected from weather conditions and, at the same time, to provide the same in a form which allows the apparatus to be installed quickly and efficiently on site.

[0006] In a first aspect of the invention, there is provided lifting apparatus for use to move goods between first and second, spaced, goods storage locations, said apparatus provided to act to bridge the gap between said first and second storage locations and said lifting apparatus including a platform which can be moved, if required, to different height levels of the respective storage areas, said platform moved under the influence of interconnected members forming a scissor lift apparatus and wherein said platform and scissor lift apparatus is supported by, and located on, a frame having a base characterised in that the said base is located and attached on a support surface at ground level in said gap and said frame further including a gangway at a fixed height provided to allow passage by a person to a side of the platform and between first and second openings 12,14 leading to the respective first and second goods storage locations.

[0007] In one embodiment the said scissor lift apparatus and platform is located on the said frame prior to the apparatus being installed at the support surface for use.

[0008] In one embodiment the scissor lift apparatus comprises a series of members pivotally connected intermediate their ends so as to form an X shaped configuration under the platform, and said members are constrained such that movement actuation on at least one of said members causes the platform to be moved up and down. In one embodiment an X shaped configuration is provided under the platform at or near the opposing edges thereof.

[0009] In one embodiment the movement force is achieved via a powered ram acting on the X shaped member configuration.

[0010] Preferably, the scissor lift is entirely supported by the frame and therefore need not be connected to the ground or support surface or any other structure.

[0011] Typically, the frame and scissor lift apparatus are formed and connected to each other under factory conditions and then transported as a modular unit to the location for use at which only the modular unit is required to be installed as all the components are already connected and functioning.

[0012] In one embodiment, the lifting apparatus and frame form a body module and an additional roof module is also formed under factory conditions and transported to site at which the respective modules can be connected together to form the apparatus.

[0013] In one embodiment, a plurality of body modules and roof modules can be transported to the location and connected together such as to provide a lifting apparatus in a required configuration for that location of use.

[0014] Typically, the first goods storage area is a vehicle transportable storage area which can be moved into position at one edge of the lifting apparatus. Typically, the second good storage area is a warehouse, or a loading bay for the same.

[0015] Typically, the vehicle goods storage area will have a plurality of spaced floors at different heights and the platform is moveable so as to allow goods to be moved to and from each of said floors of the vehicle goods

storage area and also to the height of the loading bay of the warehouse. In one embodiment, the frame includes at least one gangway formed to one side of the platform so as to allow operators to move along adjacent to and past the platform and thereby access the platform to arrange or move goods to and from the same. Typically the gangway is provided at a fixed height, typically as part of the frame.

[0016] In one embodiment, the goods are held in cages which can be wheeled to and from a platform and said platform typically includes fixed or moveable portions which can form ramps to provide a continuous movement path between the platform and the particular floor of the goods storage area.

[0017] In one embodiment, the platform itself may be tilt-able.

[0018] Typically therefore the scissor lift actuation means act against the frame to which the scissor lift is connected to provide the movement force on the scissor lift apparatus and hence allow the controlled movement of the platform connected thereto.

[0019] The provision of the construction of the frame and scissor lift apparatus as a single body module under factory conditions means that firstly, the conditions for assembling the apparatus are improved in comparison to assembling the same on site. Secondly, when the modules are delivered to site the installation work which is required on site is significantly reduced as the scissor lift is already installed with respect to the frame to which the same is connected and therefore it is only the module unit which is required to be connected to the support surface and any other modular units connected thereto. This therefore makes the difference between several weeks installation as required with the conventional apparatus and a few number of days for installation of the apparatus in accordance with the invention.

[0020] In a further aspect of the invention there is provided a method of forming lifting means apparatus for use to allow goods to be transported between a first goods storage area and a second goods storage area, a gap being provided between the first and second goods storage areas, said gap receiving the lifting means apparatus, said lifting means apparatus including a platform movable to different heights under the influence of scissor lift apparatus, and a frame supporting said scissor lift apparatus and platform and having openings to allow access to be gained to the first and second goods storage areas said method includes the steps of forming the scissor lift apparatus, forming the frame and connecting the scissor lift apparatus to said frame under factory conditions to form a body module, transporting the body module to the location of use and installing the same by attaching the same to a support surface in said gap at ground level and said frame further including a gangway at a fixed height provided to allow passage by a person to a side of the platform and between first and second openings leading to the respective first and second goods storage locations.

[0021] In one embodiment the first or second goods storage area is in the form of a vehicle trailer which can be moved into a loading and unloading position and the other of the goods storage areas is in the form of a warehouse.

[0022] In one embodiment, additional body modules and/or roof modules can also be transported to the location and connected to the said body module to provide the lifting apparatus in the required configuration for that location.

[0023] Specific embodiments of the invention are now described with reference to the accompanying drawings wherein

Figures 1a-c illustrate various views of lifting apparatus in accordance with one embodiment of the invention;

Figures 2a-c illustrate embodiments of use of the lifting apparatus in accordance with the invention; and

Figure 3 illustrates a further schematic view of apparatus in accordance with one embodiment of the invention.

[0024] Referring firstly to figures 1a-c there is illustrated, in figures 1a and b, perspective views of the apparatus 2 and in figure 1c, a plan view from the base of said apparatus with the platform removed to show the frame 4. In the embodiment shown, the apparatus 2 is formed from the construction of two modules, body module 6 and roof module 8. Both modules are constructed under factory conditions and then delivered to the location of use as separate modules at which the same are joined together and the frame 4 of the body module 6 is positioned, and typically attached to the support surface 10. Due to the provision of the modular unit the same can typically be attached to a support surface at ground level, rather than requiring excavation work to be performed to form a cavity.

[0025] The frame 4 can also be used to support sheet material and/or other protective items, not shown, which form an external face of the apparatus and serve to provide an at least partial enclosure to protect the interior of the frame, including the lifting platform, any goods and operators, from inclement weather conditions. The protection materials have been removed in the figures for ease of illustration of the invention.

[0026] The apparatus is provided with first and second opposed openings 12, 14 which allow goods to be moved into and from the apparatus from both ends. Within the frame 4 there is provided a lifting platform 16 which in this case is located on lifting means apparatus in the form of a scissor lift apparatus 18. The scissor lift apparatus is in turn attached to the base 20 of the frame 4 and is therefore an integral part of the body module 6 prior to the same leaving the factory with the frame, scissor lift

and platform being installed and assembled under factory conditions and then also, typically, tested and commissioned under factory conditions. The performance of all of these actions under factory conditions rather than on site allows a more controlled process to be performed thereby improving the reliability of the apparatus to be improved. It also allows the time spend on installation on site to be greatly reduced in comparison to conventional apparatus of this type. This in turn ensures that the expensive downtime of the goods handling facility is kept to a minimum.

[0027] The scissor lift apparatus comprises a series of members 21 provided in an contractable and extendable "X" shape as they are viewed from opposing sides as shown in Figures 2a-c. The members are provided to be pivotable about the connection axis 19 with at least one of the members being driven to be movable. The movement means can, for example, be a hydraulic ram which is fixed to the frame at one end and therefore the movement of the ram acts on the scissor lift apparatus to allow movement of the platform thereon in a vertical direction.

[0028] As shown schematically in Figure 3, to one side of the platform 16 there is provided a gangway 22 which allows operators to walk between the openings 12, 14 and along side the platform 16 and goods held thereon. The gangway is also typically provided as part of the frame and formed under factory conditions. The gangway will typically be provided at a fixed height.

[0029] Figures 2a-c illustrate various forms of apparatus for use with first and second goods storage areas. The apparatus, in each case, is located in a gap 24 between the location of the first goods storage area which is a vehicle trailer 26 and the second goods storage area which is a loading bay 28 leading to a warehouse. The vehicle trailer 26 is provided with first and second vertically spaced floors 30,32 and goods, in this case held in cages 34 can be supported on each of floors 30,32. It will therefore be appreciated that in each case, the lifting apparatus includes a scissor lift 18 and a platform 16 mounted thereon to be moveable vertically as indicated by arrow 36 to allow the platform 16 to be brought to the level of the floor 30 to allow goods to move to and from the same, to the level of the loading bay 28 to allow goods to be selectively moved to and from the same and to be moved to the height of the floor 32 to allow goods to be selectively moved to and from the same.

[0030] In figures 2b and c, two scissor lift apparatus are provided and this, in one embodiment, can be achieved by providing two body modules 6 and two roof modules 8 to site and then connecting the same together to form the lifting apparatus of the required length. Alternatively two scissor lift apparatus 18, 18' can be connected to the common frame 4 thereby allowing a body module to be created under factory conditions which has one or more scissor lift apparatus connected thereto as required.

[0031] Thus, in accordance with the invention, there is provided a lifting means which allows the required scissor lift platform arrangement to be constructed and fitted to the surrounding frame under factory conditions to greatly improve the speed of installation, the accuracy of installation and assembly at the factory and subsequently, reduce the time required for installation of the modules which are formed at the actual location for use.

Claims

1. Lifting apparatus (2) for use to move goods between first and second, spaced, goods storage locations, said apparatus provided to act to bridge the gap between said first and second storage locations and said lifting apparatus including a platform (16) which can be moved, if required, to different height levels of the respective storage areas, said platform moved under the influence of interconnected members (21) forming a scissor lift apparatus and wherein said platform and scissor lift apparatus is supported by, and located on, a frame (4) having a base (20) **characterised in that** the said base is located and attached on a support surface (10) at ground level in said gap and said frame further including a gangway (22) at a fixed height provided to allow passage by a person to a side of the platform and between first and second openings (12,14) leading to the respective first and second goods storage locations..

2. Apparatus according to claim 1 wherein the said scissor lift apparatus and platform is located on the said frame prior to the apparatus being installed at the support surface for use.

3. Apparatus according to claim 1 wherein the scissor lift apparatus comprises a series of members pivotally connected intermediate their ends so as to form an X shaped configuration in side elevation under the platform.

4. Apparatus according to claim 3 wherein said members are constrained such that movement actuation on at least one of said members causes movement of the scissor lift apparatus to move the platform up or down.

5. Apparatus according to claim 4 wherein the movement force is achieved via a powered ram acting on at least one of said members.

6. Apparatus according to claim 1 wherein the scissor lift apparatus is entirely supported by the frame.

7. Apparatus according to claim 2 wherein the frame and scissor lift apparatus are formed and connected to each other under factory conditions and then transported as a modular unit to the location for use.

8. Apparatus according to claim 7 wherein the modular unit includes a plurality of scissor lift apparatus.

9. Apparatus according to claim 7 wherein installation work is only required to be performed on the modular unit at the said location.

10. Apparatus according to claim 7 wherein the lifting apparatus and frame form a body module and an additional roof module is also formed under factory conditions and transported to site at which the respective modules are connected together to form the apparatus.

11. Apparatus according to claim 1 wherein the first goods storage area is a vehicle transported storage area which can be moved into position at one edge of the lifting apparatus.

12. Apparatus according to claim 1 wherein the second goods storage area is a warehouse, or a loading bay for the same.

13. Apparatus according to claim 1 wherein the frame includes at least one gangway formed to one side of the platform so as to allow access to and past the platform.

14. Apparatus according to claim 13 wherein said gangway is formed as part of the frame.

15. Apparatus according to claim 14 wherein the gangway is provided at a fixed height.

16. Apparatus according to claim 1 wherein said platform typically includes fixed or moveable portions which can form ramps to provide a continuous movement path between the platform and the particular floor of the goods storage area.

17. A method of forming lifting means apparatus for use to allow goods to be transported between a first goods storage area and a second goods storage area, a gap (24) being provided between the first and second goods storage areas, said gap receiving the lifting means apparatus (2), said lifting means apparatus including a platform (16) movable to different heights under the influence of scissor lift apparatus (18), and a frame (4) supporting said scissor lift apparatus and platform and having openings to allow access to be gained to the first and second goods storage areas said method includes the steps of forming the scissor lift apparatus, forming the frame and connecting the scissor lift apparatus to said frame under factory conditions to form a body module(6), transporting the body module to the location of use and installing the same by attaching the same to a support surface (10) in said gap at ground level and said frame further including a gangway (22) at a fixed height provided to allow passage by a person to a side of the platform and between first and second openings (12,14) leading to the respective first and second goods storage locations..

18. A method according to claim 17 wherein additional body modules and/or roof modules are transported to the location and connected to the said body module to provide the lifting apparatus in the required configuration for that location.

Patentansprüche

1. Hebevorrichtung (2) zur Verwendung zum Bewegen von Waren zwischen einem ersten und einem zweiten Warenlagerort, die voneinander beabstandet sind, wobei die genannte Vorrichtung bereitgestellt ist, um zur Überbrückung des Zwischenraums zwischen dem genannten ersten und zweiten Lagerort zu wirken, und wobei die genannte Hebevorrichtung eine Plattform (16) beinhaltet, die, falls erforderlich, auf verschiedene Höhenniveaus der jeweiligen Lagerbereiche bewegt werden kann, wobei die genannte Plattform unter dem Einfluss von miteinander verbundenen Elementen (21) bewegt wird, die eine Scherenhebevorrichtung bilden, und wobei die genannte Plattform und Scherenhebevorrichtung von/auf einem Rahmen (4) mit einer Basis (20) getragen wird und liegt, **dadurch gekennzeichnet, dass** die genannte Basis auf einer tragenden Fläche (10) auf Bodenhöhe in dem genannten Zwischenraum liegt und angebracht ist und der genannte Rahmen ferner einen Gang (22) auf einer festen Höhe beinhaltet, der bereitgestellt ist, um den Durchgang einer Person zu einer Seite der Plattform und zwischen einer ersten und einer zweiten Öffnung (12, 14), die zu dem ersten bzw. zweiten Warenlagerort führen, zu ermöglichen.

2. Vorrichtung nach Anspruch 1, wobei die genannte Scherenhebevorrichtung und Plattform auf den genannten Rahmen gesetzt werden, bevor die genannte Vorrichtung zur Verwendung auf der tragenden Fläche eingebaut wird.

3. Vorrichtung nach Anspruch 1, wobei die genannte Scherenhebevorrichtung eine Reihe von Elementen aufweist, die zwischen ihren Enden schwenkbar miteinander verbunden sind, um im Seitenaufriss ein X-förmiges Gebilde unter der Plattform zu bilden.

4. Vorrichtung nach Anspruch 3, wobei die genannten Elemente so eingeschränkt sind, dass eine Bewegungsbetätigung an wenigstens einem der genannten Elemente die Bewegung der Scherenhebevorrichtung zum Auf- oder Abbewegen der Plattform

verursacht.

5. Vorrichtung nach Anspruch 4, wobei die Bewegungskraft über einen kraftbetriebenen Druckzylinder erzielt wird, der auf wenigstens eines der genannten Elemente einwirkt.

6. Vorrichtung nach Anspruch 1, wobei die Scherenhebevorrichtung vollständig von dem genannten Rahmen getragen wird.

7. Vorrichtung nach Anspruch 2, wobei der Rahmen und die Scherenhebevorrichtung unter Werksbedingungen hergestellt und miteinander verbunden werden und dann zur Verwendung als modulare Einheit zu dem Ort transportiert werden.

8. Vorrichtung nach Anspruch 7, wobei die modulare Einheit eine Vielzahl von Scherenhebevorrichtungen beinhaltet.

9. Vorrichtung nach Anspruch 7, wobei an der modularen Einheit nur an dem genannten Ort Einbauarbeiten durchgeführt werden müssen.

10. Vorrichtung nach Anspruch 7, wobei die Hebevorrichtung und der Rahmen ein Körpermodul bilden und ein zusätzliches Dachmodul ebenfalls unter Werksbedingungen hergestellt und zu dem Standort transportiert wird, an dem die jeweiligen Module miteinander zu der Vorrichtung verbunden werden.

11. Vorrichtung nach Anspruch 1, wobei der erste Warenlagerbereich ein fahrzeugtransportierter Lagerbereich ist, der in Sollposition an einem Rand der Hebevorrichtung bewegt werden kann.

12. Vorrichtung nach Anspruch 1, wobei der zweite Warenlagerbereich ein Warenlager oder ein Verladebereich für dieses ist.

13. Vorrichtung nach Anspruch 1, wobei der Rahmen wenigstens einen Gang beinhaltet, der an einer Seite der Plattform ausgebildet ist, um Zugang zu der Plattform und an ihr vorbei zu gewähren.

14. Vorrichtung nach Anspruch 13, wobei der genannte Gang als Teil des Rahmens ausgebildet ist.

15. Vorrichtung nach Anspruch 14, wobei der Gang auf einer festen Höhe bereitgestellt ist.

16. Vorrichtung nach Anspruch 1, wobei die genannte Plattform gewöhnlich feste oder bewegliche Teile beinhaltet, die Rampen bilden können, um einen Weg zur ununterbrochenen Bewegung zwischen der Plattform und der jeweiligen Etage des Warenlagerbereichs bereitzustellen.

17. Verfahren zum Herstellen einer Hebemittelvorrichtung zur Verwendung, um das Transportieren von Waren zwischen einem ersten Warenlagerbereich und einem zweiten Warenlagerbereich zu ermöglichen, wobei zwischen dem ersten und zweiten Warenlagerbereich ein Zwischenraum (24) bereitgestellt ist, wobei der genannte Zwischenraum die Hebemittelvorrichtung (2) aufnimmt, wobei die genannte Hebemittelvorrichtung eine Plattform (16), die unter dem Einfluss der Scherenhebevorrichtung (18) auf verschiedene Höhen bewegt werden kann, und einen Rahmen (4), der die genannte Scherenhebevorrichtung und Plattform trägt und Öffnungen hat, um Zugang zu dem ersten und dem zweiten Warenlagerbereich erhalten zu können, wobei das genannte Verfahren die folgenden Schritte aufweist: Herstellen der Scherenhebevorrichtung, Herstellen des Rahmens und Verbinden der Scherenhebevorrichtung mit dem genannten Rahmen unter Werksbedingungen zum Herstellen eines Körpermoduls (6), Transportieren des Körpermoduls zum Verwendungsort und Einbauen desselben durch Anbringen desselben an einer tragenden Fläche (10) in dem genannten Zwischenraum auf Bodenhöhe, und wobei der genannte Rahmen ferner einen Gang (22) auf einer festen Höhe beinhaltet, der bereitgestellt ist, um den Durchgang einer Person zu einer Seite der Plattform und zwischen einer ersten und einer zweiten Öffnung (12, 14), die zu dem ersten bzw. zweiten Warenlagerort führen, zu ermöglichen.

18. Verfahren nach Anspruch 17, wobei zusätzliche Körpermodule und/oder Dachmodule zu dem Ort transportiert und mit dem genannten Körpermodul verbunden werden, um die Hebevorrichtung in der erforderlichen Gestaltung für diesen Ort bereitzustellen.

Revendications

1. Appareil élévateur (2) destiné à être utilisé pour déplacer des marchandises entre des premier et deuxième emplacements espacés de stockage de marchandises, ledit appareil étant prévu pour servir à combler l'écartement entre lesdits premier et deuxième emplacements de stockage, et ledit appareil élévateur comportant une plate-forme (16) qui peut être amenée, si besoin est, vers différents niveaux de hauteur des zones de stockage respectives, ladite plate-forme étant déplacée sous l'influence d'éléments raccordés les uns aux autres (21) formant un appareil élévateur à ciseaux, et cas dans lequel ladite plate-forme et l'appareil élévateur à ciseaux sont soutenus par un cadre (4), et sont positionnés sur ce dernier, le cadre possédant un socle (20), **caractérisé en ce que** ledit socle est positionné et fixé sur une surface de support (10) au niveau

du sol dans ledit écartement, et ledit cadre comportant en outre une voie d'accès (22) au niveau d'une hauteur fixe qui est prévue pour permettre à une personne de passer vers un côté de la plate-forme et entre des première et deuxième ouvertures (12, 14) aboutissant aux premier et deuxième emplacements de stockage de marchandises respectifs.

2. Appareil selon la revendication 1, ledit appareil élévateur à ciseaux et la plate-forme étant positionnés sur ledit cadre avant que l'appareil ne soit installé au niveau de la surface de support en vue d'une utilisation.

3. Appareil selon la revendication 1, l'appareil élévateur à ciseaux comprenant une série d'éléments lesquels sont raccordés de façon pivotante entre leurs extrémités de sorte à former une configuration en forme d'un X en élévation latérale sous la plate-forme.

4. Appareil selon la revendication 3, lesdits éléments étant restreints de sorte qu'un actionnement de mouvement s'exerçant sur l'un au moins desdits éléments provoque un mouvement de l'appareil élévateur à ciseaux afin de déplacer la plate-forme vers le haut ou vers le bas.

5. Appareil selon la revendication 4, la force de mouvement étant obtenue par l'intermédiaire d'un vérin motorisé agissant sur l'un au moins desdits éléments.

6. Appareil selon la revendication 1, l'appareil élévateur à ciseaux étant entièrement soutenu par le cadre.

7. Appareil selon la revendication 2, le cadre et l'appareil élévateur à ciseaux étant formés et raccordés l'un à l'autre sous des conditions en usine, et étant ensuite transportés en tant qu'unité modulaire sur l'emplacement concerné en vue d'une utilisation.

8. Appareil selon la revendication 7, l'unité modulaire incluant une pluralité d'appareils élévateurs à ciseaux.

9. Appareil selon la revendication 7, la réalisation de travaux d'installation étant uniquement requise sur l'unité modulaire sur ledit emplacement.

10. Appareil selon la revendication 7, l'appareil élévateur et le cadre formant un module de corps et un module de toit additionnel étant également formé sous des conditions en usine, et étant transportés sur le site concerné au niveau duquel les modules respectifs sont raccordés les uns aux autres afin de constituer l'appareil.

11. Appareil selon la revendication 1, la première zone de stockage de marchandises étant une zone de stockage transportée par véhicule, laquelle peut être mise en position au niveau d'un bord de l'appareil élévateur.

12. Appareil selon la revendication 1, la deuxième zone de stockage de marchandises étant un entrepôt, ou un quai de chargement, pour celles-ci.

13. Appareil selon la revendication 1, le cadre incluant au moins une voie d'accès laquelle est formée sur un côté de la plate-forme de sorte à procurer un accès à la plate-forme, et devant celle-ci.

14. Appareil selon la revendication 13, ladite voie d'accès étant formée en tant que partie intégrante du cadre.

15. Appareil selon la revendication 14, la voie d'accès étant prévue à une hauteur fixe.

16. Appareil selon la revendication 1, ladite plate-forme incluant typiquement des portions fixes ou mobiles qui peuvent constituer des rampes afin de procurer un trajet à mouvement continu entre la plate-forme et le plancher particulier de la zone de stockage de marchandises.

17. Procédé de réalisation d'un appareil à moyens élévateurs destiné à être utilisé pour permettre le transport de marchandises entre une première zone de stockage de marchandises et une deuxième zone de stockage de marchandises, un écartement (24) étant prévu entre les première et deuxième zones de stockage de marchandises, ledit écartement recevant l'appareil à moyens élévateurs (2), ledit appareil à moyens élévateurs comportant une plate-forme (16) apte à être déplacée à différentes hauteurs sous l'influence d'un appareil élévateur à ciseaux (18), et un cadre (4) soutenant ledit appareil élévateur à ciseaux et la plate-forme et présentant des ouvertures qui permettent de donner accès aux première et deuxième zones de stockage de marchandises, ledit procédé englobant les étapes consistant à former l'appareil élévateur à ciseaux, former le cadre et raccorder l'appareil élévateur à ciseaux audit cadre sous des conditions en usine afin de constituer un module de corps (6), transporter le module de corps à l'emplacement d'utilisation et installer celui-ci en le fixant à une surface de support (10) dans ledit écartement au niveau du sol, et ledit cadre comportant en outre une voie d'accès (22) à une hauteur fixe qui est prévue pour permettre à une personne de passer vers un côté de la plate-forme et entre des première et deuxième ouvertures (12, 14) aboutissant aux premier et deuxième emplacements de stockage de marchandises respectifs.

18. Procédé selon la revendication 17, des modules de corps et/ou des modules de toit additionnels étant transportés vers l'emplacement et raccordés audit module de corps afin de prévoir l'appareil élévateur dans la configuration requise pour cet emplacement.

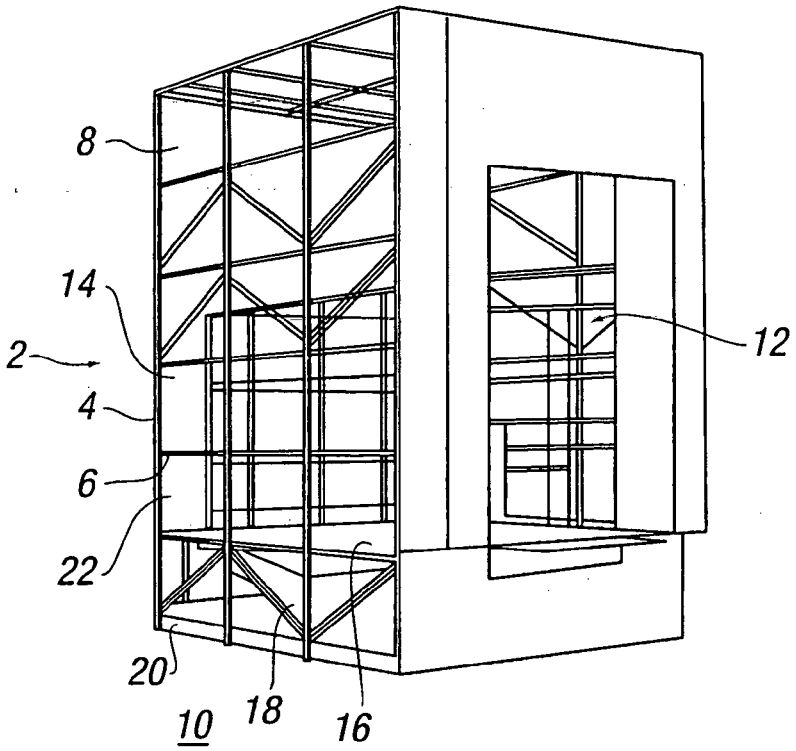


FIG. 1a

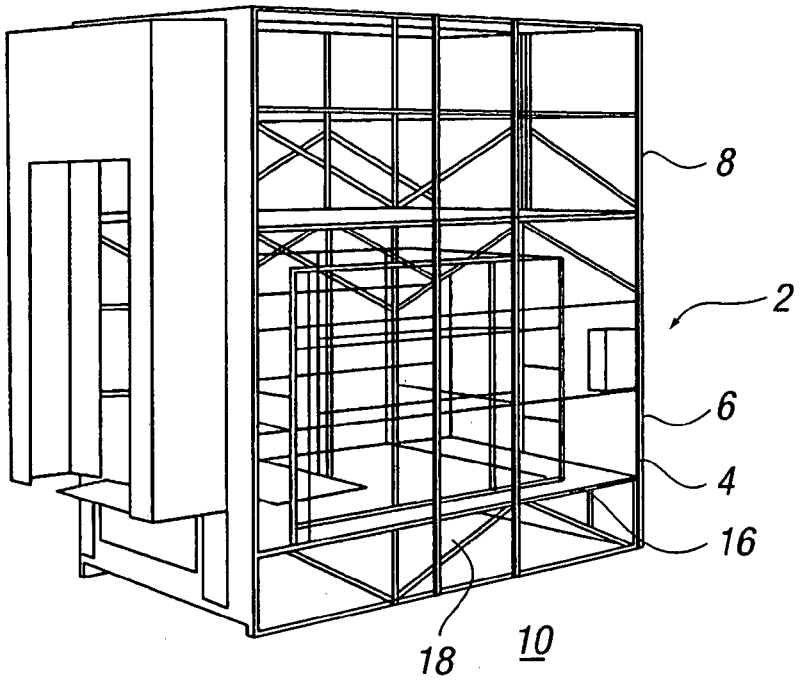


FIG. 1b

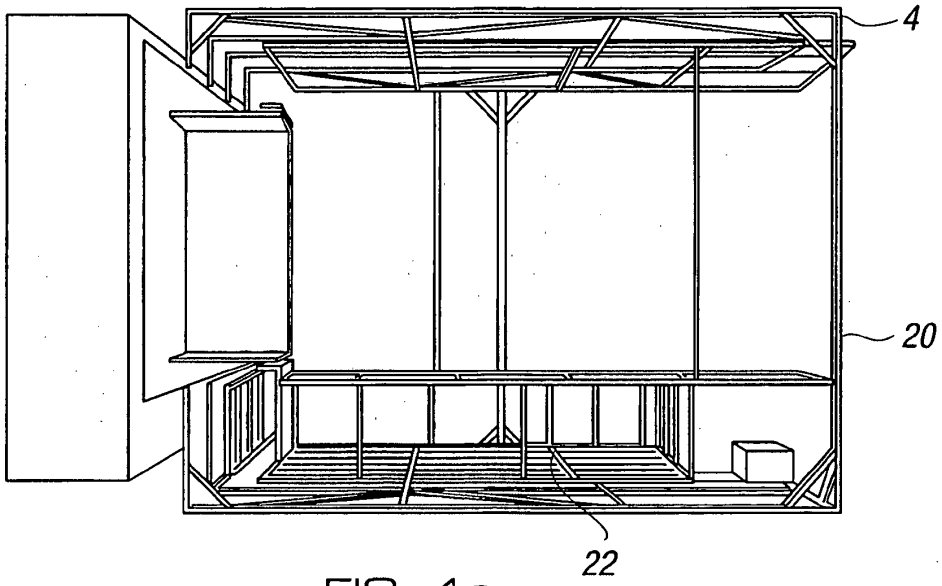


FIG. 1c

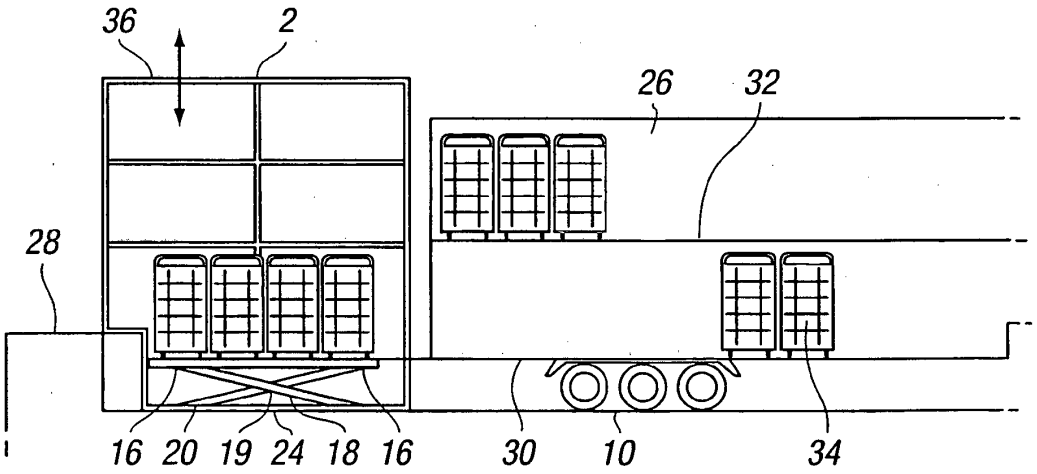
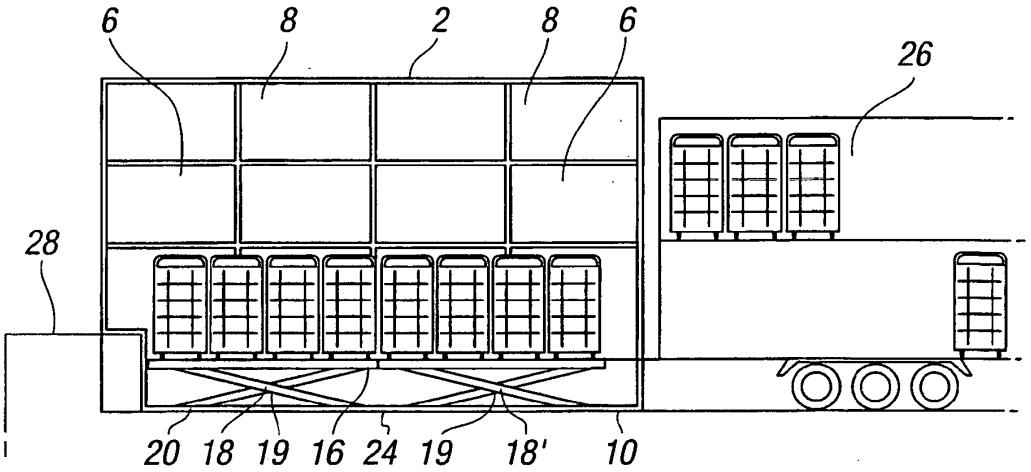


FIG. 2a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6
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19
16
24
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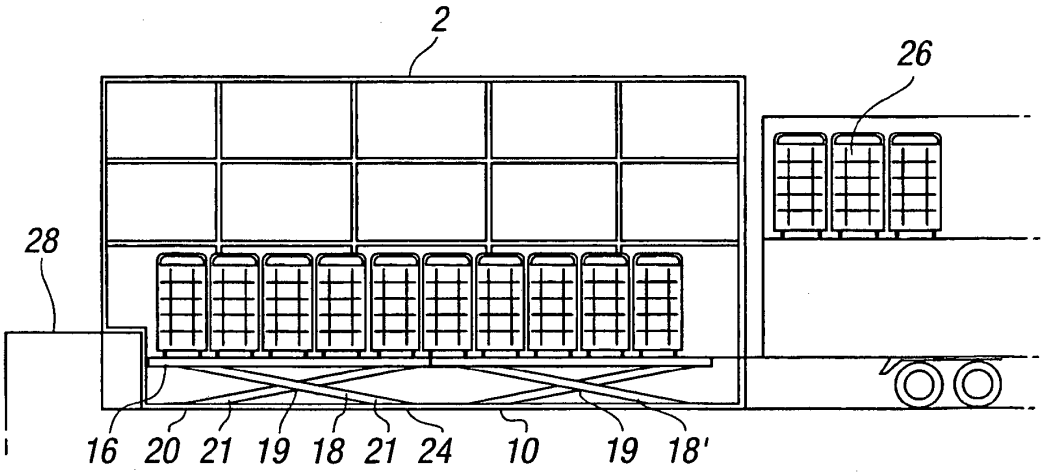
18'
10

FIG. 2b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18'

FIG. 2c

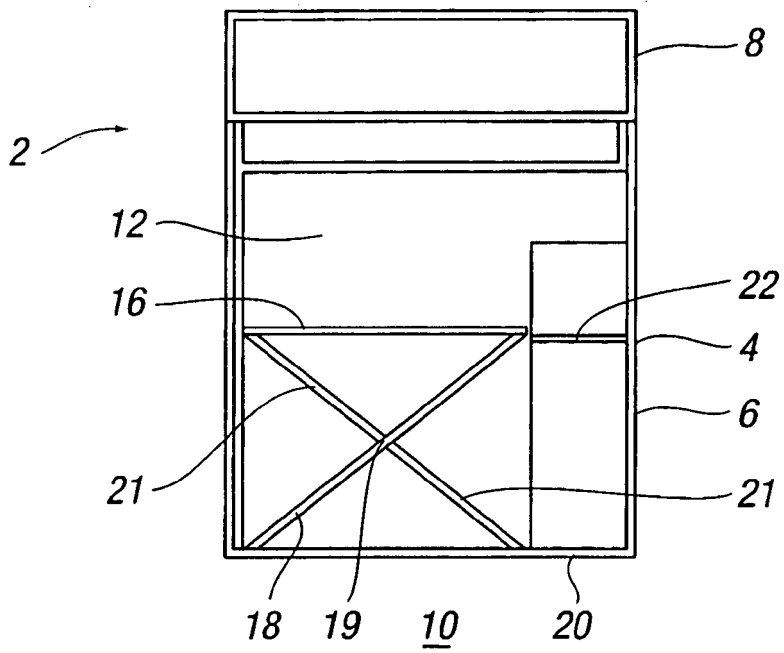

FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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- EP 1775246 A **[0004]**