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(54) **WINDOW FRAME WITH CORNERS**

(57) Window frame for a roof window comprising upper stile (1) with ventilation channel (10), lower stile (2) and two side stiles (3), wherein each stile is constructed out of plastic profiles constituting outer wall (11, 21), inner wall (12, 22, 31), top wall (13, 23) and bottom wall (14, 24) with closed chambers (4) in between them, so that the outer wall of each jamb stile constitutes the stile's external profile directed towards the roof structure, and the inner wall of each stile constitutes its internal profile directed towards the window frame internal opening, and upper stile (1) outer wall (11), top wall (13) and bottom wall (14) and the corresponding side stile (3) outer wall, top wall and bottom wall share welded edges wherein upper stile inner wall (12) and side stile inner wall comprises a partially welded common edge and corner fitting (5) which fills the remaining part of the window frame between upper stile (1) and side stile (3) .

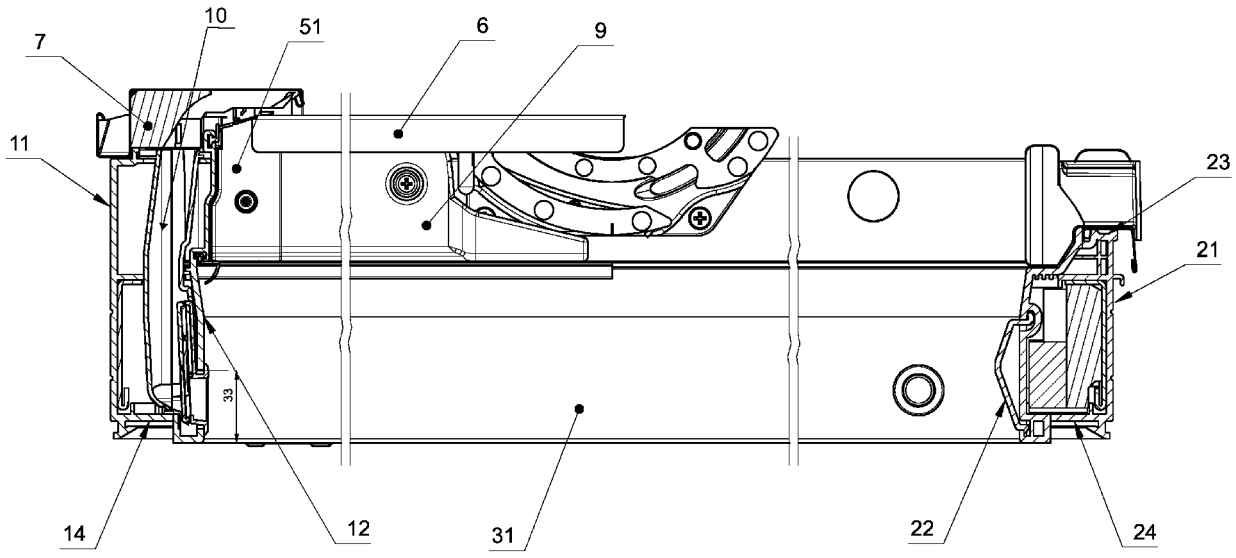

Fig. 3

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Description

[0001] The object of the invention ia a welded window frame for a roof window with corner fittings, located in particular between its upper stile and its side stiles.

[0002] A frame structure, such as a window sash or a window or door jamb, with side pieces, a top and a bottom piece, as well as a core made out of at least one core element and a polyurethane casing encapsulating the core was disclosed under patent No. PL/EP 2847408T3. The side pieces are attached to the top piece using a plastic corner piece.

[0003] Also, patent EP2431562A2 describes a window sash comprising a four profiles which form a rectangular frame. Sash profiles are connected using corner fittings. Each corner fitting comprises a flanges positioned perpendicular relative to each other. As a result of temperature differences, gaps may appear in window sash corner fittings visible once the window is open. Use of a third and a fourth corner fitting flanges eliminates the said gaps. The third and fourth corner fittings are perpendicular to the first and second flange respectively, and they are directly connected to one another. Once installed, the corner fitting third and fourth flanges are located on the external surface of the window frame glass unit.

[0004] Window frame corner fittings disclosed as patent WO2008131755A1 comprises two arms with a ribbed surface. The said arms are inserted in frame profile slits and the ribbed surface prevents a gap from appearing between the connected stiles during frame use on a roof.

[0005] The subject of the invention is a window frame with top corner fittings joining window frame stiles of different cross-sections, and in particular an upper stile with side stiles.

[0006] The aim of the invention is a window frame which comprising an upper stile, a lower stile and two side stiles. Each stile is a made out of plastic profile elements, welded together into chamber profiles. The outer wall of each frame stile is the stile's external profile directed towards the roof structure, and the inner wall of each stile is its internal profile directed towards the frame internal opening. The stiles also comprises a top wall and a bottom wall which join the inner and outer walls to make a chamber profile. The frame stiles are connected using a welding so that the upper stile outer wall, top wall and bottom wall and the corresponding side stile outer wall, top wall and bottom wall share welded edges, respectively. Whereas the upper stile inner wall and side stile inner wall comprises a partially welded common edge and a corner fitting which substitutes for a part of the window frame between the upper stile and side stile. Frame stile chambers comprises strengthening profiles and/or insulation profiles. The upper stile provides ventilation for the interior where the window frame is installed. To that end, inside the upper stile chamber, between its inner and outer walls, there is a ventilation channel with an inlet opening in the upper stile top wall and an outlet opening in the upper stile inner wall. The ventilation channel outlet comprises a vent in the upper stile inner wall. The ventilation channel inlet is covered by a window frame shielding profile known as the hood. Inclusion of a ventilation channel in the upper stile means that the window frame upper stile cross-section is partially different from the side stile cross-section, which prevents the upper stile from being completely welded to the side stiles. For that reason, the window frame comprises the said corner fittings which join the window frame upper stile to a side stile and fill the space where these stiles meet. Once installed, the said corner fittings comprises a side wall, wherein said side wall at least partially abut with the side stile inner wall and said said wall comprises at least one assembly opening for a screw to attach the corner fitting to a side stile. The attachment screw passes through at least the window frame side stile inner wall. Once installed, the side wall is flush with the insulation profile seated on the frame side stile inner wall. Corner fitting side wall also comprises an arm, which, once installed, abuts the upper stile inner wall so that the corner fitting edge is located between the arm and the corner fitting side wall. The side wall arm comprises a profiled surface, matching the profile of the upper stile inner wall which it abuts. Apart from the joining function, the corner fitting also fulfils other functions. Fixing the window frame side stile shielding element in a mounting socket, where the said mounting socket is a groove in the corner fitting top wall is one such function. It is also possible to attach the upper stile shield, referred to as the hood. To that end, the top wall comprises a socket for a hood bracket. The hood is fixed to the window frame side stile using a connector in the form of an attachment screw which passes through an opening in the hood bracket and the corner fitting. The hood bracket also comprises an opening for a roof window covering add-on cable, such as rollerblinds.

[0007] A socket for an insulation profile seated on the side stile inner wall eliminating the need for another screw to fix that profile is another function of the corner fitting.

[0008] Welding frame stiles together entails welding edges of adjacent stiles. To that end, the shapes and sizes of the welded edges are the same for adjacent stiles. Frame corner fittings according to the invention make it possible to connect welded edges if adjacent stiles to be connected are partially different, and it is not possible to join their edges using the welding method.

[0009] Additionally, the corner fitting also fulfils an aesthetic function, covering stile joints.

[0010] The illustration depicts the invention, with given figures depicting the following:

Fig. 1 spatial view of window frame,

Fig. 2 top view of window frame,

Fig. 3 window frame cross-section,

Fig. 4 corner fitting cross-section with side wall also

depicted,

Fig. 5 corner fitting cross-section and hood bracket.

[0011] The window frame according to the invention is a rectangular frame comprising an upper stile 1, a lower stile 2 and two side stiles 3. Each stile is made out of plastic and is joined with an adjacent stile using a welding method. Welded window frame stile profiles are referred to as the an inner, an outer, a top and a bottom walls. Upper stile 1 is constructed out of outer wall 11, inner wall 12, top wall 13 and bottom wall 14 with closed chambers 4 in between them, so that outer wall 11, 21 of each jamb stile constitutes the stile's external profile directed towards the roof structure, and inner wall 12, 22 of each stile constitutes its internal profile directed towards the window frame internal opening. The frame stiles are connected to one another at frame corners, so that in the bottom section of the window lower stile 2 outer wall 21, inner wall 22, top wall 23 and bottom wall 24 and the corresponding side stile outer wall, inner wall 31, top wall and bottom wall are welded and share welded edges. Whereas in the top section of the window upper stile 1 outer wall 11, top wall 13 and bottom wall 14 and the corresponding side stile outer wall, top wall and bottom wall are welded and share welded edges. At a frame corner, the upper stile inner wall 12 and side stile inner wall 31 are welded and comprises a partially welded common edge and corner fitting 5 which fills the remaining part of the window frame between upper stile 1 and side stile 3 is required to connect them fully. Window frame corner fitting 5 comprises side wall 51, abut with the side stile inner wall 31 and one assembly opening for a screw to attach corner fitting 5 to side stile 3. The corner fitting also comprises arm 52, which is essentially perpendicular to side wall 51 and once installed abuts frame upper stile inner wall 12. Corner fitting arm 52 surface is a profiled surface, and its shape reflects upper stile inner wall 12 surface profiling. The corner fitting fulfils additional functions, such as fixing side stile 3 shielding element 6. To that end, mounting socket 53 in the form of a groove for side stile 3 shielding element 6 edge is located in the corner fitting top wall. Window frame upper stile 1 shield, referred to as hood 7, is also attached to the corner fitting. To that end, the corner fitting top wall also comprises a socket for hood bracket 8. Hood bracket 8 is locked in corner fitting socket by a snap connector. Hood bracket 8 also includes opening 81 for a cable to connect a roof window covering add-on to an electrical power supply. Whereas opening 54 in hood 7 bracket 8 is designated for a means of attachment between hood 7 and side stile 3 top wall. Insulation profile 9 is on at least a part of side stile inner wall 31. Once installed, the insulation profile is flush with corner fitting side wall 51. The necessity to use a frame corner fitting according to the invention stems from differences in the cross-sections between upper stile 1 and the adjacent side stile. The upper stile cross-section is also different because of ventilation channel 10 in the upper stile between upper stile inner wall 12 and outer wall 11. The said window frame ventilation channel comprises an inlet under upper stile 1 hood 7 and an outlet terminating with vent 15 seated in upper stile 1 inner wall 12.

Claims

1. Window frame for a roof window comprising

   - an upper stile (1) with ventilation channel (10), lower stile (2) and two side stiles (3), wherein each stile is a plastic profiles being an outer wall (11, 21) an inner wall (12, 22, 31), a top wall (13, 23) and a bottom wall (14, 24) with closed chambers (4) in between them, such that the outer wall of each frame stile is the stile's external profile directed towards the roof structure, and the inner wall of each stile is its internal profile directed towards the window frame internal opening, and
   - an upper stile (1) outer wall (11), top wall (13) and bottom wall (14) and the corresponding side stile (3) outer wall, top wall and bottom wall share welded edges,
   - **characterized in that** the upper stile inner wall (12) and side stile inner wall comprises a partially welded common edge and a corner fitting (5) which fills the remaining part of the window frame between upper stile (1) and side stile (3).

2. The window frame according to claim 1 **characterized in that** the corner fitting (5) comprises a side wall (51), wherein said side wall (51) at least partially abut with side stile inner wall (31) and comprises an assembly opening for a screw to attach corner fitting (5) to side stile (3).

3. The window frame according to claim 2 **characterized in that** side wall (51) comprises an arm (52), which once installed abuts upper stile inner wall (12) and side wall (51) arm (52) comprises a profiled surface matching the profile of the upper stile inner wall (12) surface which it abuts.

4. The window frame according to claim 1 or 2, or 3 **characterized in that** the corner fitting comprises a top wall with mounting socket (53) constituting a groove for window frame side stile (3) shielding element (6).

5. The window frame according to claim 1 or 2, or 3, or 4 **characterized in that** the corner fitting top wall comprises a socket for the upper stile shielding element bracket, referred to as a hood bracket (8).

6. The window frame according to claim 5 **character-**

ized in that the hood bracket (8) comprises opening (54) for hood (7) attachment screw to attach it to the frame window side stile top wall.

7. The window frame according to claim 1 or 2, or 3, or 4, or 5, or 6 **characterized in that** it comprises insulation profile (9) seated on at least a part of side stile inner wall (31) such that in installed staed, said insulation profile (9) is flush with corner fitting side wall (51).

8. The window frame according to claim 1 **characterized in that** inner wall (12) comprises a ventilation channel (10) with its inlet located under hood (7).

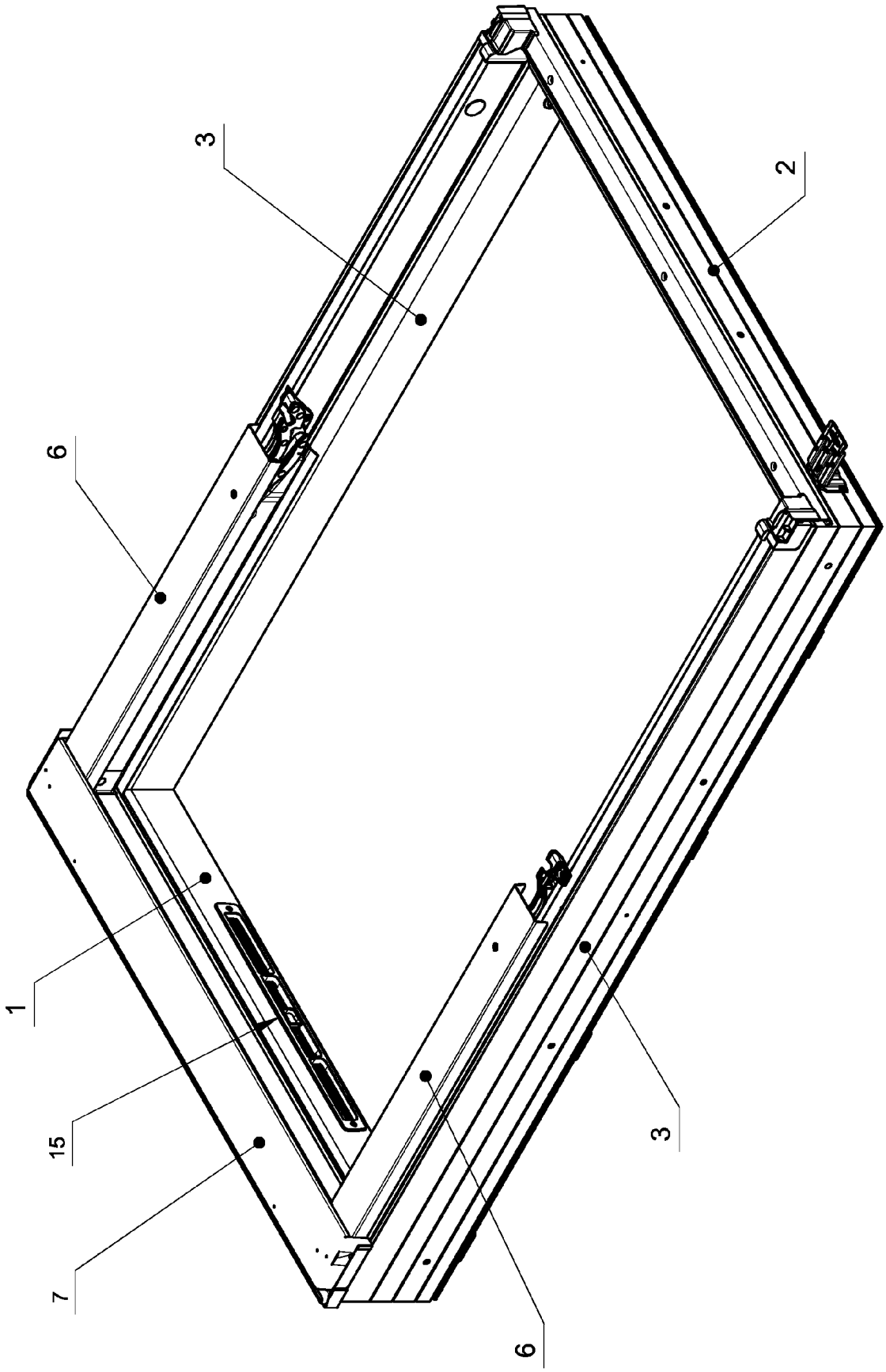

Fig. 1

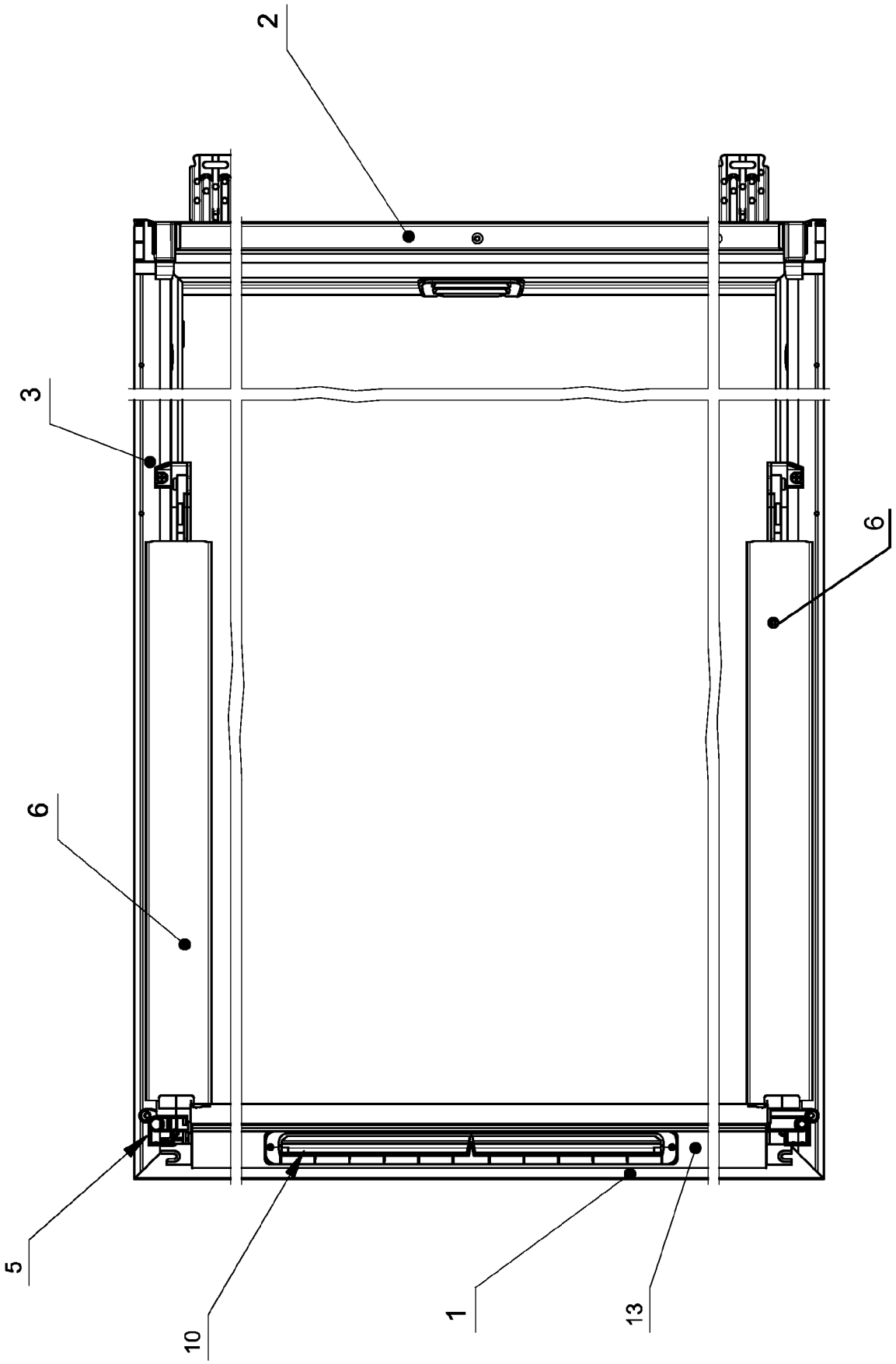

Fig. 2

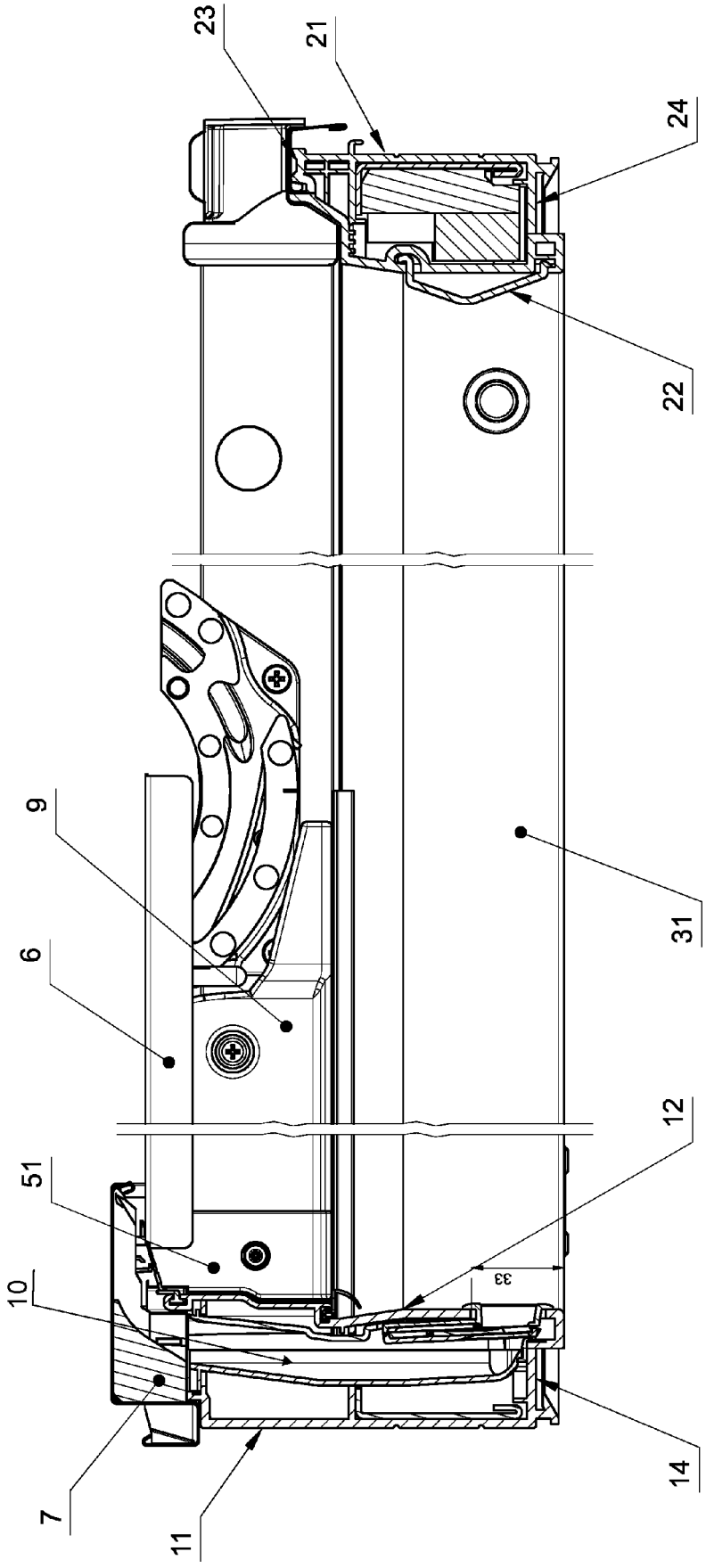

Fig. 3

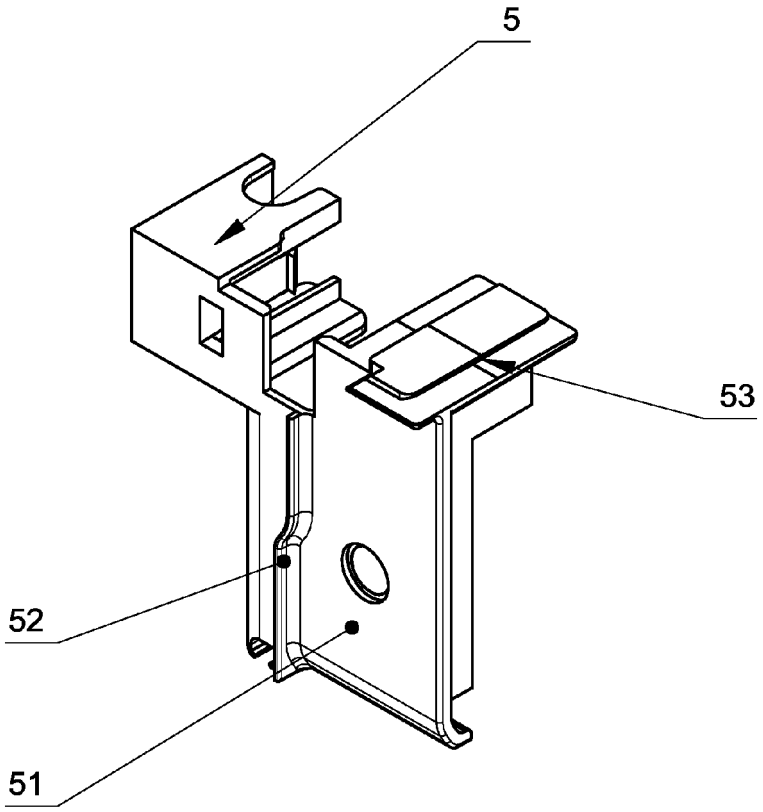

Fig. 4

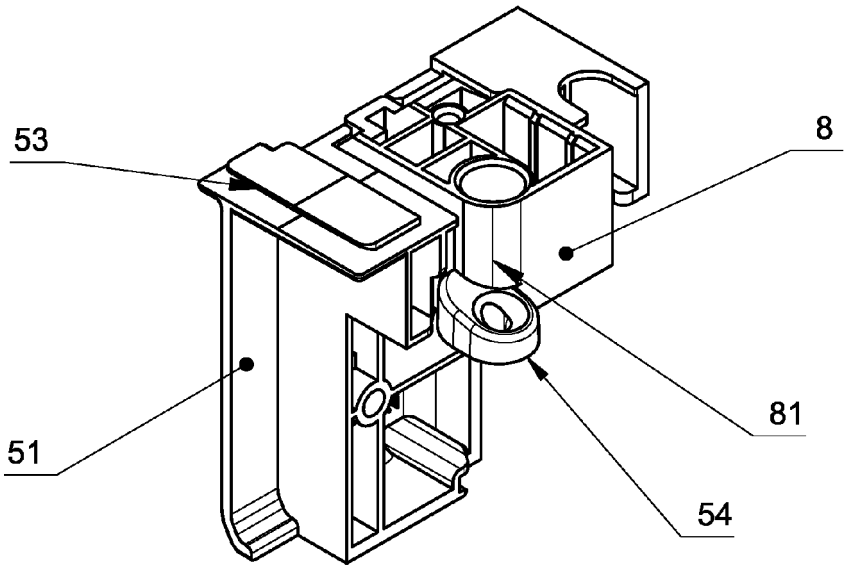

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 23 17 3314

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	EP 2 426 303 A2 (FAKRO PP SPOLKA ZOO [PL]) 7 March 2012 (2012-03-07) * figure 1 *	1-8	INV. E04D13/03 E04D13/035 E06B3/96
A	EP 3 299 567 A1 (ROTO FRANK AG [DE]) 28 March 2018 (2018-03-28) * figures 1-2 *	1-8	E06B3/964 E06B3/968 E06B7/10
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A	PL 226 109 B1 (FAKRO PP SPÓLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA [PL]) 30 June 2017 (2017-06-30) * figure 1 *	1-8	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04D E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	14 September 2023	Demeester, Jan

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 23 17 3314

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- EP 2431562 A2 **[0003]**
- WO 2008131755 A1 **[0004]**