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Platform type vehicles parking system.

Prefabricated, platform type, vehicles' parking mechanical system, composed of various types of pillars (1) connected with primary (2) and secondary (3) connection beams, to create a basic frame. The pillars consisted of connecting portions at the top and a pedestal at the bottom, so all loads are absorbed by the pedestal and the construction does not need foundation or any other kind of fastening to the ground. In the basic frame's empty space between beams are positioned floor modules (4), with steel frame (34) at the top, so there is no surface resisting to the wind flow and the only loads on the construction are the vertical forces of construction's and vehicles' weight. There is also an inclined ramp for vehicles' passage to the upper level and safety fences all around. The system can be assembled and reassembled in a very short time, so it is suitable to cover temporarily and permanent needs.

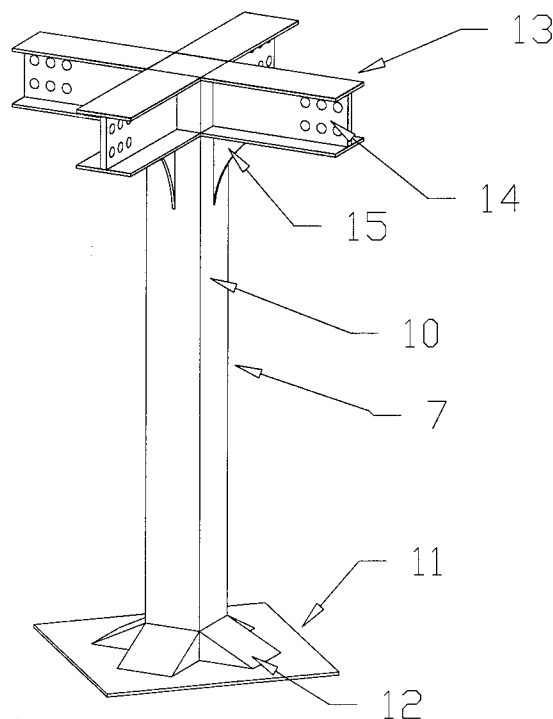


FIGURE 2

This invention relates to a prefabricated, platform type, vehicles' parking mechanical system, pedestal based, for duplicating the parking ability of an area by creating a second parking level over ground level.

The lack of parking places is a well known problem, especially in big cities. There are various solutions to this problem. The most common is to make the best of all available places, constructing under ground or multistoried car parks.

These constructions are permanent and costly, so the available place should be occupied as parking place, for a long time period. When it's desired to make a different use for the place, the construction should be broken down. This break down is costly and the construction becomes useless.

A parking system raising additional economical parking places, assembled fast, not founded in the ground, for short or long time use, reusable and easily transferable, appears to be very useful, in order to make the best of all available places, even for short time periods covering all temporary needs.

Solutions to the above mentioned problem have been proposed. The solution GB-A-2189274 proposes the construction of a second parking level over ground. This level is composed of various pillars, on the top of them there is a special construction from two, three or four portions in order to connect the beams to the pillars and create a frame. There are floor plates placed on frame's upper level, in order to create a floor surface. There is also a metal plate, as pillar's base, connected to the pillar, used for founding the pillars to the ground.

A differentiation to this solution (EP-A-0364414) is based on pillar's construction. The proposed pillars can be adjusted in height, so they can be used in any uneven area, without asking for any ground improvement.

Both proposals use inclined passages in order to connect the upper floor with the ground floor.

The above mentioned proposals use floor plates to create a surface to the upper level. This surface, which does not allow the sunlight to pass through, is air resistant, so, once the construction is used in open air, needs to be founded in the ground. So, these proposals found the construction to the ground.

It's an object of the present invention to provide a modular structure for parking lots, consisted of prefabricated parts which can be disassembled, transported and reassembled in a short time, used for covering temporarily or permanent parking needs. The structure's upper level floor allows the sun rays and the wind to pass through, so the structure does not offer a big surface resisting to the wind flow. In addition that the pillar's base is a

pedestal, the construction's characteristic is that it does not need to be founded in the ground.

The invention is described further with reference to the accompanying drawings, wherein:

5 figure 1 shows a perspective view of the main body of the prefabricated structure.

figure 2 shows a perspective view of the first embodiment of the prefabricated structure shown in figure 1

10 figure 3 shows a perspective view of the second embodiment of the prefabricated structure shown in figure 1

figure 4 shows a perspective view of the third embodiment of the prefabricated structure shown in figure 1

15 figure 5 shows a perspective view of the fourth embodiment of the prefabricated structure shown in figure 1

figure 6 shows a perspective view of the fifth embodiment of the prefabricated structure shown in figure 1

figure 7 shows a perspective view of the sixth and seventh embodiment of the prefabricated structure shown in figure 1

25 figure 8 shows a perspective view of the eighth embodiment of the prefabricated structure shown in figure 1

figure 9 shows a front elevation of a preferred node of the prefabricated structure shown in figure 1

30 figure 10 shows a perspective view of a connection between the fourth and the seventh embodiment shown in figures 5 and 7.

figure 11 shows a perspective view of a connection between the fourth and the fifth embodiment shown in figures 5 and 6.

35 An example of a prefabricated parking place is shown in figure 1. The structure is consisted of various types of vertical pillars (1) connected at the top with main (2) and secondary (3) beams. Main beams used for connections between pillars and secondary beams used for connections between beams. These connections create a main frame. Floor modules (4) are used at the upper floor to cover the empty space between beams and create a floor surface. There is also an inclined ramp (5) used as a passage to the upper floor and the safety fence (6), all around the structure, used for safety reasons. The structure consisted of parallelogram or square cells varying in length and width, which can be constructed each other in order to create bigger cells. So, having this flexibility the construction can cover any surface scheme covering 100% of the surface. In figure 1 there are also arrows showing vehicles' motion at the upper level and dashed border showing all available parking area.

Figures 2 through 5 show the various pillars used in the structure. Each pillar consisted of a hollow steel post (10), with connecting portions at the top and a pedestal at the bottom. The bottom pedestal consisted of a base plate (11) and the reinforcing members (12). The pedestal is designed so, that absorbs all loads and the structure does not need foundation to the ground.

Figure 2 shows a four edges pillar (7). The hollow steel post (10) is of rectangular section and the base plate (11), connected at the bottom end, is rectangular shaped. The base plate (11) is reinforced to it's welding to the steel post (10) by four reinforcing members (12). With this connection, a pedestal is created at the pillar's base suitable to absorb all loads in order to avoid founding the structure to the ground. Four connecting portions (13) are welded at the top end of the steel post reinforced with the reinforcing members (15). The connecting portions (13) are also drilled, so there are connecting holes (14) created, in order to connect the beams to the pillars.

Figure 3 shows a three edges pillar (8). The hollow steel post (10) is of rectangular section and the base plate (16), connected at the bottom end, is triangle shaped. The base plate (16) is reinforced to it's welding to the steel post (10) by three reinforcing members (12). With this connection, a pedestal is created at the pillar's base suitable to absorb all loads in order to avoid founding the structure to the ground. Three connecting portions (13) are welded at the top end of the steel post reinforced with the reinforcing members (15). The connecting portions (13) are also drilled, so there are connecting holes (14) created, in order to connect the beams to the pillars.

Figure 4 shows a two edges pillar (9). The hollow steel post (10) is of rectangular section and the base plate (17), connected at the bottom end, is triangle shaped. The base plate (17) is reinforced to it's welding to the steel post (10) by two reinforcing members (12). With this connection, a pedestal is created at the pillar's base suitable to absorb all loads in order to avoid founding the structure to the ground.

Two connecting portions (13) are welded at the top end of the steel post reinforced with the reinforcing members (15). The connecting portions (13) are also drilled, so there are connecting holes (14) created, in order to connect the beams to the pillars.

Figure 5 shows the first type of connection beams. This connection beam (18) consisted of a steel material having an H shape section (22) having connection holes (23) at the two edges. The connection beam (18) is also supported with special shape metal plates (24) with connection holes (25) welded at the steel material (22).

Figure 6 shows the second type of connection beams. This connection beam (19) consisted of a steel material having an H shape section (22) having connection holes (23) at the two edges. The connection beam (19) is also supported with special shape metal plates (26) with connection holes (27) welded at the steel material (22).

Figure 7 shows the third and fourth type of connection beams. The only difference between third and fourth type is the steel material dimensions. The connection beam (20) is consisted of a steel material having an H shape section (22) with connection holes (23) at the two edges and the connection beam (21) (shorter than connection beam (22)) is consisted also of a steel material having an H shape section (28) with connection holes (29) at the two edges.

Figure 8 shows a floor module (4) consisted of L shaped steel profiles, (30) and (31), welded to create a parallelogram, I shaped profiles, (32) and (33), for reinforcing the module and a steel frame (34). The steel frame (34) if manufacture so that does not offer a great surface to air resistance.

Figure 9 shows, in front elevation, the connection between a pillar (1) and a main beam (18). There are two laps (35) used in the connection, and bolts and nuts (36) penetrating the lap (35) and the connection holes (14) for assembling the beam (18) with the pillar (1).

Figure 10 shows, in perspective view, the connection between the primary connection beam (18) and the secondary connection beam (21). There is a lap (37) used in this connections and bolts and nuts (36) penetrating the lap (37) and the connection holes, (23) and (29) for assembling the beam (18) with the beam (21).

Figure 11 shows, in perspective view, the connection between the connection beam (18) and the connection beam (19). There is a lap (38) used in this connections and bolts and nuts (36) penetrating the lap (38) and the connection holes, (25) and (27) for assembling the beam (18) with the beam (19).

All the above mentioned connections between beams and pillars create a frame. The floor modules used to cover the empty space between beams and create a floor surface. Because that the floor module has a steel frame on the top and not a steel or any other material sheet the module (and furthermore the construction) does not resist to wind flow, so the construction does not need foundation.

Claims

1. A prefabricated, platform type, vehicles' parking mechanical system, pedestal based, composed of rectangular or square modules, con-

sisted of various pillar types, varying in height, with rectangular or triangle base plate, with two, three, or four connecting portions for connecting the various types of connection beams, in order to create a frame, for duplicating the parking ability of an area by creating a second parking level over ground level by positioning floor modules in the empty space between beams, with the characteristic that the floor modules do not use sheets to cover the upper surface, so the construction does not need foundation and can be easily assembled and disassembled to cover temporary or permanent needs.

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2. Prefabricated, platform type vehicles' parking mechanical system, as claimed in claim 1, with various types of pillars, composed of a hollow steel post of rectangular or circular section, of two, three, or four connection portions of H section, with connecting holes and reinforcing members to reinforce the connecting portions to the hollow steel post and with pedestals created at pillar's base, composed of a steel plate reinforced with reinforcing members to absorb all loads in order to avoid system's foundation or any other kind of fastening the construction to the ground.

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3. Prefabricated, platform type vehicle's parking mechanical system, as claimed in claims 1 and 2, with prefabricated steel beams of H section in standard types, varying in height and length, with special kind of laps welded on them ready to connect each other, or to the pillars' connection portions, in order to create the main body frame.

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4. Prefabricated, platform type, vehicle's parking mechanical system, as claimed in claims 1, 2 and 3, with prefabricated floor modules consisted of L and I shaped steel profiles and a steel frame which does not create a closed surface, allowing air and sunlight to pass through, so the only loads are the construction's and vehicles' weight, suitable to cover the empty space between beams, in order to create the upper floor level.

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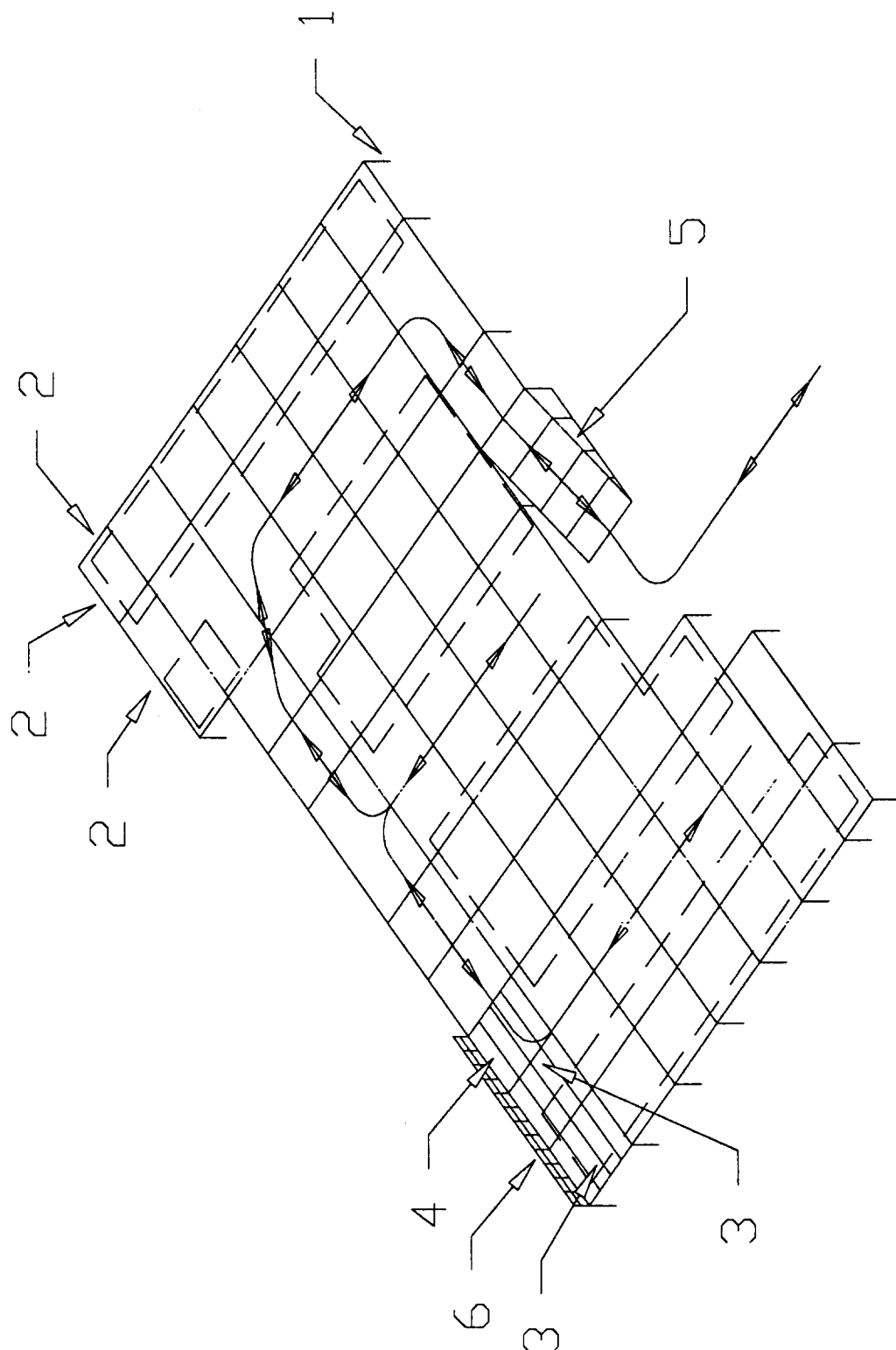


FIGURE 1

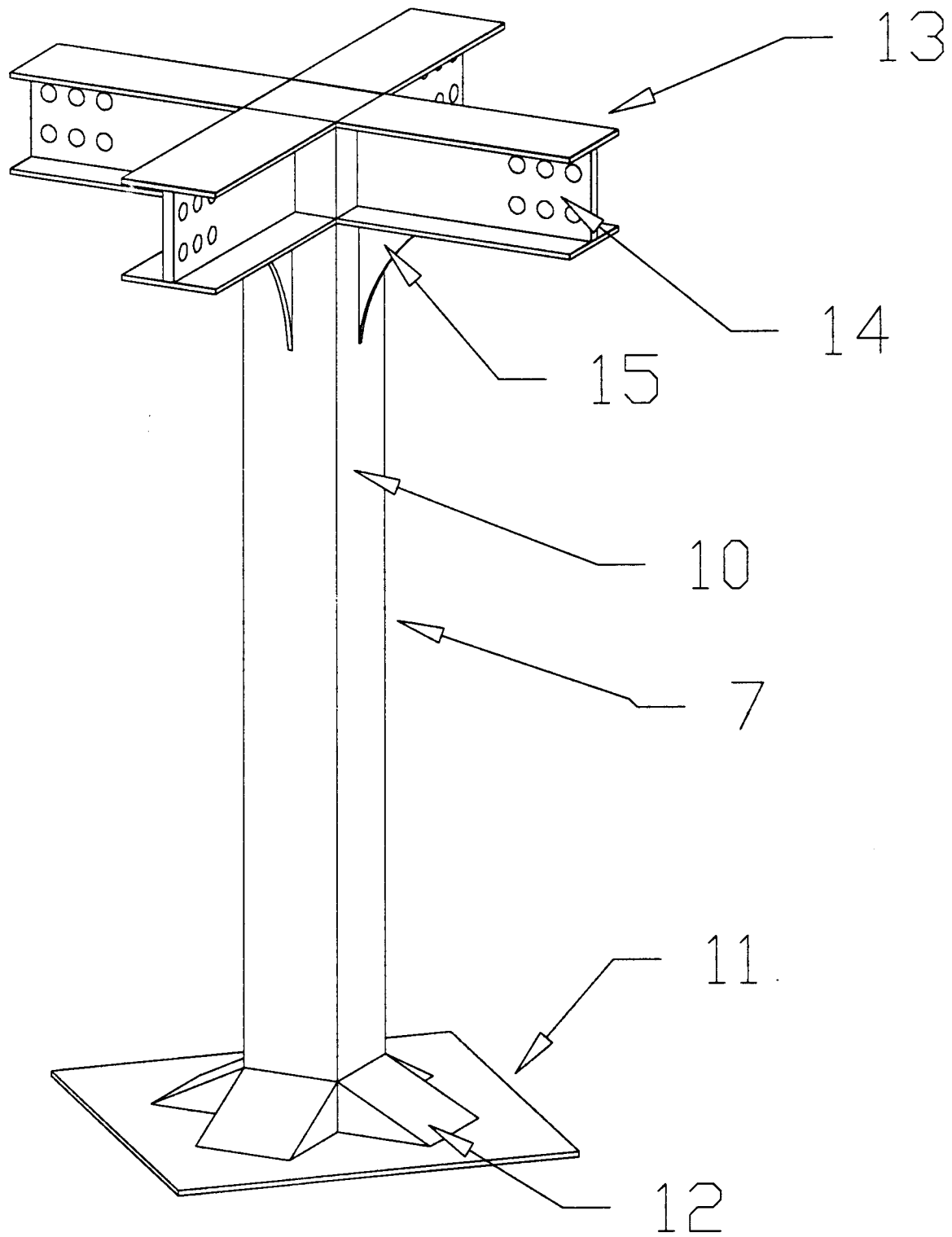


FIGURE 2

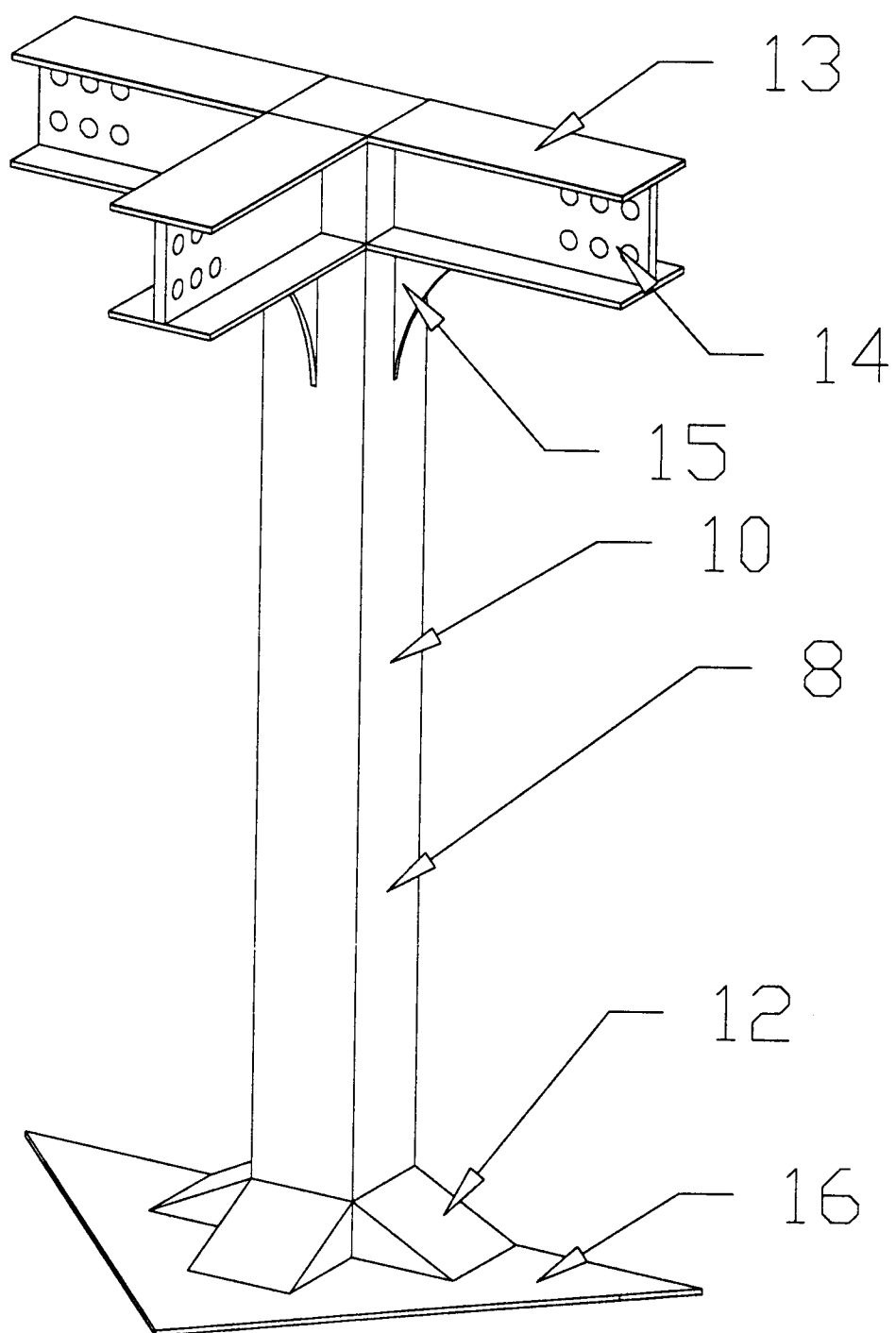


FIGURE 3

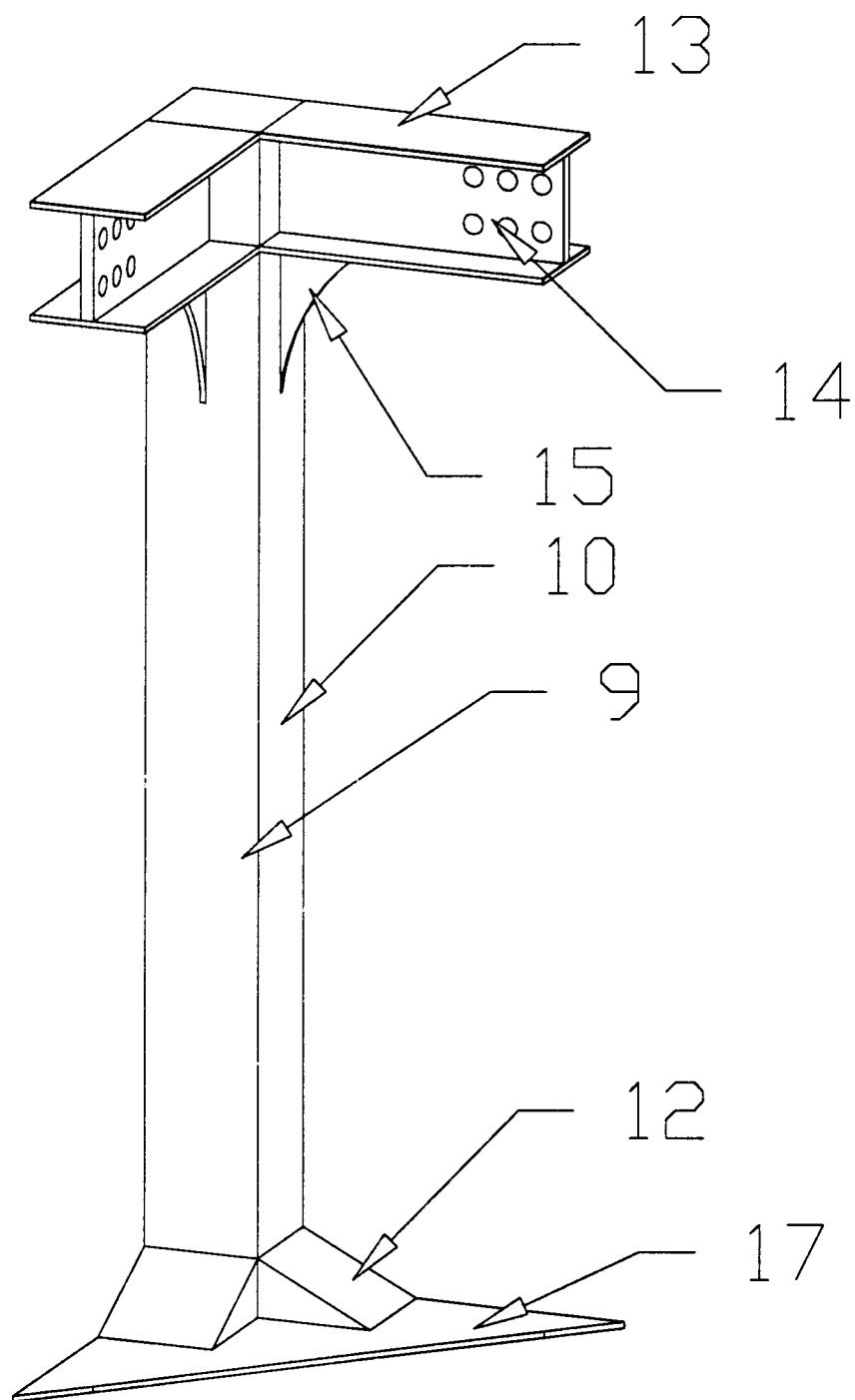


FIGURE 4

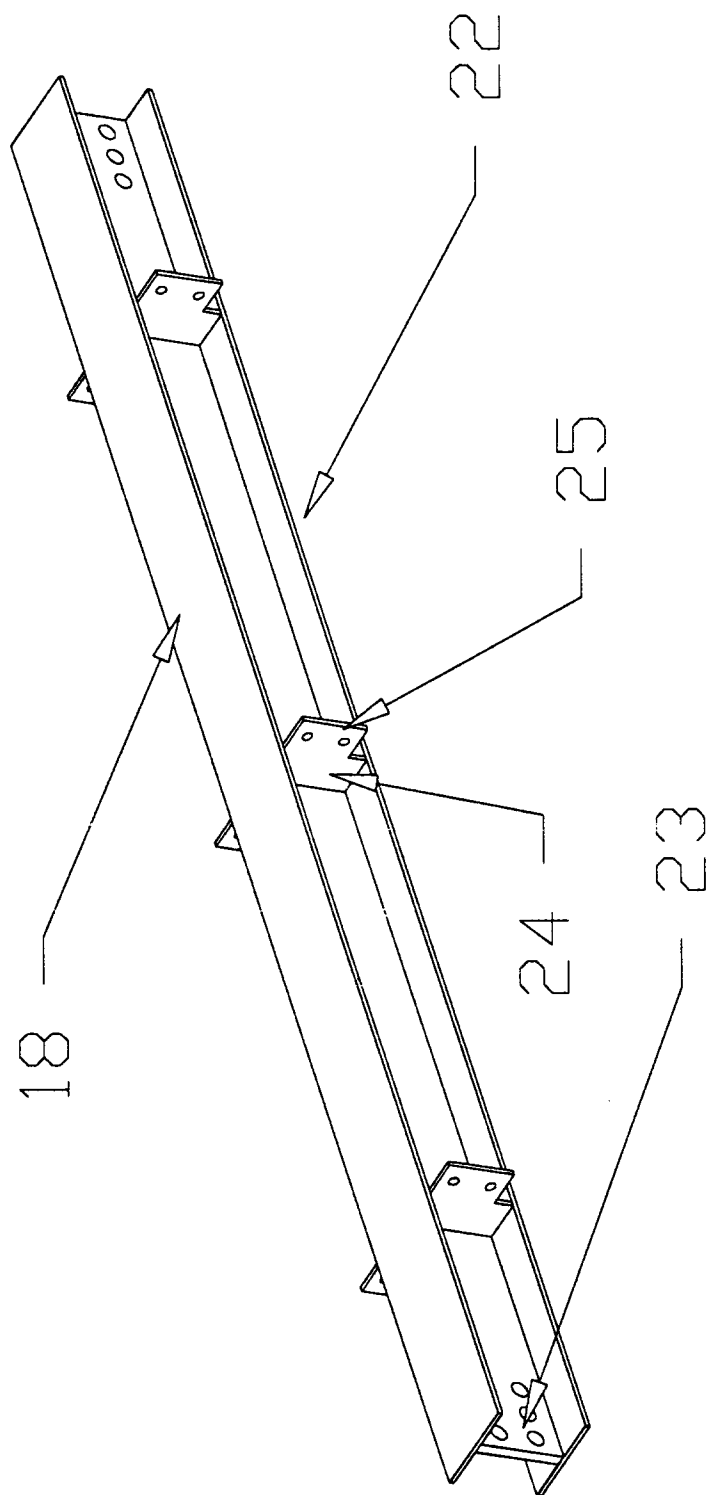


FIGURE 5

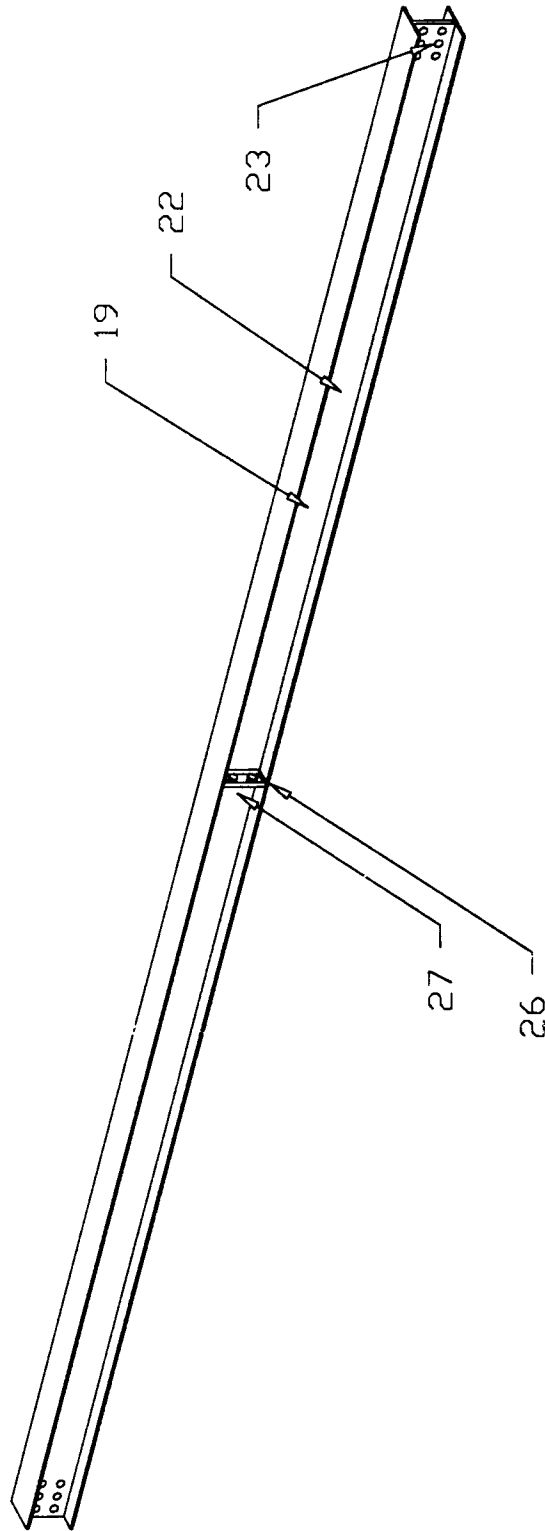


FIGURE 6

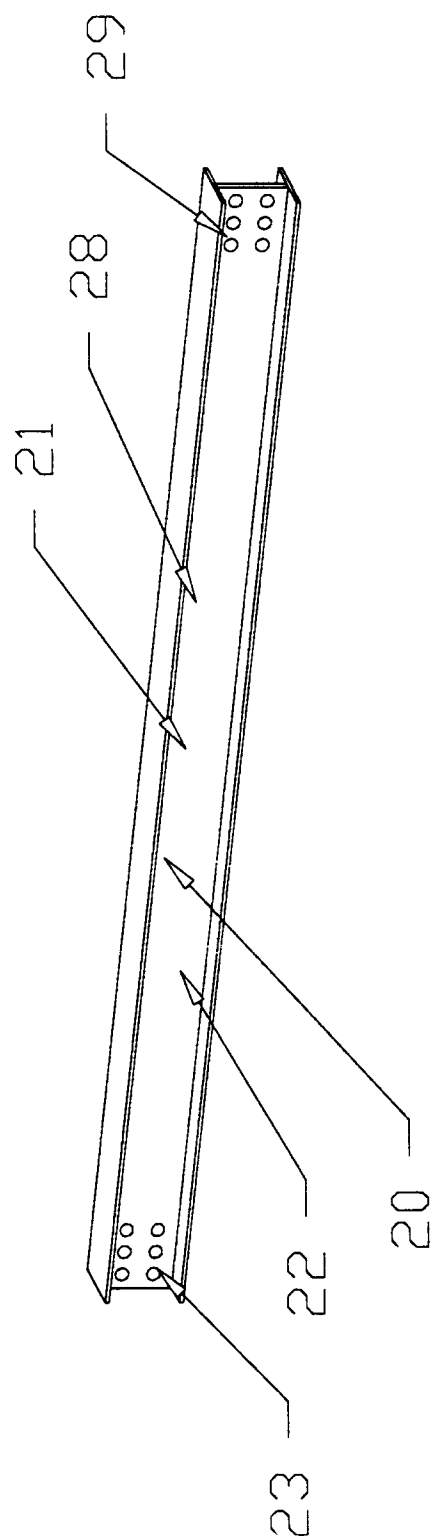


FIGURE 7

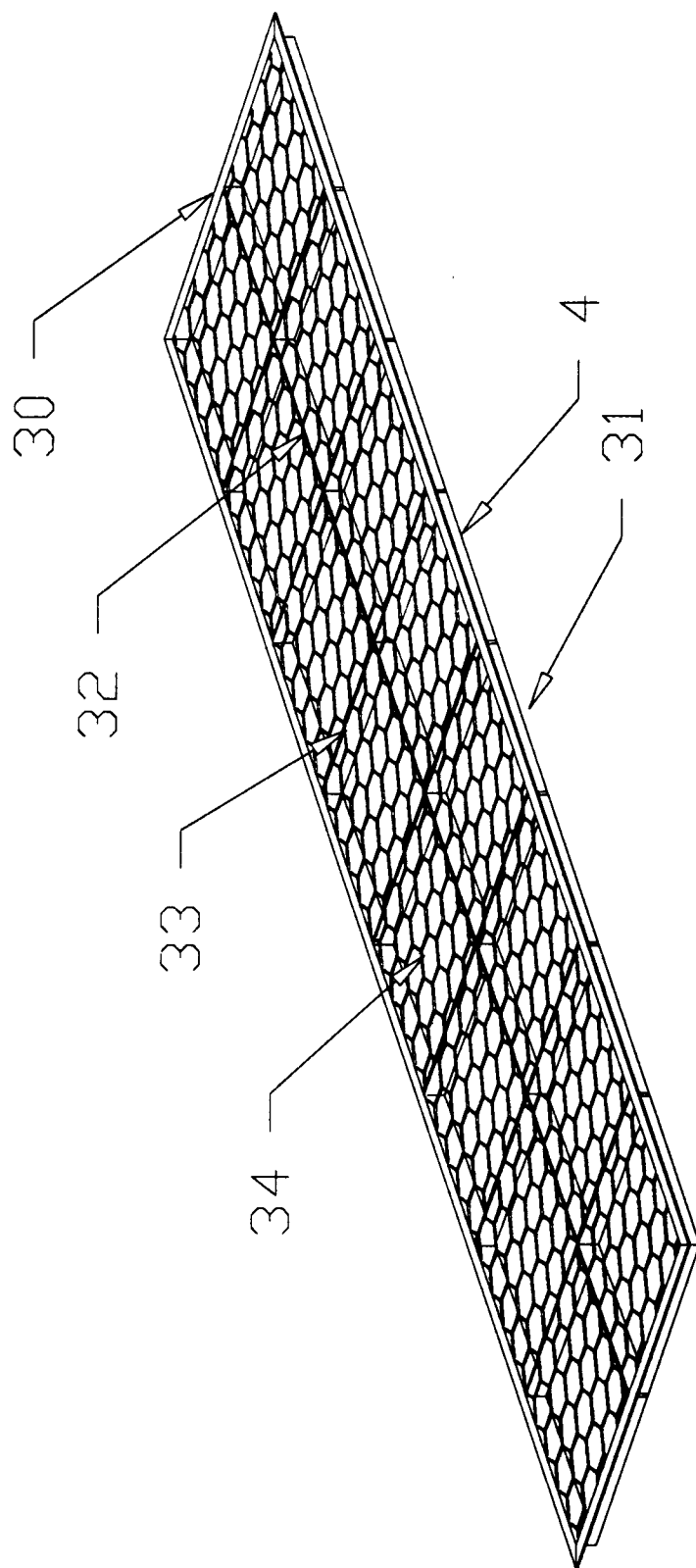


FIGURE 8

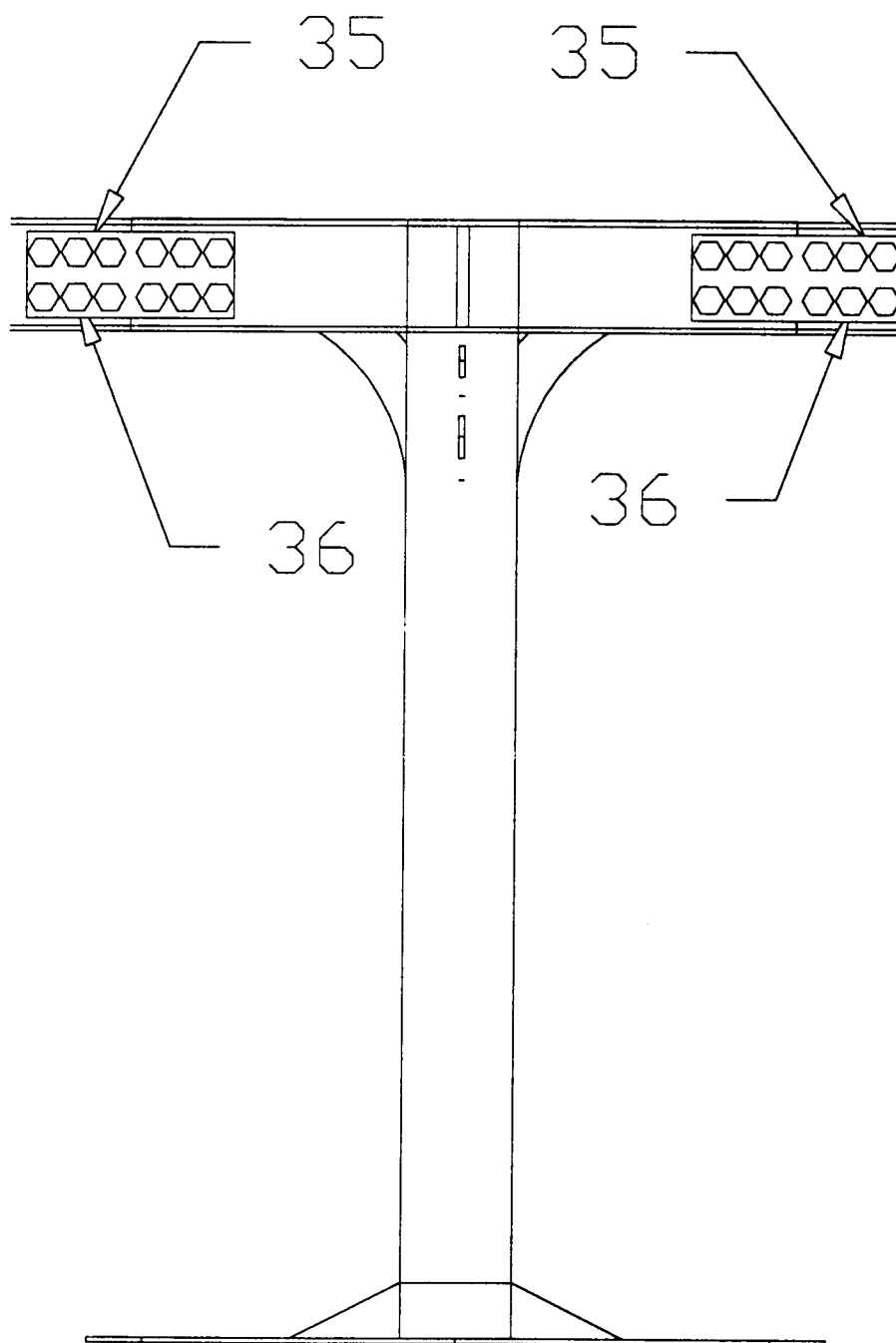


FIGURE 9

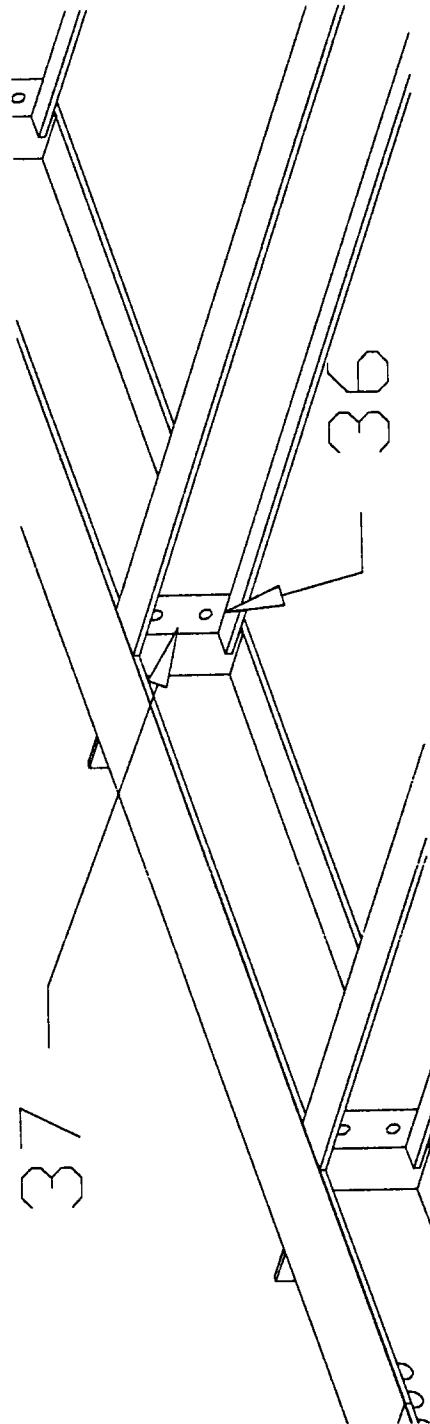


FIGURE 10

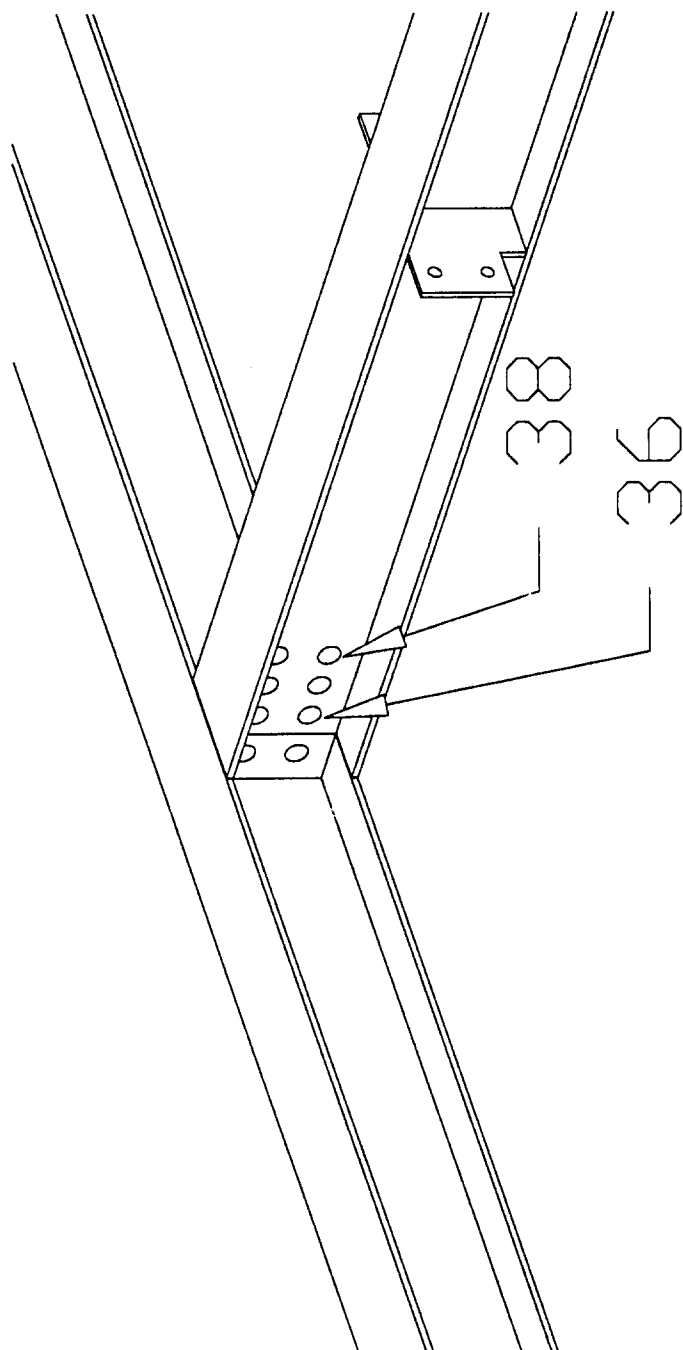


FIGURE 11



European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 92 60 0007

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	BETRIEBSTECHNIK vol. 24, no. 1, February 1983, GRÄFELING, DEUTSCHLAND JÄGER 'WENN ES SCHMIERIG WIRD UND KLEBRIG' * page 40 * * page 42 *	1-3	E04H6/10
D, Y	---	---	---
A	GB-A-2 189 274 (TSUGARUSOKEN CO. LTD.) * page 1, line 1 - page 3, line 130 * * page 4, line 125 - page 5, line 124; figures 1-7, 11 *	1-3 4	
A	---	---	
A	WO-A-8 605 228 (PUGH OR BOSTICK) * page 9, paragraph 3; figures 1, 8 *	4	
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A	EP-A-0 364 414 (CENTRO PROGETTAZIONI COORDINATE S.R.L.) * column 1, line 1 - column 4, line 8 * * column 4, line 50 - column 6, line 14 * * column 7, line 22 - line 57 * * column 8, line 18 - line 22 * * column 9, line 1 - column 10, line 21; figures *	1-3 4	
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A	DE-U-8 515 956 (STEEB) * page 6 - page 9; figures 1, 4 *	1, 2, 4	E04H E04F E04C
A	---	---	
A	US-A-2 009 384 (BRETT) * column 1, line 34 - line 49; figures 1-5 *	1, 3	
A	---	---	
A	GB-A-2 211 831 (YOUNG) -----		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 02 AUGUST 1993	Examiner FORDHAM A.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document			