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(11) **EP 0 925 412 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
21.05.2003 Bulletin 2003/21

(21) Application number: **97939310.5**

(22) Date of filing: **08.09.1997**

(51) Int Cl.7: **E04B 1/00**

(86) International application number:
PCT/SE97/01497

(87) International publication number:
WO 98/010150 (12.03.1998 Gazette 1998/10)

(54) **MOUNTING SYSTEM FOR HOSPITALS**
MONTAGESYSTEM FÜR KRANKENHÄUSER
SYSTEMES D'ASSEMBLAGE POUR HOPITAUX

(84) Designated Contracting States:
DE ES FR GB IT

(30) Priority: **06.09.1996 SE 9603277**

(43) Date of publication of application:
30.06.1999 Bulletin 1999/26

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Description

AREA OF INVENTION

[0001] The present invention relates to a mounting system for mounting hospital equipment in a hospital room. The mounting system enables the mounting of different equipment such as medical support service units to be used in the hospital room.

PRIOR ART

[0002] A mounting system for mounting equipment in the ceiling of a hospital room is previously known from e.g. EP-A2-0 215 212. Said mounting system comprises girders mounted in the ceiling of the room in order to support hospital equipment of different types.

[0003] EP-A2-0 257 299 discloses a support arm suspended in the ceiling and for supporting equipment close to a bed at a hospital.

[0004] EP-A1-0 603 093 discloses a ceiling mounted support system for distribution of medical fluids.

[0005] Another support arm system and mounting equipment attached to the ceiling of a hospital room is disclosed in CH-A5-568 459 (corresponding to US -A-3.931.452).

[0006] EP-A 1-0 219 274 discloses a support frame for medical apparatuses to be used close to the bed at a hospital and supported by wheels on the floor of the room.

[0007] An intravenous infusion device mobile is disclosed in EP-B1-477 551. The mobile carries a number of infusion devices necessary for the patient. DE-C1-41 04 814 discloses an intravenous infusion device in more details.

[0008] Within intensive care there is required many service functions such as: several types of drip and infusion systems for nutrition, liquid balance and drug supply; monitoring systems for various vital systems; respiratory support systems and also complete take-over of respiration.

[0009] The necessary equipment has to be supported, either by a ceiling attached support system or by a mobile provided with wheels.

[0010] When building such hospitals, it is convenient to first perform the necessary building steps, such as building the foundation, the walls and the ceilings of the hospital. Then, the different rooms are predisposed for the future use by adding gas supplies and electricity supplies according to said pre-planned disposition.

[0011] It has been found that in certain building techniques, it is not an easy task to provide ceiling constructions which enables the attachment and support of heavy hospital equipment as disclosed in the above-mentioned patent specifications. It is to be noted that it is customary to use the ceiling for support of such heavy equipment, while mobile units on wheel often are used for less heavy and bulky equipment.

[0012] Moreover, it would be convenient if the hospital could be built in a standard fashion without necessitating special building techniques and without predisposing the building, during the initial erection work, for specialised functions.

DISCLOSURE OF THE INVENTION

[0013] Consequently, the object of the present invention is to provide a mounting system for hospitals, which enables the elimination of the above-mentioned drawbacks in order to provide a convenient and standardised method of building a hospital, as well as a mounting system which enables the conversion of a standard building into a highly effective hospital with dedicated functions in different rooms.

[0014] Another object of the present invention is to provide a mounting system which enables the rebuilding of an old hospital into a modern and efficient hospital.

[0015] Accordingly, there is provided a mounting system comprising several upright girders supported by the floor and several horizontal girders connecting the upright girders to provide a self-supporting girder system. The horizontal girders provides support for equipment to be mounted to the room and the upright or vertical girders provide limitations, such as delimitations of rooms, as well as also serving the purpose as supportive elements for the room.

[0016] Further details of the present invention appear from the attached patent claims.

SHORT DESCRIPTION OF THE DRAWINGS

[0017] Further objects, features and advantages of the present invention will appear from the following detailed description of preferred embodiments shown on the attached drawings.

[0018] Fig. 1 is a perspective view of a mounting system according to the present invention.

[0019] Fig. 2 is a perspective view similar to Fig. 1 disclosing further equipment attached to the mounting system.

[0020] Fig. 3 is a perspective view similar to Fig. 1 disclosing further modes of functions of the present mounting system.

[0021] Fig. 4 is a perspective view similar to Fig. 1 and shows the connection of gas and electricity conduits.

[0022] Fig. 5 is a perspective view similar to Fig. 1 and shows another connected equipment.

DETAILED DESCRIPTION OF THE INVENTION

[0023] Fig. 1 is a perspective view of the mounting system according to a preferred embodiment of the present invention.

[0024] The building of a hospital starts with the erection of a house including foundation, walls and ceiling. The house is built with large rooms, the size and dimen-

sions of which are only dictated by the construction constraints. The house is made ready by the building workers.

[0025] Afterwards, the house is rebuilt into a hospital by using the mounting system according to the present invention.

[0026] The mounting system is based on the use of standardised girders of a sufficient strength to provide a supporting system for the necessary equipment.

[0027] Such girders are mounted as upright girders 1, 2, 3... close to the walls of the room. Other upright or vertical girders 4, 5... are mounted at a distance from the first-mentioned girders 1, 2, 3. The system of vertical girders are interconnected at their upper ends by several horizontal girders 6, 7, 8... Moreover, horizontal smaller girders 9, 10 interconnects the first-mentioned horizontal girders.

[0028] All the girders form a three-dimensional girder system as shown in Fig. 1. This girder system is self-supporting and can be mounted anywhere in the room, either close to a wall as described above, or completely stand-alone. This girder system is the basis for mounting hospital equipment.

[0029] In Fig. 1 is shown a wall panel 11 mounted between and supported by the upright girders 1, 2, 3. The wall panel supports several horizontal rails 12, whereby five such rails are shown in Fig. 1. The rails can be used for supporting cabinets 13 as shown in Fig. 1 or can serve other purposes as described in more details below.

[0030] Each upright or vertical girder is provided with, at the lower end thereof, an adjustment foot 14, by means of which the height of the upper end of the relevant girder can be adjusted. By such adjustment feet 14 it is possible to adjust the upright girders so that the horizontal girders will be just horizontal, independently of possible irregularities on the floor of the room. Such an adjustment foot 14 may comprise outer screw windings co-operating with inner screw windings in a nut portions in the lower end of the girder. Other adjustment mechanisms can also be used, such as keying constructions.

[0031] As further shown in Fig. 1, the smaller horizontal girders can be provided with lamps 15. Moreover, the upright girders can be provided with electric outlets for mains current 16 or signal voltage connections.

[0032] The girder system is interconnected by conventional means, for example screw connection means 17. Each girders is provided with a longitudinal groove intended for attachment of a mounting clamp. Such groove is not shown in details in the drawings. The groove can provide a means for attaching equipment at different heights along the upright girder, such attachment also being adjustable in height.

[0033] Fig. 2 shows the same mounting system as Fig. 1, but complemented with a first moveable pillar 18 attached to the horizontal girder 6. The moveable pillar 18 comprises a first horizontal portion 19 rotatably connected to the girder 6 to be pivotable around a vertical

axis 20. A second horizontal portion 21 is rotatably connected to the first portion 19 to be pivotable around a second vertical axis 22. Finally, a vertical pillar 23 is rotatably connected to the second portion 21 to be pivotable around a third vertical axis 24. The construction enables the pillar to be moved into close proximity to the patient being placed in a bed 25. The pillar can also be moved to a position away from the bed where it leaves the room free for the patient when the service of the pillar is not needed. The pillar can include gas connections and electric supplies and signal connectors for the patients need and comfort.

[0034] To the right of the bed 25 there is shown another moveable unit 26 similar to the moveable pillar 18. However, the pillar is replaced by a frame construction comprising two vertical pillars 27, 28 interconnected by two horizontal girders 29, 30. Between the pillars 27, 28 there can be mounted equipment needed at the bed side, such as monitors, suction units, heart monitoring equipment etc.

[0035] Fig. 3 shows another disposition of the mounting system according to the present invention. The bed 25 in Fig. 2 has been replaced by an adjustable chair 31 which is moveable on wheels 32. The moveable unit 26 is provided with a monitor 32 and several gas panels 33.

[0036] The horizontal girder 7 is provided with a curtain delimiting the room from an adjacent room as clearly appears from Fig. 3. Moreover, the horizontal girder 7 is provided with an indication lamp 35 controlled by a switch 36 at the adjacent upright girder 5. The lamp 35 can indicate that the room is occupied by showing a red light or can be used for indicating an alarm condition by emitting a blinking light.

[0037] The lamps 15 at the smaller horizontal girders 9, 10 are controlled by a switch 37 at the adjacent upright girder 4, via electric wires 38.

[0038] In Fig. 4 there is shown how the girders are provided with electric current and gas. At the upper end of the girders there is mounted a longitudinal rail 39, for example connected to the wall of the building, or supported by the ends of the upright girders. The rail comprises electric mains supply and connections for signal voltages. Moreover, in a separate compartment, the rail is provided with necessary gas pipes, such as oxygen gas, nitrogen gas and air supply. Such gas pipes are connected to the interior of the girders via flexible hoses 40 and connected to outlets in the upright girders. Alternatively, the gas supplies is connected directly to respective equipment in for example a moveable unit 26. The electric supplies are connected via wires 41 to connectors at the uprights or at other suitable locations. Consequently, the gas supplies and electric supplies are well hidden inside the girders. The connections are placed in a position where they cannot easily be tampered.

[0039] Finally, Fig. 5 shows the attachment of a patient lift equipment 42 to the horizontal girder system ac-

according to the present invention. The patient lift 42 is connected to a protruding portion 43 of the horizontal girder 6. Thence, the patient lift 42 can be used in two rooms of the hospital only by rotating the patient lift over 270 degrees.

[0040] It is clear that the curtains mentioned above can be replaced by rigid wall constructions supported by the upright girders in order to provide separate rooms required in a hospital. Moreover, the panel 11 and rail system 12 at the panel can be provided with necessary equipment for performing a specific function of the room so that it easily can be converted from a conventional patient room into a intensive care room if required. Other possibilities occur easily to a person having the task to set up a hospital. Of course the system according to the present invention can also be used at other areas of use requiring a high degree of freedom to plan a building construction and modifying it afterwards.

[0041] Although several embodiments have been described above with reference to the appended drawings, it is obvious to a skilled person that different modifications can be made to the embodiments shown on the drawings and different combinations can be made without departing from the inventive idea of the invention. Such modifications obvious to a skilled person reading this specification is intended to be within the scope of the invention.

Claims

1. A mounting system for a room having side walls, a floor and a ceiling, **characterised** by a first set of two spaced apart upright girders (1, 2) mounted on the floor close to a wall the house, by a second set of two spaced apart upright girders (4, 5) mounted on the floor, the first set and the second set of upright girders being spaced apart for receiving there between a bed (25), by electric outlets for mains current (16) provided in at least one upright girder (1, 2, 4, 5), and by a first horizontal girder (6) connecting a first upright girder (1) of the first set of upright girders to a first upright girder (4) of the second set of upright girders and a second horizontal girder (7) connecting a second upright girder (2) of the first set of upright girders to a second upright girder (5) of the second set of upright girders, the upright girders (1, 2, 4, 5) and the horizontal girders (6, 7) forming together a self-supporting girder mounting system for mounting ceiling supported equipment units (18, 26) in said horizontal girders (6, 7).
2. A mounting system according to claim 1, wherein the upright girders (1, 2, 3, 4, 5) are provided with an adjustment foot (14) for adjusting the height of the girder.

3. A mounting system according to claim 1, wherein at least a third horizontal girder (10) is provided to extend from said first horizontal girder (6) to said second horizontal girder (7) for supporting a lamp (15).

Patentansprüche

1. Montagesystem für einen Raum mit Seitenwänden, einem Fußboden und einer Decke, **gekennzeichnet durch:**
 - einen ersten Satz zweier beabstandeter aufrecht stehender Träger (1, 2), die auf dem Fußboden nahe an einer Wand des Hauses angebracht sind;
 - einen zweiten Satz zweier beabstandeter aufrecht stehender Träger (4, 5), die auf dem Fußboden angebracht sind, wobei der erste und der zweite Satz aufrecht stehender Träger voneinander beabstandet sind, um ein Bett (25) dazwischen aufzunehmen,
 - elektrische Steckdosen für Netzstrom (16), die in wenigstens einem aufrecht stehenden Träger (1, 2, 4, 5) vorhanden sind, und
 - einen ersten horizontalen Träger (6), der einen ersten aufrecht stehenden Träger (1) des ersten Satzes aufrecht stehender Träger mit einem ersten aufrecht stehenden Träger (4) des zweiten Satzes aufrecht stehender Träger verbindet, und einen zweiten horizontalen Träger (7), der einen zweiten aufrecht stehenden Träger (2) des ersten Satzes aufrecht stehender Träger mit einem zweiten aufrecht stehenden Träger des zweiten Satzes aufrecht stehender Träger verbindet, wobei die aufrecht stehenden Träger (1, 2, 4, 5) und die horizontalen Träger (6, 7) zusammen ein selbsttragendes Träger-Montagesystem zum Montieren von von der Decke getragenen Einrichtungseinheiten (18, 26) in den horizontalen Trägern (6, 7) bilden.
2. Montagesystem nach Anspruch 1, wobei die aufrecht stehenden Träger (1, 2, 3, 4, 5) mit einem Einstellfuß (14) zum Einstellen der Höhe des Trägers versehen sind.
3. Montagesystem nach Anspruch 1, wobei wenigstens ein dritter horizontaler Träger (10) vorhanden ist, der sich von dem ersten horizontalen Träger (6) zu dem zweiten horizontalen Träger (7) erstreckt, um eine Lampe (15) zu tragen.

Revendications

1. Système d'assemblage pour une pièce comportant des murs latéraux, un plancher et un plafond, **caractérisé** 5
 - par un premier ensemble de deux poutres montantes (1, 2) espacées l'une de l'autre montées sur le plancher à proximité d'un mur de la pièce, 10
 - par un second ensemble de deux poutres montantes espacées (4, 5) montées sur le plancher, le premier ensemble et le second ensemble de poutres montantes étant espacés l'un de l'autre pour recevoir un lit (25) entre les deux, 15
 - par des prises électriques pour le courant du secteur (16) prévues dans au moins une poutre montante (1, 2, 4, 5), et 20
 - par une première poutre horizontale (6) connectant une première poutre montante (1) du premier ensemble de poutres montantes à une première poutre montante (4) du second ensemble de poutres montantes et une deuxième poutre horizontale (7) connectant une seconde poutre montante (2) du premier ensemble de poutres montantes à une seconde poutre montante (5) du second ensemble de poutres montantes, les poutres montantes (1, 2, 4, 5) et les poutres horizontales (6, 7) formant ensemble un système d'assemblage de poutre autoporteur pour monter les équipements supportés par le plafond (18, 26) dans lesdites poutres horizontales (6, 7). 25 30
2. Système d'assemblage selon la revendication 1, dans lequel les poutres montantes (1, 2, 3, 4, 5) sont prévues avec un pied de réglage (14) pour régler la hauteur de la poutre. 35
3. Système d'assemblage selon la revendication 1, dans lequel au moins une troisième poutre horizontale (10) est prévue pour s'étendre de ladite première poutre horizontale (6) à ladite deuxième poutre horizontale (7) pour supporter une lampe (15). 40

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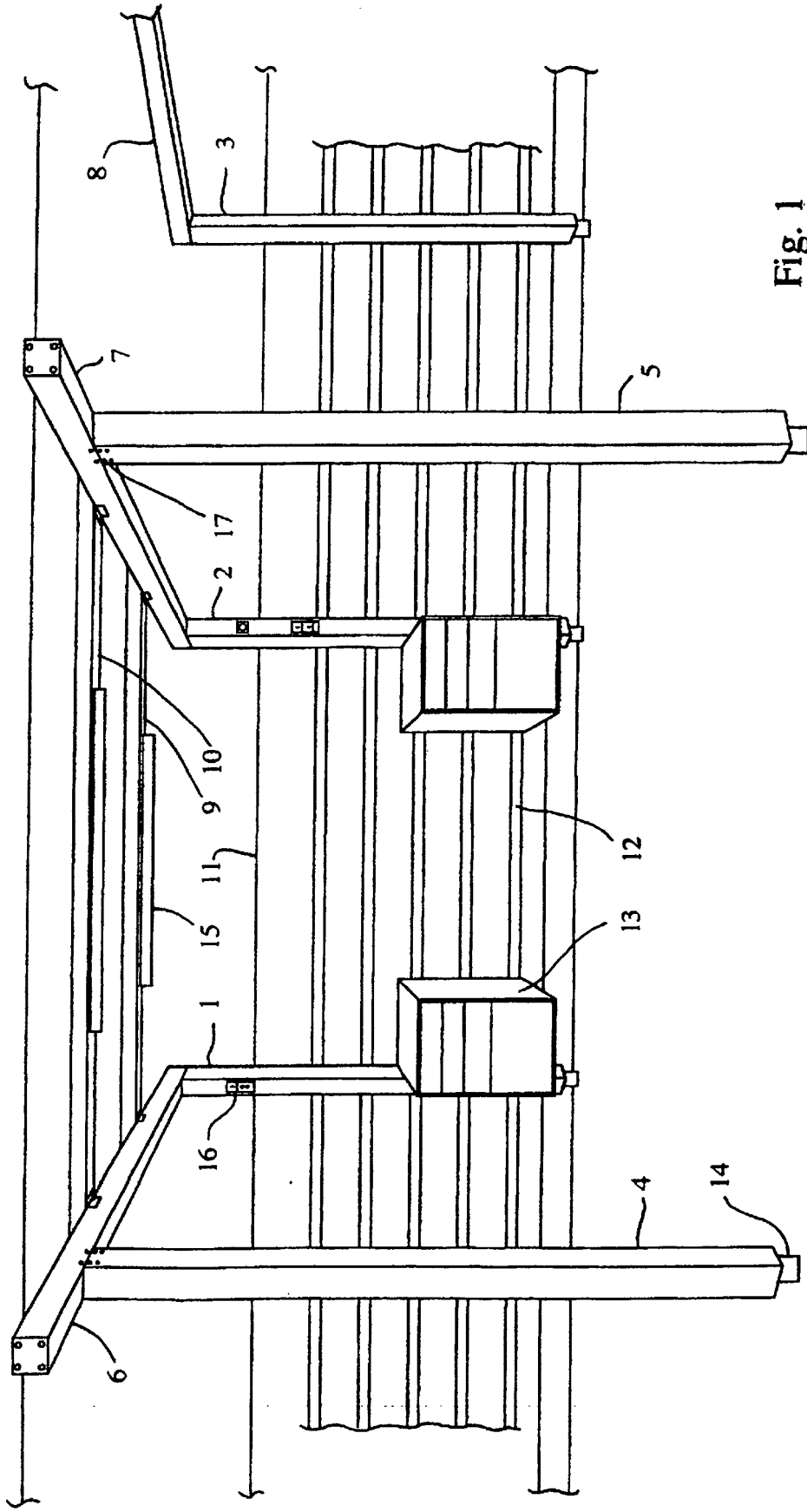


Fig. 1

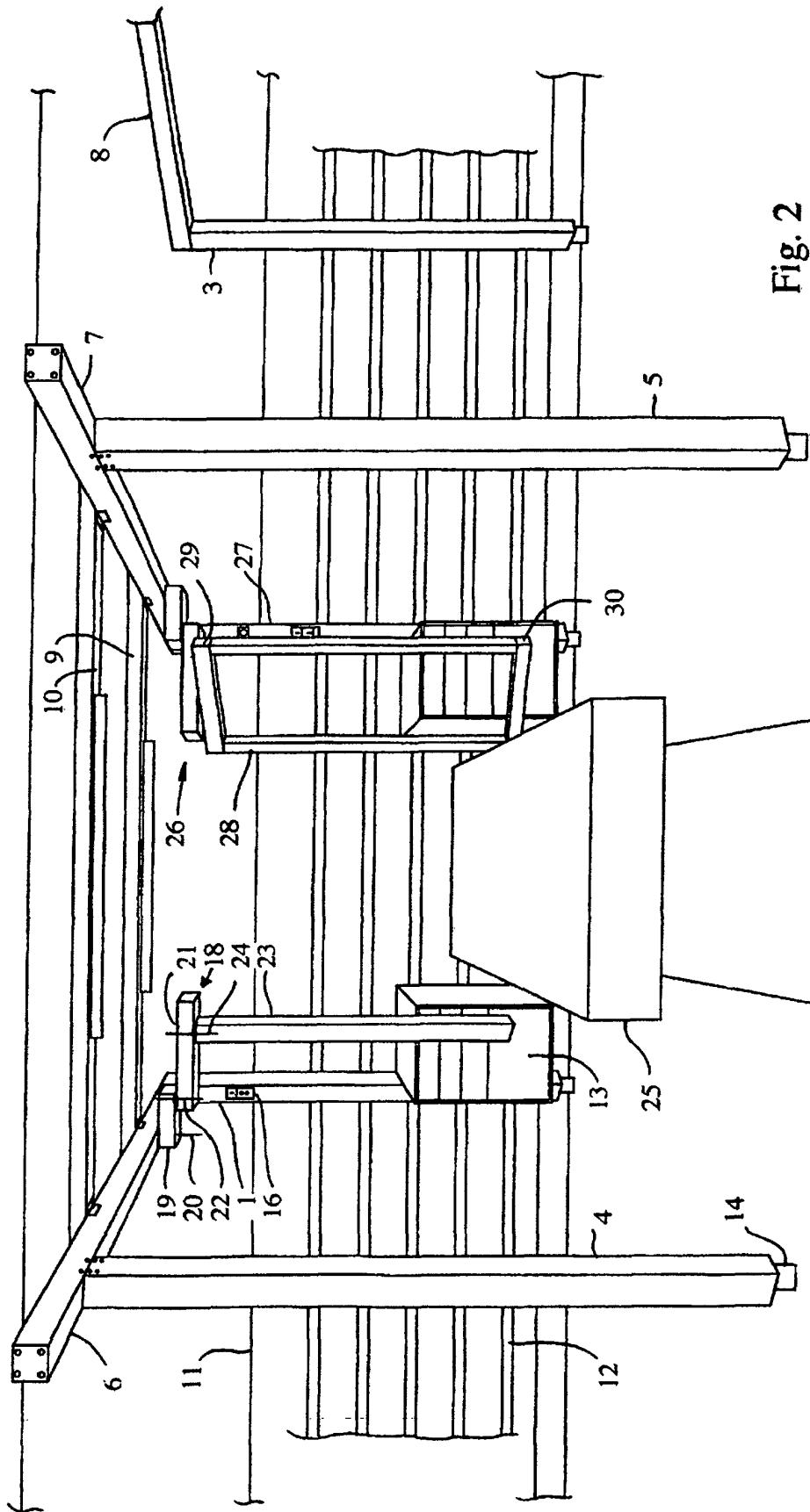


Fig. 2

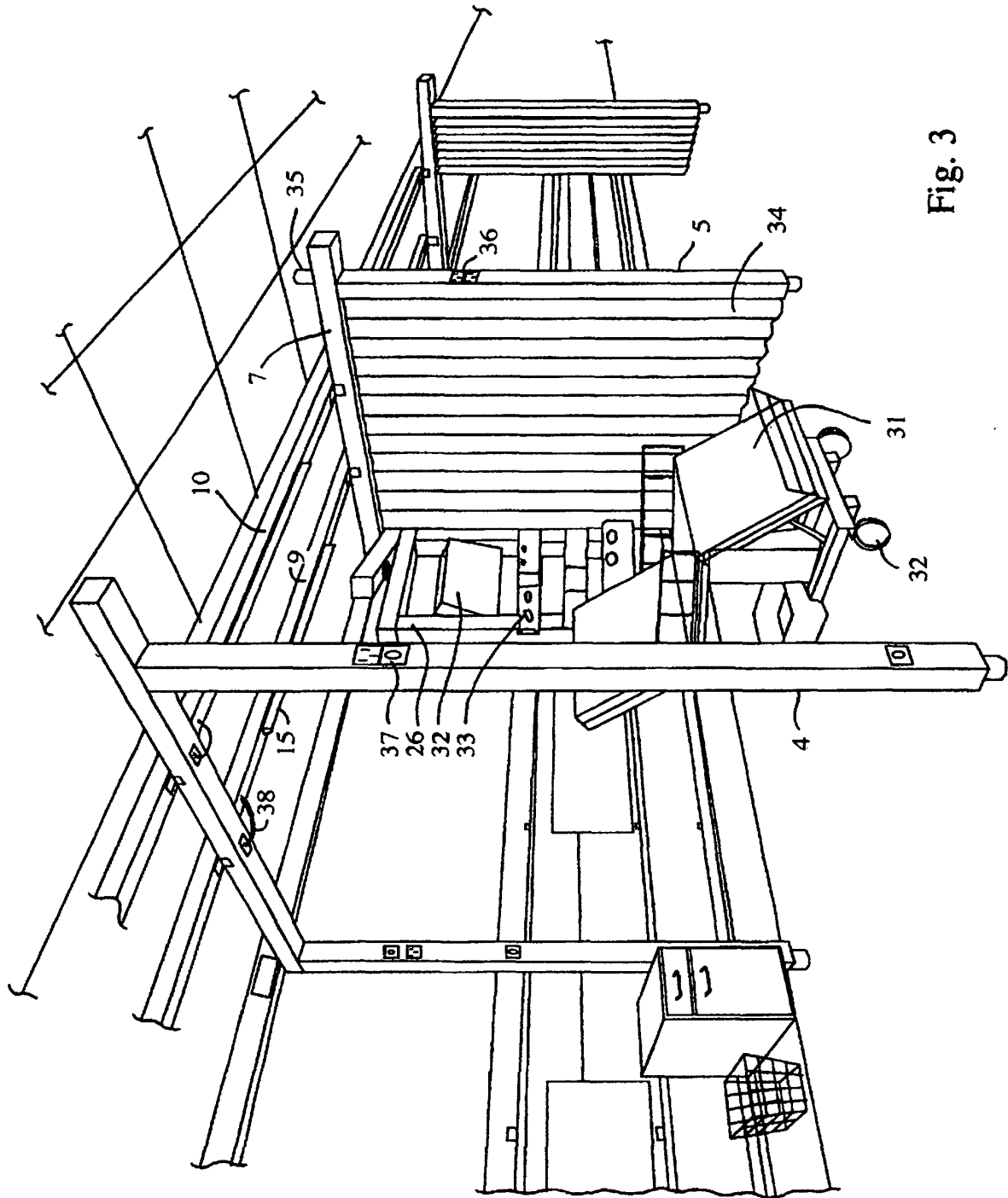


Fig. 3

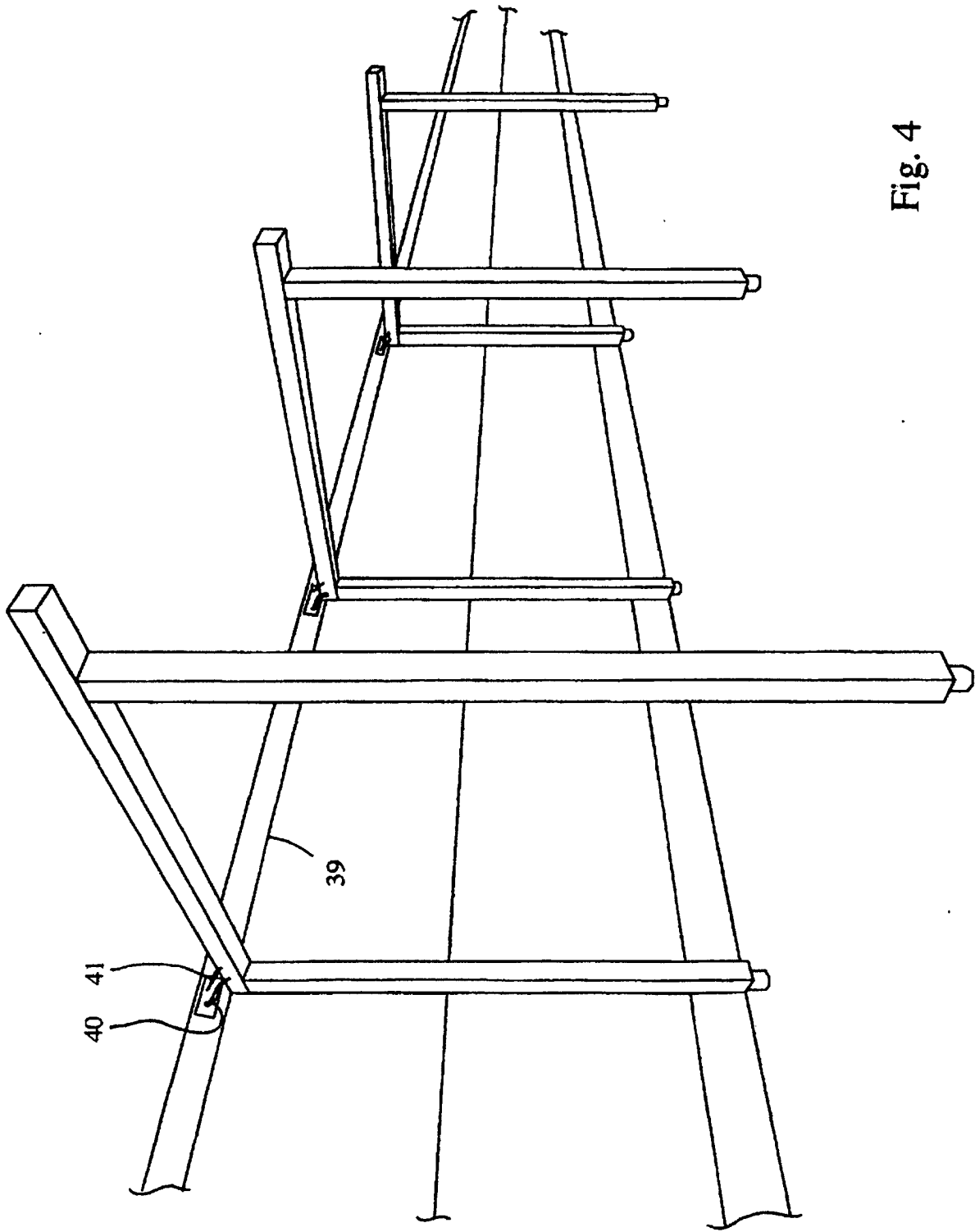


Fig. 4

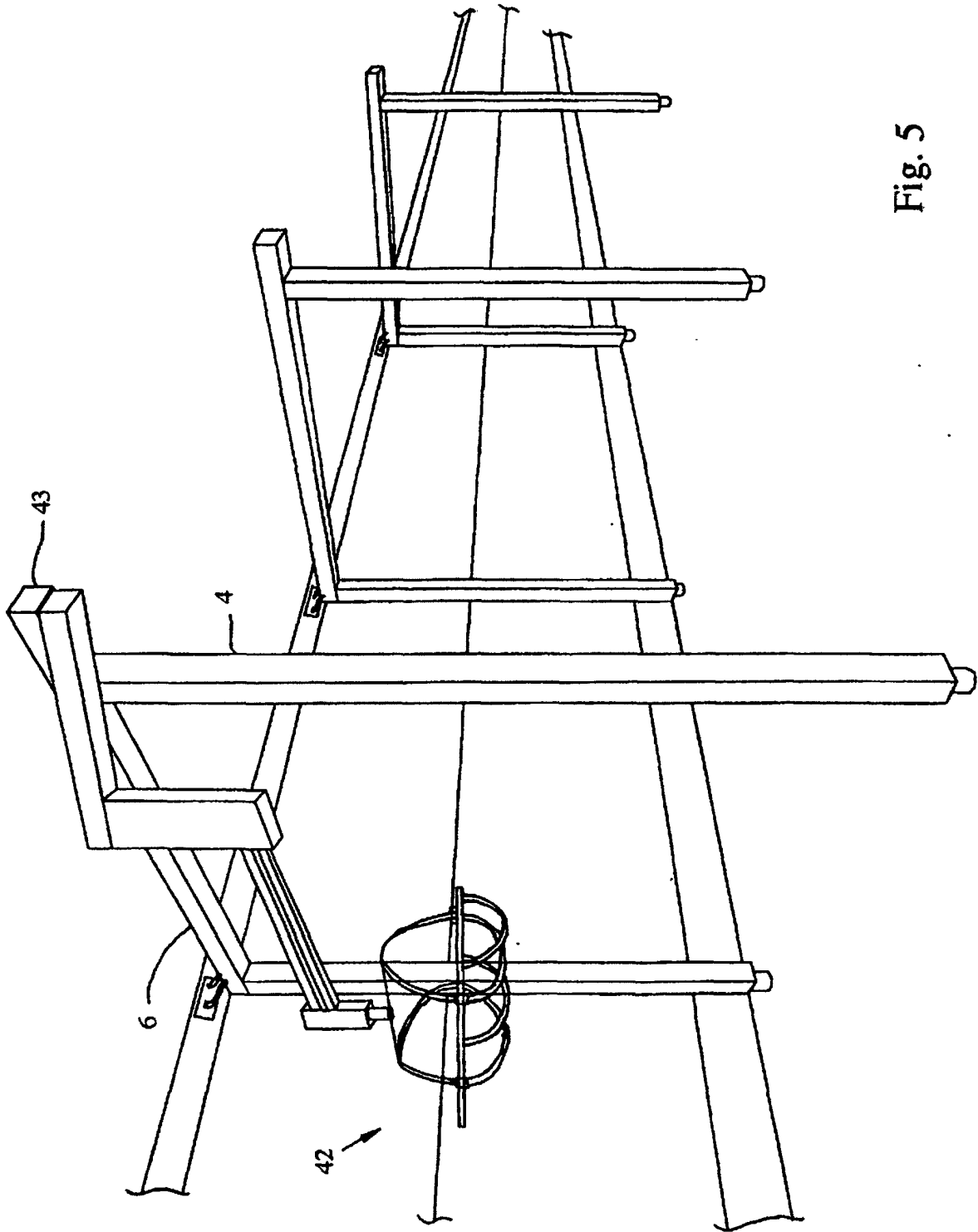


Fig. 5