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(54) METHOD FOR MOUNTING ELEVATOR FRAME

(57) The present disclosure relates to an installation method for an elevator framework, including the following steps: connecting cross beams and pillars, locating upper and lower pillars, and fixing the cross beams and the pillars as well as the upper and lower adjacent pillars. In the present disclosure, one end of a locating column is inserted into a connection slot of the lower pillar and is limited by a locking column; a connection slot of the upper pillar is sheathed on the locating column; the upper and lower pillars are located easily and conveniently; fixed beds are flat and straight to facilitate perforation; the included angles between the fixed beds and vertical sections are 45 degrees, so that the locking column can be conveniently threaded into the connection slots; the fixed beds can be used as accommodating cavities to facilitate installation of wires, and fixing cavities; and the locating column is fixed through the locking column, so that the design is ingenious. Fixing plates are inserted into vertical fixing plate slots and horizontal fixing plate slots; connection corner fittings are fixed to the fixing plates through bolts to fix the cross beams and the pillars as well as the upper and lower adjacent pillars; the fixing plates are located on the outer sides of the connection corner fittings, and the bolts realize fastening outside the profiles; the previous fastening inside the profile is changed, so that the operation space is large, and the installation is convenient.

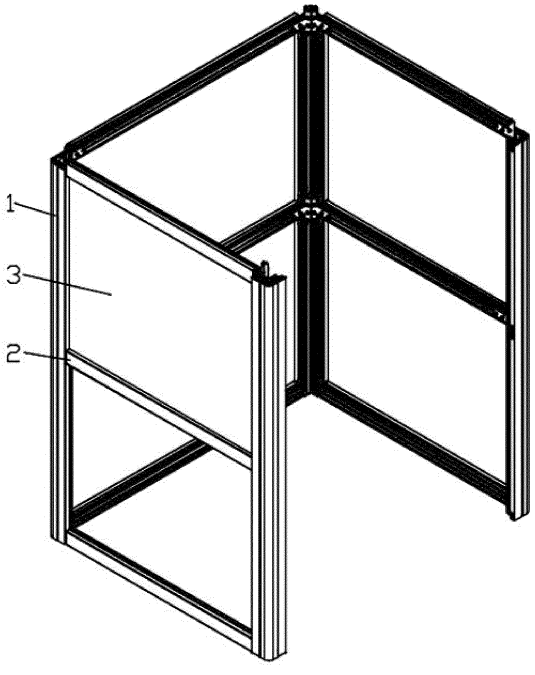

Fig.1

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of elevators, and in particular, an installation method for an elevator framework.

BACKGROUND

[0002] An elevator framework is one of the indispensable and important components of an elevator. However, an existing installation method for an elevator framework cannot locate upper and lower pillars of the elevator framework during installation of the elevator framework, so that the installation process is relatively complicated. At the same time, when cross beams and the pillars as well as the upper and lower adjacent pillars are fixed, bolt heads are located inside profiles, which is inconvenient for fastening.

[0003] Therefore, it is necessary to provide a new technical solution to overcome the above-mentioned deficiencies.

SUMMARY

[0004] The present disclosure is directed to provide an installation method for an elevator framework to effectively solve the above technical problems.

[0005] In order to achieve the objective of the present disclosure, the following technical solution is adopted:
an installation method for an elevator framework. The elevator framework includes a plurality of upper and lower pillars connected in sequence and arranged at four corners, and cross beams perpendicularly connected to two adjacent pillars at joints of the upper and lower pillars. The installation method includes the following steps:

S1: connecting the cross beams with the pillars: Four connection sheets, two cross beams and two pillars are used; two ends of the cross beams are provided with cavities to make the two pillars parallel with each other; the four connection sheets are inserted into the four cavities of the two cross beams and are fixed through bolts; the end portions of the connection sheets respectively press against the upper and lower ends of the pillars and are fixed through bolts, so as to form a "square"-shaped structure;

S2: locating the upper and lower pillars: The pillar is a vertical corner profile; the vertical corner profile includes two vertical sections that are perpendicular to each other and a bent section that connects the two vertical sections; a connection slot is formed inside the bent section; the inner side of the bent section of the vertical corner profile is provided w a fixed bed; two locating columns, two locking columns and two "square"-shaped structures in the step S1 are used; one end of each of the two locating columns is inserted into the connection slots of the two pillars of any one of the "square"-shaped structures; the two locking columns pass through the fixed beds, are inserted into the connection slots and resist against the locating columns; the fixed beds are flat and straight, and are convenient for perforation, and included angles between the fixed beds and the vertical sections are 45 degrees to facilitate the locking columns to be threaded into the connection slots; the connection slots of the two pillars of the other "square"-shaped structure are sheathed at the other ends of the locating columns to locate the upper and lower pillars of the "square"-shaped structure, so as to form a "日"-shaped structure;

S3: fixing the cross beams and the pillars as well as the upper and lower adjacent pillars: Two sides of the inner sides of the vertical sections of the vertical corner profile are provided with vertical fixing plate slots; the inner sides of the cross beams are provided with horizontal fixing plate slots; the horizontal fixing plate slots are located on the rear sides of the cavities; connection corner fittings and fixing plates are used; the fixing plates are inserted into the vertical fixing plate slots and the horizontal fixing plate slots; the connection corner fittings are fixed to the fixing plates through bolts to fix the cross beams and the pillars as well as the upper and lower adjacent pillars, so as to form a stable "日"-shaped structure; the fixing plates are located on the outer sides of the connection corner fittings, and the bolts realize fastening outside the profiles.

[0006] Further, two stable "日"-shaped structures in the step S3 are used, and are placed in parallel; the stable "日"-shaped structures are connected to the cross beams through the connection sheets at the upper parts, the middle parts and the lower parts of the "日"-shaped structures; the cross beams and the two stable "日"-shaped structures are fixed together through the connection corner fittings and the fixing plates to form a stable structure that is of a U shape from the top view, i.e., the elevator framework.

[0007] Further, one stable "日"-shaped structure in the step S3 is used; the stable "日"-shaped structures are connected to the cross beams through the connection sheets at the upper parts, the middle parts and the lower parts of two ends in vertical directions of the "日"-shaped structures; the cross beams and the "日"-shaped structures are fixed through the connection corner fittings and the fixing plates to form a structure that is of a U shape from the top view, and the end portions of the cross beams at the two open ends of the structure that is of the U shape from the top view are connected with the pillars, and the pillars are fixed, so as to form a stable structure

that is of a U shape from the top view, i.e., the elevator framework.

[0008] Further, the fixed beds are sunken at the bent sections towards the inner sides to form clamping slots provided with bayonets at two sides; wires are placed in the fixed beds, and are fastened on the clamping slots by means of cooperation between clamping jaws on two sides of threading components and the bayonets, so as to be fixed; the fixed beds are used as, on one hand, accommodating cavities to facilitate installation of the wires, and are used as, on the other hand, fixing cavities; and the locating columns are fixed through the locking columns.

[0009] Further, a board is embedded on the elevator framework; the board is located on the exterior of the elevator framework; fixing slots are formed in the outer side surfaces of the cross beams; the insides of the fixing slots are detachably connected with T-shaped fixing pieces for fixing the end portion of the board in a height direction; the pillars are detachably connected with battens for fixing the end portion of the board in a width direction; one board, two battens and two T-shaped fixing pieces are used; the board resists against the pillars and the cross beams; the T-shaped fixing pieces are respectively fixed on the fixing slots of the cross beams at two ends of the board in the height direction; one end of each batten presses and covers the end portion of the board in the width direction; and then, one end of each batten is fixedly connected to a space between the pillars and the board.

[0010] Further, when the board is located on the inner side of the elevator framework, two sides of the horizontal fixing plate slots of the cross beams are provided with cross beam clamping bar bayonets; the outer sides of the vertical fixing plate slots of the vertical corner profile are provided with pillar clamping bar bayonets; the insides of the cross beam clamping bar bayonets and the pillar clamping bar bayonets are all fastened with installation clamping bars; the sides, opposite to the board, of the installation clamping bars are provided with fixing bayonets in which flexible bars for fixing the board are fastened; the flexible bars resist against the board; the board resist against the pillars and the cross beams at first, and then the flexible bars are fastened in the installation clamping bars; the installation clamping bars are fastened on the pillars and the cross beams; and the entire flexible bars are driven to resist against the board.

[0011] Further, the pillars are detachably connected with pillar cover plates; the pillar cover plates are divided into bent section cover plates and vertical section cover plates; the bent section cover plates are detachably connected with the vertical section cover plates; the bent section cover plates are connected with the bent sections of the vertical corner profiles; the vertical section cover plates are connected with the vertical sections of the vertical corner profiles; the cross beams are detachably connected with cross beam cover plates; the vertical section cover plates are fastened on the vertical sections of the vertical corner profiles, and then the bent section cover plates are fastened on the bent sections of the vertical corner profiles; and the bent section cover plates are fastened on the vertical section cover plates at the same time.

[0012] Further, the bent sections of the vertical corner profiles are detachably connected with bent section cover plates; and the bent section cover plates are fastened on the bent sections of the vertical corner profiles, and are fastened on the board at the same time.

[0013] Further, in the step S1, pre-formed holes are pre-processed on the pillars, and the end portions of the connection sheets press against the upper and lower ends of the pillars and are connected with the pre-formed holes through bolts.

[0014] Compared with the prior art, the present invention has the following beneficial effects.

1. In the installation method for the elevator framework of the present disclosure, one end of each locating column is inserted into the connection slot of the lower pillar and is limited by each locking column; the connection slot of the upper pillar is sheathed on the locating column; the upper and lower pillars are located easily and conveniently; the fixed beds are flat and straight to facilitate perforation; the included angles between the fixed beds and the vertical sections are 45 degrees, so that the locking columns can be conveniently threaded into the connection slots; the fixed beds can be used as, on one hand, the accommodating cavities to facilitate installation of the wires, and can be used as, on the other hand, the fixing cavities; and the locating columns are fixed through the locking columns, so that the design is ingenious.
2. In the installation method for the elevator framework, two sides of the inner sides of the vertical sections of the vertical corner profiles are provided with the vertical fixing plate slots; the inner sides of the cross beams are provided with the horizontal fixing plate slots; the horizontal fixing plate slots are located on the rear sides of the cavities; the connection corner fittings and the fixing plates are used; the fixing plates are inserted into the vertical fixing plate slots and the horizontal fixing plate slots; the connection corner fittings are fixed to the fixing plates through bolts to fix the cross beams and the pillars as well as the upper and lower adjacent pillars; the fixing plates are located on the outer sides of the connection corner fittings, and the bolts realize fastening outside the profiles; the previous fastening inside the profiles is changed, so that the operation space is large, and the installation is convenient.
3. In the installation method for the elevator framework of the present disclosure, the cross beams and the pillars are connected through the connection sheets, and this is easy and quick.
4. In the installation method for the elevator framework of the present disclosure, the pillars are detach-

ably connected with the pillar cover plates, and the cross beams are detachably connected with the cross beam cover plates, so as to form protection to the pillars and the cross beams.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

Fig. 1 is a structural schematic diagram of an elevator framework of the present disclosure.

Fig. 2 is a structural schematic diagram of a portion of an installation-facilitated elevator framework of the present disclosure.

Fig. 3 is an enlarged schematic diagram of a portion A in Fig. 2;

Fig. 4 is an enlarged schematic diagram of a portion B in Fig. 2;

Fig. 5 is an enlarged schematic diagram of a portion C in Fig. 2;

Fig. 6 is a top view of another portion of an installation-facilitated elevator framework of the present disclosure.

Fig. 7 is a structural schematic diagram showing that a board of an installation-facilitated elevator framework of the present disclosure is located on the inner side of the elevator framework.

Fig. 8 is a structural schematic diagram showing, from another angle, that a board of an installation-facilitated elevator framework of the present disclosure is located on the inner side of the elevator framework.

Fig. 9 is a structural schematic diagram showing that a board of an installation-facilitated elevator framework of the present disclosure is located on the outer side of the elevator framework.

Fig. 10 is a structural schematic diagram showing, from another angle, that a board of an installation-facilitated elevator framework of the present disclosure is located on the outer side of the elevator framework.

In the drawings: 1: pillar; 2: cross beam; 3: board; 4: batten; 5: installation clamping bar; 10: vertical section; 101: vertical fixing plate slot; 102: pillar clamping bar bayonets; 11: bent section; 12: connection slot; 13: locating column; 14: fixed bed; 15: clamping slot; 16: fixing plate; 161: connection corner fitting; 17: pillar cover plate; 171: bent section cover plate; 172: vertical section cover plate; 21: horizontal fixing plate slot; 211: cross beam clamping bar bayonet; 212: fixing slot; 22: cavity; 23: connection sheet; 24: cross beam cover plate; 50: fixing bayonet; and 51: flexible bar.

DESCRIPTION OF THE EMBODIMENTS

[0016] In the description of the present disclosure, it should be understood that orientations or positional relationships indicated by the terms "center", "transverse", "longitudinal", "front", "rear", "left", "right", "upper", "lower", "upright", "horizontal", "top", "bottom", "inside", "outside" and the like are orientations or positional relationships as shown in the drawings, and are only for the purpose of facilitating and simplifying the description of the present disclosure instead of indicating or implying that devices or elements indicated must have particular orientations, and be constructed and operated in the particular orientations, so that these terms are not construed as limiting the protection scope of the present disclosure. When a component is referred to as "being fixed to" another component, it can be directly on the other component or an intermediate component may also be present. When one component is considered to be "connected" to another component, it can be directly connected to the other component or an intermediate component may be present at the same time. When one component is considered to be "disposed" on another component, it can be directly disposed on the other component or an intermediate component may be present at the same time. The terms "vertical", "horizontal", "left", "right" and similar representations used herein are only for the purpose of illustration.

[0017] An installation method for an elevator framework of the present disclosure will be clearly and completely described below in conjunction with the accompanying drawings.

[0018] As shown in Fig. 1 to Fig. 8, an installation method for an elevator framework of the present disclosure is illustrated. The elevator framework includes a plurality of upper and lower pillars 1 connected in sequence and arranged at four corners, and cross beams perpendicularly connected to two adjacent pillars 1 at joints of the upper and lower pillars 1. The installation method includes the following steps that:

S1: the cross beams 2 are connected with the pillars 1: Four connection sheets 23, two cross beams 2 and two pillars 1 are used; two ends of the cross beams are provided with cavities 22 to make the two pillars 1 parallel with each other; the four connection sheets 23 are inserted into the four cavities 22 of the two cross beams 2 and are fixed through bolts; the end portions of the connection sheets respectively press against the upper and lower ends of the pillars 1 and are fixed through bolts, so as to form a "square"-shaped structure;

S2: the upper and lower pillars 1 are located: The pillar 1 is a vertical corner profile; the vertical corner profile includes two vertical sections 10 that are perpendicular to each other and a bent section 11 that connects the two vertical sections 10; a connection slot 12 is formed inside the bent section 11; the inner side of the bent section 11 of the vertical corner profile is provided with a fixed bed 14; two locating columns 13, two locking columns and two "square"-shaped structures in the step S1 are used; one end

of each of the two locating columns 13 is inserted into the connection slots 12 of the two pillars 1 of any one of the "square"-shaped structures; the two locking columns pass through the fixed beds 14, are inserted into the connection slots 12 and resist against the locating columns 13; the connection slots 12 of the two pillars 1 of the other "square"-shaped structure are sheathed at the other ends of the locating columns 13 to locate the upper and lower pillars 1 of the "square"-shaped structure, so as to form a "日"-shaped structure;

[0019] The fixed beds 14 are flat and straight, and have included angles of 45 degrees to the vertical sections 10; the included angles between the fixed beds 14 and the vertical sections 10 may also be other angles, as long as notches of the connection slots 12 are opposite to the fixed beds 14. However, in consideration of the convenience of installation, a 45-degree angle should be selected, and only vertical perforation needs to be performed on the middle portions of the fixed beds 14 to cause the locking columns to be successfully threaded into the connection slots 12. In consideration of the convenience of perforation, the fixed bed 14 should be flat and straight. If it has a curved surface or a slope, a perforation position is hard to locate, and inclined holes are easy to generate in the perforation process, so that it is hard to ensure that the locking columns are successfully inserted into the connection slots 12 of the pillars. The locking column may be a screw, a stud and a shaft pin. In consideration of the cost and the convenience of use, the screw should be selected. If the stud is used, the relatively large end portion of the stud would occupy the limited volume of the fixed bed 14. If the shaft pin is used, the pin shaft is easily inserted into the connection slot 12 too much to cause the end portion of the shaft pin to be remained in the fixed bed 14 too little, and this cannot fix the shaft pin well.

[0020] S3: the cross beams 2 and the pillars 1 as well as the upper and lower adjacent pillars 1 are fixed: Two sides of the inner sides of the vertical sections 10 of the vertical corner profile are provided with vertical fixing plate slots 101; the inner sides of the cross beams 2 are provided with horizontal fixing plate slots 21; the horizontal fixing plate slots 21 are located on the rear sides of the cavities 22; connection corner fittings 161 and fixing plates 16 are used; the fixing plates 16 are inserted into the vertical fixing plate slots 101 and the horizontal fixing plate slots 21; the connection corner fittings 161 are fixed to the fixing plates 16 through bolts to fix the cross beams 2 and the pillars 1 as well as the upper and lower adjacent pillars 1, so as to form a stable "日"-shaped structure.

[0021] The fixing plates 16 are located on the outer sides of the connection corner fittings 161, and the bolts realize fastening outside the profiles. The previous fastening inside the profile is changed, so that the operation space is large, and the installation is convenient.

[0022] Further, two stable "日"-shaped structures in the step S3 are used, and are placed in parallel; the stable "日"-shaped structures are connected to the cross beams 2 through the connection sheets 23 at the upper parts, the middle parts and the lower parts of the "日"-shaped structures; the cross beams 2 and the two stable "日"-shaped structures are fixed together through the connection corner fittings 161 and the fixing plates 16 to form a stable structure that is of a U shape from the top view, i.e., the elevator framework.

[0023] Further, one stable "日"-shaped structure in the step S3 is used; the stable "日"-shaped structures are connected to the cross beams 2 through the connection sheets 23 at the upper parts, the middle parts and the lower parts of two ends in vertical directions of the "日"-shaped structures; the cross beams 2 and the "日"-shaped structures are fixed through the connection corner fittings 161 and the fixing plates 16 to form a structure that is of a U shape from the top view, and the end portions of the cross beams 2 at the two open ends of the structure that is of the U shape from the top view are connected with the pillars 1, and the pillars 1 are fixed, so as to form a stable structure that is of a U shape from the top view, i.e., the elevator framework.

[0024] Further, the fixed beds 14 are sunken at the bent sections 11 towards the inner sides to form clamping slots 15 provided with bayonets at two sides; wires are placed in the fixed beds 14, and are fastened on the clamping slots 15 by means of cooperation between clamping jaws on two sides of threading components and the bayonets, so as to be fixed; the fixed beds 14 are used as, on one hand, accommodating cavities to facilitate installation of the wires, and are used as, on the other hand, fixing cavities; and the locating columns 13 are fixed through the locking columns, and the design is ingenious.

[0025] Further, a board 3 is embedded on the elevator framework; the board 3 is located on the exterior of the elevator framework; fixing slots 212 are formed in the outer side surfaces of the cross beams 2; the insides of the fixing slots 212 are detachably connected with T-shaped fixing pieces for fixing the end portion of the board in a height direction; the pillars are detachably connected with battens 4 for fixing the end portion of the board in a width direction; one board 3, two battens 4 and two T-shaped fixing pieces are used; the board 3 resists against the pillars 1 and the cross beams 2; the T-shaped fixing pieces are respectively fixed on the fixing slots 212 of the cross beams 2 at two ends of the board 3 in the height direction; one end of each batten 4 presses and covers the end portion of the board 3 in the width direction; and then, one end of each batten 4 is fixedly connected to a space between the pillars 1 and the board 3.

[0026] Further, when the board 3 is located on the inner

side of the elevator framework, two sides of the horizontal fixing plate slots 21 of the cross beams 2 are provided with cross beam clamping bar bayonets 211; the outer sides of the vertical fixing plate slots 101 of the vertical corner profile are provided with pillar clamping bar bayonets 102; the cross beam clamping bar bayonets 211 and the pillar clamping bar bayonets 102 are all internally fastened with installation clamping bars 5; the sides, opposite to the board 3, of the installation clamping bars 5 are provided with fixing bayonets 50 in which flexible bars 51 for fixing the board are fastened; the flexible bars 51 resist against the board 3; the board 3 resist against the pillars 1 and the cross beams 2 at first, and then the flexible bars 51 are fastened in the installation clamping bars 5; the installation clamping bars 5 are fastened on the pillars 1 and the cross beams 2; and the entire flexible bars 51 are driven to resist against the board 3.

[0027] Further, the pillars 1 are connected with pillar cover plates 17 in a fastened manner; the pillar cover plates 17 are divided into bent section cover plates 171 and vertical section cover plates 172; the bent section cover plates 171 are detachably connected with the vertical section cover plates 172; the bent section cover plates 171 are connected with the bent sections 11 of the vertical corner profiles; the vertical section cover plates 172 are connected with the vertical sections 10 of the vertical corner profiles; the cross beams 2 are detachably connected with cross beam cover plates 21; the vertical section cover plates 172 are fastened on the vertical sections 10 of the vertical corner profiles, and then the bent section cover plates 171 are fastened on the bent sections 11 of the vertical corner profiles; and the bent section cover plates 171 are fastened on the vertical section cover plates 172 at the same time.

[0028] Further, the bent sections 11 of the vertical corner profiles are detachably connected with bent section cover plates 171; and the bent section cover plates 171 are fastened on the bent sections 11 of the vertical corner profiles, and are fastened on the board 3 at the same time.

[0029] Further, in the step S1, pre-formed holes are pre-processed on the pillars 1, and the end portions of the connection sheets 23 press against the upper and lower ends of the pillars 1 and are connected with the pre-formed holes through bolts, so that the installation is convenient.

[0030] The present disclosure has the following beneficial effects.

1. In the installation method for the elevator framework of the present disclosure, one end of each locating column is inserted into the connection slot of the lower pillar and is limited by each locking column; the connection slot of the upper pillar is sheathed on the locating column; the upper and lower pillars are located easily and conveniently; the fixed beds are flat and straight to facilitate perforation; the included angles between the fixed beds and the vertical sections are 45 degrees, so that the locking columns can be conveniently threaded into the connection slots; the fixed beds can be used as, on one hand, the accommodating cavities to facilitate installation of the wires, and can be used as, on the other hand, the fixing cavities; and the locating columns are fixed through the locking columns, so that the design is ingenious.

2. In the installation method for the elevator framework, two sides of the inner sides of the vertical sections of the vertical corner profile are provided with the vertical fixing plate slots; the inner sides of the cross beams are provided with the horizontal fixing plate slots; the horizontal fixing plate slots are located on the rear sides of the cavities; the connection corner fittings and the fixing plates are used; the fixing plates are inserted into the vertical fixing plate slots and the horizontal fixing plate slots; the connection corner fittings are fixed to the fixing plates through bolts to fix the cross beams and the pillars as well as the upper and lower adjacent pillars; the fixing plates are located on the outer sides of the connection corner fittings, and the bolts realize fastening outside the profiles; the previous fastening inside the profile is changed, so that the operation space is large, and the installation is convenient.

3. In the installation method for the elevator framework of the present disclosure, the cross beams and the pillars are connected through the connection sheets, and this is easy and quick.

4. In the installation method for the elevator framework of the present disclosure, the pillars are detachably connected with the pillar cover plates, and the cross beams are detachably connected with the cross beam cover plates, so as to form protection to the pillars and the cross beams.

[0031] It should be understood that those of ordinary skill in the art can make improvements or transformations according to the above illustrations, and all these improvements and transformations shall fall within the protection scope of the claims appended.

Claims

1. An installation method for an elevator framework, wherein the elevator framework comprises a plurality of upper and lower pillars connected in sequence and arranged at four corners, and cross beams perpendicularly connected to two adjacent pill at joints of the upper and lower pillars; the installation method comprises the following steps:

   S1: connecting the cross beams with the pillars: Four connection sheets, two cross beams and two pillars are used; two ends of the cross beams are provided with cavities to make the two pillars parallel with each other; the four connection

sheets are inserted into the four cavities of the two cross beams and are fixed through bolts; the end portions of the connection sheets respectively press against the upper and lower ends of the pillars and are fixed through bolts, so as to form a "square"-shaped structure;

S2: locating the upper and lower pillars: The pillar is a vertical corner profile; the vertical corner profile includes two vertical sections that are perpendicular to each other and a bent section that connects the two vertical sections; a connection slot is formed inside the bent section; the inner side of the bent section of the vertical corner profile is provided w a fixed bed; two locating columns, two locking columns and two "square"-shaped structures in the step S1 are used; one end of each of the two locating columns is inserted into the connection slots of the two pillars of any one of the "square"-shaped structures; the two locking columns pass through the fixed beds, are inserted into the connection slots and resist against the locating columns; the fixed beds are flat and straight, and are convenient for perforation, and included angles between the fixed beds and the vertical sections are 45 degrees to facilitate the locking columns to be threaded into the connection slots; the connection slots of the two pillars of the other "square"-shaped structure are sheathed at the other ends of the locating columns to locate the upper and lower pillars of the "square"-shaped structure, so as to form a "日"-shaped structure;

S3: fixing the cross beams and the pillars as well as the upper and lower adjacent pillars: Two sides of the inner sides of the vertical sections of the vertical corner profile are provided with vertical fixing plate slots; the inner sides of the cross beams are provided with horizontal fixing plate slots; the horizontal fixing plate slots are located on the rear sides of the cavities; connection corner fittings and fixing plates are used; the fixing plates are inserted into the vertical fixing plate slots and the horizontal fixing plate slots; the connection corner fittings are fixed to the fixing plates through bolts to fix the cross beams and the pillars as well as the upper and lower adjacent pillars, so as to form a stable "日"-shaped structure; the fixing plates are located on the outer sides of the connection corner fittings, and the bolts realize fastening outside the profiles.

2. The installation method for the elevator framework according to claim 1, wherein two stable "日"-shaped structures in the step S3 are used, and are placed in parallel; the stable "日"-shaped structures are connected to the cross beams through connection sheets at the upper parts, the middle parts and the lower parts of the "日"-shaped structures; the cross beams and the two stable "日"-shaped structures are fixed together through the connection corner fittings and the fixing plates to form a stable structure that is of a U shape from the top view, i.e., the elevator framework.

3. The installation method for the elevator framework according to claim 1, wherein one stable "日"-shaped structure in the step S3 is used; the stable "日"-shaped structures are connected to the cross beams through connection sheets at the upper parts, the middle parts and the lower parts of two ends in vertical directions of the "日"-shaped structures; the cross beams and the "日"-shaped structures are fixed through the connection corner fittings and the fixing plates to form a structure that is of a U shape from the top view, and the end portions of the cross beams at the two open ends of the structure that is of the U shape from the top view are connected with the pillars, and the pillars are fixed, so as to form a stable structure that is of a U shape from the top view, i.e., the elevator framework.

4. The installation method for the elevator framework according to claim 2 or 3, wherein the fixed beds are sunken at the bent sections towards the inner sides to form clamping slots provided with bayonets at two sides; wires are placed in the fixed beds, and are fastened on the clamping slots by means of cooperation between clamping jaws on two sides of threading components and the bayonets, so as to be fixed; the fixed beds are used as, on one hand, accommodating cavities to facilitate installation of the wires, and are used as, on the other hand, fixing cavities to fix the locating columns through the locking columns.

5. The installation method for the elevator framework according to claim 2 or 3, wherein a board is embedded on the elevator framework; the board is located on the exterior of the elevator framework; fixing slots are formed in the outer side surfaces of the cross beams; the insides of the fixing slots are detachably connected with T-shaped fixing pieces for fixing the end portion of the board in a height direction; the pillars are detachably connected with battens for fixing the end portion of the board in a width direction; one board, two battens and two T-shaped fixing pieces are used; the board resists against the pillars and the cross beams; the T-shaped fixing pieces are respectively fixed on the fixing slots of the cross beams at two ends of the board in the height direction; one

end of each batten presses and covers the end portion of the board in the width direction; and then, one end of each batten is fixedly connected to a space between the pillars and the board.

6. The installation method for the elevator framework according to claim 2 or 3, wherein when the board is located on the inner side of the elevator framework, two sides of the horizontal fixing plate slots of the cross beams are provided with cross beam clamping bar bayonets; the outer sides of the vertical fixing plate slots of the vertical corner profile are provided with pillar clamping bar bayonets; the insides of the cross beam clamping bar bayonets and the pillar clamping bar bayonets are all fastened with installation clamping bars; the sides, opposite to the board, of the installation clamping bars are provided with fixing bayonets in which flexible bars for fixing the board are fastened; the flexible bars resist against the board; the board resist against the pillars and the cross beams at first, and then the flexible bars are fastened in the installation clamping bars; the installation clamping bars are fastened on the pillars and the cross beams; and the entire flexible bars are driven to resist against the board.

7. The installation method for the elevator framework according to claim 5, wherein the pillars are detachably connected with pillar cover plates; the pillar cover plates are divided into bent section cover plates and vertical section cover plates; the bent section cover plates are detachably connected with the vertical section cover plates; the bent section cover plates are connected with the bent sections of the vertical corner profiles; the vertical section cover plates are connected with the vertical sections of the vertical corner profiles; the cross beams are detachably connected with cross beam cover plates; the vertical section cover plates are fastened on the vertical sections of the vertical corner profiles, and then the bent section cover plates are fastened on the bent sections of the vertical corner profiles; and the bent section cover plates are fastened on the vertical section cover plates at the same time.

8. The installation method for the elevator framework according to claim 6, wherein the bent sections of the vertical corner profiles are detachably connected with bent section cover plates; and the bent section cover plates are fastened on the bent sections of the vertical corner profiles, and are fastened on the board at the same time.

9. The installation method for the elevator framework according to claim 1, wherein in the step S1, preformed holes are pre-processed on the pillars, and the end portions of the connection sheets press against the upper and lower ends of the pillars and are connected with the pre-formed holes through bolts.

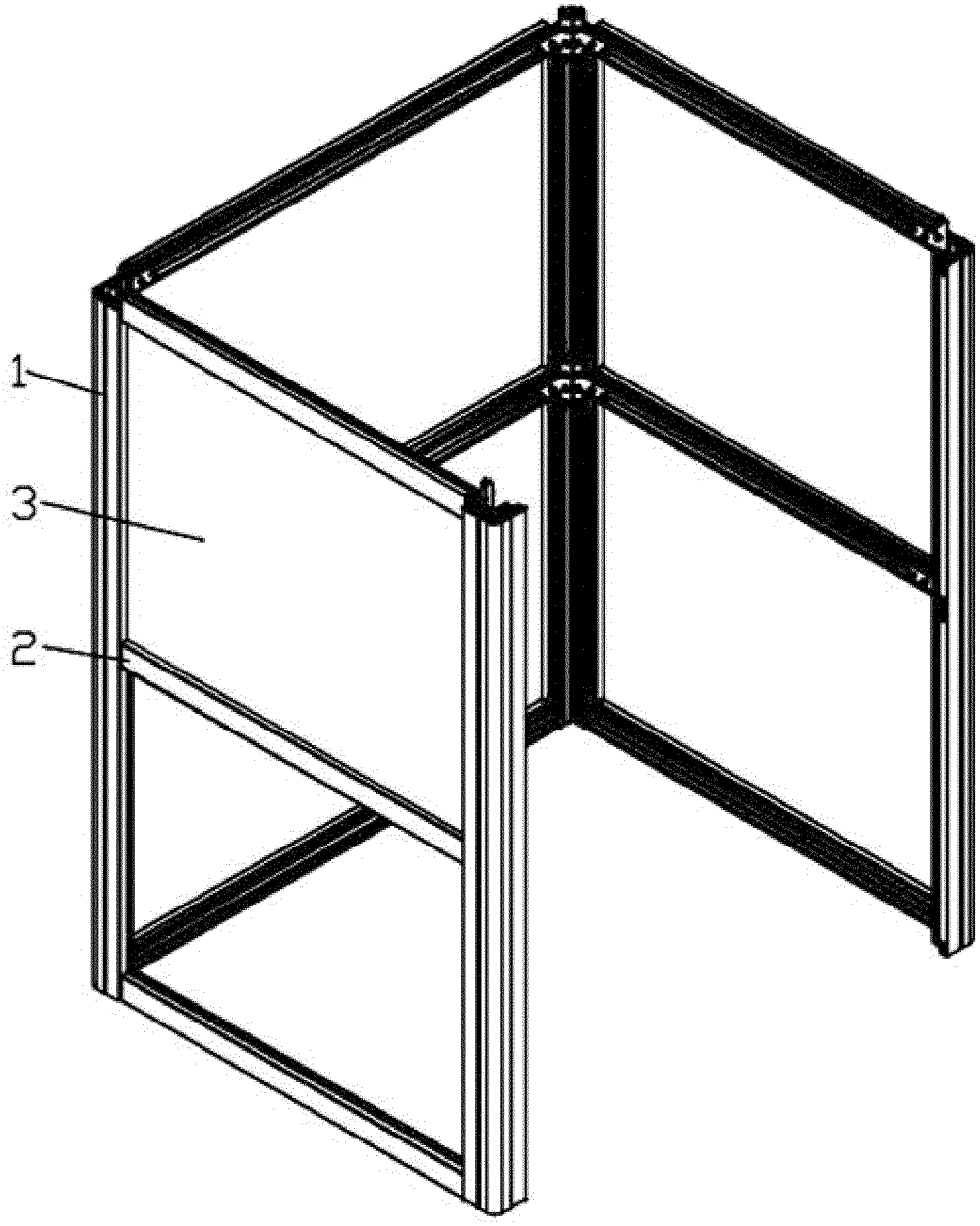

Fig.1

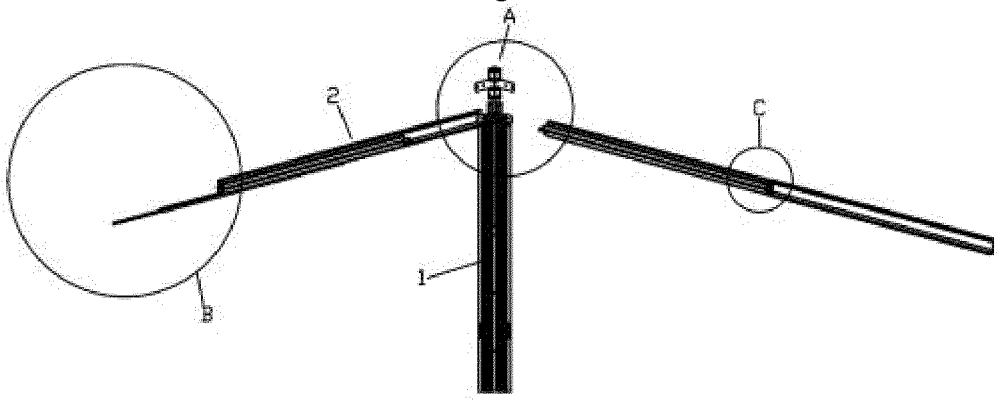

Fig.2

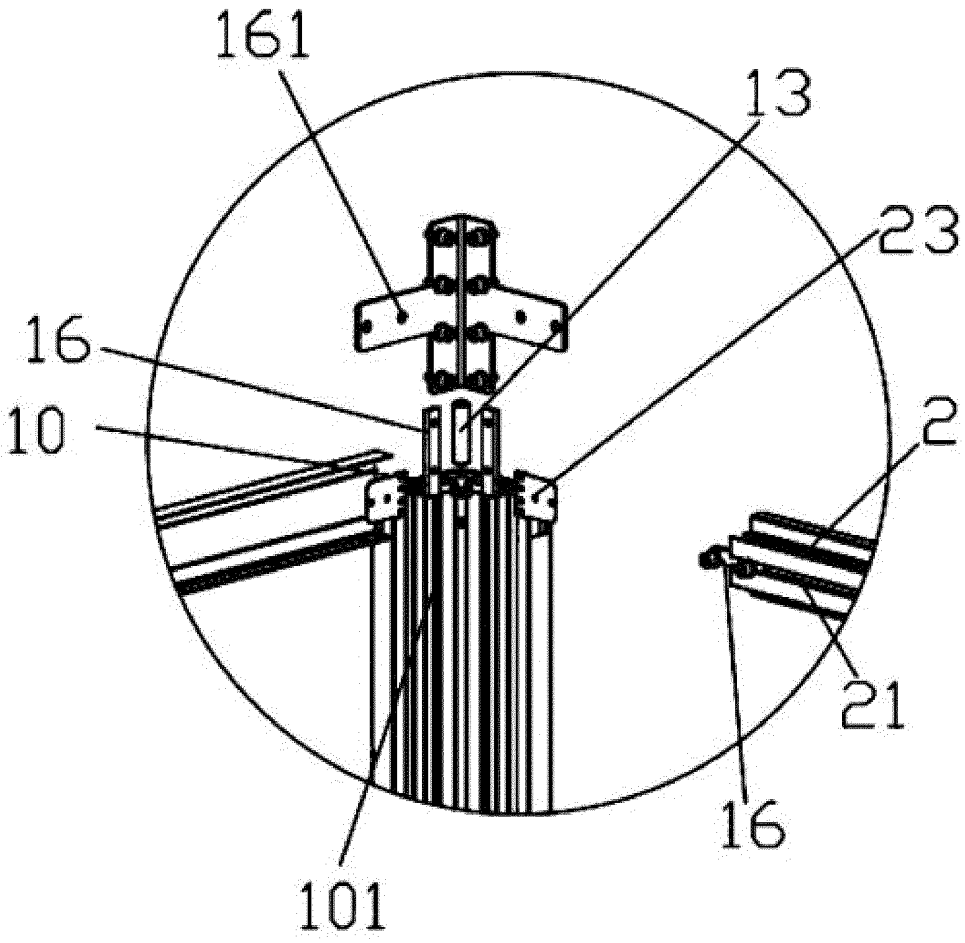

Fig.3

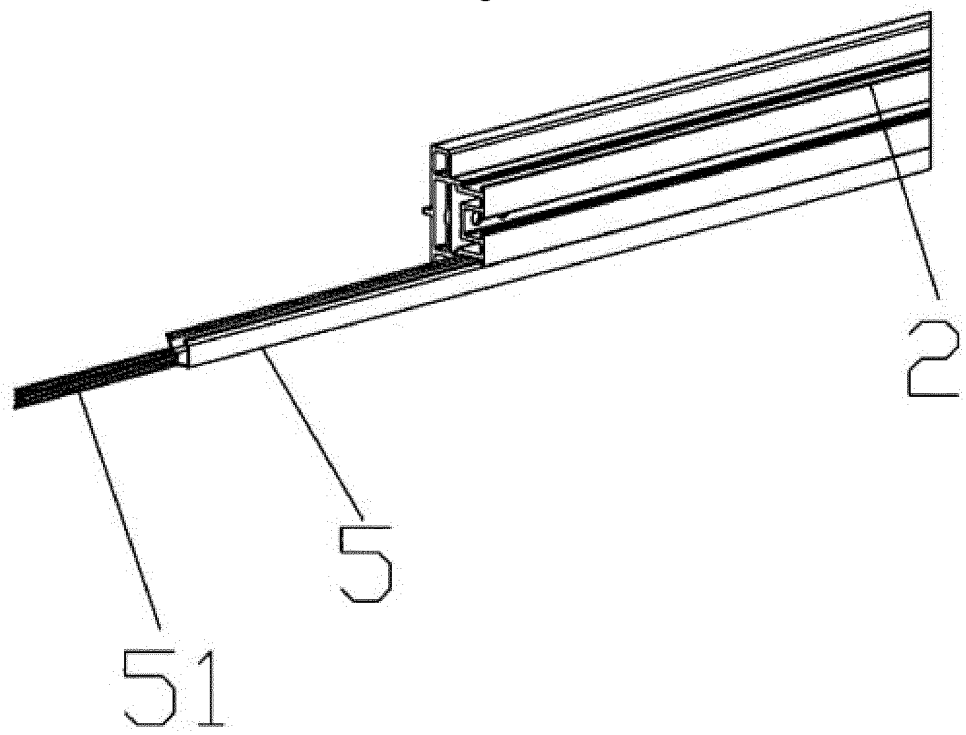

Fig.4

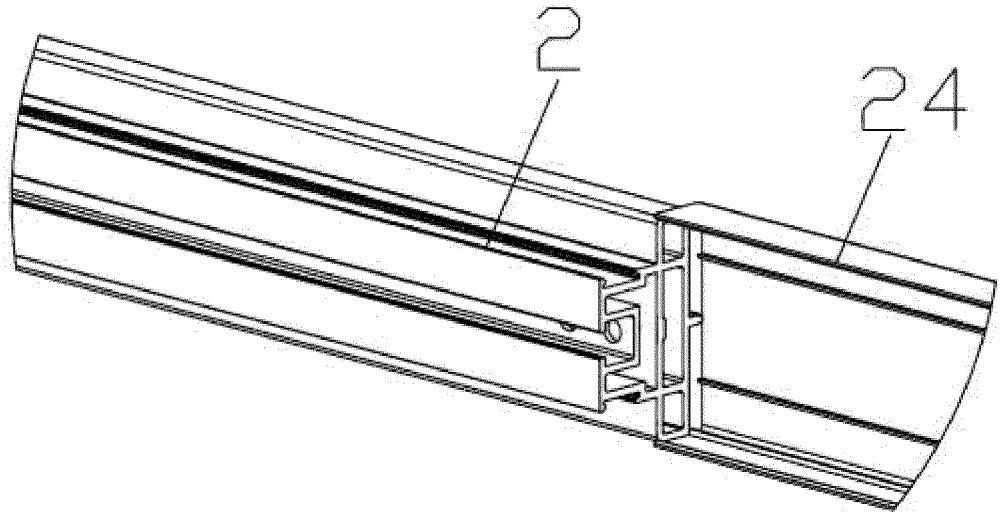

Fig.5

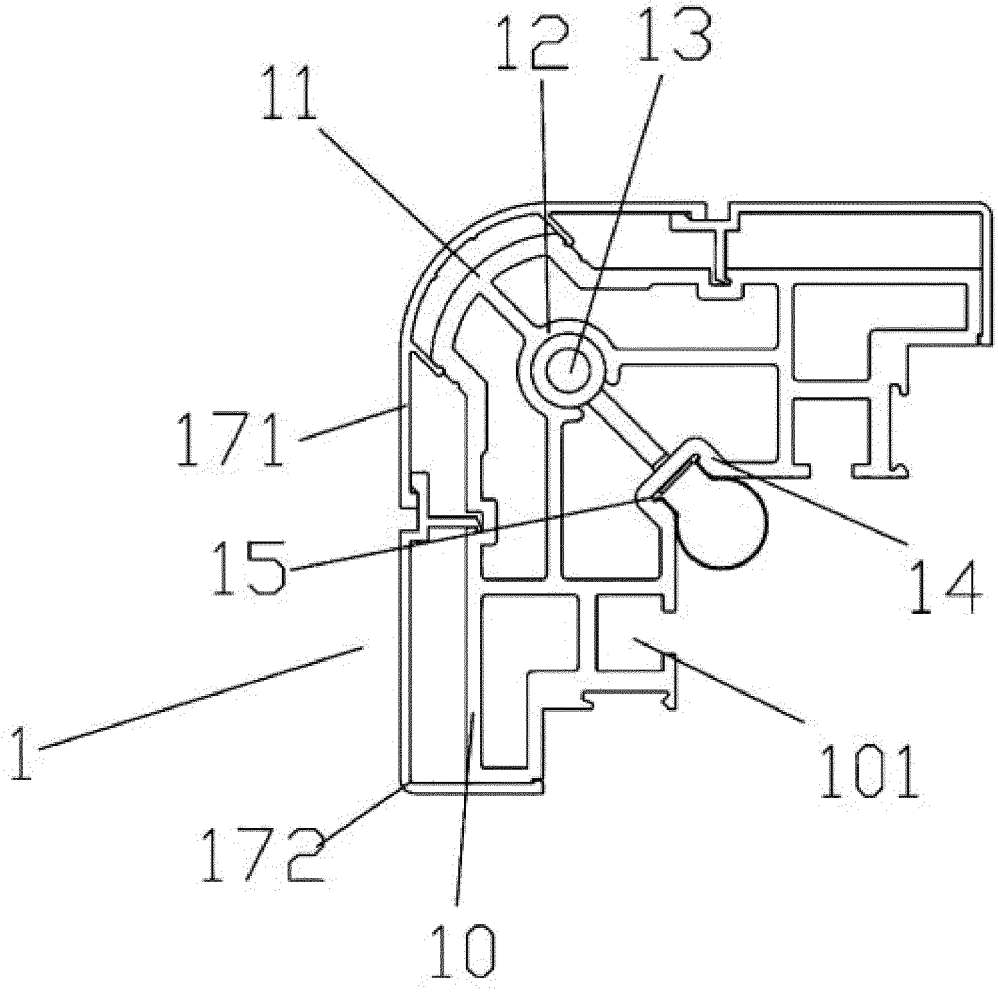

Fig.6

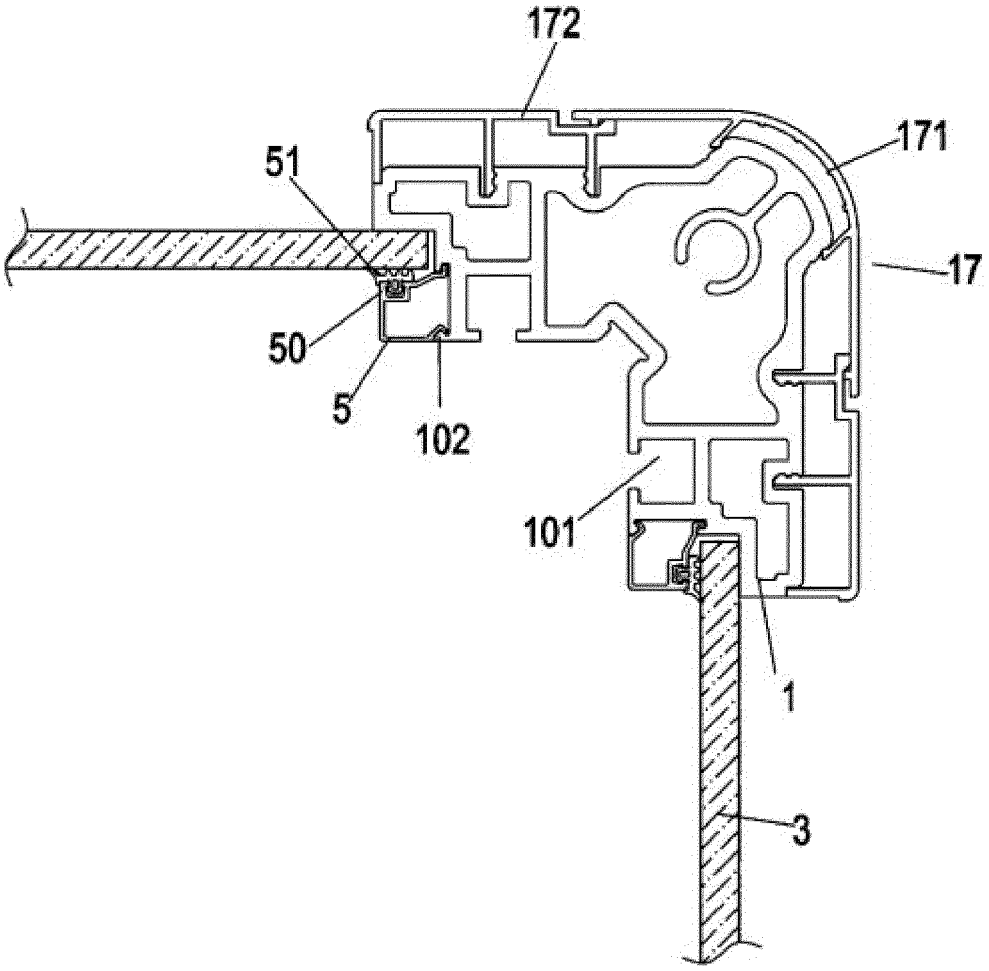

Fig.7

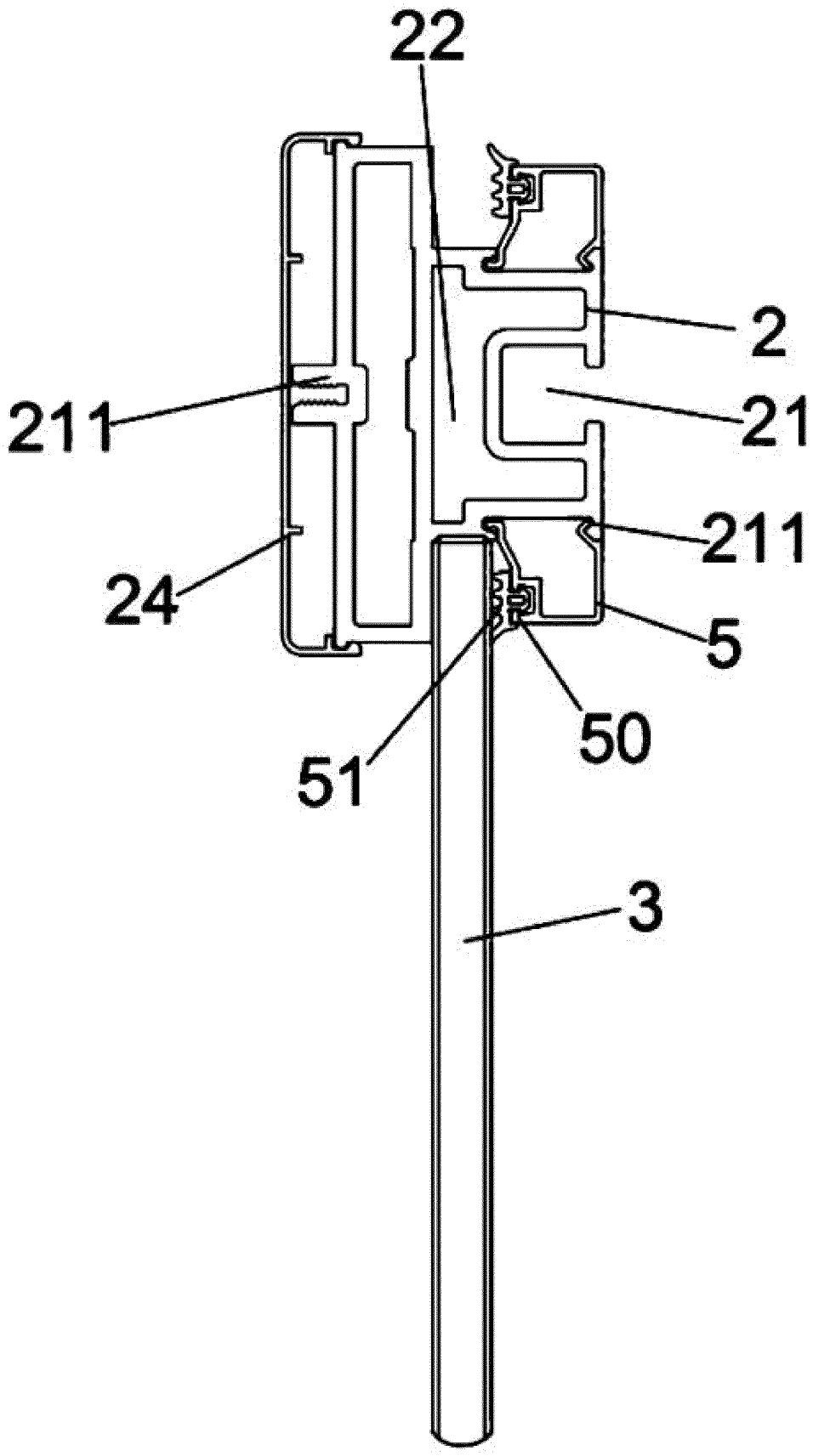

Fig.8

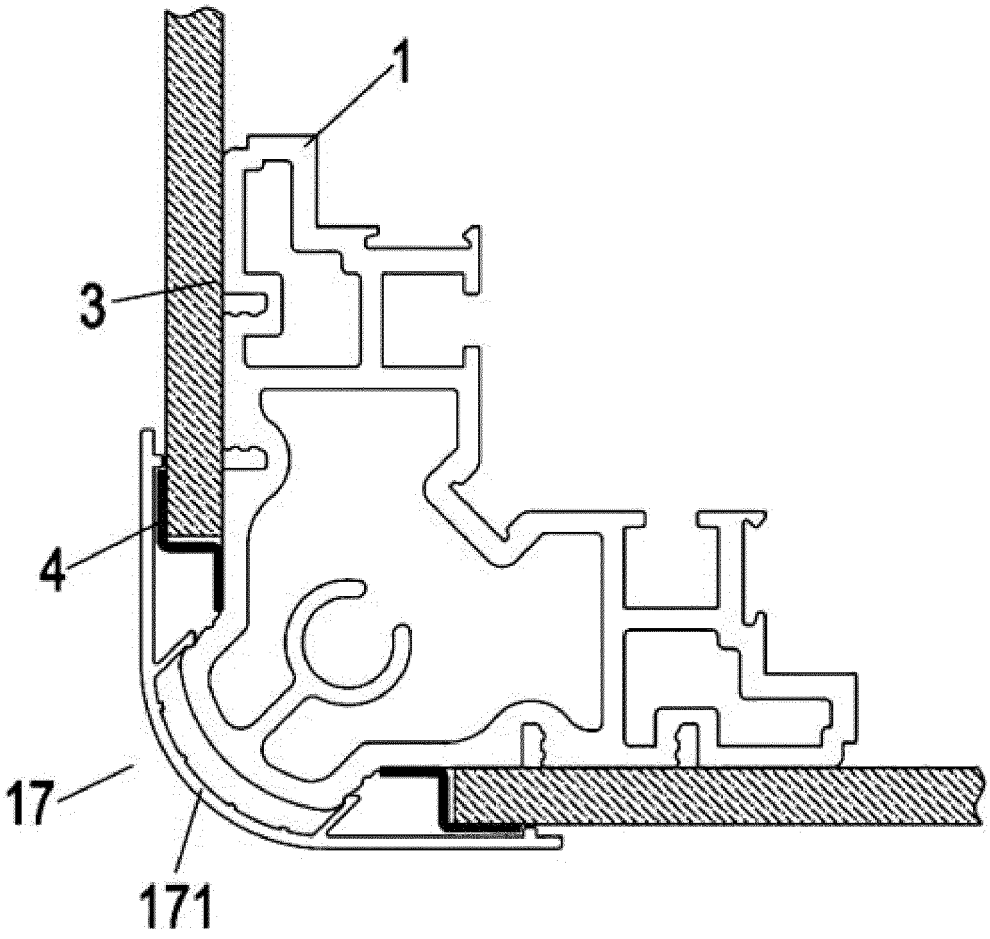

Fig.9

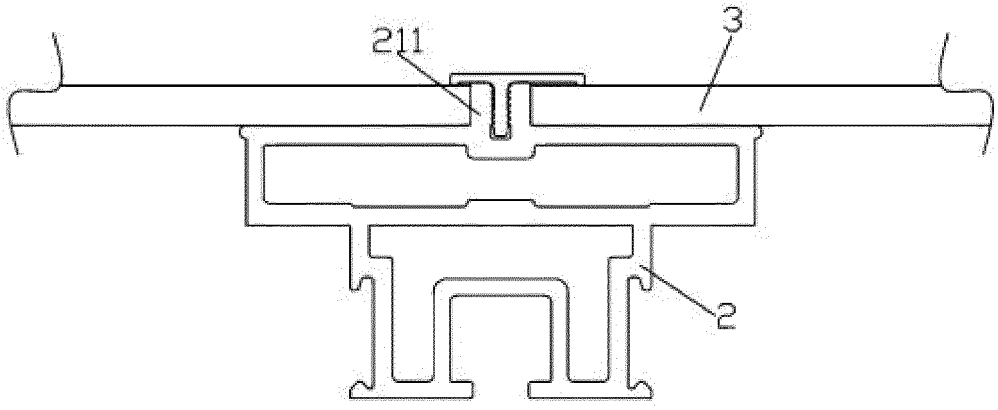

Fig.10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2020/085858

A. CLASSIFICATION OF SUBJECT MATTER

B66B 11/02(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B66B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS; CNKI; CNTXT; VEN; EPTXT; USTXT; WOTXT: 电梯, 框架, 立柱, 横梁, 横档, 定位, 安装, column, post, pillar, upright, locate, angle, fix, install

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 110642124 A (SUZHOU BAIWEI INTELLIGENT TECHNOLOGY CO., LTD.) 03 January 2020 (2020-01-03) description paragraphs [0035]-[0054], figures 1-10	1-7
PX	CN 110510482 A (SUZHOU POWEI INTELLIGENT TECHNOLOGY CO., LTD.) 29 November 2019 (2019-11-29) description paragraphs [0033]-[0050], figures 1-10	1-7
A	CN 110127492 A (SUZHOU POWEI INTELLIGENT TECHNOLOGY CO., LTD.) 16 August 2019 (2019-08-16) description paragraphs [0037]-[0061], figures 1-7	1-7
A	CN 110182667 A (SUZHOU POWEI INTELLIGENT TECHNOLOGY CO., LTD.) 30 August 2019 (2019-08-30) entire document	1-7
A	CN 107352358 A (SUZHOU TRANS ELEVATOR CO., LTD.) 17 November 2017 (2017-11-17) entire document	1-7
A	US 2014374197 A1 (LOHR LIFTEN B V) 25 December 2014 (2014-12-25) entire document	1-7

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 June 2020	**08 July 2020**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2020/085858

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	110642124	A	03 January 2020	None			
CN	110510482	A	29 November 2019	None			
CN	110127492	A	16 August 2019	None			
CN	110182667	A	30 August 2019	None			
CN	107352358	A	17 November 2017	CN	207046644	U	27 February 2018
US	2014374197	A1	25 December 2014	US	9828217	B2	28 November 2017
				CA	2859160	A1	27 June 2013
				EP	2791042	B1	25 April 2018
				EA	027653	B1	31 August 2017
				AU	2012354320	A1	03 July 2014
				WO	2013095113	A3	10 October 2013
				ES	2680916	T3	11 September 2018
				WO	2013095113	A2	27 June 2013
				EP	2791042	A2	22 October 2014
				AU	2012354320	B2	25 May 2017

Form PCT/ISA/210 (patent family annex) (January 2015)