(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 441 900 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
18.04.2012 Bulletin 2012/16

(51) Int Cl.:
E04G 3/28 *(2006.01)*

(21) Application number: **11008227.8**

(22) Date of filing: **12.10.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **14.10.2010 KR 20100100348**

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(54) Cage for construction work with extendable function

(57) There is provided a cage for construction work with an extendable function and, more particularly, a cage for construction work with an extendable function, which is formed so as to have both extendibility and safety by allowing for lateral extension of a cage used in finish work for the outer wall of a structure when constructing the structure and integrally forming a guard net for preventing falls on an upper part thereof.

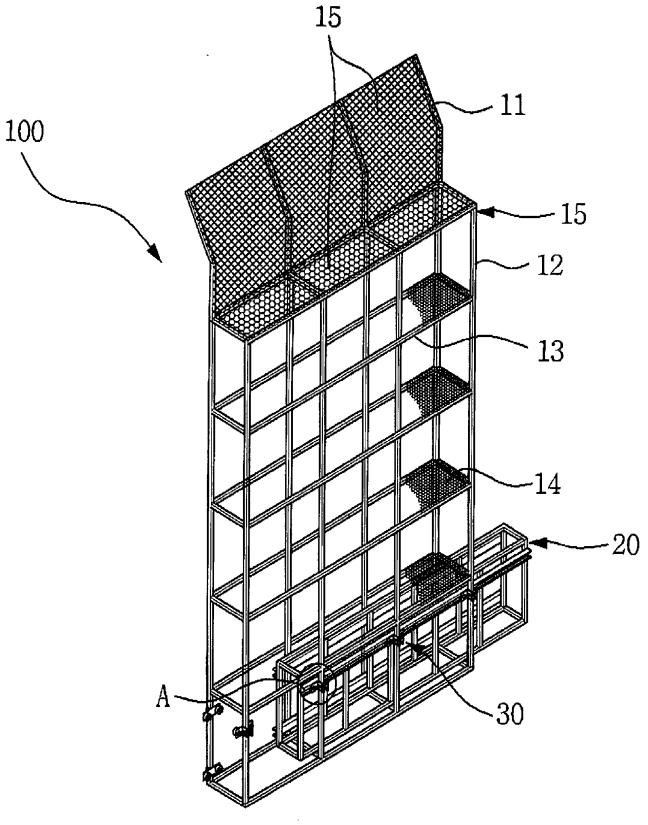

Fig. 1

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates, in general, to a cage for construction work with an extendable function and, more particularly, to a cage for construction work with an extendable function, which is formed so as to have both extendibility and safety by allowing for lateral extension of a cage used in finish work for the outer wall of a structure when constructing the structure and integrally forming a guard net for preventing falls from an upper part thereof.

Description of the Related Art

[0002] Recently, it is a general trend that, in regions such as cities in which the density of the structures is high and the land is also expensive, the demand for increasing the number of floors of the structure is sharply increasing so that the land can be effectively used.

[0003] As such, as the number of floors of the structures increases, there is a risk that various construction materials, working tools, dust, etc. can fall down from the interior of the structure to the outside thereof during the construction work. Accordingly, in order to prevent human damage, property damage and environmental pollution due to such a sudden falling or dropping trouble, various type of safety guard nets are already used in the art.

[0004] In using such a safety guard net for construction work, a method for binding a tent or a dust proof net to the outer side of the framework of the structure or installing a frame on the outer side and then fixing a dust proof net to the frame, etc. is mainly adapted.

[0005] Furthermore, as is well known in the art, in construction methods for the large scale structures such as apartments, buildings or hospitals, low regions (first to third floors) are firstly constructed using a normal mould, a cage for the mould is mounted on the structures using a tower crane, and then concrete is poured to construct the large scale structure while moving the cage upward.

[0006] And then, in order to improve the urban view by variously modifying the outer wall of the structures and to receive effectively natural lighting, only the frame and slab works which erect the framework of the structures are done using concrete, and the other parts of the structures are separately constructed using exterior finishing material such glass for the finishing work.

[0007] As an example of the finishing work of the structures mentioned above, a structure construction method (Korea Patent No.895614) invented by the present applicant is disclosed. This structure construction method includes a construction method (SWC; Safety Working Cage) in which a process for constructing the framework of the structure by pouring concrete and a process for finishing the outer wall of the structure are simultaneously performed at intervals of two floors or three floors. Equipment capable of protecting workers doing finishing work on the lower floors is required by the above construction method.

[0008] Further, the cage used for finishing work can be obtained by modifying the cage for pouring concrete. Therefore, there is a problem that the working space is limited and thus not enough working space can be secured for the worker doing the finishing work to work smoothly.

[0009] Further, since there is no safety facility to provide adequate protection against falling things and dust generated from the concrete pouring work in the upper side, the worker working on the lower floors is likely to be damaged by the falling things.

[0010] Recently, various types of structures incorporating a special design have been constructed. For this reason, when constructing the building having the special design at irregular intervals of several floors, a cage for finishing work which can rapidly respond to special design needs is strongly required.

[0011] The present invention is developed in consideration of the problems associated with the related art. An object of the present invention is to provide a cage for construction work with an extendable function, which can rapidly respond to the special design of the structure and, in particular, can rapidly respond to the grooves or protrusions on the outer wall of the structures.

[0012] Further, another object of the present invention is to provide a cage for construction work with an expendable function, which is capable of improving the work environment, allowing the finishing work to be safer and preventing the worker or the workers' tools from falling down, by making a walking plate to be extendible in the cage used for the finishing work such as on a curtain wall of the structures.

[0013] In addition, yet another object of the present invention is to provide a cage for construction work with an extendable function, which is capable of preventing the worker or the workers' tools from falling down a short distance and that can minimize human damage and property damage, by integrally forming a vertical guard net on the upper part of a cage for finish work.

[0014] Further, another object of the present invention is to provide a cage for construction work with an extendable function, which is capable of maximizing the work efficiency by responding suitably to the special design of the structures and being able to undergo self-modification. Also, the cage can reduce the number of cages and material cost by making the cage extendible in a lateral direction, and save on costs related to safety facilities in the work field.

SUMMARY OF THE INVENTION

[0015] In order to achieve the above object, according to one aspect of the present invention, there is provided

a cage for construction work with an extendible function. The cage includes a frame formed by connecting a vertical bar and a horizontal bar to each other and integrally formed at an upper side thereof with a frame for vertical guard net, a walk plate provided on the upper surface of the horizontal bar, a guard net assembled to the upper and lower surfaces of the frame for the vertical guard net, and an extending frame formed at the lower part of the frame. The extending frame is assembled to the frame so as to move in lateral direction by a slide means.

[0016] According to another aspect of the present invention, an auxiliary walk plate rotating through a hinge and a wire regulating the rotational radius of the auxiliary walk plate are further provided on one side of the extending frame. Thus, the auxiliary walk plate has an extendable function.

[0017] According to yet another aspect of the present invention, the slide means includes a fixing body and a guide rail. The fixing body is assembled to the vertical bar through a bolt insertion hole and includes a rolling wheel at the inner surface thereof. The guide rail surrounds the outer surface of the rolling wheel in "C" shaped and is assembled to a position corresponding to the fixing body outside of the extending frame.

[0018] According to another aspect of the present invention, a set of three fixing bodies are assembled to the outer surface of a pair of corresponding horizontal bars.

[0019] According to yet another aspect of the present invention, the slide means includes an H-shaped guide rail assembled to the lower surface of the horizontal bar and a moving body assembled to the upper surface of the extending frame. The upper wheel of the moving body is slidably assembled to the guide rail while making close contact therewith.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description when taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view illustrating a cage for construction work with an extendable function, according to the present invention;

FIG. 2 is a perspective view illustrating an extending frame of a cage for construction work with an extendable function, according to the present invention;

FIG. 3 is a partial magnified perspective view illustrating the frame part of a cage for construction work with an extendable function, according to the present invention;

FIG. 4 is a magnified view illustrating the "A" portion shown in FIG. 1;

FIG. 5 is a magnified side view illustrating a slide means of a cage for construction work with an extendable function, according to the present invention;

FIG. 6 is a side view illustrating another example of the slide means in a cage for construction work with an extendable function, according to the present invention; and

FIG. 7 is a front view illustrating an application example of the cage for construction work with an extendable function, according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0021] Hereinafter, preferred embodiments of the present invention will be described in details with reference to the accompanying drawings. The embodiments of the present invention can be changed in various forms and thus the present invention is not limited to the embodiments disclosed hereinafter.

[0022] FIG. 1 is a perspective view illustrating a cage for construction work with an extendable function, according to the present invention.

[0023] As shown in FIG. 1, a cage 100 [hereinafter, referred to as "cage"] for construction work with an extendable function, according to the present invention, mainly includes a frame 10, an extending frame 20 and a slide means 30. And, a vertical protection frame 11 is integrally formed with the upper part of the frame 10. The extending frame 20 is movably assembled to the lower part of the frame 10. The slide means 30 can stably move the extending frame away from the frame 10 in lateral direction.

[0024] The frame 10 has a box form of a rectangular parallelepiped shape formed by connecting a vertical bar 12, a horizontal bar 13 and a connecting bar 14 to each other, and a walk plate 15 is assembled to the upper surface of the connecting bar 14, so that workers can easily perform work.

[0025] That is, one box-shaped frame 10 is formed by connecting the vertical bar 12 and the horizontal bar 12 to form a flat plate and connecting a pair of the flat plates to each other by the connecting bar 14.

[0026] Also, the upper part of the frame 10 is integrally formed with a frame 11 for vertical guard net bent toward the outside of the structure. And a guard net 16 is assembled to the frame 11 and the uppermost horizontal bar 13 of the frame 10, so that a safety facility to prevent dropping things from falling is formed.

[0027] Further, an extending frame 20 capable of moving in lateral direction by the slide means 30 is formed at the lower part of the frame 10.

[0028] As shown in FIG. 2, in the extending frame 20, a horizontal bar 21, a vertical bar 22 and a connecting bar 23 are connected to each other so as to form a box form. A walk plate 24 is formed at the bottom surface of the extending frame. And, one or more guide rail 25 on outer side and an auxiliary walk plate on one side are rotatably assembled to each other by a hinge 28.

[0029] That is, the extending frame 20 in one box form

is formed, by connecting the horizontal bar 21 and the vertical bar 22 to obtain two plates and then connecting two plates to each other by the connecting bar 23, as in the frame 10.

[0030] In addition, the rotation range of the auxiliary walk plate 26 is regulated by a wire 27 connected to the extending frame 20.

[0031] Next, the process for sliding the extending frame 20 away from the frame 10 will be explained in detail, by referring to FIGS. 3 and 4.

[0032] As shown in FIGS. 3 and 4, the slide means 30 is constituted by slidably connecting the rolling wheels 32 of several fixing bodies 31 formed at the lower part of the frame 10 and a guide rail 25 assembled to the outside of the extending frame 20.

[0033] That is, several fixing bodies 31 are integrally bolted to the lower part of the vertical bar 12 of the frame 10. Preferably, two fixing bodies are connected to the upper side thereof and one fixing body is connected to the lower side thereof. By doing so, two fixing bodies in the upper side can allow the extending frame 20 to move smoothly in the lateral direction and the one fixing body in the lower side can prevent the extending frame from being shaken, when the extending frame is moved.

[0034] Further, by providing the fixing body 31 only on one place in the lower side, it is possible to prevent the worker's legs from being interfered with by the rail when the auxiliary walk plate 26 is extended. The fixing body 31 is assembled to the vertical bar 12 of the frame 10 having the box form as mentioned above, and then the extending frame 20 is slidably fitted and assembled to the fixing body from one side thereof. This becomes possible by inserting the rolling wheel 32 of the fixing body 31 into the guide rail 25 formed at the outer peripheral surface of the extending frame 20 for allowing the sliding movement the extending frame 20.

[0035] In addition, several bolt inserting holes 33 are formed at the back surface of the fixing body 31 so as to surround or penetrate the vertical bar 12 and to assemble firmly the fixing body 31.

[0036] On the other hand, it is preferred that the guide rail 24 is formed at one side thereof with a separation prevention means (not shown) such as a fixing pin or engaging jaw capable of controlling the lateral movement in order not to be separated from the frame following excessive movement.

[0037] FIG. 6 is a side view illustrating another example of the slide means in a cage for construction work with an extendable function, according to the present invention.

[0038] As shown in figures, a guide rail 41 in a form of "H" is assembled to the lower surface of the horizontal bar 14, and the rolling wheel 42a of the moving body 42 assembled to the upper surface of the extending frame 20 is closely assembled to the outer peripheral surface of the guide rail 41.

[0039] The slide means 40 as mentioned above can prevent the front and rear parts of the extending frame 20 from being clogged and thus provide a better work environment.

[0040] FIG. 7 is a front view illustrating an application example of the cage for construction work with an extendable function, according to the present invention. As is apparent from FIG. 7, the finish work for the space between adjacent cages can be performed with no difficulty, by connecting the extending frame into a space between two cages.

[0041] That is, according to the above embodiment, it is possible to respond rapidly to the special designs of the structures such as protrusions, when the structures are constructed. Accordingly, various types of the structures can be smoothly constructed and additional costs stemming from changing the form of the structures is not generated.

[0042] Further, it is possible to save the installation cost by reducing the number of the cages used when the structures are constructed. And it is also possible to save costs and strengthen the safety facility by assigning the function of a safety guard net to the cage for finish work.

[0043] As apparent from the above description, the cage for construction work according to the present invention provides advantages in that, it is possible to provide a guard net at the safest height and at a location capable of preventing the danger of falls by forming the vertical guard net integrally with the upper part of the cage for finish work, so that the falling of the worker or the workers' tools can be prevented. In particular, it is possible to prevent the worker from falling down and thus to minimize the human harm.

[0044] Further, the cage for construction work according to the present invention provides advantages in that, since the cage includes the extending frame formed at the lower part of the cage and the auxiliary walk plate spread auxiliary for increasing the rotating radius thereof, workers can safely perform the finish work in a state of a maximum amount of work space being secured.

[0045] In addition, the cage for construction work according to the present invention provides advantages in that, since the cage includes the extending frame, the spaces between adjacent cages, can be easily shortened and lengthened by protruding parts of the structure. Accordingly, the work efficiency can be maximized, the number of the cages can be reduced and construction work for the structures having special design needs can be safely performed.

[0046] Although a preferred embodiment of the present invention has been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

Claims

1. A cage for construction work with an extendable

function comprising;
a frame (10) formed by connecting a vertical bar (12) and a horizontal bar (13) to each other and integrally formed at an upper side thereof with a frame (11) for vertical guard net;
a walk plate (14) provided on the upper surface of the horizontal bar (13);
a guard net (15) assembled to the upper and lower surfaces of the frame (11) for the vertical guard net; and
an extending frame (20) formed at the lower part of the frame (10) such that the extending frame is able to move in a lateral direction by a slide means (30, 40), the extending frame having a walk plate (23) on the lower surface thereof,
wherein the extending frame is movable in a lateral direction by means of the slide means so that a working space is increased, thereby maximizing the work efficiency.

2. The cage for construction work with an expendable function according to claim 1, wherein
the extending frame (20) is further provided, in one side thereof, with an auxiliary walk plate (25) rotating through a hinge (26), and a wire (27) regulating the rotational radius of the auxiliary walk plate (25).

3. The cage for construction work with an extendable function according to claim 1, wherein
the slide means (30) includes:

a fixing body (31) assembled to the vertical bar (13) through a bolt insertion hole (33) and having a rolling wheel (32) at the inner surface thereof; and
a guide rail (24) slidably surrounding the outer surface of the rolling wheel (32) in the form of "C" shape and assembled to a position corresponding to the fixing body (31) outside the extending frame (20).

4. The cage for construction work with an extendable function according to claim 3, wherein
the fixing body (31) is provided in a set of three bodies so that the set of three fixing bodies are assembled to the outer surface of a pair of corresponding horizontal bars (12).

5. The cage for construction work with an extendable function according to claim 1, wherein
the slide means (40) includes:

a H-shaped guide rail (41) assembled to the lower surface of the horizontal bar (13); and
a moving body (42) assembled to the upper surface of the extending frame (20) such that an upper wheel (42a) thereof slides along the guide rail (41) while making close contact therewith.

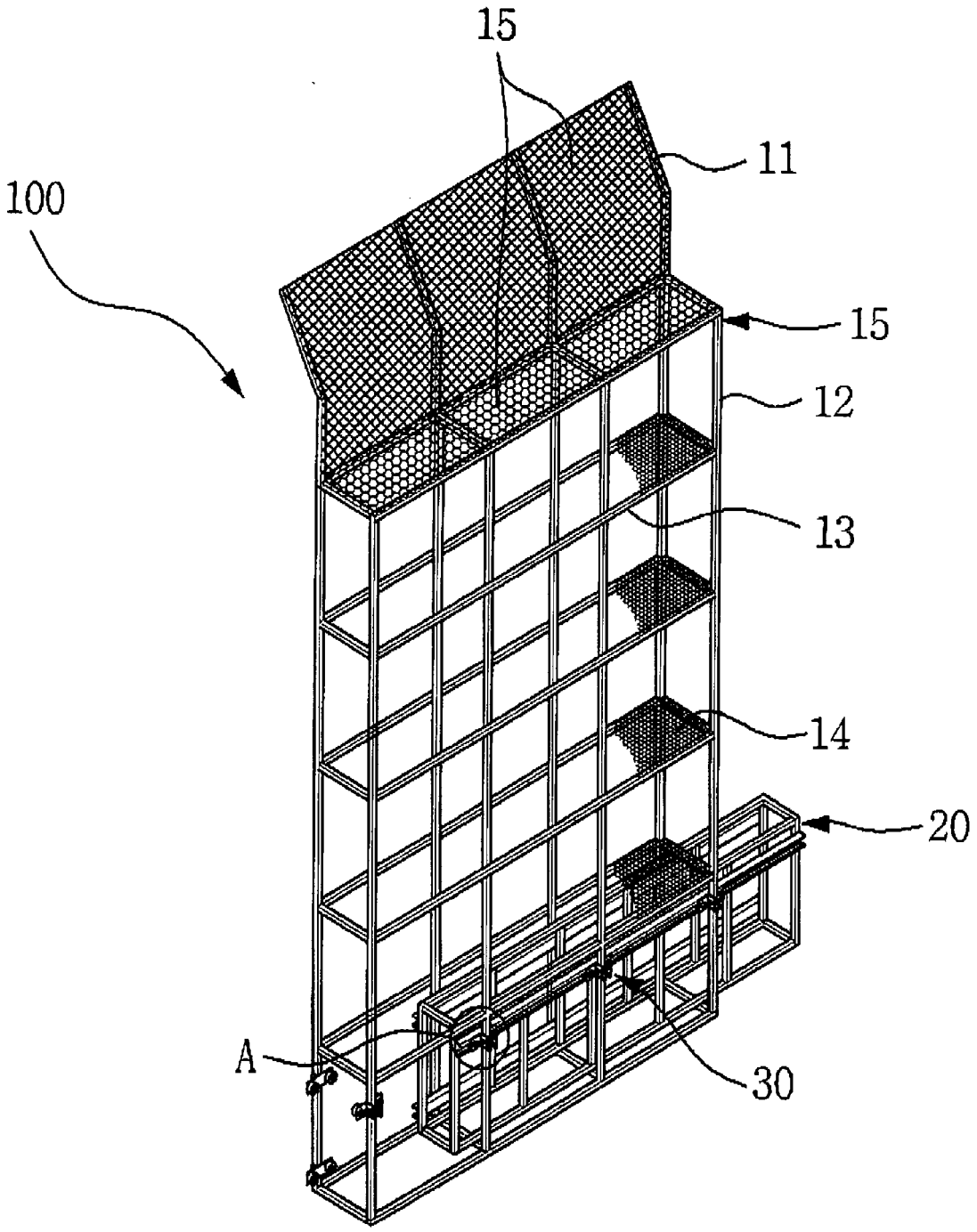

Fig. 1

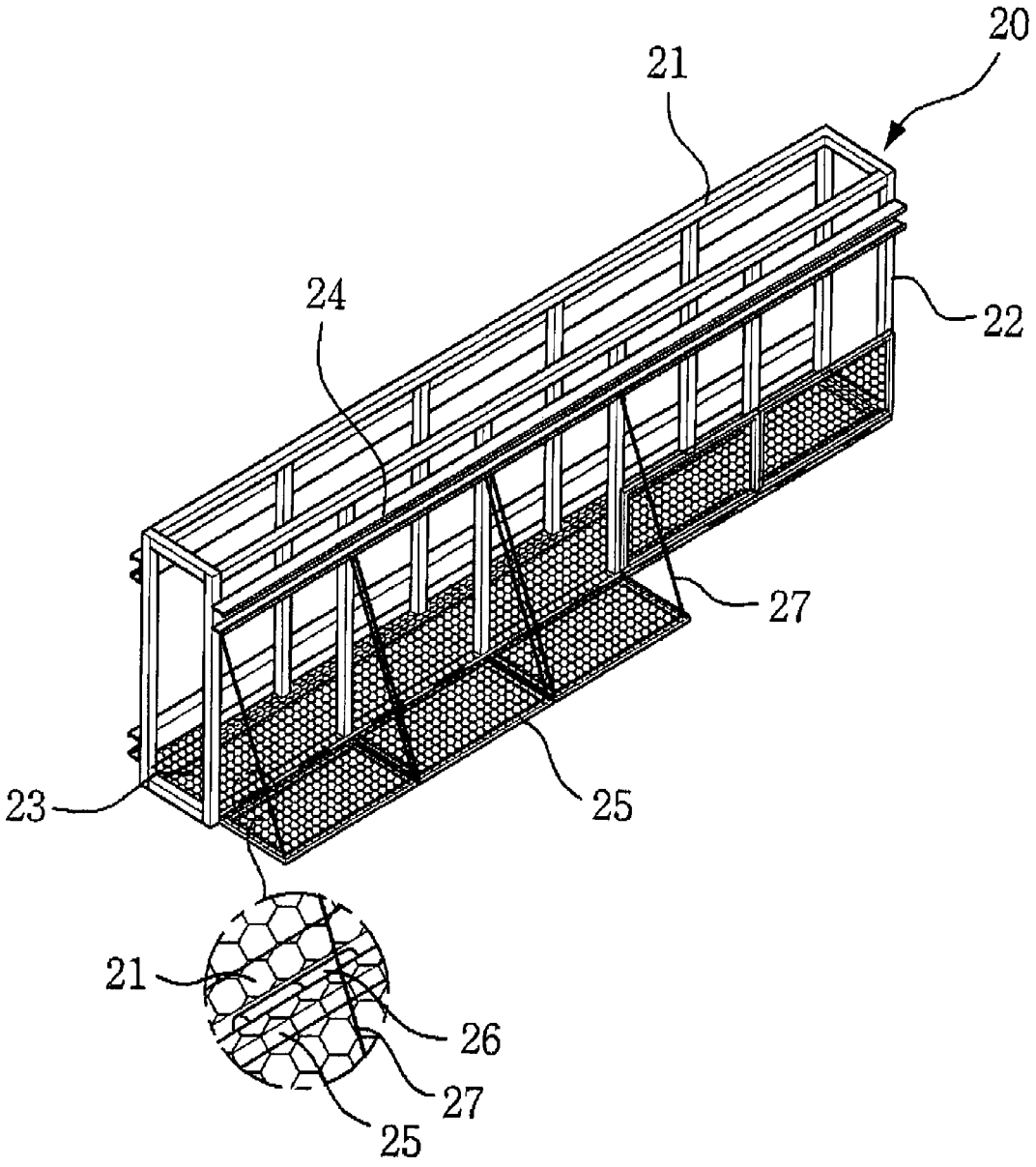

Fig. 2

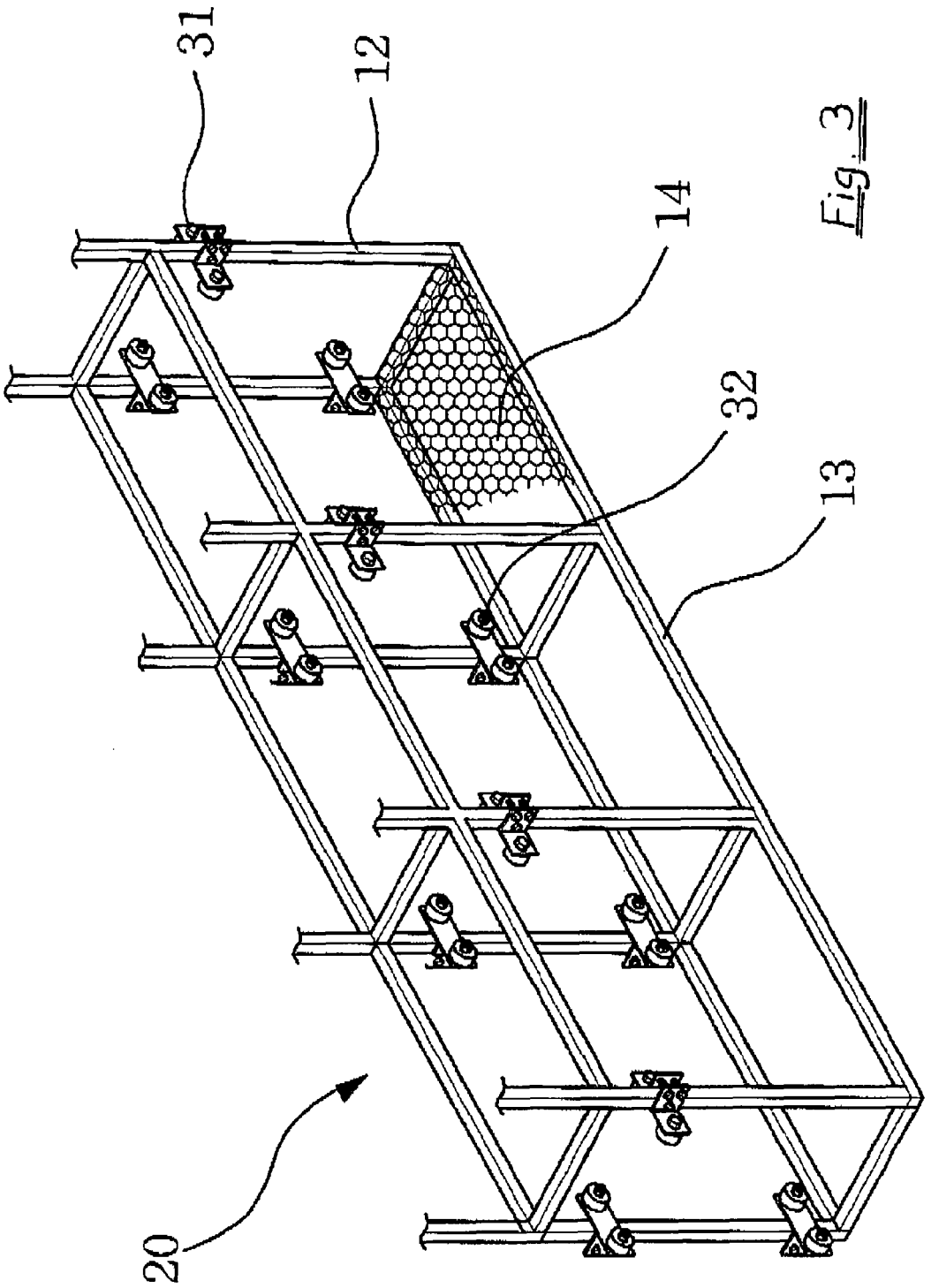

Fig. 3

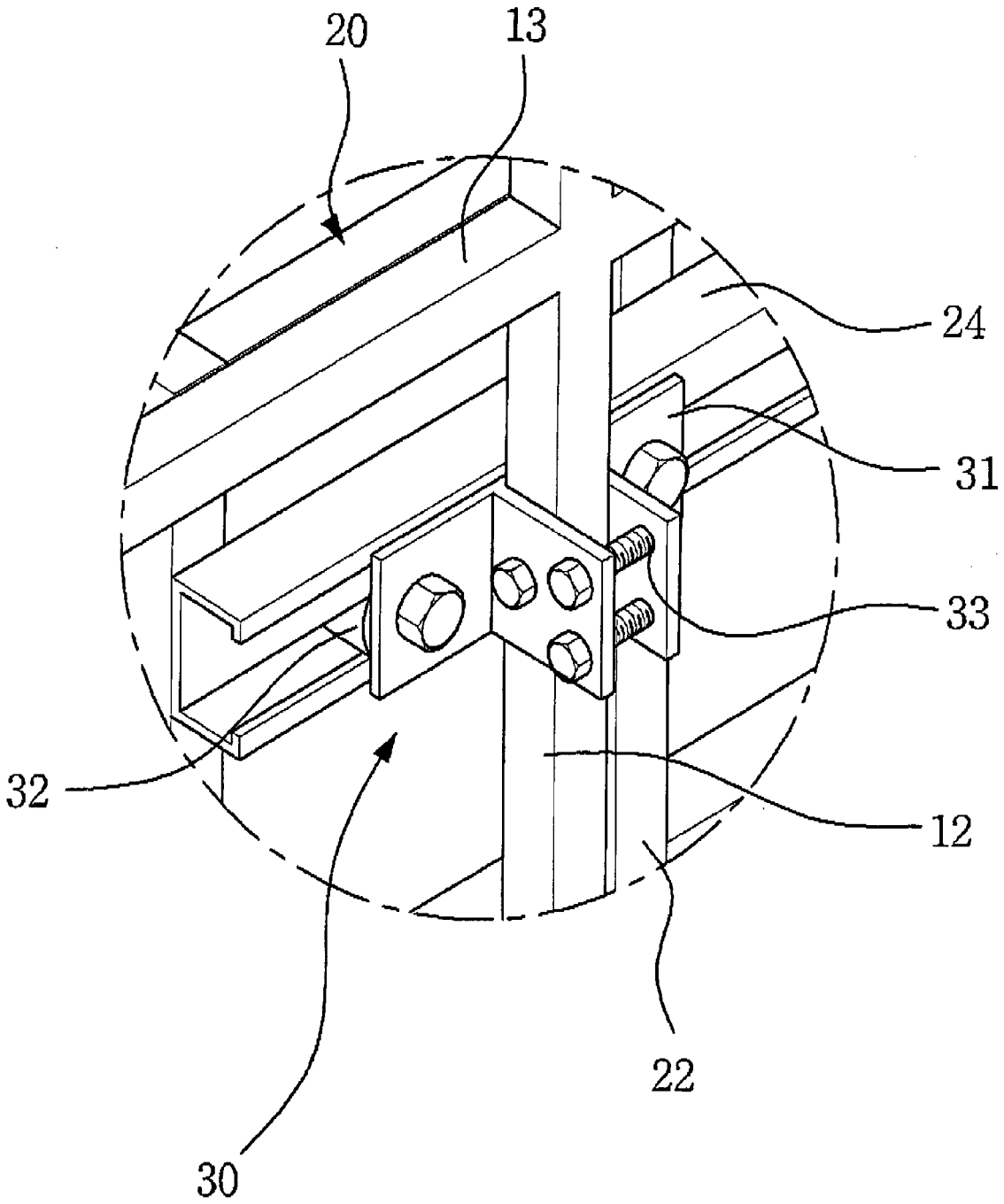

Fig. 4

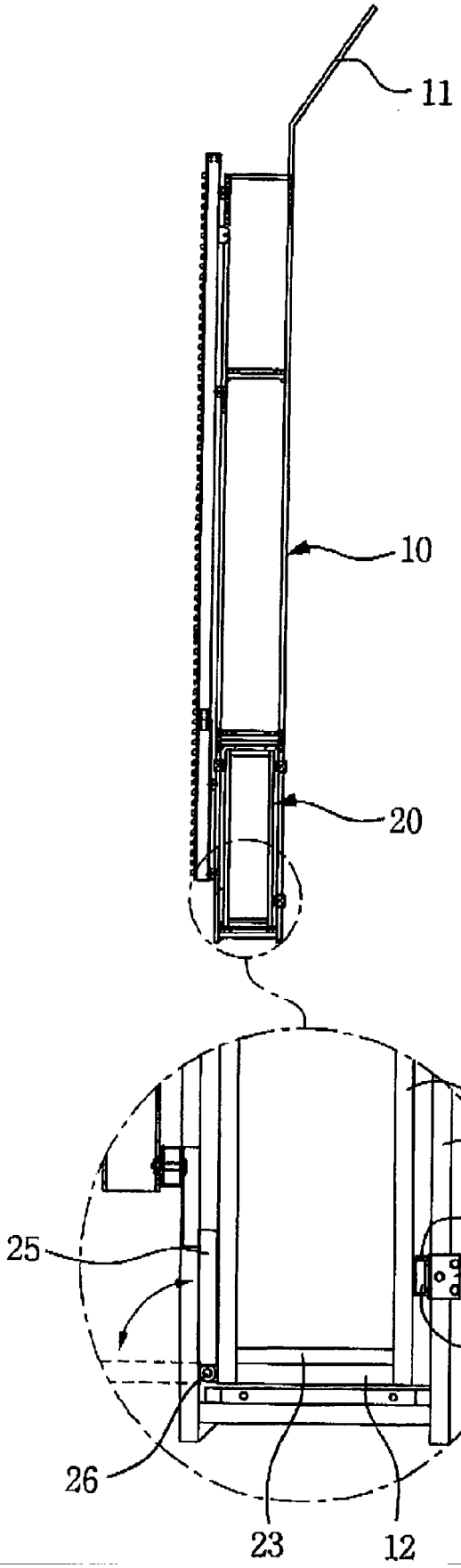

Fig. 5

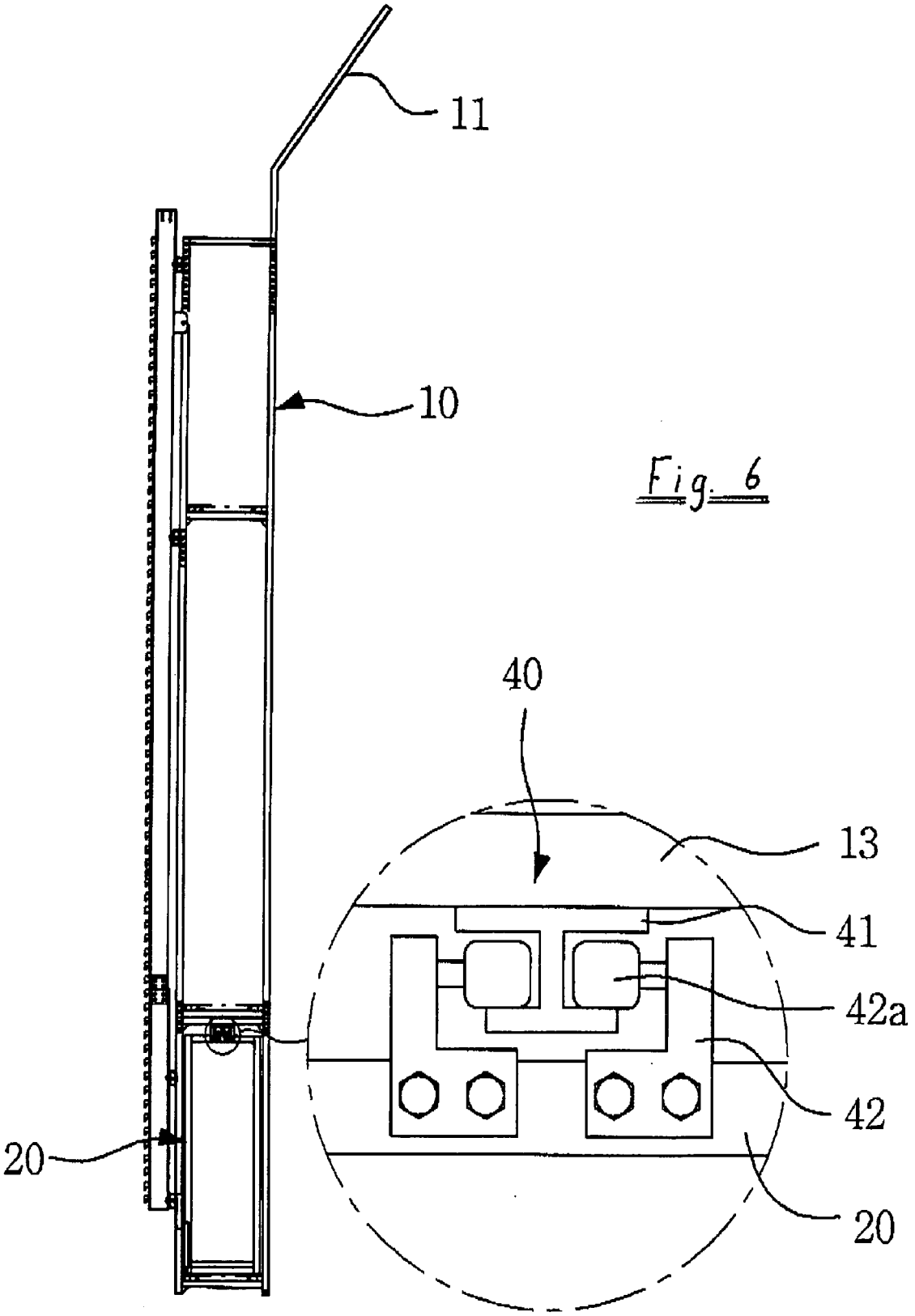

Fig. 6

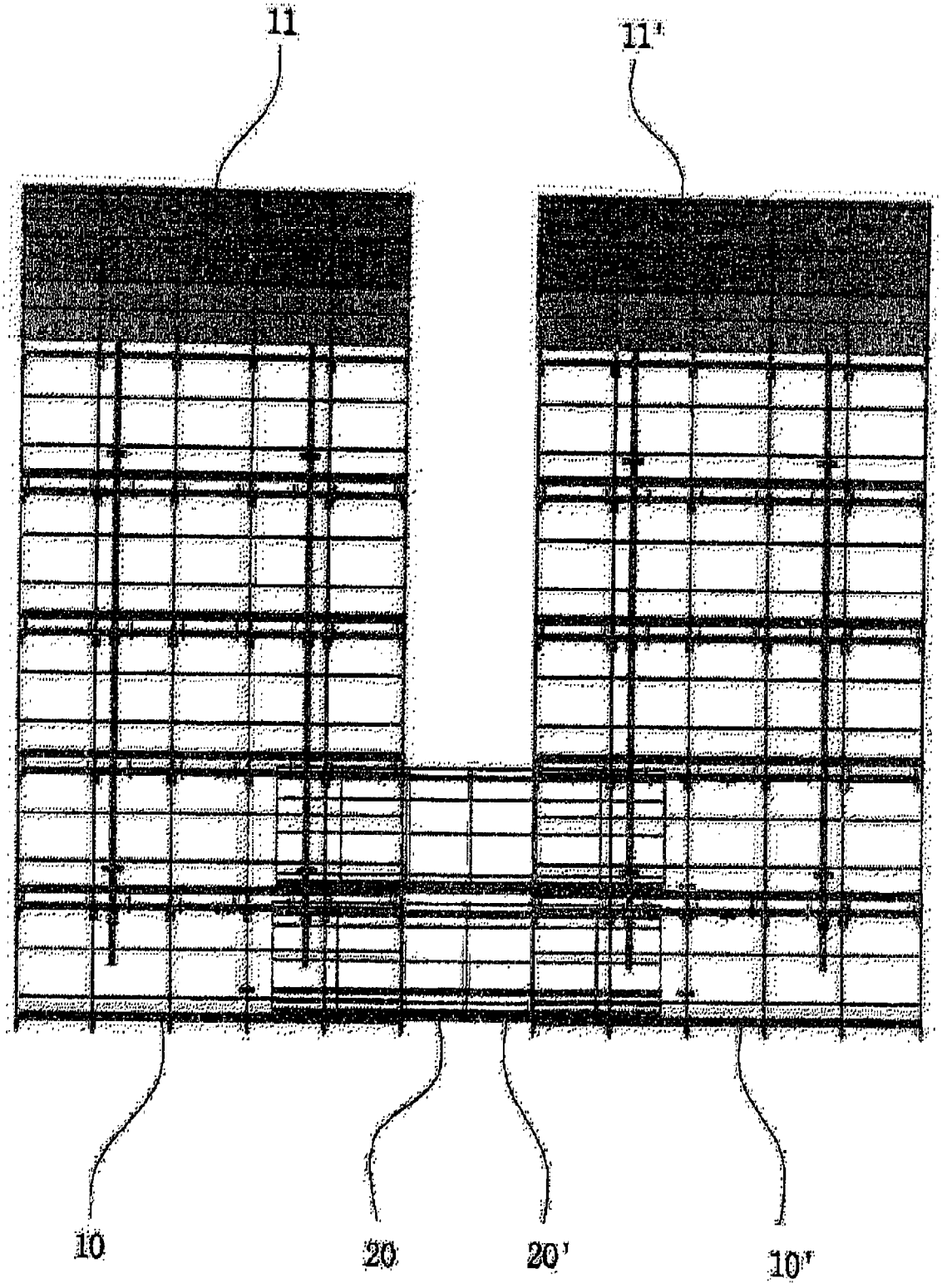

Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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