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(54) DOOR OR WINDOW

(57) A swinging door or window, comprising a door or window sash (1), a door or window leaf (2) and sealing structures (3); the sealing structures (3) comprise fixing pieces (31), flexible members (32) and sealing members (33); the door or window sash (1) has the fixing pieces (31) installed thereon; the door or window leaf (2) has the flexible members (32) installed thereon; the sealing members (33) are connected below the flexible members (32), and are installed at the bottom portion of the door or window leaf (2). In addition, the fixing pieces (31) are further provided with inclined surfaces (311); the flexible members (32) comprise housings (321) and springs (322); the sealing members (33) comprise sealing frames (331), plastic strips (332) and convex portions (333) ; the convex portions (333) are provided with at least one inclined surface (334) matching the fixing pieces (31), and guide rails (335) for positioning the door or window leaf (2); when the convex portions (333) are connected to the springs (322) to move relative to the fixing pieces (31), the sealing frames (331) can move up and down. The door or window has good sealing performance, ensures smooth opening of the door or window, and achieves separate left and right height adjustment.

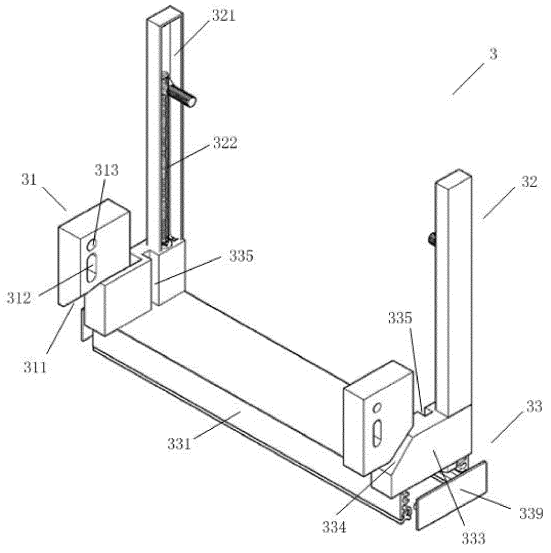

Fig. 4

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Description

[0001] The present application claims priority from Prior Application CN201410300153.8 filed June 30th, 2014 before the SIPO, entitled "a door or window", all of the content is incorporated herein by reference.

TECHNICAL FIELD OF THE INVENTION

[0002] The present invention relates to building doors or windows technical field, particularly to a door or a window.

TECHNICAL BACKGROUND OF THE INVENTION

[0003] For the existing doors or windows, in particular swinging doors or swinging windows, there is always a certain distance between the lower part of the door leaf and the floor or between the lower part of the window leaf and the windowsill, to ensure the door or window can be opened and closed without being blocked. However, a gap between the door leaf and the floor or between the window leaf and the windowsill is left as a result, which will result in poor sealing performance, and make it easy for the outdoor materials (such as sand, moisture, insects and the like) entering into the room. In order to solve the problem of sealing the swinging door or the swinging window tightly, those skilled in the art provides the following solutions:

[0004] The application entitled as "An automatic adjusting swinging art door" with the Publication Number CN201972566U records as below: the invention discloses an automatic adjusting swinging art door, comprising a door leaf, the bottom of the door leaf is provided with a shell; the shell is of symmetrical structure, and provided with a groove at the center of the shell; both sides of the shell are provided with a sliding groove; two ends of a U-shaped adjusting strip are respectively mounted in the sliding grooves; two adjusting hooks are respectively mounted onto both ends of the U-shaped adjusting strip, and the adjusting hooks are matched up with shell hooks at the bottom of the side wall of the shell, the shell hooks is provided inside the shell and outside the sealing strip groove; and the bottom of the U-shaped adjusting strip is provided with two sealing strips mounted inside the sealing strip groove, the bottoms of the sealing strips extend beyond the sealing strip groove.

[0005] That is to say, in the prior art, as the bottom of the door leaf is provided with a shell, and the shell is provided with a sliding groove, U-shaped adjusting strips and adjusting hooks, thus the distance between the door and the floor can be adjusted by utilizing the automatic sealing of the U-shaped adjusting strip and the structure of the adjusting hook. But this relies on the shell structure mounted at the bottom of the door leaf, and the adjusting strips and the adjusting hooks are easy to failure, resulting a short service life. Meanwhile, when the door leaf is opened or closed, the door leaf can be automatically adjusted up and down, thus the adjusting hook will hinder the opening and closing of the door leaf and impact the smooth opening and closing.

[0006] Furthermore, as the floor or the windowsill is subjected to be of different heights from left to right, the floor or the windowsill is usually not as flat as it is supposed. And this fact requires even higher sealing performance of the swinging door or window. However, in the existing solutions, the sealing performance is obtained according to the highest point of the floor or the windowsill, there is no solution aiming to adjust the heights of the left and the right of the door leaf or the window leaf respectively, therefore the technical problem of complete sealing cannot be solved.

SUMMARY OF THE INVENTION

[0007] The present invention aims to provide a door or a window with a longer service life and better sealing performance, which can ensure smooth opening.

[0008] The technical problem to be solved by the present invention is to provide a door or a window with the heights of the left and the right of the door or the window can be adjusted respectively, so as to achieve complete sealing.

[0009] In order to solve the above technical problem, this present invention provides a door or a window, comprising a door sash or a window sash, a door leaf or a window leaf and a sealing structure, the sealing structure comprising fixing pieces, flexible members and sealing members;

the door sash or the window sash is provided with at least two said fixing pieces, the door leaf or the window leaf is provided with at least two said flexible members, at least one said sealing member are connected below the at least two flexible members, the sealing members are installed at the bottom portion of the door leaf or the window leaf;

the fixing piece is provided with at least one inclined surface;

the flexible member comprises a housing and a spring within the housing;

the sealing member comprises a sealing frame, plastic strips installed at the bottom portion of the sealing frame, and convex portions installed on the two ends of the top portion of the sealing frame; the convex portion is provided with at least one inclined surface matching the fixing piece and a guide rail for positioning the door leaf or the window leaf;

the convex portions are connected with the springs so that the sealing frame moves up and down when the convex portions move relative to the fixing pieces.

[0010] As an improvement of the above scheme, the convex portion is provided with a connecting piece inside it; the connecting piece comprises a bolt and a nut, one end of the bolt is connected with the spring, the other end of the bolt passes through the convex portion, the sealing frame and is fixed to the nut.

[0011] As an improvement of the above scheme, one end of the spring is connected with the bolt of the convex portion; the other end of the spring is fixedly installed onto the door leaf or the window leaf.

[0012] As an improvement of the above scheme, the fixing piece is provided with at least one circular through-hole and at least one elliptical through-hole;
the elliptical through-hole is provided with a screw through it, so that the fixing piece can slide up and down along the door sash or the window sash;
the circular through-hole is provided with a screw through it, so that the fixing piece can be fixed onto the door sash or the window sash.

[0013] As an improvement of the above scheme, the sealing frame is provided with mounting grooves at its bottom portion, the mounting grooves are used to mount the plastic strips; the lower part of the mounting groove is provided with hooks protruding inwards.

[0014] As an improvement of the above scheme, the plastic strips are inverted Y-shaped, and made of Ethylene Propylene Diene Monomer.

[0015] As an improvement of the above scheme, the sealing frame is of a rectangular frame structure; the lengths of the sealing frame, the mounting groove, and the plastic strip, in the front direction of the door or the window are the same as the length of the bottom portion of the door leaf or the window leaf in the front direction of the door or the window.

[0016] As an improvement of the above scheme, the door or the window comprises cover plates, the cover plates are mounted on sides of the sealing frame; the sealing frame is provided with mounting members on its inner surfaces, the mounting members are used to install the cover plates.

[0017] As an improvement of the above scheme, the mounting members are symmetrically installed on the inner surfaces of the sealing frame; the mounting members are C-shaped.

[0018] As an improvement of the above scheme, the door sash or the window sash is provided with two said fixing pieces; the door leaf or the window leaf is provided with two said flexible members; one said sealing member is connected below the two flexible members.

[0019] The implementation of the present invention has the following beneficial effects:

[0020] The present invention provides a swinging door or a swinging window. The door sash or the window sash is provided with at least two fixing pieces, and the door leaf or the window leaf is provided with at least two flexible members. At least one sealing member is connected below the at least two flexible members and the sealing member is mounted at the bottom portion of the door leaf or the window leaf. Wherein, the fixing piece is provided with at least one inclined surface; the flexible member comprises a housing and a spring within the housing. The sealing member comprises a sealing frame, plastic strips mounted at the bottom portion of the sealing frame, and convex portions mounted on the two ends of the top of the sealing frame. The convex portion is provided with at least one inclined surface matching the fixing piece and a guide rail for positioning the door leaf or the window leaf. The convex portions are connected with the springs so that the sealing frame can move up and down when the convex portions move relative to the fixing pieces. The door or the window has a long service life and good sealing performance, ensures smooth opening, and the heights of the left and the right of the door or the window can be adjusted respectively and thus is water-proof, moisture-proof, dust-proof, insect-proof and noise-proof, which will be revealed in detail as blow:

[0021] Firstly, the sealing member is connected with the spring via the convex portion, and thus the sealing member is lifted by the spring. The sealing member will not touch the floor or the windowsill when the door or the window is opened. Only when the door leaf or the window leaf touches the door sash or the window sash, the sealing member will gradually move downwards, and on the moment the door or the window is closed completely, the sealing member will move downwards to the position fitting the floor or the windowsill tightly. Adopting the present structure, the opening and closing movement by rotating the swinging door or the swinging window will be smooth and easy and not be hindered. Furthermore, the flexible member and the sealing member do not function while the door or the window is opened, which will reduce wear and prolong the service life.

[0022] The sealing member comprises a sealing frame and plastic strips mounted at the bottom portion of the sealing frame. The plastic strips are inverted Y-shaped, and are preferably made of Ethylene Propylene Diene Monomer. Adopting the above-mentioned plastic strips, when the door or the window is closed, the plastic strips at the lower part of the door leaf or the window leaf can adjust the amount of compression according to the height of the floor or windowsill, and the amount of compression may extend to a maximum of 12 mm. Meanwhile, the left of the plastic strips and the right of the plastic strips can be adjusted respectively according to the different heights of the left or the right of the floor or the windowsill, enabling to effectively solve the problems of insufficient water resistance and poor sealing performance in the threshold-free swinging door or the threshold-free swinging window.

[0023] Secondly, the door sash or the window sash is provided with at least two fixing pieces, and the fixing pieces are mounted on the left side and the right side of the door sash or the window sash. The fixing piece is provided with at least one circular through-hole and at least one elliptical through-hole, wherein the elliptical through-hole is provided with a screw through it, in order that the fixing piece can slide up and down along the door sash or the window sash. And the circular through-hole is provided with a screw through it, in order that the fixing piece can be fixed onto the door sash or the window sash. Therefore, the present invention can respectively adjust the mounting height of the fixing piece on the left and the

mounting height of the fixing piece on the right by the two elliptical through-holes on the left and on the right, so as to individually adjust the descending height of the left side of the sealing member and the descending height of the right side of the sealing member, and thus to meet the sealing requirements for the uneven floor or the uneven windowsill. And then the present invention makes use of the circular through-holes to fix the fixing pieces to the door sash or the window sash.

[0024] Thirdly, the sealing frame is provided with the mounting grooves for mounting the plastic strips at its bottom portion, and the lower part of the mounting groove is provided with hooks protruding inwards, which can effectively ensure the stability of the plastic strips mounted in the mounting grooves.

DESCRIPTION OF FIGURES OF THE INVENTION

[0025]

Fig. 1 is the schematic diagram of the door or the window of the present invention;

Fig. 2 is the right cutaway view of the door or the window of the present invention;

Fig. 3 is the plan cutaway view of the door or the window of the present invention;

Fig. 4 is the three-dimensional schematic diagram of the sealing structure of the door or the window as shown in Fig. 1;

Fig. 5 is the right cutaway view of the door or the window as shown in Fig. 4;

Fig. 6 is the schematic diagram of the sealing frame as shown in Fig. 4 ;

Fig. 7 is the working state schematic diagram of the sealing member shown in Fig. 4.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0026] In order to make the purpose, the technical scheme and the advantages of the present invention more clear, the present invention will be further described in detail with the combination of the figures.

[0027] As shown in Fig. 1, Fig. 2 and Fig. 3, the present invention provides a door or a window, the door or the window is a swinging door or a swinging window, comprising a door sash or a window sash 1, a door leaf or a window leaf 2 and a sealing structure 3; the sealing structure 3 comprises fixing pieces 31, flexible members 32 and sealing members 33.

[0028] As shown in Fig. 4, the door sash or the window sash 1 is provided with at least two fixing pieces 31, and the door leaf 2 is provided with at least two flexible members 32, and at least one sealing member 33 is connected below the at least two flexible members 32, and the sealing member 33 is mounted at the bottom portion of the door leaf or the window leaf 2.

[0029] In this embodiment, the door sash or the window sash 1 is provided with two fixing pieces 31, and the door leaf or the window leaf 2 is provided with two flexible members 32, and one sealing member 33 is connected below the two flexible members 32, and the sealing member 33 is mounted at the bottom portion of the door leaf or the window leaf 2.

[0030] Wherein the fixing piece 31 is provided with at least one inclined surface 311, at least one elliptical through-hole 312 and at least one circular through-hole 313. In this embodiment, the fixing piece 31 is provided with one inclined surface 311, one elliptical through-hole 312 and one circular through-hole 313.

[0031] The elliptical through-hole 312 is provided with a screw through it, in order that the fixing piece 31 can slide up and down along the door sash or the window sash 1; the circular through-hole 313 is provided with a screw through it, in order that the fixing piece 31 can be fixed onto the door sash or the window sash 1. Therefore, in the present invention, the mounting height of the fixing piece on the left and the mounting height of the fixing piece on the right can be adjusted respectively by the two elliptical through-holes 312 on the left and on the right, so that the descending height of the left side of the sealing member and the descending height of the right side of the sealing member can be adjusted respectively, and thus to meet the sealing requirements for the uneven floor or the uneven windowsill. And then, in the present invention the circular through-holes 313 are used to fix the fixing pieces onto the door sash or the window sash 1.

[0032] The flexible member 32 comprises a housing 321 and a spring 322 within the housing 321.

[0033] As shown in Fig. 5, the sealing member 33 comprises a sealing frame 331, plastic strips 332 mounted at the bottom portion of the sealing frame 331, and convex portions 333 mounted on the two ends of the top of the sealing frame 331; the convex portion 333 is provided with at least one inclined surface 334 matching the fixing piece 31 and a guide rail 335 for positioning the door leaf or the window leaf 2; the convex portion 333 is connected with the spring 322 so that the sealing frame 331 can move up and down when the convex portions 333 move relative to the fixing pieces 31.

[0034] The convex portion 333 is provided with the guide rail 335, so that the sealing member 33 can be located onto the door leaf or the window leaf 2, and thus the sealing member 33 can move up and down more easily.

[0035] The convex portion 333 is provided with a connecting piece 336 inside it; the connecting piece 336 comprises a bolt 336A and a nut 336B; one end of the bolt 336A is connected with the spring 322, the other end of the bolt 336A passes through the convex portion 333,

the sealing frame 331 and is fixed to the nut 336B. One end of the spring 322 is connected with the bolt 336A of the convex portion 333; the other end of the spring 322 is mounted on the door leaf or the window leaf 2. Specifically, the other end of the spring 322 can be mounted on the door leaf or the window leaf 2 through a screw; however it is not limited to this.

[0036] The sealing member 33 is connected with the spring 332 via the convex portion 333, and thus the sealing member 33 is lifted by the spring 322. The sealing member 33 will not touch the floor or the windowsill when the door or window is opened. Only when the door leaf or the window leaf 2 touches the door sash or the window sash, the sealing member 33 will gradually move downwards, and on the moment the door or the window is completely closed, the sealing member 33 will move downwards to the position fitting the floor or the windowsill tightly. Adopting the present structure, the opening and closing movement by rotating the swinging door or the swinging window will be smooth and easy and not be hindered. Furthermore, the flexible member 32 and the sealing member 33 do not function while the door or the window is opened, which will reduce wear and prolong the service life.

[0037] As shown in Fig. 6, the sealing frame 331 is provided with mounting grooves 337 at its bottom portion, and the mounting grooves 337 is used to mount the plastic strips; the lower part of the mounting groove 337 is provided with hooks 338 protruding inwards, which can effectively ensure the stability of the plastic strips mounted in the mounting grooves 337.

[0038] Preferably, the plastic strips 332 are inverted Y-shaped, and is are preferably made of Ethylene Propylene Diene Monomer. Adopting the above-mentioned plastic strips 332, when the door or the window is closed, the plastic strips at the lower part of the door leaf or the window leaf can adjust the amount of compression according to the height of the floor or the windowsill, and the amount of compression may extend to a maximum of 12 mm. Meanwhile, the left of the plastic strips and the right of the plastic strips can be adjusted respectively according to the different heights of the left and the right of the floor or the windowsill, enabling to effectively solve the problems of insufficient water resistance and poor sealing performance in the threshold-free swinging door or the threshold-free swinging window.

[0039] Preferentially, the sealing frame 331 is of a rectangular frame structure; the lengths of the sealing frame 331, the mounting groove 337 and the plastic strip 332, in the front direction of the door or the window, are the same as the length of the bottom of the door leaf or the window leaf in the front direction of the door or the window, which ensures the sealing performance of the door or the window even more effectively.

[0040] Furthermore, the door or the window comprises cover plates 339, the cover plates 339 are mounted on both sides of the sealing frame 331; the sealing frame 331 is further provided with mounting members 340 on the inner surfaces, the mounting members 340 are used to install the cover plates 339. The mounting members 340 are symmetrically mounted on the inner surfaces of the sealing frame 331. Preferentially, the mounting members 340 are C-shaped. The structure of the present invention is provided with cover plates 339, the mounting members 340 are mounted on the inner surfaces of the sealing frame 331, therefore the mounting members used for connection can be hided, which will ensure the aesthetic property of the door or the window.

[0041] As shown in Fig. 7, the present door or window may function as below :

When the door leaf or the window leaf 2 is opened, the sealing member 33 is lifted and does not touch the floor or the windowsill, as shown in Fig. 7 marked by A state ;

When the door leaf or the window leaf 2 begins to be closed, the convex portion 333 mounted on the door leaf or the window leaf 1 comes close to the fixing pieces 31 mounted on the door sash or the window sash 1, and moves relative to the fixing piece 31, so that the sealing member 33 gradually moves downwards. On the moment the door leaf or the window leaf 2 is closed completely, the sealing member 33 moves downwards to the position fitting the floor or the windowsill tightly, as shown in Fig. 7 marked by B state.

[0042] In summary, the door or the window disclosed by the present invention has a long service life and good sealing performance, ensures smooth opening, the heights on the left and on the right can be adjusted respectively, and thus is water-proof, moisture-proof, dust-proof, insect-proof and noise-proof, etc.

[0043] The above disclosed solution is only the preferred embodiment of the present invention, it should be noted that for one skilled in the art, modifications and embellishes can also be made without deviating from the theory of the present invention, and the modifications and embellishes should be deemed as within the protection scope of the present invention.

INDUSTRIAL APPLICABILITY OF THE INVENTION

[0044] The door or the window disclosed by the present invention has a long service life and good sealing performance, ensures smooth opening, the heights on the left and on the right can be adjusted respectively, and thus is water-proof, moisture-proof, dust-proof, insect-proof and noise-proof, etc.

Claims

1. A door or a window, the door or the window being a swinging door or a swinging window, comprising a

door sash or a window sash, a door leaf or a window leaf and a sealing structure, **characterized in that**, the sealing structure comprising fixing pieces, flexible members and sealing members; wherein ,
the door sash or the window sash is provided with at least two said fixing pieces, the door leaf or the window leaf is provided with at least two said flexible members, at least one said sealing member are connected below the at least two flexible members, the sealing members are installed at the bottom portion of the door leaf or the window leaf;
the fixing piece is provided with at least one inclined surface;
the flexible member comprises a housing and a spring within the housing;
the sealing member comprises a sealing frame, plastic strips installed at the bottom portion of the sealing frame, and convex portions installed on the two ends of the top of the sealing frame; the convex portion is provided with at least one inclined surface matching the fixing piece and a guide rail for positioning the door leaf or the window leaf;
the convex portions are connected with the springs so that the sealing frame moves up and down when the convex portions move relative to the fixing pieces.

2. A door or a window according to Claim 1, **characterized in that**, the convex portion is provided with a connecting piece inside it; the connecting piece comprises a bolt and a nut; one end of the bolt is connected with the spring; the other end of the bolt passes through the convex portion, the sealing frame and is fixed to the nut.

3. A door or a window according to Claim 2, **characterized in that**, one end of the spring is connected with the bolt of the convex portion; the other end of the spring is fixedly installed onto the door leaf or the window leaf.

4. A door or a window according to Claim 1, **characterized in that**, the fixing piece is provided with at least one circular through-hole and at least one elliptical through-hole;
the elliptical through-hole is provided with a screw through it, so that the fixing piece can slide up and down along the door sash or the window sash;
the circular through-hole is provided with a screw through it, so that the fixing piece can be fixed onto the door sash or the window sash.

5. A door or a window according to Claim 1, **characterized in that**, the sealing frame is provided with mounting grooves at its bottom portion, the mounting grooves are used to mount the plastic strips; the lower part of the mounting groove is provided with hooks protruding inwards.

6. A door or a window according to Claim 5, **characterized in that**, the plastic strips are inverted Y-shaped, and made of Ethylene Propylene Diene Monomer.

7. A door or a window according to any of Claims 1 to 6 , **characterized in that**, the sealing frame is of a rectangular frame structure; the lengths of the sealing frame, the mounting groove, and the plastic strip, in the front direction of the door or the window are the same as the length of the bottom portion of the door leaf or the window leaf in the front direction of the door or the window.

8. A door or a window according to Claim 1, **characterized in that**, the door or the window comprises cover plates, the cover plates are mounted on sides of the sealing frame; the sealing frame is provided with mounting members on its inner surfaces, the mounting members are used to install the cover plates.

9. A door or a window according to Claim 8, **characterized in that**, the mounting members are symmetrically installed on the inner surfaces of the sealing frame; the mounting members are C-shaped.

10. A door or a window according to Claim 1, **characterized in that**, the door sash or the window sash is provided with two said fixing pieces; the leaf door or the window leaf is provided with two said flexible members; one said sealing member is connected below the two flexible members.

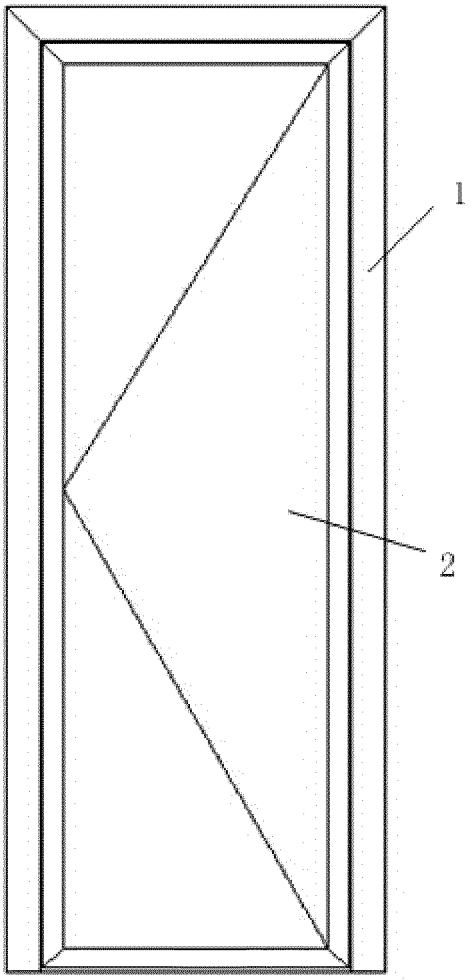

Fig. 1

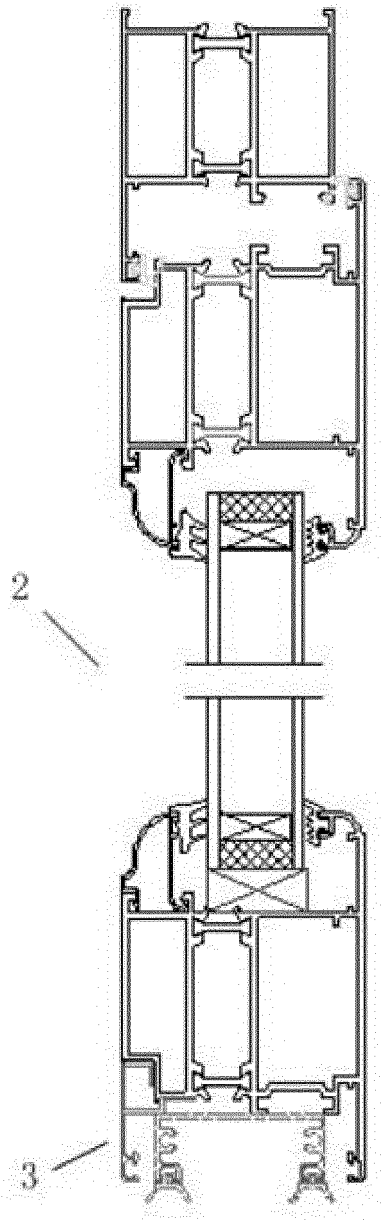

Fig. 2

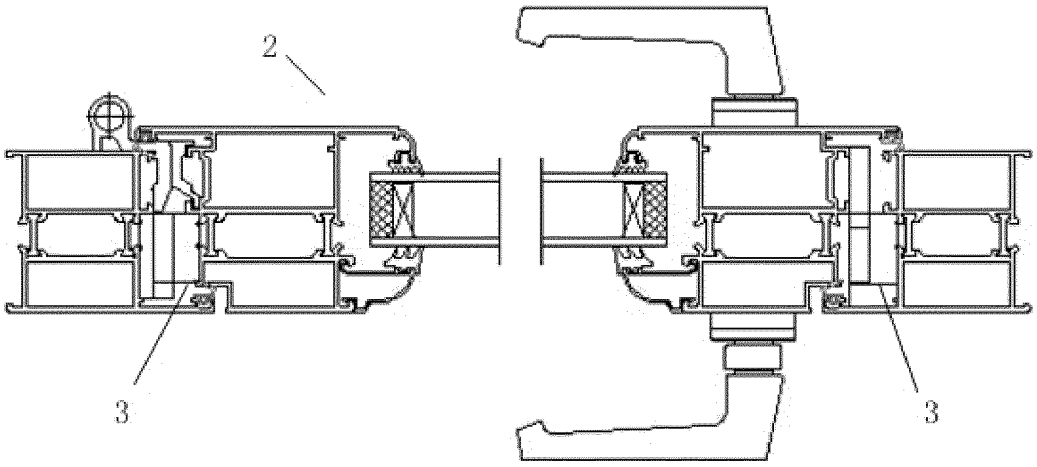

Fig. 3

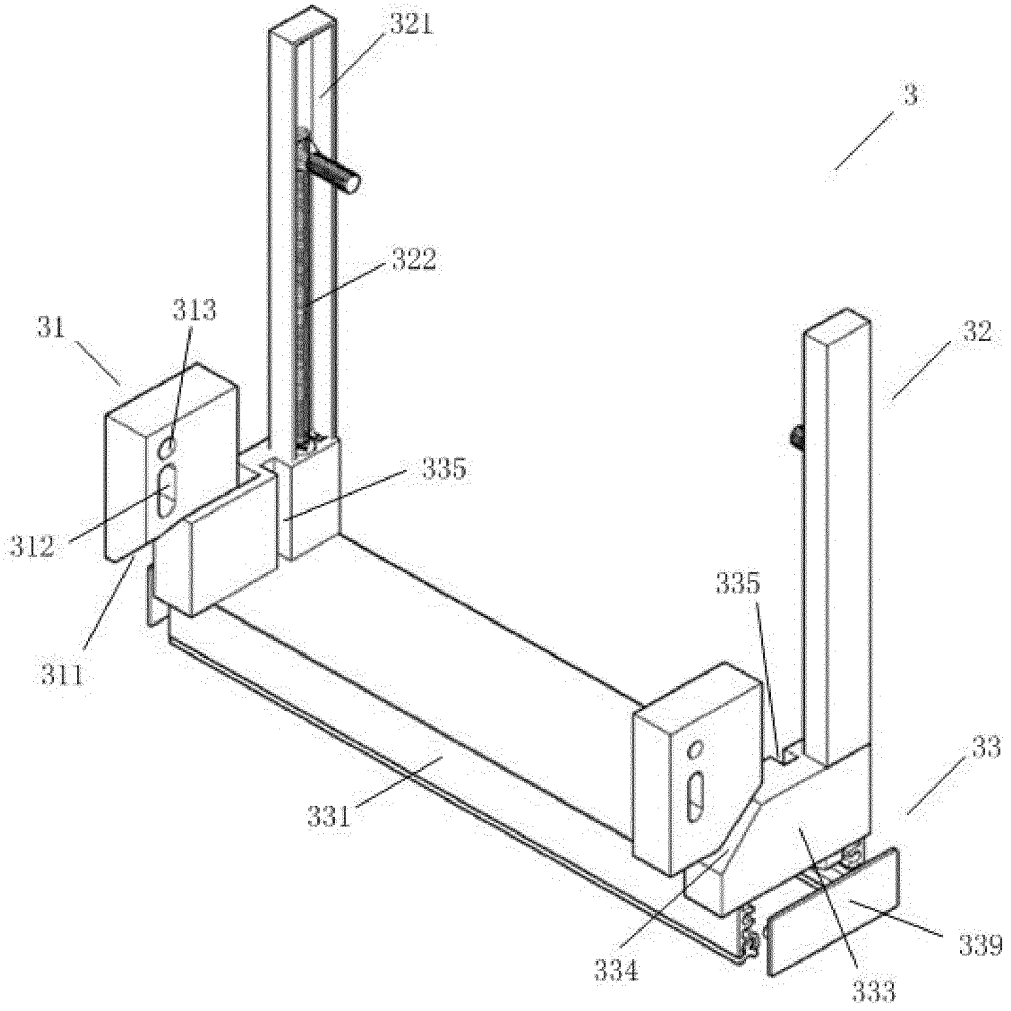

Fig. 4

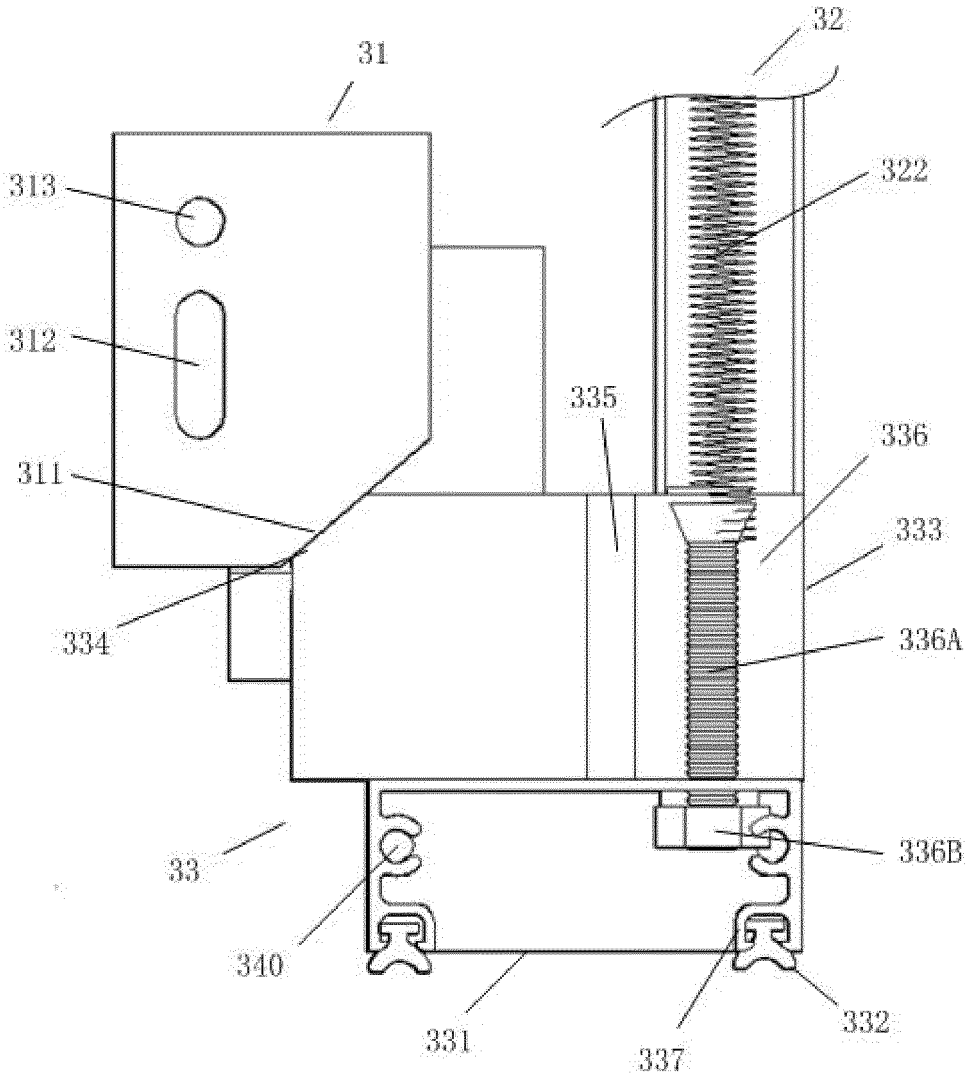
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Fig. 5

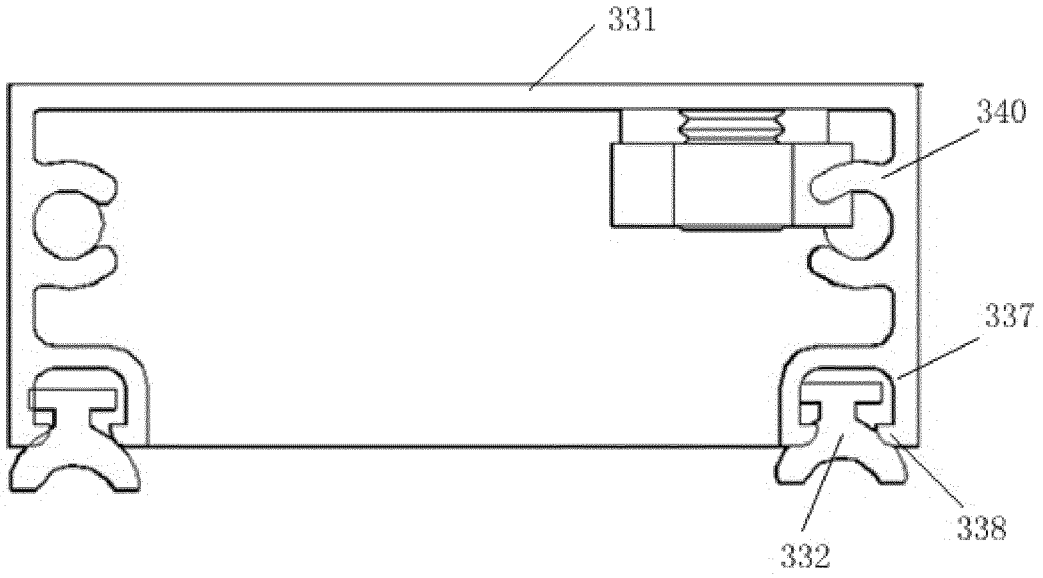

Fig. 6

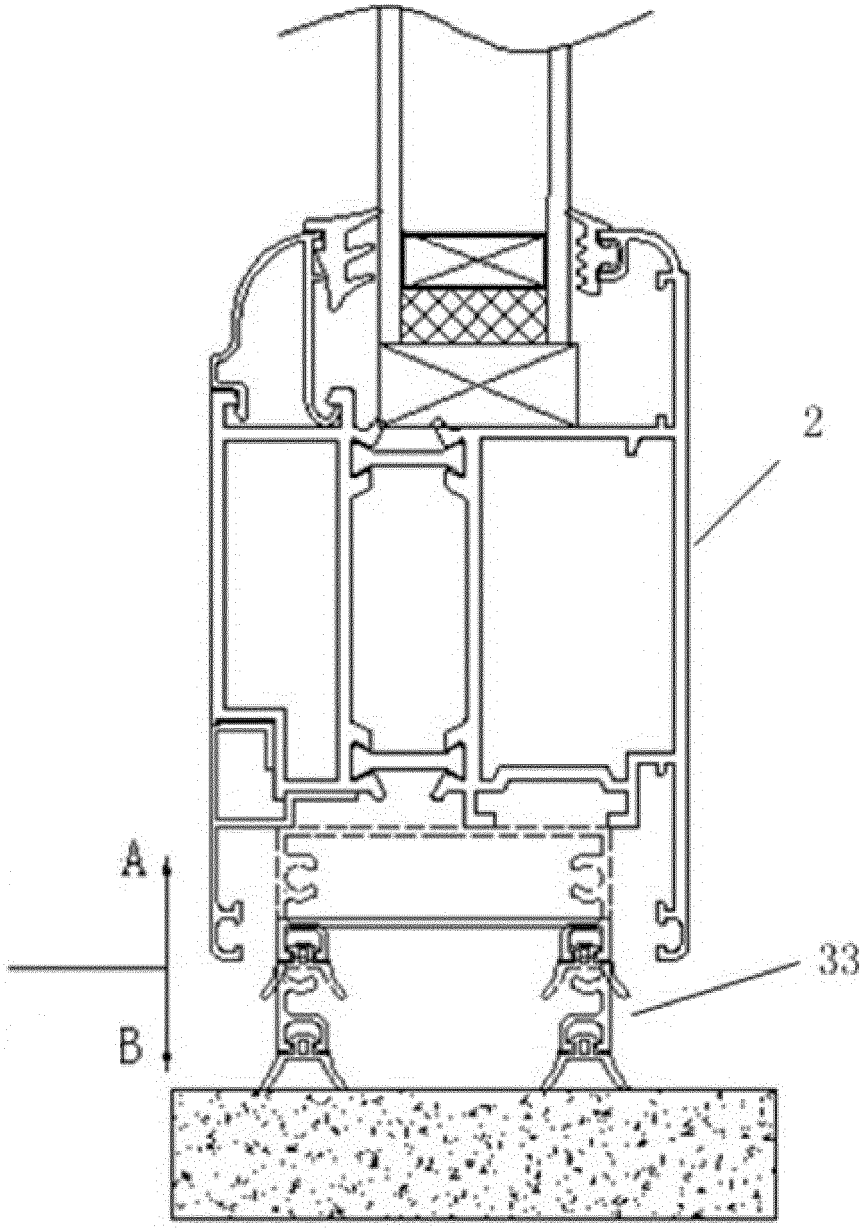

Fig. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2015/079344

A. CLASSIFICATION OF SUBJECT MATTER

E06B 7/215 (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 7

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)

CNKI, CNPAT, WPI, EPODOC: fix+, door, window, bottom, base, foot, root, elastic+, spring, flexibi+, stretch+, airproof, seal+, rubber strip, latex, project+, bulge, protrud+, rail

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim
PX	CN 203961727 U (GUANGDONG JIANMEI ALUMINIUM PROFILE FACT) 26 November 2014 (26.11.2014) claims 1-10	1-10
PX	CN 104100192 A (GUANGDONG JIANMEI ALUMINIUM PROFILE FACT) 15 October 2014 (15.10.2014) claims 1-10	1-10
A	CN 202510003 U (WUXI CSMC TECHNOLOGIES CORP.) 31 October 2012 (31.10.2012) description, the embodiments and figure 3	1-10
A	CN 201535125 U (RAVEN SEALING PROD CO LTD) 28 July 2010 (28.07.2010) claims 1-10	1-10
A	CN 201972566 U (LU, Junfeng) 14 September 2011 (14.09.2011) the whole document	1-10
A	JPH 11166378 A (SANKI LOUVRE KK) 22 June 1999 (22.06.1999) the whole document	1-10

☐ 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

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Date of the actual completion of the international search	Date of mailing of the international search report
10 August 2015	25 August 2015
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer CUI, Ruimei Telephone No. (86-10) 62085032

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
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Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
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REFERENCES CITED IN THE DESCRIPTION

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