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(54) SYSTEM OF BUILDING ELEMENTS AND A METHOD FOR FORMING A BUILDING

SYSTEM VON BAUELEMENTEN UND VERFAHREN ZUR HERSTELLUNG EINES GEBÄUDES

SYSTÈME D'ÉLÉMENTS DE CONSTRUCTION ET PROCÉDÉ DE CONSTRUCTION D'UN
BÂTIMENT

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Description

[0001] The present invention relates to a system of building elements comprising columns and floor slabs, in which the columns are provided on at least one of the end surfaces with column coupling means and in which the floor slabs are provided on one or more of the corners with floor slab coupling means, which column coupling means and floor slab coupling means are adapted to connect the building elements in order to form a skeleton of a building.

[0002] A system having all the features of the preamble of claim 1 is known in practice **for example in** DE3238349. In the known system the columns are provided on the end surfaces with a plate with four protruding pins. The floor slabs are provided with corner anchors with openings for receiving the pins.

[0003] The known system has a number of important advantages. The building elements can be prefabricated. This ensures the dimensional stability and increases the quality of the building elements. The skeleton of the building can then be formed on the building site by means of assembly of the building elements. The assembly results in a greatly reduced construction time at the building site and provides a high degree of flexibility in respect of the eventual shape and dimensions of the skeleton. The skeleton must then be completed into the desired building. This takes place using traditional building methods.

[0004] The invention has for its object to provide a system of the type stated in the preamble with which a complete building can be formed.

[0005] The system according to the invention has for this purpose the feature that the system comprises walls which are provided at one or more of the corners with wall coupling means, in addition to first general coupling means which are adapted for pairwise connection of one of the wall coupling means of a wall to one of the column coupling means of a column or of one of the wall coupling means of a wall to one of the wall coupling means of a further wall for the purpose of connecting the walls to the skeleton in order to form the building.

A system of building elements with this feature is known from US 4,030,262.

[0006] The system of building elements according to the invention provides the option of forming a complete building by assembly of prefabricated building elements with associated coupling means developed for this purpose. Such a system of building elements is defined in claim 1 for characters in bold use normal print

[0007] The use of releasably fastenable general coupling means makes it possible to remove building elements again once they have been coupled, provided they are non-bearing. Non-bearing walls can be envisaged here. A building formed using the system according to the invention for a determined function, for instance working, can hereby be converted at any desired stage into

a different building suitable for another function, for instance living. This greatly enhances the flexibility of the building.

[0008] According to a further embodiment, the system according to the invention comprises filling means for placing between adjacent building elements to be placed one on the other. The filling means create in practical manner the space necessary between the building elements for the purpose of removing non-bearing building elements from the building. The filling means preferably comprise a filling plate.

[0009] The system according to the invention is supplemented with second general coupling means which are adapted for pairwise connection of one of the floor slab coupling means of a floor slab to one of the column coupling means of a column or to one of the wall coupling means of a wall. Just as the first general coupling means, the second general coupling means in a preferred embodiment can be fastened releasably to the floor slab coupling means, the column coupling means and the wall coupling means so as to enable uncoupling of non-bearing building elements.

[0010] In an elegant embodiment the floor slab coupling means are of the receiving type and the second general coupling means are at least partly of the inserting type.

[0011] According to a first practical embodiment, the floor slab coupling means comprise a corner anchor provided with one or more openings which are adapted to receive at least a part of the second general coupling means. According to a further practical embodiment, the second general coupling means comprise a pin to be received in the floor slab coupling means. The floor slab coupling means preferably comprise an arresting element for arresting the second general coupling means in a stable position.

[0012] The invention also relates to a method for forming a building with the system according to the invention, comprising the steps of:

- a) placing a floor slab provided with floor slab coupling means;
- b) placing on the floor slab a column provided with column coupling means or a bearing wall provided with wall coupling means;
- c) connecting the column or the bearing wall to the floor slab using the second general coupling means;
- d) placing a wall provided with wall coupling means adjacently to the column or the bearing wall;
- e) connecting the wall to the column or the bearing wall using the first general coupling means; and
- f) repeating one or more of the foregoing steps as required until the building is formed.

[0013] Using the method according to the invention a complete building can be formed by assembly at the building site of prefabricated building elements with the associated coupling means developed for this purpose.

[0014] The invention will now be discussed in more detail with reference to the drawings, in which

Figures 1A and 1B illustrate in schematic view the connection between a column and a floor slab of the system according to the invention;

Figure 1C illustrates an embodiment of the floor slab coupling means of the floor slab of the foregoing figures;

Figures 2A and 2B illustrate schematically the connection of a wall to the column of figures 1A and 1B; Figure 3 illustrates schematically the connection between two walls of the system according to the invention;

Figure 4 illustrates a first embodiment of the wall coupling means and the column coupling means of the column and walls of the foregoing figures;

Figure 5A illustrates a second embodiment of the wall coupling means and the column coupling means; and

Figure 5B illustrates the connection of a wall to a column, both being provided with the second embodiment of figure 5A.

[0015] The steps of the method according to the invention for forming a building will be discussed hereinbelow with reference to the figures, which show the system of building elements according to the invention.

[0016] Figures 1A and 1B illustrate in schematic view the realization of a connection between a column and a floor slab on the basis of column 2 and floor slab 1 of the system according to the invention.

[0017] In a first step floor slab 1 is placed on a suitable ground surface. Floor slab 1 is provided on one or more of the corners thereof with floor slab coupling means, in this example a corner anchor 10. Corner anchor 10 is provided with openings 10-1, 10-2 respectively which are accessible from the top side and underside respectively of the floor slab. Corner anchor 10 is described in more detail with reference to figure 1C.

[0018] Column 2 is then placed on floor slab 1. Column 2 is provided on at least one of the end surfaces thereof with column coupling means. The column coupling means comprise a manifold 20 with openings 20-1, 20-2. In each manifold one of the openings is accessible from the end surface, while the other opening is accessible from a side of the column. Manifold 20 is described in more detail with reference to figure 4.

[0019] Two general coupling means 200 are used to connect column 2 to floor slab 1. The second general coupling means 200 comprise a pin 201, also referred to as dowel. On one side pin 201 is placed into opening 10-1 of the corner anchor 10 of floor slab 1, which anchor comprises an internal arresting element for arresting pin 201 in a stable position.

[0020] Filling means 60 can optionally be arranged between adjacent building elements to be placed onto one another. In this example a filling plate 61 is placed be-

tween floor slab 1 and column 2. Filling plate 61 is provided with a hole for passage of pin 201 so as to ensure a stable position.

[0021] At the other end pin 201 is received in opening 20-1 of manifold 20 of column 2. Column 2 and floor slab 1 are now mutually connected, as shown in figure 1B.

[0022] Figure 1C illustrates a first embodiment of the floor slab coupling means of floor slab 1 of the foregoing figures. In the first embodiment the floor slab coupling means take the form of a corner anchor 10. Corner anchor 10 consists of a plate 11-1 which is provided with a clamping tube 12-1 for an upright 13, on which a clamping tube 12-2 for a plate 11-2 is arranged. Openings 10-1 and 10-2 are arranged in plates 11-1 and 11-2 respectively for receiving the general coupling means, as described above.

[0023] Figures 2A and 2B illustrate schematically the realization of a connection of a wall to a column on the basis of wall 3 and column 2 of figure 1B. In a first step the wall 3 is placed adjacently of column 2.

[0024] Filling means 60 can optionally be arranged between adjacent building elements to be placed onto one another. In this example a filling plate 61 is placed on floor slab 1 adjacently of column 2. Wall 3 is placed on filling plate 61.

[0025] Wall 3 is provided on one or more of the corners with wall coupling means 30. The wall coupling means comprise a manifold 30 with openings 30-1, 30-2. At each manifold one of the openings is accessible from the top side or underside of the wall, while the other opening is accessible from a surface of the wall. Manifold 30 is preferably identical to manifold 20 and is described in more detail with reference to figure 4.

[0026] In order to connect wall 3 to column 2 use is made of first general coupling means 100, which are adapted for pairwise connection of wall coupling means 30 of wall 3 to column coupling means 20 of column 2. In a first variant 101 the first general coupling means comprise a coupling strip 103 which is provided with at least two openings 103-1, 103-2, and at least two pins 104 adapted for co-action with the openings of the coupling strip and opening 20-2 of manifold 20 and opening 30-2 of manifold 30. Pins suitable for this purpose are for instance wedge bolts, which are commercially available per se.

[0027] Figure 3 illustrates schematically the connection between two walls 4 and 5. Wall 4 is a bearing wall directly connected to floor slab 1. Wall 5 is a removable wall directly connected to wall 4.

[0028] The connection between a bearing wall and a floor slab takes place in a manner analogous to the connection between a column and a floor slab, which is described with reference to figures 1A and 1B.

[0029] Wall 4 is placed on floor slab 1. Wall 4 is provided on one or more of the corners with wall coupling means 40. The wall coupling means comprise a manifold 40 with openings 40-1, 40-2. At each manifold one of the openings is accessible from the top side or underside of

the wall, while the other opening is accessible from a surface of the wall. Manifold 40 is preferably identical to manifold 20 and is described in more detail with reference to figure 4.

[0030] In order to connect wall 4 to floor slab 1 use is made of the second general coupling means 200, which comprise pin 201. Pin 201 is inserted on one side into opening 10-1 of corner anchor 10 of floor slab 1, which comprises an internal arresting element for arresting pin 201 in a stable position.

[0031] Filling means 60 can optionally be arranged between adjacent building elements to be placed onto one another. In this example a filling plate 61 is placed between floor slab 1 and wall 4. Filling plate 61 is provided with a hole for passage of pin 201 so as to ensure a stable position.

[0032] At the other end pin 201 is received in opening 40-1 of manifold 40 of wall 4. Wall 4 and floor slab 1 are now mutually connected, as shown in figure 3.

[0033] The removable wall 5 is then connected to bearing wall 4. The connection between a removable wall and a bearing wall takes place in a manner analogous to the connection between a removable wall and a column, which is described with reference to figures 2A and 2B.

[0034] In a first step wall 5 is placed adjacently of wall 4. Filling means 60 can optionally be arranged between adjacent building elements to be placed onto each other. In this example a filling plate 61 is placed on floor slab 1 adjacently of wall 4. Wall 5 is placed on filling plate 61.

[0035] Just as wall 4, wall 5 is provided on one or more of the corners with wall coupling means 50. The wall coupling means comprise a manifold 50 with openings 50-1, 50-2. At each manifold one of the openings is accessible from the top side or underside of the wall, while the other opening is accessible from a surface of the wall. Manifold 50 is preferably identical to manifold 20 and is described in more detail with reference to figure 4.

[0036] In order to connect wall 5 to wall 4 use is made of a second variant 102 of the first general coupling means 100, which is adapted for pairwise connection of wall coupling means 50 of wall 5 to wall coupling means 40 of column 4. In the second variant the first general coupling means comprise a corner coupling strip 105 which is provided with at least two openings 105-1, 105-2, as well as the at least two pins 104 which are adapted for co-action with the openings of the corner coupling strip and opening 50-2 of manifold 50 and opening 40-2 of manifold 40.

[0037] Figure 4 illustrates a first embodiment of the wall coupling means and the column coupling means of the column and walls of the foregoing figures. In the first embodiment the wall coupling means and/or the column coupling means have a general T-shape. The wall coupling means and/or the column coupling means comprise a manifold 20 consisting of a plate 21 which is provided with a clamping tube 22 for an upright 23 on which a cross beam 24 is arranged. Upright 23 is provided on the underside with a first opening 20-1 which is intended for

receiving the second general coupling means, for instance pin 201. Cross beam 24 is provided at one of the outer ends with a second opening 20-2 which is intended for receiving the first general coupling means, for instance pins 104.

[0038] Manifold 20 forms part of the walls and/or columns of the system of building elements according to the invention. Manifold 20 is cast in during forming of the walls and/or columns. A common method of forming is pouring concrete. During forming a cylindrical object such as a pin 107 is preferably inserted through cross beam 24 in a manner such that a cavity is formed in the line of cross beam 24 in the material of the formed wall or column. Use is made here of recessing piece 108. Pin 107 and recessing piece 108 are removed after pouring. During assembly of the thus formed building elements into a building the first general coupling means will then engage on cross beam 24 as well as on the cavity formed in line therewith, which strengthens the connection.

[0039] Figure 5A shows a second embodiment of the wall coupling means and the column coupling means of the columns and walls of the system according to the invention.

[0040] In the second embodiment the wall coupling means and/or the column coupling means comprise a manifold 25 consisting of a plate 26 provided with a clamping tube 27 for an upright 28 on which a cross beam 29 is arranged. Upright 28 is provided on the underside with a first opening 25-1 which is intended for receiving the second general coupling means, for instance pin 201. In contrast to cross beam 24 of manifold 20, cross beam 28 does not run straight but has a bend, which is formed substantially by a right angle. Cross beam 28 is provided at both outer ends with an opening 25-2, 25-3, which are both intended for receiving the first general coupling means, for instance pins 104. Using pin 107 and recessing piece 109 a cavity is preferably formed in line with both outer ends of cross beam 29 in the material of the formed wall or column, this in analogous manner as described in respect of manifold 20.

[0041] Figure 5B shows the connection of a wall 3' to a column 2' in the view of figure 2A. Column 2' is provided with manifolds 25 of figure 5A and wall 3' is provided with a manifold 35 which is identical to manifold 25. The only visible difference between building elements 2, 3 and 2' and 3' is formed by the additional openings 25-3, 35-3 respectively.

[0042] The columns and walls of the system according to the invention can be provided as desired with manifold 20 or 25. The number of manifolds can vary per column or wall. In figures 2A and 2B column 2 is provided with two manifolds 20. In figure 5B column 2' is provided with four manifolds 25.

[0043] Suitable materials for the components of the above stated manifolds are metal and plastic. Some specific examples are steel and PVC.

[0044] By repeating as required one or more of the basic steps of the method according to the invention de-

scribed in the foregoing, a variety of buildings for diverse purposes can be formed using the system according to the invention. Once formed, buildings can be converted as desired. This conversion can take place internally by displacing or removing non-bearing inner walls, but also externally by adding a new (part of a) building. The removable walls play a crucial part in both situations.

Claims

1. System of building elements comprising columns and floor slabs, in which the columns are provided on at least one of the end surfaces with column coupling means and in which the floor slabs are provided on one or more of the corners with floor slab coupling means, which column coupling means and floor slab coupling means are adapted to connect the building elements in order to form a skeleton of a building, wherein the system comprises walls (3; 4, 5; 3') which are provided at one or more of the corners with wall coupling means (30; 40, 50; 35), in addition to first general coupling means (103, 104; 105, 104) which are adapted for pairwise connection of one of the wall coupling means (30; 35) of a wall (3; 3') to one of the column coupling means (20; 25) of a column (2; 2') or of one of the wall coupling means (40) of a wall (4) to one of the wall coupling means (50) of a further wall (5) for the purpose of connecting the walls to the skeleton in order to form the building, wherein at least a part of the first general coupling means (103, 104; 105, 104) can be fastened releasably to the wall coupling means and the column coupling means, wherein the column coupling means and the wall coupling means are of the receiving type, and wherein the first general coupling means (104) are at least partly of the inserting type, wherein the column coupling means and/or the wall coupling means comprise a manifold (20, 30; 40, 50) which is provided with two openings (20-1, 20-2, 30-1, 30-2; 40-01, 40-2; 50-1, 50-2) which are adapted to receive at least a part of the first general coupling means (104) or wherein the column coupling means and/or the wall coupling means comprise a manifold (25, 35) which is provided with three openings (25-1, 25-2, 25-3; 35-1, 35-2, 35-3) which are adapted to receive at least a part of the first general coupling means (104), **characterized in that** at each manifold present in a wall one of the openings is accessible from the top side or underside of the wall, while the other opening is accessible from a surface of the wall, wherein at each manifold present in a column one of the openings is accessible from the end surface of the column, while the other opening is accessible from a side of the column.
2. System as claimed in claim 1, wherein the first general coupling means comprise a coupling strip (103,

105) which is provided with at least two openings (103-1, 103-2; 105-1, 105-2) as well as at least two pins (104) which are adapted for co-action with the openings of the coupling strip and the openings of the column coupling means and/or the wall coupling means.

CLAIMS for characters in bold use normal print

3. System as claimed in one or more of the foregoing claims, comprising filling means (60) for placing between adjacent building elements (1, 2, 3; 1, 4, 5; 1, 2', 3') to be placed one on the other.
4. System as claimed in claim 3, wherein the filling means comprise a filling plate (61).
5. System as claimed in one or more of the foregoing claims, further comprising second general coupling means (201) which are adapted for pairwise connection of one of the floor slab coupling means (10) of a floor slab (1) to one of the column coupling means (20; 25) of a column (2; 2') or to one of the wall coupling means (30; 40, 50; 35) of a wall (3; 4, 5; 3').
6. System as claimed in claim 5, wherein the second general coupling means (201) can be fastened releasably to the floor slab coupling means (10), the column coupling means (20; 25) and the wall coupling means (30; 40, 50; 35).
7. System as claimed in claim 5 or 6, wherein the floor slab coupling means (10) are of the receiving type and wherein the second general coupling means (201) are at least partly of the inserting type.
8. System as claimed in claim 7, wherein the floor slab coupling means comprise a corner anchor (10) provided with one or more openings (10-1, 10-2) which are adapted to receive at least a part of the second general coupling means (201).
9. System as claimed in claim 8, wherein the second general coupling means comprise a pin (201) to be received in the floor slab coupling means.
10. System as claimed in claim 9, wherein the floor slab coupling means comprise an arresting element for arresting the second general coupling means in a stable position.
11. Method for forming a building with the system as claimed in one or more of the foregoing claims, comprising the steps of:
 - a) placing a floor slab (1) provided with floor slab coupling means (10);
 - b) placing on the floor slab a column (2; 2') provided with column coupling means (20; 25) or a

bearing wall (4) provided with wall coupling means (40);

c) connecting the column or the bearing wall to the floor slab using the second general coupling means (201);

d) placing a wall (3; 5; 3') provided with wall coupling means (30; 50; 35) adjacently to the column or the bearing wall;

e) connecting the wall to the column or the bearing wall using the first general coupling means (103, 104; 105, 104); and

f) repeating one or more of the foregoing steps as required until the building is formed.

Patentansprüche

1. System von Bauelementen, das Pfeiler und Geschossdecken umfaßt, wobei die Pfeiler an wenigstens einer der Endflächen mit Pfeilerkopplungsmitteln versehen sind und wobei die Geschossdecken an einer oder mehreren Ecken mit Geschossdeckenkopplungsmitteln versehen sind, wobei die Pfeilerkopplungsmittel und die Geschossdeckenkopplungsmittel zum Verbinden der Bauelemente ausgebildet sind, um ein Gebäudeskelett zu errichten, wobei das System Wände (3; 4; 5; 3') umfaßt, die zusätzlich zu ersten allgemeinen Kopplungsmitteln (103, 104; 105, 104) die zum paarweise Verbinden eines der Wandkopplungselemente (30; 35) einer Wand (3; 3') mit einem der Pfeilerkopplungsmittel (20; 25) eines Pfeilers (2; 2') oder eines der Wandkopplungsmittel (40) einer Wand (4) mit einem der Wandkopplungsmittel (50) einer weiteren Wand (5), um die Wände mit dem Skelett zu verbinden, um ein Gebäude auszubilden, an einer oder mehreren Ecken mit Wandkopplungsmitteln (30; 40, 50; 35) versehen sind, wobei mitestens ein Teil der ersten allgemeinen Kopplungsmittel (103, 104; 105, 104) lösbar mit den Wandkopplungsmitteln und den Pfeilerkopplungsmitteln verbindbar sind, wobei die Pfeilerkopplungsmittel und die Wandkopplungsmittel vom Empfänger typ sind und wobei die ersten allgemeinen Kopplungsmittel (104) wenigstens teilweise vom Einfügetyp sind, wobei die Pfeilerkopplungsmittel und/oder die Wandkopplungsmittel ein Übergangsstück (20, 30; 40, 50) umfassen, das zwei Öffnungen (20-1, 20-2, 30-1, 30-2; 40-01, 40-2, 50-1, 50-2) aufweist, die ausgebildet sind, um mindestens einen Teil der ersten allgemeinen Kopplungsmittel (104) aufzunehmen oder wobei die Pfeilerkopplungsmittel und/oder die Wandkopplungsmittel ein Übergangsstück (25, 35) umfassen, das drei Öffnungen (25-1, 25-2, 25-3; 35-1, 35-2, 35-3) aufweist, die ausgebildet sind, um wenigstens einen Teil der ersten allgemeinen Kopplungsmittel (104) aufzunehmen, **dadurch gekennzeichnet, dass** bei jedem in einer Wand vorhandenen Übergangsstück eine der Öff-

nungen von der Oberseite oder der Unterseite der Wand her zugänglich ist, während die andere Öffnung von einer Wandfläche zugänglich ist, wobei bei jedem in einem Pfeiler vorhandenen Übergangsstück eine der Öffnungen von der Endfläche des Pfeilers zugänglich ist, während die andere Öffnung von der Seite des Pfeilers her zugänglich ist.

2. System gemäß Anspruch 1, wobei die ersten allgemeinen Kopplungsmittel einen Kopplungsstreifen (103, 105) umfassen, der wenigstens zwei Öffnungen (103-1, 103-2; 105-1, 105-2) sowie wenigstens zwei Verbindungsmittel (104), die zum Zusammenwirken mit den Öffnungen des Kopplungsstreifens und den Öffnungen der Pfeilerkopplungsmittel und/oder der Wandkopplungsmittel ausgebildet sind.

3. System gemäß einem oder mehrerer der vorgenannten Ansprüche, das Füllmittel (60) zum Platzieren zwischen benachbarte Bauelemente (1, 2, 3; 1, 4, 5; 1, 2', 3'), die aufeinander angeordnet werden, umfaßt.

4. System gemäß Anspruch 3, wobei die Füllmittel eine Füllplatte (61) umfassen.

5. System gemäß einem oder mehrerer der vorgenannten Ansprüche, das weiterhin zweite allgemeine Kopplungsmittel (201) umfaßt, die ausgebildet sind, um eines der Geschossdeckenkopplungsmittel (10) einer Geschossdecke (1) mit einem der Pfeilerkopplungsmittel (20; 25) eines Pfeilers (2; 2') oder einem der Wandkopplungsmittel (30; 40; 50; 35) einer Wand (3; 4, 5; 3') zu verbinden.

6. System gemäß Anspruch 5, wobei die zweiten allgemeinen Kopplungsmittel (201) lösbar mit den Geschossdeckenkopplungsmitteln (10), den Pfeilerkopplungsmitteln (20; 25) und den Wandkopplungsmitteln (30; 40, 50, 35) verbindbar sind.

7. System gemäß Anspruch 5 oder Anspruch 6, wobei die Geschossdeckenkopplungsmittel (10) vom Empfänger typ sind und wobei die zweiten allgemeinen Kopplungsmittel (201) wenigstens teilweise vom Einfügetyp sind.

8. System gemäß Anspruch 7, wobei die Geschossdeckenkopplungsmittel einen Eckanker (10) umfassen, der eine oder mehrere Öffnungen (10-1, 10-2) aufweist, die ausgebildet sind, um wenigstens einen Teil der zweiten allgemeinen Kopplungsmittel (201) aufzunehmen.

9. System gemäß Anspruch 8, wobei die zweiten allgemeinen Kopplungsmittel ein Verbindungsmittel (201) umfassen, das in den Geschossdeckenkopplungsmitteln aufgenommen wird.

10. System gemäß Anspruch 9, wobei die Geschoßdeckenkopplungsmittel ein Arretierelement zum Arretieren der zweiten allgemeinen Kopplungsmittel in einer stabilen Position umfassen.
11. Verfahren zur Herstellung eines Gebäudes mit dem in einem oder mehreren der vorhergehenden Ansprüchen beanspruchten System, das die folgenden Schritte umfasst :
- a) Platzieren einer Geschoßdecke (1) mit Geschoßdeckenkopplungsmitteln (10);
 - b) Platzieren eines Pfeilers (2 ; 2'), der mit Pfeilerkopplungsmitteln (20 ; 25) versehen ist oder einer tragenden Wand (4), die mit Wandkopplungsmitteln (40) versehen ist, auf der Geschoßdecke ;
 - c) Verbinden des Pfeilers oder der tragenden Wand mit der Geschoßdecke unter Verwendung der zweiten allgemeinen Kopplungsmittel (201) ;
 - d) Platzieren einer Wand (3 ; 5 ; 3'), die mit Wandkopplungsmitteln (30 ; 50 ; 35) neben den Pfeiler oder die tragende Wand ;
 - e) Verbinden der Wand mit dem Pfeiler oder der tragenden Wand unter Verwendung der ersten allgemeinen Kopplungsmittel (103, 104 ; 105 ; 104) ; und
 - f) Wiederholen eines oder mehrerer der vorhergehenden Schritte bis das Gebäude hergestellt ist.

Revendications

1. Système d'élément de construction comprenant des colonnes et des dalles de plancher, dans lequel les colonnes sont munies sur au moins une des surfaces d'extrémité de moyens de couplage de colonne et dans lequel les dalles de plancher sont munies à un ou plusieurs angles de moyens de couplage de dalle de plancher, lesquels moyens de couplage de colonne et moyens de couplage de dalle de plancher étant aptes à coupler les éléments de construction en vue de former le squelette d'un bâtiment, ledit système comprenant des parois (3 ; 4 ; 5 ; 3') qui sont munies à un ou plusieurs angles de moyens de couplage de paroi (30 ; 40 ; 50 ; 35) en plus de premiers moyens de couplage généraux (103, 104 ; 105, 104) qui sont aptes à connecter deux à deux l'un des moyens de couplage de paroi (30 ; 35) d'une paroi (3 ; 3') à l'un des moyens de couplage de colonne (20 ; 25) d'une colonne (2 ; 2') ou l'un des moyens de couplage de paroi (40) d'une paroi (4) à l'un des moyens de couplage de paroi (50) d'une paroi suivante (5) en vue de connecter les parois au squelette afin de former un bâtiment, au moins une partie des premiers moyens de cou-

plage généraux (103, 104 ; 105, 104) pouvant être fixée de façon réversible aux moyens de couplage de paroi et aux moyens de couplage de colonne, les moyens de couplage de colonne et les moyens de couplage de paroi étant du type femelle et les premiers moyens de couplage généraux (104) étant au moins en partie de type mâle,

les moyens de couplage de colonne et/ou les moyens de couplage de paroi comprenant un élément de jonction (20, 30 ; 40, 50) muni de deux ouvertures (20-1, 20-2, 30-1, 30-2 ; 40-01, 40-2 ; 50-1, 50-2) qui sont aptes à recevoir au moins une partie des premiers moyens de couplage généraux (104) ou les moyens de couplage de colonne et/ou les moyens de couplage de paroi comprenant un élément de jonction (25, 35) muni de trois ouvertures (25-1, 25-2, 25-3 ; 35-1, 35-2, 35-3) qui sont aptes à recevoir au moins une partie des premiers moyens de couplage généraux (104), **caractérisé en ce que** pour chaque élément de jonction présent dans une paroi, une des ouvertures est accessible depuis le dessus ou le dessous de la paroi tandis que l'autre ouverture est accessible depuis la surface de la paroi, et **en ce que** pour chaque élément de jonction présent dans une colonne une des ouvertures est accessible depuis la surface d'extrémité de la colonne tandis que l'autre ouverture est accessible depuis le côté de la colonne.

2. Système selon la revendication 1, **caractérisé en ce que** les premiers moyens de couplage généraux comprennent une bande de couplage (103, 105) munie d'au moins deux ouvertures (103-1, 103-2 ; 105-1, 105-2) ainsi que d'au moins deux broches (104) aptes à coopérer avec les ouvertures de la bande de couplage et les ouvertures des moyens de couplage de colonne et/ou des moyens de couplage de paroi.

3. Système selon l'une ou plusieurs des revendications précédentes, comprenant des moyens de remplissage (60) à placer entre des éléments de constructions adjacents (1, 2, 3 ; 1, 4, 5 ; 1, 2', 3') devant être placés les uns au-dessus des autres.

4. Système selon la revendication 3, dans lequel les moyens de remplissage comprennent une plaque de remplissage (61).

5. Système selon l'une ou plusieurs des revendications précédentes, comprenant en outre des seconds moyens de couplage généraux (201) aptes à connecter deux à deux l'un des moyens de couplage de dalle de plancher (10) d'une dalle de plancher (1) à l'un des moyens de couplage de colonne (20 ; 25) d'une colonne (2 ; 2') ou à l'un des moyens de couplage de paroi (30 ; 40 ; 50 ; 35) d'une paroi (3 ; 4, 5 ; 3').

6. Système selon la revendication 5, dans lequel les seconds moyens de couplage généraux (201) peuvent être fixés de façon réversible aux moyens de couplage de dalle de plancher (10), aux moyens de couplage de colonne (20 ; 25) et aux moyens de couplage de paroi (30 ; 40, 50 ; 35). 5

7. Système selon la revendication 5 ou 6, dans lequel les moyens de couplage de dalle de plancher (10) sont de type femelle et les seconds moyens de couplage généraux (201) sont au moins en partie de type mâle. 10

8. Système selon la revendication 7, dans lequel les moyens de couplage de dalle de plancher comprennent un ancrage d'angle (10) muni d'une ou plusieurs ouvertures (10-1, 10-2) aptes à recevoir au moins une partie des seconds moyens de couplage généraux (201). 15
20

9. Système selon la revendication 8, dans lequel les seconds moyens de couplage généraux comprennent une broche (201) destinée à être reçue dans les moyens de couplage de dalle de plancher. 25

10. Système selon la revendication 9, dans lequel les moyens de couplage de dalle de plancher comprennent un élément d'arrêt pour arrêter les seconds moyens de couplage généraux dans une position stable. 30

11. Procédé pour former un bâtiment avec le système selon l'une ou plusieurs des revendications précédentes, comprenant les étapes suivantes : 35
 - a) mise en place d'une dalle de plancher (1) munie de moyens de couplage de dalle de plancher (10) ;
 - b) mise en place sur la dalle de plancher d'une colonne (2 ; 2') munie de moyens de couplage de colonne (20 ; 25) ou d'une paroi porteuse (4) munie de moyens de couplage de paroi (40) ; 40
 - c) connexion de la colonne ou de la paroi porteuse à la dalle de plancher en utilisant les seconds moyens de couplage généraux (201) ; 45
 - d) mise en place d'une paroi (3 ; 5 ; 3') munie de moyens de couplage de paroi (30 ; 50 ; 35) à côté de la colonne ou de la paroi porteuse ;
 - e) connexion de la paroi à la colonne ou à la paroi porteuse en utilisant les premiers moyens de couplage généraux (103, 104 ; 105, 104) ; et 50
 - f) répétition de l'une ou plusieurs des étapes précédentes selon nécessité jusqu'à formation du bâtiment. 55

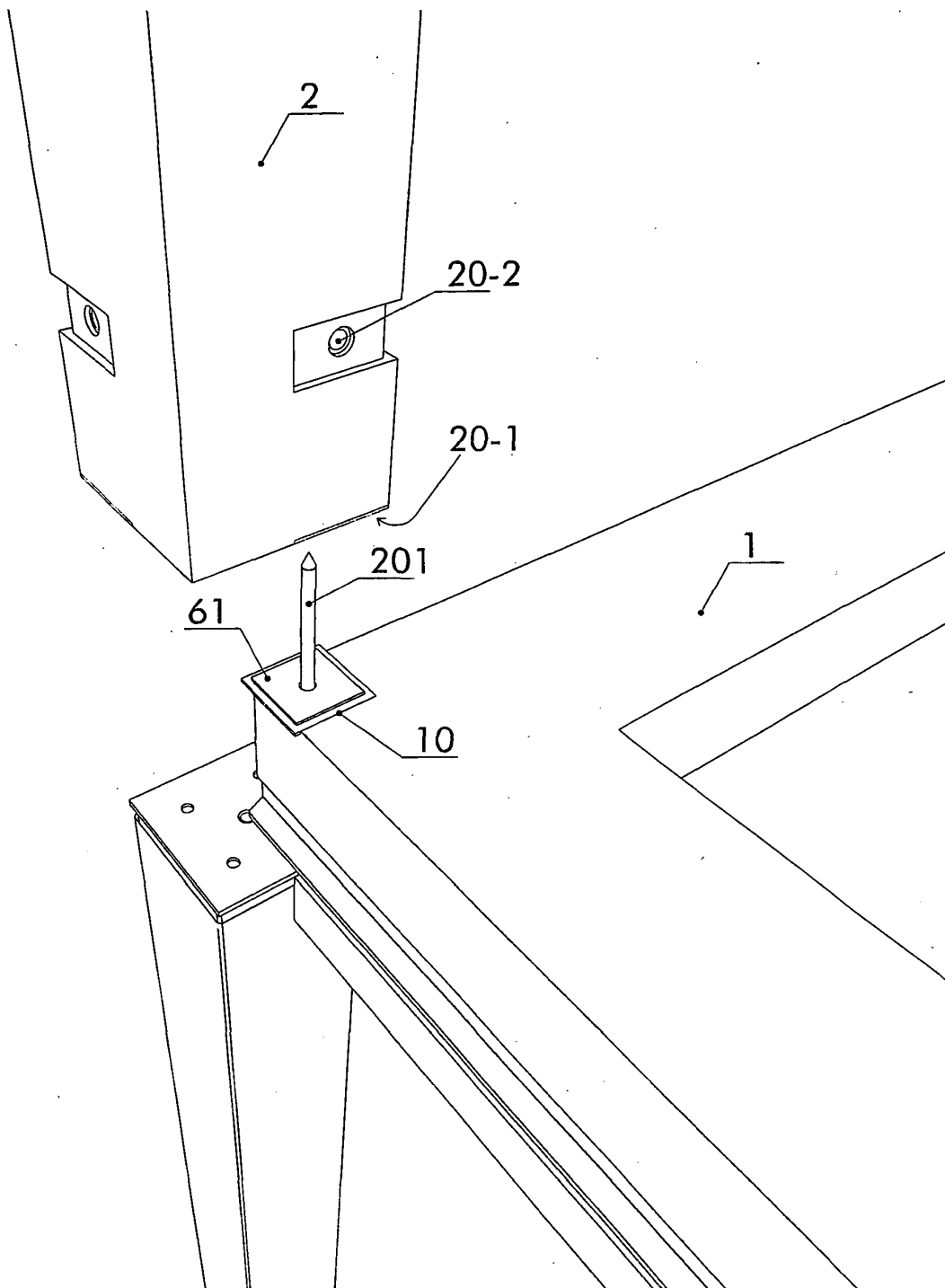


Figure 1A

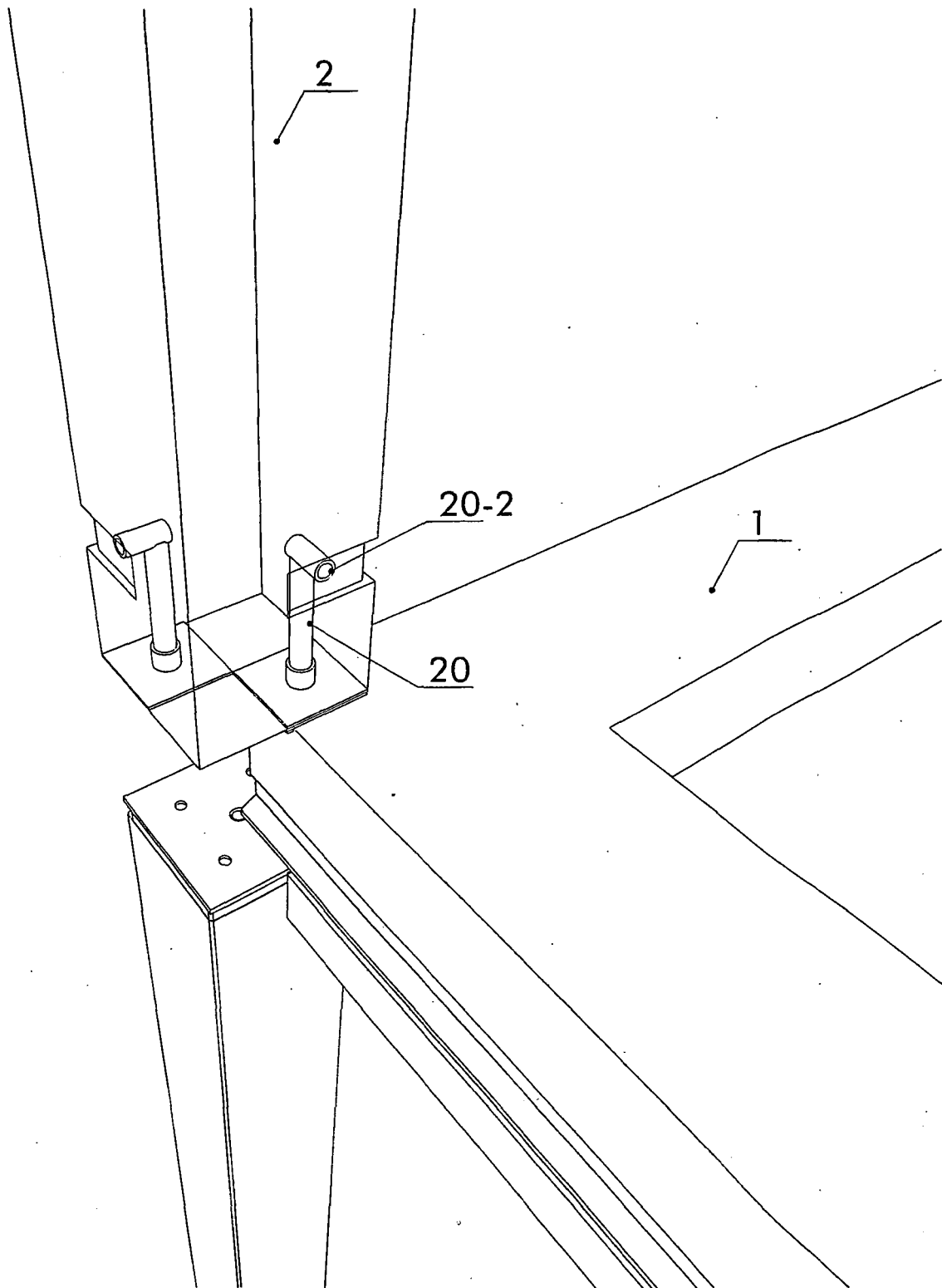


Figure 1B

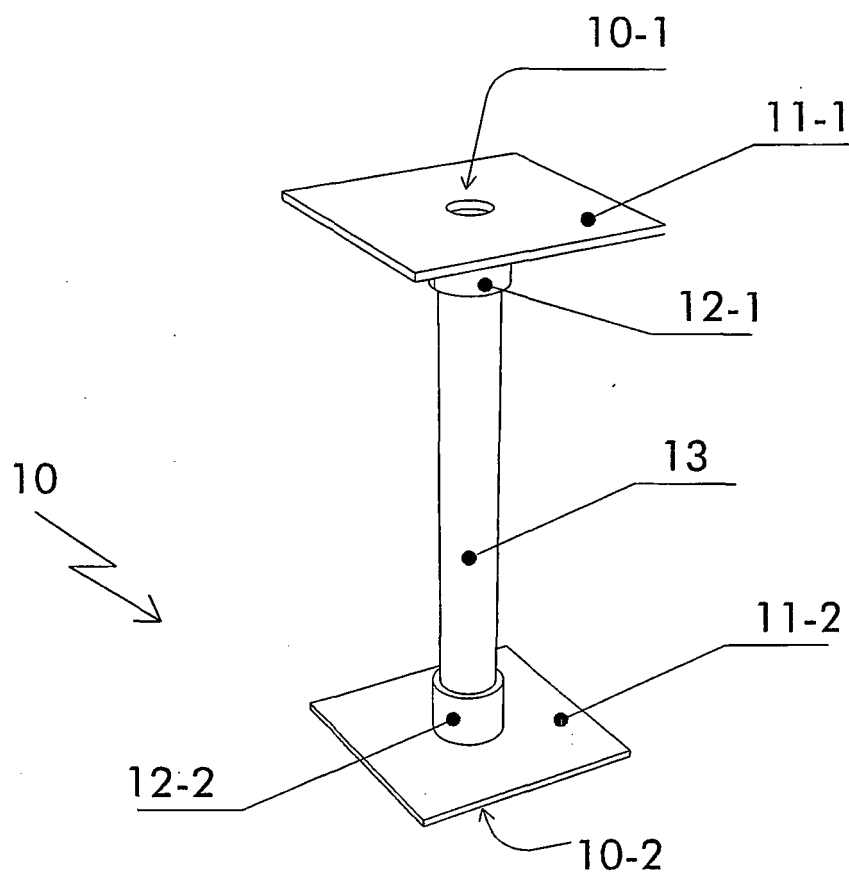


Figure 1C

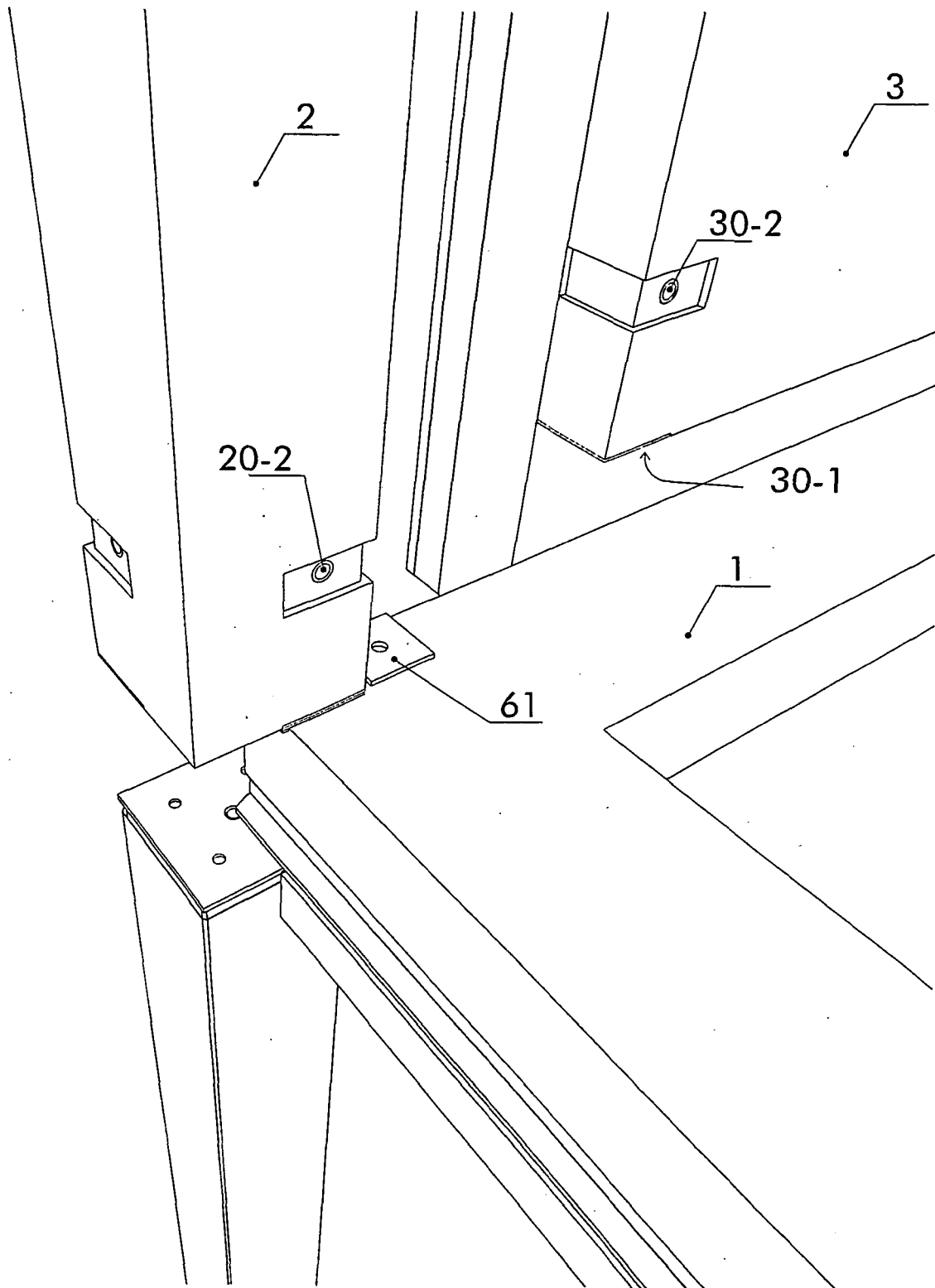


Figure 2A

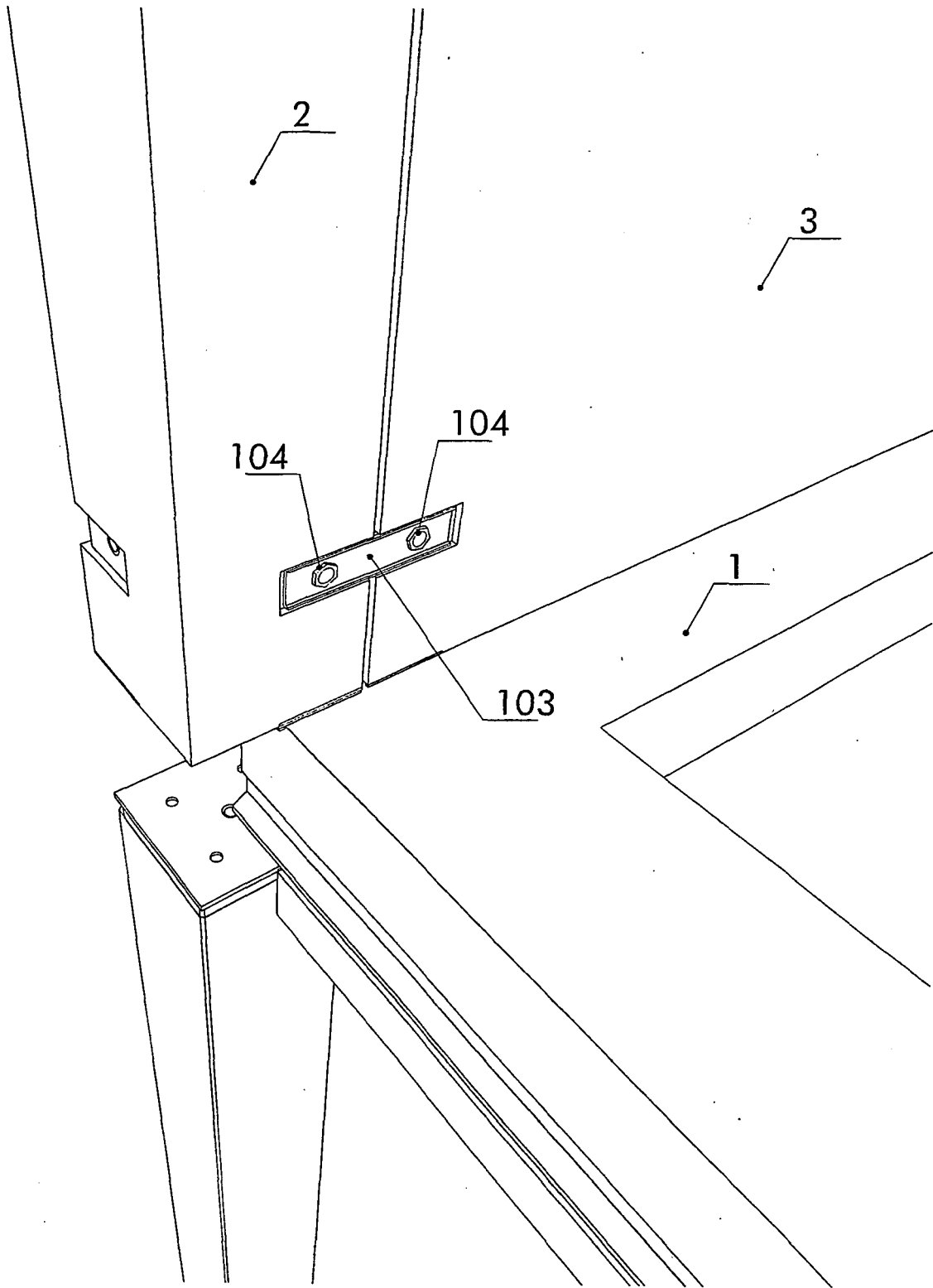


Figure 2B

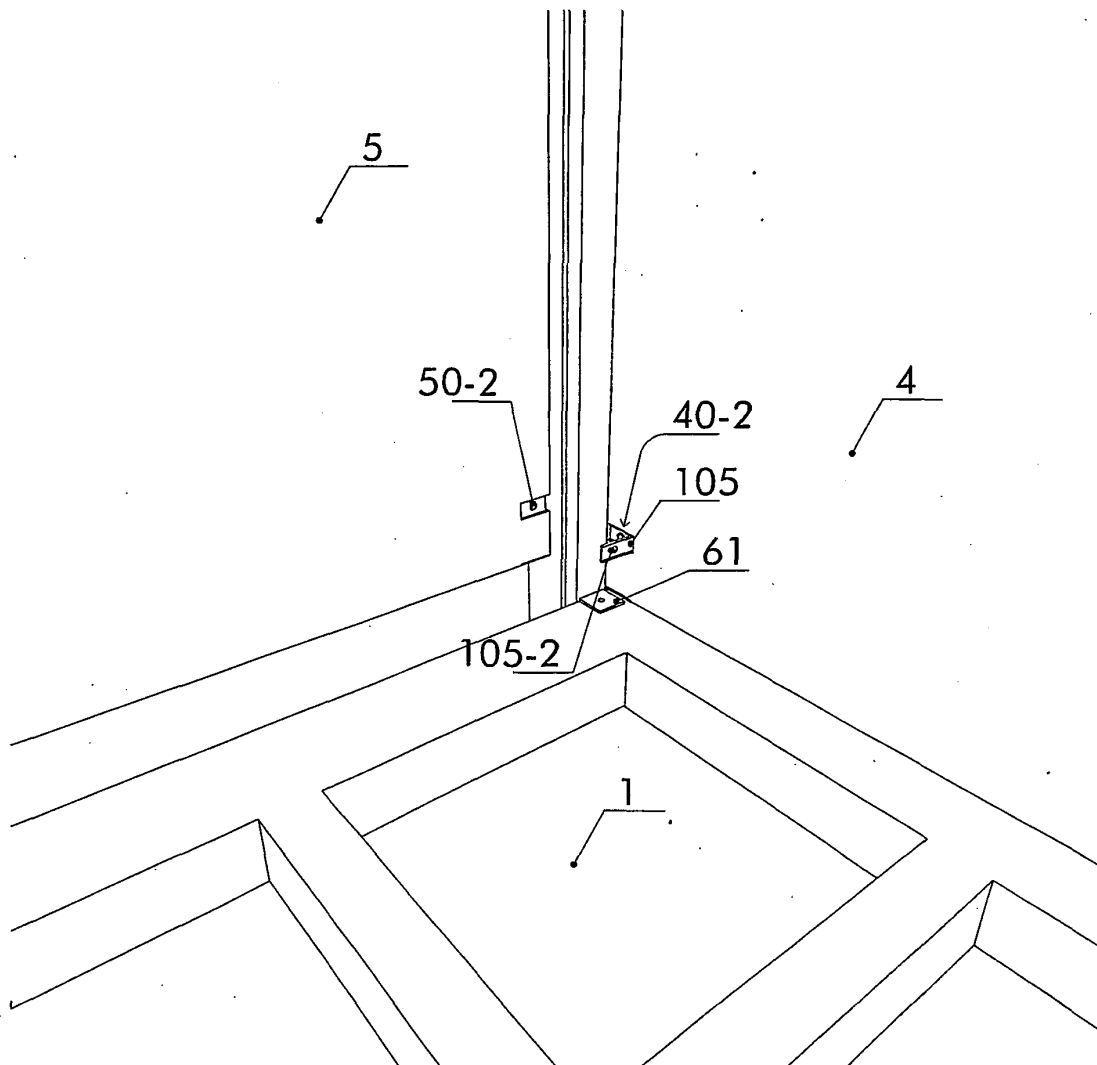


Figure 3

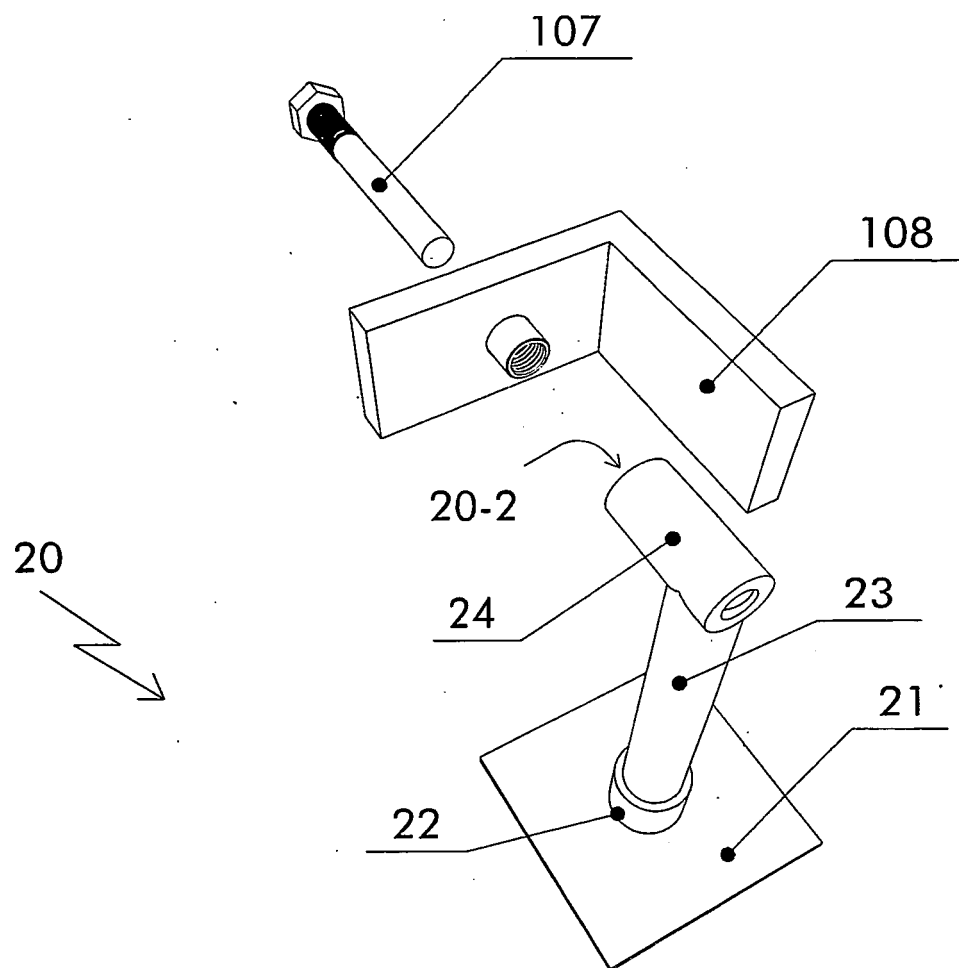


Figure 4

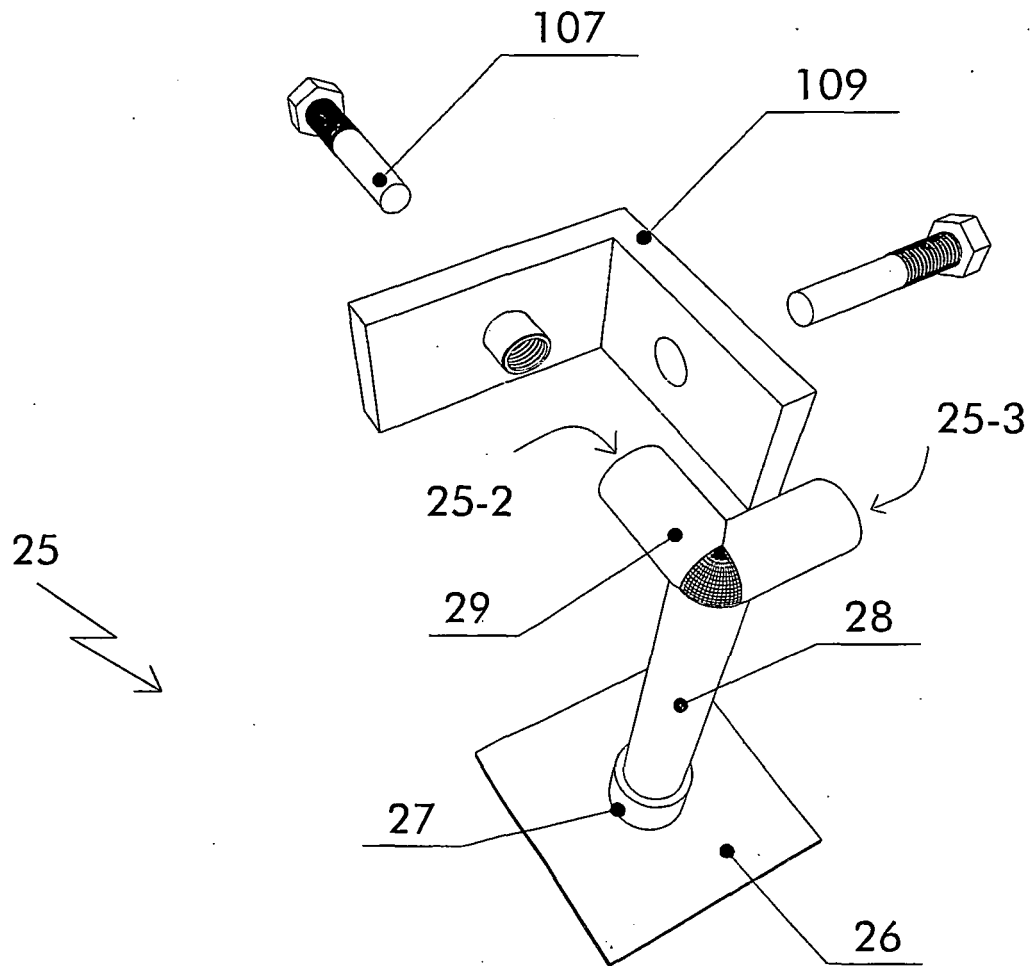


Figure 5A

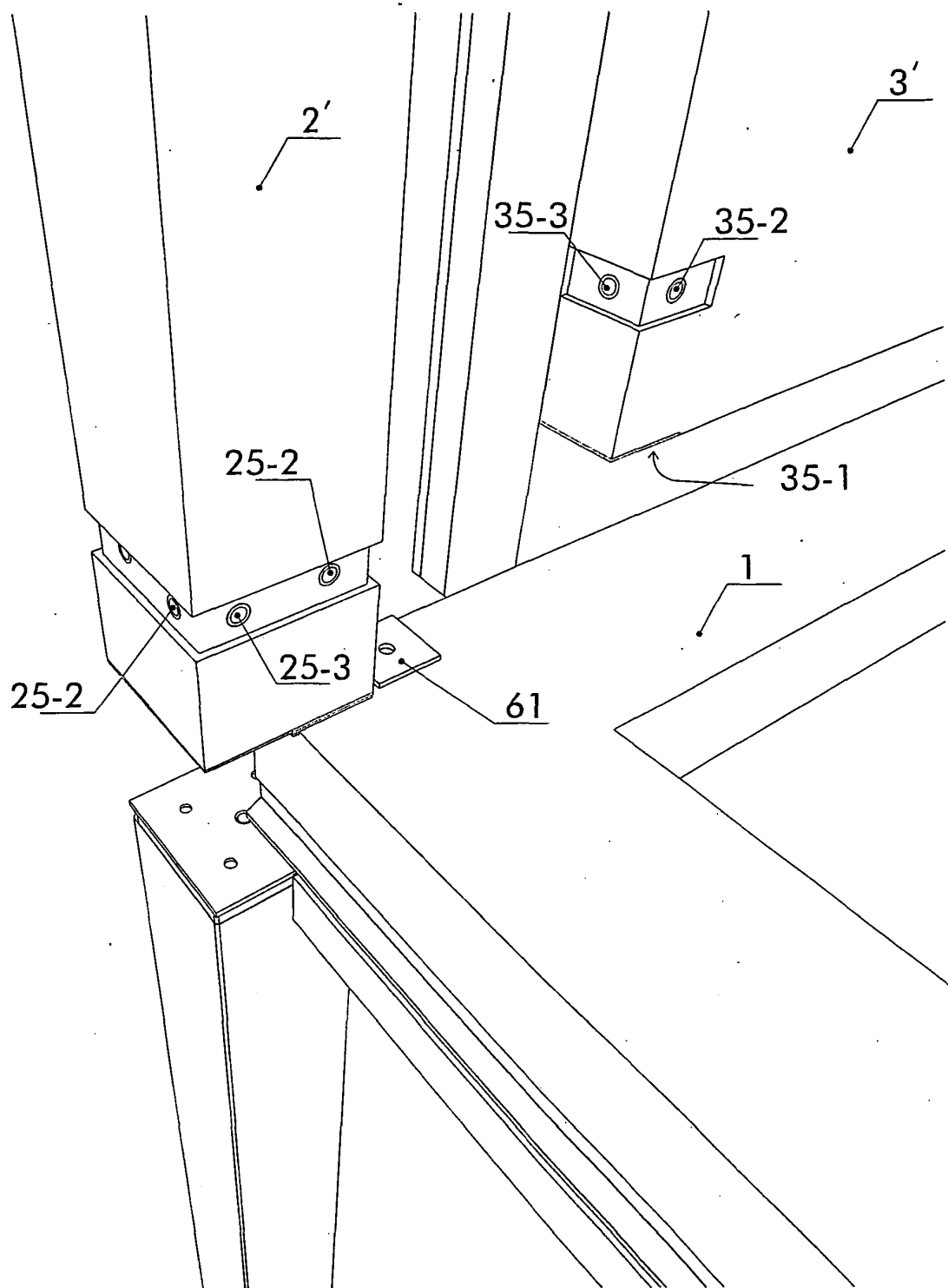


Figure 5B

REFERENCES CITED IN THE DESCRIPTION

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