

(19)



(11)

EP 1 325 534 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
31.01.2007 Bulletin 2007/05

(51) Int Cl.:
H01Q 1/12 ^(2006.01) **E04H 12/22** ^(2006.01)
H01Q 1/00 ^(2006.01)

(21) Application number: **01979070.8**

(86) International application number:
PCT/NL2001/000687

(22) Date of filing: **14.09.2001**

(87) International publication number:
WO 2002/031910 (18.04.2002 Gazette 2002/16)

(54) **ANTENNA PLATFORM**

ANTENNENPLATTFORM

PLATE-FORME D'ANTENNE

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**

(30) Priority: **15.09.2000 NL 1016191**

(43) Date of publication of application:
09.07.2003 Bulletin 2003/28

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EP 1 325 534 B1

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Description

[0001] The present invention relates to a platform, comprising a bearing part and coupled thereto means for connecting an antenna mast or the like to the bearing part.

[0002] It is common practice to construct antenna masts, especially for the so-called GSM base stations, as well as for UMTS base stations and the like, on high objects such as roofs of buildings. Often the antenna masts are mounted on flat roofs of flat buildings and the like. On average the antenna's mounting point at a height of 30 metres. The antennae themselves are mounted on one or more masts having a height of approximately 5 metres, positioned on the roof.

[0003] Often there is also an equipment cabinet provided on the roof of the respective building. By means of cables this equipment cabinet is connected with the antennae, of which there are usually three. The equipment cabinet is then connected to a power supply and is linked with the permanent network by means of a cable connection or by means of beam transmission.

[0004] These known antenna platforms have a great number of drawbacks, in particular with respect to their fastening to the mounting face. The known antenna platforms are fastened by means of a mechanical coupling to the supporting construction of the building underneath. If the concrete roofs are sufficiently strong, the outer layer of roof-covering is cut open and an anchor is provided in the concrete for mounting an individual base made of wood or steel. In order to fix said anchors, holes are drilled into the concrete, in which they are lodged. The individual base is slid over said anchors and is fixed. The individual bases are subsequently finished to be water-tight. The platform is then mounted on the individual base. If the roof itself has insufficient bearing power, for example, in the case of wooden or steel roofs, the underlying supporting construction of trusses is used for fastening the platform. To this end a hole is made above a truss through the entire roof construction. The individual base is then mounted on the truss. Finally the individual base is finished to be water-tight, which has to be done very precisely.

[0005] It will be obvious that this method practised until now has many drawbacks. The roof-covering has to be opened up creating a real possibility of permanent leakage. Moreover, mounting can only be carried out in dry weather. The expansion behaviour in warm and cold weather of the construction fastened to the individual bases is usually different to that of the underlying roof construction. Due to temperature fluctuations, undesirable stress may be exerted on the roof construction. The final result may be that the connection between the individual bases and the roof covering is not tight, so that leakage occurs. In order to mount the construction on the roof, break work is required causing nuisance for the occupants and users. In addition, a builder and a roofer, and possibly other experts have to be hired, which incurs

in considerable costs. Also, the original guarantee on the roof covering will in general be cancelled. A last but not insignificant problem is the possible formation of thermal bridges. Also, wind load causes vibrations that may eventually lead to leakages. Likewise, the unavoidable play between the various parts may eventually lead to leakages.

[0006] It is the object of the invention to provide an improved antenna platform that does not exhibit the above mentioned drawbacks. This object is achieved by a platform as specified in claim 1. A platform according to the preamble of claim 1 is known from patent document US-A-4 799 642. This measure according to claim 1 avoids the above-mentioned problems.

[0007] According to a preferred embodiment, the elements consist of elongated elements.

[0008] According to a further preferred embodiment, the supports consist of longitudinal beams and cross beams, providing a simple modular system, allowing simple extensions to be carried out to the platform at the place of destination.

[0009] In another preferred embodiment, several elements connected in each other's extended direction are provided.

[0010] The system according to the invention is very advantageous especially when the platform is to be placed on a flat roof of a high building. The separate modular parts may be taken to the place of destination, to subsequently be assembled there. Alternatively, the platform may be assembled in an assembly room and be placed directly on to the roof or the like. In accordance with the invention, it is not necessary to anchor the construction to the building.

[0011] As the supporting means are adjustable in height, it is simple to level out possible unevennesses in the mounting face.

[0012] The vibration-isolating construction of the supporting means, wherein said construction may consist, for example, of a vibration-isolating material such as a rubber-like material, provides a number of advantages. It has a high friction coefficient, which minimizes any movement of the platform over the mounting face. Such material is relatively soft so that damage to the mounting face is prevented. It is also vibration-isolating. Finally, such material has a low thermal conduction coefficient so that thermal bridges to the mounting face are avoided.

[0013] Embodying the supporting means with a solid core, for example, metal, provides a good load distribution over a larger area; maximally as large as the surface area of the supporting means themselves.

[0014] The elements are preferably provided with a plurality of fastening points for the supporting means in order to allow them to be fastened to the platform at different positions. This means that they can be positioned, for example, exactly above roof trusses. This allows the supporting means, moreover, to be attached under the platform such that they do not rest on elements mounted on the roof such as chimneys and the like.

[0015] To this end the elements comprise fastening positions for supporting means in such numbers that the strength and soundness of the elements are not adversely affected. The elements comprise at least two, preferably at least three, and more preferably at least four fastening positions for the supporting means.

[0016] A further preferred embodiment provides in the supporting means being pivotingly fastened to the platform. When the platform is being placed on a roof, unevennesses in the mounting face will be compensated, while the hinge mechanism may be fixed after mounting is completed.

[0017] In many cases it is advantageous to place the system equipment in the vicinity of an antenna mast. In that case the platform may also be provided with connecting means for fastening equipment cabinets that house this system equipment thereto. Preferred is an enclosed room on the platform for housing said equipment cabinets. In accordance with the invention the room comprises an air conditioning system and is equipped to accommodate equipment to be used with an antenna system. The air conditioning system may comprise a traditional air conditioner or a (mechanical) air circulation system and/or a heater and the like. By making the room sufficiently large, a considerable number of equipment cabinets, known in the art as indoor equipment cabinets, can be accommodated in the room, resulting in significant savings in costs.

[0018] Equipment from different manufacturers has different methods of fastening. The room may comprise a standard fastening whereby different kinds of equipment (cabinets) may be fastened in the room by means of adapters.

[0019] Preferably the room comprises means to allow a top section to be mounted on top. The top section preferably comprises a niche which, when the top section is mounted on the equipment room, lies in the extended direction of the niche that is provided in the wall of the equipment room. The known GSM/UMTS antennae can be placed in such a niche. It is, for example, possible to place a beam transmitter, preferably of the kind known in the art, in the top section. This may then be protected from the surroundings by a material such as polycarbonate, which is substantially permeable with regard to the respective radiation.

[0020] According to another advantageous embodiment, the elements are provided with grids suitable to be walked over. In that case there will be no direct contact with the roof surface during possible maintenance activities. It is also possible to provide fencing around the periphery of the platform. This is especially advantageous if the antenna platform is mounted on a high building.

[0021] The invention will now be further described with reference to the appended drawings.

[0022] Figure 1 shows a side view of an antenna platform and mounted thereon a mast with antenna.

[0023] Figure 2 shows a top view of the embodiment according to Figure 1.

[0024] Figure 3 shows the side view of another embodiment of the invention.

[0025] Figure 4 shows a top view of the embodiment of Figure 3.

5 **[0026]** Figure 5 shows a schematic illustration of an equipment cabinet mounted on the platform according to the invention.

[0027] Figure 6 shows a top view of a portion of the bearing part of the platform.

10 **[0028]** Figure 7 shows the top view of a cross beam with two supporting means coupled thereto.

[0029] Figures 8A and 8B show a side view of the construction according to Figure 7.

15 **[0030]** Figure 9 shows a top view of a room according to the invention.

[0031] As shown in Figure 1, the antenna platform 1 comprises a bearing surface 2, formed substantially by the carriers 3. Also provided are means 4 on which an antenna mast 5 can be mounted.

20 **[0032]** As can be clearly seen in Figure 2, which shows a top view of the device according to Figure 1, the carriers are comprised of elongated elements 3, being at their end 6, which in the present case faces toward a centre, coupled to means 4 on which the antenna mast 5 is mounted. In this embodiment, the outward facing ends 7 of the elongated elements 3 are connected to supporting means 8, fastened with the aid of cross beams 9. In the case shown in the Figures 1 and 2, the means 4 consists of a central part to which a mast 5 can be coupled. Coupling may occur in any suitable manner.

30 **[0033]** Although the figures show an exemplary embodiment with three elongated elements, it will be obvious that instead of three it is also possible to use four, five, or still more elements 3. It is even possible to only use two elongated elements 3 that may or may not lie in each other's extended direction. The desired stability may then be obtained by coupling cross beams 9 to the elongated elements 3 (as shown in Figure 2).

40 **[0034]** The ends 6 of the elongated elements 3 may be interconnected, after which the means 4 are coupled thereto individually. It is also possible to couple the ends 6 of the elongated elements 3 directly to the means 4.

45 **[0035]** In the embodiment illustrated, the supporting means 8 have a relatively large surface area. In this way the load per unit of area on the mounting face is still low despite the fact that the weight of the entire antenna platform 1 plus mast and antennas may be considerable. This allows the antenna platform 1 to be mounted also on a mounting face with a limited strength, e.g. a flat roof of a building.

50 **[0036]** Figure 3, shows another embodiment of an antenna platform 1 according to the invention. In the illustrated case the carriers are comprised substantially of elongated elements 3 placed horizontally, coupled to supporting means 8 with the aid of coupling means (not shown). According to a preferred embodiment, these may be mounted anywhere on the elements. On the antenna platform 1 a mast 5 is mounted, which is fastened

with the aid of struts 10 (in Figure 3 only one strut 10 is shown). The mast is connected to the bearing surface 2 by means of coupling means (not shown). The mast is provided with antennae 11. The platform is also provided with fencing 12. This fencing ensures that persons who are on the platform for maintenance, repair and the like, will not step outside the platform area. This is especially important when an antenna platform 1, as shown in the figure, is mounted on a high surface.

[0037] Figure 4 shows a top view of an antenna platform 1 as illustrated in Figure 3. The various elongated elements 3 that are interconnected can be clearly distinguished. The elements 3 form elongated beams and cross beams that are preferably interchangeable and may have the same shape. The supporting means 8 can also be clearly seen. By means of coupling means 13, the fencing 12 is connected with the elongated elements 3. In the fencing 12 there is also a provision 14 that is comprised of, for example, a pivoting element such as a door 14 via which one can simply come inside of the fencing on the antenna platform 1. In that case it is advantageous to place, for example, grids (not shown) on the antenna platform, supported by the elongated elements 3. The grids generally used in the art are provided with large openings so that rainwater and dirt will fall through the grids. The mast 5 is mounted on the elongated elements 3 with the aid of the coupling means 4, which may simply be comprised of a flange or the like. It is common practice in the art to mount a mast on a mounting face with the aid of coupling means.

[0038] Figure 5, shows a schematic side view of an antenna platform 1 according to the invention, depicting only elongated elements 3 and supporting means 8. The supporting means 8 are coupled to the elongated elements 3 by means of coupling means 19. The height of the supporting means 8 is adjustable by means of, for example, adjusting screws 15. This makes it possible to position the antenna platform 1 substantially horizontally even if the mounting face 16 is not entirely horizontal or flat. This Figure 5 also shows an equipment cabinet 17 comprising system equipment for cooperating with the antennae. By means of suitable coupling means 18, preferably using an adapter (not shown), the cabinet 17 may be mounted on the antenna platform 1, in particular on the elongated elements 3. of course, it is also possible to use an adapter whose one side is suitable for fastening to the elongated elements 3, and whose other side is suitable for fastening to the equipment cabinet 17.

[0039] Figure 6 shows a top view of a portion of the bearing part of the platform 1 according to the invention. The supporting means 8 are fastened in pairs to an intermediate beam or cross beam 9. Said cross beam 9 is fastened to an element 3 via a hinging mechanism 20. Figure 7 shows a top view of a cross beam 9 and two supporting means 8 fastened thereto, as shown in Figure 6.

[0040] Figure 8A shows a side view of the cross beam 9 according to Figure 7 in the direction of the arrows 8A-

8A, also clearly showing the hinge mechanism 20. When placing the platform on a mounting face, the supporting means 8 will be able to adapt to the shape of the mounting face. Once the platform is positioned, the hinge mechanism may be fixed by means of bolt connections 21. Thereby guaranteeing a stable positioning of the platform on the mounting face.

[0041] Figure 8B shows a side view in the direction of the arrows 8B-8B according to Figures 7 and 8A. The supporting means 8 are connected to the cross beam 9 by coupling means 19, and are adjustable in height by means of adjusting screws 15.

[0042] Figure 9 shows a top view of an equipment room 21, in which the necessary equipment cabinets as described above and as known in the art, may be located. In the configuration illustrated, the room 21 is located on a platform 1 according to the invention. On the roof 22 of the room 21 an opening is provided covered with a removable plate 23. This plate may be replaced by a top section which, for example, houses an emergency power supply or a beam transmitter or possibly the said GSM/UMTS transmitters. The top side of the top section may be covered, for example, with the said removable cover plate 23. The cover plate 23 may optionally be provided with a man hole, which may be covered by a plate 24.

[0043] The room 21 may be provided with adapters to allow any desirable equipment cabinet known in the art to be fastened therein.

[0044] In its walls 25, the room 21 may be provided with one or more niches 26. In said niches 26, for example, the fastening means for GSM/UMTS antennae 27 may be placed, or both the fastening means and the antennae. The niches are preferably also provided with means for putting cables through to allow the cables connecting the antennae with the equipment in the room to be put through into the equipment room.

[0045] Although this is not shown in the figures, it is possible to mount a mast with antennae as well as one or more equipment cabinets or a room 21 as mentioned above, on the antenna platform 1 according to the invention. There are no limitations to the mounting or distribution of the various equipment cabinets, or the rooms and masts on the platform. It is preferred to let positioning depend on the structure of the underlying mounting face. In the case of a wooden roof with a sub-construction of spaced trusses it is, for example, advisable to ensure that the supporting means 8 carrying most of the weight rest on the positions above said support trusses. To this end the elements 3 may comprise a large number of fastening points for supporting means 8. The number of fastening points may maximally be such as to produce no adverse effect on the necessary strength of the elements 3.

[0046] A result very conveniently achieved with the antenna platform according to the invention is that there is no need for permanent connection between the bearing construction for an antenna mast and the remaining equipment cabinets, so that no break work in the roof

construction of a building is required. This allows the mounting of an antenna platform to be carried out much more quickly. It is also possible to mount an antenna platform on a building in rainy weather conditions.

[0047] The invention is not limited to the foregoing description. It is, for example, possible to mount the antenna platform on a mounting face that is not flat. A platform as shown in Figures 3 and 4 may possibly also be embodied without fencing. It is also possible that the supporting means 8 have another form than the square shapes shown in the figures. Depending on the size of the antenna platform and the strength of the mounting face, the number of supporting means may possibly be increased or reduced in relation to the number of supporting means shown in the figures.

[0048] To obtain the favourable effect, all the above mentioned and described parts may be used separately, and in any combination desired.

Claims

1. A platform, comprising a bearing part and coupled thereto means for connecting to the bearing part an antenna mast, equipment to be used therewith or the like, wherein the bearing part consists of substantially similar, interchangeable and interconnected elements (3); wherein the platform (1) comprises supporting means (8), which support the platform (1) on a mounting face (16) without being connected thereto; and wherein said supporting means (8) are adjustable in height, **characterized in that** at the side facing the mounting face, said supporting means (8) comprise a vibration-isolating construction, for example, a vibration-isolating material such as a rubber-like material; and that said elements (3) comprise a plurality of fastening points for said supporting means (8).
2. A platform according to claim 1, **characterized in that** the elements (3) are elongated elements.
3. A platform according to claim 1 or 2, **characterized in that** the elements (3) comprise longitudinal beams and cross beams.
4. A platform according to any one of the preceding claims, **characterized in that** several elements (3) are connected in each other's extended direction.
5. A platform according to any one of the preceding claims, **characterized in that** the elements (3) comprise at least two, preferably at least three, and more preferably at least four fastening positions for the supporting means (8).
6. A platform according to any one of the preceding claims, **characterized in that** the elements (3) comprise fastening positions for supporting means (8) in such numbers that the strength and soundness of the elements (3) are not adversely affected.
7. A platform according to any one of the preceding claims, **characterized in that** the supporting means (8) are pivotally fastened to the platform.
8. A platform according to any one of the preceding claims, **characterized in that** the mounting face (16) is formed by a substantially flat roof.
9. A platform according to any one of the preceding claims, **characterized in that** fencing is provided around the periphery of the platform (2).
10. A platform according to any one of the preceding claims, **characterized in that** the same is provided with means coupled thereto for connecting an equipment room, which room comprises an air conditioning system and is equipped to accommodate equipment to be used with an antenna system, in particular a GSM/UMTS antenna system.
11. A combination of an equipment room and a platform according to any of claims 1 - 10, in particular with a GSM/UMTS antenna system, **characterized in that** the room comprises an air conditioning system and is equipped to accommodate equipment to be used with an antenna system.
12. A combination according to claim 11, **characterized in that** a niche is provided in the exterior wall of the room, for accommodating an antenna.
13. A combination according to claim 11 or 12, **characterized in that** the niche is provided with means for putting cables through in order to be able to connect the antenna with the equipment in the equipment room.
14. A combination according to claims 11-13, **characterized in that** the equipment room comprises coupling means to allow a top section to be mounted on the room.
15. A combination according to claim 14, **characterized in that** the top section comprises a niche, which, when the top section is mounted on the equipment room, lies in the extended direction of the niche that is provided in the wall of the equipment room.
16. A combination according to any of claims 11-15, **characterized in that** the niche is covered by a material that is substantially permeable with regard to radio waves.

Patentansprüche

1. Eine Plattform, die ein tragendes Teil und damit gekoppelt eine Einrichtung zum Verbinden eines Antennenmastes mit dem tragenden Teil, damit zu verwendende Geräte oder dergleichen umfasst, wobei das tragende Teil aus im Wesentlichen ähnlichen, gegeneinander austauschbaren und miteinander verbundenen Elementen (3) besteht; wobei die Plattform (1) eine Trägereinrichtung (8) umfasst, die die Plattform (1) auf einer Anbringfläche (16) trägt, ohne mit derselben verbunden zu sein; und wobei die Trägereinrichtung (8) höhenverstellbar ist, **dadurch gekennzeichnet, dass** an der der Anbringfläche zugewandten Seite die Trägereinrichtung (8) eine Schwingungsisolierungskonstruktion umfasst, beispielsweise ein Schwingungsisolierungsmaterial wie z.B. ein gummiartiges Material; und **dadurch, dass** die Elemente (3) eine Mehrzahl von Befestigungspunkten für die Trägereinrichtung (8) umfassen.
2. Eine Plattform gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die Elemente (3) längliche Elemente sind.
3. Eine Plattform gemäß Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Elemente (3) Längsbalken und Querbalken umfassen.
4. Eine Plattform gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** mehrere Elemente (3) in der verlängerten Richtung eines jeweils anderen Elements verbunden sind.
5. Eine Plattform gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Elemente (3) zumindest zwei, vorzugsweise zumindest drei und stärker bevorzugt zumindest vier Befestigungspositionen für die Trägereinrichtung (8) umfassen.
6. Eine Plattform gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Elemente (3) Befestigungspositionen für Trägereinrichtungen (8) in einer derartigen Anzahl umfassen, dass die Stärke und Brauchbarkeit der Elemente (3) nicht negativ beeinflusst ist.
7. Eine Plattform gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Trägereinrichtung (8) aufschwenkbare Weise an der Plattform befestigt ist.
8. Eine Plattform gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Anbringfläche (16) durch ein im Wesentlichen flaches Dach gebildet ist.
9. Eine Plattform gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** um die Peripherie der Plattform (2) herum eine Einzäunung vorgesehen ist.
10. Eine Plattform gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** dieselbe mit einer mit derselben gekoppelten Einrichtung zum Verbinden eines Geräteraums versehen ist, wobei der Raum ein Klimatisierungssystem umfasst und dahin gehend ausgestattet ist, Geräte zu beherbergen, die mit einem Antennensystem, insbesondere mit einem GSM/UMTS-Antennensystem, verwendet werden sollen.
11. Eine Kombination eines Geräteraums und einer Plattform gemäß einem der Ansprüche 1 bis 10, insbesondere mit einem GSM/UMTS-Antennensystem, **dadurch gekennzeichnet, dass** der Raum ein Klimatisierungssystem umfasst und dahin gehend ausgestattet ist, Geräte zu beherbergen, die mit einem Antennensystem verwendet werden sollen.
12. Eine Kombination gemäß Anspruch 11, **dadurch gekennzeichnet, dass** in der Außenwand des Raums eine Nische zum Beherbergen einer Antenne vorgesehen ist.
13. Eine Kombination gemäß Anspruch 11 oder 12, **dadurch gekennzeichnet, dass** die Nische mit einer Einrichtung zum Durchlegen von Kabeln versehen ist, um in der Lage zu sein, die Antenne mit den Geräten in dem Geräteraum zu verbinden.
14. Eine Kombination gemäß einem der Ansprüche 11 bis 13, **dadurch gekennzeichnet, dass** der Geräteraum eine Kopplungseinrichtung umfasst, um zu ermöglichen, dass ein oberer Abschnitt an dem Raum angebracht wird.
15. Eine Kombination gemäß Anspruch 14, **dadurch gekennzeichnet, dass** der obere Abschnitt eine Nische umfasst, die, wenn der obere Abschnitt an dem Geräteraum angebracht ist, in der verlängerten Richtung der Nische liegt, die in der Wand des Geräteraums vorgesehen ist.
16. Eine Kombination gemäß einem der Ansprüche 11 bis 15, **dadurch gekennzeichnet, dass** die Nische durch ein Material abgedeckt ist, das in Bezug auf Funkwellen im Wesentlichen durchlässig ist.

Revendications

1. Plate-forme, comprenant une partie de roulement à laquelle sont couplés des moyens pour relier à la

- partie de roulement un mât d'antenne, un matériel à utiliser en association, ou similaire, dans laquelle la partie de roulement se compose d'éléments (3) sensiblement similaires, interchangeables et interconnectés ; dans laquelle la plate-forme (1) comprend des moyens de support (8) qui supportent la plate-forme (1) sur une face de montage (16) sans y être reliée ; et dans laquelle lesdits moyens de support (8) sont réglables en hauteur, **caractérisée en ce que**, au niveau du côté qui fait face à la face de montage, lesdits moyens de support (8) comprennent une construction qui isole des vibrations, par exemple, un matériau qui isole des vibrations tel qu'un matériau du genre caoutchouc ; et **en ce que** lesdits éléments (3) comprennent une pluralité de points d'attache desdits moyens de support (8).
2. Plate-forme selon la revendication 1, **caractérisée en ce que** les éléments (3) sont des éléments allongés.
 3. Plate-forme selon l'une quelconque des revendications 1 ou 2, **caractérisée en ce que** les éléments (3) comprennent des poutres longitudinales et des poutres transversales.
 4. Plate-forme selon l'une quelconque des revendications précédentes, **caractérisée en ce que** plusieurs éléments (3) sont reliés dans une direction prolongée des uns des autres.
 5. Plate-forme selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les éléments (3) comprennent au moins deux, de préférence au moins trois, et de façon plus préférée au moins quatre, positions de fixation des moyens de support (8).
 6. Plate-forme selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les éléments (3) comprennent des positions de fixation des moyens de support (8) en un nombre tel que la robustesse et la solidité des éléments (3) ne soient pas compromises.
 7. Plate-forme selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les éléments de support (8) sont fixés de manière pivotante à la plate-forme.
 8. Plate-forme selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la face de montage (16) est formée par un toit sensiblement plat.
 9. Plate-forme selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'une** clôture est prévue autour de la périphérie de la plate-forme (2).
 10. Plate-forme selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'il** est fourni la même chose avec des moyens qui y sont couplés pour relier une salle de matériel, laquelle salle comprend un système de climatisation et est équipée pour recevoir un matériel à utiliser avec un système d'antenne, en particulier un système d'antenne GSM / UMTS.
 11. Association d'une salle de matériel et d'une plate-forme selon l'une quelconque des revendications 1 à 10, en particulier avec un système d'antenne GSM / UMTS, **caractérisée en ce que** la salle comprend un système de climatisation et est équipée pour recevoir un matériel à utiliser avec un système d'antenne.
 12. Association selon la revendication 11, **caractérisée en ce qu'une** niche est pourvuea paroi extérieure de la salle, pour recevoir une antenne.
 13. Association selon l'une quelconque des revendications 11 ou 12, **caractérisée en ce que** la niche est dotée de moyens pour passer des câbles à travers afin de pouvoir connecter l'antenne au matériel situé dans la salle de matériel.
 14. Association selon l'une quelconque des revendications 11 à 13, **caractérisée en ce que** la salle de matériel comprend des moyens de couplage pour permettre de monter une partie supérieure sur la salle.
 15. Association selon la revendication 14, **caractérisée en ce que** la partie supérieure comprend une niche qui se situe, lorsque la partie supérieure est montée sur la salle de matériel, dans la direction prolongée de la niche qui est prévue dans la paroi de la salle de matériel.
 16. Association selon l'une quelconque des revendications 11 à 15, **caractérisée en ce que** la niche est couverte par un matériau qui est sensiblement perméable aux ondes radioélectriques.

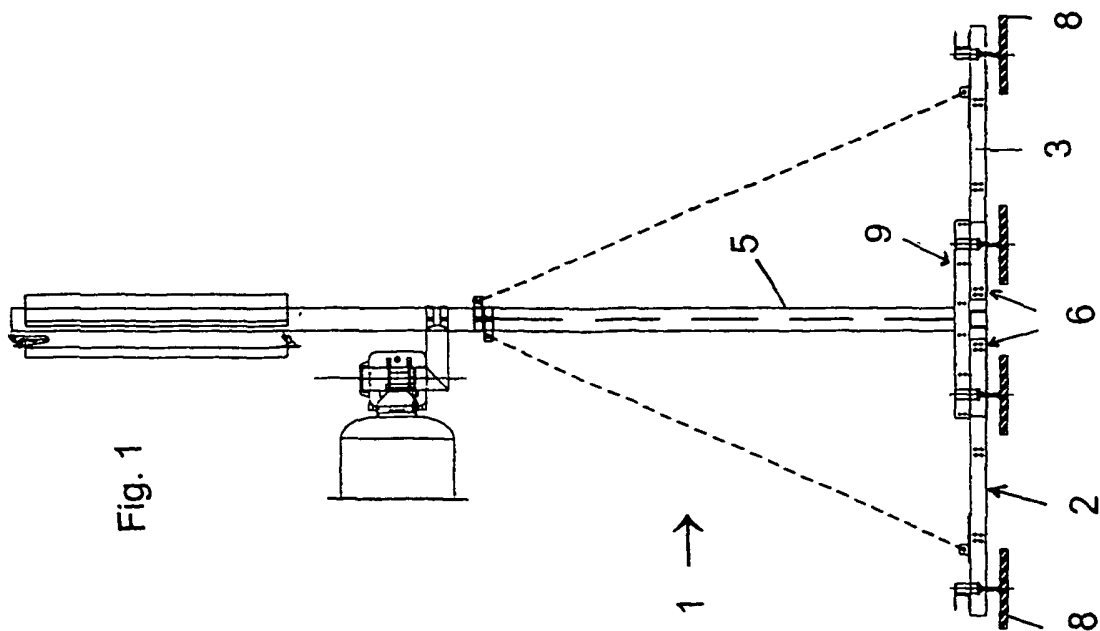


Fig. 1

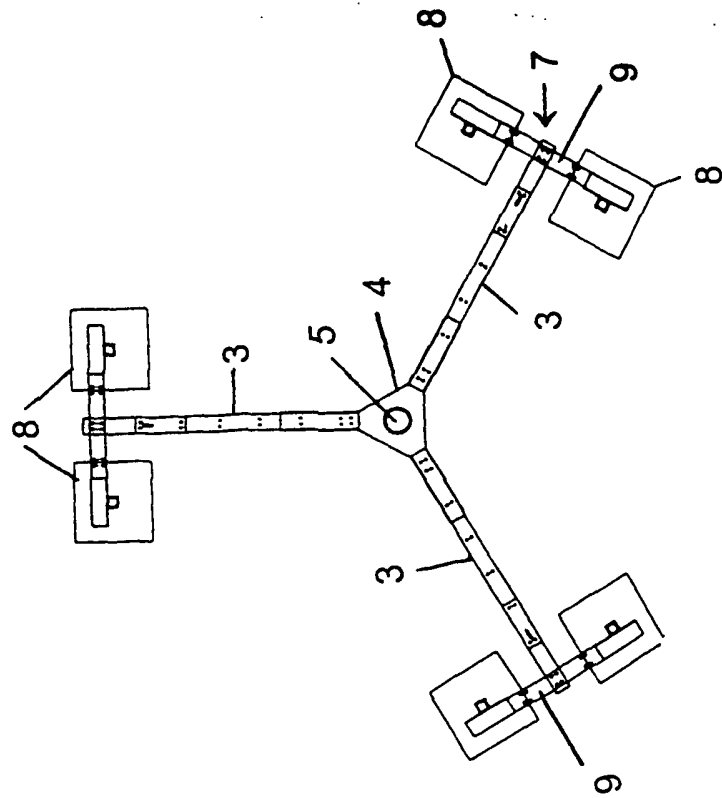


Fig. 2

Fig. 3

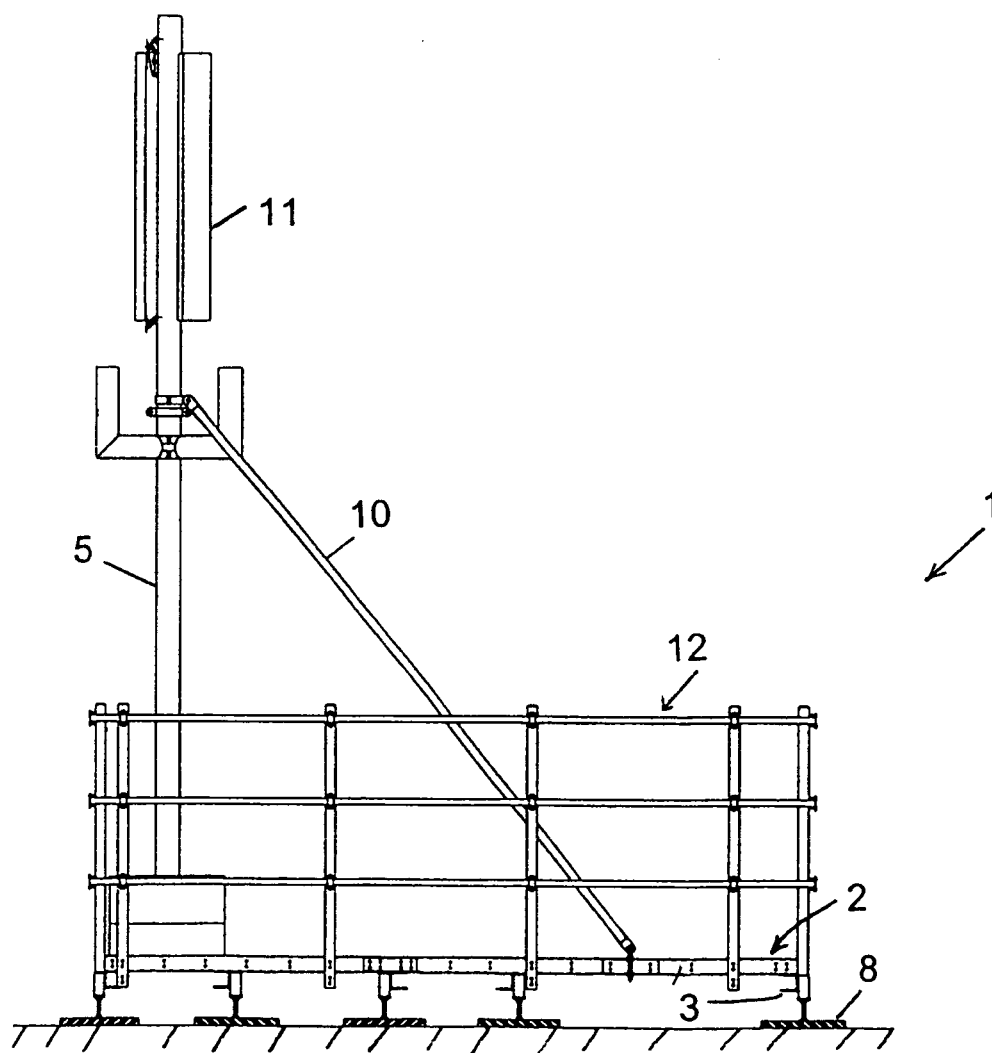
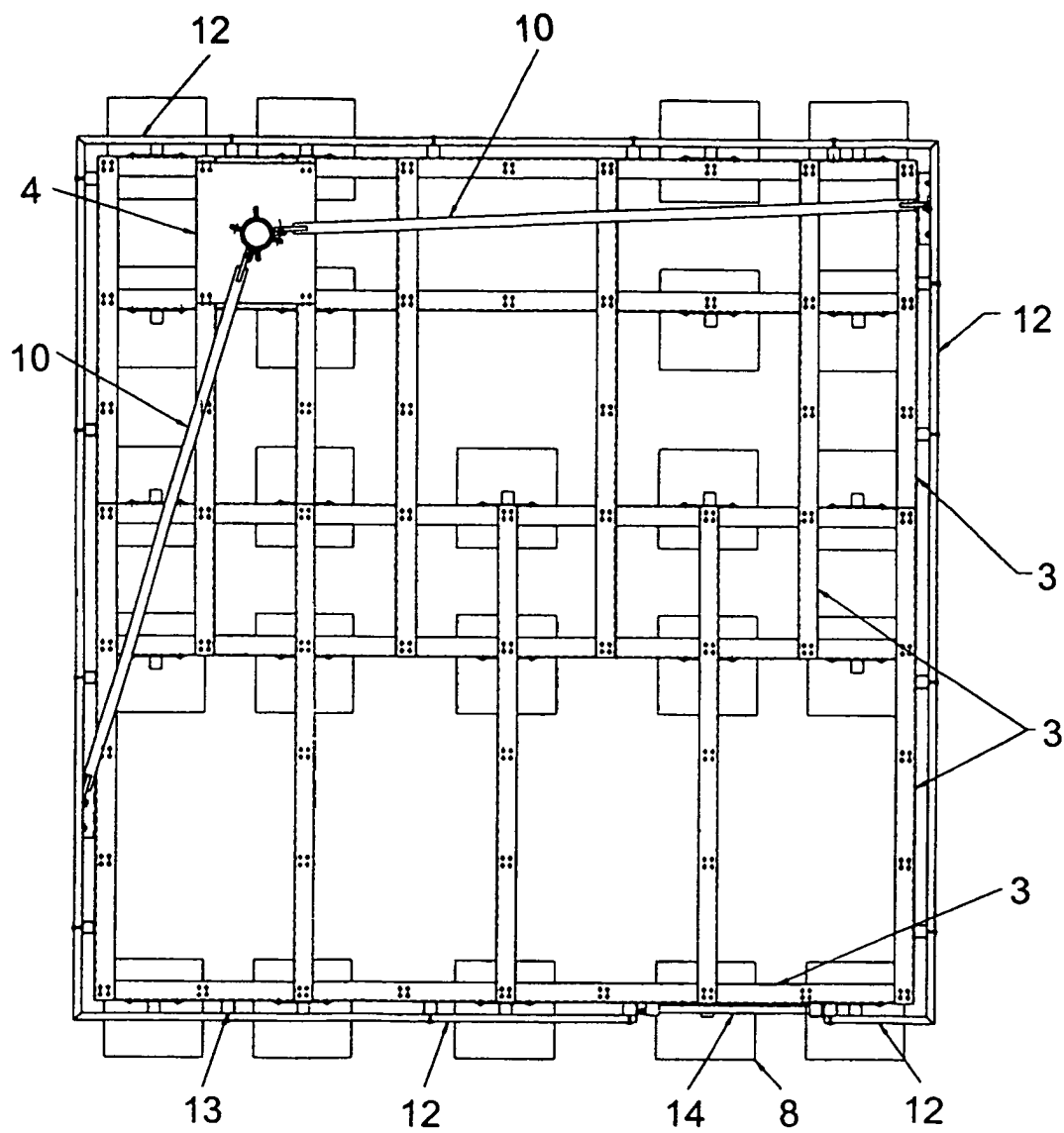
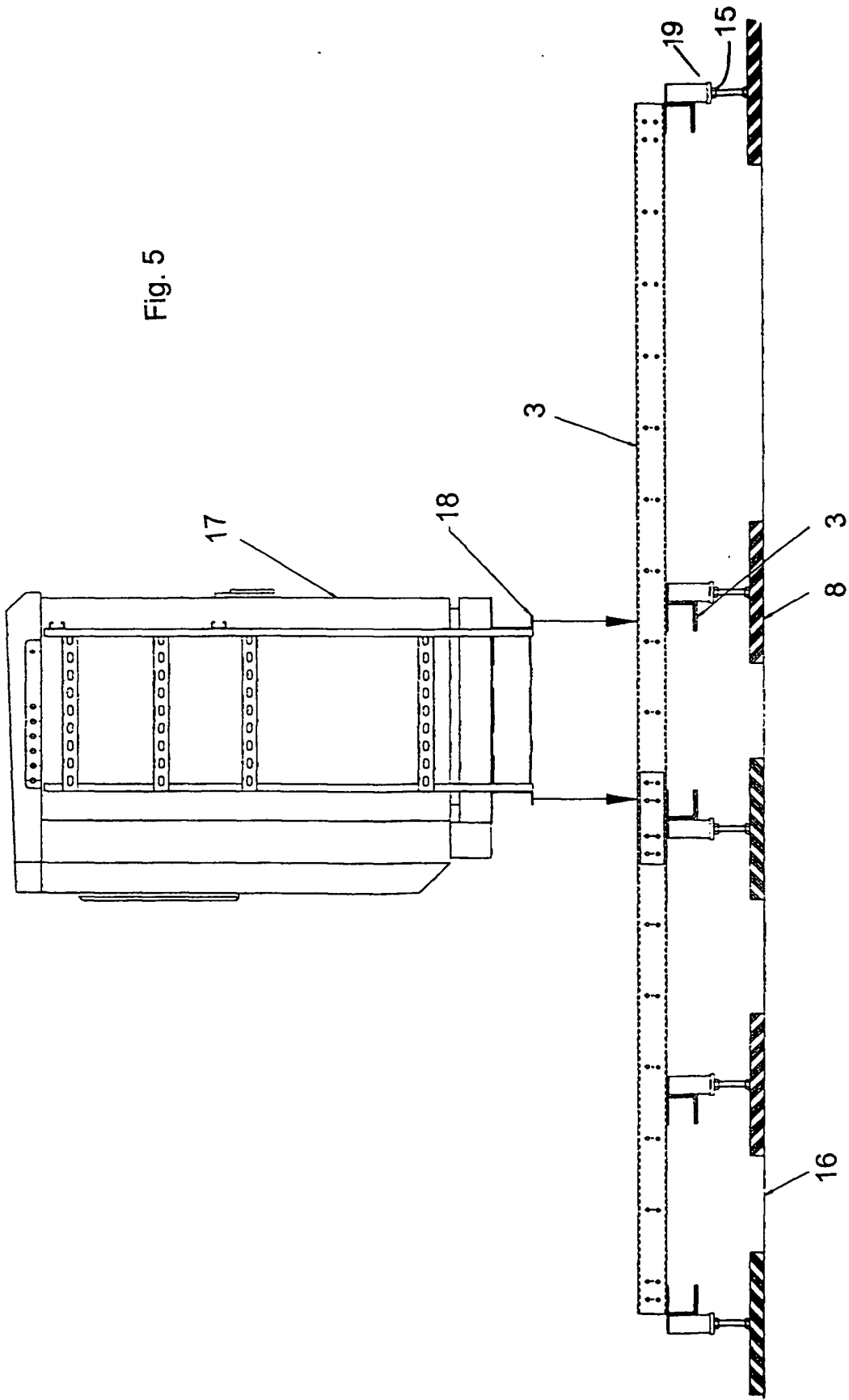


Fig. 4





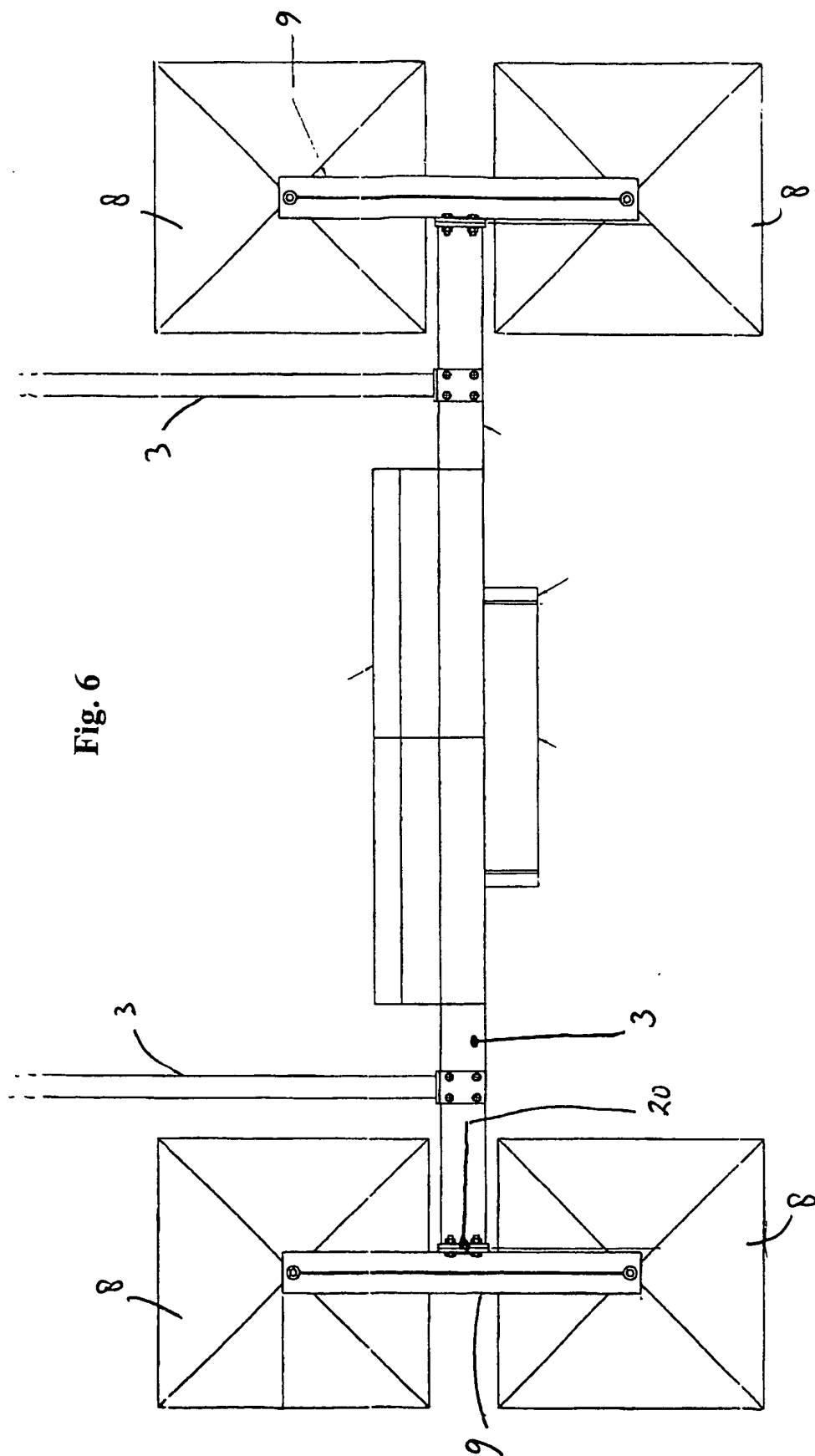


Fig. 6

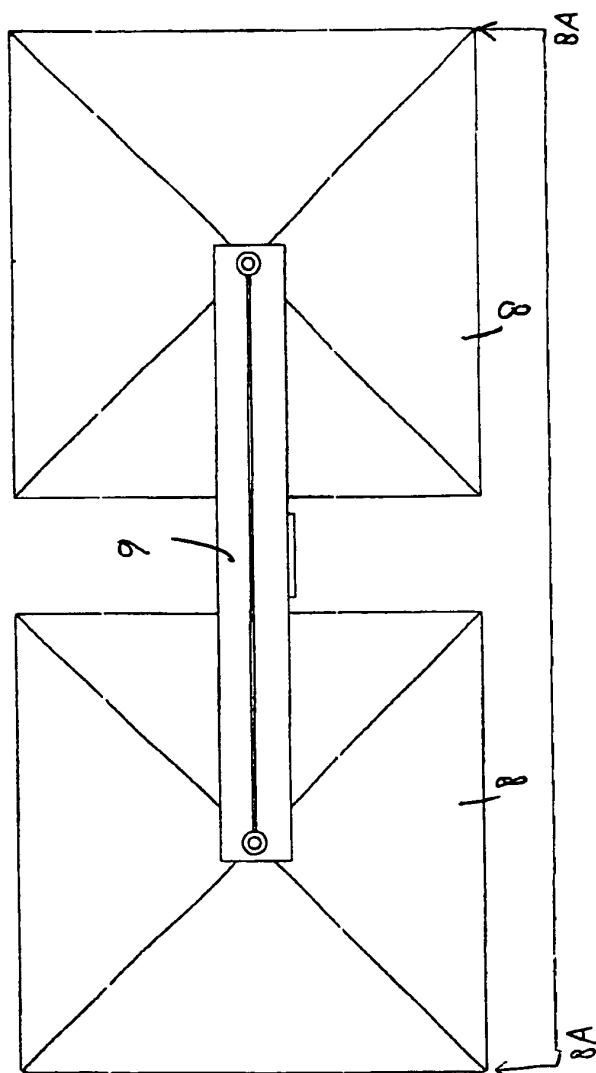


Fig. 7

Fig. 8a

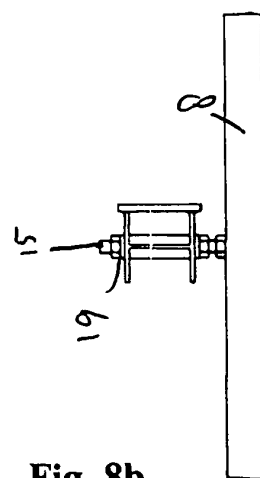
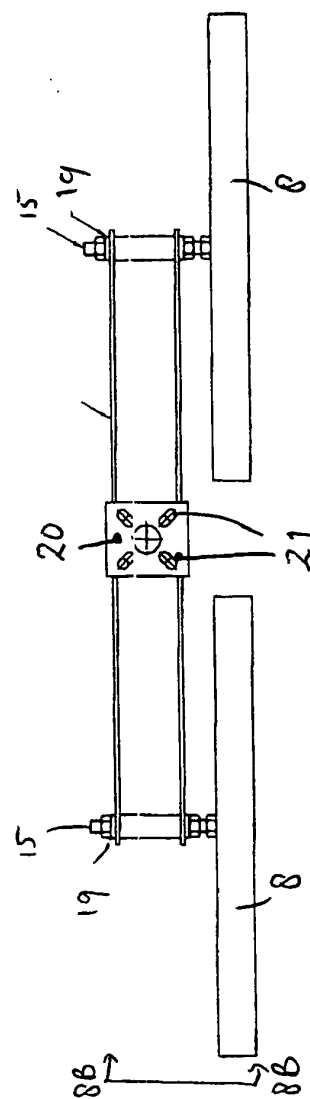


Fig. 8b

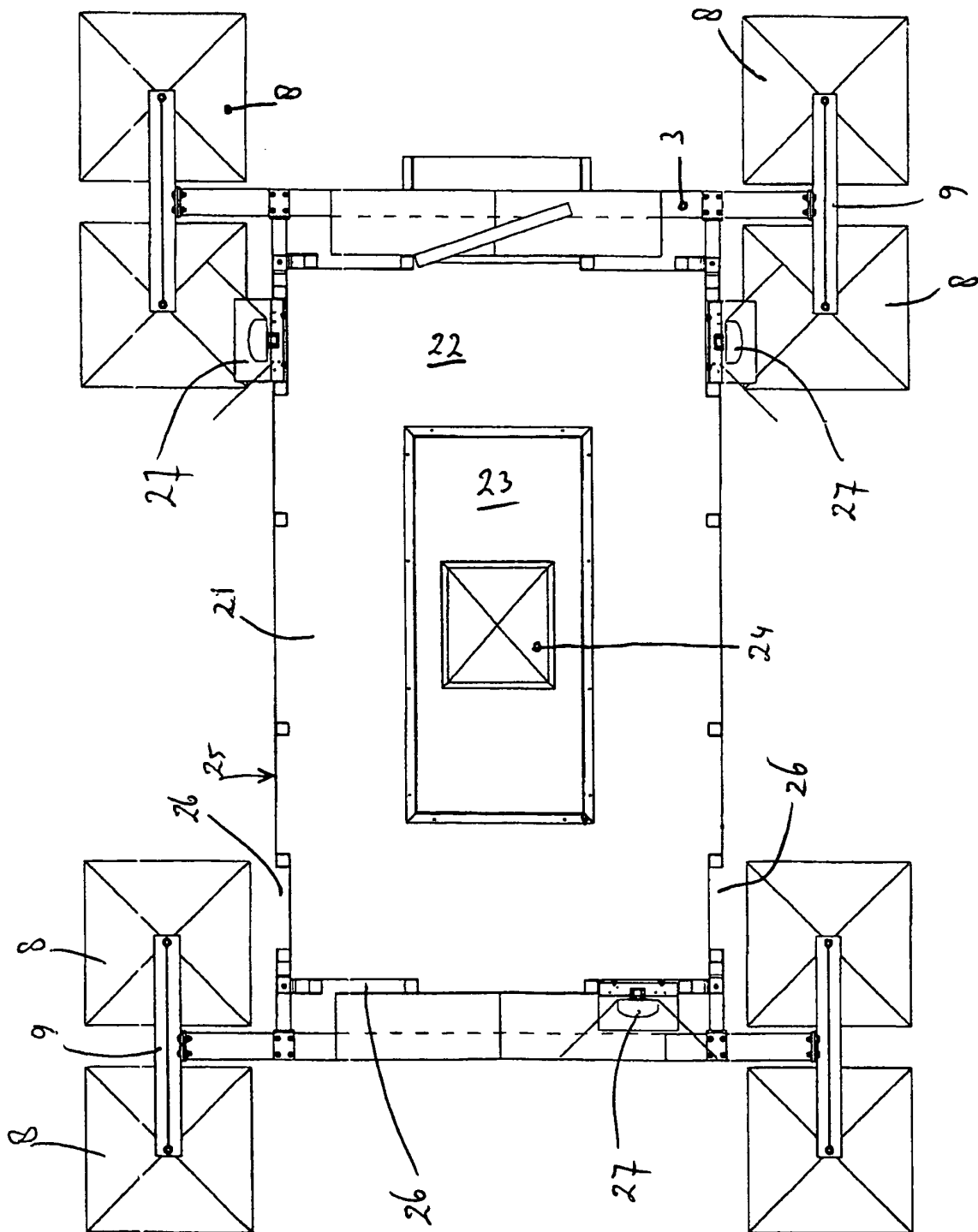


Fig. 9