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

(57) The present application disclose an installation structure and installation method for mounted LED screen, comprising a LED screen, a hook profile (20) and a vertical column (30); the LED screen comprising a screen cabinet (11) and a crossbeam, the crossbeam is fixed laterally and steady on the back of the screen cabinet (11); a side of the hook profile (20) is provided with a mount groove adapting to the crossbeam; the crossbeam is fixed in the mount groove; the vertical column (30) is vertically arranged on the ground or other installation platform, the hook profile is connected laterally and steady to the vertical column. This present application implements quick installation of the LED screen. It saves working hours, and requires lesser fixing and mounting working to accomplish. Meanwhile, the universality of the hook profile is high and could be applied to many different types LED screens.

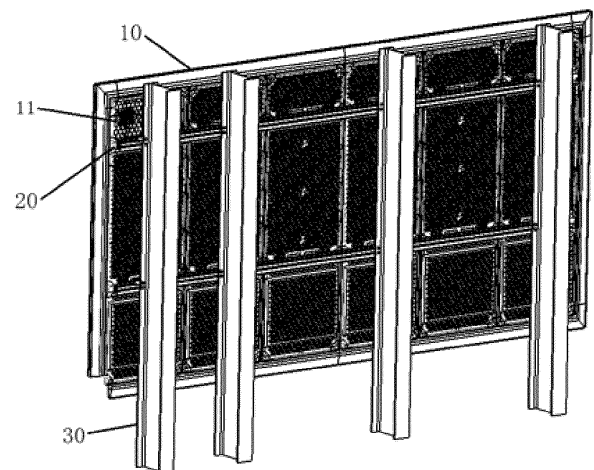


FIGURE 1

## 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] 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 steady; 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.

[0004] Therefore, an installation structure for LED screen which could be installed quickly and cut cost down is in exigency.

### SUMMARY OF THE INVENTION

[0005] 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 to install the LED screen quickly and conveniently. The second object of the present application is to provide an installation method to install the LED screen quickly and conveniently.

[0006] To achieve the object, this present application provides the technical solutions as follows:

An installation structure for mounted LED screen, comprising a LED screen, a hook profile and a vertical column; the LED screen comprising a screen cabinet and a crossbeam, the crossbeam is fixed laterally and steady on the back of the screen cabinet; a side of the hook profile is provided with a mount groove adapting to the crossbeam; the crossbeam is fixed in the mount groove; the vertical column is vertically arranged on the ground or other installation platform, the hook profile is connected laterally and steady to the vertical column.

[0007] Furthermore, another side of the hook profile facing to the crossbeam is provided with a bolt groove. 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 complies steady connection by bolt.

[0008] Furthermore, there are 2 bolt grooves.

[0009] Furthermore, the installation structure for mounted LED screen further comprising a locking part, the locking part is a long strip shaped C-profile steel; an opening of the locking part is steady sleeved on a top end of the hook profile, an end foot reaches the crossbeam, and another end foot connects to the hook profile steady.

[0010] Furthermore, the locking part implements steady connection to the hook profile by bolt.

[0011] Furthermore, the vertical column is vertically arranged I-shaped steel.

[0012] Furthermore, there are multiple vertical columns, which are arranged in line with isometric interval, the hook profile is connected laterally and steady to those vertical columns.

[0013] An installation method for LED screen, comprising the steps as follows: A step to fix a vertical column: set a vertical column on the ground or other installation platform; A step to fix a hook: using a bolt to laterally fix a hook profile on the vertical column; A step to mount a screen: mount a crossbeam of a LED screen to a mount groove of the hook profile; A step to lock the screen: put the opening downward and lock the locking part steady to the hook profile by a bolt.

[0014] Compared to the prior art, the beneficial effects of the present application are as follows:

In this present application, the hook profile is fixed laterally and steady 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 steady 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

[0015]

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

FIGURE 2 is a stereoscopic diagram hiding a 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.

**[0016]** 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

**[0017]** 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.

**[0018]** 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 fixed laterally and steady 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 laterally and steady to the vertical column 30.

**[0019]** By the embodiment mentioned above, the vertical column 30 is vertically arranged on the ground firstly, and the hook profile 20 is then connected laterally and steady 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.

**[0020]** 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 steady 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.

**[0021]** Furthermore, there are 2 bolt grooves. The hook profile 20 connects to the vertical column 30 by 2 bolts, to make the connection much steady.

**[0022]** 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 steady 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 steady.

**[0023]** 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.

**[0024]** Furthermore, the locking part 40 implements steady 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.

**[0025]** As a prefer embodiment, the vertical column 30 is vertically arranged I-shaped steel. The vertical column 30 implements steady 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 laterally and steady 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.

**[0026]** 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 laterally and steady 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 steady.

**[0027]** 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. 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.

**[0028]** Those skilled in the art could make various other changes and the corresponding deformation according to the aspect and conception described above. All such

changes and deformation should fall within the scope of the application as claimed in claims.

## Claims

1. An installation structure for mounted LED screen, comprising a LED screen, a hook profile and a vertical column; the LED screen comprising a screen cabinet and a crossbeam, the crossbeam is fixed laterally and steady on the back of the screen cabinet; a side of the hook profile is provided with a mount groove adapting to the crossbeam; the crossbeam is fixed in the mount groove; the vertical column is vertically arranged on the ground or other installation platform, the hook profile is connected laterally and steady to the vertical column. 5  
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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; 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 complies steady connection by bolt. 20  
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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, the locking part is a long strip shaped C-profile steel; an opening of the locking part is steady sleeved on a top end of the hook profile, an end foot reaches the crossbeam, and another end foot connects to the hook profile steady. 30  
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5. An installation structure for mounted LED screen of claim 4, the locking part implements steady connection to the hook profile by bolt. 40
6. An installation structure for mounted LED screen of claim 1, the vertical column is vertically arranged I-shaped steel. 45
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 laterally and steady to those vertical columns. 50
8. An installation method for LED screen, comprising the steps as follows: 55

A step to fix a vertical column: set a vertical column on the ground or other installation platform;  
A step to fix a hook: using a bolt to laterally fix

a hook profile on the vertical column;

A step to mount a screen: mount a crossbeam of a LED screen to a mount groove of the hook profile;

A step to lock the screen: put the opening downward and lock the locking part steady to the hook profile by a bolt.

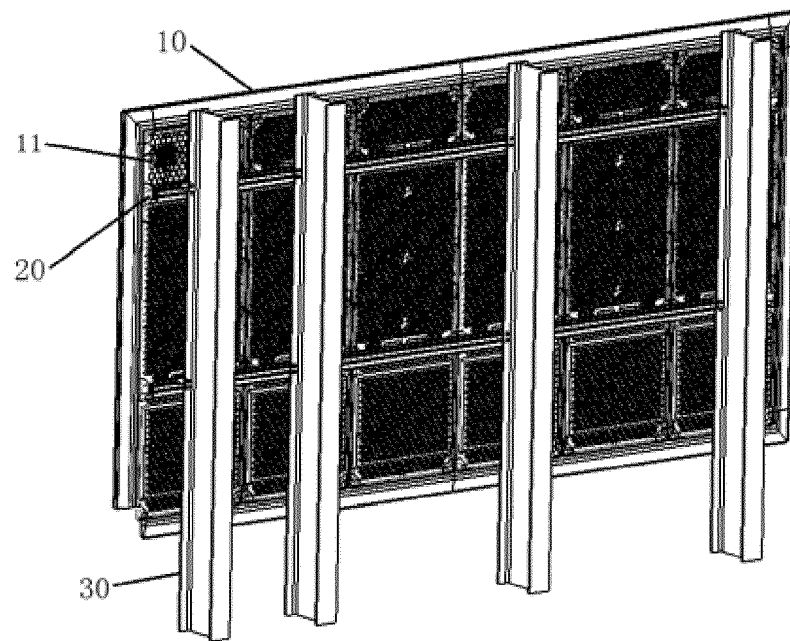


FIGURE 1

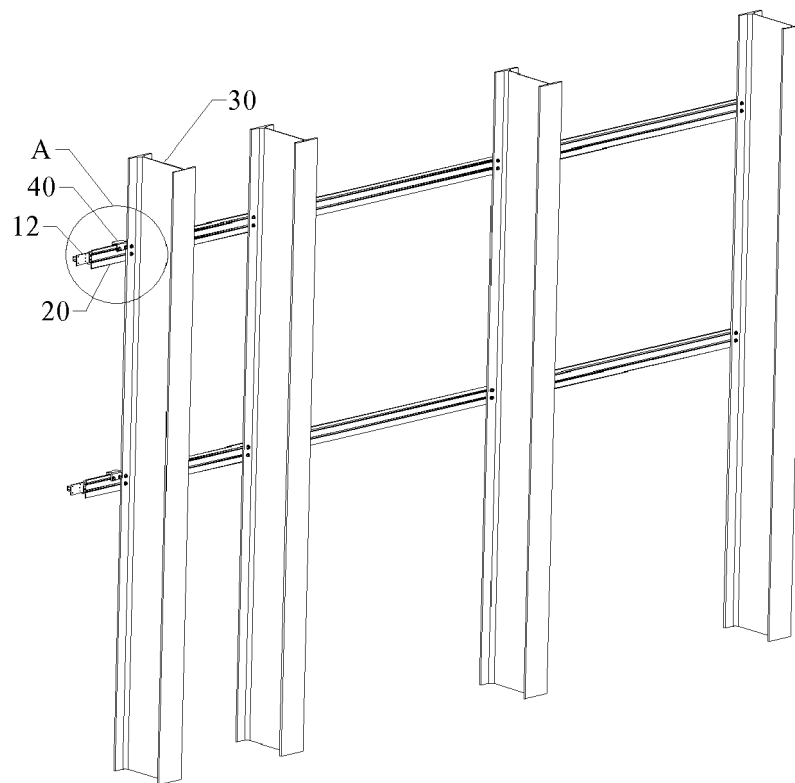


FIGURE 2

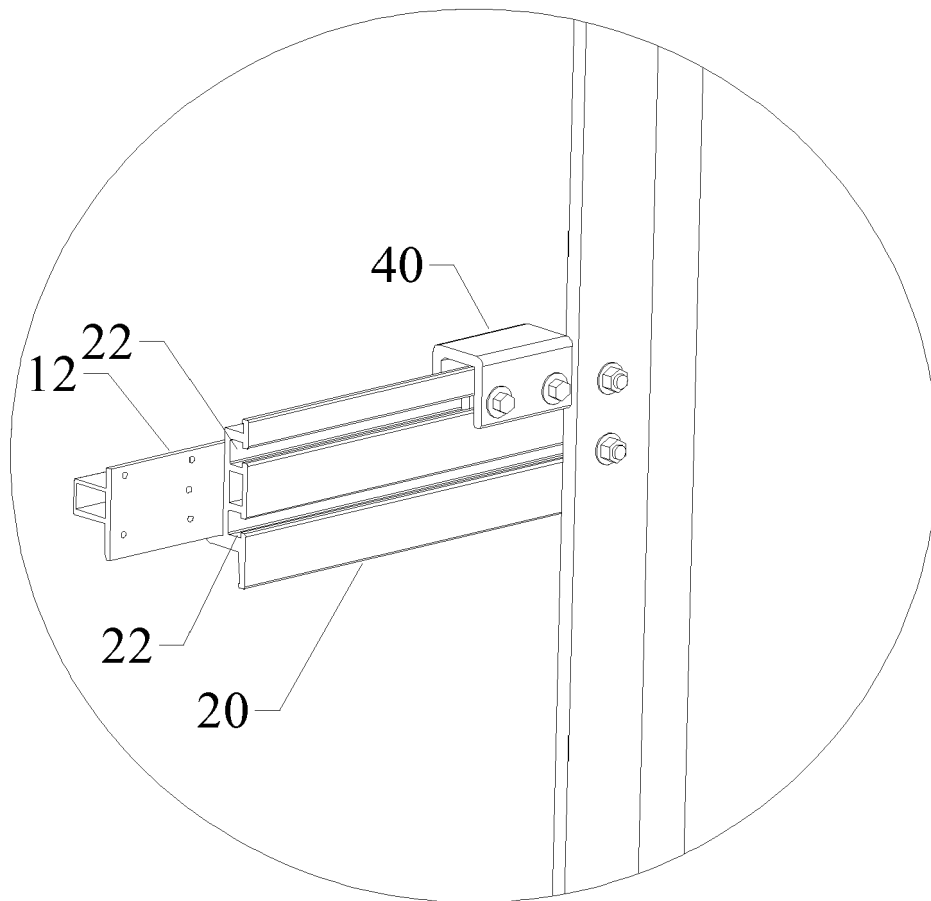


FIGURE 3

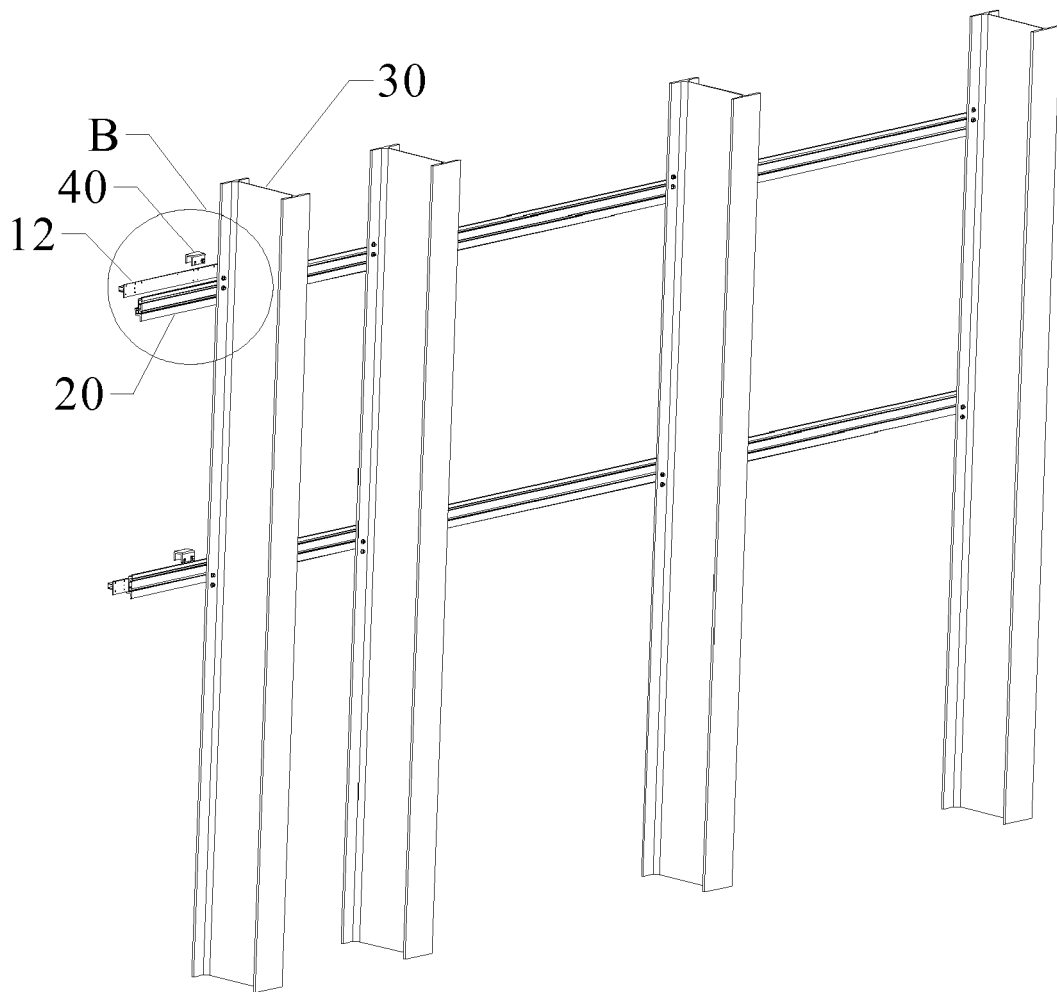


FIGURE 4



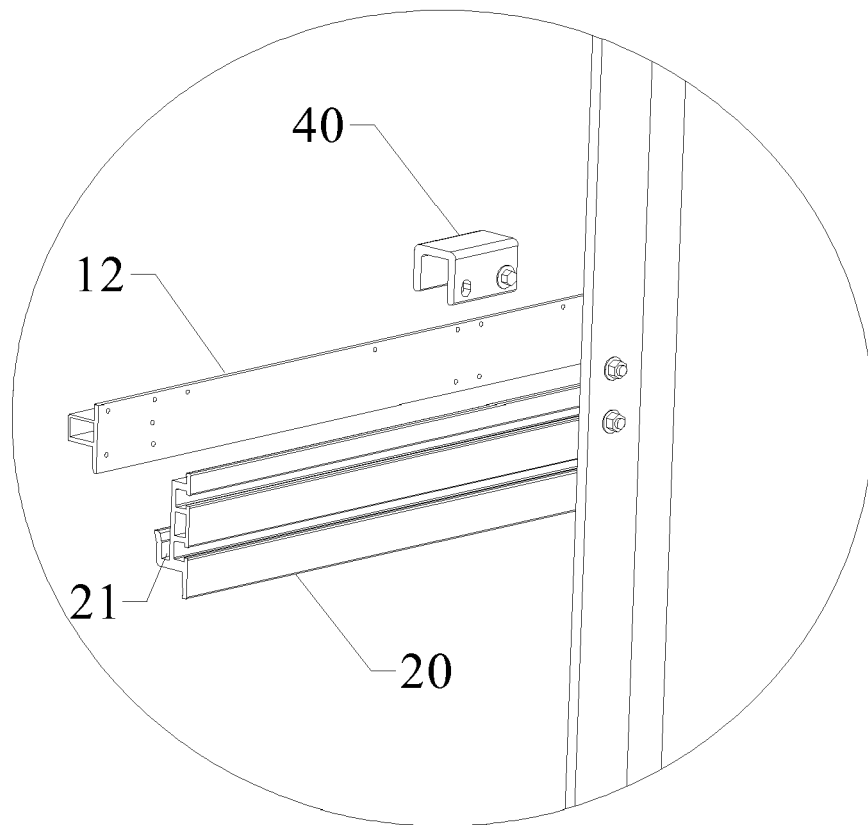


FIGURE 5

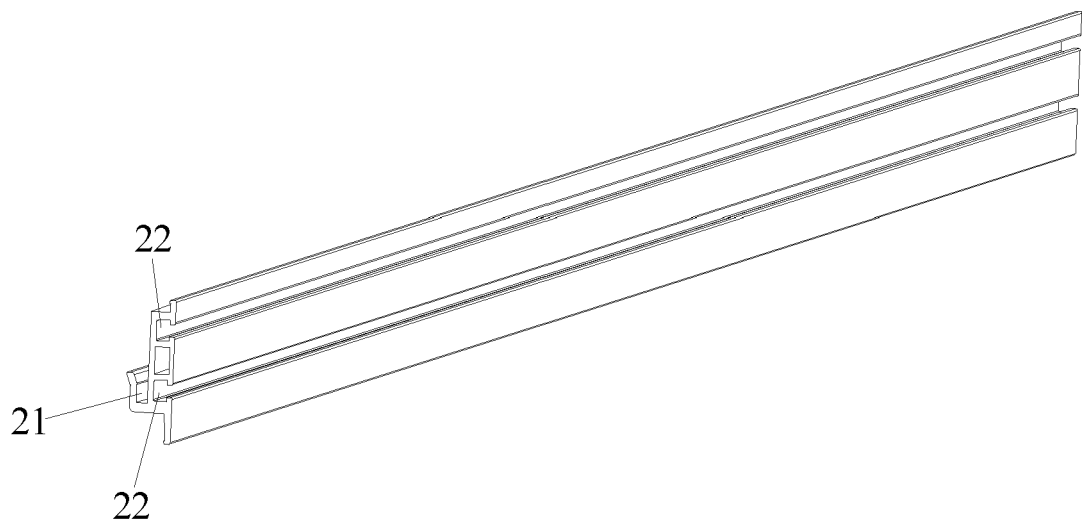


FIGURE 6



## EUROPEAN SEARCH REPORT

Application Number  
EP 19 17 6851

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Y	* abstract; figures 1-5 *	4,5,8	
X	US 2017/221392 A1 (TAYLOR CURTIS [US] ET AL) 3 August 2017 (2017-08-03) * paragraph [0121] - paragraph [0170] * * figures 1-6 * * figures 14-32 *	1-3,6,7	
X	WO 2013/192614 A2 (MILESTONE AV TECHNOLOGIES LLC [US]) 27 December 2013 (2013-12-27) * page 6, line 5 - page 9, line 15 * * figures 1-6 *	1-3,6,7	
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A	EP 3 409 858 A1 (CCOMM GROUP LTD [GB]) 5 December 2018 (2018-12-05) * paragraph [0021] - paragraph [0030] * * figures 1-6 *	1-8	TECHNICAL FIELDS SEARCHED (IPC) G09F G06F F16M
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 18 November 2019	Examiner Pantoja Conde, Ana
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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18-11-2019

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