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(54) **MOUNTING AND FIXING STRUCTURE OF OUTER FRAME AND INNER FRAME OF WINDOW**

(57) The present invention discloses a mounting and fixing structure of an outer frame and an inner frame of a window, which includes an outer frame part and an inner frame part. The outer frame part is mounted at a wall opening while the inner frame part is fitted to the outer frame part. U-shaped angle brackets are fixedly connected with an upper crossbeam of the outer frame part. Recessed angle brackets are fixedly connected with two side vertical beams and a lower crossbeam of the outer frame part. T-shaped profiles are fixedly connected with an upper crossbeam of the inner frame part. O-shaped profiles are fixedly connected with two side vertical beams and a lower crossbeam of the inner frame part. The T-shaped profile and the U-shaped angle bracket are fitted together. The O-shaped profile and the recessed angle bracket are fitted together. According to the present invention, all parts are integrally, firmly, and sealingly mounted at corresponding positions of the outer frame part and the inner frame part so as to avoid losing due to vibration during travelling.

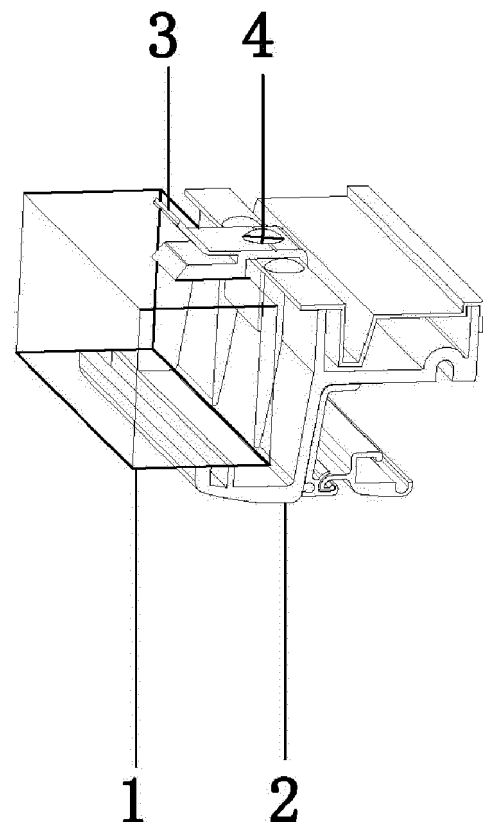


FIG. 1

Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of windows, and in particular to a mounting and fixing structure for an outer frame and an inner frame of a window.

BACKGROUND

[0002] There are various types of windows and frames for motorhomes. In the prior art, a frame consists of an inner frame and an outer frame that are made separately. In addition to the installation environment and other factors, a mounting and fixing system and method of a window usually depend on the budget.

[0003] The outer frame is fixed to a wall opening of the motorhome from the exterior. The inner frame is fixed to the wall from the interior. Then, the inner frame is fixed to the outer frame through screws. For aesthetic needs, caps are usually used to cover the screws in the inner frame.

[0004] However, the caps can be easily disconnected due to vibration during traveling. In addition, the caps can be seen even though they are well mounted in the frame.

SUMMARY

[0005] To solve the problems in the prior art, the present invention provides a mounting and fixing structure of an outer frame and an inner frame of a window. In the present invention, parts are closely fitted to prevent from losing, and the inner frame and the outer frame of the window are firmly mounted.

[0006] To achieve the objective, the present invention provides the following solution: the present invention provides a mounting and fixing structure of an outer frame and an inner frame of a window, which includes an outer frame part and an inner frame part. The outer frame part is mounted at a wall opening while the inner frame part is fitted to the outer frame part. U-shaped angle brackets are fixedly connected with an upper crossbeam of the outer frame part. Recessed angle brackets are fixedly connected with two side vertical beams and a lower crossbeam of the outer frame part. T-shaped profiles are fixedly connected with an upper crossbeam of the inner frame part. O-shaped profiles are fixedly connected with two side vertical beams and a lower crossbeam of the inner frame part. The T-shaped profile and the U-shaped angle bracket are fitted together. The O-shaped profile and the recessed angle bracket are fitted together.

[0007] Preferably, the U-shaped angle bracket is fitted to an outer side of the upper crossbeam of the outer frame part through a screw. The U-shaped angle bracket includes a slot located in one side of a main body of the U-shaped angle bracket. One side of the slot is a tilted side plate. The T-shaped profile is inserted into the slot.

[0008] Preferably, one side of a main body of the T-shaped profile is integrally connected with a hanging plate. The hanging plate is inserted into the slot of the U-shaped angle bracket.

5 [0009] Preferably, the recessed angle brackets are fitted to outer sides of the two side vertical beams and an outer side of the lower crossbeam of the outer frame part through screws. A snapslot is integrally arranged on one side of the recessed angle bracket. The O-shaped profile is inserted into the snapslot.

10 [0010] Preferably, an O-shaped bulge is integrally connected with one side of a main body of the O-shaped profile. The O-shaped bulge is fitted to the snapslot.

15 [0011] Preferably, multiple U-shaped angle brackets or recessed angle brackets can be respectively and uniformly distributed on the upper crossbeam, the two side vertical beams and the lower crossbeam of the outer frame part according to different specifications of the wall opening. The T-shaped profile and the O-shaped profiles of the upper crossbeam, the two side vertical beams and the lower crossbeam of the inner frame part are arranged respectively corresponding to the U-shaped angle brackets and the recessed angle brackets.

20 [0012] Compared with the prior art, the present invention achieves the following technical effects: according to the present invention, the T-shaped profile and the O-shaped profiles of the upper crossbeam, the two side vertical beams and the lower crossbeam of the inner frame part are correspondingly connected with the U-shaped angle brackets and the recessed angle brackets of the outer frame part so as to achieve firm mounting of the outer frame part and the inner frame part. This mounting method has good sealing performance. All parts are integrally and firmly mounted at corresponding positions of the outer frame part and the inner frame part so as to avoid losing due to vibration during travelling.

BRIEF DESCRIPTION OF THE DRAWINGS

40 [0013] To describe the technical solutions in the embodiments of the present invention or in the prior art more clearly, the following briefly introduces the accompanying drawings required for describing the embodiments. Apparently, the accompanying drawings in the following description show merely some embodiments of the present invention, and a person of ordinary skill in the art may still derive other drawings from these accompanying drawings without creative efforts.

50 FIG. 1 is a schematic diagram of an upper crossbeam of an outer frame part.

FIG. 2 is a schematic diagram showing mounting of an angle bracket on the upper crossbeam of the outer frame part.

55 FIG. 3 is a schematic diagram of a side vertical beam and a lower crossbeam of the outer frame part.

FIG. 4 is a mounting schematic diagram of the side vertical beam and the lower crossbeam of the outer

frame part.

FIG. 5 shows a U-shaped angle bracket.

FIG. 6 shows a recessed angle bracket.

FIG. 7 is a mounting schematic diagram of an outer frame mounting assembly.

FIG. 8 is a schematic diagram of an upper crossbeam of an inner frame part.

FIG. 9 shows a T-shaped profile.

FIG. 10 is a mounting schematic diagram of a partial side portion and a partial lower portion of the inner frame part.

FIG. 11 shows a profile of the side portion and the lower portion.

FIG. 12 is a schematic diagram of an inner frame mounting assembly.

FIG. 13 is a sectional view of the outer frame part and the inner frame part before mounting.

FIG. 14 is a sectional view of the outer frame part and the inner frame part after mounting.

FIG. 15 is a schematic diagram of a mounted assembly.

[0014] In the drawings: 1-wall opening, 2-upper crossbeam of outer frame, 3-U-shaped angle bracket, 4-screw, 5-recessed angle bracket, 6-two side vertical beams of outer frame, 7-lower crossbeam of outer frame, 8-slot, 9-tilted side plate, 10-snapslot, 11-hanging plate, 12-O-shaped bulge, and 13-T-shaped profile.

DETAILED DESCRIPTION

[0015] A clear and complete description of the technical solutions in the embodiments of the present invention will be given below, in combination with the accompanying drawings in the embodiments of the present invention. Apparently, the embodiments described below are a part, but not all, of the embodiments of the present invention. All other embodiments obtained by a person of ordinary skill in the art based on the embodiments of the present invention without inventive efforts fall within the scope of protection of the present invention.

[0016] To solve the problems in the prior art, the present invention provides a mounting and fixing structure of an outer frame and an inner frame of a window. In the present invention, parts are closely fitted to prevent from losing, and the inner frame and the outer frame of the window are firmly mounted.

[0017] To make the above objective, characteristics and advantages of the present invention more understandable, the present invention will be further described below in detail in combination with the accompanying drawings and specific embodiments.

[0018] As shown FIG. 1 to FIG. 15, the present invention provides a mounting and fixing structure of an outer frame and an inner frame of a window, which includes an outer frame part and an inner frame part. The outer frame part is mounted at a wall opening 1 while the inner frame part is fitted to the outer frame part. U-shaped angle

brackets 3 are fixedly connected with an upper crossbeam 2 of the outer frame part. Recessed angle brackets 5 are fixedly connected with two side vertical beams 6 and a lower crossbeam 7 of the outer frame part. T-shaped profiles 13 are fixedly connected with an upper crossbeam of the inner frame part. O-shaped profiles are fixedly connected with two side vertical beams and a lower crossbeam of the inner frame part. The T-shaped profile 13 and the U-shaped angle bracket 3 are fitted together. The O-shaped profile and the recessed angle bracket 5 are fitted together.

[0019] The U-shaped angle bracket 3 is fitted to an outer side of the upper crossbeam of the outer frame part through a screw 4. The U-shaped angle bracket 3 includes a slot 8 located in one side of a main body of the U-shaped angle bracket. One side of the slot 8 is a tilted side plate 9. The T-shaped profile 13 is inserted into the slot 8. One side of a main body of the T-shaped profile 13 is integrally connected with a hanging plate 11. The hanging plate 11 is inserted into the slot 8 of the U-shaped angle bracket 3.

[0020] The recessed angle brackets 5 are fitted to outer sides of the two side vertical beams and an outer side of the lower crossbeam of the outer frame part through screws 4. A snapslot 10 is integrally arranged on one side of the recessed angle bracket 5. The O-shaped profile is inserted into the snapslot 10. An O-shaped bulge 12 is integrally connected with one side of a main body of the O-shaped profile. The O-shaped bulge 12 is fitted to the snapslot 10.

[0021] The slot 8 and the snapslot 10 are female connectors while the hanging plate 11 and the O-shaped bulge 12 are male connectors. When the female connectors of the outer frame part are right connected with the male connectors of the inner frame part, all connectors are hidden in the inner frame and are invisible, thereby avoiding a problem that a cap is lost due to the fact that the cap is exposed in the exterior in the background.

[0022] To meet mounting requirements of the window, multiple U-shaped angle brackets 3 or recessed angle brackets 5 can be respectively and uniformly distributed on the upper crossbeam, the two side vertical beams and the lower crossbeam of the outer frame part according to different specifications of the wall opening. The T-shaped profile 13 and the O-shaped profiles of the upper crossbeam, the two side vertical beams and the lower crossbeam of the inner frame part are arranged respectively corresponding to the U-shaped angle brackets 3 and the recessed angle brackets 5. When the windows need to be mounted in the same specification of the wall openings but on different thicknesses of walls of a motorhome, only different U-shaped angle brackets 3 and the recessed angle brackets 5 need to be changed.

[0023] The mounting and fixing structure of an outer frame and an inner frame of a window in the present invention has the following mounting steps:

a required specification of the outer frame of the window is mounted in the wall opening of the motorhome from

the exterior of the wall; the U-shaped angle brackets 3 and the recessed angle brackets 5 are respectively fixed to the outer frame through the screws 4 from the interior of the motorhome; the T-shaped profile 13 on the upper portion of the inner frame is hung in the slots 8 of the U-shaped angle brackets 3 fixed to the upper portion of the outer frame; the O-shaped profiles of the inner frame are snapped into the recessed angle brackets 5 fixed to the outer frame by properly pressing the two sides and the lower portion of the inner frame, respectively (as shown in FIG. 13/14). Therefore, the inner frame and the outer frame of the window are mounted.

[0024] Several examples are used for illustration of the principles and implementation methods of the present invention. The description of the embodiments is used to help illustrate the method and its core principles of the present invention. In addition, a person of ordinary skill in the art can make various modifications in terms of specific embodiments and scope of application in accordance with the teachings of the present invention. In conclusion, the content of this specification shall not be construed as a limitation to the present invention.

Claims

1. A mounting and fixing structure of an outer frame and an inner frame of a window, comprising an outer frame part and an inner frame part, wherein the outer frame part is mounted at a wall opening while the inner frame part is fitted to the outer frame part; U-shaped angle brackets are fixedly connected with an upper crossbeam of the outer frame part; recessed angle brackets are fixedly connected with two side vertical beams and a lower crossbeam of the outer frame part; T-shaped profiles are fixedly connected with an upper crossbeam of the inner frame part; O-shaped profiles are fixedly connected with two side vertical beams and a lower crossbeam of the inner frame part; the T-shaped profile and the U-shaped angle bracket are fitted together; the O-shaped profile and the recessed angle bracket are fitted together.
2. The mounting and fixing structure of an outer frame and an inner frame of a window according to claim 1, wherein the U-shaped angle bracket is fitted to an outer side of the upper crossbeam of the outer frame part through a screw; the U-shaped angle bracket comprises a slot located in one side of a main body of the U-shaped angle bracket; one side of the slot is a tilted side plate; the T-shaped profile is inserted into the slot.
3. The mounting and fixing structure of an outer frame and an inner frame of a window according to claim 2, wherein one side of a main body of the T-shaped profile is integrally connected with a hanging plate,

and the hanging plate is inserted into the slot of the U-shaped angle bracket.

4. The mounting and fixing structure of an outer frame and an inner frame of a window according to one of claims 1 to 3, wherein the recessed angle brackets are fitted to outer sides of the two side vertical beams and an outer side of the lower crossbeam of the outer frame part through screws; a snapslot is integrally arranged on one side of the recessed angle bracket; the O-shaped profile is inserted into the snapslot.
5. The mounting and fixing structure of an outer frame and an inner frame of a window according to claim 4, wherein an O-shaped bulge is integrally connected with one side of a main body of the O-shaped profile, and the O-shaped bulge is fitted to the snapslot.
6. The mounting and fixing structure of an outer frame and an inner frame of a window according to one of claims 1 to 5, wherein multiple U-shaped angle brackets or recessed angle brackets can be respectively and uniformly distributed on the upper crossbeam, the two side vertical beams and the lower crossbeam of the outer frame part according to different specifications of the wall opening; the T-shaped profile and the O-shaped profiles of the upper crossbeam, the two side vertical beams and the lower crossbeam of the inner frame part are arranged respectively corresponding to the U-shaped angle brackets and the recessed angle brackets.

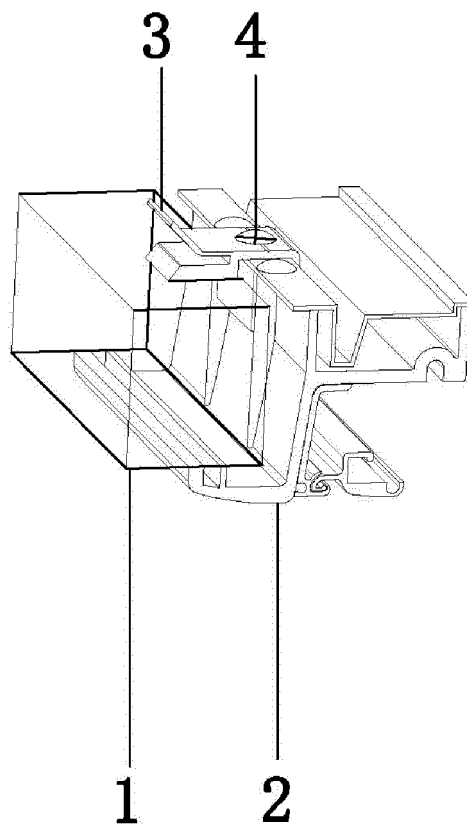


FIG. 1

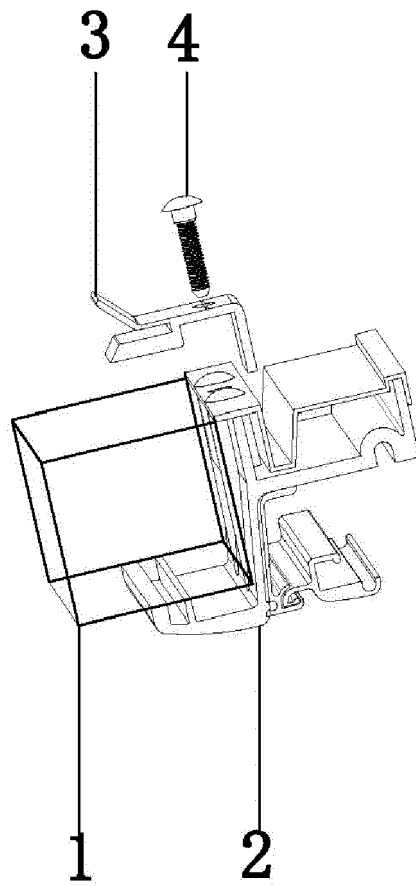


FIG. 2

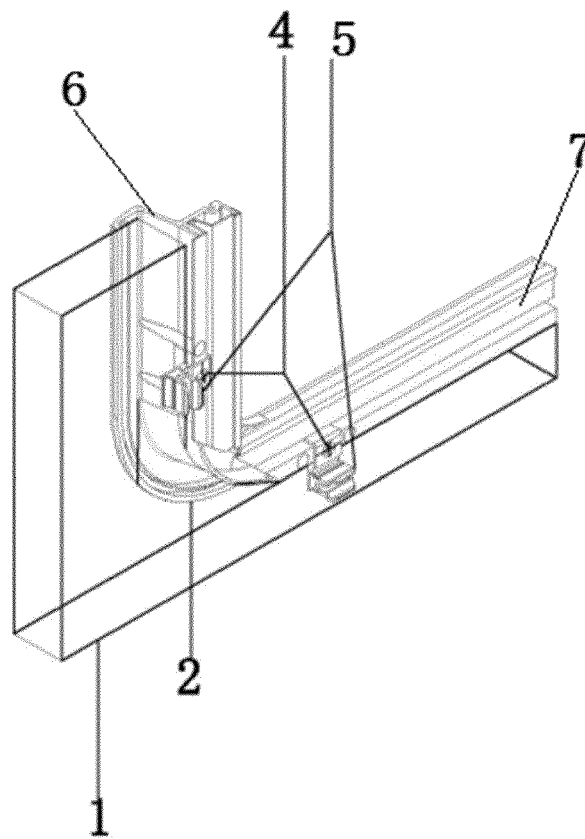


FIG. 3

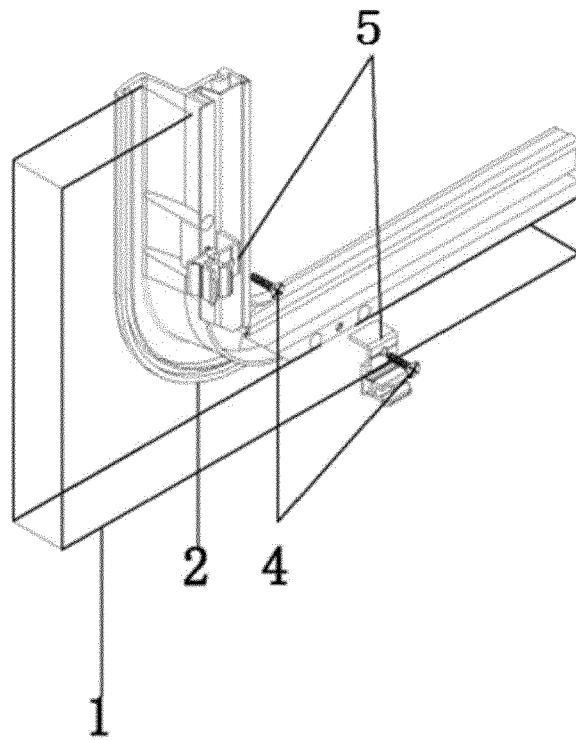


FIG. 4

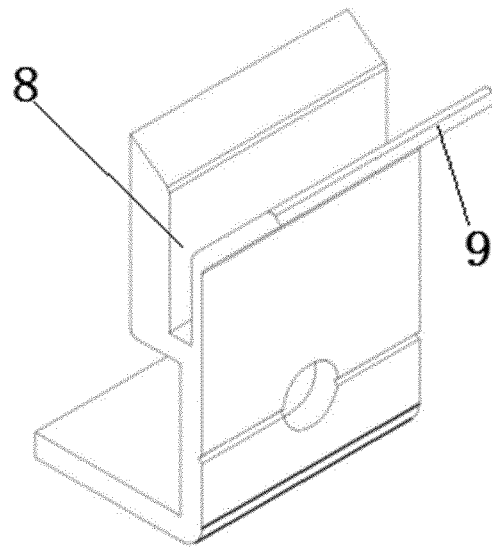


FIG. 5

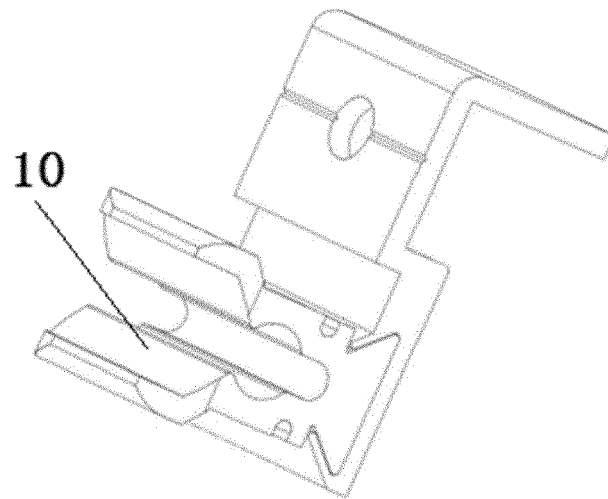


FIG. 6

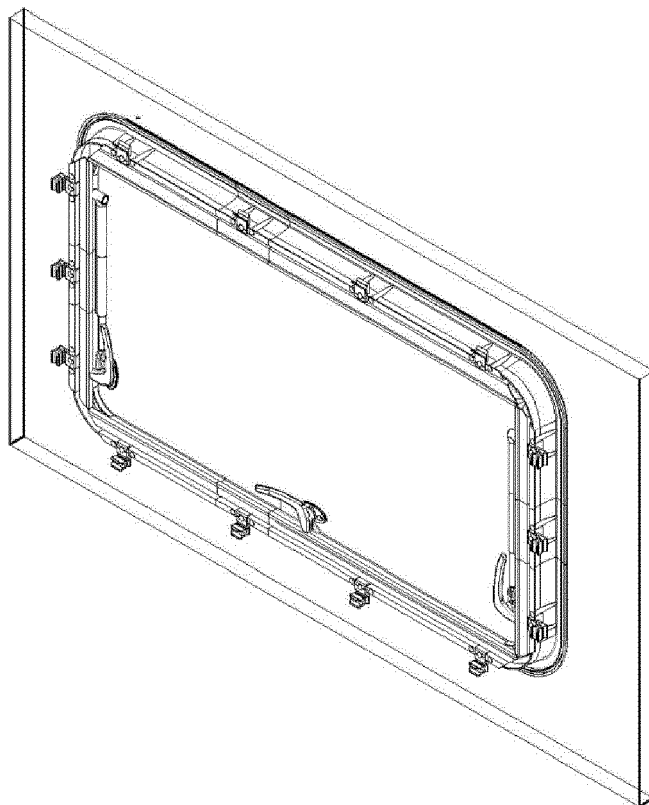


FIG. 7

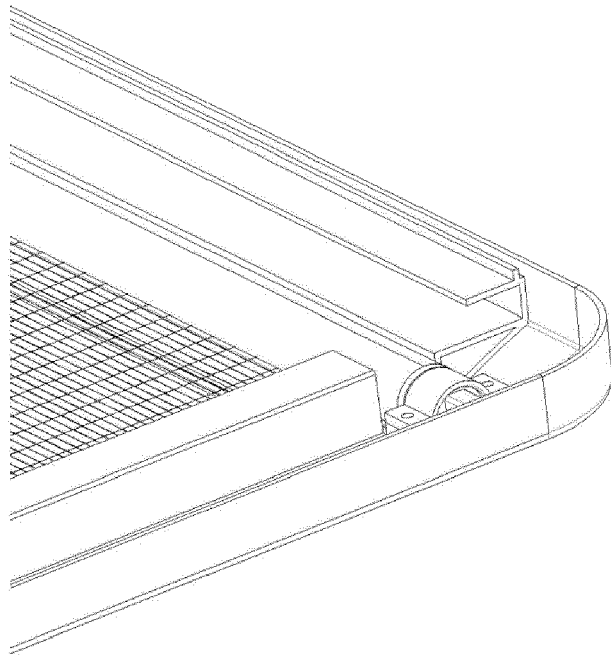


FIG. 8

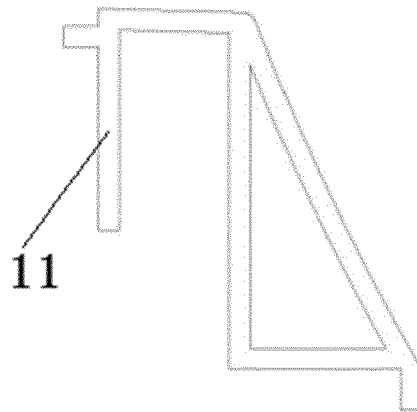


FIG. 9

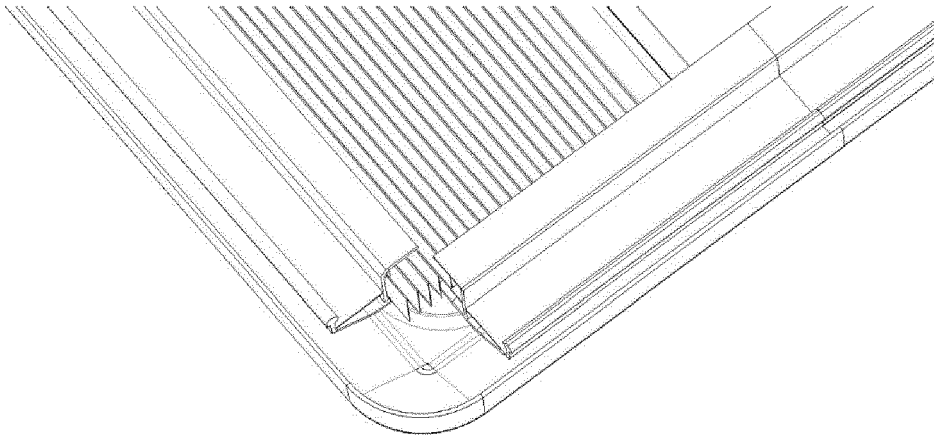


FIG. 10

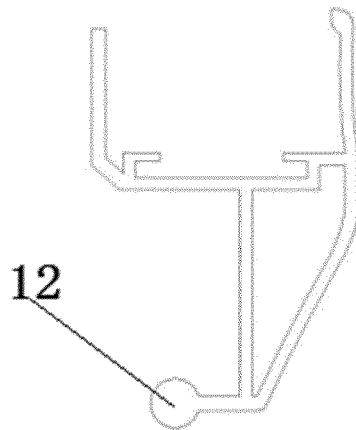


FIG. 11

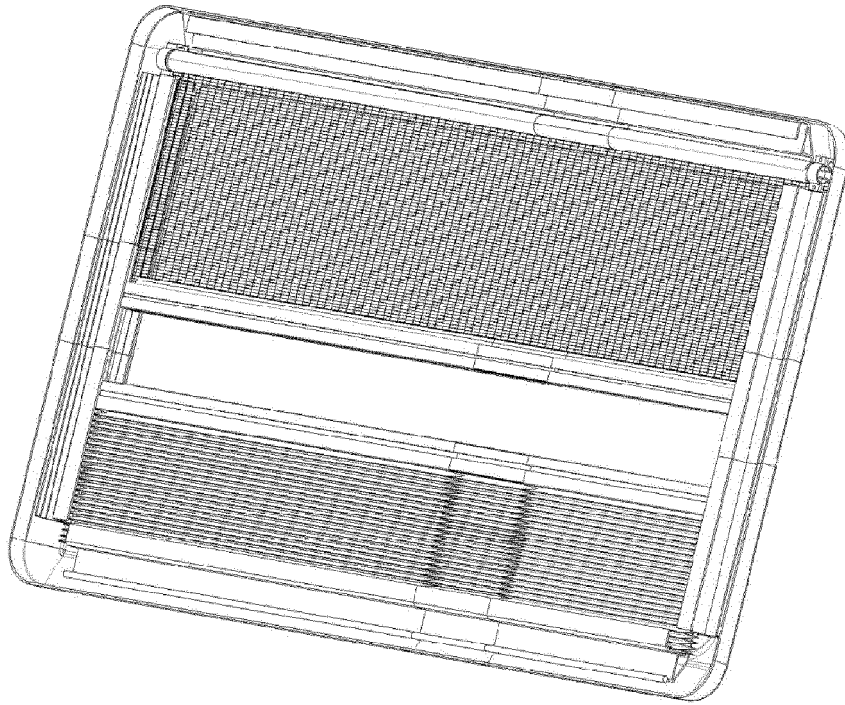


FIG. 12

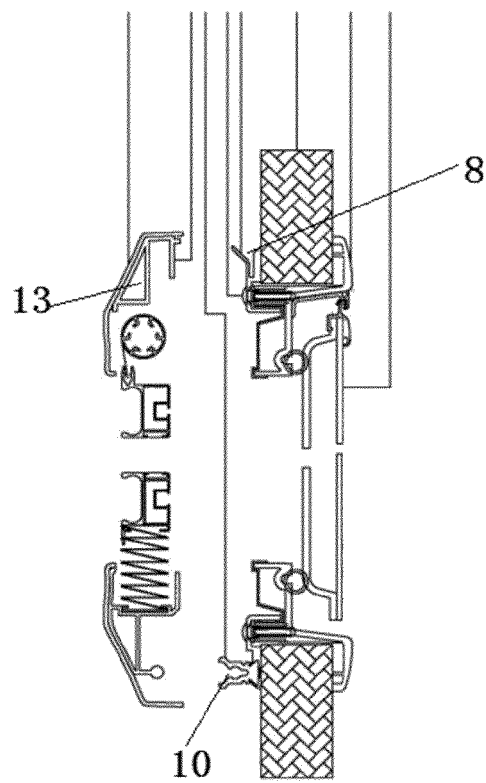


FIG. 13

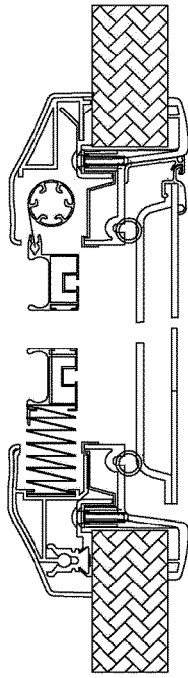


FIG. 14

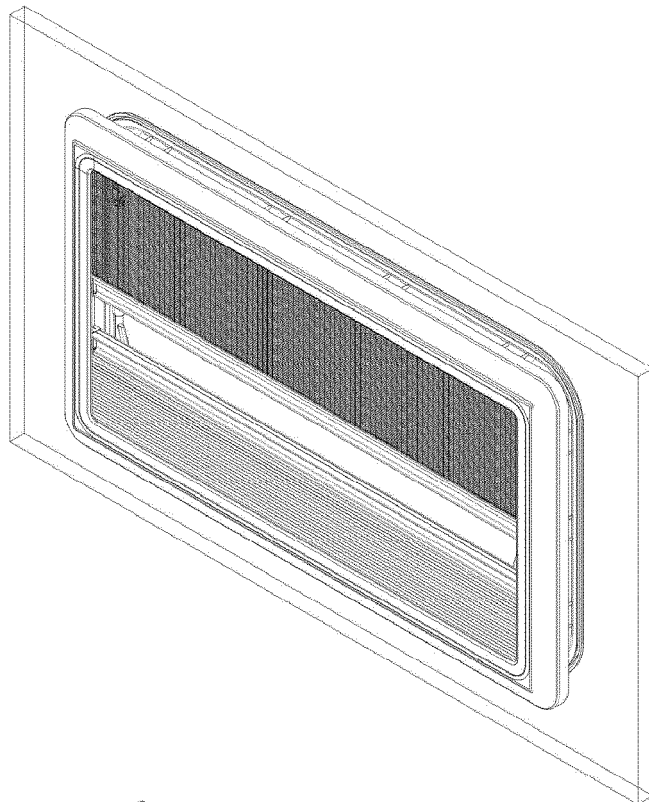


FIG. 15



EUROPEAN SEARCH REPORT

Application Number
EP 20 16 2746

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	CN 205 311 293 U (ANHUI MEIGUTE RV PARTS CO LTD) 15 June 2016 (2016-06-15) * the whole document *	1-6	INV. E06B3/54 B60J1/00
A	US 2017/218681 A1 (SIDDIQUI ANEEL NADEEM [US] ET AL) 3 August 2017 (2017-08-03) * the whole document *	1-6	
			TECHNICAL FIELDS SEARCHED (IPC)
			E06B B60J
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 21 August 2020	Examiner Cobusneanu, D
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21-08-2020

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 205311293 U	15-06-2016	NONE	
US 2017218681 A1	03-08-2017	NONE	

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