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(54) SCREEN WIRE REGULATION AND CONTROL DEVICE WITH EASY DISASSEMBLY AND ASSEMBLY STRUCTURE

(57) Disclosed is a screen wire regulation and control device with an easy disassembly and assembly structure, the screen wire regulation and control device comprising: a fixing seat and a wire regulation body. The fixing seat is provided with an accommodating groove and an elastic shifting piece, the wire regulation body is assembled in the accommodating groove of the fixing seat, one end of the wire regulation body is provided with a guide inclined plane for conveniently accommodating the wire regulation body in the accommodating groove, and the wire regulation body can also be conveniently taken out from the accommodating groove of the fixing seat by means of the elastic shifting piece, and inconvenience in assembly and disassembly in the prior art is eradicated.

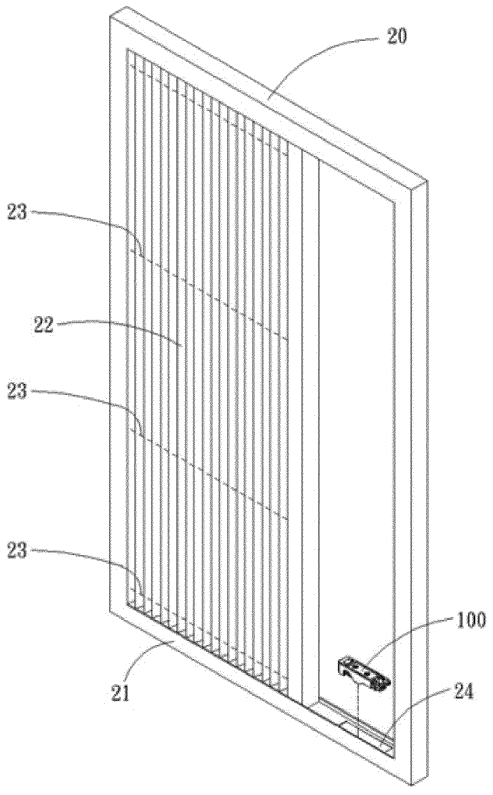

FIG. 1

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Description

FIELD OF INVENTION

[0001] The present disclosure relates to a wire regulation and control device, and in particular, relates to a screen wire regulation and control device with an easy disassembly and assembly structure.

BACKGROUND OF INVENTION

[0002] The screen devices currently in use, whether they are folding screens or rolling bar screens, use a wire adjustment and control device to adjust and control the tightness of the wire thereon, such as the invention patent No. I500848, No. 1612210, and the invention publication No. 201728292; however, the wire adjustment and control device in the aforementioned patents has a number of drawbacks while using, which are described below.

[0003] The invention patent No. 1500848 discloses a structure capable of adjusting the tightness of screen wires. The structure mainly includes a cover, a base, and a housing. The base has a rotatable adjustment disc disposed thereon. A wire is fixed on the adjustment disc, and the adjustment disc is used for adjusting the tightness of the wire, so that the screen can be smoothly unfolded and closed under the action of the appropriate tension of the wire; however, in this conventional technology, it is necessary to drill a through hole and then use several screw assemblies to fix the housing on a frame of a screen device before installation, therefore the cover and the base can be installed on the frame. This installation method not only requires the installation process and parts of drilling and screw assembly, but also requires technical personnel to perform the drilling process. It not only causes an increase in cost, but also causes the inconvenience of DIY installation.

[0004] Both the structures of the invention patent No. 1612210 and the invention publication No. 201728292 disclose an adjustment device of a folding screen window. The structure consists of a cover and a bottom seat. In the process of installation, the cover and the bottom seat are mainly assembled with each other so as to be directly installed on a frame of a screen device. Since none of a housing is disposed in the structure, the process of drilling and the assembling of screw assemblies can be eliminated. Although the above-mentioned disadvantages of the conventional structure can be overcome, this conventional technology still has the following disadvantages in use:

[0005] 1. This conventional technology mainly uses positioning posts and positioning pins on the cover to combine with the socket holes and stoppers of the bottom seat, so that the cover and the bottom seat can be assembled into one body. However, the aforementioned positioning posts and socket holes are square structures, and the aforementioned square structures are often difficult to be assembled while assembling and combining.

[0006] 2. Furthermore, in this conventional technology, the stopper of the bottom seat is arranged in the middle of the guiding groove, so when the positioning pin of the cover and the stopper of the bottom seat are combined and the aforementioned two are going to be disassembled, it is necessary to use a tool to reach into the guiding groove to pluck the positioning pin of the cover away from the stopper, so that the positioning pin is no longer stuck to the stopper. However, this structure design causes the inconvenience while disassembling.

SUMMARY OF INVENTION

[0007] The present disclosure utilizes a screen wire regulation and control device with an easy disassembly and assembly structure as a technical solution. The screen wire regulation and control device with an easy disassembly and assembly structure includes a wire regulation body and a fixing seat, wherein the wire regulation body and the fixing seat are assembled with each other, and an outer periphery of the fixing seat is provided with a protruded portion and a fastener, wherein an end of the fastener is spaced apart from the fixing seat at a distance to form a compression space, and the compression space is greater than a distance of the protruded portion protruding from the outer periphery of the fixing seat.

[0008] A screen wire regulation and control device with an easy disassembly and assembly structure includes a wire regulation body and a fixing seat, wherein the wire regulation body and the fixing seat are assembled with each other, an outer periphery of the fixing seat is provided with a protruded portion and a fastener, and the outer periphery of the fixing seat is further provided with a first slide groove, wherein the fastener is slidable in the first slide groove and extendable outwardly with a distance from an opening of the first slide groove.

[0009] The present disclosure has the beneficial effects that the present disclosure provides a screen wire regulation and control device with an easy disassembly and assembly structure, including a wire regulation body and a fixing seat, wherein an accommodating groove is defined by the fixing seat, the accommodating groove is provided with a first position-limiting protrusion and a second position-limiting protrusion, the wire regulation body is assembled in the accommodating groove of the fixing seat, and the wire regulation body is provided with a first concave portion and a second concave portion corresponding to the first position-limiting protrusion and the second position-limiting protrusion of the fixing seat. By the convex-concave combination of assembling the first concave portion and the second concave portion with the first position-limiting protrusion and the second position-limiting protrusion of the fixing seat, besides the wire regulation body can be accommodated within the accommodating groove without a risk of falling out, the bothered inconvenience in assembling and disassembling of the conventional technology can be ameliorated.

DESCRIPTION OF DRAWINGS

[0010]

FIG. 1 is a schematic view of the first preferred embodiment of the present disclosure installed on a frame of a screen device.

FIG. 2 is a schematic view of the first preferred embodiment of the present disclosure.

FIG. 3 is a schematically exploded view of the first preferred embodiment of the present disclosure.

FIG. 4 is a schematically cross-sectional view of the first preferred embodiment of the present disclosure.

FIG. 5 is the first of schematically cross-sectional views of the second preferred embodiment of the present disclosure.

FIG. 6 is the second of schematically exploded views of the second preferred embodiment of the present disclosure.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0011] Please refer to FIG. 1 to FIG. 4. It is a first preferred embodiment of "a screen wire regulation and control device with an easy disassembly and assembly structure" of the present disclosure. It is mainly installed on a screen device. Since the types implementing on folding screens or on rolling bar screens are the same, only the folding screens are described as illustrated structures in this embodiment. The type implementing on rolling bar screens is not redundantly described. The screen device 20 at least has a frame 21. The frame 21 is provided with a screen yarn mesh 22. The screen yarn mesh 22 has at least one leading wire 23 penetrating therethrough. A screen wire regulation and control device with an easy disassembly and assembly structure 100 is disposed on the frame 21 of the screen device 20. The screen wire regulation and control device with an easy disassembly and assembly structure 100 includes a fixing seat 30 and a wire regulation body 40. The fixing seat 30 is provided to be disposed on an engagement slot 24 of the frame 21 of the screen device 20, and the fixing seat 30 is provided with a protruded portion 31 and a fastener 32 corresponding to an opening of the engagement slot 24. The protruded portion 31 protrudes at a distance from an outer periphery of the fixing seat 30. The fastener 32 is sheet shaped. The fastener 32 at least has a root portion 321 and an end portion 322. The root portion 321 is connected with the fixing seat 30, and the end portion 322 is spaced apart from the fixing seat 30 at a distance to form a compression space. The compression space is greater than a distance of the protruded portion 31 protruding from the outer periphery of the fixing seat 30. In addition, the fastener 32 is provided with a locking portion 323 disposed on the end portion 322. On the other hand, a top portion of the fixing seat 30 is provided with a push portion 33 and a wire returning portion 34. In this embodiment, the push portion 33 is a recess, and the wire returning portion 34 is a rod. However, the structures of the push portion 33 and the wire returning portion 34 are not limited as mentioned above. An accommodating groove 35 is defined by a bottom portion of the fixing seat 30, and the accommodating groove 35 is provided with at least a perforation 36 and a wire inlet 37 at locations towards the top portion and the wire returning portion 34 of the fixing seat 30, respectively. In addition, the accommodating groove 35 is provided with a first position-limiting protrusion 351 and a second position-limiting protrusion 352. An elastic shifting piece 38 is formed on the fixing seat 30 located at the first position-limiting protrusion 351.

[0012] Please continuously refer to FIG. 2 to FIG. 4. The wire regulation body 40 is accommodated within the accommodating groove 35 of the fixing seat 30. The wire regulation body 40 is provided with a first concave portion 41 and a second concave portion 42 corresponding to the first position-limiting protrusion 351 and the second position-limiting protrusion 352 of the fixing seat 30, and a guide inclined plane 411 is disposed at a position of the wire regulation body 40 close to the first concave portion 41. During the process of the wire regulation body 40 being accommodated into the accommodating groove 35 of the fixing seat 30, an end of the wire regulation body 40 having the second concave portion 42 can be firstly stretched into the accommodating groove 35 of the fixing seat 30 in an inclined way. Next, another end of the wire regulation body 40 is therefore contacted with the first position-limiting protrusion 351 of the fixing seat 30 by using the guide inclined plane 411, so that another end of the wire regulation body 40 can slide into the accommodating groove 35 of the fixing seat 30 along the guide inclined plane 411. At this time, the first concave portion 41 and the second concave portion 42 are right attached on the first position-limiting protrusion 351 and the second position-limiting protrusion 352 of the fixing seat 30, such that the wire regulation body 40 can be accommodated within the accommodating groove 35 of the fixing seat 30 without a risk of falling out, and the problem of difficulty of assembling caused by the utilization of square structures of the conventional technology can be eradicated because of the aforementioned structure design. In this embodiment, when the wire regulation body 40 is going to be removed from the accommodating groove 35 of the fixing seat 30, it only needs to outwardly pluck the elastic shifting piece 38 on the fixing seat 30 to make the elastic shifting piece 38 elastically deform and make the first position-limiting protrusion 351 of the fixing seat 30 depart from the first concave portion 41 of the wire regulation body 40 and no longer abut against each other. At this time, the wire regulation body 40 can be removed from the accommodating groove 35 of the fixing

seat 30. Besides the disassembling process can be simplified, the beneficial effects of facilitating rapidly removal of the wire regulation body 40 can be achieved.

[0013] The wire regulation body 40 is further provided with an operation slot 43 and a wire inlet slot 44 corresponding to the perforation 36 and the wire inlet 37 of the fixing seat 30. The wire inlet slot 44 is communicated with the operation slot 43, and the operation slot 43 is provided with a rotation shaft 45. The rotation shaft 45 is provided with a lacing hole 451, a plurality of protruded teeth 452 are disposed around the rotation shaft 45, and an elastic stopper 453 extends from a slot wall of the operation slot 43 towards the plurality of protruded teeth 452 of the rotation shaft 45.

[0014] Please refer to FIG. 1 to FIG. 4 again. While using this embodiment, the leading wire 23 of the screen device 20 firstly passes through the wire returning portion 34 of the fixing seat 30 to make the leading wire 23 return and enter the wire inlet 37 of the fixing seat 30 and the wire inlet slot 44 of the wire regulation body 40, then enter the operation slot 43, and then make the leading wire 23 lace up the lacing hole 451 of the rotation shaft 45. Next, the wire regulation body 40 is assembled in the accommodating groove 35 of the fixing seat 30 to make rotation shaft 45 be able to be limited between the fixing seat 30 and the wire regulation body 40 while making an end of the rotation shaft 45 be able to be accommodated in the perforation 36 of the fixing seat 30. Then, the protruded portion 31 on the fixing seat 30 can be used for stretching into an inner rim of the opening of the engagement slot 24. The locking portion 323 of the fastener 32 is elastically stuck and locked on an edge of the opening of the engagement slot 24, such that the fixing seat gets rid of falling out. When the leading wire 23 on the screen device 20 is too tight or too loose, the rotation shaft 45 in the wire regulation body 40 can be rotated through the perforation 36 on the fixing seat 30 to tighten or loosen the leading wire 23, thereby maintaining an appropriate tension force of the leading wire 23 to make the screen yarn mesh 22 be smoothly unfolded and closed.

[0015] Furthermore, when a maintenance and repair is performed and the present embodiment is needed to be removed, it only needs to force on the push portion 33 of the fixing seat 30 with fingers. The fixing seat 30 slides toward the fastener 32. At the same time, the fastener 32 elastically deforms toward the compression space because of the squeeze of the edge of the opening of the engagement slot 24. When a distance of the elastic deformation of the fastener 32 is greater than the distance of the protruded portion 31 protruding from an outer peripheral rim of the fixing seat 30, the protruded portion 31 can depart from the inner rim of the opening of the engagement slot 24. Since the locking portion 323 of the fastener 32 is stuck at an outer rim of the opening of the engagement slot 24, the fixing seat 30 can be conveniently removed from the engagement slot 24 without any locking action.

[0016] Please refer to FIG. 5 and FIG. 6, It is a second preferred embodiment of the present disclosure. Most of the structure of the second preferred embodiment are same as the structure of the first preferred embodiment. The differences between the structures of the first preferred embodiment and the second preferred embodiment are as following: The fixing seat 30' is provided with a protruded portion 31' and a fastener 32' corresponding to an opening of the engagement slot 24, and the fixing seat 30' is provided with a first slide groove 391' and a second slide groove 392' at a top portion and an outer peripheral rim thereof corresponding to the fastener 32'. Besides the first slide groove 391' is communicated with the second slide groove 392', the fastener 32' is received in the first slide groove 391', and a push portion 33' disposed on the fastener 32' is protruding at a distance from outside of the opening of the second slide groove 392'. As a result, by the action of forcing a force on the push portion 33', the fastener 32' can protrude at a distance from the outer peripheral rim of the fixing seat 30', thereby facilitating fastening against outside of the opening of the engagement slot 24. When the action of forcing a reverse force on the push portion 33', the fastener 32' retract back to the first slide groove 392", so that the fasten 32' is no longer fastened against the opening of the engagement slot 24. At this time, it is convenient to remove the fixing seat 30' from the engagement slot 24. The beneficial effects of facilitating removal are same as the first preferred embodiment.

[0017] The above-mentioned embodiment is only for illustrating the technical concepts and features of the present disclosure, and its purpose is to make a person having ordinary skills in the art understand the content of the present disclosure and implement accordingly. The present disclosure cannot be limited therewith. All equivalent changes or modifications made according to the spirit of the present disclosure and the contents of the description shall be covered within the scope of the claims of the present disclosure.

Claims

1. A screen wire regulation and control device with an easy disassembly and assembly structure, comprising: a wire regulation body and a fixing seat, wherein the wire regulation body and the fixing seat are assembled with each other, and an outer periphery of the fixing seat is provided with a protruded portion and a fastener, wherein an end of the fastener is spaced apart from the fixing seat at a distance to form a compression space, and the compression space is greater than a distance of the protruded portion protruding from the outer periphery of the fixing seat.

2. A screen wire regulation and control device with an easy disassembly and assembly structure, comprising: a wire regulation body and a fixing seat, wherein

the wire regulation body and the fixing seat are assembled with each other, an outer periphery of the fixing seat is provided with a protruded portion and a fastener, and the outer periphery of the fixing seat is further provided with a first slide groove, wherein the fastener is slidable in the first slide groove and extendable outwardly with a distance from an opening of the first slide groove.

3. The screen wire regulation and control device with an easy disassembly and assembly structure according to claim 1 or claim 2, wherein an accommodating groove is defined by the fixing seat, the accommodating groove is provided with a first position-limiting protrusion and a second position-limiting protrusion, the wire regulation body is assembled in the accommodating groove of the fixing seat, the wire regulation body is provided with a first concave portion and a second concave portion corresponding to the first position-limiting protrusion and the second position-limiting protrusion of the fixing seat, and a guide inclined plane is disposed at a position of the wire regulation body close to the first concave portion.

4. The screen wire regulation and control device with an easy disassembly and assembly structure according to claim 1, wherein the fastener is provided with a locking portion.

5. The screen wire regulation and control device with an easy disassembly and assembly structure according to claim 3, wherein an elastic shifting piece is disposed on the fixing seat located at the first position-limiting protrusion.

6. The screen wire regulation and control device with an easy disassembly and assembly structure according to claim 1 or claim 2, wherein at least one perforation is defined by a top portion of the fixing seat, an operation slot is defined by the wire regulation body corresponding to the perforation of the fixing seat, the operation slot is provided with a rotation shaft, a plurality of protruded teeth are disposed around the rotation shaft, and an elastic stopper extends from a slot wall of the operation slot towards the plurality of protruded teeth of the rotation shaft.

7. The screen wire regulation and control device with an easy disassembly and assembly structure according to claim 6, wherein the rotation shaft is provided with a lacing hole.

8. The screen wire regulation and control device with an easy disassembly and assembly structure according to claim 6, wherein the top portion of the fixing seat is provided with a wire returning portion and a wire inlet, the wire regulation body is provided with a wire inlet slot corresponding to the wire returning portion of the fixing seat, and the wire inlet slot is communicated with the wire inlet and the operation slot.

9. The screen wire regulation and control device with an easy disassembly and assembly structure according to claim 1, wherein a top portion of the fixing seat is provided with a push portion.

10. The screen wire regulation and control device with an easy disassembly and assembly structure according to claim 2, wherein a top portion of the fixing seat is provided with a second slide groove, the second slide groove is communicated with the first slide groove, the fastener is accommodated within the first slide groove, the fastener is provided with a push portion, and the push portion protrudes from the second slide groove.

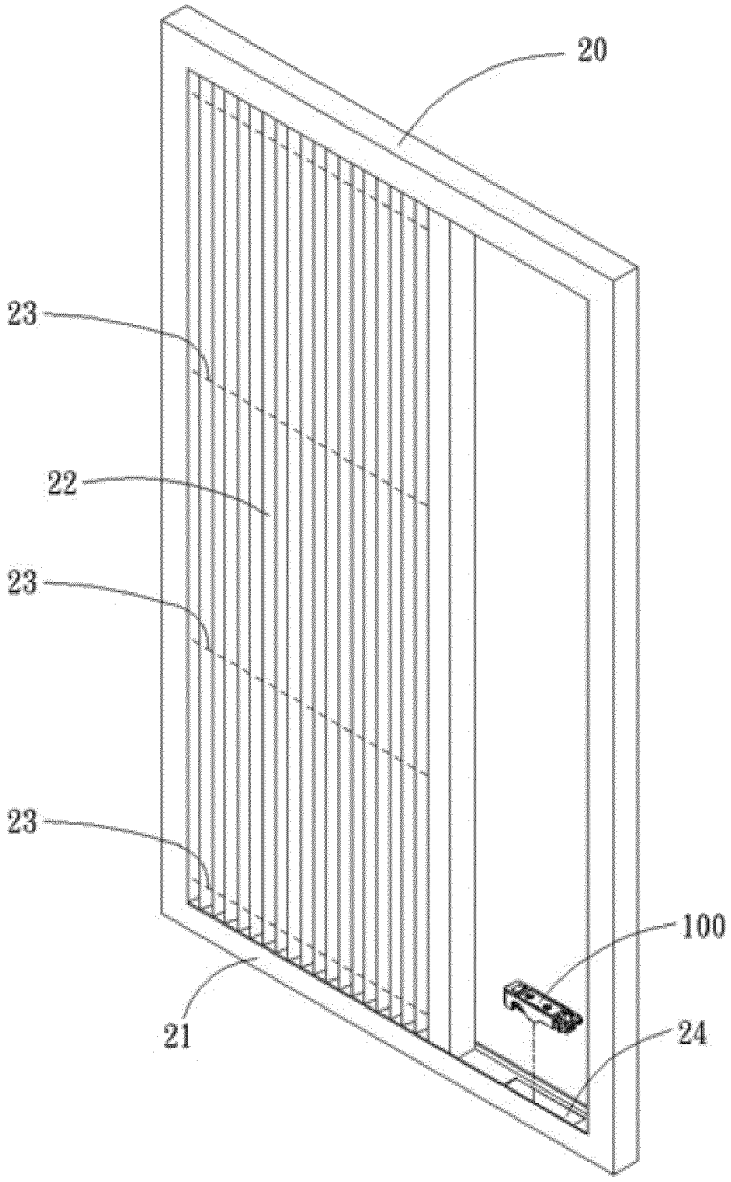

FIG. 1

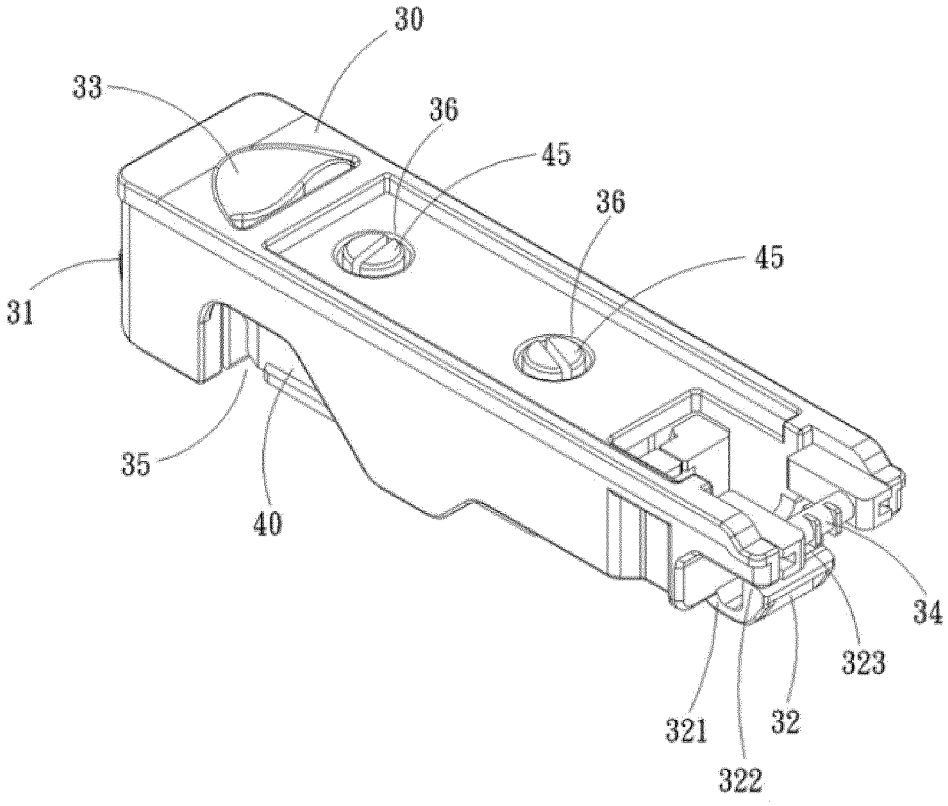

FIG. 2

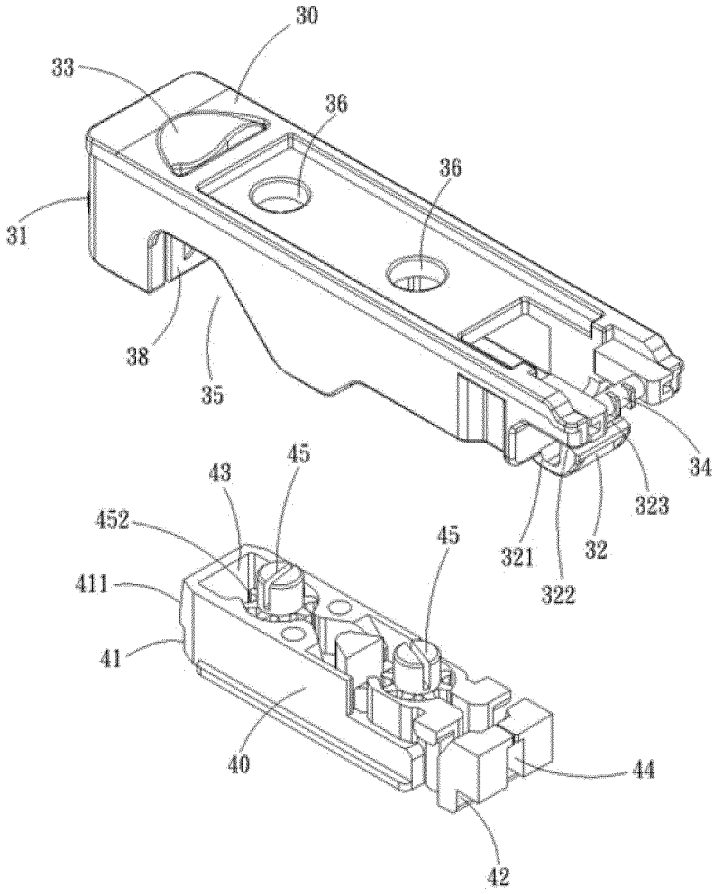

FIG. 3

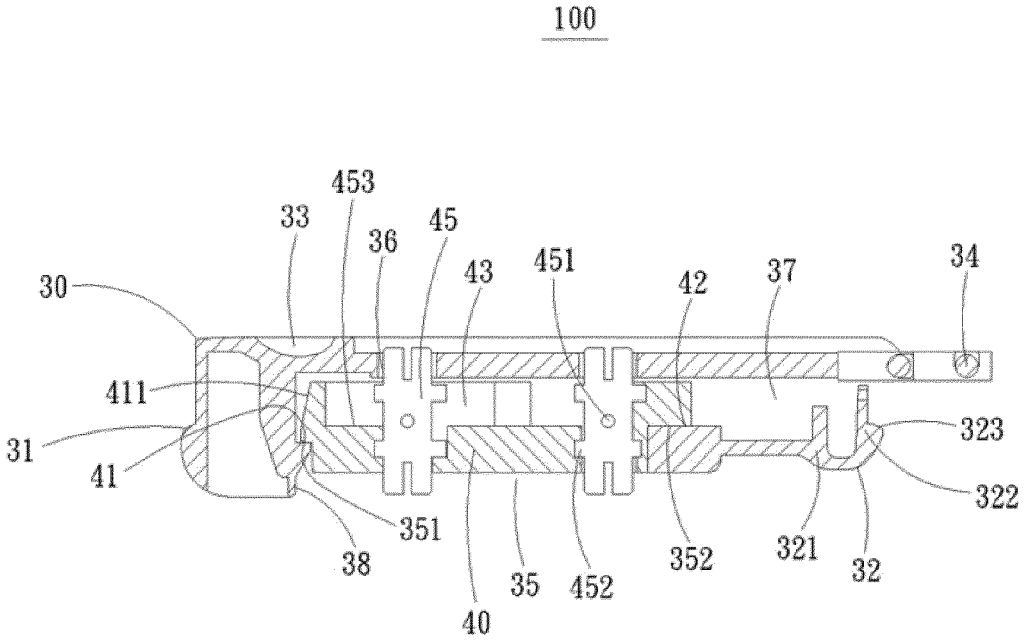
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FIG. 4

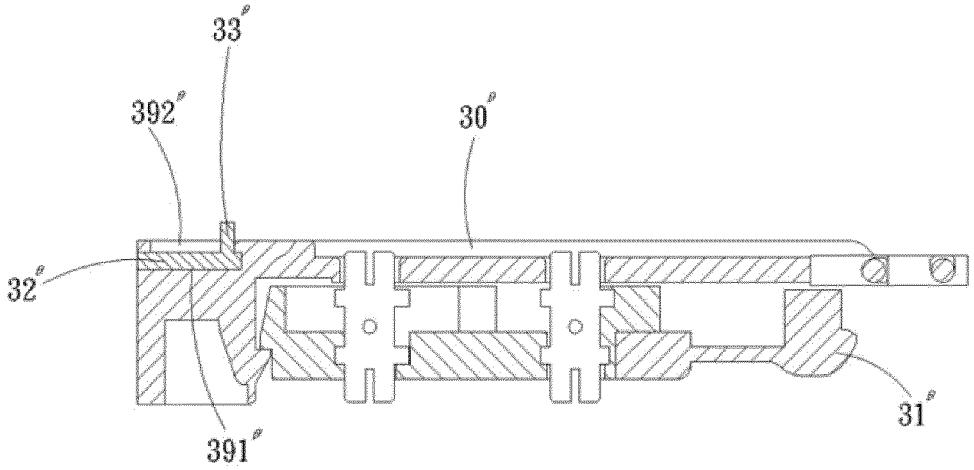

FIG. 5

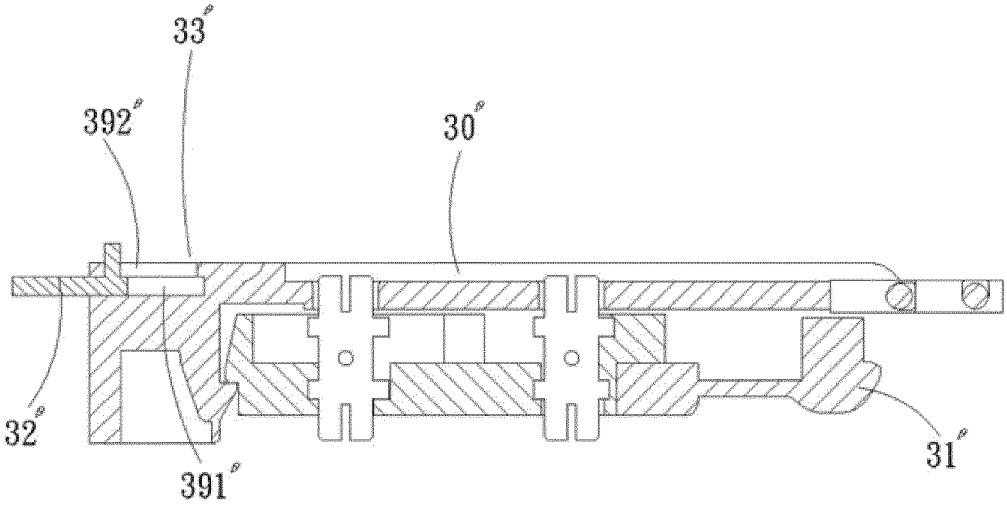

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/103553

A. CLASSIFICATION OF SUBJECT MATTER

E06B 9/52(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)

E06B; A47H

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)

CNPAT, CNKI, WPI, EPODOC: 窗, 纱窗, 百叶窗, 调, 锁, 调节, 调控, 线, 绳, 导线, 可, 易, 拆装, 拆卸, 扣件, 凸, 松紧, 滑动, 斜面, 推移, adjustable, wire, curtain?, rope, tape, yarn, window, flexible, fastener, removable, detachable

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 206581864 U (ZHU, Yanrong) 24 October 2017 (2017-10-24) description, paragraphs [0016]-[0033], and figures 1-7	1, 3-9
A	CN 204591083 U (ZHONG, Mingheng) 26 August 2015 (2015-08-26) entire document	1-10
A	US 2015204137 A1 (MV LINE S.P.A.) 23 July 2015 (2015-07-23) entire document	1-10
A	TW 201728292 A (TAROKO DOOR & WINDOW TECHNOLOGIES, INC.) 16 August 2017 (2017-08-16) entire document	1-10
A	CN 201045276 Y (BEIJING JIEGAO LEJIA SCREENING DOORS AND WINDOWS TECHNOLOGY CO., LTD.) 09 April 2008 (2008-04-09) entire document	1-10

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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"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 May 2020	**27 May 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**	Authorized officer
Facsimile No. **(86-10)62019451**	Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/103553

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 206581864 U	24 October 2017	None	
CN 204591083 U	26 August 2015	None	
US 2015204137 A1	23 July 2015	WO 2014024214 A1	13 February 2014
		PT 2900894 T	17 March 2017
		HR P20170417 T1	02 June 2017
		ES 2631141 T3	28 August 2017
		EP 2900894 A1	05 August 2015
		SI 2900894 T1	26 April 2017
TW 201728292 A	16 August 2017	CN 106812447 A	09 June 2017
CN 201045276 Y	09 April 2008	None	

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

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO I500848 A **[0002]**
- WO 1612210 A **[0002] [0004]**
- WO 1500848 A **[0003]**
- WO 201728292 A **[0004]**