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

(11) **EP 3 716 254 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
27.04.2022 Bulletin 2022/17

(21) Application number: **19176851.4**

(22) Date of filing: **28.05.2019**

(51) International Patent Classification (IPC):
F16M 11/04 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
G09F 9/3026; G09F 15/0018

(54) INSTALLATION STRUCTURE AND INSTALLATION METHOD FOR MOUNTED LED SCREEN

INSTALLATIONSSTRUKTUR UND INSTALLATIONSVERFAHREN FÜR EINEN MONTIERTEN LED-BILDSCHIRM

STRUCTURE D'INSTALLATION ET PROCÉDÉ D'INSTALLATION POUR UN ÉCRAN À DEL MONTÉ

(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

(30) Priority: **28.03.2019 CN 201910243811**

(43) Date of publication of application:
30.09.2020 Bulletin 2020/40

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Description

TECHNICAL FIELD

[0001] The present application relates generally to installation and fixation of LED screen technical field, more specifically to installation structure and installation method for mounted LED screen.

BACKGROUND

[0002] As the rapid development of the LED technology, outdoor LED screens are getting better display effect and cheaper price, which are widely applied in many outdoor occasions and stage performances.

[0003] CN 206 036 539 U discloses a single-upright-column concatenation screen installing support, the installing support includes installation base, horizontal support rod, installation crossbeam, adjusting device, horizontal installation roof beam, fixed mounting has horizontal support rod on the installation base, horizontal support rod's side and installation crossbeam bolted connection, horizontal support rod's the top side and the one end of horizontal installation roof beam are connected, the other end and the wall fixing of horizontal installation roof beam connect, the middle part of horizontal installation roof beam is provided with adjusting device, the mounting pad is connected through the link to the installation crossbeam.

[0004] US 2017/221392 A1 discloses a free standing billboard for displaying information and adapted for attachment to a pre-existing billboard structure comprising: (i) a graphic wrap; (ii) one or more panel units, each of said panel units comprising: two panel subunits; one or more LED units affixed to each of said panel subunits; a bracket means for joining said subunits to each other; a latching means attached to each of said panel units; and a baffle means having one or more batons appended thereto mounted to said panel unit and positioned between said graphic wrap and said LED unit.

[0005] WO 2013/192614 A2 discloses a mounting system for adjusting the pitch, yaw and roll orientation of a panel display. The mounting system includes bracket assemblies comprising a mounting member and a floating member, the members having elongate slots that overlap each other in a non-parallel arrangement. Adjustment screws are coupled to interface adjustment pins that can move within the overlapping slots. The non-parallel arrangement between the slots passively secures the floating member relative to the mounting member without need for a set screw or clamp mechanism. The floating stems can be biased to provide a clamping force between the mounting and floating members. Washers and spacers comprised of dry, self- lubricating materials enable translation between the mounting and floating members and between the adjustment screws and the bracket assemblies.

[0006] CN 202 056 484 U discloses a mounting bracket of a combination display screen comprising at least two horizontal connecting rods which are horizontally extended and are provided with horizontal grooves on the periphery, at least two vertical connecting rods which are vertically extended and are provided with vertical grooves on the periphery, connecting components for connecting the horizontal connecting rods and the vertical connecting rods, a connecting component which is arranged on the horizontal or vertical connecting rod and is capable of being connected with the display screen, and a supporting component which is fixed on the horizontal or vertical connecting rod and is fixed with a wall. A horizontal splicing screen and a vertical splicing screen can be spliced and combined by the utility model according to the difference of directions mounted on the display screen, the screen is directly-viewed and graceful; and the mounting bracket is made as a standard component.

[0007] Large size LED screen is needed at some large scale application, whose install height is higher and install area is larger. So far, the installation of those LED screen implements by adopting an install support that adapting to the LED screen, then fixing the support and the LED screen by a bolt. The installation method above gets larger shortage: since the size of the LED screen is large, it requires many holes to keep firm; the operators need to align the install holes one by one and fix with bolt, which cost a great deal of working hour and manpower cost. In addition, the universality of the install support is usually low, which causes large waste.

[0008] Therefore, an installation structure for LED screen which could be installed quickly and cut cost down is in exigency.

SUMMARY OF THE INVENTION

[0009] In order to overcome the deficiencies of the prior art, the first object of the present application is to provide an installation structure for LED screen according to claim 1, to install the LED screen quickly and conveniently. The second object of the present application is to provide an installation method according to claim 8, to install the LED screen quickly and conveniently

[0010] The present application provides the technical solutions which are defined in the appended claims.

[0011] Compared to the prior art, the beneficial effects of the present application are as follows:

In this present application, the hook profile is fixed horizontally and firmly on the vertical column, and the crossbeam is mounted in the mount groove of the hook profile. Because an adapting structure of the crossbeam and the mount groove, and the gravity of the LED screen itself, the LED screen could implement firm mounting and unlikely to get loose. This present application implements quick installation of the LED screen. It saves working hours, and requires lesser fixing and mounting working to accomplish. It also avoids the large cost of working hours and manpower cost to align the install holes. Meanwhile, the universality of the hook profile is high and could

be applied to many different types LED screens, which could cut down the material cost.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIGURE 1 is an overall stereoscopic diagram of the present application;

FIGURE 2 is a stereoscopic diagram hiding the screen cabinet of the present application;

FIGURE 3 is a partial enlargement of the A part of FIGURE 2;

FIGURE 4 is an explosion view of FIGURE 2;

FIGURE 5 is a partial enlargement of the B part of FIGURE 4;

FIGURE 6 is a stereoscopic diagram of hook profile.

[0013] Reference numerals: 10, LED screen; 11, screen cabinet; 12, crossbeam; 20, hook profile; 21, mount groove; 22, bolt groove; 30, vertical column; 40, locking part.

DESCRIPTION OF EMBODIMENTS

[0014] Hereinafter, in conjunction with the accompanying drawings and specific embodiments, the present application will be further described. It should be noted that, in the case of non-collision, a new embodiment may be formed by any combination between the embodiments described below or between the technical features.

[0015] As described in FIGURE 1 to FIGURE 5, the present application discloses an installation structure for mounted LED screen which is used to install LED screen 10, comprising a LED screen 10; the LED screen comprising a screen cabinet 11 and a crossbeam 12, the screen cabinet 11 is main body part of LED screen, and the crossbeam 12 is installation part; the crossbeam 12 is arranged horizontally and firmly on the back of the screen cabinet 11. As described in FIGURE 6, hook profile 20, a side of the hook profile 20 is provided with a mount groove 21 adapting to the crossbeam 12; opening of the mount groove 21 is upward, the LED screen is mounted inside the mount groove 21 by the crossbeam 12; vertical column 30, vertical column 30 is vertically arranged on the ground or other installation platform, the hook profile 20 is connected horizontally and firmly to the vertical column 30.

[0016] By the embodiment mentioned above, the vertical column 30 is vertically arranged on the ground firstly, and the hook profile 20 is then connected horizontally and firmly to the vertical column 30, the LED screen mounted in the mount groove of the crossbeam 12, thus leads to implement quick installation of the LED screen, which is work hour saving and convenient and quick, thus can largely improve the produce efficiency.

[0017] As a prefer embodiment, another side of the hook profile 20 facing to the crossbeam 12 is provided with a bolt groove 22, to fix with the vertical column 30. The bolt groove is a C-typed groove, the vertical column 30 is provided with a bolt hole accordingly, the hook profile 20 and the vertical column 30 implements firm connection by bolt. At this embodiment, hook profile 20 and the vertical column 30 can be fixed quickly. Meanwhile, because the C-typed groove is a long strip structure, the builders are only demanded to put the bolt go through the C-typed groove and align the bolt hole of the vertical column 30 directly when installing, there is no need to align two or more install holes then put the bolts in. It will be time-saving and quick, and the operation is also brief and convenient.

[0018] Furthermore, there are 2 bolt grooves 22. The hook profile 20 connects to the vertical column 30 by 2 bolts, to make the connection firmer.

[0019] As a prefer embodiment, the installation structure for mounted LED screen further comprising a locking part 40. The locking part 40 is a long strip shaped C-profile steel, an opening of the locking part 40 is firmly sleeved on a top end of the hook profile 20, an end foot reaches the crossbeam 12, and another end foot connects to the hook profile 20 firmly.

[0020] Since the LED screen is mounted on the hook profile 20, the gravity of the LED screen itself can make sure that it is steady at the vertical direction. While, there are plenty application the LED screen will be applied, especially the outdoor applications that will be easily affected by bad weather or other extraneous factors. If the impacts and shocks are large, the LED screen 10 will likely to get loose. Therefore, by using a locking part 40 to limit the position of the LED screen 10 at the vertical direction, the steadiness of installation will be improved.

[0021] Furthermore, the locking part 40 implements firm connection to the hook profile 20 by bolt. As described in FIGURE 3, similarly to the vertical column 30, the locking part 40 also implements bolt connection by C-typed groove of the hook profile 20. This connect method is also time-saving and quick.

[0022] As a prefer embodiment, the vertical column 30 is vertically arranged I-shaped steel. The vertical column 30 implements firm connection with the ground or other installation platform. Furthermore, there are multiple vertical columns 30, which are arranged in line with isometric interval; the hook profile 20 is connected horizontally and firmly to those vertical columns 30 on the side; there are multiple hook profiles 20 as well and fix to the vertical columns 30 at different height, by which could fix more than one LED screen.

[0023] Here is a detailed illustration of the installation method for the LED screen as bellow: A step to fix a vertical column: set a vertical column 30 on the ground or other installation platform; a step to fix a hook: using

a bolt to laterally fix a hook profile 20 on the vertical column 30, to fix the hook profile 20 horizontally and firmly on the vertical column 30; a step to mount a screen: mount a crossbeam 12 of a LED screen 10 to a mount groove 21 of the hook profile 20; a step to lock the screen: put the opening downward and sleeve the locking part 40 on and top end of the hook profile 20, to make an end foot reach the crossbeam 12, and to make another end foot connect to the hook profile 20 by bolt firmly.

[0024] By the detailed illustration of those embodiments above, it will be understood that the present application implements quick installation of LED screen 10, and it is time-saving that only requires fewer fixing, mounting steps to accomplish, which avoids plenty of align the install holes steps that calls for plenty time and manpower.

[0025] Meanwhile, the universality of the hook profile is high and could be applied to many different types LED screens 10, which could cut down the material cost.

Claims

1. An installation structure for mounted LED screens, comprising a LED screen (10) and a vertical column (30); the LED screen comprising a screen cabinet (11) and a crossbeam (12), the crossbeam is arranged horizontally and firmly on the back of the screen cabinet; the vertical column is vertically arranged on the ground or other installation platform, **characterized in that**

   the installation structure for mounted LED screens further includes a hook profile (20),
   wherein a side of the hook profile is provided with a mount groove (21) extending in the longitudinal direction of the hook profile and adapting to the crossbeam, wherein the opening of the mount groove is upward; the crossbeam is arranged in the mount groove,
   wherein the hook profile is connected horizontally and firmly to the vertical column.

2. An installation structure for mounted LED screen of claim 1, another side of the hook profile facing to the crossbeam is provided with a bolt groove (22); the bolt groove is a C-typed groove, the vertical column is provided with a bolt hole accordingly, the hook profile and the vertical column achieve firm connection by bolt.

3. An installation structure for mounted LED screen of claim 2, there are 2 bolt grooves.

4. An installation structure for mounted LED screen of claim 1, the installation structure for mounted LED screen further comprising a locking part (40), the locking part is a long strip shaped C-profile steel; an opening of the locking part is firmly sleeved on a top end of the hook profile, an end foot reaches the crossbeam, and another end foot connects to the hook profile firmly.

5. An installation structure for mounted LED screen of claim 4, the locking part implements firm connection to the hook profile by bolt.

6. An installation structure for mounted LED screen of claim 1, the vertical column is vertically arranged I-shaped steel.

7. An installation structure for mounted LED screen of claim 1, there are multiple vertical columns, which are arranged in line with isometric interval, the hook profile is connected horizontally and firmly to those vertical columns.

8. An installation method for LED screen, comprising the steps as follows for setting up the installation structure for mounted LED screen according to claim 1:

   a step to fix the vertical column: set the vertical column (30) on the ground or other installation platform;
   a step to fix a hook: using a bolt to horizontally fix the hook profile (20) on the vertical column;
   a step to mount the screen (10): mount the horizontal crossbeam of the LED screen to the mount groove (21) extending in the longitudinal direction of the hook profile and adapting to the crossbeam so that the crossbeam is arranged in the mount groove;
   a step to lock the screen: put the opening downward and lock the locking part (40) firmly to the hook profile by a bolt.

Patentansprüche

1. Installationsstruktur für angebaute LED-Bildschirme, umfassend einen LED-Bildschirm (10) und eine senkrechte Stütze (30); wobei der LED-Bildschirm ein Bildschirmgehäuse (11) und einen Querträger (12) umfasst, wobei der Querträger waagerecht und fest an der Rückseite des Bildschirmgehäuses angeordnet ist; wobei die senkrechte Stütze senkrecht auf dem Boden oder einer anderen Installationsplattform angeordnet ist,

   dadurch gekennzeichnet, dass die Installationsstruktur für angebaute LED-Bildschirme ferner ein Aufhängeprofil (20) umfasst,
   wobei eine Seite des Aufhängeprofils mit einer Montagenut (21) versehen ist, die sich in der Längsrichtung des Aufhängeprofils erstreckt

und sich an den Querträger anpasst, wobei die Öffnung der Montagenut nach oben gerichtet ist; wobei der Querträger in der Montagenut angeordnet ist,
wobei das Aufhängeprofil waagerecht und fest mit der senkrechten Stütze verbunden ist.

2. Installationsstruktur für angebaute LED-Bildschirme nach Anspruch 1, wobei eine andere Seite des Aufhängeprofils, die dem Querträger gegenübersteht, mit einer Bolzennut (22) versehen ist; wobei die Bolzennut eine C-förmige Nut ist, wobei die senkrechte Stütze entsprechend mit einem Bolzenloch versehen ist, wobei das Aufhängeprofil und die senkrechte Stütze durch den Bolzen eine feste Verbindung herstellen.

3. Installationsstruktur für angebaute LED-Bildschirme nach Anspruch 2, wobei es 2 Bolzennuten gibt.

4. Installationsstruktur für angebaute LED-Bildschirme nach Anspruch 1, wobei die Installationsstruktur für angebaute LED-Bildschirme ferner ein Arretierungsteil (40) umfasst, wobei das Arretierungsteil ein langes streifenförmiges C-Stahlprofil ist; wobei eine Öffnung des Arretierungsteils fest an einem oberen Ende des Aufhängeprofils übergeschoben ist, ein Fußende den Querträger erreicht, und ein anderes Fußende fest mit dem Aufhängeprofil verbunden ist.

5. Installationsstruktur für angebaute LED-Bildschirme nach Anspruch 4, wobei das Arretierungsteil durch den Bolzen eine feste Verbindung mit dem Aufhängeprofil eingeht.

6. Installationsstruktur für angebaute LED-Bildschirme nach Anspruch 1, wobei die senkrechte Stütze ein senkrecht angeordnetes I-förmiges Stahlprofil ist.

7. Installationsstruktur für angebaute LED-Bildschirme nach Anspruch 1, wobei es mehrere senkrechte Stützen gibt, die mit einem isometrischen Intervall in Reihe angeordnet sind, wobei das Aufhängeprofil waagerecht und fest mit diesen senkrechten Stützen verbunden ist.

8. Installationsverfahren für LED-Bildschirme, umfassend die folgenden Schritte zum Einrichten der Installationsstruktur für angebaute LED-Bildschirme nach Anspruch 1:

einen Schritt zum Fixieren der senkrechten Stütze: Stellen der senkrechten Stütze (30) auf den Boden oder eine andere Installationsplattform;
einen Schritt zum Fixieren eines Hakens: Verwenden eines Bolzens, um das Aufhängeprofil (20) waagerecht an der senkrechten Stütze zu fixieren;
einen Schritt zum Anbauen des Bildschirms (10): Anbauen des waagerechten Querträgers des LED-Bildschirms an die Montagenut (21), die sich in der Längsrichtung des Aufhängeprofils erstreckt, und Anpassen an den Querträger, so dass der Querträger in der Montagenut angeordnet ist;
einen Schritt zum Arretieren des Bildschirms: Ausrichten der Öffnung nach unten und festes Arretieren des Arretierungsteils (40) mit dem Aufhängeprofil durch einen Bolzen.

Revendications

1. Structure d'installation pour écrans LED montés, comprenant un écran LED (10) et une colonne verticale (30); l'écran LED comprenant une armoire d'écran (11) et une traverse (12), la traverse est agencée horizontalement et fermement à l'arrière de l'armoire d'écran ; la colonne verticale est disposée verticalement sur le sol ou sur une autre plate-forme d'installation,

caractérisé en ce que la structure d'installation pour écrans LED montés comprend en outre un profilé de crochet,
dans lequel un côté du profilé de crochet est pourvu d'une rainure de montage (21) s'étendant dans la direction longitudinale du profilé de crochet et s'adaptant à la traverse, dans lequel l'ouverture de la rainure de montage est dirigée vers le haut ; la traverse est agencée dans la rainure de montage,
dans lequel le profilé de crochet est raccordé horizontalement et solidement à la colonne verticale.

2. Structure d'installation pour écran LED monté selon la revendication 1, un autre côté du profilé de crochet faisant face à la traverse est pourvu d'une rainure de boulon (22) ; la rainure de boulon est une rainure de type C, la colonne verticale est pourvue d'un orifice de boulon en conséquence, le profilé de crochet et la colonne verticale réalisent un raccordement ferme par boulon.

3. Structure d'installation pour écran LED monté selon la revendication 2, il y a 2 rainures de boulon.

4. Structure d'installation pour écran LED monté selon la revendication 1, la structure d'installation pour écran LED monté comprenant en outre une partie de verrouillage (40), la partie de verrouillage est une longue bande en acier profilé en C ; une ouverture de la partie de verrouillage est fermement emmanchée sur une extrémité supérieure du profilé de crochet, un pied d'extrémité atteint la traverse, et un

autre pied d'extrémité se raccorde fermement au profilé de crochet.

5. Structure d'installation pour écran LED monté selon la revendication 4, la partie de verrouillage exécute un raccordement ferme au profilé de crochet par boulon.

6. Structure d'installation pour écran LED monté selon la revendication 1, la colonne verticale est en acier en forme de I disposée verticalement.

7. Structure d'installation pour écran LED monté selon la revendication 1, il y a plusieurs colonnes verticales, qui sont disposées en ligne avec un intervalle isométrique, le profilé de crochet est raccordé horizontalement et fermement à ces colonnes verticales.

8. Procédé d'installation pour écran LED, comprenant les étapes suivantes pour mettre en place la structure d'installation pour écran LED monté selon la revendication 1 :

une étape de fixation de la colonne verticale : poser la colonne verticale (30) au sol ou une autre plate-forme d'installation ;
une étape de fixation d'un crochet : utiliser un boulon pour fixer horizontalement le profilé de crochet (20) sur la colonne verticale ;
une étape de montage de l'écran (10) : monter la traverse horizontale de l'écran LED sur la rainure de montage (21) s'étendant dans la direction longitudinale du profilé de crochet et s'adaptant à la traverse de manière à ce que la traverse soit agencée dans la rainure de montage ;
une étape de verrouillage de l'écran : placer l'ouverture vers le bas et verrouiller fermement la pièce de verrouillage (40) au profilé de crochet par un boulon.

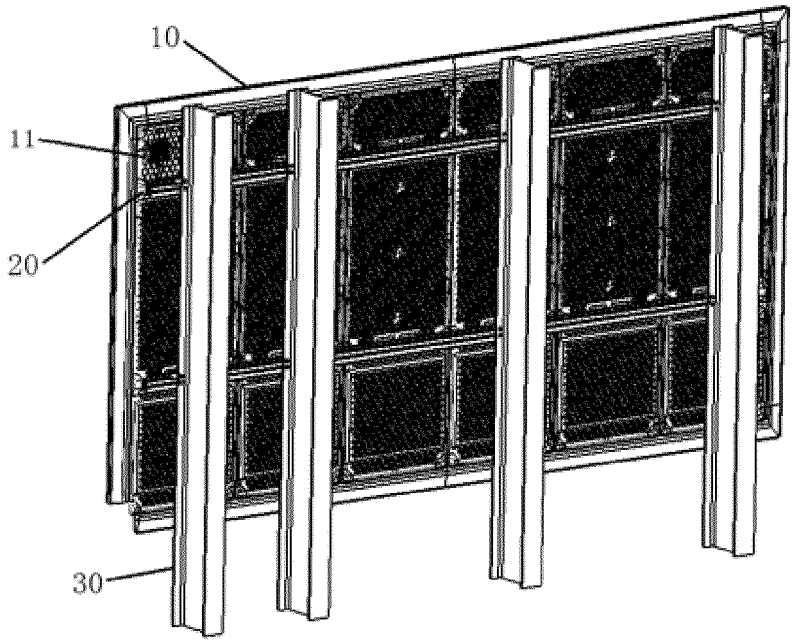

FIGURE 1

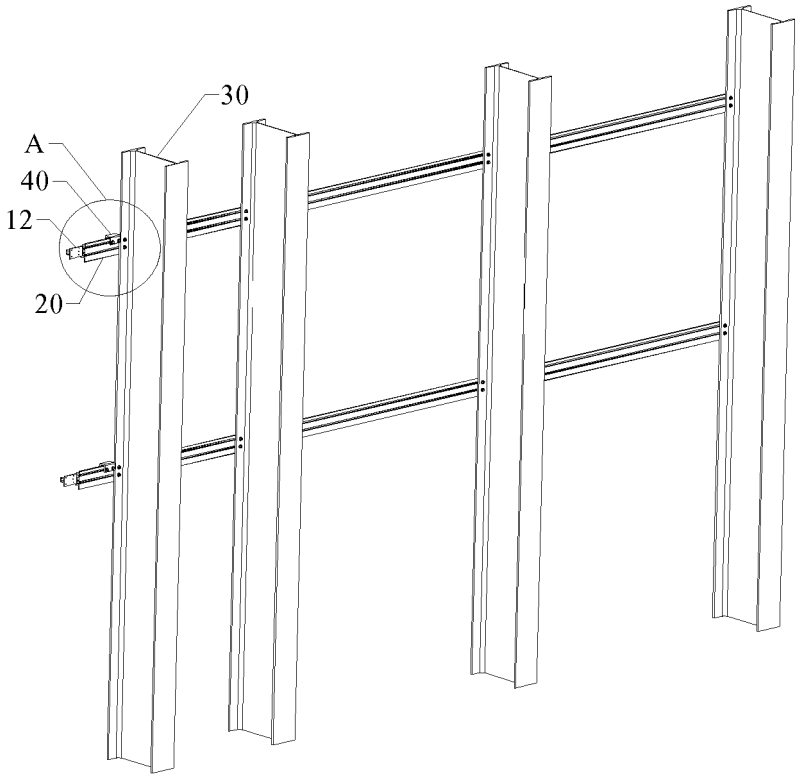

FIGURE 2

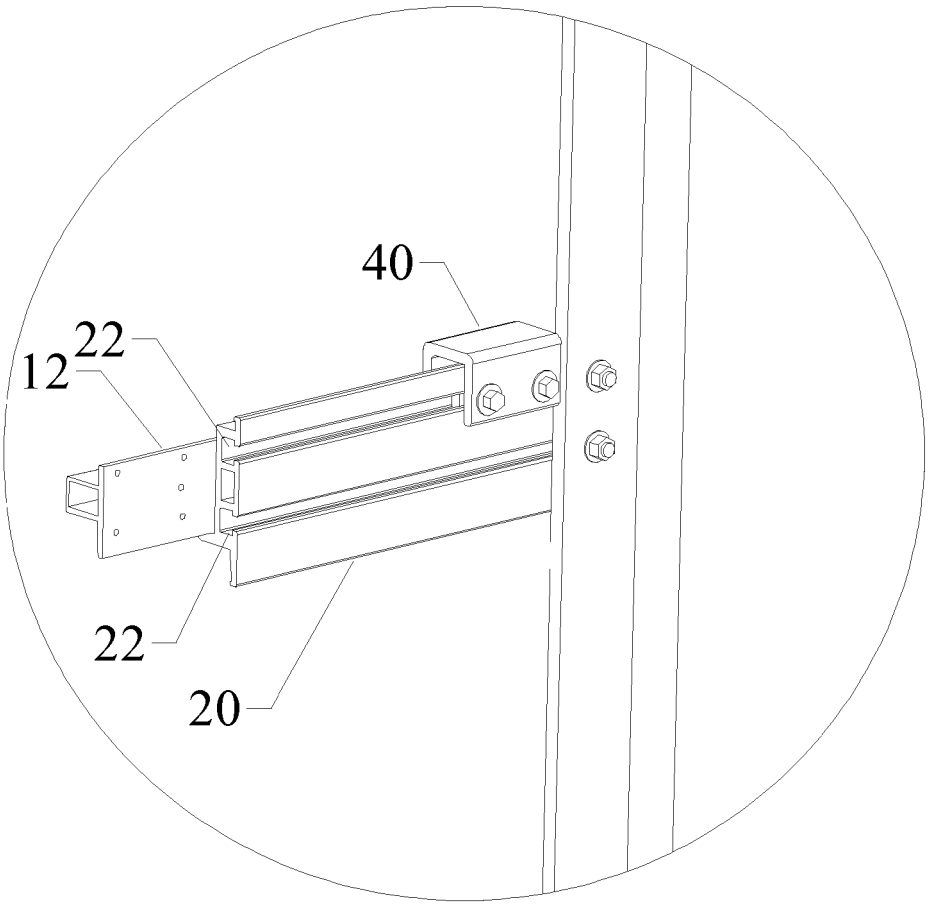

FIGURE 3

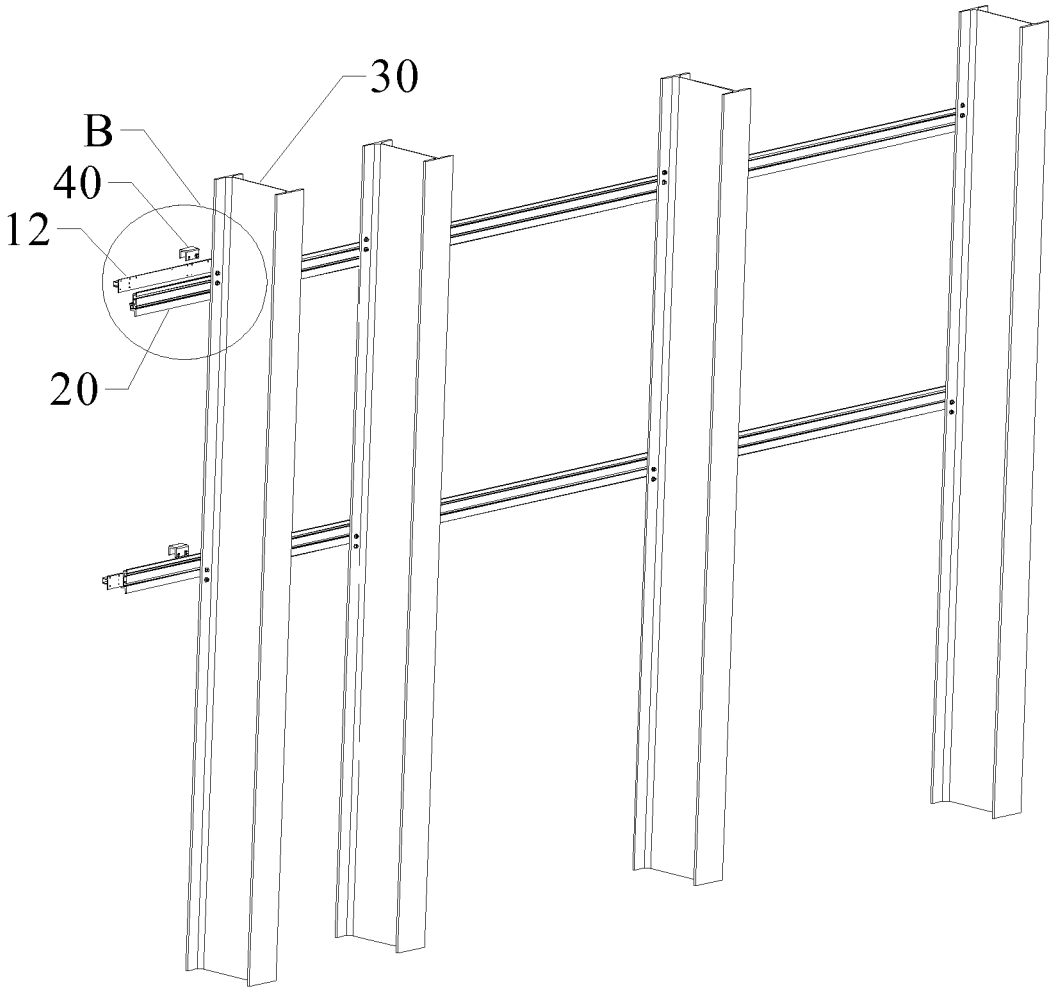

FIGURE 4

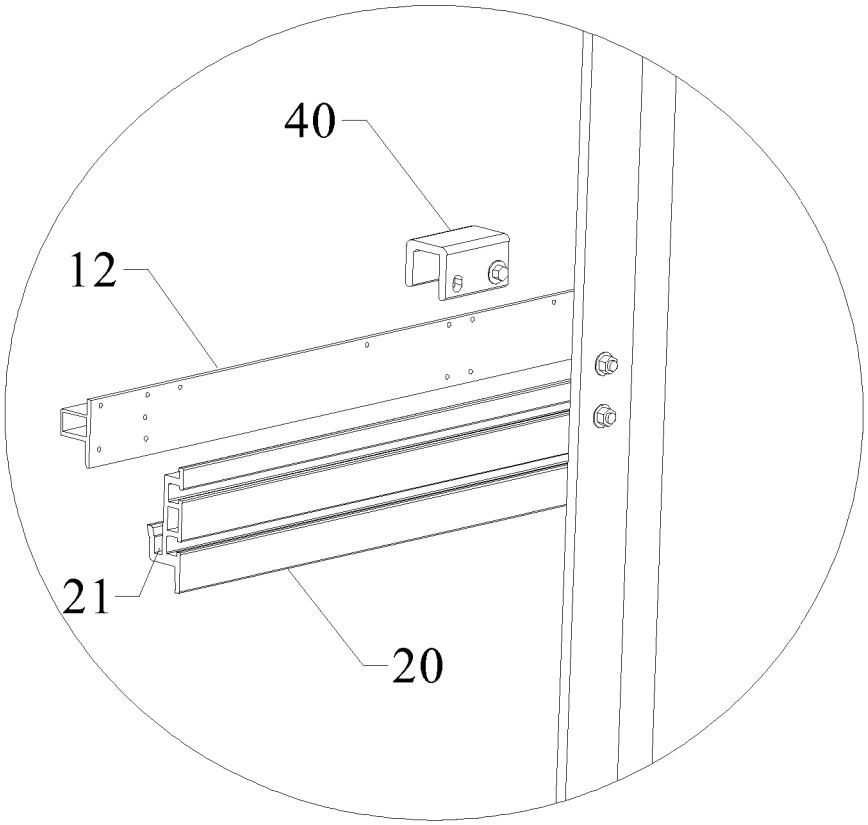

FIGURE5

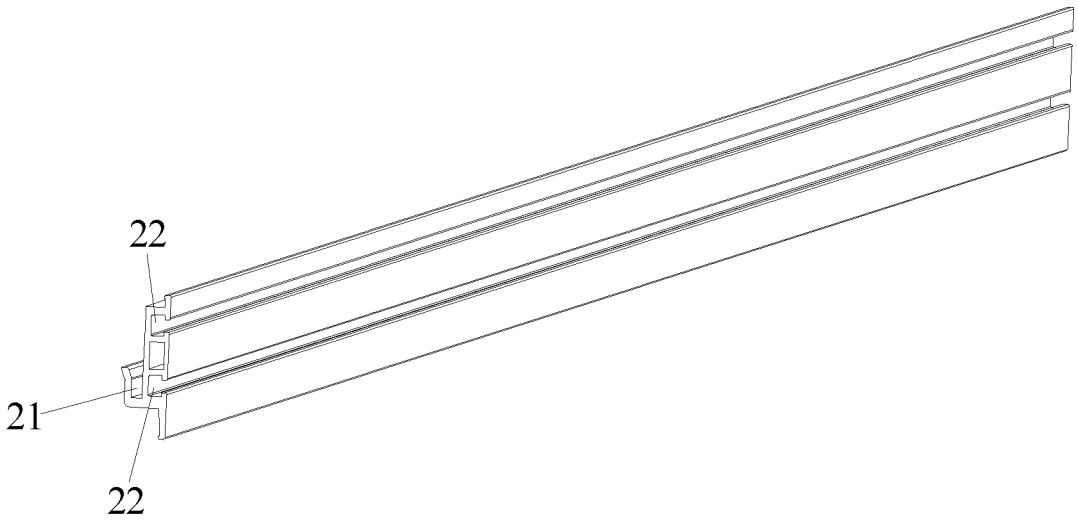

FIGURE 6

REFERENCES CITED IN THE DESCRIPTION

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- WO 2013192614 A2 **[0005]**
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